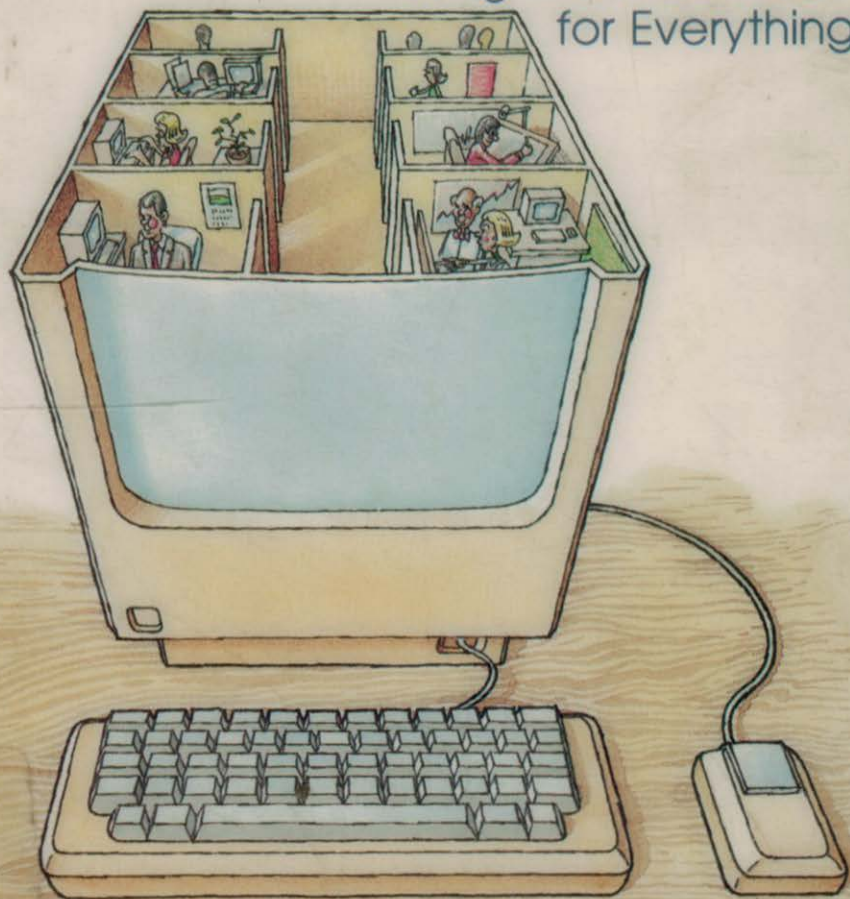


MacOffice

Using the Macintosh™
for Everything



Inside information, practical applications, and hints and tips on the Macintosh show you how to use Microsoft® Word, File, Chart, Multiplan®, and MacTerminal™ to turn your office into a more efficient workplace.

Edited by Gregg Keizer

A **COMPUTE! Books** Publication

\$18.95

MacOffice

Using the Macintosh™ for Everything

Edited by Gregg Keizer

COMPUTE! Publications, Inc. 
One of the ABC Publishing Companies

Greensboro, North Carolina

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Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN 0-87455-006-8

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Introducing MacOffice

Gregg Keizer

The Macintosh, Apple's relative newcomer to the field of personal computers, is changing the ways we work with and think about computing. Its easy-to-use operating environment, dazzling graphics, and growing software base help make the Macintosh effective as an educational tool, a home entertainment device, and a programmer's playground. But as thousands of new and experienced computer users are discovering, the Macintosh is also custom-made for business.

This idea, that the Macintosh is a superior business computer, initially caught some people by surprise. IBM, after all, has conquered the business world forever. Right? And a computer as easy to use and as powerful as the Macintosh can't really be effective in a traditional office setting. Correct?

Wrong on both counts. Since Apple guided the Macintosh into the business arena, surprising things have been happening. Calling the package the Macintosh Office, even going so far as to trademark the phrase, Apple has targeted the Mac at companies both large and small, from the Fortune 1000 to the Mom-and-Pop retail store down the street. Even more attractive, Apple has produced a network system, called AppleTalk, and a powerful laser printer, the LaserWriter, to add shared peripherals and close-to-typeset-quality printing to the office. Third-party software and hardware developers have swarmed to the Macintosh Office, offering hard drives, file servers, and other products to enhance the final Macintosh business environment.

MacOffice: Using the Macintosh for Everything explores the power and the promise of Apple's revolutionary computer. What you'll find here are practical uses of the machine and of some of its most popular software. Actual demonstrations of the Macintosh's business capabilities show you just what you can do with the computer. If you already have a Macintosh, you can get to work immediately. And if you haven't bought a Macintosh yet, *MacOffice* can give you an idea of what it will do for your office.

Half a Million Sold

By the beginning of 1985, somewhere between 250,000 and 350,000 Macintoshes had been sold (the numbers obviously vary according to whom you talk to). The Macintosh is still selling briskly. During the first quarter of 1985, for instance, a computer trade weekly reported that the Macintosh accounted for 20 percent of all specialty computer store sales. That's a larger percentage than any one IBM PC model (though not quite as large as the IBM PC line taken as a whole). It's safe to assume, if sales remain constant, that over half a million Macintosh computers will be on desks when 1986 rolls around.

Apple aims for 10,000 AppleTalk connections by the end of 1985. AppleTalk connections point at the acceptance of the Macintosh Office concept. And it appears that this goal may well be met. At the time of this writing (June 1985), more than 2500 LaserWriters, Apple's main hardware contribution to the Macintosh Office idea, had been placed.

But you don't need ten Macintoshes, a LaserWriter or two, and lengths of AppleTalk's cable to use the machine as an office computer. Not every business is going to require that kind of setup. Small businesses, particularly, may use only one or two Macs. *MacOffice: Using the Macintosh for Everything* is written for these businesses as well.

What Tells What

All the hardware in the world won't do a thing for you unless you have the software, or programs, to tell it what to do. Software is the most crucial component of a computer system. Without the right software, your computer may not be able to do exactly what you had planned, or if it can, it may do it poorly. It may *look* sexy, but the Macintosh can't help you manage your business without software.

That's where the Mac excels. In the year and a half since its release, the Macintosh has seen some very impressive software debut. The programs bundled with the machine, *MacWrite* and *MacPaint*, were powerful in their own right. But third-party developers have released spreadsheets, databases, word processors, terminal programs, and graphics packages which use the Macintosh's unique operating system to its fullest extent.

MacOffice: Using the Macintosh for Everything concentrates on five Macintosh programs: Four are Microsoft products—*Word*, *File*, *Chart*, and *Multiplan*—and the fifth is Apple's own *MacTerminal*.

These five weren't selected solely because of their abilities, though they *are* among the best available in their specialties. Their acceptance and popularity also had something to do with it. Microsoft's packages constantly show up on software best-seller lists.

MacTerminal was the first commercially produced terminal program for the Mac (there were several public domain terminal programs available prior to *MacTerminal's* release).

It does no good to show you how to use your Macintosh, especially if you already have the machine and some of its software, if the descriptions are culled from programs you don't have or aren't likely to buy. You're more likely to have or buy *Multiplan* than any other Macintosh spreadsheet. *Word*, though not part of the Macintosh package, is the most popular third-party Mac word processor on the market. The other software used in *MacOffice* follow these criteria.

But What Can This Book Do for Me?

MacOffice: Using the Macintosh for Everything is an anthology showing what seven different Macintosh users and authors have done with their computers and the various software packages. These authors know the Macintosh—they've worked with the machine and they know what it can and cannot do. Each author has explored a particular program, or a combination of programs, and used it to accomplish a very specific task. Using *Word* to create form letters. Adding graphs to reports or other documents with *Chart*. Accessing other Macintoshes and other computers using *MacTerminal*.

The applications, and that is what this book is all about, are practical and can be used immediately in your own business. The Accounts Receivable, Accounts Payable, and Balance Sheet templates created with *Multiplan* in Chapter 6, for instance, could be entered and used as is. The information concerning the AppleTalk network and the LaserWriter can prove helpful as you create your own network, or as you try to decide if a network will prove valuable in *your* office.

Many chapters include step-by-step instructions detailing how you can use a program, *Multiplan*, for example, to create these applications. Figures and text walk you through the process, showing you just what happens at almost every step. By reading *MacOffice*, with your Macintosh in front of you, you can end up with an impressive collection of Macintosh capabilities.

But there's more to *MacOffice* than just a collection of applications. Within each chapter, countless hints, tips, and techniques are discussed. Some are obvious, but perhaps overlooked in your eagerness to get started with the machine and its software. Others are more advanced and show you things that no manual can.

More important, these practical examples will give you ideas. Perhaps you don't need a client list, as shown in Chapter 4, one of the chapters which concentrates on *File*. But Chapter 4 will show you how to use *File* most efficiently. You'll see ways to sort information in the *File* documents you create, and you'll find out how to create a variety of different *File* reports. Within a short time, especially if you produce the sample applications as you read, you'll be able to apply the information to whatever task you need. All the chapters are like this. Not only are there applications and documentation, but the simple process of showing how *one* thing can be done will invariably lead you to see *another*. Learning by example is one of the main concepts behind this anthology.

Information Everywhere

Not everything in *MacOffice* is concerned directly with business. Other sections provide you with information about your Macintosh and its operating system. How to manage your disk files, how to use valuable disk space most efficiently, what to consider if you're thinking about upgrading your 128K Macintosh to the optimum 512K Fat Mac (or adding even more memory—see Chapter 9 for details on adding up to two megabytes of RAM). The last chapter in *MacOffice* discusses and evaluates several Macintosh utilities that will make your work easier, sometimes even make formerly impossible tasks possible. Almost everything you need to get started with the Macintosh in your office is here, in one place.

It's Just a Computer

The Macintosh can be an effective, powerful office tool. But remember, that's all it is—a tool. It can make your office more efficient, but it can't make your business decisions for you. Some people believe that simply buying a personal computer will solve every problem. Unfortunately, not true. *MacOffice* is realistic. It doesn't try to tell you how to run your office—it only shows you how to get the best use from the computer and selected software. The rest is up to you.

The Pictures

Almost all the figures included in this book were generated on the Macintosh, then uploaded via modem to COMPUTE! Publications' Atex editorial/typesetting system and typeset on an Autologics APS-Micro 5 typesetter. Thanks go to Tony Roberts, Production Director, and Charles Brannon, Program Editor, of COMPUTE! Publications, for creating this capability.

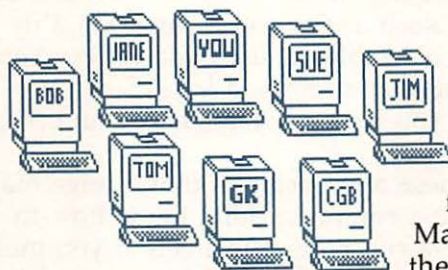
Chapter 1

The MacOffice for Everyone



The MacOffice for Everyone

Charles Brannon



The IBM PC was once the uncontested champion of business microcomputers, but it must now face a feisty opponent—Apple's Macintosh. It's not an easy fight for the Macintosh—IBM is firmly en-

trenched, both in the corporate mind and in offices throughout the world. Many competitors have tried to find a unique niche in some nook IBM overlooked, snapping up whatever morsels that fall from Big Blue's table.

And yet Apple's "computer for the rest of us" is surviving, quite well, thank you, in a market enthralled by IBM compatibility. A computer that scoffs at this standard rarely has the last laugh. Macintosh succeeds because it represents a fresh concept in computing, a machine that is uniquely easy to learn and use, a computer for complete novices that provides professional power. How is this possible? To find out, let's take a look at the Macintosh user interface.

The Macintosh User Interface

The *user interface* is more or less the personality of an application or operating system. Through it you perform all your work. It's a pipeline for communication. The user interface should communicate information clearly, in sufficient detail to keep you well-informed, but not overwhelm you with information you don't need. It should allow you to access all the program's functions with a minimum of overhead. Ideally, the output of a program should be instantly recognizable and understandable, communicated in a familiar way, not couched in computer jargon. A word processing document should look like type on paper. When your work is analogous to familiar tasks, you can use your computer immediately, just by applying the expertise you've learned working in a more conventional office setting.

Many computers have no consistent user interface. The way you operate a program varies widely between applications or even within an application. Some programs may require you to enter

complex command lines and acknowledge you with cryptic messages. Others use control keys to enter commands. Even here, you must still memorize the keystrokes, though they're often related to the function they perform, such as Control-E for Erase. Programmable function keys are available on some machines to store commonly used phrases or work as command keys. Some programs display menus, where you type a key to choose an option from the display.

What's forgotten in all these approaches is that a huge majority of people who want to use a computer don't know how to touch-type. How can you use a computer effectively if you must hunt and peck to use the primary input device? It's asking a lot of someone to learn to type just to talk to a machine. If the commands were displayed on the screen, and if there were some way to point at the command you want, the keyboard problem would be alleviated.

The Mouse Solution

The Macintosh uses a mouse controller as its pointing device. Many people immediately associate the Macintosh with its mouse. Their love or hatred begins (and sometimes ends) with the mouse, but the real issue is not the use of the actual device, but with the pointing method of accessing commands.

The mouse is a small box with a push button. A rubber ball is nestled beneath the mouse. By pushing the mouse around on a flat surface, the ball rolls and communicates the direction and speed of spin to the computer. The screen cursor mimics the movement of the mouse. Push the mouse away from you, and the cursor moves up. Push it to the right, and the cursor follows. The mouse is just one way to move a cursor on the screen. It's possible to use other pointing devices, such as light pens, touch tablets, or trackballs.

The mouse cursor is normally an arrow pointer, but it often changes to different shapes depending on screen context. For example, the cursor can become a hand when used to grab objects or a crosshair when used to draw a box around an object.

Using the mouse is tricky at first. Since the trackball of the mouse must roll on a smooth, flat surface, you must dedicate some desktop space for the mouse. It's not uncommon for beginners to run out of desk space when rolling the mouse around. After some practice, though, *mouse dexterity* becomes second nature. Actually, very little desk space is needed to move the mouse.

You don't even think about it. The pointing action is effortless.

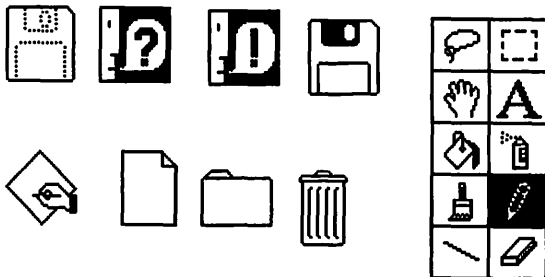
Nonetheless, touch-typists complain that they have to move their hands away from the keyboard to use the mouse. Yet the same is true when pressing the cursor keys on most keyboards, unless you have very long fingers. In any case, there are plenty of keyboard shortcuts, even keys to move the cursor, depending on the application.

Clicking and Dragging

After you've pointed to a screen location, you have to select it. There are three basic mouse operations: the *click* (a single press and release of the mouse button), the *double-click* (two clicks of the mouse button in rapid succession), and the *drag* (holding down the mouse button while moving the mouse to a new location). Clicking is generally used to highlight something or to select it. The double-click is a shortcut. Where a single click can select something, a double-click can start an application or open a file. You don't really have to use it, since there are other ways of opening a file or starting an application.

The drag is a more common operation than the double-click. You would drag when drawing a box around an object, for instance. You start drawing a box by holding down the mouse button. This sets one corner of the box. Still holding down the button, you then move the mouse (drag) to where you'd like the opposite corner of the box to be. When you let go, the box is finished. You can even pick up screen objects and drag them to new locations.

Figure 1-1. A Variety of Icons



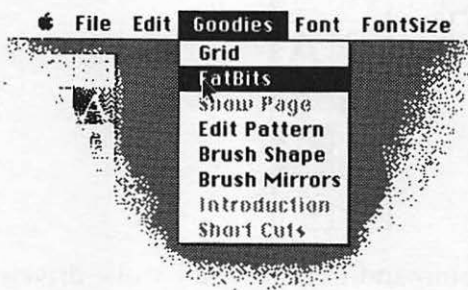
Rather than using a command-driven or keystroke-driven user interface, the Macintosh can represent commands as words or pictures on the desktop, commands that are pointed to, not typed

out. Words or pictures by themselves can be incomplete, but a captioned picture is a clear way of symbolizing something. Commands become less abstract and can even be thought of as objects. Object-oriented processing is another characteristic of the Macintosh. The objects are usually called *icons*. An icon can represent a disk, an application, a data file, a tool like a paintbrush, or a command option. You can erase a file from the disk just by picking up the icon that represents that file and dropping it in the Trashcan icon.

Pull-Down Menus

The screen could quickly become cluttered with such icons. Menus are a good alternative for commands, but they also use a lot of screen space. The Macintosh solution is to use *pull-down menus*. The titles of each menu appear along the top of the screen. You need merely to select the title by pointing to it with the mouse, then pull it down while holding down the mouse button. The menu options pop up. You hold down the button and pull down until the option you want is highlighted, then let go of the mouse button. A menu doesn't take up any screen space until it's selected, and it goes away as soon as you've selected from it. A menu also keeps you from having to memorize all the commands. It can be used to perform a command as well as document what commands are available. You usually know what menu to look under, since the titles of the menus are always displayed. When a menu option can also be accessed with the keyboard, the shortcut key is displayed next to the option. Most shortcut keys are entered by holding down the Command key (shown on the keyboard as ⌘) while pressing another key.

Figure 1-2. Pull-Down Menu



Sometimes the use of a menu is inappropriate, for example, trying to change the format of text when you have no text defined. The title of an inappropriate menu appears dimmed and fuzzy. Some items within a menu may also be inappropriate, like trying to *Open* a new document before you've *Saved* the one you're working on. The inappropriate items also appear dimmed. The mouse will not highlight these items, but will skip right past them. There's never any ambiguity—you immediately know if a certain command is allowed or even exists.

Windows

The Macintosh user interface imitates a desktop. The mouse cursor is an extension of your hand and hovers above the desktop. Files are shown on the desktop as miniature file folders or pages of documents. Familiar objects like the wastebasket are pictorially represented. Your work appears as a sheet of paper. And you can display several of these sheets. Like paper, they can be moved about the desktop, brought to the foreground, or shoved beneath a stack. But unlike ordinary paper, a *window's* size and shape can be changed. The idea of a window is to use your one display to show several different screens.

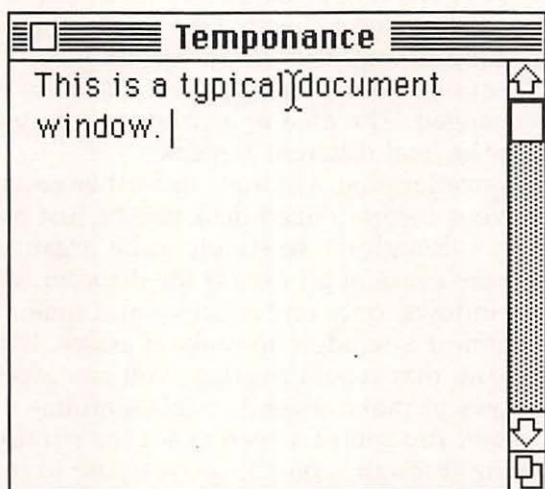
The Macintosh uses overlapping windows to further enhance the desktop illusion, so your computerized desk can be just as sloppy as your real desk, although it's so simple to be organized on the Macintosh that there's less of an excuse for disorder. While you can display many windows, only one is active at a time. You click on any visible portion of a window to make it active. It surfaces, burying any windows that would overlap. You can move around and resize windows to make several visible simultaneously. You can, however, run out of screen space for windows and find yourself shuffling through a pile of them trying to find a particular one. It's best to carefully plan your window layout on the screen. Many software packages offer special commands to make it even easier to manage your windows.

There are two kinds of windows: the *document window*, which can be resized, moved, and used to edit text, and the *dialog box*, which can be used to alert you with a message, or let you enter text or select options. A dialog box (like the one in Figure 1-4) cannot be moved or resized.

Document Windows

The name of a document window is displayed at the top, in the *title bar*. A *go-away box* is shown at the far left of the title bar. Clicking the go-away box makes the window disappear, revealing whatever's beneath it. You can store more than a windowful of text within a window. The window may show only a portion of a large document, so there are several ways to display different parts of it. Along the bottom and right side of the document window you'll see *scroll bars*. You can drag the small box within a scroll bar to jump to a new part of the document. If the scroll bar is empty, scrolling is disallowed or inappropriate. You can also click on the arrows to scroll the text left or right, and up or down, one line at a time. By clicking above or below the scroll bar box, you scroll forward or backward by pages within the document.

Figure 1-3. Document Window



The small box at the lower-right corner is the *size box*. Dragging here lets you extend or retract this corner of the window, effectively changing the size and shape of the window. You move the window by dragging the title bar. This lets you drag a dotted-line skeleton of the window to a new location. When you let go, the window moves.

Some programs extend the options of a document window. For example, many Microsoft applications let you choose between

two sizes of a window, just by double-clicking on the title bar. The shape of the mouse cursor may even change to remind you of the functions of the various parts of a window.

Text Editing

You can click anywhere within the window to place the text cursor, a blinking vertical line. This is the *insertion point*. The arrow cursor usually changes to an I-beam cursor within the document area to remind you that clicking the mouse sets the insertion point. You can type from the keyboard to insert text at the insertion point. The Backspace key is used for deleting single characters. You can move the insertion point within the document to edit at different points. You can also define text, erase it, or save it for later use.

To define a section of text, just click and drag the mouse cursor across the text. The text is highlighted, and the window scrolls automatically, if necessary, to let you define large sections. You can define a single word or phrase by double-clicking on it. The Shift key can be used to extend a selection. You could select one word, then move the mouse cursor to the end of the sentence. You hold down Shift when you click, and the range extends from the defined word to the end of the sentence. (This procedure is called *Shift-click* throughout this book.) You can also select pictures in applications that allow it, usually by dragging a box around the object.

x Using the Clipboard

Once some text or an object is selected, you can erase it by selecting *Clear* from the *Edit* menu or by pressing the Backspace key (a shortcut key). You can replace selected text by simply typing in some new text. Or you can select *Cut* (or press Command-X) from the *Edit* menu to put the selected text into a special buffer called the *Clipboard*, a System file stored on your startup disk. Once cut, the object or text disappears from the screen, but is safely stored in the Clipboard. You can also select *Copy* (or press Command-C) from the *Edit* menu to move the text or graphics into the Clipboard without erasing. The Clipboard can hold only one item at a time, and it preserves this item until something else is copied or cut into the Clipboard, or until the Macintosh's power is shut off.

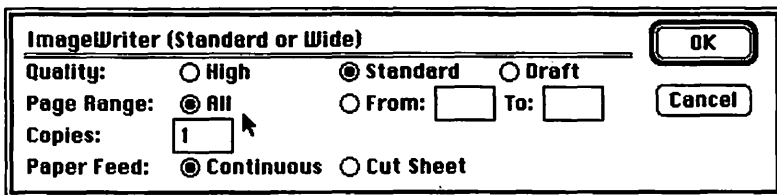
The *Edit* menu is found in most applications. Text or graphics cut into the Clipboard can be pasted into many applications. You can paste text from the Clipboard at an insertion point by

selecting *Paste* from the *Edit* menu or by pressing the shortcut key, Command-V. You can also use *Paste* to replace any selected text. Many applications will also accept graphics from the Clipboard. You could use *MacPaint* to draw a picture, copy the picture into the Clipboard, then run *MacWrite*, and insert the picture into your document.

Dialog Boxes

The *dialog box* is sometimes used just to tell you something. A simple click, or a click within the OK box, is enough to tell the Macintosh that you've read the message. The dialog box can also be an area where you enter information. You can click on buttons to turn options on and off. Some buttons are hollow squares which hold an X when turned on. Others are hollow circles which are filled with a solid circle when turned on. Another kind of button is a word or phrase surrounded by a rounded box.

Figure 1-4. Dialog Box



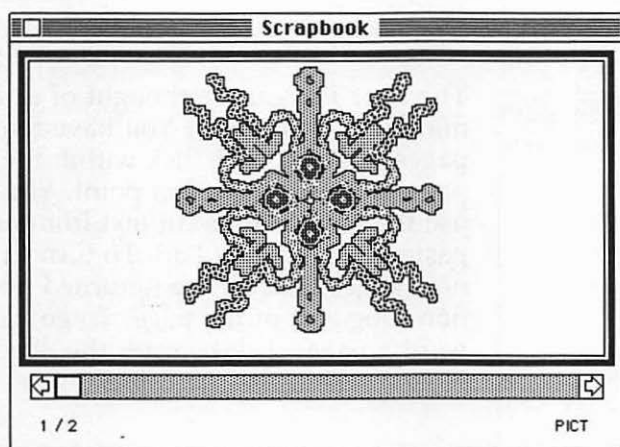
Edit fields are used to enter a single line of text. They appear as rectangles that may contain a default segment of text. You can click on an edit field to select it, then begin typing. Many dialog boxes let you use the Tab key to skip between multiple edit fields. You can cut from an edit field into the Clipboard or paste from the Clipboard into an edit field.

Desk Accessories

One special menu is labeled with a small Apple logo. This menu contains the *desk accessories*, special tools usable with almost all applications. These tools are like small built-in applications, considered handy enough to be made available at all times. The desk accessories permit a limited form of concurrency, since you can have them running while you work within another application. You can use many desk accessories simultaneously, although

each opened desk accessory uses more processing time and slows down everything else. The first item in the Apple menu is usually something like *About the....* It presents the name of the application, a brief description, and the version number and author(s) of the program. The standard desk accessories are the *Scrapbook*, *Alarm Clock*, *Note Pad*, *Calculator*, *Key Caps*, *Control Panel*, and *Puzzle*. The desk accessories appear as objects on the desktop, and can be moved around for convenience. Each accessory can be cleared from the desktop by clicking on its go-away box.

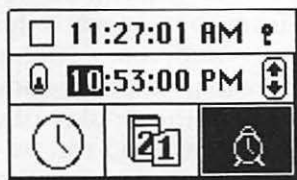
Scrapbook



The *Scrapbook* is like an extended Clipboard. The Clipboard can hold only one item at a time, but the Scrapbook can hold an entire portfolio of pictures and text. The Scrapbook is filled by pasting into it from the

Clipboard. You can scroll through the pictures and text in the Scrapbook with its horizontal elevator. The item currently displayed can be cut or copied into the Clipboard to be pasted into some other application.

Alarm Clock

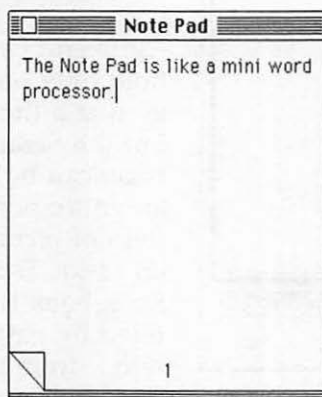


The *Alarm Clock* is a realtime clock (as long as you set it correctly) that's updated from the Macintosh's internal clock/calendar. Be sure you have a fresh AA battery installed in the back of the machine to keep the clock alive. You can

pull out the clock and leave it on the desktop, but remember that it will slow down the mainline application. The clock is set by clicking on the little flag next to the time, which lowers the clock

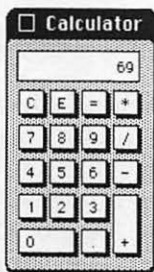
setting panel. Click on the picture of the clock dial to display the time. Now click on each segment of the time (hours/minutes/seconds), then on the tiny up/down arrows to increment and decrement the clock digit. You can also type numbers from the keyboard. Click on the icon of the daily calendar to display the date. You can click on each date segment (month/day/year) to count it up or down. The alarm clock icon is used to display and change the alarm time. When the alarm time is displayed, you can raise or lower a tiny switch to turn the alarm function on or off. The alarm clock icon changes when the alarm is set. The current date or time is automatically selected and can be cut or copied into the Clipboard.

Note Pad



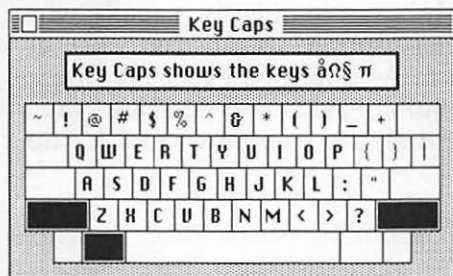
The *Note Pad* can be thought of as a mini-word processor. You have ten pages of notes. Just click within the page to set the insertion point. You can use the clipboard to cut text from or paste into the Note Pad. To turn to the next page, click on the upturned portion (dog ear) of the page. To go backward a page, click beneath the dog ear.

Calculator



The *Calculator* is a simple four-function calculator with scientific notation. You can press the calculator keys with the mouse cursor, but you can also enter data and select functions from the keyboard. Just type a number, a function (+ addition, - subtraction, * multiplication, / division), another number, then the = key. The number in the display of the Calculator is automatically selected and can be cut into the Clipboard. You can also paste a number from the Clipboard into the Calculator's display.

Key Caps



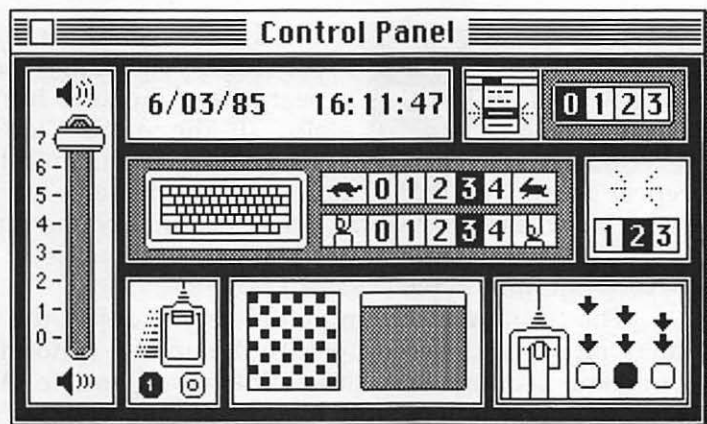
Key Caps is not a substitute for the keyboard, although you can actually type characters using the mouse. Its main purpose is to show you what special characters are available. Press the Shift key, the Option key, and then Shift and Option together to see all

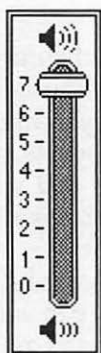
the possibilities. *Key Caps* shows the status of every key. The characters you type appear in the *Key Caps* display (while the appropriate keys on the *Key Caps* keyboard flash), and you can cut and paste from and to the *Key Caps* display using the Clipboard. *Key Caps* is also a way to get some text into the Clipboard when your current application doesn't support text entry.

Control Panel

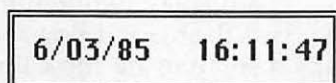
The *Control Panel* lets you customize some of the components of the Macintosh user interface. As the name implies, there are various switches, sliders, and other adjustment controls pictorially represented.

Figure 1-5. The Control Panel





The slider bar at the left controls the speaker volume. The Macintosh beeps frequently, usually when you make an error. If these sounds irritate you, click on and drag the slider down. As might be expected, dragging it up increases the volume, and down decreases the volume. You can drag it all the way down to 0 for no sound at all.



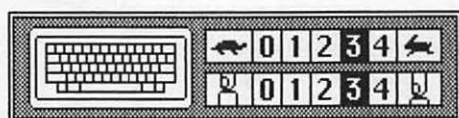
Another panel lets you see and change the date and time. You change the time just as you did with the

clock, by clicking on each segment of the date or time, then clicking on the tiny arrows displayed to count the number up or down. You can also type the time and date from the keyboard.



The section at the upper right of the Control Panel lets you control the amount of visual feedback you get when selecting from a

menu. When you make a selection, the selected item flashes. You can control the number of flashes, from 0 (no flash at all) to 3 (three flashes). Expert users might turn off the flashing to speed things up.



The keyboard control panel lets you change the repeat rate of the keys from slow (0, the tortoise) to fast

(4, the hare). Underneath the repeat rate icon, you can control the keyboard repeat sensitivity, that is, how long you have to hold down a key before it starts repeating. Some people like the repeat to start very quickly. Others might not like two or three keystrokes for every one they type.

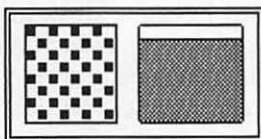


The flashing insertion point lets you adjust the blink rate of all insertion points. A rate of 2 is normal, but some people like as little blinking as possible. A rate of 1 gives a very slow blink, and rate 3 blinks

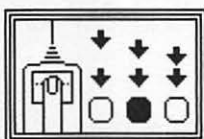
hyperactively.



The picture of the moving mouse controller lets you choose between two movement styles. With (1) clicked, the cursor moves farther when you speed up your mouse movement. This lets you cross the screen without running out of desk space for the mouse. With (0) clicked, the mouse moves at a constant speed. This can be better when you need fine, predictable control of the mouse. It's really a matter of personal preference.



Next to the mouse control is a panel that lets you edit the background pattern of the desktop. The box on the left is an editing grid where you can design the actual 8×8 pattern used. To the right, you can see what the pattern looks like in actual size, filling a small box. The white bar on top of the filled box lets you pick from several predefined patterns. Just click on the bar to change patterns. To actually change the desktop pattern, click inside the filled box.



This section lets you control the time delay between the two clicks of a double-click selection. If you don't have a very fast finger, you'd better click on the circle with more space between the two arrows (the leftmost). On the other hand, you don't want two separate clicks mistaken for a double-click, so you may want to choose the least amount of time between clicks on the far right. The center selection is generally the best compromise.

Puzzle



Apple whimsically included this little game to give harried executives an excuse to relax a bit. The *Puzzle* is the computerized form of the sliding tiles puzzle. Try to get all the numbers in order. Click on any tile adjacent to the empty space to slide it into place. You can also click on the end of a row or column to slide the whole row or column into the empty space. You get a new game every time you call up the Puzzle. Click the go-away box when you've had enough of the game.

New Desk Accessories

Several third-party companies now sell add-on desk accessories. Accessories available include a terminal program, word processor, spreadsheet, print spooler (lets you continue using your current application during printing), graphics grabber (lets you “grab” a part of the screen and cut it into the Clipboard), and more. The advantage of using these packages is that as desk accessories, they’re always available. Desk accessories are an instant, and easy, way to integrate two applications. And because desk accessories can run simultaneously with your application, you have the powerful capability of multitasking—running two programs at the same time. (Chapter 11 describes several commercial utilities which can act as desk accessories.)

A new version 4.1 of the Finder (see below), adds *Choose Printer* to the Apple (desk accessory) menu. It lets you install one of several printer drivers (only the ImageWriter driver is included by default), select which port (printer or modem) to use, and whether or not the printer is connected to the AppleTalk network.

The Macintosh Finder

When you finish your work in any application, it’s time to save it to disk. As you may know or have painfully found out, anything in the Macintosh’s memory is lost when you turn off the power (or when power is turned off for you, as in a thunderstorm). Computer memory is *volatile*. That’s why it’s important to store your work on disk. Some form of nonvolatile mass storage is required for any computer.

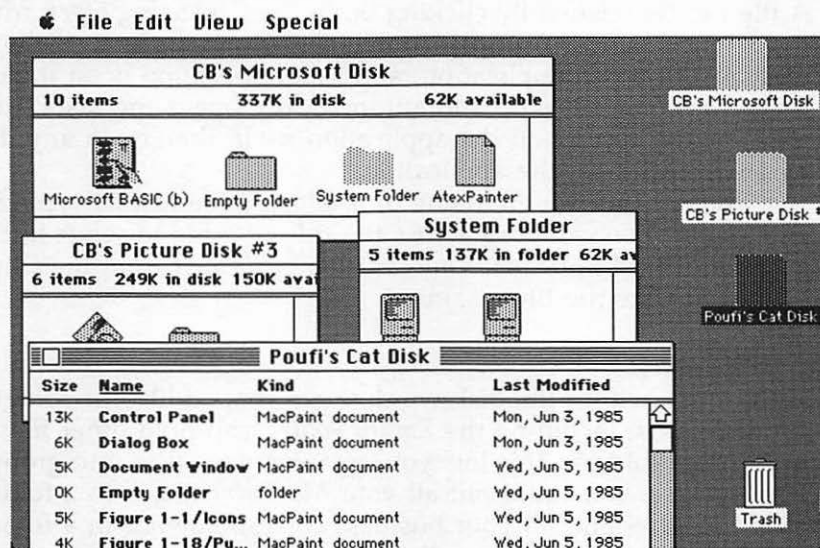
The Macintosh disk drive is one of the fastest microcomputer disk drives, and the storage medium, the 3-1/2-inch microfloppy, can hold over 400,000 characters. Managing that much information can be tricky. That’s where the *Finder* comes into play.

The Finder lets you manipulate your documents and disks. It can be considered an application, although it usually comes up automatically when you turn your computer on with a disk in the drive. It’s not an integral part of the computer, but a specialized program for managing the contents of your disks. Even if you use only a few application programs, you’ll have to use the Finder occasionally, if only to start the applications you use.

Finder Version 4.1

Apple's latest version of the Finder incorporates many conveniences, shortcuts, and additional features. It is completely compatible with other versions of the Finder, and applications that ran under the old Finder should have no problem working with version 4.1. The new Finder is usually installed with a program called *System Update*. This program also updates the *System* and *ImageWriter* files. Check with your Apple dealer to obtain *System Update* and version 4.1 of the Finder; the new features will make it worth your while. The body of the following text deals with the old Finder. Notes are added as appropriate to document new or different features of version 4.1 of the Finder.

Figure 1-6. Finder Screen



Files and Icons

Information is stored on disk in the form of *files*. Each file can be thought of as a single file folder that holds sheets of paper or other information. The Finder carries this analogy to the extreme. When you insert a disk into the drive, the Finder displays a miniature icon of the disk, with the disk's name displayed beneath it. You can see what's inside a disk by clicking on it and selecting *Open* from the *File* menu. A shortcut is just to double-click on the

disk icon. A window opens up, containing icons for every file on the disk. The files may look like sheets of paper, or they may be represented pictorially. A *MacPaint* document shows a paintbrush painting across the paper. The *MacTerminal* icon is a telephone. Applications normally have distinctive icons.

The files behave like actual objects. You can pick them up and move them by dragging them (hold down the mouse button to pick them up and keep the button down while you move the mouse). This lets you arrange the files just like you would on a real desktop. The window holding the files can be moved and resized. Use the scroll bars to scan through the disk folder or just expand the disk folder if you can't see all the files.

Opening a File

A file can be opened by clicking on it, then selecting *Open* from the *File* menu, or by simply double-clicking on its icon. If the file was created by an application, and that application is on the disk, the application starts up and automatically opens the associated file. You can also open the application itself, then open any documents from within the application.

You can change the name of a selected file just by typing in a new name. You can drag across the title of a file to select it, then cut it into the Clipboard. You can also paste text from the Clipboard to create the file's name.

Using Folders

Some icons within the disk window are shaped like file folders. These folders, including the *Empty Folder*, can hold other files, even other folders. This lets you organize your files into groups. For example, you could put all your *MacPaint* files into a folder called *Pictures* and all your business correspondence in a folder called *Letters*. Most disks, called *startup disks*, because you can put them in the drive and start up the Macintosh with them, contain the *System Folder*. If you double-click on it, it opens up to show you several files, including the System file, the Finder itself, the ImageWriter file (supports the use of the ImageWriter printer), and probably files storing the contents of the Clipboard, Scrapbook, and Note Pad.

To create your own folder, you need to duplicate the Empty Folder, then change the name of the duplicate. Click on the Empty Folder, then select *Duplicate* from the *File* menu, or press Command-D. Just click on the duplicate and retype the name.

(With version 4.1, you can also select *New Folder* from the *File* menu to create an empty folder.) You can now pick up and drag files atop this folder. When the position of the file you're dragging and that of the folder coincide, and when the folder turns dark, let go of the button. The file you were dragging disappears, but is actually inside the folder. You can open up the folder (double-click on it) to see its contents. You can use the same technique to duplicate any file onto the same disk. (You'll see how to copy a file to another disk in a moment.)

Deleting Files

An important part of disk management is removing files that are no longer needed. A disk has a limited amount of space on it. The System Folder takes up quite a bit of space, as does an application program. You'll probably need to remove any unnecessary files just to free up disk space for further storage. This is where you use the Trashcan. Just drag any file you don't need on top of the trashcan icon, and watch it disappear. The file isn't removed from the disk just yet—it's actually still inside the Trashcan. You can open it up to display its contents and remove the file if you change your mind. The Trashcan is emptied (and the disk space used by Trashcan items is freed) whenever you start an application or eject the disk. You can empty it yourself by selecting *Empty Trash* from the *Special* menu.

Some memory is used to hold the information about the image of a disk on the desktop, including information about every file. This limits how many disks you can display on the desktop. Fortunately, you can discard the images of disks that you no longer need to display by simply dragging the image of the disk into the Trashcan. This doesn't do any harm to a disk, but just frees up the memory used to hold the image. You cannot trash the image of the startup disk or of a disk in any drive. (Version 4.1 of the Finder does let you trash any nonstartup disk. If you trash a disk icon, Finder 4.1 ejects the disk if it's in a drive and removes the disk image from the desktop. You can also use *Shut Down* from the *Special* menu of Finder 4.1 to eject all disks and restart the system.)

Saving Disk Space

Even if you delete unneeded files, you'll find yourself running out of disk space fast. The System Folder alone uses almost half the available disk space. There are a few ways to free up some extra

room. You can delete the System Folder, freeing up 196K, but the disk can then no longer be used to start up your Macintosh. Such a disk is called a *data disk* rather than a startup disk. You can use the data disk to store your files, but you'll still need a startup disk to run your application from.

Another way to free up disk space is to remove the fonts from the System file that you won't need. Unless you're using *MacWrite* or *MacPaint* with a lot of fancy text, you probably won't need very many fonts. Use the *Font Mover* application on the *System Disk* to move any unused fonts from your disk onto a file on another disk. You can always restore the fonts later.

If you won't be using the ImageWriter printer (or don't have one), you can erase its icon from the System Folder. You can copy the file back onto the disk from the *System Disk* if you need to. We'll see how to copy files in a bit.

You can free up 46K by deleting the Finder from the System Folder. Without the Finder, though, that disk cannot be used to display or modify a disk. A Finderless disk can be used as a startup disk, though, as long as you want to start a particular application automatically. When you turn on the Macintosh, the application loads automatically instead of the Finder. To make an application the startup file, click on the application and use *Set Startup* from the *Special* menu. If you need to restore the Finder, copy it back to the disk and use *Set Startup* to make the Finder the startup application.

Disk Swapping

To work with another disk, click on the disk icon, then select *Eject* from the *File* menu, or press Command-E. The disk is ejected, but its image remains on the desktop. Now insert the next disk you want to work with. Its image appears. While working with another disk, you may be asked to insert the disk you originally started up with. The Macintosh keeps some of its information on disk so as not to overburden memory, and needs to refer to the original disk at times. The disk in the internal drive is ejected, and you're asked to insert the original disk. The original disk is read from and ejected, and then you can return the disk you were working with. You may need to swap disks like this several times. It can be tedious, but there's no way around it short of buying an external drive.

Using an External Drive

The external drive is a timesaver. With an external drive, you can keep your startup disk in the internal drive and store all your data on the external drive. A data disk doesn't have to be a startup disk, so you can remove the System Folder from the data disk, freeing up a whopping 196K of disk space. You can use a data disk with a single-drive Macintosh, but you'll have to swap disks whenever the Macintosh needs to refer to the startup disk. The external drive can behave just like the internal drive—you can even start the Macintosh with the external drive. Because you can have two disks loaded at the same time, you increase the speed and convenience of using your computer. A second disk drive can be more valuable than adding extra memory.

Copying Between Disks

To copy a file between disks, you need to display the images of both disks. Eject whatever's in the drive and insert your other disks until the disks concerned are displayed. With the images of the disk you're copying from and the disk you're copying to shown, you can just drag the file you'd like to copy from one disk folder to another. With a single-drive system, you may need to do several disk swaps before the job is done. But with both an internal and external drive, it's a snap.

You'll sometimes need to select more than one file at a time. You may want to erase several files at once, instead of grabbing each one and dunking it in the trash. Or you may need to copy a whole slew of files. You may need to eject all the disks in all the drives. To select more than one file or icon, just move to one corner of a group of files and drag to a diagonally opposite position. This will pull a dotted-line box around the files. When all the files you want to select are framed in the box, release the mouse button. All the files will turn dark, showing that they're selected. If you need to highlight all the files, choose *Select All* from the *Edit* menu. When moving a group of files, always drag the file in the lower-right corner of the group. This file is the leader of the group and should be the first to be moved onto another disk, into a folder, or into the Trashcan.

When moving files around, it's not too hard to clutter your desktop, just as with a real desk. Icons can rest upon and hide other icons. Icons can be left on the desktop, orphaned from their folders. To restore a file to its original position, select *Put Back* from the *File* menu (not available in Finder version 4.1). To

straighten a cluttered desktop, choose *Clean Up* from the *Special* menu.

Copying an Entire Disk

With a dual-drive Macintosh, copying files or entire disks is easy. Just drag the file or disk icons onto the image of the second disk. But copying an entire disk of files with a single-drive Macintosh can be a nightmare of constant disk swapping. Fortunately, you can use the *Disk Copy* application found on the *System Disk*. Start your Macintosh from the *System Disk*, and double-click on the *Disk Copy* icon.

Disk Copy copies an entire disk. It reads one quarter of the original disk at a time, filling all Macintosh memory, including the memory used for the screen; this makes for some strange, twisting patterns. Each quarter is dumped onto the disk you're copying to. It takes only four disk swaps to copy the entire disk. You also have the option of initializing the destination disk.

Initializing a Disk

A disk right out of the box is not customized for use with the Macintosh, so it must be initialized before anything can be written to it. If you insert a new disk into the Macintosh, it will be pronounced as unreadable, and you'll be asked if you want to initialize it. This can also happen if a disk has been damaged or if your disk drive needs repair. Initializing a disk erases everything on that disk, so be careful. You can also force the Macintosh to initialize a disk by clicking on the disk's icon and selecting *Erase Disk* from the *Special* menu. You must give a unique name to a disk when you initialize it.

The contents of the disk are normally displayed as icons, but you can display the names, size, type, and date of creation for all files. The *View* menu lets you choose the kind of display you'd like for each disk. *View* also lets you see more information than is displayed in icon form. You can view by icons (the default setting), by name (alphabetical order), kind (System files, *MacPaint* files, BASIC files, and so on, are grouped together), date (chronological order), or by size in bytes (highest to lowest). Pre-4.1 versions of the Finder did not let you treat documents displayed in nonicon form as objects, so you had to switch to an icon display to drag or copy files. Version 4.1 lets you select and move files from a folder displayed by Name, Date, Size, or Kind. These files change back to icons when moved onto the desktop.

Getting Information

Another way to see more information about a file is to click on it and choose *Get Info* from the *File* menu, or press Command-I. The *Information About* window shows what kind of file it is (a folder, a *MacPaint* picture, a System file), the size in bytes of the file, the name of the disk holding the file, the date the file was created, and the last date on which the file was modified. The *Get Info* window gives you a four-line edit field where you can keep notes about the file.

This window also presents a button you can click to *lock* the file. A locked file cannot be changed. You can read it, but you cannot modify or trash it. The only way to write to or erase the file is to unlock it. You can lock an entire disk (also called *write-protection*) by sliding the write-protect tab on the disk into the closed position. A locked disk is hard to use, since the Macintosh needs a portion of the disk as scratchpad area, but it's a good way to protect a disk from accidental damage. Many people write-protect a disk before copying it, just in case.

Permanence

When you set the clock, the Macintosh doesn't forget the time. In fact, it continues to keep track of the time and date, even with the power turned off. The speaker volume, set in the Control Panel, is also remembered. You probably know that this is because of the AA battery installed in the back of your Macintosh, but you may not know that the Macintosh permanently remembers other information, with no battery required. Many of the other settings in the Control Panel, such as the desktop pattern, are stored on your startup disk. Each disk can have its own distinctive combination of Control Panel settings.

Other information is also preserved on disk. When you change the name of a file or a disk, this obviously has to be saved. Also saved are the positions of all files, the sizes and positions of any active document windows, and the kind of file viewing selected. In effect, the status of your desktop is preserved for the next time you start up your computer.

This information is saved only when you start a new application or eject the disk. This is why it's important to eject the disk only through the menus, not by inserting a paper clip into the "emergency eject" hole. This mechanically ejects the disk, but doesn't give the Macintosh a chance to update current information. For the same reason, don't turn off your Macintosh before

you've ejected the disk. It's safest to always *Quit* (from the *File* menu) your current application, return to the Finder, then select *Eject* from the *File* menu (or *Shut Down* from the *Special* menu in Finder version 4.1) before you turn off your machine.

Other Features of Finder Version 4.1

The latest *System Update* not only updates the Finder, but also the System and ImageWriter files. The new ImageWriter file permits full use of the wide carriage version of the ImageWriter, and adds a 50 percent reduction selection to the *Page Setup* option of *File*. The half-size printouts are sharper (but smaller, of course) than normal ImageWriter printouts.

The new Finder allows you to install a *MiniFinder* that is used only to start up applications. To create the MiniFinder, just select the applications you'll normally use, then pull down *Use Mini-Finder* from the *Special* menu. The MiniFinder will then be used automatically when you quit an application or start up the system. You can erase the Finder to free up disk space and use the MiniFinder in place of it for starting applications. The MiniFinder only lets you open applications, change drives, eject a disk, exit back to the main Finder, or *Shut Down* the system. It's a small program, though, so it's quicker and more convenient when you don't need all the features of the Finder.

Hardware Options

The basic 128K Macintosh is quite a workhorse, but it does have some limitations. The memory can be quickly filled by large applications, requiring the Macintosh to resort to disk access as a slow substitute for computer memory. But this can be impossible if the disk is nearly full. You may never notice these limitations when working with programs optimized for the 128K Macintosh, programs like *MacPaint* and *MacWrite*, but the really powerful applications like *Word* or *Multiplan* are memory-hungry. More and more people are turning to Macintosh enhancements to beef up their systems.

The Fat Mac

The so-called Fat Mac has 512K of memory, four times the memory of the 128K Macintosh, a half-megabyte—524,288 characters. That's enough memory to store most novels, more memory than many mainframe computers have. It's just enough to turn the

Macintosh into an exceedingly powerful machine. The extra memory reduces the amount of disk access, so programs run faster, sometimes *much* faster. It permits much larger documents in word processing, huge spreadsheets, and ample buffers for uploading and downloading in telecommunications. With the *Switcher* (see Chapters 9 and 11), you can hold multiple programs in memory, quickly switching between them, and cutting and pasting information between them.

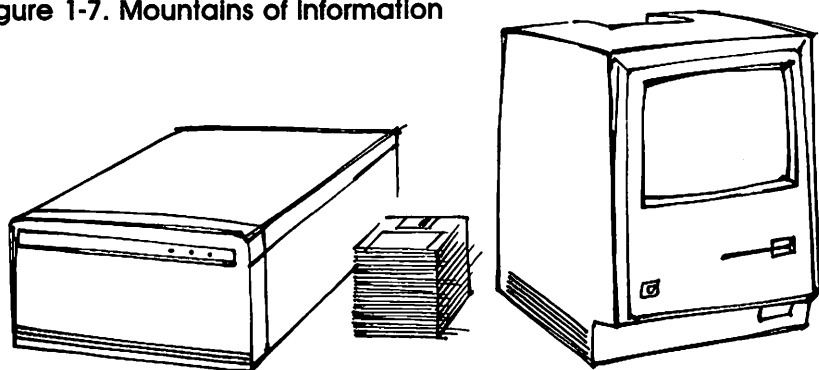
Most important, the 512K memory encourages software developers to write programs that take advantage of this extra memory and provides room for growth. Before long, even 512K will seem like a paltry amount of memory, and Macintosh owners will be clamoring for multimegabyte machines. (See Chapter 9 for information on doing just that.) But in the meantime, we'll have to make do with more memory than most people know what to do with.

External Disk Drive

An external disk drive can be an even more significant upgrade. It simplifies, streamlines, and speeds up disk-to-disk transfer. It permits you to have 400K of permanent storage available at any time. You can fill one disk with applications and use another for data storage. Apple has promised a double-sided 800K external drive. This drive would use two read/write heads to read and write to both sides of a 3-1/2-inch minifloppy. However, once written to, the 800K disks may not be readable on a 400K drive, limiting disk interchangeability.

Using a Hard Disk Drive

Figure 1-7. Mountains of Information



You can use only one external drive, though, since there is only one disk drive port, and with no port on the disk drive, there's no way to *daisychain* peripherals. If you need more than a total of 800K (400K internal, 400K external), or 1.2 megabytes (400K internal, 800K external), or find the speed of the disk drives a bit too slow, you need to investigate using a *hard disk*.

Floppy disks are flexible plastic disks coated with magnetic material like that used for cassette tapes. The thin disks are kept either in a flexible plastic jacket, with a portion exposed for read/write access (5-1/4-inch floppies), or are encased in a rigid plastic case with a retractable metal cover that protects the read/write access area (3-1/2-inch microfloppies). Floppy disks must be floppy, since the read/write head touches the disk, requiring the disk itself to flex under pressure. A rigid disk surface would be seriously scratched or damaged by the constant pressure of the head.

The disk inside the envelope spins at about 300 rpm, but this speed varies, depending on where the drive is trying to read. The drive speeds up when reading the inside tracks and slows down on the outside tracks so that every track passes by the read/write head at the same speed.

A hard disk (sometimes called a fixed disk) uses a rigid magnetic platter instead of a flexible disk. By spinning at more than 10,000 rpm, the rigid platter creates a tiny windstorm above it. The read/write head floats on this buffer of air, only a few microns away from the disk surface. From this perspective, a speck of dust is a boulder, and a human hair a sequoia. Fortunately, hard disks use fans and filters to keep out most dust and smoke.

The hard disk permits much greater accuracy in placing the read/write head, so data can be packed in much more compactly. Access time is also improved, since the hard disk spins so fast. A hard disk can store anywhere from 5 to more than 150 megabytes (millions of bytes). The most popular sizes are 10 and 20 megabytes.

Hard disks can be very susceptible to damage, given the low tolerance for dust. With the head so close to the disk surface, even a small bump can bring the head crashing down onto the disk, gouging the disk surface and plowing up millions of bits of data. A power failure can also stop the disk from spinning, canceling the air cushion before the drive has a chance to retract the head. Here, too, you'd get a head crash. A head crash is disastrous, since with a hard disk, you have all your eggs in one basket, so to

speak. You need some way to copy the contents of a hard disk to some other medium for safekeeping. It would take 25 Macintosh 3-1/2-inch disks to hold the contents of a 10-megabyte drive, so some people go so far as to buy a second hard disk to back up the first one. An alternative is the streaming-tape backup system, a high-speed magnetic tape drive. Some people use a special system that backs up hard disks onto ordinary videocassettes. These backup systems can be expensive, but so is 10 to 40 megabytes of information.

If you think managing your floppy disks is tricky, just wait until you're working with 10,000,000 bytes. Most Macintosh hard drives pretend to be a multiple of normal disks. The Finder works as it does with floppy disks, displaying disk icons for the simulated disks. It's especially important to use folders to organize information on hard disks, or you'd have a desktop filled with thousands of overlapping icons. The Macintosh can manage only a limited number of disk icons and folders, though, so using a hard disk on it can be cumbersome. Manufacturers are still experimenting with ways to streamline the use of hard disks. A new ROM and a new Finder from Apple are forthcoming, and they should solve some of these problems.

Most Macintosh hard disks do not give a significant increase in speed, either, since they must communicate via the serial port. The serial port is plenty fast enough for disk drives, modems, and printers, but is a serious speed bottleneck for use with a hard disk drive. Even hard disks which are installed internally, attached directly to the computer circuitry, are not as fast as hard disk drives used with other computers.

Hard Disk Manufacturers

Listed here are just some hard drive manufacturers. Like so much concerned with the Macintosh, there are new products released almost every month. A good place to watch for these new products is in computer magazines; Macintosh user groups (if there's one in your area) are another excellent source of information. The following aren't recommendations, just examples of some of the hard drives currently available—more to give you an idea of pricing and power than anything else.

The **Tecmar** hard disk was one of the first hard disks for the Macintosh, so it's especially popular. Many software packages use the Tecmar drive as their standard, although they may work with other hard drives. The Tecmar drive runs \$1,990 for a 5-megabyte removable cartridge, \$1,995 for a 10-megabyte fixed drive, \$3,290

for a 10-megabyte fixed drive with a 5-megabyte removable cartridge, and \$3,290 for a drive with two 5-megabyte removable cartridges. Tecmar's MacDrive's speed is approximately 5 megabits (610K) per second. They're available from Tecmar, Inc., 6225 Cochran Road, Solon, Ohio 44139.

Davong Systems manufactures 10-, 21-, 32-, and 43-megabyte hard disks. Access time is 100 milliseconds for the 10- and 21-megabyte drives, and 40 milliseconds for the 32- and 43-megabyte disks. The Davong drives use a special utility program called *Volume Manager* that permits you to partition the massive amount of disk memory into individual volumes. Each volume is used like a disk icon. The *Volume Manager* lets you combine volumes to store your files more compactly. Prices are \$1,950 for the 10-megabyte drive, \$2,795 for the 21-megabyte drive, \$3,395 for the 32-megabyte drive, and \$3,995 for 43 megabytes. Available from Davong Systems, Inc., 217 Humboldt Court, Sunnyvale, California 94089.

General Computer Company, originally a designer of Atari arcade games and the 7800 Pro System, have engineered a unique 10-megabyte internal hard drive, called the Hyperdrive. The internal hard drive retains the Macintosh's small *footprint* (amount of desk space required). Since the unit is installed inside your computer, you need to ship your Macintosh to General Computer for the upgrade. They promise a one to two week turnaround. Apple has recently announced that this does *not* void your Macintosh warranty. General Computer can also install a memory upgrade to bring your total memory up to 512K. They claim their hard disk is 7 times faster than other Macintosh hard drives—speed of 5 megabits (610K) per second—and 20 times faster than the internal microfloppy drive. Unlike external hard drives, the Hyperdrive leaves all rear ports open for other peripherals, and it's possible to start up your computer from the Hyperdrive. Price is \$2,795 with the 512K memory expansion, \$2,195 without memory expansion. Available from General Computer Company, 215 First Street, Cambridge, Massachusetts 02142.

Iomega's Bernoulli box is a unique variation on hard disks. Instead of using a read/write head that floats on a cushion of air created by the high rpm's, the rigid disk itself floats due to the Bernoulli principle—the same principle that permits airplanes to fly. The disk floats up to a stationary head. There's no way for the head to crash. If power is lost, the disk just softly falls away from the head, solving a major anxiety for hard disk users. The Iomega

Bernoulli box uses a removable cartridge. Each cartridge stores 5 megabytes, with a data transfer rate of 90K per second, not as fast as most hard disks. Each cartridge is \$59. The removable cartridge means you can have an unlimited total amount of removable data, and you can transport the media rather than the machine. The Bernoulli box combines the best advantages of hard disks and floppy drives. The price is \$1,895, from Iomega Corporation, 4646 South 1500 West, Ogden, Utah 84403.

Printer Alternatives

Just as the bitmapped graphics screen is the key to the Macintosh's "what you see is what you get" concept, a printer that can accurately reproduce the bitmap, or even improve on it, is a must. Bitmapped printer graphics require lots of information, so you need a fast printer. Apple's ImageWriter meets these needs. It has square pixels with a 1:1 aspect ratio, just as the screen does, so it can produce output with proportions close to what's shown on the screen. But because it can print 1280 dots per line instead of the Macintosh's 512 dots per line, the ImageWriter can improve on the display. In fact, when you print text to the printer, the Macintosh actually uses a font twice the size of the text on the screen and reduces it on the printer. For example, Geneva 12 is printed on the printer as a reduced Geneva 24.

Despite the ImageWriter's high performance, many people don't like being limited to one printer. Apple's design makes it difficult to use any other graphics or letter-quality printer with the Macintosh, but clever engineers wouldn't let this go unchallenged. The Macintosh versions of Okidata's 92 and 192 printers are designed to be perfectly compatible with the ImageWriter and Macintosh, and at a lower cost (\$499).

The ImageWriter does a fair job of approximating various typefaces and styles, but is still not quite letter-quality. Figure 1-8 shows samples of both ImageWriter (left) and letter-quality (right) print.

For many people, nothing less than print indistinguishable from the venerated Selectric will do. This hampered the acceptance of the Macintosh into the office, until several third-party manufacturers found ways to attach non-Apple hardware to the Macintosh.

Microsoft's MacEnhancer is a hardware/software combination that lets you attach a wide range of peripherals not normally compatible with the Macintosh. The MacEnhancer supports one

Figure 1-8. Print Comparisons

Suzanne:
The following is
labels. See you at th

Sara Billings
Jeremy Cliff
William Dyks

Suzanne:
The following
labels. See you a

Sara Billings
Jeremy Cliff
William Dykst

Centronics parallel port (IBM PC compatible) for parallel printers, and two RS-232 serial ports (also IBM PC compatible) for use with serial devices such as modems, plotters, and serial printers. It includes software that installs as a desk accessory, ready to pull down from any application. You can use almost any dot-matrix or letter-quality printer with the MacEnhancer, since the software translates ImageWriter codes into those needed by your printer. MacEnhancer is \$249, available from Microsoft Corporation, 10700 Northup Way, Box 97200, Bellevue, Washington 98009.

With the right cable, a wide variety of RS-232 serial printers can be attached to the Macintosh, but you have to use these printers with software that can support them. For example, Microsoft *Word* includes printer drivers for many popular letter-quality printers. A new version of the Macintosh *System* program builds a printer selection utility into the desk accessory menu, letting you tell the Macintosh what kind of printer you're using. You can print only text with many applications by selecting the *Draft* print quality mode.

MacOffice Tomorrow

The Apple Macintosh is still growing. More and more software packages are becoming available, new and powerful tools for the Macintosh office. Page layout programs let you cut and paste to create whole pages of text and graphics, and print them to the ImageWriter or the LaserWriter. The LaserWriter itself is opening up new, inexpensive opportunities for quality production work. This laser printer can be linked with other Macintoshes, hard disks, even IBM PCs, in a fully communicative office system network (see Chapter 10 for complete details on this AppleTalk net-

work concept). You can even run IBM programs on your Macintosh with MacCharlie, a hardware emulator.

A lap portable "Flat Mac" isn't far away. The Macintosh of the future may very well sport 5 megabytes of memory, 50 megabytes of ultrafast online mass storage, a large, crisp, super-high-resolution color screen, a 68020 microprocessor with mainframe speed and flexibility, and new software to match this power. We'll wonder how we ever got along without it.

Chapter 2

The MacOffice Software



The MacOffice Software

Selby Bateman



Once familiar with Macintosh's easy-to-use operating environment, you're ready to take full advantage of the system's power and flexibility in your own MacOffice. To accomplish this, you'll work with a sophisticated group of four productivity programs developed by Microsoft, one of the leaders in creating computer software: *Word*, a powerful word processor; *Multiplan*, an electronic spreadsheet for financial calculations and other quantitative work; *File*, a database information management system; and *Chart*, a business graphics program which also allows you to create charts and graphs from your *File* and *Multiplan* programs.

Microsoft has tailored these packages to use all of the Macintosh features. You'll find that each program is intuitively easy to learn. As your experience grows and your requirements become more demanding, you'll also be surprised at how these programs grow with you. And many of their functions can be integrated to bring even more utility to your work.

You'll also be introduced to *MacTerminal*, a telecommunications program which lets the Macintosh communicate with other computers. The documents and files you create with Microsoft's application programs can be sent and received by the Macintosh using *MacTerminal* (or a similar telecommunications package).

The following hands-on sessions will introduce you to the basics of these programs. By the end of this chapter, you'll see how to use each one in a simple but practical application. In later chapters, you'll learn in detail how to use them every day in your own MacOffice, creating specific procedures, forms, and templates which will save you time and increase your productivity.

A Note on Disk Drives

For ease of use, Microsoft recommends that *Word*, *Multiplan*, *File*, and *Chart* be used with an external disk drive in addition to the internal Macintosh drive. However, each of these applications is fully functional with just the internal drive. The differences between the two are largely those of convenience and speed. With

two drives, the documents and files you create can be placed on a separate disk in the external drive while a copy of your master applications disk resides in the internal drive. If you have only one disk drive, you must go through additional *disk swapping*—that is, exchanging disks to save, copy, and handle other disk management processes. Disk swapping with one drive can become a tedious process for some of the procedures you'll learn. But the benefits of these programs—even with one drive—outweigh the inconveniences associated with swapping disks.

You'll be able to use all the procedures in this book no matter what your disk configuration. The Macintosh will guide you in virtually every action you encounter relating to disk management. Your Macintosh manual has more information on this, and in later chapters of this book you'll learn some advanced application techniques as well.

Each of the Microsoft applications is contained on a master disk which has a special identification code that the Macintosh must read when you start the program. You should make a copy (or copies) of the master disks and use them rather than the masters. When you begin a session with one of the applications, the Macintosh will ask for the master disk in order to read that identification code.

Making a Startup Disk

Making startup copies of the master disks is identical in each of the four Microsoft applications. First, place the master disk in your drive. After the program's icon appears on the screen, choose *Eject* from the *File* menu, then insert an initialized disk (preferably empty) after the master disk has ejected. (If you have two drives, simply place the master disk in the internal drive and the blank disk in the external drive.) Drag the master disk icon onto the other disk's icon and release the mouse button.

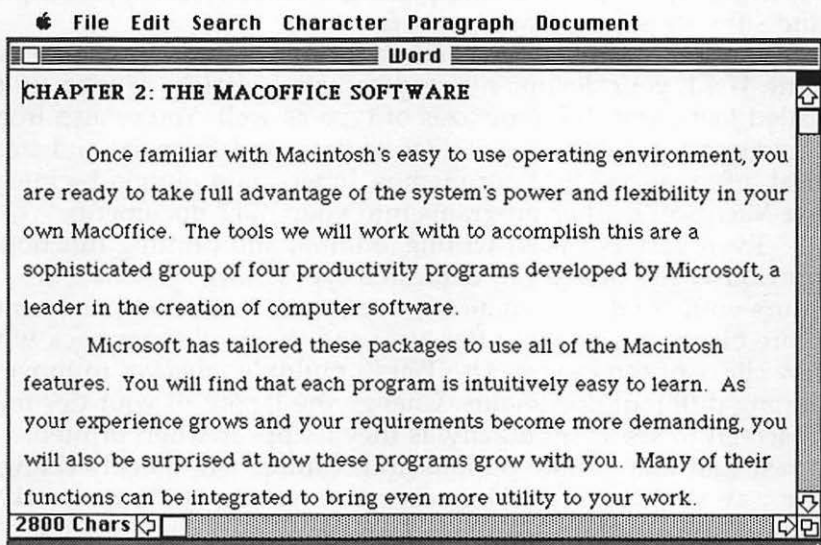
A window will appear, asking whether you wish to replace the contents of the second disk with that of the master disk. Click *OK*, and your Macintosh will begin the process. Remember, if you have any files on the second disk, they will be erased. If you have a single-disk system, there can be more than 20 disk swaps to complete the process. With two drives, no disk swaps are necessary. For a fuller treatment of disk space and memory management techniques, refer to Chapter 1 or the manual that came with your Macintosh.

(It's a good idea to take advantage of Microsoft's Backup Disk Order service. For ten dollars and proof of purchase, Microsoft will send you a duplicate master disk for the application you purchased.)

Microsoft Word

No matter what the requirements of your MacOffice, chances are that *Word* will be the foundation of much of your work. *Word* is the first serious word processor available for the Macintosh. Whether you're writing a short memo or preparing a 200-page report, *Word* lets you create and manipulate documents with ease.

Figure 2-1. Microsoft *Word* Document



If you've never used a word processor, *Word* on the Mac will bring an entirely new experience to your writing. Learning *Word* is easier and faster than other word processors. And once freed from the cumbersome process of handling office paperwork on a typewriter, you'll wonder how you managed without *Word* and the Macintosh.

If you're familiar with word processors for other computers, you'll be pleased with the simplicity and freedom of creating, editing, formatting, and printing documents with the Macintosh.

The complicated command codes and special keyboard sequences found on many other word processors have been replaced by a menu system based on clear, descriptive terms written in everyday English and controlled by the click of a mouse. There's no need to worry about running out of room with *Word*, since each document is limited only by the amount of space on your disk—as much as 50 to 60 pages of text.

Like most full-featured word processors, *Word* lets you type your information on the keyboard, then make changes, move blocks of text anywhere on the screen, and copy and save documents. The program also contains all of the other commands which make a word processor so useful: adjusting text to the left, right, or center; adding headers and footers to your documents; searching and replacing text; placing footnotes and superscripts and subscripts; and many more features.

But the Macintosh goes much further than other computers. With *Word*, your documents may contain a variety of type styles, called *fonts*, and different sizes of type as well. You're also free to incorporate graphic images, files of data, and financial and statistical information into your memos, letters, and reports by integrating Microsoft's other programs into your *Word* documents.

Even very powerful writing, editing, and printing functions—previously the domain of dedicated typesetting systems—are yours with *Word*. Automatically number footnotes in documents. Store blocks of text you often use, and then call them back with a few clicks of the mouse. Use *Word's* multiple *windows* to move among different documents. Change the layout of your documents onscreen to see them exactly as they'll appear when printed. These and many more options and features will quickly change the way you deal with every aspect of writing and paperwork.

First Session—*Word*

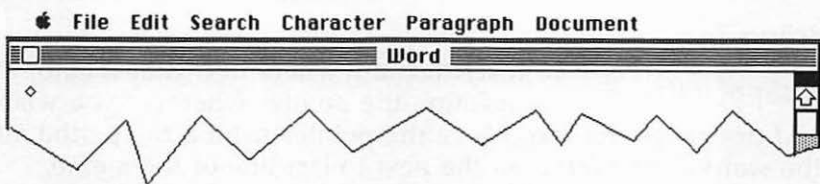


Microsoft Word

When you're ready to write, *Word* is just the click of a mouse away. Turn on the Macintosh, insert your copy of the *Word* master disk, and in a moment you'll see the Macintosh desktop. Double-click the *Word* icon to load the program into the computer. Or make a single click on the icon to select it and then click *Open* in the *File* menu. The Macintosh will instruct you when it needs to read the identification code on the *Word* master disk.

After waiting a moment for the program to load, you're ready to begin writing. The Macintosh screen is your sheet of paper, with the familiar menu bar at the top, as in Figure 2-2.

Figure 2-2. Word Opening Screen

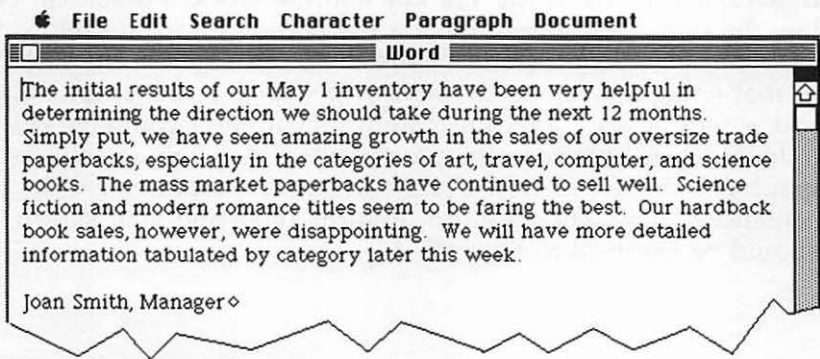


At the upper-left corner of your empty sheet of paper you'll see a flashing vertical bar. This is the point at which text will be inserted when you begin typing. Next to the vertical bar is a diamond, marking the end point of any text which will be entered. Centered below the menu bar is the as-yet untitled filename for the memo you're about to create. (In Figure 2-2, the label has been replaced with the name *Word*.)

Slowly roll the mouse across your desktop. Notice that when the onscreen moving pointer is in the text area of the screen, it takes the form of an I-beam. When you move it off the text area, it reverts to the familiar arrow.

Now type in the text just as you see it in Figure 2-3. As the text reaches the right margin, it automatically jumps to the next line. This feature is called *word-wrap*. You don't need to use the Return key until you reach the end of a paragraph. If you make a mistake as you type, simply press the Backspace key to erase the error.

Figure 2-3. Initial Draft of Memo



The text in Figure 2-3 should now be on your screen. This is the initial draft of a memo to employees at The Book Haven, a retail bookstore. As manager of the store, you'll refine the rough draft, add a heading, and insert a store letterhead into the memo as well.

Adding Text

disappointing. To insert text anywhere into your memo, simply position the pointer wherever you wish to add or change the text. Move the pointer behind the period after the word *disappointing* in the next to last line of the memo.

Now insert the following text into your memo: **Trade paperback sales have jumped 20 percent over last year and mass market titles have increased by 12 percent. At the same time, our sales of hardbacks have decreased by 6 percent.**

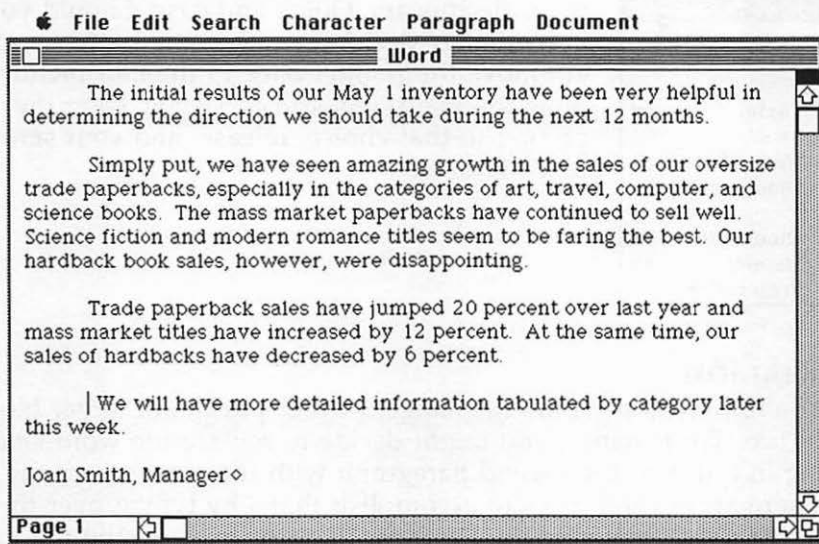
You'll notice that as you typed the new material, the last sentence of the memo moved ahead of your inserted text, automatically spacing the words correctly.

Reforming Text

Your memo now is more complete, but its appearance is a relatively uninviting block of words. With a few clicks of the mouse and several keystrokes, the text can be divided into several indented paragraphs. Note that in Figure 2-4 the sentences have been split and reformatted with indented first lines. To do this, move the pointer in front of the first word on the first line. Click the mouse once to bring the insertion point there. Then locate the Tab key on the Macintosh keyboard and press it once. The line is quickly indented and the rest of the words move to make room.

Next, place the pointer in front of the word *Simply* in the second sentence. Press the Return key and the block of text moves down one line. Press the Tab key and the block is indented. Follow the same procedure, moving the pointer to a spot following the word *disappointing* and before the word *Trade* in the fifth line of that paragraph. Press the Return key once and the remaining text moves down a line. Press Return again and you have created a double-space between the paragraphs. Press Tab and this paragraph is indented as well. Follow the same procedure for the last sentence—point, click, Return, Return, Tab—and your screen should be identical to Figure 2-4.

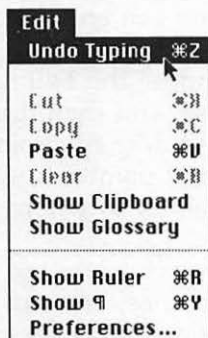
Figure 2-4. Reforming Text



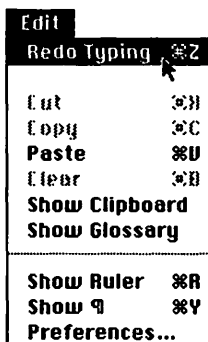
When you write your own memos, you may indent and space your lines as you write. But no matter how the text looks, you can always change it at any time.

Undo and Redo Commands

If you decide to add a final sentence to your memo, move the pointer to the end of your text and click. Then type **Please try to develop some ideas for store layout to help promote sales in different categories of books.**



Perhaps you decide this last sentence is inappropriate. You can erase it by simply using the *Undo* command in the *Edit* menu. Move the pointer to *Edit* on the menu bar; click the mouse and hold it down as you drag the pointer to the first choice on the menu—*Undo Typing*.



As you release the mouse, that last sentence disappears. Quick and easy. Should you immediately decide you liked the sentence after all, move the pointer back to the *Edit* menu. Now the menu reads *Redo Typing*. Drag the pointer to that choice, release, and your sentence returns.

Editing Text

You're free at any time to change a word, phrase, or larger block of text. For instance, you might decide to replace the word *amazing* in line 1 of the second paragraph with the word *surprising*. There are several ways to accomplish that—by typing over the selected word, by using the Backspace key, or by choosing the *Cut* selection from the *Edit* menu.

... of our May 1 invento
tion we should take durin.

have seen **amazing** growth
tially in the categories c
market paperbacks +
romance titles se
were disapr

To select the word *amazing* for deletion, simply move the pointer to the beginning of the word, click and hold the mouse, then drag the pointer over the word. It changes to white lettering outlined in black. Release the mouse. Begin typing the word *surprising*. As soon as you begin, the outlined word *amazing* disappears and begins to be replaced by your new entry. You've now replaced one word with another.

As an alternative, you can select the word *amazing* and press the Backspace key. The word disappears and you can enter the word *surprising* once more.

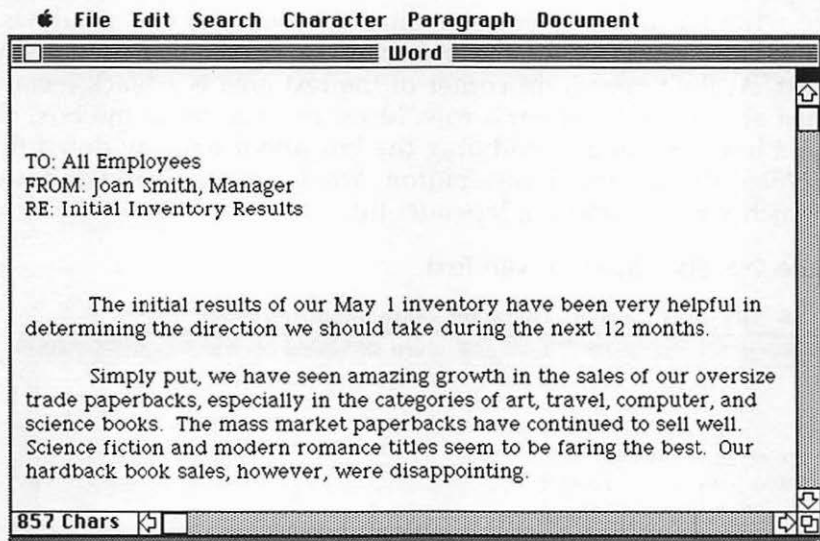
One more method for deleting a word—choose the *Edit* category on the menu bar, click and hold the mouse, and then drag the pointer to *Cut*. Click the word *surprising* and drag the pointer over it. Select *Edit* with a click, and then drag the pointer to *Cut* and release. *Surprising* disappears. Move the pointer to where you wish to reinsert the word, and type **amazing**.

Word offers you a variety of ways to insert and delete text. The method you choose depends on your preference. You can also move blocks of text anywhere in a document simply by choosing to *Cut* and then *Paste* them back in a different area.

Add Your Heading

To give you an idea of *Word's* versatility, let's add a heading to the memo. Move the pointer to the top leftmost point in the text area of your screen. Click the mouse button and press the Return key ten times to move the text down. This gives you plenty of room to add a heading. Move the pointer about halfway up in the empty text area and click. Then type the following: **TO: All Employees** <Press Return>; **FROM: Joan Smith, Manager** <Press Return>; and **RE: Initial Inventory Results**. Your screen should now be similar to Figure 2-5.

Figure 2-5. Memo Heading



If you would like to close up the space slightly between the heading and the body of the text, simply move the pointer to the leftmost point on the first line of text. The blinking vertical insertion point should now be at the extreme left of the screen, several spaces from the indented beginning of text.

When making this adjustment, if your pointer went too far to the left—off the text area—it's possible that when you clicked the mouse the entire line was selected (white lettering on a black background). To avoid this when moving the pointer, make sure that the pointer is still in the I-beam shape. If it has changed to an arrow, then you have left the text area.

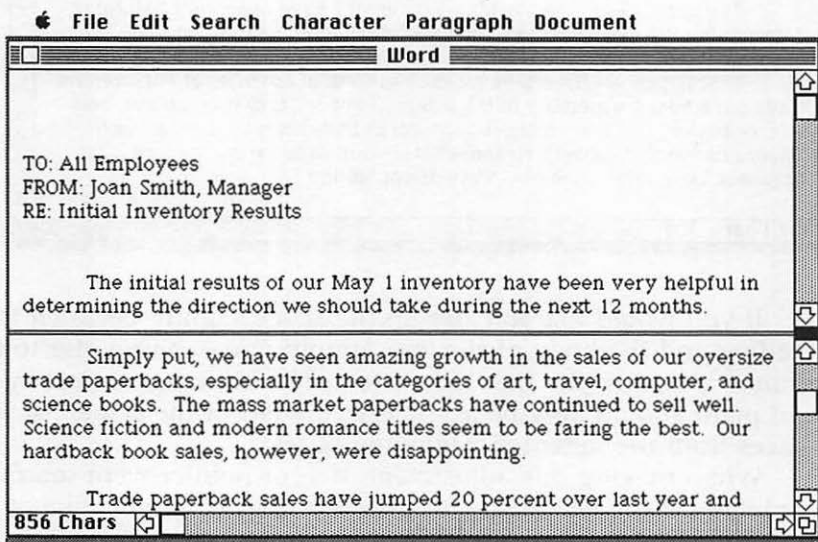
If this occurred, correct it by moving the pointer to a text-free space on the screen and then clicking the mouse. The line will no longer be selected and you can try again.

Split Screen

When you created the heading, you left the manager's name at the bottom of the memo. You can delete that by selecting the name and then choosing *Cut* from the *Edit* menu or simply pressing the Backspace key after the name has been selected. But by now, the name has scrolled out of sight off the bottom of the screen. To scroll up or down, use the vertical scroll bar at the right of the screen.

Word also allows you to split the screen into two windows wherever you wish for easier editing or to compare portions of text. At the upper-right corner of the text area is a black rectangle just above the scroll bar arrow. Move the pointer to the box, click and hold the mouse, and drag the box about halfway down the screen. Release the mouse button. You've created two windows in which you can scroll independently.

Figure 2-6. Split Window with Text

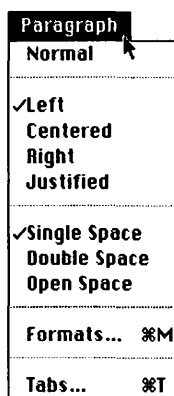


In the lower window, scroll toward the bottom of text until you see *Joan Smith, Manager*. Now select and delete the name and

title. To dispose of the split window, simply move the pointer to the black window split bar and return it to the top of the vertical scroll bar.

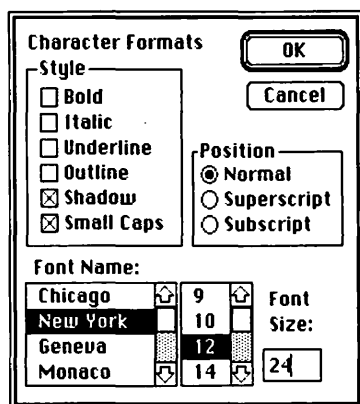
Add Your Letterhead

As a final touch, you'll create the store's letterhead at the top of the memo. Move the pointer to the top left of the text area and click. Type **The Book Haven** and then press Return; type **222 Main Street**.



To create a more distinctive effect you can center the letterhead and then change its type font and size. Begin by selecting *The Book Haven* and the address; that is, move the pointer to the beginning of the name, click, and drag the pointer across both lines. Then shift the pointer to *Paragraph* on the menu bar. Click and hold the mouse. This menu offers you several paragraphing alternatives.

With your finger still holding down the mouse button, drag the pointer to *Centered* and release. The name and address are centered. The name and address are still selected, so move the pointer to an empty space on the screen and click to remove the selection.

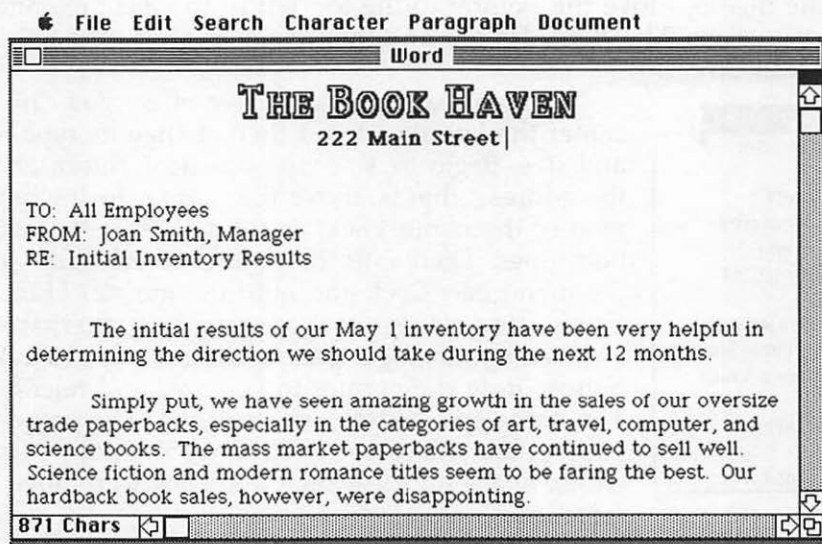


You can change the size and style of the bookstore's name by making selections from the *Character* menu. First, select *The Book Haven*. Select *Shadow* from the *Character* menu. Notice the change. Try selecting *Small Caps* from the same menu for something different. Or choose *Formats*. In a moment, you'll see the *Character Formats* window. From this window you can change the text style and position as well as the font styles and sizes. Since *The Book Haven*

is still selected, any change you make will be reflected in that portion of the text. How about increasing the size of the name from the present 12-point (outlined in the window in white lettering on black) to 24-point? Type the number **24**. The *Font Size* window registers the change. Press Return or click on OK and the *Character Formats* window disappears. The name of the store has been enlarged.

Let's make one final change by putting the address in bold-face. Select the address. Choose *Bold* from the *Character* menu. Click once again in an area with no text to remove the selection. Your screen should now look like Figure 2-7.

Figure 2-7. Memo with Letterhead



You can make a permanent record of the memo by choosing *Save* from the *File* menu. Type in the name for the memo and then click the mouse on *Save* or press the Return key.

If you've already saved the document, you can keep an original and make a new version by selecting the *Save As* option from the *File* menu. Type in the name you want to use, making sure that it's different from the original document name.

With *Word*, what you see on the screen is what you get when a document is printed out. Printing with *Word* is as easy as the program's other features. The *File* menu contains four submenus which help you in printing documents. Select *Page Setup*, *Print*, *Print Merge*, and *Printer Setup* to familiarize yourself with their features. See the *Word* manual and your Macintosh manual for more details on printing features.

Word can also offer help if you forget the function of certain options and features. Select *About Microsoft Word* from the Apple menu. A window will appear with a list of topics which you can

choose for further explanations. For those computer users who may prefer keyboard control rather than the mouse for some functions, *Word* includes an optional keyboard control system which is explained in detail in the manual.

Microsoft Multiplan

Putting financial and numerical information to work effectively is at the core of any successful business. With Microsoft *Multiplan*, your office has one of the most advanced electronic modeling, planning, and accounting tools ever created.

Figure 2-8. A *Multiplan* Screen

File Edit Select Format Options Calculate					
R13C1		Total Costs			
Multiplan					
	1	2	3	4	5
1	Expenses:	July	August	September	
2					
3	Office Rent	\$2,000.00	\$2,000.00	\$2,000.00	
4	Payroll	\$9,600.00	\$9,600.00	\$10,400.00	
5	Mailing Costs	\$250.00	\$212.00	\$365.00	
6	Transportation	\$68.00	\$119.00	\$65.00	
7	Utilities	\$209.00	\$350.00	\$300.00	
8	Insurance	\$315.00	\$315.00	\$315.00	
9	Loan Payments	\$460.00	\$460.00	\$460.00	
10	Maint. Agreement	\$45.00	\$45.00	\$45.00	
11	Miscellaneous	\$263.00	\$110.00	\$350.00	
12					
13	Total Costs	\$13,210.00			
14					
15					

Since its introduction in 1979, the electronic spreadsheet has revolutionized the way people work with numbers. Whether you're developing an office budget, projecting a sales campaign, analyzing your company's inventory, calculating a profit-loss ratio, or working on any of a hundred other projects, *Multiplan* will enable you to pose the questions and find the answers faster and easier.

Electronic spreadsheets are also the ultimate in "what if?" planning. Change one number in your worksheet and all other numbers are altered instantaneously. This capability allows you to

try any number of variations in your calculations. What might have taken hours or even days of work just ten years ago can be accomplished with *Multiplan* in minutes or seconds.

Multiplan's greatest advantage over earlier spreadsheets is its remarkable ease of use. You don't have to be a whiz at math or remember complicated formulas for different functions. *Multiplan* takes care of that. Once you've set up your worksheet the way you want it—in everyday English terms—*Multiplan* offers you easy-to-follow options.

But just because it's simple to use doesn't mean *Multiplan* lacks the power and sophistication you expect from an electronic spreadsheet. The built-in mathematical and statistical operations include functions for mathematical and trigonometrical calculations, logical evaluations, and even text calculations, among other features. From the simplest home budget calculation to the most complex mathematical operation, *Multiplan* will make your work with numbers easier and faster.

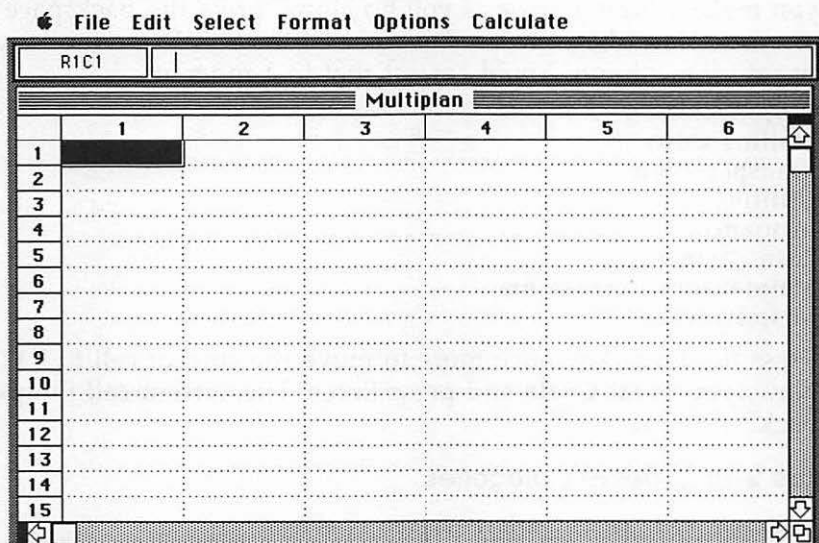
First Session—*Multiplan*



Multiplan

As with all Macintosh programs, start by turning your computer on and inserting the disk. When the *Multiplan* icon is on the screen, click it twice to get started. In a moment, a portion of the *Multiplan* worksheet grid appears. The numbers in the vertical line at the left, running from 1 to 15, are the visible *row* numbers. The numbers in the horizontal line, running from 1 to 6, are the visible *column* numbers. *Multiplan* can contain up to 255 rows and 63 columns, although they can't all fit on the screen at one time.

Each of the rectangular boxes below the column numbers and to the right of the row numbers is called a *cell*, identified by the row and column numbers which intersect on that space. For example, the black cell outlined in white at the upper left is at the intersection of Row 1 and Column 1, and so is referred to as R1C1. Note that the rectangle visible beneath the *File* menu contains the *reference* to the black cell—R1C1. Move the pointer to another cell on the screen, then click the mouse button and release. The black rectangle, referred to as the *current cell*, has moved, and the cell reference has changed automatically in the rectangle below the *File* menu. Practice moving the pointer across the screen, changing the current cell and watching the cell reference shift. Most people prefer using the mouse, but if you want

Figure 2-9. Opening *Multiplan* Screen

to change the current cell by using keys, the following keystrokes allow you to do this:

Direction

Move right to next horizontal cell
 Move down to next vertical cell
 Move up to previous vertical cell
 Move left to previous horizontal cell

Key(s)

Press Tab key
 Press Return key
 Press Shift-Return keys
 Press Shift-Tab keys

In *Multiplan*, you can enter text, numbers, or calculation formulas as part of your work. You can use the scroll bars to move to other parts of the *Multiplan* worksheet. Remember, the current cell is the insertion point for *anything* you enter in *Multiplan*.

To introduce *Multiplan*, let's create a simple monthly expense report for a small business.

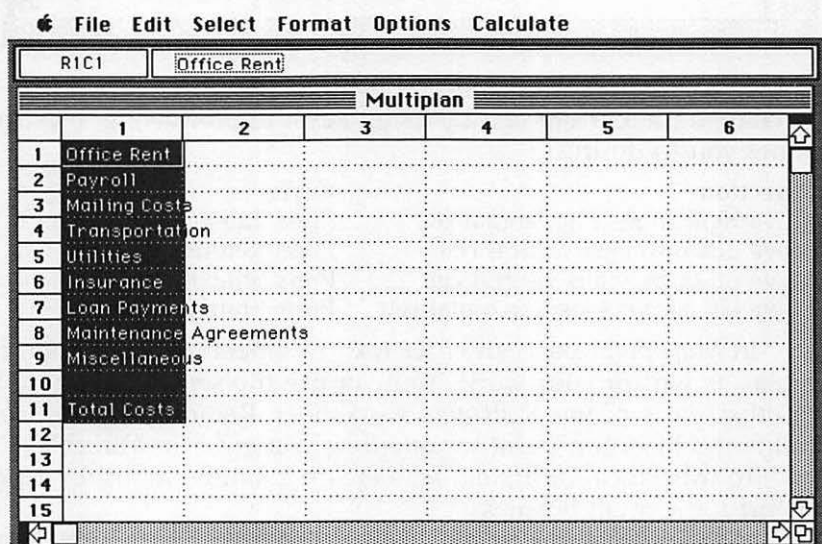
Move the pointer to R1C1, click and hold the mouse, then drag the pointer down the column to Row 11. Although Rows 1–11 are now highlighted in black, R1C1 remains the current cell. Type the words **Office Rent**. The text is placed in the current cell. The words also appear simultaneously in the long rectangle below the menu bar. This is the *formula bar*. When you press the Enter key (not the Return key, which you might be more accustomed to pressing), the word disappears from the formula bar and the current reference block changes to R2C1.

Type the following words, pressing Enter after each one. If you make a typing error as you go along, press the Backspace key to erase. Don't be concerned if some of the words are too long to fit into the column. You'll correct that in a moment.

Payroll
Mailing Costs
Transportation
Utilities
Insurance
Loan Payments
Maintenance Agreements
Miscellaneous

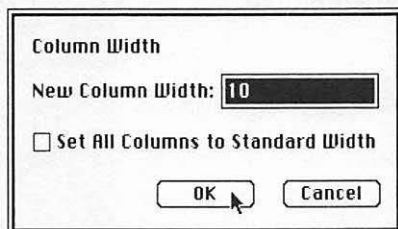
Press the Enter key once more to move the current cell to R11C1. Now type **Total Costs** and press Enter. The current cell jumps back to R1C1.

Figure 2-10. Expense Categories



	1
1	Office Rent
2	Payroll
3	Mailing Costs
4	Transportation
5	Utilities
6	Insurance
7	Loan Payments
8	Maintenance Agreements
9	Miscellaneous
10	
11	Total Costs

Since some of the categories were too long to fit into the column, you need to widen column 1. Move the pointer to the vertical divider between Column heads 1 and 2. The pointer will change from a cross to a black bar with arrows pointing left and right. This indicates that you can change the margins of the columns horizontally. Click the mouse, and while holding it down, drag to the right until you have about a quarter-inch between the end of the word *Agreements* and the vertical line. Release. Column 1 is now wide enough to show all of the words.



You may also change the column widths by choosing *Column Width* from the *Format* menu and typing in the size of a new width for selected columns or for all columns. This option can also be used to return all columns to standard width.

Let's track the company's expenses over a three-month period. To show this, you can create a space at the top of the worksheet to enter July, August, and September, the months for which you have the most recent expense figures. To move the column of expense categories down two spaces, hold down the Shift key and move the pointer to the head of Row 1, directly over the number. Click the button twice while still holding down the Shift key. The categories move down two spaces and the current cell remains R1C1.

Move the pointer to R1C1; click and hold the mouse button down while you drag the pointer horizontally across Columns 1 through 4, staying on Row 1. Release the button. With R1C1 still the current cell, type **Expenses:** and press the Enter key. The current cell becomes R1C2. Now type the names of the months—**July, August, September**—pressing Enter after each.

You'll also want to enter the financial information for each of the months in their respective categories. Begin by moving the pointer to R3C2. Click and hold the mouse button, then drag down through R11C2; in other words, all of the cells to the immediate right of the *Expense* categories. Release the button and enter the following figures, pressing the Enter key after each.

2000
9600
250
68
209
315
460
45
263

Before you add the total costs for July, enter the figures for August and September as well. Move the pointer to R3C3. Click the mouse and, while holding the button down, drag the pointer to R11C4. Release the mouse. The cells for entering expenses for August and September are now highlighted.

August	September
2000	2000
9600	10400
212	365
119	65
350	300
315	315
460	460
45	45
110	350

Enter the numbers for each category. The first one—2000—is the current cell, R3C3 (August). Type 2000 and press the Enter key. Note that *Multiplan* moves the current cell horizontally to the next cell, R3C4 (September). Type the September figure, also 2000, and press Enter. The current cell jumps back to August, but at cell R4C3. Continue to enter the figures until you've filled the highlighted cells. If you find that you've made an error, there are several methods of correction. Repeatedly press the Enter key, cycling through the selected cells until you return to the cell containing the error, then simply enter the information again. Or press Backspace to delete the information and type it in again. Once you're satisfied with the results, your worksheet should look like Figure 2-11.

Since you're working with financial information, you need to arrange the numbers to appear that way. First, move the pointer to the *Select* menu, click and hold the mouse button, and drag down the menu to *All Cells*. Release the button. *Multiplan* selects all cells. Next, move the pointer to the *Format* menu, and click and drag down to the *Dollar* option. The program shifts all numbers to dollar values. You can enhance that even more by again

Figure 2-11. Expense Columns

File Edit Select Format Options Calculate

R13C1 Total Costs

Multiplan

	1	2	3	4	5
1	Expenses:	July	August	September	
2					
3	Office Rent	2000	2000	2000	
4	Payroll	9600	9600	10400	
5	Mailing Costs	250	212	365	
6	Transportation	68	119	65	
7	Utilities	209	350	300	
8	Insurance	315	315	315	
9	Loan Payments	460	460	460	
10	Maintenance Agreements	45	45	45	
11	Miscellaneous	263	110	350	
12					
13	Total Costs				
14					
15					

choosing the *Format* menu and dragging the pointer to *Commas*. Commas will be inserted in numbers automatically where appropriate. Notice that *Multiplan* did not alter the text when you chose the *Dollar* and *Commas* options. The program differentiates among text, numbers, and formulas.

Your worksheet now shows that in R4C4 the number has been replaced by a string of # symbols. This indicates that the number, with its dollar signs and commas, is too long for the available space. Move the pointer to the vertical bar between Column heads 4 and 5. Click on the bar and drag the margin line to the right about a quarter-inch. When you release the mouse button, the margin for that column will be extended and the number, \$10,400.00, will have enough room to be displayed once again.

Calculating Totals

Multiplan's real power stems from its capacity to handle formulas ranging from the simplest addition to the most complex scientific, mathematical, and financial calculations. To give you an idea of how *Multiplan* builds its formulas, let's look at how the program manages a simple sum.

=R[-10]C

Start by moving the pointer to R13C2. Click and release the mouse button. The *Total Costs* cell for July is now selected. Type an equal (=) sign in that cell. The symbol will also appear in the formula bar near the top of your screen. Now move the pointer to the first dollar amount under July, cell R3C2 (\$2,000.00). Click the mouse on that cell. The formula bar now has the first part of the formula you're building. It should look like this: =R[-10]C.

Figure 2-12. Building Your Formula

The screenshot shows the Multiplan spreadsheet application. The menu bar includes File, Edit, Select, Format, Options, and Calculate. The formula bar at the top displays 'R13C2' and '=R[-10]C'. The spreadsheet table has five columns labeled 1 through 5. Column 1 lists various expenses, while columns 2 through 5 represent the months of July, August, and September respectively. The 'Total Costs' row (row 13) is currently selected, and its formula is shown in the formula bar.

	1	2	3	4	5
1 Expenses:	July	August	September		
2					
3 Office Rent	\$2,000.00	\$2,000.00	\$2,000.00		
4 Payroll	\$9,600.00	\$9,600.00	\$10,400.00		
5 Mailing Costs	\$250.00	\$212.00	\$365.00		
6 Transportation	\$68.00	\$119.00	\$65.00		
7 Utilities	\$209.00	\$350.00	\$300.00		
8 Insurance	\$315.00	\$315.00	\$315.00		
9 Loan Payments	\$460.00	\$460.00	\$460.00		
10 Maintenance Agreements	\$45.00	\$45.00	\$45.00		
11 Miscellaneous	\$263.00	\$110.00	\$350.00		
12					
13 Total Costs	=R[-10]C				
14					
15					

The formula so far means that the cell you've just clicked is ten rows up in relation to the selected cell (R13C2). In other words, the cell is defined in terms of its *relative* position to the selected cell. Now click and release on each of the dollar amounts in the July column (Column 2). The formula near the top of your screen becomes longer with each click, all in relation to the cell in which you typed the = symbol. The formula bar has been enlarged to two lines to contain the complete formula.

Figure 2-13. Complete Formula

File Edit Select Format Options Calculate

R13C2 \otimes =R[-10]C+R[-9]C+R[-8]C+R[-7]C+R[-6]C+R[-5]C+R[-4]C+R[-3]C+R[-2]C

Multiplan

	1	2	3	4	5
1	Expenses:	July	August	September	
2					
3	Office Rent	\$2,000.00	\$2,000.00	\$2,000.00	
4	Payroll	\$9,600.00	\$9,600.00	\$10,400.00	
5	Mailing Costs	\$250.00	\$212.00	\$365.00	
6	Transportation	\$68.00	\$119.00	\$65.00	
7	Utilities	\$209.00	\$350.00	\$300.00	
8	Insurance	\$315.00	\$315.00	\$315.00	
9	Loan Payments	\$460.00	\$460.00	\$460.00	
10	Maintenance Agreements	\$45.00	\$45.00	\$45.00	
11	Miscellaneous	\$263.00	\$110.00	\$350.00	
12					
13	Total Costs	=R[-10]C+R			
14					
15					

Press the Enter key and *Multiplan* automatically calculates the sum of the expenses, then deposits the result in the selected box at R13C2.

This is only one way that *Multiplan* lets you calculate a total. With R13C2 as the current cell and the formula showing in the formula bar, move the pointer to the *Edit* menu and choose *Copy*. This will make a copy of the formula in the Clipboard. You can use this copy of the formula to save time for adding other numbers which correspond to this formula.

Move the pointer to R13C3 (the *Total Costs* cell under the August column) and click the mouse. Select the *Edit* menu again and choose *Paste*. *Multiplan* automatically calculates the total using the formula you've saved.

While this is a relatively easy example, *Multiplan* allows several other ways to accomplish the same thing. As you work with *Multiplan* later in this book and in your own work, you'll find that the program lets you take even more shortcuts as your knowledge increases.

Another way to get a total using the formula you've placed in the Clipboard is to choose the *Fill Right* or the *Fill Down* command in the *Edit* menu. For example, click on R13C3 and then

drag the pointer to the next cell to the right (R13C4). Release the mouse button and select *Fill Right* from the *Edit* menu. *Multiplan* takes the formula and makes the calculations automatically. The more totals you need to figure, the more time you save as *Multiplan* takes care of things.

Figure 2-14. *Fill Right*

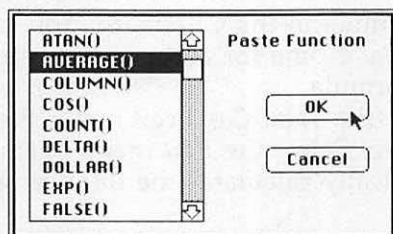
File
Edit
Select
Format
Options
Calculate

R13C3

=R[-10]C+R[-9]C+R[-8]C+R[-7]C+R[-6]C+R[-5]C+R[-4]C+R[-3]C+R[-2]C

Multiplan

	1	2	3	4	5
1	Expenses:	July	August	September	
2					
3	Office Rent	\$2,000.00	\$2,000.00	\$2,000.00	
4	Payroll	\$9,600.00	\$9,600.00	\$10,400.00	
5	Mailing Costs	\$250.00	\$212.00	\$365.00	
6	Transportation	\$68.00	\$119.00	\$65.00	
7	Utilities	\$209.00	\$350.00	\$300.00	
8	Insurance	\$315.00	\$315.00	\$315.00	
9	Loan Payments	\$460.00	\$460.00	\$460.00	
10	Maintenance Agreements	\$45.00	\$45.00	\$45.00	
11	Miscellaneous	\$263.00	\$110.00	\$350.00	
12					
13	Total Costs	13,210	13,211	14,300	
14					
15					



There are more than 40 different functions in *Multiplan*, ranging from such commonly used calculations as SUM (addition) and AVERAGE (average of a group of numbers) to more complex procedures such as ATAN (finding the inverse tangent function of a number) and TAN (tangent of a number). To look at the menu of these functions, select *Paste Function* from the *Edit* menu. When the *Paste Function* window opens, practice scrolling up and down to see a list of all the functions.

Press *Cancel* to remove the *Paste Function* window. In your expense report example, you can quickly find the average of each of the categories of expenditures. Make R1C5 the current cell and type **Average**, then press the Enter key. You may find that your

worksheet has automatically shifted one column to the left to let you see Column 6, one beyond the column you're using.

Click on R3C5, making it the current cell. Then select *Paste Function* from the *Edit* menu. Move the pointer to *AVERAGE()* and click. Click *OK* to indicate your selection. Your choice appears in both the current cell and in the formula bar above. To tell *Multiplan* that you want to find the averages for Row 3, move the pointer to R3C4, click and hold the mouse button, then drag from R3C4 to R3C2. Release the button.

The formula has been automatically built for you in the formula bar. Press *Enter* and the calculation is placed in the current cell. Since all three months have the same totals for that category (\$2,000), there's no change. But now that the formula has been created, you can copy it and use the *Fill Down* function from the *Edit* menu to calculate the rest of the averages.

With R3C5 as the current cell, select *Copy* from the *Edit* menu. *Multiplan* makes a copy and places it in the Clipboard. Click on the current cell and drag the pointer down until all the cells in Column 5 from Row 3 to Row 13 are selected. Choose *Fill Down*, and *Multiplan* computes the averages. If the averages don't appear in dollar form, choose *Dollar* from the *Format* menu.

Figure 2-15. Expense Averages

File Edit Select Format Options Calculate						
R3C5		=AVERAGE(RC[-1]:RC[-3])				
Multiplan						
	2	3	4	5	6	
1	July	August	September	Average		
2						
3	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00		
4	\$9,600.00	\$9,600.00	\$10,400.00	\$9,866.67		
5	\$250.00	\$212.00	\$365.00	\$275.67		
6	\$68.00	\$119.00	\$65.00	\$84.00		
7	\$209.00	\$350.00	\$300.00	\$286.33		
8	\$315.00	\$315.00	\$315.00	\$315.00		
9	\$460.00	\$460.00	\$460.00	\$460.00		
10	\$45.00	\$45.00	\$45.00	\$45.00		
11	\$263.00	\$110.00	\$350.00	\$241.00		
12				#DIV/0!		
13	\$13,210.00	\$13,211.00	\$14,300.00	\$13,573.67		
14						
15						

Printing

Printing your worksheets with *Multiplan* is a snap. By choosing the *Print* option on the *File* menu, you can print out the entire worksheet (all the cells with information), or you can print just a portion of it.

If you don't wish to print the entire worksheet, drag the pointer over the cells you do want to select. This can include anything on the worksheet, whether it's on the screen or not. Simply keep dragging the pointer and *Multiplan* will bring the other cells into view. Then choose the *Print Selection Only* option in the *Print* window.

In later chapters, you'll learn many more ways to use *Multiplan* to simplify complex calculations. You'll quickly find that the range of what you can accomplish will increase without any special abilities or knowledge of mathematics. *Multiplan* takes care of it all for you.

As with Microsoft *Word*, *Multiplan* comes with a list of menu definitions built into the *About Multiplan* feature of the Apple menu. Take a few minutes before going on to call up this feature and familiarize yourself with the various menus.

Microsoft *File*

If you have information to organize—names, addresses, business accounts, payroll files, telephone numbers, inventory lists, client contacts—*File* lets you record, search, sort, and report them quickly and in a variety of ways. You can also insert that information into your documents with *Word*, make mailing lists and labels, create charts and graphs with *Chart*, incorporate data from *File* into *Multiplan* and vice versa, and even customize files to your own particular specifications.

The power of *File* lies in its great versatility. Like the card and paper files you've probably already used, all the information can be organized as you need it, whether alphabetically, chronologically, topically, or in any other way. With *File*, you create *records* which are just like the pieces of paper or cards on which you now keep information. Each piece of information in these records is called a *field*.

But rather than having all of this data in static form—on pieces of paper which are cumbersome to change—*File* gives you a dynamic information management system. After you have set up your file forms once, you can manipulate the information at will. All with a few clicks of the mouse.

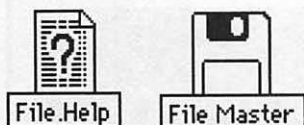
Figure 2-16. Microsoft *File*

File Edit Form Organize

	Last.Name	First.Name	Telephone	Address
1	Adams	Samuel	555-1209	123 Franklin Street
2	Cody	William F.	555-6357	4868 Buffalo Road
3	Prescott	Bill	555-8006	9802 Harvard Road
4	Fulton	Robert	555-4908	1807 Clermont Avenue
5	Webster	Noah	555-2287	1555 Hartford Street
6	Seward	William	555-9643	3106 Alaska Avenue
New				

6/6

First Session—*File*



As with the other Microsoft programs, turn on the computer and insert the *File* disk. After several seconds you'll see the Macintosh desktop with the *File* icon and the Trashcan. But there's also a *File.Help*

icon with a question mark in its center.

File.Help contains what you would expect from its title, approximately 20 different categories of *File's* procedures and functions. As you become familiar with the program, these explanations and reminders can quickly refresh your memory on specific topics without your having to consult the *File* manual.

After this first session, take some time to return to *File.Help* and browse through the menu of categories. Some of the topics covered will be explained in more detail later in this book. You may also receive help by moving the pointer to the function you need help with and then simultaneously pressing the Command key (⌘) and the question mark.

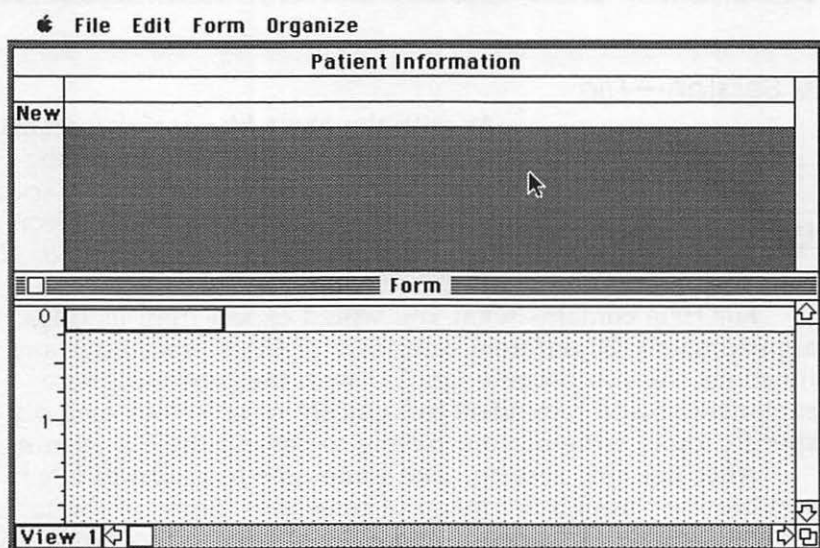
For now, double-click on the *File Master* icon to bring up the desktop. Then click twice on the *File* icon to get started. A window opens, asking you to name a new data file or to select a file you've previously created.

There are two differences between *File* and the other Microsoft programs which you'll notice immediately. First, *File* asks you to name your data file *before* you start rather than when you begin to save your work. That brings up the second difference. Rather than having to save your work periodically, *File* automatically saves your input as you enter it.

Let's create a simple patient information list for a dentist's office. Type the words **Patient Information**. Then either move the pointer to the *New* box and click or press the Enter key to register the information.

The screen will go blank for a few seconds, and then you'll see two windows appear, the top one called *Patient Information* and the bottom labeled *Form*. It's within the *Form* window that you'll create a specific structure for the data file you're building. In *File*, before you enter any data, you must construct the form in which it will be recorded, recalled, and manipulated.

Figure 2-17. *Form Window*



As you create the form, you'll decide whether each of the fields in your data records will contain text, numbers, dates, or pictures. The vertical insertion bar rests in a rectangle within the *Form* window. This is the place in which you will type the names for individual fields in *File*.

Start by typing **Last.Name**, leaving a period but no spaces between the words. Field names are more manageable in *File* when they appear as one word. Now press the Return key.

File presents a dialog box asking you whether the information you'll enter in this field is to be Text, Number, Date, or Picture. Since this category of information is to be all text, click the OK box. *File* automatically saves this information. Another field box for a new entry has appeared. Type **First.Name** and press Return. Click OK again to indicate a text category. If a particular data file category is going to be text, you can simply press the Return key twice to indicate that, rather than having to wait for the dialog box.

In the next new field box, type **Telephone** and enter this as text also. Be sure to choose the information type carefully as you build your form. Once chosen, you cannot go back to the form to change it. The next category will be **Address**, a text field, followed by **Next.Appoint**. This is to be a *Date* field. Finally, type **Special.Notes**, a text field which will contain patient information and reminders. (Notice that the information in the *Form* window scrolls to the left to make room for your additional categories of information.)

List Helper

So far, you've been creating a data file form with the help of a hidden but powerful function called *List Helper*. If you select the *Form* menu at the top of the screen, you'll see that *List Helper* is already checked. *File* automatically begins with that feature activated as a way to make your initial entry of information easier.

List Helper formats your data in columns which are easy to see and work with. If *List Helper* is turned off, you can create more complex, personalized forms for your office's particular needs. Later, after you've mastered the basics of *File*, you'll see how to create these forms without *List Helper*.

Let's enter the first data into your Patient Information file. Close the *Form* window for the moment by moving the pointer to the box at the extreme left of the *Form* line and clicking the mouse button. Or you can click the *Patient Information* line to activate that window on top of the *Form* window.

Now enter the following patient information for the first line of your data file. The insertion point begins at the left, under the *Last.Name* category. Type **Adams** and press Return. The insertion point jumps to the *First.Name* category. Type **Samuel**, then press Return. Continue by entering **555-1209** for *Telephone* and **123**

Franklin Street for *Address*. You'll notice that the address you've typed won't fit completely in its window. Don't worry about that right now. You'll enlarge those windows in just a moment.

Continue by typing **5-28-86** in the **Next.Appoint** block. Press Return and watch as *File's List Helper* automatically changes the form to May 28, 1986. Finally, enter the note **Rec. wisdom tooth extract.**, a note to indicate that the dentist has previously recommended that a wisdom tooth be pulled.

When you press Return, the data file insertion point jumps back to the left margin, ready for a new entry under *Last.Name*. In the lower-left corner of your screen you'll also see two numbers separated by a slash: 1/1. The first number indicates how many records are in the window at the present time, while the second indicates the total number of records in the data file itself.

Before entering the remaining patient records, you'll want to adjust the width and possibly the depth of a couple of fields. Using the horizontal scroll bar, move the *Samuel Adams* record until you can see both the *Address* and *Special.Notes* categories. Both these boxes should be enlarged since they're more likely to require the most room for data. Move the mouse pointer to the *Form* menu, then click on the first item, *Show Form*. The *Form* window opens below your *Patient Information* data file. Be sure the *Address* and *Special.Notes* categories are in view, this time on the *Form* window. Move the pointer to the vertical divider between the *Address* label and the *Next.Appoint* label. The pointer will change to a vertical bar with left and right pointers. Click and hold the mouse button, then drag the bar to the right about a half inch. As soon as you release the button, the margin enlarges on the *Form* window and then automatically does the same thing in your data file. *Address* should now be wide enough to contain 123 *Franklin Street* without cutting off any of the information.

To give yourself some working room, move the right margin of the *Address* label in the *Form* window another quarter-inch right in case later addresses are even longer. You can change the margins at any time while working with your data files. *File* also gives you the ability to have more than one line in a field by dragging the bottom line downward.

In the *Form* window, move the pointer to the bottom line in the form you've created. The pointer will change to a horizontal line with up and down arrows. Click and hold the mouse button while you pull the pointer downward. The entire horizontal line moves down, giving you a larger workspace. Pull down the line until the vertical space within each box is about the same size as another line of type. Then release the button. The field boxes in both the *Form* and *Datafile* windows enlarge.

Notice what's occurred with the *Special.Notes* category. The phrase *Rec. wisdom tooth extract.* has now changed to two lines—without any work on your part.

Figure 2-18. Expanding a Window

The screenshot shows two overlapping windows from a Macintosh-style graphical user interface. The top window, titled 'File', contains a table with the following data:

	Telephone	Address	Next.Appoint	Special.Notes
1	555-1209	123 Franklin Street	May 28, 1986	Rec. wisdom tooth extract.
New				

Below the 'File' window is the 'Form' window. It has a title bar with a close button and the word 'Form'. Inside, it displays a form with three labeled fields: 'Address', 'Next.Appoint', and 'Special.Notes'. The 'Address' field has a small crosshair icon next to it. Below these fields is a large, empty rectangular area with a dotted pattern, which is the workspace for the form. A vertical scroll bar is on the right side of this workspace. At the bottom of the 'Form' window is a status bar that says 'View 1'.

Now that these changes have been made, close the *Form* window. Use the scroll bar to move back to the first data entry point under *Last.Name*. In order to demonstrate a couple of *File*'s features, enter the information you see in the figure below, just as you did for the first patient. When you finish, your screen should look like Figure 2-19.

Figure 2-19. Patient Records

	Last Name	First Name	Telephone	Address	Next Appoint.	Special Notes
1	Adams	Samuel	555-1209	123 Franklin Street	May 28, 1986	Rec. wisdom tooth extract
2	Cody	William F	555-6357	4668 Buffalo Road	Jul 8, 1986	
3	Prescott	Bill	555-8006	9802 Harvard Road	Jul 3, 1986	New patient
4	Fulton	Robert	555-4908	1807 Clermont Avenue	Sep 12, 1986	Allergic: Penicillin
5	Webster	Noah	555-2287	1555 Hartford Street	May 29, 1986	
6	Seward	William	555-9643	3106 Alaska Avenue	Jun 4, 1986	
New						

Organization

One of the most important reasons for using a database as simple and yet as powerful as *File* is to organize and find information far faster than was possible under your previous file folder or card system.

To give you a quick idea of a few of *File's* abilities, move the pointer to the *Organize* menu, click, and then select *Sort*. A *Sort* window appears in the center of your screen, with the same field categories as your data file. Position the pointer underneath the *Last.Name* label in the *Sort* window and click. Immediately, A->Z appears, indicating that *File* will sort the last names from A to Z. Click again, and *File* will sort the names in reverse order, Z->A. Click once more and you again have the A->Z sort. Click the mouse on the *Sort* option in the window and *File* will organize your patient file from Adams to Webster.

Using the horizontal scroll bar, move the records to the left until you see the *Next.Appoint* category. Choose *Sort* again from the *Organize* menu. When the window appears, scroll to the right until you see the *Next.Appoint* column. Click under that category, and *File* presents the option of ordering your files by date from 1->9. Click again for reverse order.

You'll also see the number 2 in a narrow column to the left of the number sort option. This indicates that the first sort, by *Last.Name*, is still in effect. Since you no longer need that, click on the *Clear* button. Now click again under *Next.Appoint*; the 1->9 option appears, this time with a 1 in the narrow column to its left. Click on *Sort*, and in a moment the names will be sorted from the most recent date to the latest date of appointments.

Obviously, this is but the beginning of what *File* can do in the office environment. In Chapter 4, you'll learn how to organize your files in any form you want without the *List Helper*. You'll also see how to easily accomplish complex searches of your database information, to cross-reference information within the data file, and much more.

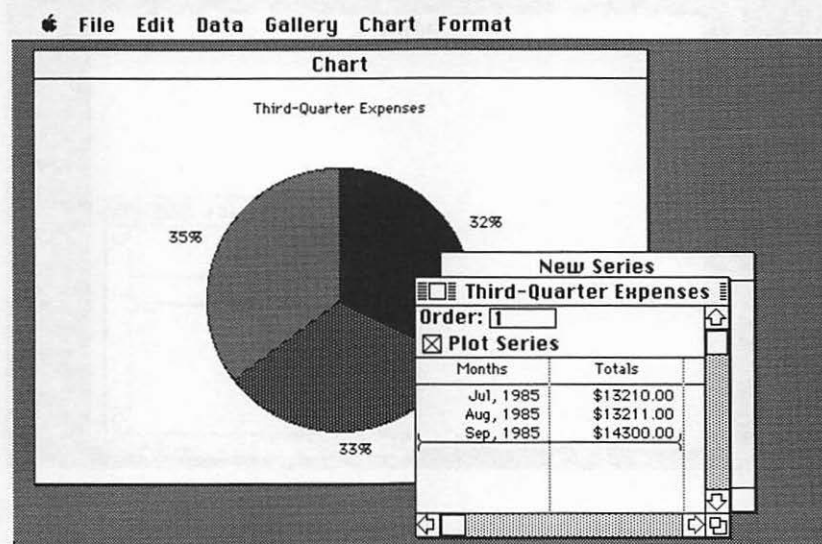
Everything you do with *File*, whether it's a simple address list or a complex report, can be printed out. Using the *Page Setup* option in the *File* menu, you can structure your printed copy in numerous ways. And the *Print* option will work as easily with *File* as it does with *Word*, *Multiplan*, and *Chart*.

Microsoft Chart

Nothing makes complex numeric information easier to understand than an appropriate chart or similar graphic representation. Microsoft's *Chart* creates these graphic forms for you in a variety of ways.

More than 40 predesigned charts are included, all of which can be modified by size, shape, line style, pattern, font size, and other details. You can also add text within your charts anywhere you wish. And *Chart* lets you move from one style of chart to another in seconds as you choose just the right graphic form for your finished product.

Figure 2-20. Microsoft Chart



Business presentation graphics have become a major component in the operations of many offices. Whether the occasion is a sales proposal, a departmental report, a letter to stockholders, or your own planning projections, well-done graphic representations can make numeric data far easier to understand. With *Chart*, you have one of the most sophisticated graphic creation tools available.

Without having to be either an artist or statistician, you'll be able to enter data and create charts after just a short introduction to *Chart*. You can also insert data from *Multiplan* worksheets into *Chart* forms. And then, if needed, you can transfer your charts into *Word* documents.

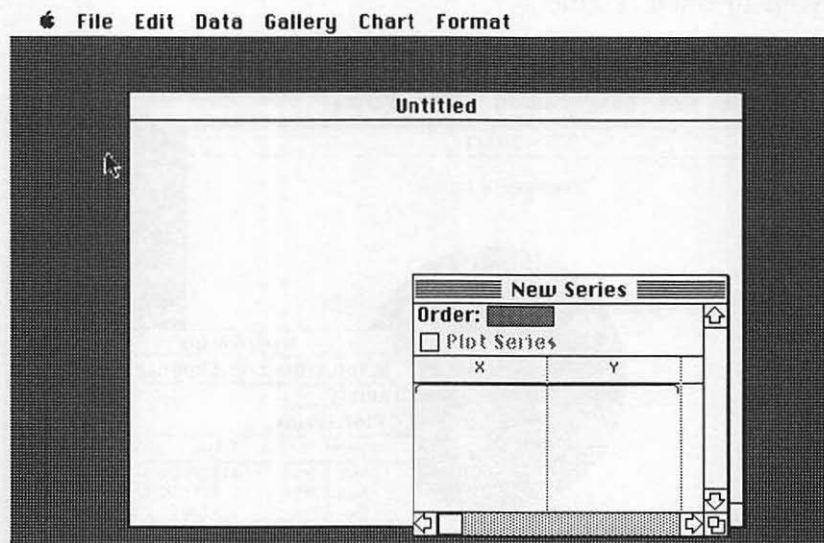
First Session—*Chart*



Microsoft Chart

After you've inserted your *Chart* disk and chosen the Microsoft *Chart* icon, two windows appear on the screen. The smaller of the two is labeled *New Series*, and is called the *series* window. The larger window is marked *Untitled*, and is called the *Chart* window.

Figure 2-21. *Chart* Opening Screen



No matter what you create with *Chart*, you'll first enter your data into the *series* window. When you work with *Chart*, the three underlying functions you use are *series*, *categories*, and *values*. A series is composed of different categories of information. Each category has a value which corresponds to that category. For example, one category might be the months of the year, and its corresponding values would be your company's total expenditures per month.

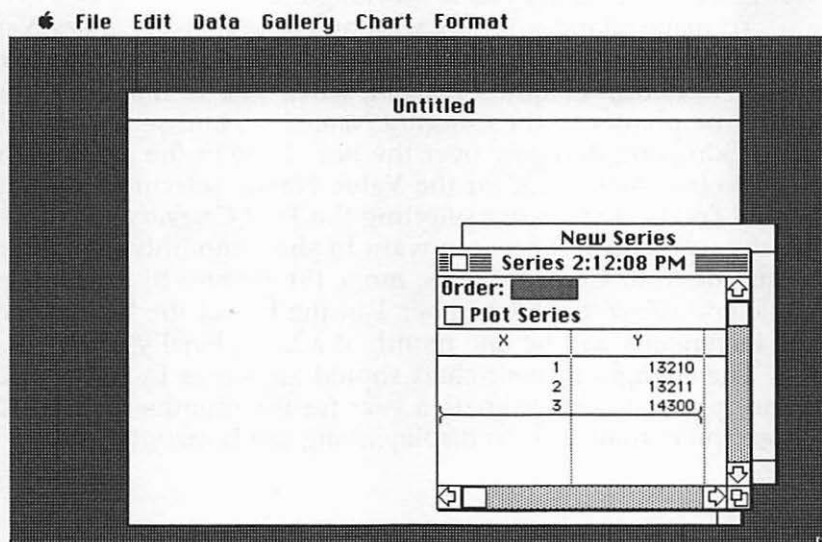
Let's see how this works. Earlier, you were introduced to *Multiplan*, and you created a simple three-month expense report. The total expenses, by month, were \$13,210 (July), \$13,211 (August), and \$14,300 (September).

Without using the dollar sign (\$) or commas, type the July number, **13210**, and press the Enter key. Several things happened when you entered the information. As soon as you began typing, *Chart* created a third window and titled it with the word *Series* and the current time of day. The numbers appeared under the Y, or *Category*, label. And a number 1 also appeared in the corresponding space beneath the X, or *Value*, label.

Now enter the August and September numbers, **13211** and **14300**, pressing the Enter key after each.

Your screen should look like Figure 2-22.

Figure 2-22. Entering Data



Move the pointer to the *Plot Series* box above the numbers and click. Behind the window in which you're working, you'll see an *Untitled* column chart appear. Bring that chart to the front by clicking the pointer on the *Untitled* window.

Chart has created a simple column chart covering the three monthly categories along the horizontal, or X, axis, and the numeric values along the vertical, or Y, axis. The values have been selected by *Chart* to be in increments of 200 initially, although you'll change that in a moment to better show the relationships. The program has initially labeled the chart with a *Series* name and the time of day in which you created it.

Refinements

Now you'll begin to refine the chart, creating a name for this series, adding the names of the months, putting the numbers into dollar form, and changing the style of chart.

To begin, bring out the *Series* window in which you typed in the numbers. You may have to move the *Chart* window around a bit to find it. (You can change the size and position of windows at any time while working with *Chart*.)

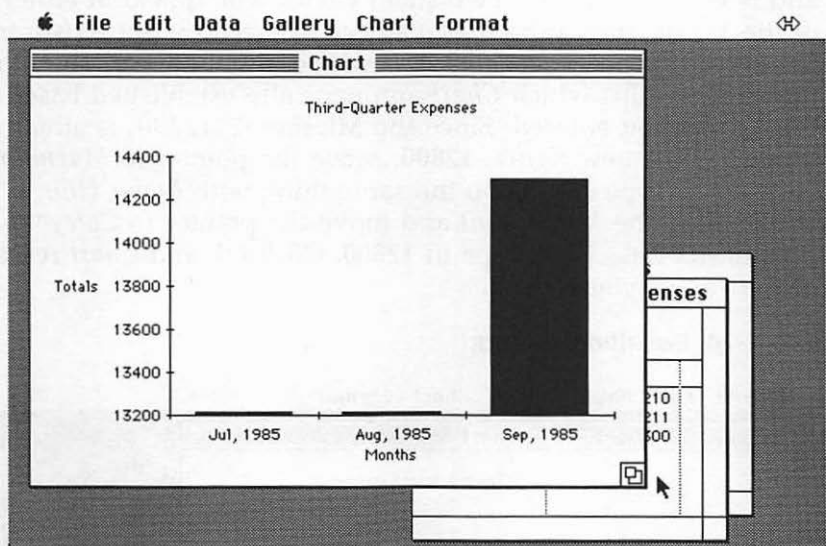
Now move the pointer to the *Data* menu at the top of the screen, and click the mouse. Since you're tracking expenses over a three-month period, drag the pointer to *Date* and release the button. The window which appears shows the default names *Chart* has given to the chart you're working on.

To make changes in this window, note that the *Series Name* box is already selected. Simply type **Third-Quarter Expenses**. Do not press Return or Enter. Instead, when you've finished typing, move the pointer to the *Category Name* box, and select the X there by clicking and dragging over the box. Type in the word **Months**.

Do the same thing for the Value Name, selecting it and typing in **Totals**. Then, after selecting the *First Category* rectangle, enter the word **July**. Since you want to show monthly increments along the X, or Category, axis, move the pointer to the *Months* circle and select it. The number 1 in the box at the left shows that the increments will be one month at a time. Finally, click OK.

The changes in your chart should appear as in Figure 2-23. (Since you did not designate a year for the months covered, *Chart* chose the current year to display along the horizontal axis.)

Figure 2-23. Third-Quarter Expenses



Values	
Align	Number Format
<input type="radio"/> Left	<input type="radio"/> General
<input type="radio"/> Center	<input checked="" type="radio"/> Dollar
<input checked="" type="radio"/> Right	<input type="radio"/> Percent
	<input type="radio"/> No Decimal
	<input type="radio"/> Decimal
Number of Decimals:	<input type="text" value="2"/>
Text Before:	<input type="text"/>
Text After:	<input type="text"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

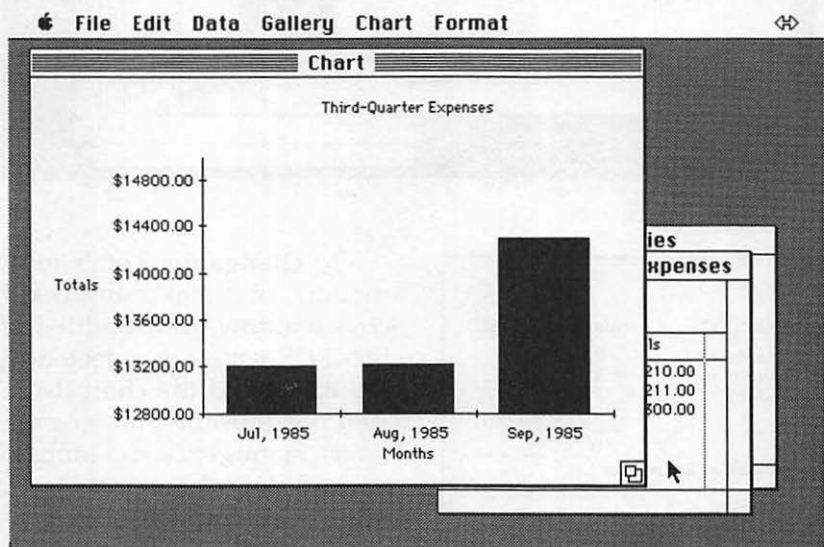
To change the Totals to dollar amounts, first make sure that the *Series* window, now entitled *Third-Quarter Expenses*, is selected. (It may be behind the chart itself.) Then position the pointer over the *Format* menu, click the mouse button, and drag the pointer to *Values* before releasing. The *Values* window will appear.

Choose *Dollar* under the *Number Format* heading, and then click *OK*. The numbers in the chart and in the *Series* window will reappear in dollar format.

When you first entered the figures for this graphic representation, *Chart* automatically set the values to a minimum of \$13,200 and a maximum of \$14,400, with increments of 200 in between. To make the chart a bit more readable, you can change the increments and the high-low figures, and then experiment with a few different styles of charts.

First, move the pointer to the vertical Y-axis line, then click and release the button. Two small circles will appear at either end of the Y-axis, indicating that it's been selected. Select *Axis* from the *Format* menu. The *Value Axis* window will appear, showing the relationships which *Chart* automatically established based on the figures you entered. Since the Minimum (13200) is already selected, type a new figure, **12800**. Move the pointer to *Maximum*, and select. Type **15000**. Do the same thing with *Major Unit*, typing in **400**. Skip the *Minor Unit* and move the pointer to *Category Axis Crosses At:*. Select and type in **12800**. Click *OK* and *Chart* resets all of the values you altered.

Figure 2-24. Resetting a Chart



Seeing how your information looks in different types of charts is remarkably easy with *Chart*. Move the pointer to the *Gallery* menu; click and then hold the mouse button. You see seven basic styles of charts listed. Each of these options has a submenu of half a dozen different styles. Beyond these basic charts, there are hundreds of possible variations for you to develop on your own. Later in the book, you'll learn more about customizing your own charts for almost any kind of information.

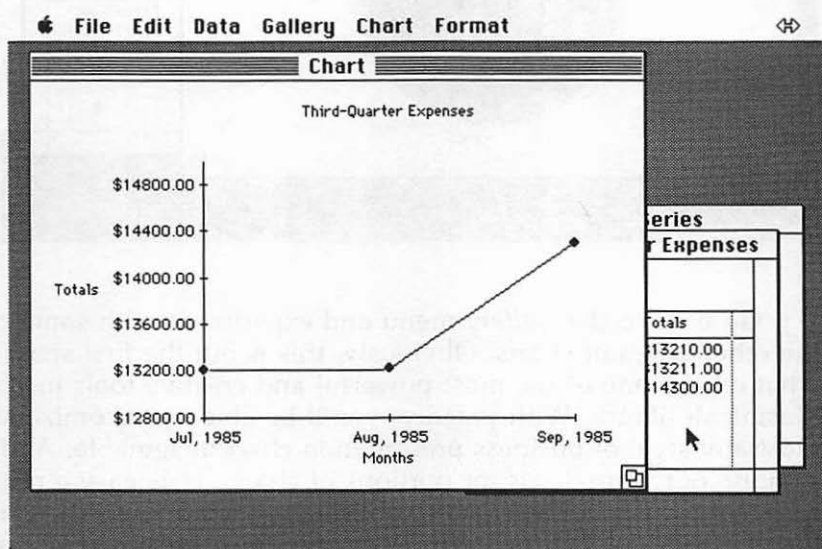


As you look at the menu, notice that the *Column* label has been checked. *Chart* uses that form as the default chart with which to automatically begin after you first enter data.

Drag the pointer down the menu until you come to *Line*. Release the mouse and *Chart* offers seven different styles of line charts. Chart 1 is preselected, so click the pointer on *OK*. Now

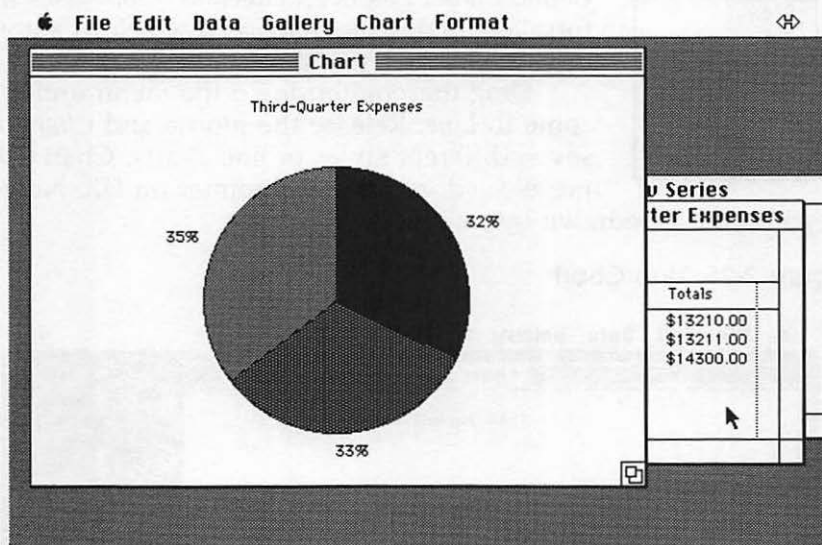
your data is redrawn into a simple line chart.

Figure 2-25. Line Chart



Try a pie chart. Go back to the *Gallery* menu, click on *Pie*, and *Chart* presents you with six different kinds of pie charts. Select number 6 and click *OK*. Your third-quarter expenses are quickly changed into a pie showing the percentage of the total expenses which each month equals.

Figure 2-26. Pie Chart



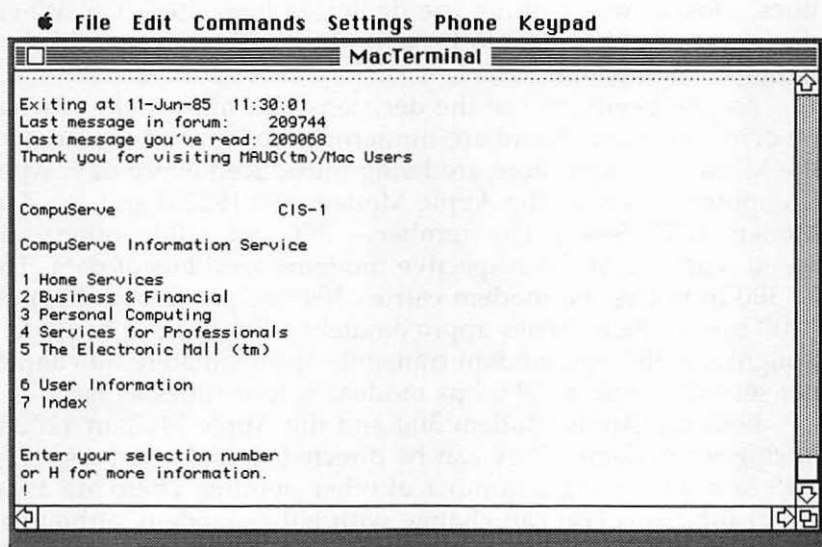
Go back to the *Gallery* menu and experiment with some of the other styles of charts. Obviously, this is but the first step in what can be one of the most powerful and creative tools in your Macintosh library. With practice, you'll be able to customize almost any style of business presentation chart imaginable. And printing out your charts, or portions of charts, is as easy a process as it is for the other Microsoft applications. Simply use the *Print* feature from the *File* menu or, to change the appearance of your page, select the *Page Setup* option instead.

Apple's MacTerminal

One of the most useful and powerful functions of your Macintosh is its ability to act as a telecommunications terminal, sending and receiving information to and from other computers across the room or across the country by telephone lines. If you need to transmit a report, a letter, or even the manuscript of a book, the Macintosh can telecommunicate information faster and more accurately than the swiftest paper transfer. And the same speed applies when you are working with any of the hundreds of online databases, electronic mail systems, and computer services such as

Dow Jones News/Retrieval, MCI Mail, CompuServe, The Source, and others.

Figure 2-27. *MacTerminal* Screen



MacTerminal, a telecommunications software program from Apple Computer, turns your Macintosh into what is called a *terminal emulator*. Simply put, with *MacTerminal* your computer mimics the operations of any of three sophisticated computer terminals—the DEC VT100, the TTY (Teletype), or the IBM 3278. What this means for your office is that the documents, tables, charts, files, and programs which you create with *Word*, *Multiplan*, *File*, and *Chart* can be sent to other computers. You can also insert into your documents information of all kinds which you receive from other computers.

Like the Microsoft programs to which you have been introduced, Apple's *MacTerminal* is easy to use. Pull-down menus, icons, and Help screens offer you a wide choice of options without the complex command codes and key sequences required of many other telecommunications programs.

To get started, all that you need are your Macintosh, *MacTerminal*, and a *modem*—a device which modulates outgoing information from digital data into analog tones which the telephone lines can carry. Another modem, connected to the

computer to which you are sending data, must receive the information you send and demodulate the analog signals back to digital form. If your office uses several Macintoshes, they may be linked directly by special cable rather than through telephone lines. Most offices will not use dedicated lines, however. When documents or files need to be sent, they will more than likely be handled via modem.

As you begin, one of the decisions you must make is what modem to choose. There are numerous modems on the market for the Macintosh, and more are being introduced every day. Apple Computer sells two, the Apple Modem 300 (\$225) and the Apple Modem 1200 (\$495). The numbers—300 and 1200—refer to the speed with which the respective modems send *bits* of data. That is, 300 indicates the modem carries 300 *bits per second* (bps). A 1200 bps modem carries approximately 1200 bits per second. Roughly, a 300 bps modem transmits approximately 30 characters per second, while a 1200 bps modem is four times as fast.

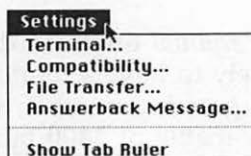
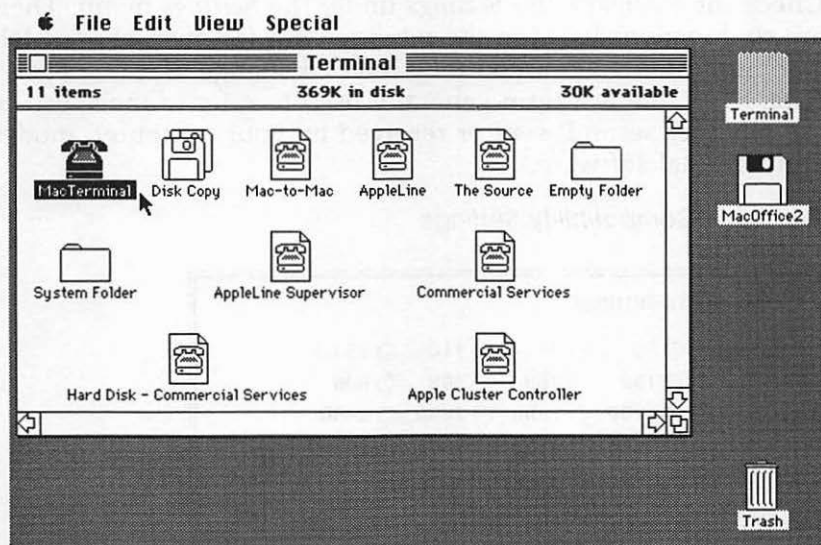
Both the Apple Modem 300 and the Apple Modem 1200 are *intelligent* modems. They can be directed to dial numbers for you, for example, among a number of other options. There are a variety of functions you can change with either modem, although in many cases you can use them without ever having to alter their preset features.

Starting Up *MacTerminal*

To begin, turn on the Macintosh and insert the *MacTerminal* disk. In a moment, the Macintosh desktop will appear with the *MacTerminal* icon in the upper-right corner of the screen. Double-click on the icon and the *MacTerminal* desktop opens.

Several different icons will be visible on the desktop. The Apple Cluster Controller and the AppleLine Supervisor icons have to do with *MacTerminal's* ability to emulate an IBM 3278 computer terminal. Consult the *MacTerminal* manual if you need to use these special settings. The Mac-to-Mac icon, when selected, lets your Macintosh communicate with another Macintosh without changing any of the compatibility options. To get started, double-click on the *MacTerminal* icon on the desktop.

Figure 2-28. The MacTerminal Desktop



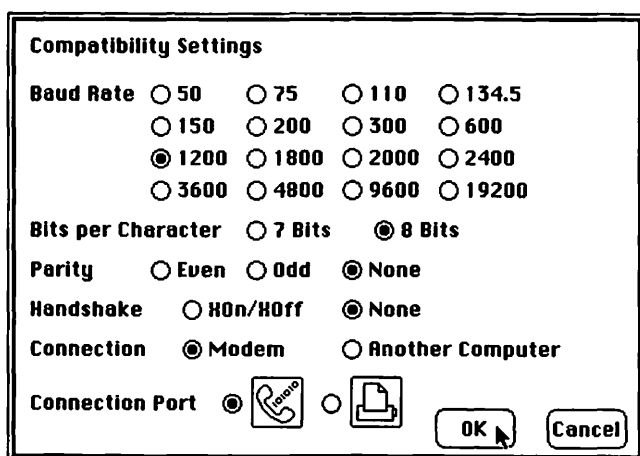
In a moment, you'll see the familiar menu bar, containing the usual Apple, *File*, and *Edit* menus. But *MacTerminal* also provides four other menus, each having to do with how your Macintosh connects and communicates with other computers. The large white area taking up much of the screen is the *terminal window*, in which all of your online communication will be recorded as you send or receive data. You'll probably use the *Settings* and *Phone* menus most often, establishing the precise configuration you need to communicate with other computers.

Later, you'll learn the details of setting up your Macintosh, modem, and terminal software to take advantage of these functions in your office work. You'll be introduced to procedures for gaining access to the major telecommunications services. And you'll also be shown how to transfer documents in such applications as *Word* and *Multiplan* from your Macintosh to other computers. For now, let's look briefly at a few of the features which a sophisticated terminal program like *MacTerminal* offers.

Features

Check the *Compatibility Settings* under the *Settings* menu. There are six functions listed in the window, but for most of your telecommunications work you may have to change only the *Baud Rate*. Baud rate is a term generally used to refer to the speed of the bits (per second) sent or received by your computer, modem, and terminal software.

Figure 2-29. *Compatibility Settings*



As you can see from Figure 2-29, *MacTerminal* offers 16 different baud rates. Although you're most likely to have a modem which operates at either 300 or 1200 bps, a growing number of modem manufacturers are producing units capable of 2400 bps.

The six parameters listed in the window are compatibility features which insure that your Macintosh and the computer with which it is communicating are correctly matched. The first four settings—*Baud Rate*, *Bits per Character*, *Parity*, and *Handshake*—have to do with how you send and receive information. The remaining two—*Connection* and *Connection Port*—indicate how the Macintosh is connected for communication.

The compatibility settings are preset on the Macintosh to be matched with most of the large communication services. Depending on your telecommunications needs, you may have to alter some of these parameters. Your *MacTerminal* manual will have information to help you on this, and the computer system with

which you'll be transmitting or receiving will usually have its set parameters for you to match. If you currently have a modem, change the baud rate setting to the number which matches the speed of your modem by clicking on the appropriate circle.

Then click *OK* on the *Compatibility Settings*. When that window disappears, move the pointer back to *Settings* and select *Terminal*. The *Terminal Settings* window becomes visible. For most of your communications with online services, the preset options you see are most likely correct.

Figure 2-30. *Terminal Settings* Window

Terminal Settings		
Terminal	<input checked="" type="radio"/> UT100	<input type="radio"/> TTY <input type="radio"/> IBM 3278
Mode	<input checked="" type="radio"/> ANSI	<input type="radio"/> UT52
Cursor Shape	<input checked="" type="radio"/> Underline	<input type="radio"/> Block
Character Set	<input checked="" type="radio"/> United States	<input type="radio"/> United Kingdom
Line Width	<input checked="" type="radio"/> 80 Columns	<input type="radio"/> 132 Columns
Protocol Conv	<input type="radio"/> AppleLine	<input type="radio"/> Cluster Ctlr
<input checked="" type="checkbox"/> On Line	<input type="checkbox"/> Local Echo	<input type="checkbox"/> Status Lights
<input checked="" type="checkbox"/> Auto Repeat	<input type="checkbox"/> Auto Wraparound	<input type="checkbox"/> New Line
<input type="checkbox"/> Repeat Ctrls	<input type="checkbox"/> Transparent	<input type="button" value="OK"/> <input type="button" value="Cancel"/>

As your experience with telecommunications increases, so too will your knowledge of many of the options you see in the *Terminal Settings* window in Figure 2-30. You don't have to worry about the relative complexity of some of the settings right now. For the most part, *MacTerminal*'s options are preset for the most common computer-to-computer communication. Click *OK* to remove the window.

Let's just take a quick walk through a typical log-on procedure for CompuServe, one of the major telecommunications services available to computer users. These services offer financial news, games, computer shopping, banking at home, and many more such options. Most of the manufacturers of modems and telecommunications software offer free memberships and a limited amount of free access time to CompuServe and other services

when you buy their products. When you join one of the services, you're given a user identification number and a private password for your personal account. You're normally charged on a monthly basis for the time you're logged onto the system.

With your modem connected and turned on, move the pointer onscreen to the *Phone* menu. Drag down to *Phone Settings*.

In this example, you'll type the CompuServe phone number into the long rectangular box. CompuServe and a few of the other large services are accessed in many metropolitan areas through a local telephone exchange. Once you have typed in the telephone number, move the pointer to *Tone*, *Pulse*, or *Mixed*, depending on the type of telephone you're using. Choose the number of rings for the system—say, 3 or 4—and indicate your modem type. Then click OK.

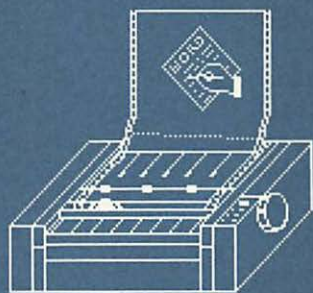
At this point, the system is ready to connect to CompuServe. Move the pointer to the *Phone* menu and select *Dial*. A window appears which indicates that your modem is dialing the telephone number. A moment later, another message appears in the window, informing you that a connection has been established. At this point, CompuServe will ask you to indicate the name of the *host* computer you're calling. In this case, type *CIS*, which stands for CompuServe Information Service. You will then be asked for your ID and for your password as the key to entering this system.

As you'll see in Chapter 8, using *MacTerminal* to send and receive documents and files is an easy process. You achieve real effectiveness for your MacOffice when you are able to use all of the Microsoft products together with *MacTerminal* to reach virtually anywhere in the world.

In the coming chapters, you'll find that the MacOffice concept is as easy to use, efficient, and powerful as the Macintosh itself.

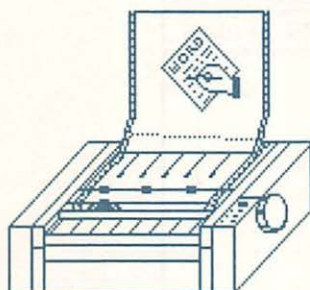
Chapter 3

Producing Form Letters with Microsoft Word



Producing Form Letters with Microsoft Word

Arlan R. Levitan



Microsoft *Word* for the Macintosh is an extremely powerful writing program.

While power and complexity usually go hand in hand in computer-based word processing, the Macintosh user interface makes much of *Word's* power accessible to novice computer users.

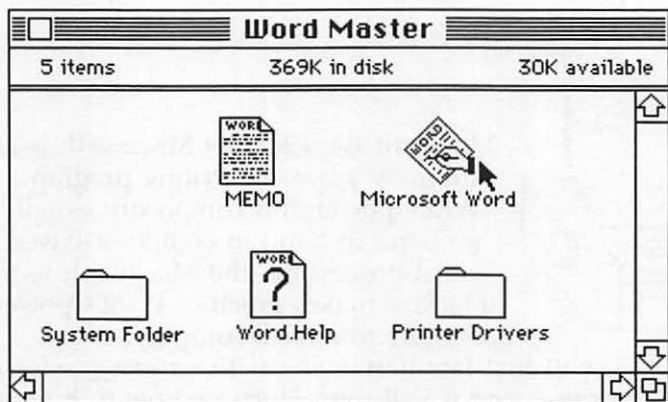
This chapter will first familiarize you with entering, selecting, and manipulating text, and it will then illustrate how to build custom form letters. While we'll review many of the features available in *Word*, this is not intended to be a reference guide, nor is it a substitute for the Microsoft *Word* manual. It's expected that you're familiar with the basics of using pull-down menus and scroll bars and generally "mousing around." The Apple Macintosh manuals and the "Guided Tour" lessons that came with your system cover these areas in depth.

Microsoft recommends that you use a copy of the *Word* Master disk rather than the original. Before you begin, make a working copy of your *Word* Master disk by dragging the Master disk icon to the icon of a blank disk. (See Chapter 1 for complete instructions on making copies of entire disks.) **Do not** use the *Disk Copy* utility that comes on the Macintosh *System Disk* to make a working copy of *Word*.

Starting Word

- Turn on the power switch on the back of your Macintosh.
- Insert your working copy of the Microsoft *Word* disk.
- When the desktop appears, start *Word* by double-clicking the icon labeled *Microsoft Word*.
- Upon startup, the working disk will be ejected and you'll be prompted to insert the *Word* Master disk. (This happens even if you're using a dual-drive system.) Your Macintosh will read the disk identification, eject the Master disk, and tell you to insert the copy again.

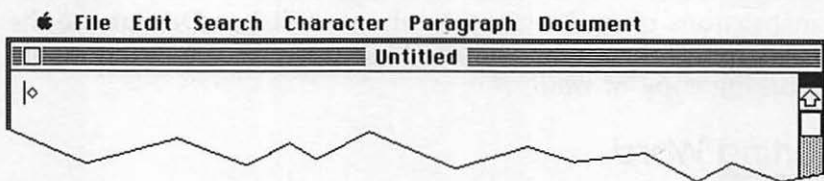
Figure 3-1. Desktop Startup



A blank text entry screen appears on your Macintosh's screen, labeled *Untitled*. You'll give the documents you create a name when they're saved.

The blinking vertical line at the upper-left corner of the screen is called the *insertion point*. The diamond-shaped character after it is an *end mark*. The end mark shows where your document currently ends.

Figure 3-2. Word Startup Screen



Move the mouse around a bit. When the mouse pointer is outside the white text entry area, it's the familiar left-pointing arrow of the Finder. It assumes a different shape, called the *insertion I-beam* within the text entry area.

Move the insertion I-beam toward the left of the screen. Slow up as you approach the left edge of the screen and watch the I-beam carefully. The very first column of each line in the text area cannot have characters entered into it. This area is called the *selection bar*. When you move the mouse into the selection bar, it changes to a right-pointing arrow.

At the right and bottom are scroll bars. Clicking and holding on the arrows at either end of the bars allows you to move up, down, left, or right within documents.

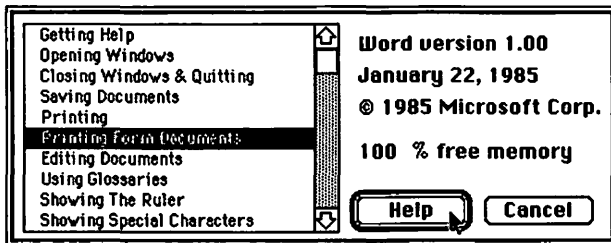
Getting Help

There are two ways to invoke the built-in help feature of *Word*.



One way is to access the help file by choosing the *About Microsoft Word* command from the pull-down Apple menu at the top left of your screen. You'll be presented with a dialog box that will allow you to select a topic from a list.

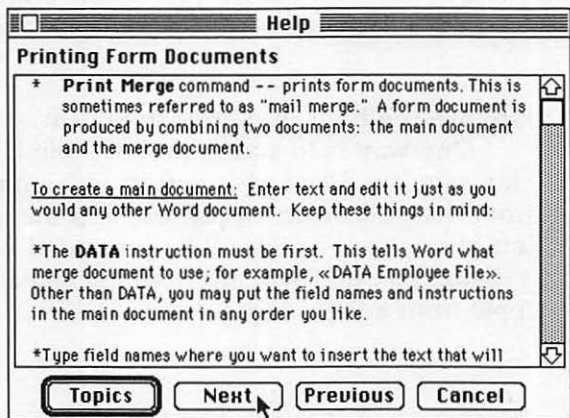
Figure 3-3. About *Word*



You can also ask for help on particular commands in a more direct manner. Hold down the Command key (⌘) and press the question mark (?) key. The mouse cursor will become a large question mark.

Move the question mark to the pull-down menu command that you want information about and select that command. Instead of the command executing, a *Help* window containing information about the selected command will open.

Figure 3-4. Help Window

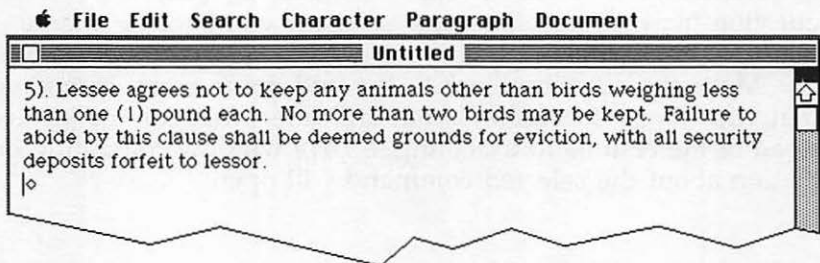


You can close *Help* windows by clicking the *Cancel* button within the window.

Entering Text

Let's begin by entering the text of a clause from a rental agreement for an apartment. Type the paragraph as it appears below. The text will appear to the left of the blinking insertion point as you type. If you make any mistakes, use the Backspace key to erase to the left. The characters will disappear as the insertion point moves back over them.

Figure 3-5. Text on Screen



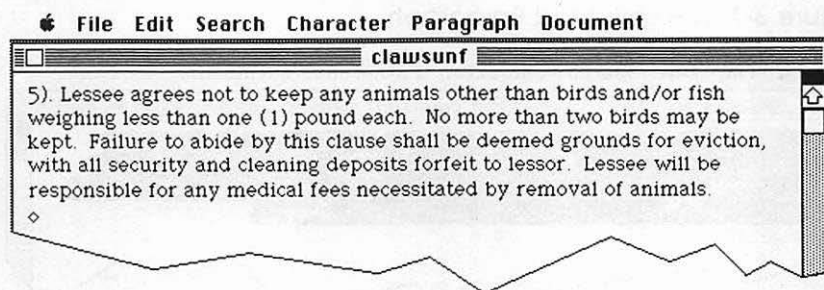
Don't hit the Return key until the very end of the paragraph. Unlike a typewriter, there's no need for you to consciously move the insertion point to the beginning of the next line when the current line is almost full. You may notice that *Word* will also dynamically reformat, or wrap, the text you type in. As you approach the end of a line, *Word* moves the word you're typing to the beginning of the next line if it's too large to fit at the end of the current line.

Inserting Text

Let's add some provisions to this rental clause.

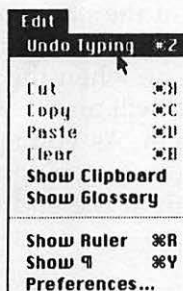
- Move the insertion I-beam just after the word *birds* in the first sentence and click the mouse button.
- Hit the spacebar and then type **and/or fish**.
- Move the insertion I-beam just after the word *security* in the third sentence and click the button.
- Hit the spacebar and then type **and cleaning**.
- Move the insertion I-beam to the right of the period that ends the paragraph and click.
- Hit the spacebar and type **Lessee will be responsible for any medical fees necessitated by removal of animals**.

Figure 3-6. Finished, Unformatted Text



The Undo Command

The *Undo* command lets you reverse your last action, which in this case was entering a sentence. Suppose you decided that the last sentence typed was not really necessary.



Move the mouse pointer up to the *Edit* menu and select *Undo Typing*. The sentence you just typed will vanish.

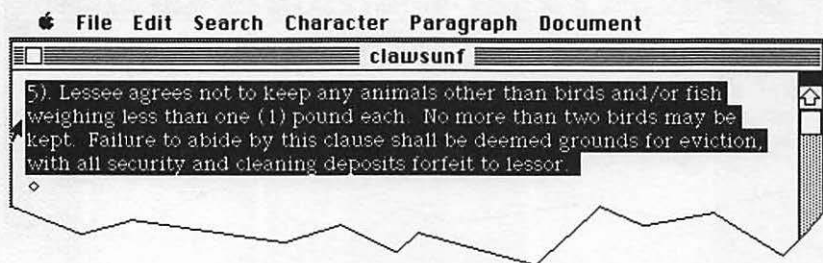
Move the mouse pointer back up to the *Edit* menu again and look at the selections. The selection which used to read *Undo Typing* has become *Redo Typing*. Select this option and the sentence is restored.

Many selections available on the pull-down menus have keyboard equivalents if you don't want to use the mouse. Take another look at the *Undo Typing* selection. Its keyboard equivalent is the Command-Z key sequence (hold down the Command key while pressing the Z key). Try the Command-Z combination. The sentence disappears once again. Hit Command-Z one more time and your sentence is back.

Selecting Text

When you want to delete, move, copy, or change the appearance of text, you must *select* the text you're going to work with. There are several ways to select text. The more familiar you become with the various methods, the more productive your time with *Word* will be. Selected text appears as white letters on a black background, as in Figure 3-7.

Figure 3-7. A Highlighted Paragraph



- Select a character—Click to the left or right of a character and drag across it.
- Select a word—Position the insertion I-beam anywhere within a word and double-click.
- Select a line—Move the mouse pointer into the selection bar next to the line and click once.
- Select a sentence—Press the Command key and click anywhere within the sentence.

- Select a paragraph—Move the mouse pointer into the selection bar next to any line in the paragraph and double-click.
- Select a block of text—Position the insertion I-beam at the beginning of the block and click. Then (a) hold the mouse button down and drag to the end of the block, or (b) move the insertion I-beam to the end of the block, hold down the Shift key, and click.
- Select the entire document—Move the mouse pointer into the selection bar, depress the Command key, and click.

Take some time now to practice selecting text in your sample paragraph using these different methods. If you accidentally alter the text, use the *Undo* command to reverse the unwanted change.

Operating on Selected Text

Once text has been selected, you can manipulate it. The most common operations are deleting, moving, copying, and formatting.

Deleting Text

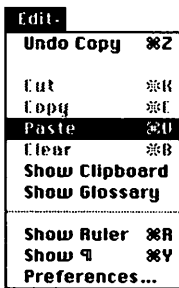
You've already used the Backspace key to delete characters one at a time. The Backspace key will also delete any block of selected text. Try it by selecting a word, sentence, or paragraph and then press the Backspace key once. The selected block vanishes. You can also use *Cut* from the *Edit* menu (or Command-X) to accomplish the same thing.

Edit		
Redo Typing	⌘Z	
Cut	⌘H	
Copy	⌘C	
Paste	⌘V	
Clear	⌘B	
Show Clipboard		
Show Glossary		
<hr/>		
Show Ruler	⌘R	
Show ¶	⌘Y	
Preferences...		

Selected text may also be replaced by simply typing over the selection. Select the word *fish* in the first sentence of the example you created earlier by placing the insertion I-beam anywhere within the word and double-clicking. Then type **gorillas** (or any other animal of your choice). The selected text will be replaced by what you type. Use the *Undo Typing* command to change the word back to *fish*.

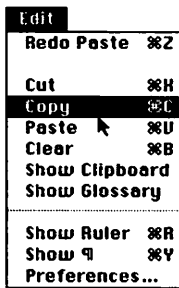
Moving Text

There's a difference between using the Backspace key and *Cut*. The latter places a copy of the cut text into the Macintosh's Clipboard. The Clipboard can be used as a temporary holding area for text that you want to paste elsewhere in your document. This allows you to move blocks of text easily. Try the following:



Select the first sentence of the paragraph in Figure 3-6 by positioning the insertion bar anywhere within the sentence, holding down the Command key, and clicking once. Remove the sentence from the paragraph using *Cut* from the *Edit* menu. Move the insertion I-beam to the right of the period that ends the paragraph and click. Select *Paste* from the *Edit* menu (or press Command-V). The sentence which began the paragraph is now at the end.

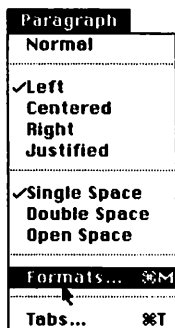
Copying Text



Select the sentence you just pasted in by using the Command-click procedure again. Choose *Copy* from the *Edit* menu (or Command-C). A copy of the selected text is placed in the Clipboard, leaving the original text intact. Move the insertion I-beam to the beginning of the paragraph, click, and use *Paste* to place a copy of the sentence now in the Clipboard back at the front of the paragraph. Delete the last sentence in the paragraph by selecting it and hitting the Backspace key.

Formatting Text

Let's change the appearance of the text.



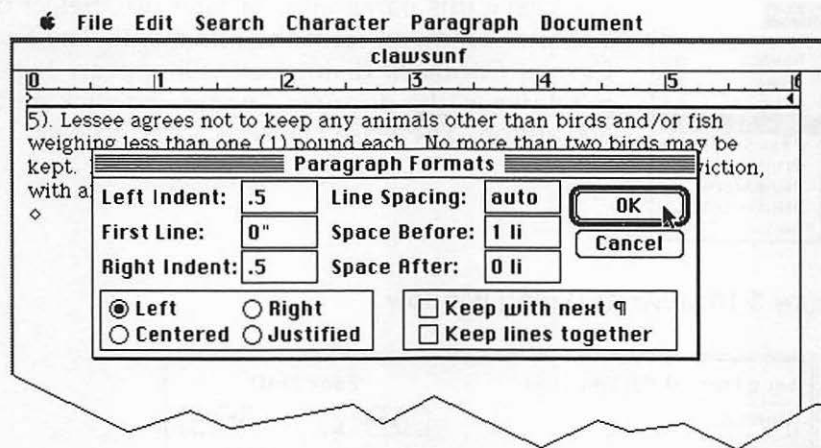
Move the insertion I-beam anywhere within the paragraph and click. Use the mouse to pull down the *Paragraph* menu and select *Formats* (or press Command-M). You'll see a dialog box. The small box labeled *Left Indent* will be highlighted. Type .5.

Move the mouse pointer to the center of the small box labeled *Right Indent* and double-click. The box will become highlighted. Type .5 again.

Move the pointer to the number 0 in the small box labeled *Space Before* and double-click.

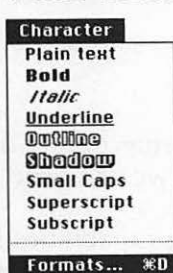
After the 0 becomes highlighted, type 1.

Figure 3-8. Paragraph Formats Dialog Window



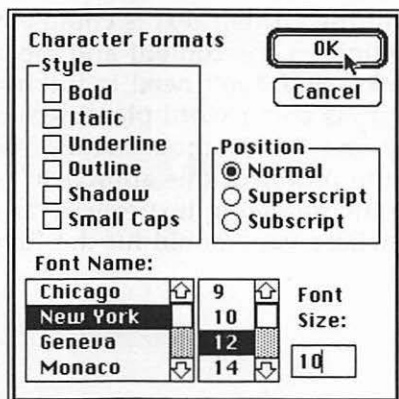
Move the pointer to the button labeled **OK** and click. The paragraph is reformatted with half-inch margins on either side and with a blank line added before the paragraph.

Select the entire paragraph by moving the mouse cursor anywhere in the selection bar to the left of the text and double-click.



What's a contract without fine print? Select the *Formats* (Command-D) command from the *Character* menu. You'll see another dialog box. Point the mouse to the small box under the words *Font Size* and double-click. Type **10**, move the mouse pointer to the **OK** button, and click. The entire paragraph changes to a smaller type size.

Figure 3-9.
Character Formats
Dialog Window

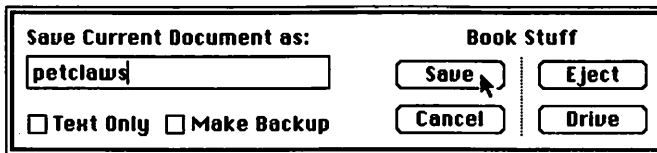


Saving Documents



Let's save this paragraph for later use. Select the *Save As* command from the *File* menu. The *Save Current Document* dialog box will appear. Type in *petclaws* as the document name and click on the *OK* button. The lease clause is saved to disk.

Figure 3-10. Save As Dialog Window



Choose the *Close* (Command-W) command from the *File* menu. The *Word* text entry screen disappears.

Select *New* (Command-N) from the *File* menu. A new, untitled document screen will be presented.

Building a Form Letter

In the following exercise we'll write a business letter to one of our mythical tenants, then modify that letter so that we can send out multiple customized versions to different tenants.

An advantage of *Word's* powerful formatting capabilities is that you can defer decisions about the final appearance of documents until the written text is completed. You can focus all of your attention on the content and meaning of the text, not on how it looks. You don't need to interrupt your thoughts with constant decisions about word placement and spacing. While many users may find this method disconcerting at first, our example will illustrate the power of this approach.

Type the following text exactly as it appears below. <RET> indicates where you should hit the Return key.

<RET>

Conan & Cthulu Management Corp.<RET>

12709 Arkham Lane, Suite 200<RET>

Lovecraft, Massachusetts 44567<RET>

June 19, 1985<RET>

Gregg Keizer<RET>

91927 Plynth<RET>

Larchmont, MA 02123<RET>

Mr. Keizer,<RET>

It has been brought to our attention that you are harboring an unauthorized pet in your apartment. Apparently your wombat has been making quite a bit of noise late at night and has been disturbing a number of the other residents of Heavy Metal City.<RET>

We realize that the wombat has a long and honorable history in its dealings with mankind. We have no doubt that your particular wombat is both well mannered and considerate.<RET>

Unfortunately, Mr. Keizer, there can also be little doubt that harboring a wombat in your apartment is specifically forbidden by the lease you signed upon moving into your apartment.<RET>

Please remove your pet within ten days of receipt of this letter.

Failure to do so may result in the loss of your lease.<RET>

We value you as a tenant and would hate to cancel your lease.<RET>

Sincerely yours,<RET>

Irving Conan<RET>

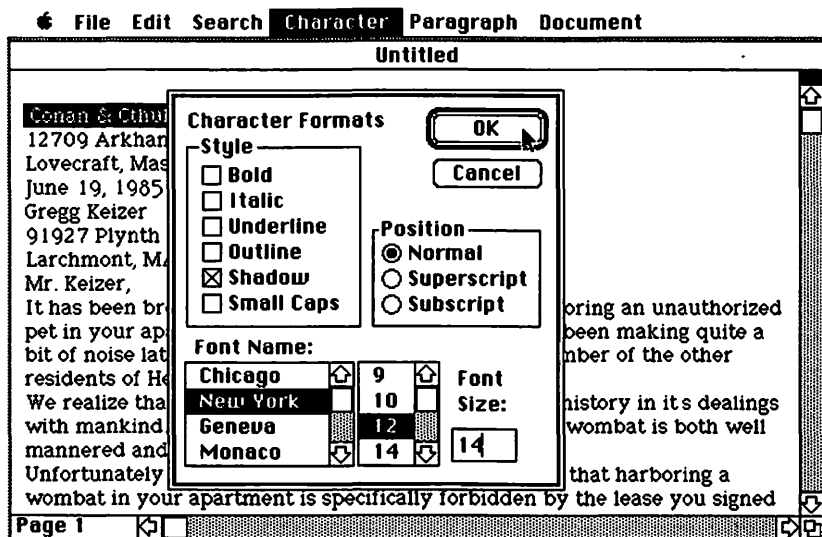
General Manager<RET>

Formatting the Text

Using the scroll bar at the right of your screen, return to the top of the document.

Select the line that begins *Conan...* by moving the mouse pointer to the selection bar, just left of the line, and then clicking. Choose *Formats* from the *Character* menu. The box labeled *Font Size* will already be highlighted. Type **14**. Then move the mouse pointer to the small box labeled *Shadow* and click. Click *OK*. Voilà! You've just changed the appearance of the firm's name.

Figure 3-11. Character Formats Dialog Window



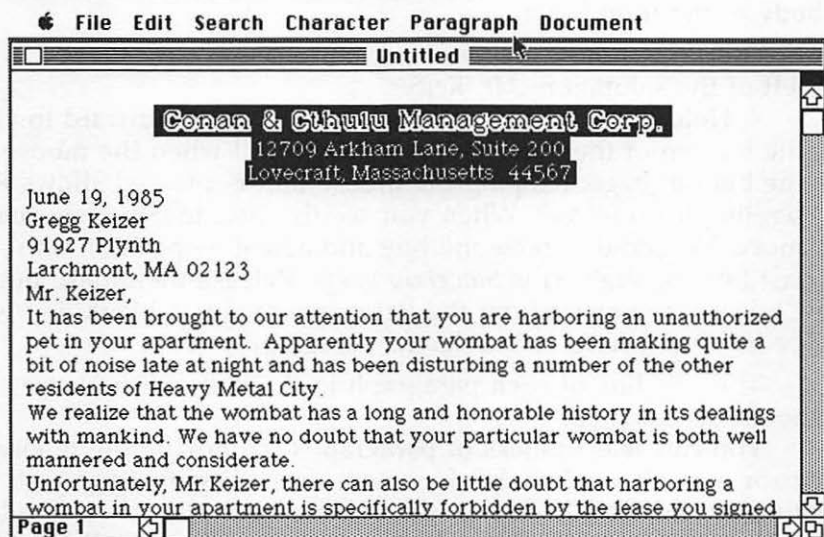
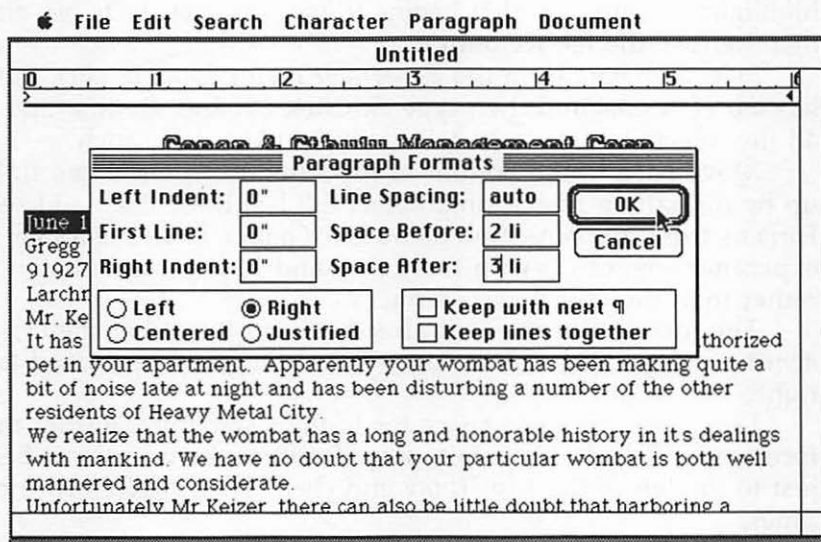
Now let's position the letterhead: Select all three lines of letterhead text by positioning the mouse in the selection bar to the left of the first line, holding down the mouse button, and dragging downward until all three lines have been selected.

Choose *Centered* from the *Paragraph* menu. The letterhead will be centered at the top of the document (Figure 3-12).

Let's move the date over to the right and open up some lines before and after it.

- Select the line of text which contains the date and then select *Formats* from the *Paragraph* menu.
- Double-click the zero in the *Space Before* box and type 2.
- Double-click the zero in the *Space After* box and type 3.
- Click the circle labeled *Right* in the box at the lower-left portion of the dialog box.
- Click *OK*. The date will be placed at the right of your documents and two and three blank lines have been inserted before and after the date, respectively.

Figure 3-12. Formatted Letterhead

Figure 3-13. Filled-In *Formats* Window

Let's open up some spacing between the paragraphs of the body of the form letter.

- Position the mouse pointer over the selection bar, directly to the left of the salutation, *Mr. Keizer*.

Hold down the mouse button and drag downward toward the bottom of the letter. The text will scroll when the mouse hits the bottom edge. Keeping the mouse button pressed allows the scrolling to continue. When you see the closing (*Sincerely yours*), move the pointer above the line and adjust its position until the last line highlighted is *Sincerely yours*. Release the mouse button.

- Choose *Open Space* from the *Paragraph* menu. A blank line will be inserted before each selected paragraph.

The first line of each paragraph in the body of the letter should be indented.

You can select blocks of paragraphs by moving the mouse cursor from the end of the document to the beginning as well. Position the mouse cursor over the selection bar, directly to the left of the line that begins *We value you as a tenant...* and click, holding the mouse button down. The text will scroll when the mouse hits the top edge. When you see the salutation, move the mouse pointer above the line and adjust its position until the last line highlighted is the one that begins *It has been brought to our attention*. Release the mouse button.

Select *Formats* from the *Paragraph* menu. Double-click the box labeled *First Line* and then type *.5*. Click *OK* and the first line of all the selected paragraphs will be indented half an inch.

Move back to the bottom of the letter so that you can finish up by formatting the closing. Select the last three lines and select *Formats* from the *Paragraph* menu once again. If you feel like experimenting, call it with the Command-M key combination rather than the pull-down menu.

The insertion cursor will already be positioned at the *Left Indent* box. Type *3* and hit Return. The closing will be moved to the right.

Let's open up some space for Irving's signature. Rather than formatting, let's do it the lazy way. Position the insertion I-beam just to the left of the *I* in *Irving* and click. Then hit Return three times.

That's it! Your letter is finished. Save it for posterity. Select *Save As* from the *File* menu. When the dialog box appears, type **PetLetter** and click *OK* or simply hit Return. *Word* will save the

document under the name you just gave it. The mouse pointer will turn into a wristwatch and won't change back to its normal form until the save is finished. After the save is complete, the page number displayed in the lower-left corner will be temporarily replaced with the number of characters in the document.

Figure 3-14. Finished Letter

Conan & Cthulu Management Corp.

12709 Arkham Lane, Suite 200
Lovecraft, Massachusetts 44567

June 19, 1985

Gregg Keizer
91927 Plynth
Larchmont, MA 02123

Mr. Keizer,

It has been brought to our attention that you are harboring an unauthorized pet in your apartment. Apparently your wombat has been making quite a bit of noise late at night and has been disturbing a number of the other residents of Heavy Metal City.

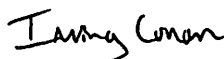
We realize that the wombat has a long and honorable history in its dealings with mankind. We have no doubt that your particular wombat is both well mannered and considerate.

Unfortunately, Mr. Keizer, there can also be little doubt that harboring a wombat in your apartment is specifically forbidden by the lease you signed upon moving into your apartment.

Please remove your pet within ten days of receipt of this letter. Failure to do so may result in the loss of your lease.

We value you as a tenant and would hate to cancel your lease.

Sincerely yours,


Irving Conan
General Manager

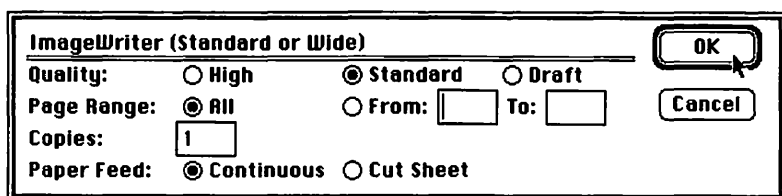
Printing

Let's print the letter:

First, make sure your printer is loaded with paper and its power is on. Select the *Print* command (Command-P) from the *File* menu.

You'll see the dialog box shown in Figure 3-15. Make sure that all settings are as shown and click *OK*. A copy of the letter will be printed. Sit back and admire your work for a few moments before you move on. You deserve a break.

Figure 3-15. *Print* Dialog Window



Form Letters

Writing the "renegade pet" letter was not particularly difficult, but there are likely to be times when many similar versions of this letter will be required to send to different people. You *could* create a series of slightly different versions of the letter and print each one at a time. Depending on the number of copies involved, this could be both labor intensive and a dead waste of time.

An easier way to accomplish this task is to use the form letter capabilities of Microsoft *Word*. This involves using a *main*, or form, document (which is merged using the *Print Merge* function) with a *merge* document, which contains the information that will vary from one version of the letter to the next.

This merge process is heavily used today by large businesses. The most commonly encountered example is unsolicited promotional material, or "junk mail," as it is referred to by nonmarketing types.

Whatever we call it, such mail typically contains repeated references to a person's name and/or place of residence. It can also contain text that is inserted only if a certain condition is true.

In the following example we'll create a separate merge document, modify our letter to become a form document, and then

combine the two to create our own customized form letters.

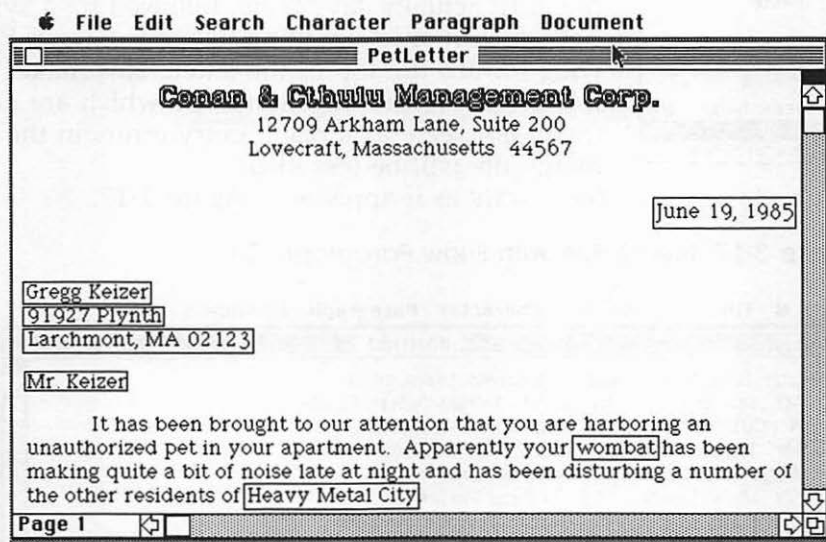
In most respects a form document is like any other *Word* document. It differs from regular documents in that it contains marked positions and special instructions which allow *Word* to insert information while printing.

These marked positions are called *fields*. Each field represents a group of characters that relate to one item of information. While the field names can be virtually anything you choose, it's best to select names which directly relate to the meaning of the characters to be inserted at that point.

These field names will relate directly to collections of information contained in the merge document. The merge document will hold a group of fields, or records, for each individual letter we wish to print. Don't worry if this sounds somewhat confusing. It's not as complicated as it seems.

Let's examine the form letter in Figure 3-14 and pick out the specific items that may differ from letter to letter in an attempt to categorize them.

Figure 3-16. Beginning of Letter with Items Boxed



Items

June 19, 1985

Mr. Gregg Keizer

91927 Plynth, Larchmont, MA 02123

wombat

Heavy Metal City

Category

Date

Title, first name, last name

Address

Type of pet

Housing development

We'll assume that all the letters will be from Conan & Cthulu Management Corporation and that Irving will sign all the letters.

Merge File

Now you need a merge file to contain information on all tenants who are harboring illegal pets.

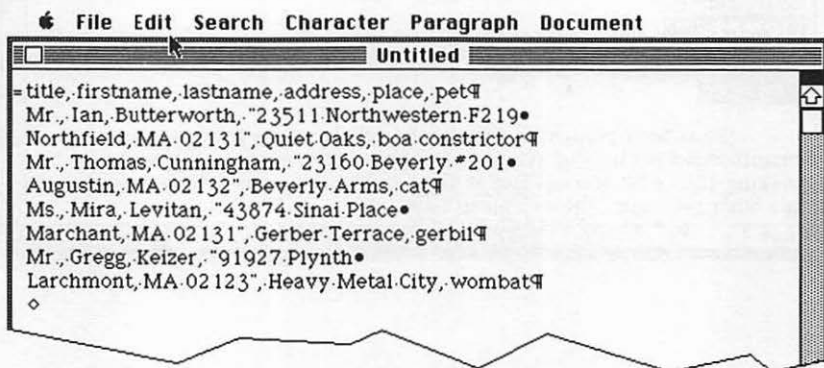
Select *New* from the *File* menu. The letter will disappear for the time being and a new, empty screen labeled *Untitled* will appear. Don't worry about the old letter. It's still around (albeit incommunicado).



Since the number of spaces and return characters between the items in the file will affect the final appearance of the document, select *Show Paragraph* (Command-Y) from the *Edit* menu (it actually says *Show*, followed by a symbol which looks something like a backward P). Drag toward the top of the letter. This makes visible certain formatting characters which are normally not seen; as a result entry errors in the merge file will be less likely.

Type in the file *exactly* as it appears in Figure 3-17.

Figure 3-17. Merge File with *Show Paragraph* On



The paragraph markers (those backward looking P's) are inserted by simply hitting Return, spaces are represented by small dots between characters, and the large dots are called *new-line* indicators. New-line indicators are inserted by holding down the Shift key and hitting Return.

The merge file is composed of records, and each record ends with a Return (a paragraph marker). The first record of the file is special and is called the *header record*. This record lists the field names we've chosen in the order in which the information will appear in subsequent data records.

Note that both the field names of the header record and the field data within records are separated by commas. The records that follow the header record contain the information that will be inserted in the printed form letters. Each data record contains the information that will be inserted in the form document to create a unique version of the letter. Notice that the field names were chosen to describe their actual contents. Each data record contains the first name, last name, address, place (name of the housing development), and kind of pet involved.

The new-line indicators are necessary because we want the information contained in the *address* field to be printed as multiple lines. If you were to end the street address line with a Return, Word's merge utility would interpret the Return character as the end of a data record and would not be able to find any data to assign to the *place* and *pet* fields. In case you've been keeping track, don't worry about a field for the date. We'll take care of that in just a bit.

When you're sure everything has been entered correctly, select *Hide Paragraph* from the *Edit* menu. The special characters will disappear from view—rest assured that they're still there.

Use the *Save As* command from the *File* menu to save the document you've created. Name the file *PetLetter*. After saving, select *Close* from the *Edit* menu. The original letter reappears.

Form Document

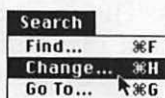
Now we'll turn the original letter into a form document by making some changes, namely, all occurrences of the following:

Mr.	to <<title>>
Gregg	to <<firstname>>
Keizer	to <<lastname>>
91927 Plynth Larchmont, MA 02123	to <<address>>
Heavy Metal City	to <<place>>
wombat	to <<pet>>

Note: The « and » are international quotation marks used within a form document to indicate the beginning and end of a field name. They are *not* formed by using the less-than (<) and greater-than (>) keys on the Macintosh keyboard. The start-of-field-name character («) is made by holding down the Option key and pressing the back slash key (located right above the Return key). The end-of-field-name character (») is made by holding down both the Shift and Option keys while hitting back slash.

You may use Word's *Change* command to change everything but the address, since it occupies two lines of text.

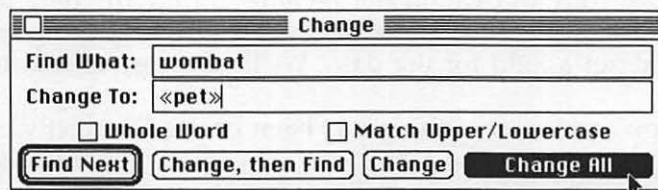
Let's change all occurrences of *wombat* to «pet».



Select *Change* (Command-H) from the *Search* menu. The *Change* dialog box appears. The box labeled *Find What* is highlighted. Type **wombat** and double-click the box labeled *Change To*. Type «pet» and click on the button labeled *Change All*. You may continue to make changes by filling in new values in the *Find What* and *Change To* boxes and clicking *Change All*. When finished, you can get rid of the *Change* box by clicking the go-away box (the small box in the upper-left corner of the dialog box).

Remember to replace the two-line address with «address».

Figure 3-18. Filled-In *Change* Box



When you're through making these changes, take some time to carefully inspect your work for errors. When you're sure all the changes are correct, scroll to the top of the document.

Position the insertion beam anywhere on the line directly above *Conan & Cthulu Management Corp.* and click. The insertion point will appear at the very first character of the line at the left.

The DATA Statement

The very first thing in a form document must be a DATA statement, which tells *Word* which merge document contains the information it needs to fill in the fields defined within the letter.

Type `<<DATA petlist>>` and hit Return. (Remember to use the `<<` and `>>` symbols to delineate the beginning and end of the DATA statement.)

Now let's take care of the date. Type `<<SET date=?What date do you want on the letters?>>` and hit Return.

Move the insertion beam just to the right of the 5 in 1985, hold down the mouse button, and drag to the left until *June 30, 1985* is selected and highlighted. Be very careful not to select the Return character at the end of the date.

Type `<<date>>`. The original date has been replaced with a *date* field. The SET statement included before the date will prompt you for the correct date when you print your customized letters.

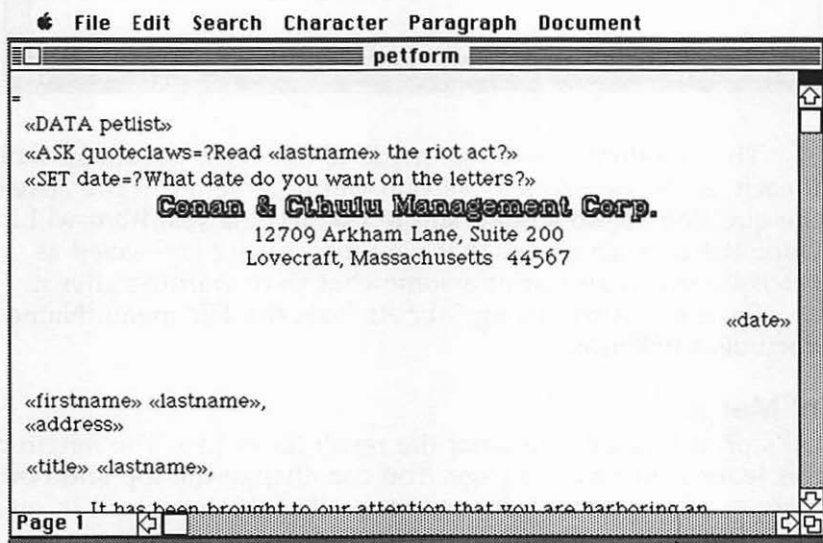
ASK, IF, and INCLUDE

Let's add one final twist to the letter. We'll use three new form letter commands that will allow us to print a different version of the letter for those tenants who have already been warned about keeping unauthorized pets.

Insert the following line between those containing the DATA and SET statements. The result should look just like Figure 3-19.

`<<ASK quoteclaws=?Read <<lastname>> the riot act?>>`

Figure 3-19. Top of Document

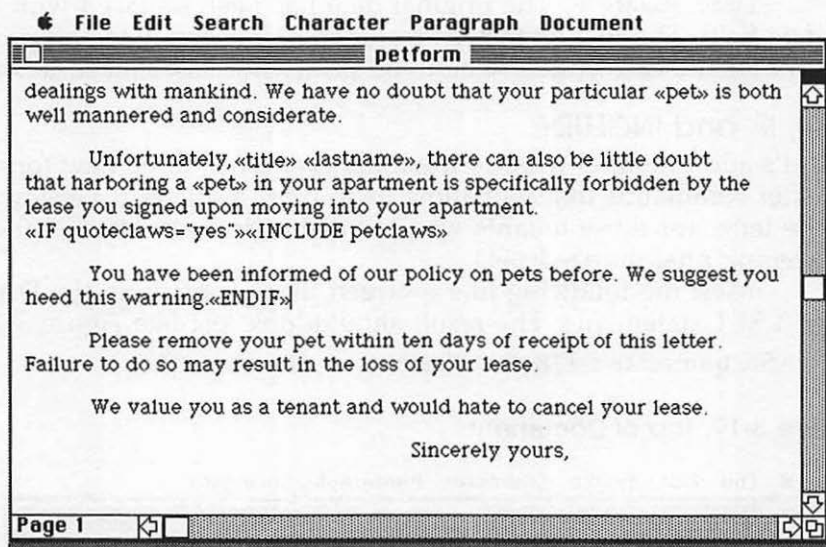


Go down to the paragraph that ends with *moving into your apartment*. Position the insertion beam directly to the right of the period that ends the paragraph and click. Insert the following text:

«IF quoteclaws="yes"» «INCLUDE petclaws» You have been informed of our policy on pets before. We suggest you heed this warning. «ENDIF»

It should be formatted so that it looks like what you see in Figure 3-20.

Figure 3-20. Middle of Document



The additions we've just made to our form document will ask if each tenant deserves a "second warning" letter. If the answer to the question "Read so-and-so the riot act?" is yes, *Word* will include the contract clause that we typed earlier and saved as *petclaws*; it will also print a somewhat stern warning after it.

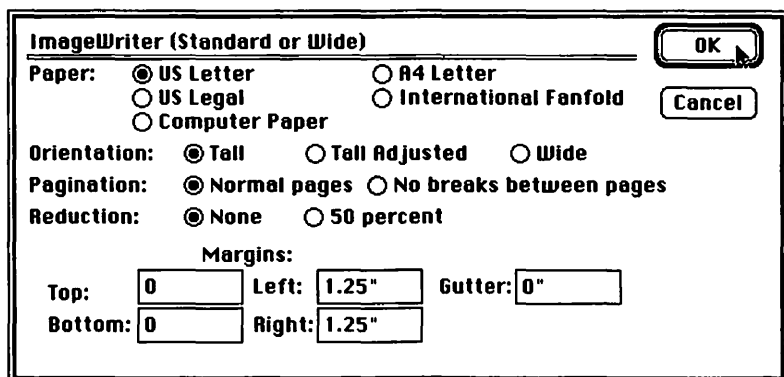
Save your work using *Save As* from the *File* menu. Name the document **petform**.

Print Merge

Let's print this and see what the result looks like. The length of this letter is just over a page. You can change the top and bottom margins of the printed documents so that the letter will fit on just one page.

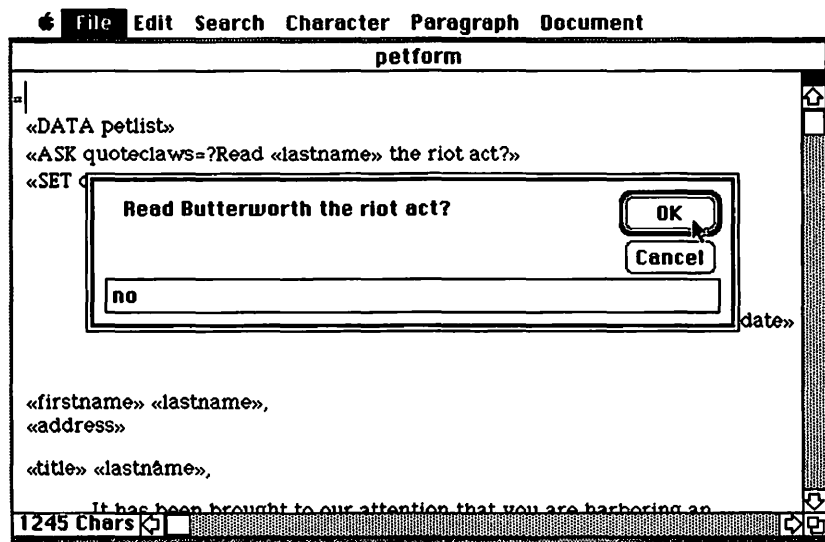
While still in the *petform* document, select *Page Setup* from the *File* menu. An ImageWriter setup box appears. In the *Margins* section, enter 0 for both top and bottom margins, then click OK.

Figure 3-21. *Page Setup* Window



Choose *Print Merge* from the *File* menu. You'll be asked if Butterworth gets "the riot act" (the sterner form of the letter) read to him. Just to be nice, type **No** and hit Return.

Figure 3-22. The Butterworth Question



You'll then be prompted to enter the date. You're asked for it only once during the entire *Print Merge* session.

Another ImageWriter dialog box appears. Click OK. After a few moments, the first customized letter will start to print. When the letter is nearly finished, you'll be asked if the next tenant deserves the "riot act." Type **Yes** and hit Return. The letter now printed will be different from the first one. Here are examples of both types so that you can check your results.

Figure 3-23. The Riot Act Letters

Conan & Cthulu Management Corp.

12709 Arkham Lane, Suite 200
Lovecraft, Massachusetts 44567

July 19, 1985

Ian Butterworth,
23511 Northwestern F219
Northfield, MA 02131

Mr. Butterworth,

It has been brought to our attention that you are harboring an unauthorized pet in your apartment. Apparently your boa constrictor has been making quite a bit of noise late at night and has been disturbing a number of the other residents of Quiet Oaks.


We realize that the boa constrictor has a long and honorable history in its dealings with mankind. We have no doubt that your particular boa constrictor is both well mannered and considerate.

Unfortunately, Mr. Butterworth, there can also be little doubt that harboring a boa constrictor in your apartment is specifically forbidden by the lease you signed upon moving into your apartment.

Please remove your pet within ten days of receipt of this letter. Failure to do so may result in the loss of your lease.

We value you as a tenant and would hate to cancel your lease.

Sincerely yours,


Irving Conan
General Manager

Conan & Cthulu Management Corp.

12709 Arkham Lane, Suite 200
Lovecraft, Massachusetts 44567

July 19, 1985

Thomas Cunningham,
23160 Beverly #201
Augustin, MA 02132

Mr. Cunningham,

It has been brought to our attention that you are harboring an unauthorized pet in your apartment. Apparently your cat has been making quite a bit of noise late at night and has been disturbing a number of the other residents of Beverly Arms.

We realize that the cat has a long and honorable history in its dealings with mankind. We have no doubt that your particular cat is both well mannered and considerate.

Unfortunately, Mr. Cunningham, there can also be little doubt that harboring a cat in your apartment is specifically forbidden by the lease you signed upon moving into your apartment.


5) Lessee agrees not to keep any animals other than birds and/or fish weighing less than one (1) pound each. No more than two birds may be kept. Failure to abide by this clause shall be deemed grounds for eviction, with all security and cleaning deposits forfeit to lessor.

You have been informed of our policy on pets before. We suggest you heed this warning.

Please remove your pet within ten days of receipt of this letter. Failure to do so may result in the loss of your lease.

We value you as a tenant and would hate to cancel your lease.

Sincerely yours,



Irving Conan
General Manager

Answer yes or no to subsequent "riot act" inquiries as needs dictate. Relax a bit after the last letter is printed. You've earned another break.

The Glossary

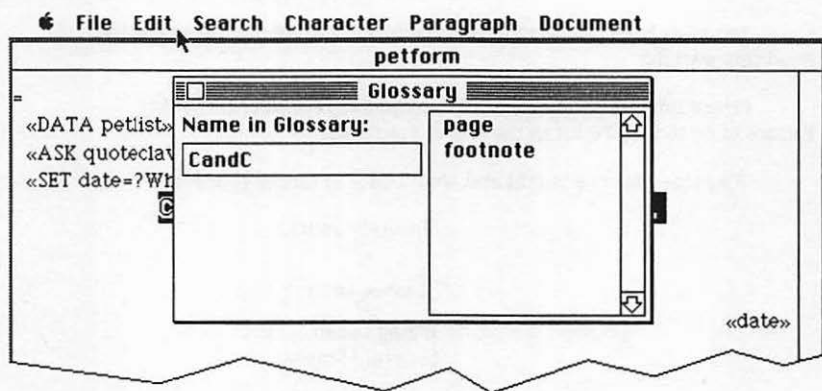
Microsoft Word provides for the use of custom glossaries for storing text which you use often and don't want to have to type into your documents every time you use it. The Conan & Cthulu letterhead and Irving Conan's closing, *Sincerely yours*, are examples of information that may be used in almost all of C & C's correspondence.

Glossary entries have names which you choose when you enter them into the glossary. Entry names must consist of alphabetic characters and may be as long as 64 characters. The most useful aspect of glossary entries is that they may be stored in a glossary file and can be recalled at will in future Word sessions. Any formatting that was done to the original text is retained.

To recall text that's stored in the glossary, you simply type the name you chose for that entry when it was stored and press the Command and Backspace keys simultaneously.

Let's add the Conan & Cthulu letterhead and Irv's closing to the glossary. Make sure that the *petform* document is on your screen, then select the three lines that comprise the Conan & Cthulu letterhead. Choose *Copy* from the *Edit* menu to copy the letterhead into the Macintosh's Clipboard. Next, select *Show Glossary* from the *Edit* menu. A special dialog box, the *Glossary* window, appears.

Figure 3-24. Glossary Window



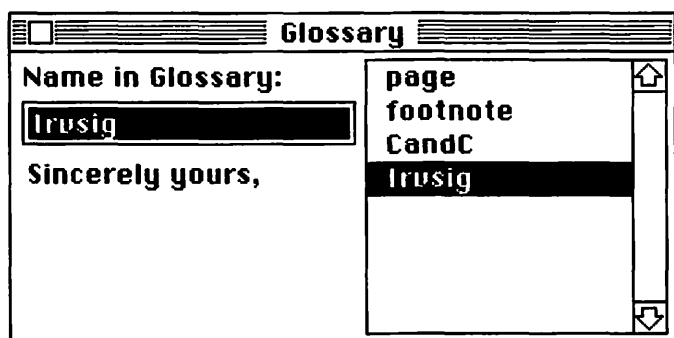
Note that two glossary entries are already in the window: *page* and *footnote*. These are glossary entry names reserved for use by Word.

Type **CandC** in the *Name in Glossary:* text box. Choose *Paste* from the *Edit* menu. The letterhead will be added to the glossary file and the entry name will be added to the list box.

Close the window by clicking the go-away box at the upper-left corner of the window.

Select the lines at the bottom of the form letter that make up Irving Conan's closing, beginning with *Sincerely Yours* and ending with *General Manager*. Choose *Copy* from the *Edit* menu again. Select *Show Glossary* from the *Edit* menu, type **Irvsig** in the *Name in Glossary:* text box, choose *Paste* from the *Edit* menu, and Irv's closing will be added to the glossary file. The entry name will also be added to the list box. The window should look like Figure 3-25.

Figure 3-25. Glossary Window the Second Time



Close the *Glossary* window.

Now save your original form document and select the *Close* option of the *File* menu. The *Word* entry screen will disappear. Choose *New* from the *File* menu. A new, pristine *Word* entry screen appears.

Type **CandC** and then hold down the Command key. Hit the Backspace key and the Conan & Cthulu letterhead jumps from its resting place within the glossary to your document.

Now type **Irvsig** and hit the Command-Backspace key combination again. The closing appears, eagerly awaiting Irving's pen.

Let's leave using the *Quit* command. Don't bother to save the current document, but do respond affirmatively to any questions that ask if you wish to save the additions made to the glossary. If glossary entries are not saved at the end of the session, they'll not be saved to disk—and you won't be able to call on them at a later date.

This ends our session with Microsoft Word.

Using Word Without an External Disk Drive

Microsoft strongly recommends that *Word* be used with two disk drives. The number and size of the files on the *Word* program disk leave little room for documents. Single-drive users of *Word* who attempt to store their documents on a separate disk are likely to find the resulting disk swaps particularly frustrating.

If all the unneeded printer drivers, fonts, and documents are removed from copies of the *Word* Master disk, there will be enough room to store more than 60 pages of manuscript on the program disk. This method does require some disk swapping at startup time since the *Word* Master disk will be requested after a copy is begun.

Here's how to free up the maximum amount of space on a copy of the *Word* Master disk.

For all single drive users:

- Remove the sample document called *MEMO*. You may delete it and other files mentioned in this list by throwing it in the Trashcan.
- *Word* comes with printer drivers for a number of different printers. Remove all except for the one(s) needed for your own printer.
- Once you're accustomed to using *Word*, remove the *Word Help* document from the disk. Although you'll no longer be able to use *Word's* help facility, this will free up a lot of space for your documents.

Additional space reclamation tricks (recommended only for users with a solid understanding of the Finder and its use):

- Using the *Font Mover* utility which comes with your original Macintosh *System Disk*, remove any fonts you're not likely to use in your work from the *Word* copy.
- If you have any of the various "resource mover" utilities that are available from user groups or online databases, remove rarely used desk accessories from the Finder. The Alarm Clock, Calculator, Note Pad, and Puzzle are good candidates.
- If you're feeling completely merciless, the Finder can be removed after you make your copy of the *Word* Master disk a "startup disk." This process does have a couple of disadvantages: You'll not be able to manipulate documents and files using the Finder. No desktop will appear upon starting *Word*. After quitting *Word*, the disk will be ejected. Cumbersome as it may seem, it will buy

back enough space for 40 or so additional pages of text. To make your copy a startup disk:

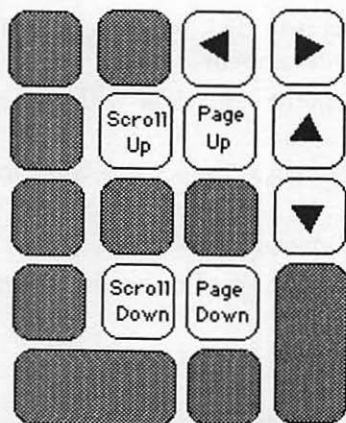
- (1) Turn your Macintosh on and insert any disk with a copy of the Finder on it. Wait for the desktop to appear.
- (2) Select *Eject Disk* from the *Special* menu. The disk will pop out of the drive slot.
- (3) Insert your copy of the *Word* Master disk. Select the *Word* icon with a single mouse click.
- (4) Select *Set Startup* from the *Special* menu.
- (5) You'll be asked to verify that you want *Word* to be the startup application. Click *OK* to continue.
- (6) Open the System Folder by pointing to it and double-clicking.
- (7) Point to the Finder icon and click, holding down the mouse button. Drag the icon over to the Trashcan.
- (8) Select *Empty Trash* from the *Special* menu. The Finder will be deleted.
- (9) Eject the disk and turn your Macintosh off and back on. The surgically altered *Word* disk may be inserted, and *Word* will start automatically.

Numeric Keypad Support

While the Macintosh's mouse has greatly simplified the user-to-computer interface, some critics have argued that constantly moving your hands away from the keyboard to handle a mouse tends to slow down an experienced typist's production in Macintosh-based word processing. While this may be largely a matter of taste, there *are* alternatives. We've already seen that many of the commands available on the pull-down *Word* menus have keyboard equivalents. What does seem to be lacking are keyboard equivalents for moving the insertion I-beam (cursor) and scrolling.

Although not documented in the Microsoft *Word* manual, owners of the Macintosh numeric keypad will find that *Word* supports cursor movement and scroll keys via the keypad. Those who are used to working with word processors on other computer systems or who are somewhat uncomfortable with using the mouse for all cursor movement operations may find using a keypad helpful. A keypad does add a high degree of function to the *Word* keyboard; it makes moving the insertion I-beam small distances and moderate scrolling much easier for some people (see Figure 3-26).

Figure 3-26. Keypad Chart



Summary

We've only touched the surface of the facilities offered within Microsoft *Word*. If you are new to word processing, you may have been surprised at how easy *Word* is to use. Those who have used other word processors are probably pleasantly surprised to experience the uncomplicated manner in which *Word* handles complex tasks.

Feel free to experiment further. You'll find that *Word* has the flexibility to adapt to any writing style and formatting requirements. The Microsoft reference guide that came with your copy of *Word* is packed with information about the program's capabilities and should be revisited often.

There's an old data processing saw whose teeth still cut quite true. "The difference between a novice and an expert is having read the manual."

Chapter 4

Keeping Customer and Client Lists with *File*



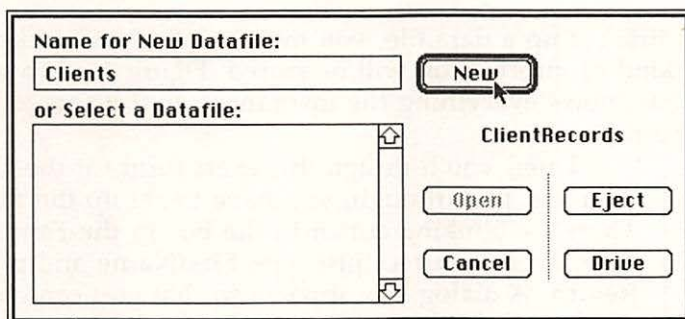
Keeping Customer and Client Lists with *File*

Sharon Zardetto Aker



Before you begin to work with *File*, there are terms with which you should be familiar. A *data file* is a collection of information, such as names, addresses, and phone numbers. A data file is divided into *records* which store groups of related items, like the name, address, and phone number of one person. Each item in a record is a *field*; each field has a name, called a *label*. ("James" is a field in a record; "FirstName" is a label.) A *form* is the way in which information in a record is presented—a template that indicates where each field appears and how it looks. The same data file can provide details for a mailing label, an invoice, or a full page of information for each record. You can make several forms for each data file: one for easy data entry, another for quick scanning through records, and another for printing the data. In this chapter, you're going to develop a database for an insurance agent that will keep track of client records. When you open *File*, type **Clients** in the dialog box and click the *New* button. (Click the *Drive* or *Eject* button first if you want the data file stored on a disk other than the one which holds the *File* application.)

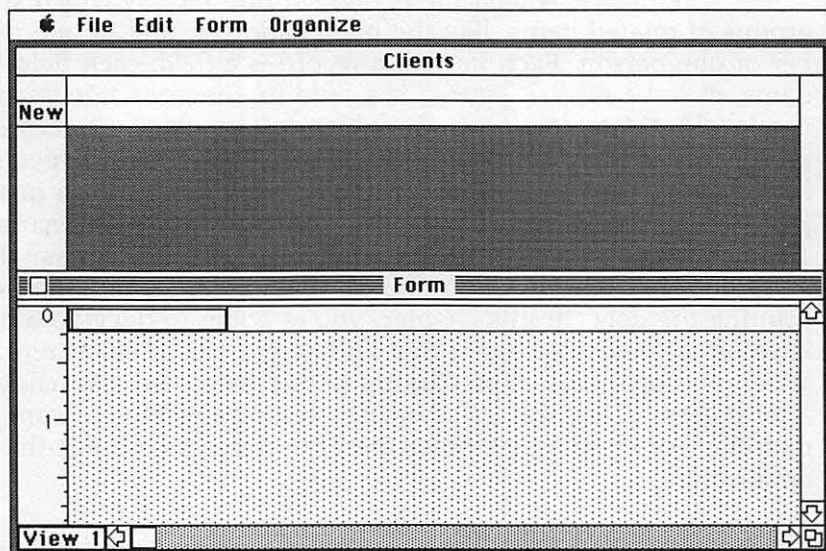
Figure 4-1. Starting a Data File



Creating Fields

File's main screen shows two windows, one labeled *Clients*, the other *Form*. The *Clients* window is the *Datafile* window, where you'll enter the information to be stored in each record. The *Form* window in the lower half of the screen is used not only to design various forms, but to define the fields you'll use in each record.

Figure 4-2. Two Windows



When you first set up a data file, you must think ahead and decide what kind of information will be stored. Figure 4-3 is a sample form that shows everything the insurance agent wants to store in each record.

Type	
<input checked="" type="radio"/>	Text
<input type="radio"/>	Number
<input type="radio"/>	Date
<input type="radio"/>	Picture

Later, you'll design this exact form for the Client data file; first, though, you have to set up the fields. There's a blinking cursor in the box in the *Form* window. To get started, just type **FirstName** and press Return. A dialog box appears so that you can choose the *type* of field. As you create each field, you must define its *type*, according to the kind of information it will contain. The possibilities are Text, Numeric, Date, and Picture. (Later, you can format each field, deciding on style, font, justification, and so on.) Since *Text* is already selected, and this is a text field, just press Return again.

Figure 4-3. Full-Page Form

James Jones	1001	Home: 555-6789
1715 Eagle Drive		Work: 555-8936
Elmwood, NJ	07864	
Birthday: Jan 13, 1942		Occupation: Teacher Employer: Elmwood Twsp
Spouse: Mary Ellen		
CrossRef: 1002		
.....		
	Homeowner	Auto
Policy#	H3 87936039	A2 65980-098
Type	3	2 cars
Renew Date	Oct 5, 1986	Dec 7, 1985
Premium	\$347.00	\$687.00
		Life
		LT 989-7809
		term
		Jan 1, 1987
		\$198.00
.....		
Comments		
<div style="border: 1px solid black; height: 100px; width: 100%;"></div>		
.....		
Annual Premiums	\$1232.00	Commission \$61.60

The field labels that you type switch to boldface when you're finished; a heading of the same name appears in the *Datafile* window. The blinking cursor is waiting in a newly created box; this is the *New* field, which is always available so that you can add a new field to your record design. Type **LastName** and press Return twice. This bypasses the dialog box and saves some time. As you enter new field names, the *Form* window scrolls horizontally so you can always see the *New* field; the *Datafile* window will not scroll, but the labels are still being created. Now, add the following as *Text* fields:

Street	CityState	Zip	HomePhone
WorkPhone	Occupation	Employer	SpouseName

Type
<input type="radio"/> Text
<input checked="" type="radio"/> Number
<input type="radio"/> Date
<input type="radio"/> Picture

Since number fields cannot contain anything except numeric characters (numbers, commas, decimals, and dollar signs), telephone numbers are defined as text fields. A zip code should also be defined as text, because a number field will not hold a leading zero, such as is in 07461. Now, add a number field: type **id#** and press Return once. Click in the *Number* button and press Return again.

Notice that the label is printed to the right of the field box; numbers (and their labels) are automatically right-justified, although you can change this when you're formatting the field. The agent will use the *id#* field to cross-reference some of the records. For instance, two clients may have a joint homeowner policy, but separate life insurance policies. Duplicate information will not have to be entered in the data file, yet the agent will be able to check on all the policies held by any family.

Now, create the cross-reference field. Make it a number field, but use this shortcut: type **Ref1**, press Return, the letter *N*, and Return again. The *N* selects the *Number* button in the dialog box. A date field is needed for the client's birthday. Type **BirthDate**, and press Return, the *D* key, and Return again; this will select the *Date* button in the dialog box. Our hypothetical agent wants to keep track of three kinds of policies for each client: Homeowners, Auto, and Life. For each policy, the agent wants to keep track of the following information: policy number, policy type, renewal date, and annual premium.

Set up these fields as the types noted:

Information	Field Type
HO Policy	Text
HO Type	Text
HO Renewal	Date
HO Premium	Number
Car Policy	Text
Car Type	Text
Car Renewal	Date
Car Premium	Number
Life Policy	Text
Life Type	Text
Life Renewal	Date
Life Premium	Number

For the final entries, create a Text field named *Comments*, and two numeric fields: *Total* and *Commission*.

Making Corrections

As you're typing field names, you can backspace and retype the name. Once you've pressed Return, however, you can't do that kind of correction; you must make any later corrections through a *Format* window. Scroll the *Form* window back to the left so that you can see the *FirstName* field, and double-click in it. The *Format* window which opens presents you with several options. You can correct the label, format it, and even change its type.

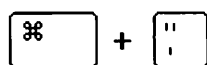
Figure 4-4. File Formatting

Label corrections and format changes can be done at any time. Changing the field type, however, can be done only during the original setup; once you have entered information into the data file, you can no longer change the field type. Click the *Cancel* button for now. If you chose the wrong type for any field you created or misspelled any field name, you can take a minute now to open a *Format* window and make the correction. Leave all the other options at their current settings for now.

Entering Data

Since fields can be formatted at any time, you can enter some information into the data file now and choose the formats later. Activate the *Datafile* window by clicking anywhere in it, or by closing the *Form* window. There's a record labeled *New*, with a

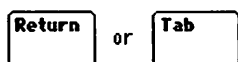
blinking cursor in the first box, under the heading *FirstName*. Type **James** and press Return; the cursor moves to the second box. As soon as you type, a record number appears (in this instance, 1), and the *New* record shifts down a line. Continue entering data into the fields to match the information in the first column in Table 4-1; when a field is to be left blank, just press Return. Keep typing when you reach the edge of a field box—the text will scroll. You can adjust the size of the boxes later. Press Enter when you're finished, and the cursor goes to the first field in the *New* record.



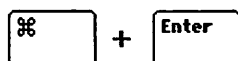
copy down

Type **Mary Ellen** in the first field of the *New* record and press Return. Using the information in Table 4-1, complete the second record.

Anytime you want a field in the current record to repeat information from the previous record, press the Command key (⌘) and the quote key ('). Continue entering the information from Table 4-1, using this copy-down option wherever the information matches. Enter the information for the other records as shown so that you have ten records with which to work. If you want to go back and change or correct any data you've entered, you can move around in the *Datafile* window with the Return, Command, Enter, and Option keys, as shown.



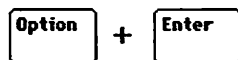
Next field



Same field, next record



First field, next record



Record one screen down

Adding the Shift key reverses the effect of the key sequence: Shift-Return selects the previous field, Shift-Enter selects the first field of the previous record, and so on. You can copy the contents of one field into any other field by using the *Copy* and *Paste* commands. (The Command-quote option works only when you want to copy from the same field in the previous record.) Select the field that you want to copy from, and choose *Copy* from the *Edit* menu; select the field you want to copy to, and select *Paste*.

Table 4-1. Insured Clients' Information

Field	Record 1	Record 2	Record 3	Record 4	Record 5
FirstName	James	Mary Ellen	Jeremy	Robin	Gerald
LastName	Jones	Jones	Clifford	Zimmerman	Zimmerman
Street	117 Eagle Dr	117 Eagle Dr	3 Balder St	27 Hollow Rd	27 Hollow Rd
CityState	Elmwood, NJ	Elmwood, NJ	Halifax, NJ	Cliffside, NJ	Cliffside, NJ
Zip	07864	07864	07198	07305	07305
HomePhone	555-6789	555-6789	555-3829	555-2837	555-2837
WorkPhone	555-4567	555-9756	555-2358	555-5702	555-4857
Occupation	Teacher	Teacher	Doctor	Cust	Rep Writer
Employer	Elmwood	Elmwood	self	Bell	self
SpouseName	Mary Ellen	James	Norma	Gerald	Robin
id#	1001	1002	1018	1015	1020
Ref1	1002	1001		1020	1015
Birthdate	Jan 13,1942	May 17,1948	Sep 17,1934	Apr 15,1955	Jun 19, 1952
HO policy	H3 87936039		H2 87363033	H3 84624003	
HO type	3		2	3	
HO renewal	Oct 5,1986		Oct 2,1986	Nov 5,1986	
HO premium	\$347		\$327	\$540	
Car policy	A2 65980-098		A3 87435-483		
Car type	2 cars		3 cars		
Car renewal	Dec 7,1985		Jun 4,1986		
Car premium	\$687		\$845		
Life policy	LT 989-7809	LT 989-6834	LT 329-4857		LT 567-4373
Life type	term	term	whole		whole
Life renewal	Jan 1,1987	Mar 15,1988			
Life premium	\$198	\$172	\$750		\$892

Field	Record 6	Record 7	Record 8	Record 9	Record 10
FirstName	John	Sarah	William	Cathy	Jeremy
LastName	Messineo	Billings	Dykstra	Gretzky	Gretzky
Street	14 Taylor St	87 Krump Rd	19 Penny Ln	907 Misty Rd	907 Misty Rd
CityState	Dover, NJ	Halifax, NJ	Orange, NJ	Orange, NJ	Orange, NJ
Zip	07302	07198	07893	07893	07893
HomePhone	555-2907	555-9736	555-3750	555-3947	555-3947
WorkPhone	555-1945	555-1944	555-8823	555-0037	555-0345
Occupation	Mason	Accountant	Store Mgr	X-Ray Tech	Lab Tech
Employer	self	Ace Accnts	A&P	Orange Gen	Orange Gen
SpouseName	Joanne			Jeremy	Cathy
id#	1007	1024	1009	1014	1025
Ref1				1025	1014
Birthdate	Nov 1,1953	Sep 23,1955	Aug 1, 1947	Sep 25,1950	Mar 14,1947
HO policy	H2 98685850			H1 73643957	
HO type	2			1	
HO renewal	Feb 27,1986			Feb 7,1986	
HO premium	\$632			\$575	
Car policy		A3 08678-954	A2 98736-865	A2 96365-8744	
Car type		3 cars	2 cars	2 cars	
Car renewal		Jan 5,1986	Aug 15,1986	Nov 25,1985	
Car premium		\$940	\$827	\$684	
Life policy	LT 964-9875				LT 874-8732
Life type	whole				term
Life renewal					May 25, 1989
Life premium	\$945				\$208

Designing the Form

It's time to design the form so that the information will be presented effectively. Choose *Show Form* from the *Form* menu, and the *Form* window reappears. The *List Helper* option in the *Form* menu has kept your fields in the linear form you've been using so far. This is the most convenient form for creating the fields at the start, and for the initial entry of data. A simple horizontal listing of data, however, is not the best way to view your records or to print them. Select *List Helper* from the *Form* menu—since it's already selected, choosing it now toggles it off. The main form the insurance agent needs is a single sheet of paper with all the information on it, as shown by Figure 4-3. The first thing to do is size and position the fields as needed. Next, you'll create *independent labels* to identify some of the items on the form. Finally, you'll format each of the fields. To make room in which to work, the dotted gray area of the *Form* window—the *hide area*—has to be moved down. Place your cursor on the bottom edge of any field until the cursor changes shape so that only two vertical arrows are showing. Press the mouse button and drag the hide border down to the bottom of the window. Scroll the window and drag the hide line down further; scroll and drag again, until the line is at the 8-inch mark. Now there is room to size and place the fields as shown in Figure 4-5.

Because the *Form* window includes a ruler to help you place fields accurately, you see less on the screen than you will on a standard-width paper. As you're working, you can use the scroll controls to move to the section of the window that you want. At any one time, you'll be able to see a little less than half of the form you're designing, as Figure 4-6 shows.

Moving and Sizing Fields

To move a field, click in it and drag it to the desired spot. If you drag a field to the edge of the window, the window scrolls. You can select more than one field at a time in order to move them together. One way to select multiple fields is to click in one field and press the Shift key before you click in subsequent ones. Alternatively, you can enclose the desired fields in a selection rectangle by beginning the rectangle in the white area of the screen and pulling the lines across all the fields you want to include, much like you see demonstrated in Figure 4-7.

Figure 4-5. Size and Place

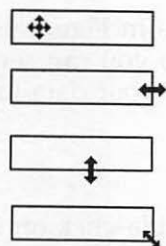
The form layout is defined by the following fields and their approximate vertical positions:

- Row 0:** **FirstName**, **LastName**, **id#**, **HomePhone**, **Street**, **WorkPhone**, **CityState**, **Zip**
- Row 1:** **BirthDate**, **Occupation**
- Row 2:** **SpouseName**, **Employer**
- Row 3:** **Ref 1**
- Row 4:** **HO policy**, **Car policy**, **Life policy**
HO type, **Car type**, **Life type**
HO renewal, **Car renewal**, **Life renewal**
HO premium, **Car premium**, **Life premium**
- Row 5:** **Comments** (large text area)
- Row 7:** **Total**, **Commission**

The bottom of the form (between rows 7 and 8) is shaded with a stippled pattern.

Figure 4-6. What You See

Figure 4-7. Field Box Selection



To resize a field, place the cursor at the right or bottom edge, or at the bottom-right corner of the box; the cursor will change from the cross used for field selection to one of three shapes, depending on where you place it. The cursor with the vertical arrows lets you make the field deeper so that it is able to hold more than a single line of text. Place the cursor on the bottom edge of the field box and drag down. If you put the cursor on the right edge of a field box, it will change to a double horizontal arrow, allowing you to drag right or left to change the length of the box. Placing the cursor at the bottom-right corner of a field box means you can adjust both length and depth at the same time—the cursor changes to diagonal arrows when you position it correctly. If you have multiple fields selected and change the size of one, the others will also be changed. Move the fields around and size them until they match Figure 4-5.

Creating Independent Labels

unselected

selected

The field boxes you've been moving around have labels in them that describe the fields into which you can enter information in the *Datafile* window. You can also create independent labels that do not define data fields in a record, but that will appear in every record to label certain fields or groups of fields. Look at Figure 4-3 again; the words in boldface are independent labels, as are some of the other labels on the form. To create an independent label, click in any free space in the white area; a blinking cursor appears. Just start typing—begin with the label **Home**. As soon as you begin typing, the word is boxed. Independent label boxes differ from field boxes: they have two thin lines across the top, with dotted lines completing the rectangle. To select this type of box, click in the area between the two top lines. A selected independent label will have a black bar across its top.

Once an independent label is selected, you can resize or move it just like a field box. Type the following labels, making the boxes slightly larger than the words they contain. (Note: An independent label can have the same name as a field label.)

Home	CrossRef:	Renew Date
Work:	HomeOwner	Premium
Birthday:	Auto	Comments
Spouse:	Life	Annual Premiums
Occupation:	Policy#	Commission
Employer:	Type	

Place each label in the appropriate spot, as shown in Figure 4-8.

Click in the *Close* box of the *Form* window so you can see the *Datafile* window. Except for fonts and formatting, your data looks much like Table 4-1.

Formatting Options

Style

- ☐ Border
- ☐ Underline
- ☐ Bold
- ☐ Italic
- ☐ Commas

Choose *Show Form* again and double-click on the title bar of the *Form* window so that it expands to full-screen size. Each field can have a variety of formats, as you know from seeing the *Format* window in Figure 4-4. Style, alignment, and index formats are available for all but picture fields. The style options available are the standard italic, bold, and underline, with a border option also available.

Figure 4-8. Independent Labels

0 **id#** **Home: HomePhone** **Work: WorkPhone**

FirstName LastName **Street** **CityState** **Zip**

1 **Birthday: BirthDate** **Occupation: Occupation** **Employer: Employer**

2 **Spouse: SpouseName**

3 **CrossRef: Ref 1**

4 **Policy#** **HomeOwner: HO policy** **Auto: Car policy** **Life: Life policy**

Type **HO type** **Car type** **Life type**

Renew Date **HO renewal** **Car renewal** **Life renewal**

Premium **HO premium** **Car premium** **Life premium**

5 **Comments: Comments**

6

7

8 **Annual Premiums: Total** **Commission: Commission**

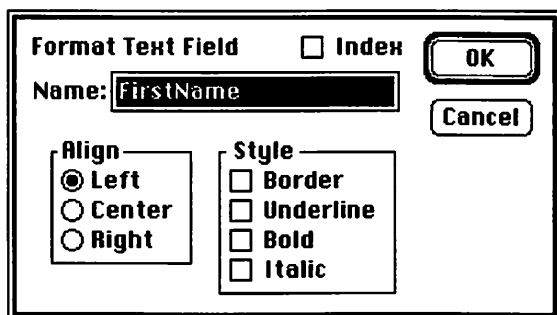
- Align**
- ☐ Left
 - ☐ Center
 - ☐ Right

All fields have borders to begin with—that's why they appear in boxes in the *Datafile* window right now. (Independent labels, which are always treated as text, can be formatted, too; they default to no border, but you can add a border if you want.)

You can choose from right, left, or center alignment, and the field contents will be placed appropriately in the field area you define.

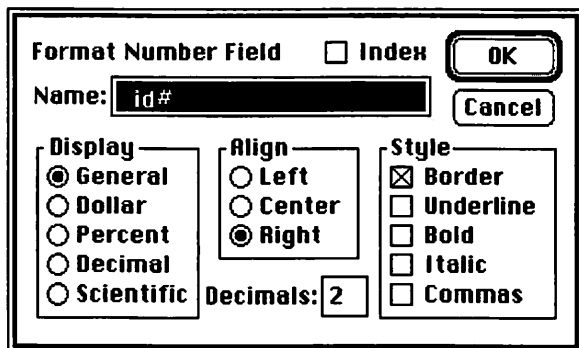
Indexed fields make searching and sorting faster. Index the field(s) you are most likely to sort by or search for. Don't use the index option unnecessarily, because the index file takes up disk space. You should, however, index at least one field in a record because *File* can then add new records to the data file more quickly. Other options are available only for specific types of fields. Since you've entered data into the data file, you can no longer change the field type; when you open a *Format* window for a field now, you'll get an abbreviated window whose contents will depend on the type of field you are formatting. Text fields have only style and alignment options. Text fields are originally left-justified; you can change this to center or right-justified through the *Format* window.

Figure 4-9. Text Fields Formatting



Number fields have the same style and alignment options as text fields; number fields default to right-justification. There are additional format options so you can choose how the number will appear.

Figure 4-10. Number Fields



The *General* display option prints a number the way you type it; *Dollar* adds two decimal places and the dollar sign; *Percent* adds the percent sign (you must enter the number as a decimal—.5 for 50 percent); *Decimal* keeps the display at the number of decimals you specify in the *Decimal* box; and *Scientific* display uses scientific notation for large numbers. Another option for number fields is that of *computed field*: the value placed in the field will depend on the formula you provide. The formula can refer to any other number field(s) in the record. A number field cannot be both computed and indexed; if you choose one option, the other will dim so that you can no longer select it. If you open a *Format* window for a numeric field that already has information in it in any record, the computed field option will not be available—only *File* itself can put information into a computed field. Date fields, in addition to having style and alignment options, can be defined to appear in one of three forms.

Display	
<input type="radio"/>	Short
<input type="radio"/>	Medium
<input type="radio"/>	Long

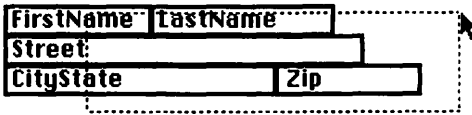
The short form appears as 1/25/86. The medium form abbreviates the month: *Jan 25, 1986*. The long form prints out the entire name of the month: *January 25, 1986*. When you select a form for a date field, you're defining how the date will appear, not

how you must enter it; you can enter it in any of the forms, and it will appear as specified. When you're entering a date into a record, if you specify only the month and day, *File* fills in the current year; if you specify only the day, *File* fills in the current month and year. If you press the Command key and the minus sign key, *File* fills in the current date—month, day, and year.

Formatting the Fields

Although you work with field labels in the *Form* window, the fields themselves are what you're formatting. Except for justification, the formatting options you choose will not show in the *Form* window, but will be applied to the data entered in the *Datafile* window. Double-clicking on any field opens its *Format* window. When you want to assign the same format to multiple fields, you can select them and open a single *Format* window. Begin a selection rectangle underneath the *CityState* field and drag upward until the two name fields and all the address fields are highlighted.

Figure 4-11. Multiple Field Selection



To open the *Format* window, double-click in any of the selected fields, choose *Format* from the *Form* menu, or press Command-D. Turn the *Border* option off for all the selected fields by clicking in the check box; the X will disappear. Close the *Format* window and double-click in the *LastName* field to open the *Format* window again. Since records will often be sorted by last name, click in the *Index* field box. Select all the following fields using the Shift-click method, and turn off the *Border* option:

HomePhone
WorkPhone
Birthdate
Occupation
Employer
SpouseName

Since date fields default to the medium display, there's no need to format the *Birthdate* field separately; its border can be taken off as you format the whole group of fields. Open a *Format* window for the *id#* field; index it and turn off the comma option. The *CrossRef* field should also be formatted to exclude commas, but it should *not* be indexed. The three premium fields (HO Premium, Car Premium, and Life Premium) can all be formatted together: leave *Border* on, turn off the commas, and choose *Dollar* format. The *Total* field is going to be a computed field that keeps track of all the premium payments a client makes during the year. Double-click on the field to open the *Format* window. Choose *Dollar* format, no border, no commas, and check the *Computed* box. Enter the following formula:

HO premium + Car premium + Life premium

The *Commission* field is also a computed field. Set it for dollars, no commas, no border, and bold print. Click in the *Computed* box and enter this formula:

Total*.05

The asterisk is used for multiplication; this formula calculates 5 percent of the total annual premiums.

Formatting the Independent Labels



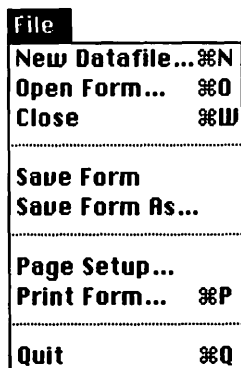
Independent labels are formatted in the same way as fields. It's sometimes difficult to select an independent label, since you have to be so accurate with the placement of the cursor; drawing a selection rectangle is often quicker

even if you need to select only a single label. First, format the *Home* and *Work* labels for italics. Next, do a multiple selection: *Birthday, Spouse, CrossRef, Occupation, Employer, HomeOwner, Auto, and Life*. A quick way to do this is to select the first three in one rectangle, hold down the Shift key while you trace a rectangle that includes the next two, and, while the Shift key is still down, put another rectangle around the last three. Instead of changing the format, change the font: Select *Set Font* from the *Form* menu, choose *Chicago, 12 point*, and click OK. Now, skip down to the *Comments* label, select it, and choose *Set Font* again. Leave the font as *Geneva*, but change the size to *9 point*. When you're back in the *Form* window, alter the depth of the *Comment* label box so that it fits the new fontsize, and move the box down closer to the *Comment* field.

Final Touches

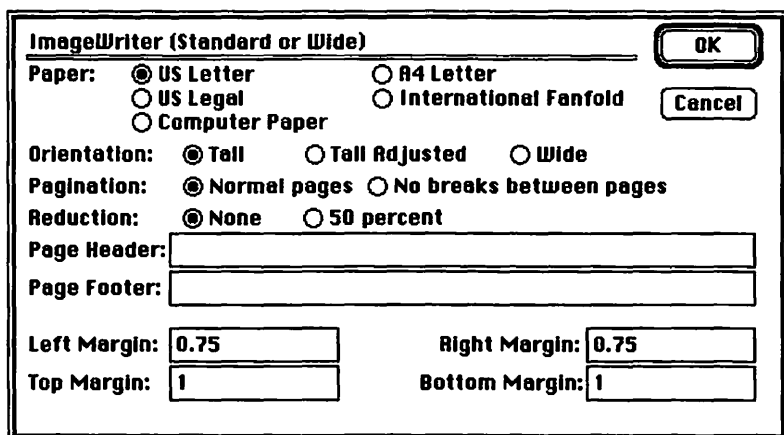
If you take a look at your *Datafile* window now, you'll see that with the exception of the circles that separate sections of information, your screen looks just like Figure 4-3. To add the circles, go back to the *Form* window and click in the area above the policy information. Hold down the Shift and Option keys, and press the 8 key—you need about 85 circles to make the line. Since you set a 9-point fontsize for the last label, that's still in effect. Select this label when you're finished typing and format it for 12-point size. Drag the right edge of the label box over to the edge of the form so the entire line of circles will show. To make the other two dividing lines without typing them, you can copy the one you just made. Place the cursor within the label, making sure the I-beam cursor is showing; double-click to highlight the contents of the label box. Choose *Copy* from the *File* menu, click where you want the next line to be, and choose *Paste*. The full line of dots will be placed in a new label box, but the box will have to be enlarged so that you can see it all. Paste another copy near the bottom of the form, under the *Comments* box.

Printing Forms



Many of *File*'s menus change depending on which window is active. When the *Form* window is active, the choices in the *File* menu refer to forms rather than records. Your first job in printing a form is to choose the page parameters. Make sure the *Form* window is active and choose *Page Setup* from the *File* menu.

Figure 4-12. Page Parameters



The *Paper* and *Orientation* choices are the same as in other Macintosh applications. Leave them at the defaults of *US Letter* and *Tall*. Leave the margins at their default settings, too. In addition to these options, you can define a header or footer (or both) for the page. Any or all of the following formatting commands can be incorporated into the header or footer:

&L = Left align
 &R = Right align
 &C = Center align
 &P = Page number
 &D = Date
 &T = Time

For this printout, type the following in the header box:

&L&T&CClientForm&R&D

This header will have the current time at the left, the title "ClientForm" in the center, and the date at the right. Note that since the date is taken from the Macintosh's internal clock, it's always the date of the current printout, not the date on which you originally created the form. Now you can choose *Print Form* from the *File* menu and print the form in the quality you prefer.

Printing Records

Activate the *Datafile* window so that you can print your records. Choose *Page Setup* again; leave the basic options at their default settings. The new options that appear in this window are for record printing only. Select *Print Record Number* so that each record will be numbered. Turn off *Print Grid Lines*; this option prints a solid line between each record on the page. Since the form you designed takes a whole page, there's no need to have grid lines. Turn off the *Mailing Label* option; its effect will be explained later, when you print mailing labels. Change the header to **&L&P&CClient Records&R&D**

This will put the page number at the left, the title "Client Record" in the center, and the current date at the right.

Saving Forms

Your data file is automatically saved as you enter information; that's why you never need to use a *Save* command to save records. The form you design is also automatically saved with the data file. In fact, two views of the form are saved: the one you designed, and a *List Helper* version. If you click in the *View 1* in the lower-left corner of the *Form* window, you'll see the second view. (The second view does not have to be a *List Helper*; you can design a form in this second view window.) Command-T also toggles you back and forth between views, in both the *Form* and *Datafile* windows. Since many different forms can be used with a single data file, you can save forms separately instead of with the data file. Make sure the *Form* window is active, and select *Save Form As* from the *File* window. When the dialog box appears, type **ClientForm** and click *Save*.

Another Form

Now you're going to design another form for the insurance agent, one that gives the bare essentials of information on each client. The easiest way to do this form is to start from scratch. Pull down the *Form* menu and choose *List Helper*. A dialog box may appear, asking if you want the current form saved with the data file. Since you just saved the current form separately and want the new design to be saved with the data file, click *No*. Your form will change to a *List Helper* form. Turn off *List Helper* again so that you can design another form. Pull the hide line down to the 2-inch mark. Create the labels and arrange the fields as shown in Figure 4-13.

Figure 4-13. Another Form Design

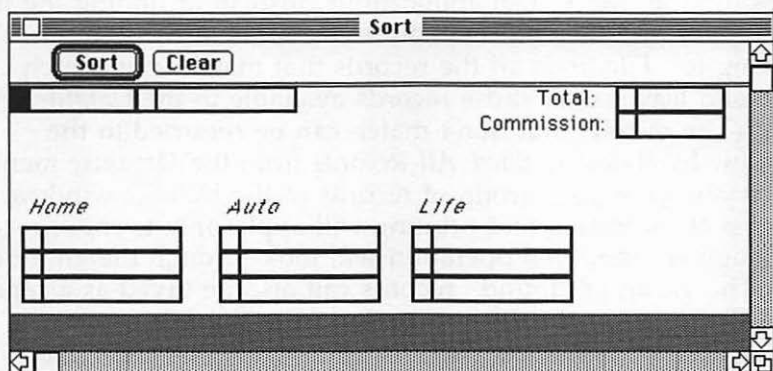
Client			
1	James	Jones	Total: \$1232.00 Commission: \$61.60
	<i>Home</i>	<i>Auto</i>	<i>Life</i>
	H3 87936039	A2 65980-098	LT 989-7809
	Oct 5, 1986	Dec 7, 1985	Jan 1, 1987
	\$347.00	\$687.00	\$198.00
<input type="checkbox"/> Form			
0	FirstName	LastName	Total: premiums Commission: Total
1	<i>Home</i>	<i>Auto</i>	<i>Life</i>
	Ho policy	Car policy	Life policy
	HO renewal	Car renewal	Life renewal
	HO premium	Car premium	Life premium

All the fields not used for this form must be dragged down into the gray hide area. The information in these hidden fields is not lost from the data file; it just no longer shows in the window. You'll have to make the following format changes to get your new form to match the one in Figure 4-13: For first and last names, take off the borders and add boldface; italicize the policy titles; and take the borders off the two computed fields in the upper-right corner. With a form design only two inches deep, you can see two forms on the screen at all times; this is convenient for scrolling through the data file more quickly.

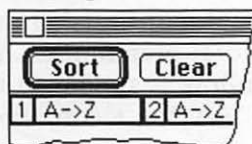
Sorting

You can arrange your records in any order during a *File* session. When you reopen the data file, the order won't be preserved, but it's a simple matter to sort the records again. To sort the records alphabetically by last name, select *Sort* from the *Organize* menu—the *Sort* window appears. If you enlarge the window (you don't need to now), you would see boxes placed just as the fields and labels are arranged on your form. The portion showing now is the *FirstName/LastName* area of your form.

Figure 4-14. *Sort* Window



The boxes in the *Sort* window are divided into two sections. The small section will contain a number that indicates the *priority* of the sort on that field. You might, for instance, sort records by last name and want them subsorted by first name in case records contain the same last name. The larger section will hold a phrase that indicates whether the sort is in descending or ascending order. Click in the box that corresponds to the *LastName* field. A 1 appears in the small box, and A->Z in the larger area. The 1 indicates that the first level of the sort will be made on this field; A->Z shows that the sort will be in normal alphabetic order. Since some of the customers have the same last name, define the *FirstName* field as the second-level sort. Click in the box that corresponds to *FirstName*; a 2 and A->Z appear.



Now click the *Sort* button, and the records will be sorted as specified. Scroll through the records to see the sort's effect.

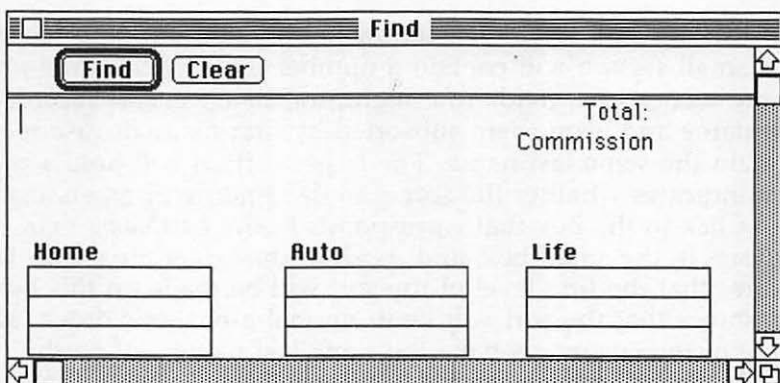
Total:	1 9->1
Commission:	

The next sort will be by total premiums, with the highest listed first. Open the *Sort* window again, and click on the *Clear* button; this erases your last sort criteria. Scroll the window until you can see the box for the *Total* field. Click in it, and 1 and 1->9 appear. Click again in the large area of the box, and the numbers reverse to 9->1, showing that the sort will be made from highest to lowest; click the *Sort* button.

Searching Through Records

The *Find* option in *File* works a little differently from similar options in other Macintosh applications. Instead of finding the first occurrence and then subsequent occurrences of the items you're looking for, *File* finds *all* the records that match your search criteria and leaves only those records available in the *Datafile* window. (The records that don't match can be returned to the window by choosing *Show All Records* from the *Organize* menu.) Once you have a subgroup of records in the *Datafile* window, options such as sorting and printing will apply only to those records, although another *Find* operation will look through the entire data file. The group of "found" records can also be saved as a separate data file by using the *Save As* option from the *File* menu.

Figure 4-15. The *Find* Window



The first search you're going to try is one that finds all the clients who pay less than \$1,000 a year in total premiums. Choose *Find* from the *Organize* menu. The *Find* window is similar to the *Sort* window in that it's patterned after the way the record ap-

pears; however, there are no boxes for the fields unless you formatted them to have borders. This can be a little confusing when you want to type in a field that has no border or independent label identifying its spot. Expand the *Find* window so that you can see the entire record; notice that the blinking cursor is in the spot which corresponds to the *FirstName* field.

Press Return twice; the cursor moves through the *LastName* field and into the *Total* field. Since you want to see records with totals under \$1,000, simply type

<1000

Click the *Find* button, and *File* will find the six records that meet this criterion. (The total number of records always appears in the lower-left corner of the screen.) You can use all the standard relational operators in *File*:

> greater than
< less than
>= greater than or equal to
<= less than or equal to
= equal to
<> not equal to

These operators can be used on numeric, text, or date fields.

There's also a "range" operator. If you want to find all the records with total premiums from one to two thousand dollars, you would use

1000...2000

in the *Total* field.

The equals operator does not have to be used; if you type a word or number in the field area with no operator at all, *File* assumes you want an equals match. And, if you are searching for a match, you can look for more than one thing at a time in a single field by separating things with a comma. For example,

Mary,Molly

in the *FirstName* field will find all the records with either of those entries.

"Wild cards" can also be used during a *Find* operation. A wild card takes the place of one or more characters in the search criteria. The asterisk stands for any number of characters. **C*** in the *LastName* field finds all the clients whose names begin with C. A question mark is used when a single character is missing: **B?LL** would retrieve Bill, Ball, Bell, and so on. (*File* does not differen-

tiate between upper- and lowercase when it's searching through records.) Multiple criteria can be used in a *Find*: clients who have both auto and life policies, or clients whose names begin in the first half of the alphabet, pay more than \$1,000 a year in premiums, and have both auto and life policies. Simply type in what you want in each field of the *Find* window and let *File* do the rest.

Let's assume the insurance agent gives more attention to larger accounts. It's October, and the agent wants to send a personal letter to any client whose homeowners policy is up for renewal—if the client has a large account. Open the *Find* window; type >1000 in the *Total* field and Oct* in the *HO renewal* field. *File* finds the two clients who need special attention this month. For a final search, find all the clients who have life, but not homeowners, insurance. Type L* in the *Life policy* field and <>H* in the *Homeowners policy* field. *File* finds the three clients who fit this description. These criteria work because all the life policies begin with the letter L and all homeowners policies with H; when you want to search your own records in a similar manner, you'll have to decide what to use. If, for instance, you wanted records that were blank in a certain field, but that field might contain any alphabetic character if it's filled in, you could tell *File* to select records that have <A in that field.

Mailing Labels

File cannot print mailing labels more than one across, so you must have single-column labels for your printer. You'll have to experiment with the mailing-label form you create to get the right fit. Our agent uses mailing labels that are divided into two parts, the upper part holding the agent's name and address, the lower part the client's name and address. Switch to the second view of the current form; the mailing label will be the alternate view stored with the data file. Take off *List Helper*, and drag the hide line down to the 2-inch mark. Hide all fields except the name and address. Lengthen the remaining fields so that even the longest entry in any record will fit comfortably. Stack the fields appropriately, and place them at the 1-inch mark. Select all the fields, open a *Format* window, and turn off the border option. Create three independent labels for the agent's return address: **B. J. Sloane/134 South Street/Elmwood, NJ 07843**. Make all the label boxes the same size, and stack them over the field labels. Select all three independent labels and format them for *Bold* style, *Center* alignment.

Figure 4-16. Mailing-Label Form

Zip
default format

Zip
new format

The mailing label, as it appears in the *Datafile* window, has gaps between the first and last names and between the contents of the *CityState* field and zip code. When you choose *Page Setup* and click in the *Mailing Label* box, *File* will remove these gaps before it prints the labels. The easiest way to insert a single space between the *CityState* and *Zip* fields is to lengthen the latter to include the space, then format it for right alignment:

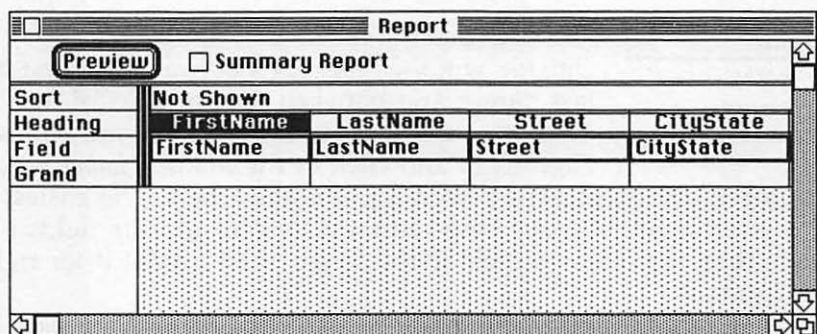
When printing mailing labels, also choose the *No Breaks Between Pages* option from the *Page Setup* window. This will prevent the printer from advancing the labels each time the equivalent of a page has been printed. The final output, printed on bordered labels, looks like this:

Figure 4-17. Gaps Closed

Reports

File's Report function lets you present data in columnar format, similar to the *List Helper* form. The advantage of a report is that it lets you do calculations involving more than one record. Choose *Report* from the *Organize* menu. The *Report* window which opens has four titles in the left margin area: *Sort*, *Heading*, *Field*, and *Grand*. The *Sort* line will later label the ascending or descending sorts you select. In the *Field* line are the fields you defined for this data file; the *Heading* line is identical to *Field* except that the words are centered. The line following *Grand* is empty, since you haven't defined any grand totals yet. You can put a field into one of three areas in a report: *Sorted*, *Not Sorted*, and *Not Shown*. If you've not used the *Report* window at all yet, everything will be in the *Not Shown* area, and the *Sort* and *Not Sorted* areas won't even be visible.

Figure 4-18. *Report Window*



You'll design two reports. The first will show the number of homeowners, auto, and life policies the agent has issued; the average annual premium each insured pays; and the total commissions the agent receives. The second will show how many clients the agent has in each town. The first report doesn't need anything in the *Sorted* area, but it does need five fields in the *Not Sorted* area. Find the *HO premium* field by scrolling horizontally. Select it and drag it to the left. A vertical line will appear on the screen as you drag—this line indicates where the field will be placed when you let go of the mouse button.

Continue dragging to the left (the window will scroll automatically) until the vertical line is covering the black bar in front of the *Not Shown* area.

Release the mouse button, and the field appears in the *Not Sorted* area. Do the same with the *Car premium* and *Life premium* fields, and the *Total* and *Commission* fields, until they're all in the *Not Sorted* area. The headings are the titles that will appear at the top of the columns in your report. They default to the field title, but you can change them with the usual Macintosh editing techniques. Click in the first three headings and change them to read **HO**, **Car**, and **Life**. The length of each field in the report can be changed.

Place the cursor on the right edge of the first premium field and drag it to the left until it's about two-thirds its former size. Do the same with the other premium fields. The fields in a report are formatted independently of the *Form* window formats. Select the three premium fields by Shift-clicking, and double-click on one to open the *Format* window. Select dollar, no commas, and center alignment. Format the *Total* field for dollar, no commas, and right alignment. Format the *Commission* field for dollar, no commas, bold, and right alignment. Now it's time to let *File* know what kind of calculations you want done. Place your cursor in the *HO* column, in the *Grand* row, and double-click. This box is called a *summary field*, and the window which opens allows you to indicate what calculation it will hold. (Although the window says "Format summary field," this is not the kind of formatting you did for fields in a form.)

Function
<input type="checkbox"/> Total
<input type="checkbox"/> Count
<input type="checkbox"/> Average
<input type="checkbox"/> Minimum
<input type="checkbox"/> Maximum
<input type="checkbox"/> Std. Dev.

Since you want to know how many home-owners policies there are, click in the *Count* box and then click *OK*. Do the same for the other two premium columns. When you get to the *Total* column, format the summary field for *Average*, so *File* will print the average premium paid by each client. The *Commission* summary field should be formatted for *Total*. Each summary field shows the function that you chose for it. Now, click in the *Preview* button, and *File* will show you on the screen how your printed report will look.

When you actually print the report, you can use the *Page Setup* command to add a header or footer to each page, as you did earlier.

Figure 4-19. Preview Your Report

Preview				
HO	Car	Life	Total	Commission
\$347.00	\$687.00	\$198.00	\$1232.00	\$61.60
		\$172.00	\$172.00	\$8.60
\$327.00	\$845.00	\$750.00	\$1922.00	\$96.10
\$540.00			\$540.00	\$27.00
		\$892.00	\$892.00	\$44.60
	\$940.00		\$940.00	\$47.00
	\$827.00		\$827.00	\$41.35
\$575.00	\$684.00		\$1259.00	\$62.95
		\$208.00	\$208.00	\$10.40
\$632.00		\$945.00	\$1577.00	\$78.85
Total:				\$478.45
Count: 5	5	6		
Average:			\$956.90	

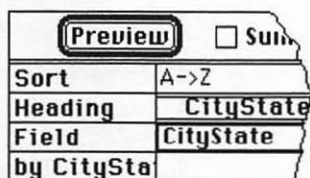
Saving the Report

Just as one form (with two views) is always saved with a data file, one report design is also automatically saved. A report can also be saved separately, by choosing *Save Report* from the *File* menu. There are new options in this dialog box: *Specification* and *Text Output*. *Specification* saves the template that you designed so you can use it again with the data file. *Text Output* saves the text of the report, formatted in columns as it appeared in the *Preview* window, so you can use it with Microsoft Word or as a new data file. Select *Specification* for now, and save the Report under the name *Policy Report*. Now choose *New Report* from the *File* menu. If a dialog box appears asking if you want the current report saved with the data file, click *No*, because you just saved it separately. When the *New Report* command is given, the *Report* window reverts to its original state.

A New Report Design



This report will count the number of clients in each city. The *CityState* field has to be placed in the *Sorted* area for this to work. Drag the *CityState* field to the extreme left of the screen until the vertical gray line is past the black bar which holds the *Not Sorted* area.



When you release the button, the *CityState* field is in the *Sorted* area, *A->Z* appears as the column heading, and a new item appears in the left margin: *by CityState*. When a field is placed in the *Sorted* area, not only will the information

in the report be sorted by that field, but things will also be grouped by that field, as you'll soon see. If you want a reverse sort, just click on the *A->Z*, and it changes to *Z->A*.

When the phrase *by fieldname* appears in the left margin, summary fields are placed under each column in the report in the new row. This means you can now find the number of clients in each city or the average premium paid by clients in each city or any other summary field format according to the cities which appear in the records. Drag the *LastName* field to the *Not Sorted* area—make sure it's long enough to accommodate any name in the data file. If you do this report using only the *LastName* field, *File* will count how many different last names are in each city. Since you want to count clients, and some share a last name, move the *id#* field into the *Not Sorted* area, too. The *CityState* and *LastName* fields don't need any format changes; however, you should double-click on the *id#* field and set its format for no commas and left alignment. Change the *CityState* heading to **Location**, the *LastName* heading to **Clients**, and erase the *id#* heading, leaving it blank. Now, double-click in the summary field under *id#* (across from *by CityState*) and select *Count*. Preview your report

now and you'll see that clients have been listed in groups according to the city in which they live. The total number of clients for each location is also given.

Figure 4-20. Summary Fields for Subtotals

Preview		
Location	Clients	
Cliffside, NJ	Zimmermann	1015
	Zimmermann	1020
	Count for Cliffside, NJ:	2
Dover, NJ	Messineo	1007
	Count for Dover, NJ:	1
Elmwood, NJ	Jones	1001
	Jones	1002
	Count for Elmwood, NJ:	2
Halifax, NJ	Clifford	1018
	Billings	1024
	Count for Halifax, NJ:	2
Orange, NJ	Dykstra	1009
	Gretzky	1014
	Gretzky	1025
	Count for Orange, NJ:	3

Return to the *Report* window and click in the *Summary Report* box. A summary report gives you the totals without listing intermediate information; in this case, you'll get the number of clients per city without the clients' names. Also, add a *Grand Summary*: format the summary field under *id#*, in the *Grand* row, for *Count*. Preview again to see the *Summary Report*, with clients per city and total number of clients listed.

Figure 4-21. Summaries Without Details

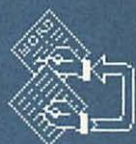
Location	
Cliffside, NJ	2
Dover, NJ	1
Elmwood, NJ	2
Halifax, NJ	2
Orange, NJ	3
<hr/>	
Count:	10

Printing Reports

When you want to print a report, you'll find a new option in the *Page Setup* option: *Start a new page when first column changes*. If you chose this option for the last report you designed, each time the name of the city changed, the paper would be advanced to the next page. The other *Page Setup* options remain the same as for other printing procedures in *File*; you can choose paper and orientation options, and define headers and footers. When you want to print more than one report, you can do so from the desktop if you've saved the report forms separately from the data file. Just select the reports you want printed and choose *Print* from the *File* menu; the reports will be printed in the order they appear on the desktop. The data file itself, and the *File* application, must be on an inserted disk in order for this to work.

Chapter 5

Merging with *Word*



Merging with Word

Sharon Zardetto Aker



The ability to produce large numbers of letters, and produce them quickly, can be invaluable to any office. Reaching every client or customer by mail can be effective and efficient, especially if you let your computer and printer do most of the work for you.

With Microsoft *Word* and your Macintosh, you can personalize letters as much as you want. You can even generate letters based on lists taken from data files you've already created with Microsoft *File*. This integration makes your Macintosh, and thus your MacOffice, even more powerful.

Word's Merge

Word has special *merge commands* that let you combine the text in one document (called the *main document* here) with information in another document (the *merge document*). Very often, your main document will be some kind of form letter, while the merge document will be a list of names, addresses, and related information. Microsoft's applications were designed to work together, so the information you've put into *File* can be made available to *Word* as a merge document. You can also create a merge document from within *Word*. This chapter draws on the insurance agent's data file that was designed in Chapter 4. (If you have that information in a *File* data file already, continue with the next section in this chapter, "Making a File Merge Document." If you don't have the data file, read through the next section, but prepare a merge document as explained in "Making the Merge Document in Word.")

Making a File Merge Document

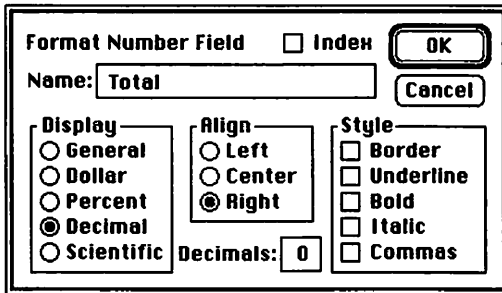


Microsoft File

When you want a *File* document to be read by *Word*, you have to save it in a special format. Open *File*, and load the *Client* data file from Chapter 4. In addition to saving the data file as a merge document, there are a few things that must be changed to make the document more useful during the merge process. When the *Client* data file is opened, choose *Show Form* and select

the *Total* field; double-click in it to open the *Format* window. Select *decimal* as the format and put in a zero for the number of decimals.

Figure 5-1. Reformatting the *Total* Field



The image shows a 'Format Number Field' dialog box. At the top, it has the title 'Format Number Field', an unchecked 'Index' checkbox, and 'OK' and 'Cancel' buttons. Below the title is a 'Name:' label followed by a text box containing 'Total'. The main area is divided into three sections: 'Display', 'Align', and 'Style'. The 'Display' section has radio buttons for 'General', 'Dollar', 'Percent', 'Decimal' (which is selected), and 'Scientific'. The 'Align' section has radio buttons for 'Left', 'Center', and 'Right' (which is selected). The 'Style' section has checkboxes for 'Border', 'Underline', 'Bold', 'Italic', and 'Commas'. At the bottom, there is a 'Decimals:' label followed by a text box containing '0'.

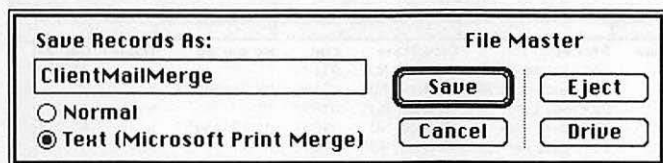
When you do comparisons with *Word*'s merge option, you can compare only whole numbers. By specifying zero decimal places, the *Total* field shows only whole numbers. Now, choose *List Helper* to line up the fields in the *Form* window and add three text fields: **Home?**, **Car?**, and **Life?**. Rearrange the fields until they're in this order:

FirstName
LastName
Street
CityState
Zip
HO policy
Home?
Car policy
Car?
Life policy
Life?
Total

Drag all the other fields into the hide area. The new fields are going to be used as "yes/no" fields. Activate the *Datafile* window and enter a **y** in the *Home?* field in each record that has a homeowner's policy; enter **n** if there's none. There's one exception—in Sarah Billings's record, enter **n** in *Car?* even though she has an auto policy. Complete the *Car?* and *Life?* fields similarly. You can save the data file as it is now or sort it by last name before you save it. If you want your records in a specific order when you merge them in *Word*, they have to be sorted while still in *File*. To

save the data file, choose *Save As* from the *File* menu. You'll be asked if you want to save the changes with the data file; click *No*—the changes were only for this merge document, not for the data file itself. When the *Save* dialog box comes up, click the button for *Text (Microsoft Print Merge)* and save it as **ClientMailMerge**.

Figure 5-2. Save the Altered Data File as Text



Since both the merge and main documents must be on the same disk, it will save time if you save this document directly to the disk you'll be using while working in *Word*.

Making the Merge Document in *Word*



Microsoft Word

To get an idea of how a merge document looks, take a look at Figure 5-3. It shows one created by *File*.

Figure 5-3. Hard to Read

ClientMailMerge						
0	1	2	3	4	5	6
FirstName	LastName	Street	CityState	Zip	Ho policy	Home?
Car policy	Car?	Life policy	Life?	Total		
Sarah Billings	3487	Krump Road	"Halifax, NJ"	07198	""	n
A3 08678-954	n	""	n	940		
Jeremy Clifford	387	Baldwin Street	"Halifax, NJ"	07198		
H3 84624003	n	""	n	540		
William Dykstra	89	Penny Lane	"Orange, NJ"	07893	""	
n A2 98736-865	y	""	n	827		
Cathy Gretzky	907	Misty Park	"Orange, NJ"	07893	H1 73643957	
y A2 96365-874	y	""	n	1259		
Jeremy Gretzky	907	Misty Park	"Orange, NJ"	07893	""	
n ""	n	LT 874-8732	y	208		
James Jones	1715	Eagle Drive	"Elmwood, NJ"	07864	H3 87936039	
y A2 65980-098	y	LT 989-7809	y	1232		
Mary Ellen Jones	1715	Eagle Drive	"Elmwood, NJ"	07864	""	
n ""	n	LT 989-6834	y	172		
John Messineo	14	Taylor Street	"Dover, NJ"	07302	H2 97685850	

The words and phrases seem jumbled because the lines don't fit on the screen properly. If you select the entire document, change it to a 9-point font, move the right margin to the 9-inch mark, and place tabs at intervals, it's easier to see how the information is stored.

Figure 5-4. After Formatting

ClientMailMerge							
FirstName	LastName	Street	CityState	Zip	Ho policy	Home?	Car po
Sarah	Billings	3487 Krump Road	"Halifax, NJ"	07198	""	n	A3 086
Jeremy	Clifford	387 Baldwin Street	"Halifax, NJ"	07198	H3 84624003	n	""
William	Dykstra	89 Penny Lane	"Orange, NJ"	07893	""	n	A2 987
Cathy	Gretzky	907 Misty Park	"Orange, NJ"	07893	H1 73643957	y	A2 963
Jeremy	Gretzky	907 Misty Park	"Orange, NJ"	07893	""	n	""
James	Jones	1715 Eagle Drive	"Elmwood, NJ"	07198	H3 87936039	y	A2 659
Mary Ellen	Jones	1715 Eagle Drive	"Elmwood, NJ"	07198	""	n	""
John	Messineo	14 Taylor Street	"Dover, NJ"	07893	H2 97685850	y	""
Gerald	Zimmermann	27 Hollow Road	"Cliffside, NJ"	07893	""	n	""
Robin	Zimmermann	27 Hollow Road	"Cliffside, NJ"	07893	H2 87363033	y	A3 874

ClientMailMerge				
Car policy	Car? Life policy	Life?	Total	
A3 08678-954	n	""	n	940
""	n	""	n	540
A2 98736-865	y	""	n	827
A2 96365-874	y	""	n	1259
""	n	LT 874-8732	y	208
A2 65980-098	y	LT 989-7809	y	1232
""	n	LT 989-6834	y	172
""	n	LT 964-9875	y	1577
""	n	LT 567-4373	y	892
A3 87435-483	y	LT 329-4857	y	1922

Each record, or group of information, is in a single paragraph; the items in the records are separated by tabs, and the end of each record is indicated by an invisible "Return" character. (You can see the Return characters if you choose *Show Paragraphs* from the *Edit* menu.) The field names, or *headers*, are shown in bold-face and occupy the first line of the document. They, too, are separated by tabs and end with a Return. There are quotes around the items in the *CityState* field—any phrase with a comma has to be enclosed by quotes in order to be treated as a single item. Blank fields have a set of empty quotes in them. To create your own merge document right within *Word*, you can type the document to match the one that *File* created; or, using the information shown in the formatted document, you can type the merge document with either or both of the following variations:

- Empty quotes do not have to be used for blank fields—you can tab past the blank fields, leaving them completely empty.
- Commas can be used to separate the fields instead of tabs. That's why an item which contains a comma must be enclosed by quotes—the comma would be mistaken for a field separator. If you use commas instead of tabs, an empty field must be indicated by an extra comma.

The beginning of the first entry could look like this:

Sarah Billings 3487 Krump Road "Halifax, NJ" 07198 "" n

Or it can look like this:

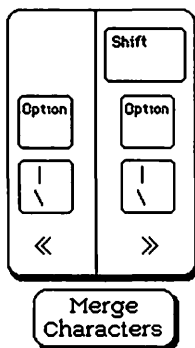
Sarah,Billings,3487 Krump Road,"Halifax, NJ,"07198,,n

Make sure that the field names are on the first line of the merge document. They can be separated by commas instead of tabs, too. Save the document under the name **ClientMailMerge**.

Creating a Main Document

The main document that you write in *Word* contains the text which you want on every printed copy as well as indicators for what is to be inserted from the merge document. Indicate the item you want from the merge document by using its field name enclosed by special merge characters. Using this system, the salutation in a letter might look like this:

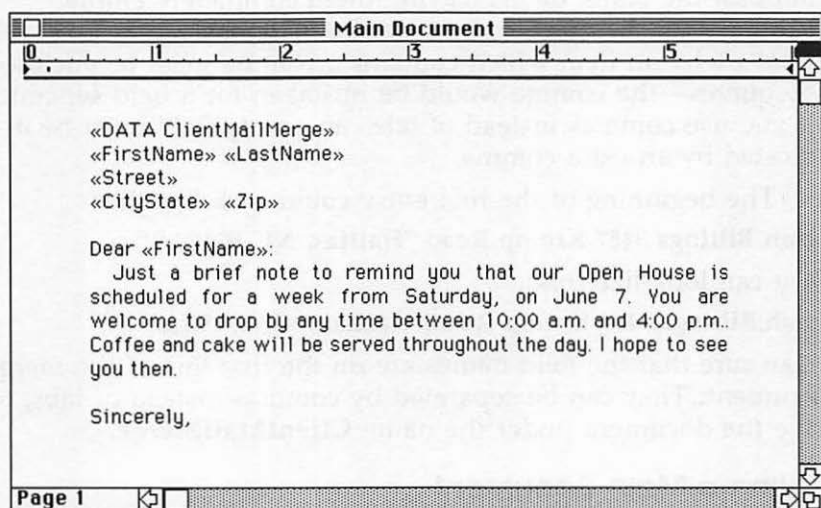
Dear <<FirstName>>,



The opening merge character (<<) is available as the Option-back slash character; the closing merge character (>>) is the Option-Shift-back slash. (The back slash is the one over the right side of the Return key.)

The first line of a main document must be the name of the merge document from which the data is to be obtained. The DATA statement is used, followed by the name of the merge document—all enclosed by the merge characters. The document shown in Figure 5-5 will print out personalized letters to all the agent's clients.

Figure 5-5. Main Document



File	
New	% N
Open...	% O
Close	% W
Save	% S
Save As...	
Page Setup...	
Print...	% P
Print Merge...	
Printer Setup...	
Quit	% Q

There are some important things to note about this document. First, the DATA statement at the top tells *Word* which merge document to use for the information. Notice the space between the merge characters of the *FirstName* and *LastName* fields. This means there will be a space printed between the first and last names in the letter. There's a space between the *CityState* and *Zip* fields for the same reason. A colon immediately follows the *FirstName* field in the salutation—anything *not* enclosed by merge characters is treated as normal text in a *Word* document, so the colon will be printed right after the inserted name. To print out the letters for this document, first save it under any name you wish, then choose *Print Merge* from the *File* menu.

The merge document does not have to be open for the merge to work; *Word* can read it directly from disk. If you have the merge document open, make sure that the main document is in the active window before you choose *Print Merge*. The standard printing options will appear so that you can set the parameters you want. When you click *OK*, ten personalized form letters will be printed.

Figure 5-6. Form Letter

Jeremy Gretzky
 907 Misty Park
 Orange, NJ 07893

Dear Jeremy:

Just a brief note to remind you that our Open House is scheduled for a week from Saturday, on June 7. You are welcome to drop by any time between 10:00 a.m. and 4:00 p.m.. Coffee and cake will be served throughout the day. I hope to see you then.

Sincerely,

You can save the main letter just as you would any document. You might consider identifying *Word* documents as merge or main documents. The merge document has the word *Merge* in it, so you could save this document as *OpenHouseMain*. Using *Merge* and *Main* as suffixes on all such documents will save time later.

Enhancing the Main Document

You can easily add two things to the *OpenHouse* letter to improve its looks. First, the current date can be printed on each letter by using the SET instruction. SET lets you define a field right in the document. Using the new field name later in the main document puts the defined piece of information in all your printed copies.

Change the heading of your letter to:

«DATA ClientMailMerge»

«SET date=May 23, 1985»

«FirstName»

«LastName»

«Street»

«CityState»

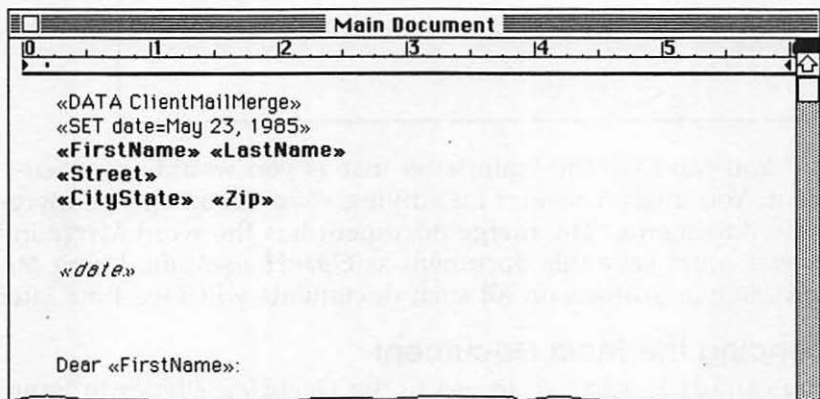
«date»

Dear «FirstName»:

Note that the merge characters enclose both the SET instruction and the definition, and are also used around the new field name later in the letter. As an additional enhancement, you can have the name and address printed in boldface. Whatever style is used for the field name in the main document is the style in

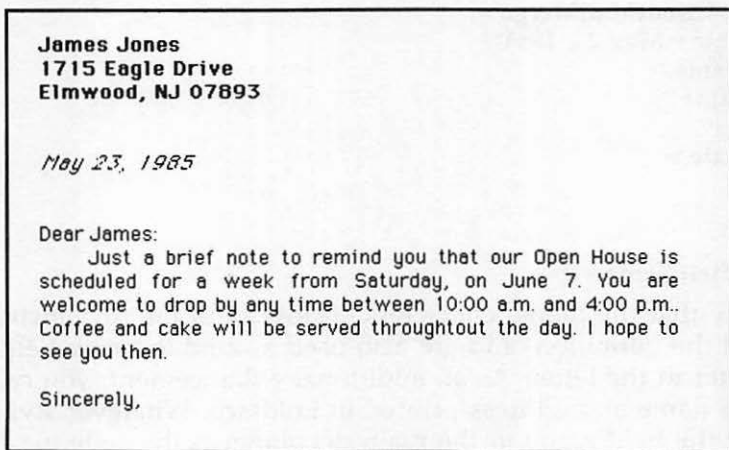
which the items will appear in the finished product. (You can adjust the point size and the font this way, too.) Select the name and address fields and make them bold—either through the *Character* menu or by pressing Command-Shift-B. It doesn't matter if the merge characters are also bold, so you can select all the field names at once, including the merge characters. Also change the date field so that the date appears in italics. The top of your main document now looks like Figure 5-7.

Figure 5-7. Enhancements



Letters printed with this new main document will now be similar to the one shown in Figure 5-8.

Figure 5-8. New, Improved Form Letter



Conditional Instructions

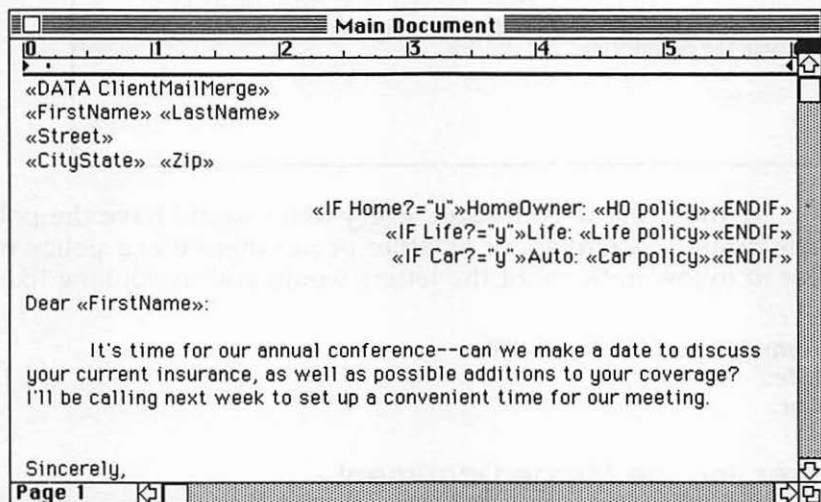
You can create a main document that will have information inserted from the merge document only if a certain condition exists. For such conditional insertions, the IF instruction is used. The IF instruction and the condition are placed between the merge characters. The "condition" is usually one that looks at the contents of some field in the merge document. If you want something printed only if a client has a homeowner's policy, for instance, you would check the *Home?* field:

```
<<IF Home?="y">>
```

When the test condition (the *y* is the test condition in the statement above) is something other than a number, it must be placed in quotes. The text you want included in the letter if the condition is met comes immediately after the merge characters. To print the word *HomeOwner*, followed by a colon and the policy number, you would use

```
<<IF Home?="y">>HomeOwner: <<HO policy>>
```

Figure 5-9. Conditions



The field name *HO policy* is enclosed by merge characters so that the information will be taken from the merge document. Another instruction, *ENDIF*, is placed in merge characters at the end of the conditional text. In the example you've built so far, the *HO policy* field is part of the conditional text, because you want the

policy number printed only when there is a policy. The **ENDIF** instruction thus comes after the *HO policy* field:

«**IF Home?="y"**»**HomeOwner:** «**HO policy**» «**ENDIF**»

This document, with its right-justified lines of IF instructions, will print letters which include the clients' policy numbers in the heading.

This is one of the letters that would be printed when the documents are merged:

Figure 5-10. A Conditional Form Letter

Cathy Gretzky 907 Misty Park Orange, NJ 07893	
HomeOwner: H1 73643957 Car: A2 96365-874	
Dear Cathy:	
It's time for our annual conference--can we make a date to discuss your current insurance, as well as possible additions to your coverage? I'll be calling next week to set up a convenient time for our meeting.	
Sincerely,	

Without the IF command, every letter would have the policy title printed, regardless of whether or not there was a policy number to follow it. Some of the letters would end up looking like this:

HomeOwner: H3 98474-298
Life:
Car:

Correcting the Merge Document

The first letter that's printed out with the last example is one to Sarah Billings, and it has no policy numbers at all; this was the record in which you entered a mistake, putting an *n* in the *Car?* field. Since the merge document, even if it was created by *File*, is a *Word* document, you can easily edit any mistakes. Open the document *ClientMailMerge* and find the *n* in the *Car?* field of the first record.

Figure 5-11. Correcting Mistakes

FirstName	LastName	Street	City	State	Zip	Ho policy	Home?
Car policy	Car?	Life p					
Sarah Billings	3487				NJ 07198	""	n
A3 08678-954	(n)						
Jeremy Clifford	387 Baldwin Street				"Halifax, NJ" 07198		
H3 84624003	n	""	n	""	n	540	

Replace the *n* with a *y*. Assume you noticed in your printouts that Jeremy Clifford's records are not current. Although the latest information has been entered in the *File* data file, that was after this merge document was created. Correct the second record in the merge document to reflect the fact that Mr. Clifford just insured his three cars: Enter the policy number **A3J98766-578**, put a *y* in the *Car?* field, and change the *Total* field to 1357. Now you want to print only two letters, for the corrected records. With the merge document still active, highlight the header (field names) and the first two records and copy them. Open a new document and paste in the copied material. Save the new document under the name *Corrections*.

Go back to the main document and change the DATA statement to

«DATA Corrections»

If you use the *Print Merge* command again, only the two corrected records will be printed, because *Word* will look at the *Corrections* merge document. Since it has served its purpose, you can delete it from your disk at any time—the corrections are permanently stored in the *ClientMailMerge* document. Change the DATA statement back to

«DATA ClientMailMerge»

for the next section.

Or ELSE

A variation of the IF instruction allows you to specify text that should be inserted if the stated condition is not met: the ELSE instruction. The following main document tests for the value stored in *Total*. Since that value is a number, the test condition is not in quotes; and since it's a number, you can use the mathematical symbols for greater than (>) and less than (<), as well as the equal sign.

The agent sends each client a gift for the holidays. The value of the gift is based on whether the client pays more or less than \$1,000 a year in premiums. This one document covers both situations.

Figure 5-12. Gift Document

The screenshot shows a window titled "Main Document" containing a letter template. The template uses merge fields (indicated by double angle brackets) for personalization. The letter is dated November 23, 1985, and is addressed to the client by their first and last names. It informs the client of an open house on December 5 and offers a holiday gift based on their annual premium payment. If the premium is less than \$1,000, the gift is stained-glass window decorations. If it is \$1,000 or more, the gift is a family portrait. The letter concludes with a polite request to join the agency and a postscript about personalized address labels.

«DATA ClientMailMerge»
«SET date=November 23, 1985»
«FirstName» «LastName»
«Street»
«CityState» «Zip»

«date»

Dear «FirstName»:

We want to wish all our customers a happy holiday.
Our agency is hosting an open house on December 5.
Please come by for coffee and cake, and to receive a holiday gift.

«IF Total<1000» You may choose from an assortment of stained-glass window decorations with a holiday theme; come by any time between 12:00 and 2:00.
«ELSE»A photographer will be present to take a family portrait; the beautiful 10 x 13 color portrait will be sent to you within two weeks.Come any time between 3:00 and 6:00.
«ENDIF»
Please join us if you can.

Sincerely,

P.S. Consider the enclosed personalized address labels a "Thank You" for placing your confidence in our agency.

The two letters printed from this form will look like Figures 5-13 and 5-14.

Figure 5-13. Inexpensive Gift Letter

Dear Mary Ellen:

We want to wish all our customers a happy holiday.
Our agency is hosting an open house on December 5.
Please come by for coffee and cake, and to receive a holiday gift.

You may choose from an assortment of stained-glass window decorations with a holiday theme; come by any time between 12:00 and 2:00.

Please join us if you can.

Figure 5-14. Expensive Gift Letter

Dear Jeremy:

We want to wish all our customers a happy holiday.
Our agency is hosting an open house on December 5.
Please come by for coffee and cake, and to receive a holiday gift.

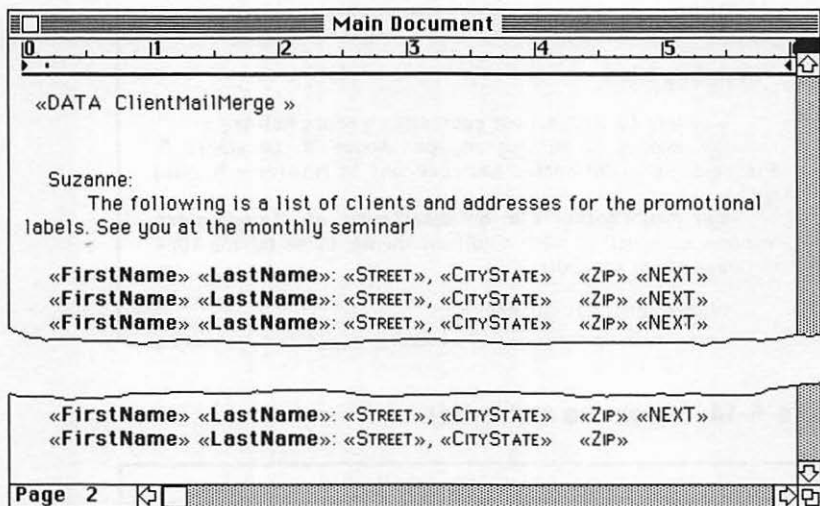
A photographer will be present to take a family portrait; the beautiful 10 x 13 color portrait will be sent to you within two weeks. Come any time between 3:00 and 6:00.

Please join us if you can.

Making Lists

So far, every merge you've done results in a separate printed letter for each record in your merge document. Using the NEXT command, you can get information from *all* the records into a single printed document. Before sending out the holiday letter to all his clients, our mythical agent sent a client list to his manager, since it was her responsibility to provide the labels for sending out the gift letters. The document looked like this:

Figure 5-15. List Document

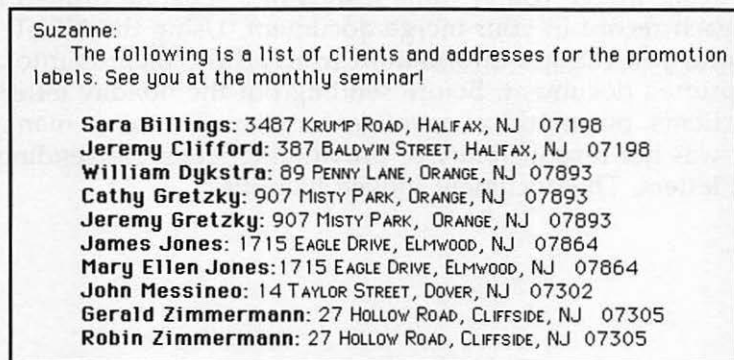


Note that the names are in boldface and the rest of the information is in Word's *Small Caps* option.

When you use the NEXT command, the information in the next record is accessed without a new form being printed. Although you must have one line of information in your main document for every record you want included in the list, it's easy to type the line once, then copy and paste it as many times as necessary. The final line doesn't use the NEXT command at all.

The letter printed by this merge is shown in Figure 5-16.

Figure 5-16. List Letter



Some Final Notes

- When you use *Word's* merge option, it uses every record in the merge document, whether or not it meets the criteria in a conditional merge. It's therefore possible to have an entirely blank piece of paper scrolled through the printer during a print merge operation. If you had used the condition

«IF Total>10000»

not one of the records would have met the condition. Yet, you would still have a page, printed or not, for every record in your merge document. If you want letters printed only for a subgroup of records, select those records while still in *File*, and save the subgroup as a separate merge document.

- The merge commands don't have to be typed in capital letters; they appear in capitals in this text so they'll be easily seen. Any combination of uppercase and lowercase letters is acceptable.
- The field names used in the main document are not case sensitive; that is, *firstname*, *FIRSTNAME*, and *Firstname* will all get the information from the merge document field *FirstName*. However, since spaces are significant, *First Name* would not work.
- A print merge will not work unless the main document has been named; this means you must save the main document *before* the merge operation.
- If you'll be using the merge function with a *File* data file, plan ahead: Sometimes you'll want a *yes/no* field, or a similar construct, to help with the merge. An especially convenient field is a *title* field that would store *Mr*, *Mrs*, *Ms*, *Dr*, and so on, to use in salutations.

Chapter 6

Accounting with *Multiplan*



Accounting with *Multiplan*

Dan McNeill



In 1979, Daniel Fylstra, head of a small Boston software firm, appeared at Apple Computer, Inc., to demonstrate a new program. It was a spreadsheet, an automatic calculating table—and a fundamental innovation. Spreadsheets had never existed on any computer, mainframe or micro, yet they proved to be the first serious business software for personal computers. Fylstra's program, *VisiCalc*, was available only on the Apple II for almost a year. Since it gave many people a compelling reason to buy this machine, it was a major factor behind Apple's success.

Multiplan is one of the best-known spreadsheets in the business. Like all spreadsheets, it displays a grid on the screen, somewhat like the mileage chart on a road map. You enter numbers or letters into the grid and then manipulate them in a variety of ways. Such a program has two virtues which make it well-suited for accounting: large size and formulas.

Spreadsheets can be enormous. A table with only 5 or 6 rows and columns would not profit much from computerization. But most businesses maintain large, ongoing records with numerous subcategories and entries, and for them the capacity of a spreadsheet is essential. *Multiplan* has 63 columns and 255 rows, for a total of 16,065 cells. That's almost 10 percent of the number of pixels on a Macintosh screen, so obviously these cells won't all fit on the display at the same time. Instead, the screen acts like a window onto the vast document beneath. You scroll that document up, down, or across the window, much as you scroll microfilm beneath a viewfinder, to see the whole record. The size of spreadsheets makes it possible to create not only huge single tables, but also to put several related tables on the same sheet for easy cross-referencing.

Formulas give life to the spreadsheet, separating it forever from paper and pencil. If you enter a formula into a cell instead of a number or name, it will automatically calculate the value of the cell as a function of another, or even several, cells. Suppose, for instance, that you want to add up a column of figures. You enter an addition formula in the total cell, and *Multiplan* finds the sum.

When you alter any number in the column, the total changes instantly to reflect it. This power has made the spreadsheet almost essential for financial management.

Spreadsheets *do* demand that you design your own layout, or *template*. This requirement is the flip side of their great adaptability, and at first may seem complex and intimidating. Once you become accustomed to the environment, however, you'll find the challenge not only relatively easy, but perhaps even enjoyable. Template creation is something of an art, but it's an art anyone can master.

In this chapter, you'll see some basic approaches to template design and you'll create three accounting templates yourself. First, however, a bit about *Multiplan*. A good part of the difficulty people sense with template creation is really just difficulty in learning a new program. Fortunately, *Multiplan* on the Macintosh is benign, accommodating software, far easier to use than spreadsheets on non-mouse-driven computers, and you'll grasp many of its powers almost intuitively.

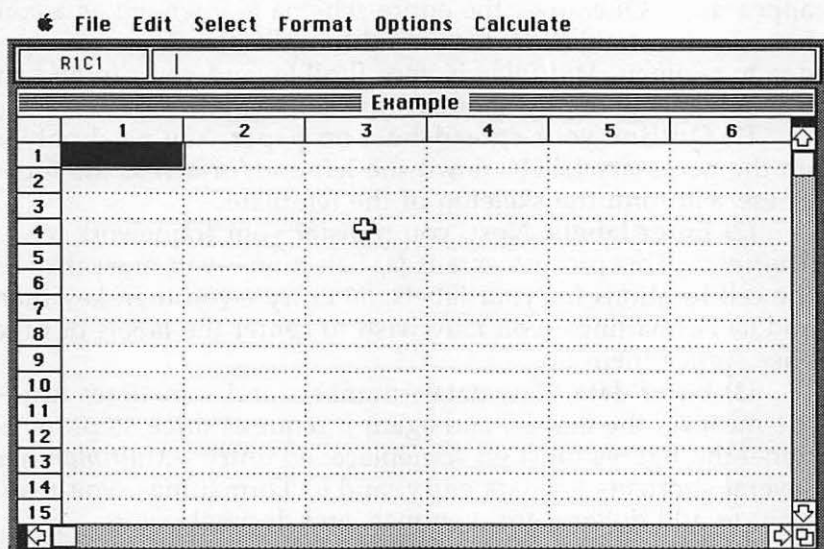
The Face of Multiplan

Spreadsheets like *Multiplan* have a distinctive structure, visible as soon as you bring the program up on the Macintosh screen. A lattice of dotted lines materializes, dividing most of the screen into broad, short cells. Since these cells will contain data which you'll want to refer to in formulas, you have to have some way of naming them.

Hence, down the left appear the numbers 1 through 15, and running across the top, 1 through 6. These are the *row headers* and *column headers*, respectively. They indicate the number of each row and column. The *cell name* derives from the intersection of these rows and columns. *Multiplan* uses the abbreviations R for row and C for column, and so expresses cell names as R1C5 or R53C21. (This terminology is one of the few clumsy aspects of *Multiplan*; most other spreadsheets use the cleaner letter plus number syntax, as in B12.) The terms *row* and *column* may cause some initial confusion, because we occasionally refer to vertical series as rows, so it can take a little time to recognize cell locations instantly. It may help to think of R and C as "Right" and "Chimney," the one being necessarily horizontal, the other vertical. If you are ever unsure of the name of a cell you've selected, check the *cell reference box* in the upper-left corner of the screen. This box always displays it.

When you boot up *Multiplan*, you'll see cell R1C1 darkened, and R1C1 in the cell reference box. *Multiplan* automatically starts you off in the upper left of the spreadsheet—it has to start somewhere. The cell, like all darkened areas, is *selected*, and whatever you type at this time appears in that cell.

Figure 6-1. Your *Multiplan* Screen



To select a different cell, click the cursor—the thick, white cross in the middle of the screen—on a different cell, say, R6C2. It turns dark, and cell R1C1 becomes white.

You may want to see *Multiplan*'s dimensions. To move it horizontally or vertically, use the cursor to pull the squares in the *scroll bars*, on the bottom and at the right. They'll zip you across the entire spreadsheet. You'll also quickly see that the vertical scroll bar is much more sensitive to tugging than the horizontal, because *Multiplan* has so many more rows than columns.

Finally, like most Macintosh programs, *Multiplan* has a line of menu names across the top. Of these, you may find yourself using *Edit* and *Format* most often. In general, *Edit* lets you shift cell contents around, and *Format* adds trappings to them, such as dollar signs and decimal points.

Template Strategy

In a way, designing templates is like juggling. It looks harder than it is, and with practice you develop the reflexes you need. The main key is planning, and the five steps below provide a basic guide to the template-creation process. Especially note that within steps 2 through 4 is a suborder: (a) Selection, or placing the data; (b) Entry, or getting it in; and (c) Formatting, or adjusting its appearance. Of course, the entire schema is intended as a convenience, not a straitjacket. It's an aid to understanding, not a pedantic regimen. *Multiplan* is very flexible, and you can and should take advantage of any shortcut that suits your needs:

(1) Outline your spreadsheet on paper. You need only set up the necessary labels, down the left and/or across the top. These will form the skeleton of the template.

(2) Enter labels. Next, you transfer your framework to *Multiplan*. This process entails (a) Selection—you must first select the cell locations for your labels; (b) Entry—you then key them in; and (c) Formatting—you may wish to center the labels or otherwise spruce them up.

(3) Enter data. Raw data—numbers and sometimes text—is the meat on the matrix, and again it requires three steps: (a) Selection—the figures must go someplace; (b) Entry—*Multiplan* has several shortcuts for data entry; and (c) Formatting—you may want to add dollar signs, commas, and decimal points.

(4) Enter formulas. Formulas are the nerves of the spreadsheet. Here again you go through (a) Selection, (b) Entry, and (c) Formatting. This tidy little order occasionally breaks down, however, since sometimes you must select and enter a formula, then select and enter the raw data it will work on. We'll ignore this problem and treat everything from formula entry on as Entry.

(5) Format the page. Once you've set up the spreadsheet, you may want to embellish it. You can insert extra rows or columns, add a title, alter column widths, and generally make the document more pleasing and easier to read. You can actually format the page at almost any stage in the process, but we'll set it apart and place it last to emphasize its distinctive and global nature.

Let's see these steps in action.

A Simple Spreadsheet

Suppose you're the head of the Wheel of Fortune Sales Company, selling auto parts door-to-door. It seemed like a good idea at first,

but business hasn't prospered, and you're down to two salespeople, Mr. Puget and Ms. Huron. You decide to analyze their performance in Tulsa, Palm Beach, and Elko, the three cities they worked last month. How do you begin?

On Paper, Outline the Spreadsheet

There are two variables: city and salesperson. You can list the three cities down the left of the page and put a TOTAL row beneath them, then list the two salespeople across the top and put a TOTAL column to the right of these. That's all you need. This 4 × 3 grid creates 12 squares for entry of data and formulas.

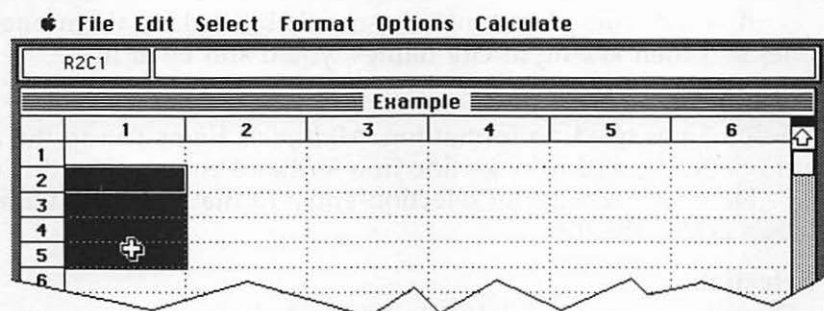
Enter the Labels

Since they form separate blocks—one column and one row—you can do it in two chunks of selection/entry/formatting. First, let's tackle the column:

Selection

- Drag the cursor from R2C1 to R5C1, darkening a four-cell column and leaving cell R2C1 enclosed by a white box.

Figure 6-2. Two Levels of Selection



This, in effect, creates two levels of selection, indicated by the white box and darkened block. The white box shows the entry point, the cell where typed matter will appear. It's the immediate selection. You can move the white box by pressing the Enter key. The darkened column limits the extent of its movement and defines its course. This is the second-level selection, the selection of where the immediate selection will appear.

Why have *two* selection levels? Because it simplifies data entry immensely. If the program lets you define the cells of a data

block beforehand and determine the order of your entries, you can just sit down and type, without having to select-and-enter, select-and-enter, over and over again. It's something like the difference between delivering newspapers in one circular route throughout the neighborhood, and returning home to pick up a paper after each delivery. The Enter key is critical to this time-saving trick. It does two things. First, it actually enters your material into the cell, so you must press it after every entry. Second, it shuttles the white box around, and you therefore have to master its movement pattern, which resembles that of a typewriter carriage. Pressing the Enter key moves the white box one cell to the right if possible. If not possible, the box drops down one row and returns as far to the left as it can. If it can move neither right nor down, it jumps back to the first cell in the block. In the column already selected, the selected box will move downward only.

Entry

- Type **Tulsa** and press Enter. The white box drops to R3C1.
- Type **Palm Beach** and press Enter.
- Type **Elko** and press Enter.
- Type **TOTAL** and press Enter. The white box is now back to R2C1, the starting point.

If you'd entered text into these cells by clicking them one by one, and then keying in city names, you'd still be at it.

Formatting

These names need no formatting. *Multiplan* aligns text to the left automatically, and it looks fine in a lefthand column like this one.

Now let's repeat the selection-entry-formatting cycle with the labels across the top:

Selection

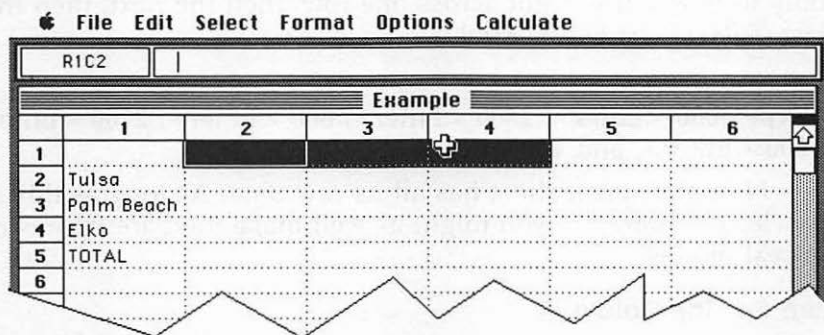
- Drag the cursor from R1C2 to R1C4, darkening a three-cell row (Figure 6-3).

Entry

- Type **Mr. Puget** and press Enter. The white box moves right, to cell R1C3.
- Type **Ms. Huron** <Enter> and **TOTAL** <Enter>.

The names are now entered and, as before, aligned to the left. Here, however, they look awkward, and they'll look downright ugly after you type in the figures. So let's center them.

Figure 6-3. Column Label Entry



Formatting

- Pull down the *Format* menu.
- Release at *Align Center*.

You've now transferred your outline of the spreadsheet to the software, and you're ready to start filling in the gaps.

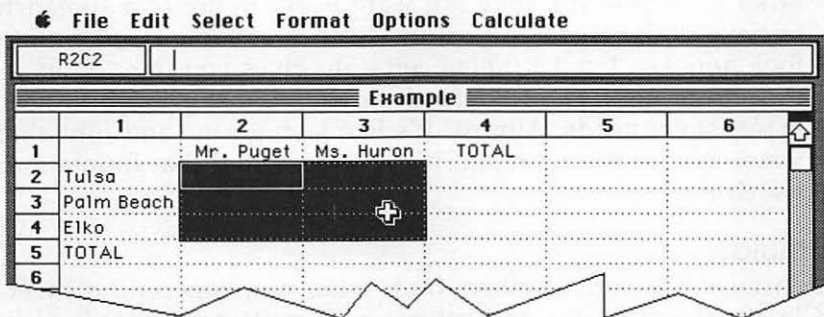
Data Entry

It's easier to enter data after this smattering of *Multiplan* functions. The "data" in data entry refers to static information, figures you already have rather than figures you'll derive. Thus, it will occupy only six cells, three beneath *Mr. Puget* and three beneath *Ms. Huron*.

Selection

- Drag the cursor from R2C2 across and down to R4C3, darkening a rectangle of six cells, as in Figure 6-4.

Figure 6-4. Your Data Block



You've selected the data block. To enter, you need remember only to type left to right across one row, then the next, then the last (*Tulsa, Palm Beach, Elko*).

Entry

- Type 3000 <Enter>, 2500 <Enter>, 800 <Enter>, 2700 <Enter>, 200 <Enter>, and 450 <Enter>.

Now the spreadsheet has all its raw data. As long as this area is selected, however, you might as well make the bare figures refer to real money.

Figure 6-5. The Data Is In

	1	2	3	4	5	6
1		Mr. Puget	Ms. Huron	TOTAL		
2	Tulsa	3000	2500			
3	Palm Beach	800	2700			
4	Elko	200	450			
5	TOTAL					
6						

Formatting

- Choose *Dollar* from the *Format* menu. The numbers now have dollar signs, decimal points, and two extra zeros to the right.
- Choose *Commas* from the *Format* menu. The three numbers greater than 1000 now have the appropriate commas. Choosing *Commas* leaves a little check beside that option on the menu, meaning that *Multiplan* will go ahead and add commas to all other numbers. You may not want every figure in a spreadsheet to have dollar signs and commas, since at some point a cluttered look appears, but *Multiplan* certainly gives you the option.

Entering text and data gives you almost everything the spreadsheet needs. Almost. It's like laying pipe and funneling water toward the fountain. It's time to install that fountain and watch it play.

Formulas

Formulas calculate numbers from other numbers on the sheet. Clearly, the total row and column will contain such derived fig-

ures. And, since every total cell will use the same formula, that for addition, it makes sense to avoid entering that formula repeatedly. Note that here, as with label entry, you'll be entering formulas in two blocks. Start with Column 4.

Selection

- Drag the cursor from R2C4 to R4C4, darkening a three-cell column.

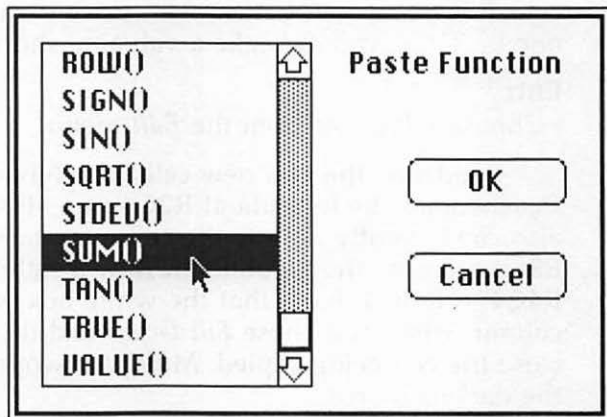
Figure 6-6. Getting Ready for Formulas

	1	2	3	4	5	6
1						
2	Tulsa	\$3,000.00	Ms. Huron	TOTAL		
3	Palm Beach	\$800.00	\$2,700.00			
4	Elko	\$200.00	\$450.00			
5	TOTAL					
6						

Entry

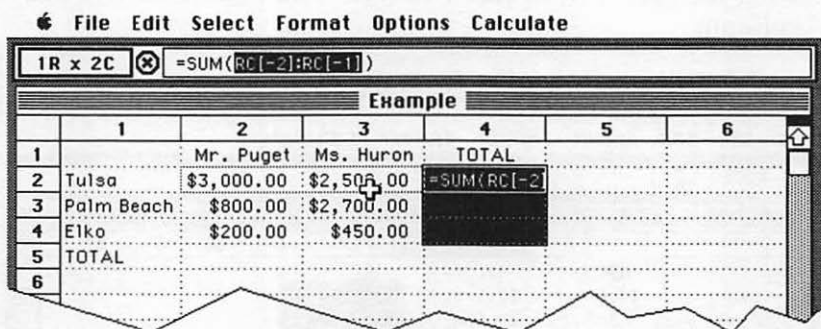
- Choose *Paste Function* from the *Edit* menu. The *Paste Function* box appears, containing a list of formulas you can stick into cells.
- Pull this box's scroll bar down to reveal *SUM()*. This formula adds the contents of a series of *Multiplan* cells.
- Click *SUM()*.

Figure 6-7. Summing



- Click the OK box. `=SUM()` will appear at R2C4. But the formula is not complete. You have to fill in the parentheses, telling it which cells to add. To do that, you must detour briefly into selection again.

Figure 6-8. The Formula's Not Quite Ready



- Drag the cursor from R2C2 to R2C3. A tightly dotted rectangle now encases the two cells, nearly invisible.
- Press Enter.

The formula disappears from R2C4, and in its place is the sum of R2C2 and R2C3. However, the formula remains the bed-rock entry in the computer. The number at R2C4 is merely what the computer displays and prints out. If you change the contents of either R2C2 or R2C3, the amount in R2C4 will change accordingly.

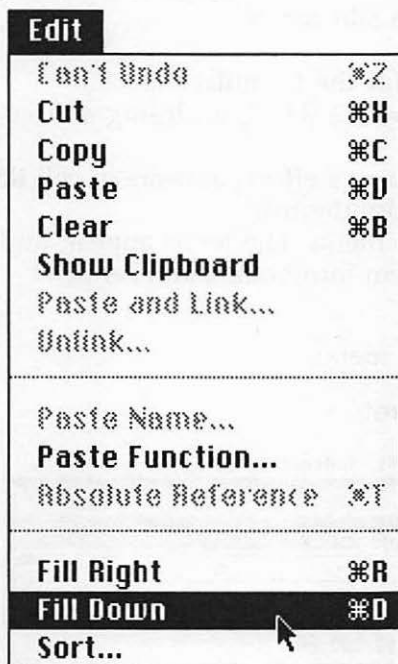
You still need to place the addition formula in the darkened cells R3C4 and R4C4. However, since it's the same formula as the one in R2C4, you can take a valuable shortcut. You can fill down.

Entry

- Choose *Fill Down* from the *Edit* menu.

Suddenly, the two new cells also have numbers in them. *Fill Down* copies the formula at R2C4 into all selected cells below it. It also conveniently adjusts the cell references, so the formula in R3C4 refers to the amounts in Row 3 rather than Row 2, and R4C4 to Row 4. Note that the white box was in the middle of the column when you chose *Fill Down* and thus does not have to enclose the cell being copied. *Multiplan* works from the top cell in the darkened area.

Figure 6-9. Fill Down



Formatting

- Choose *Dollar* from the *Format* menu.

Now the *TOTAL* column looks like the rest of the spreadsheet. Let's use the same procedure to enter formulas into Row 5, across the bottom.

Selection

- Drag the cursor from R5C2 to R5C4, darkening a three-cell row.

Figure 6-10. Totals Block

File Edit Select Format Options Calculate

R5C2

	1	2	3	4	5	6
1		Mr. Puget	Ms. Huron	TOTAL		
2	Tulsa	\$3,000.00	\$2,500.00	\$5,500.00		
3	Palm Beach	\$800.00	\$2,700.00	\$3,500.00		
4	Elko	\$200.00	\$450.00	\$650.00		
5	TOTAL					
6						

Entry

- Choose *Paste Function* from the *Edit* menu.
- Click *SUM()*.
- Click *OK*. Now enter contents for the formula.
- Drag the cursor from R2C2 down to R4C2, enclosing a three-cell column with a dotted line.
- Press *Enter*. The sum of Mr. Puget's efforts appears in cell R5C2. You then copy the formula across the row.
- Choose *Fill Right* from the *Edit* menu. The totals appear, and again you should transform them into dollars and cents.

Formatting

- Choose *Dollar* from the *Format* menu.

Figure 6-11. The Sample Spreadsheet

	1	2	3	4	5	6
1		Mr. Puget	Ms. Huron	TOTAL		
2	Tulsa	\$3,000.00	\$2,500.00	\$5,500.00		
3	Palm Beach	\$800.00	\$2,700.00	\$3,500.00		
4	Elko	\$200.00	\$450.00	\$650.00		
5	TOTAL	\$4,000.00	\$5,650.00	\$9,650.00		
6						

Now you have a *Multiplan* spreadsheet. But look at it. It's crammed into the upper-left corner. Too crowded. The page needs serious enhancement.

Page Formatting

It's best if you first plan your formatting goals. The spreadsheet will look better if you (1) put spaces between Rows 1 and 2, and Rows 4 and 5; (2) dislodge it from the corner and center it; (3) widen the city name column slightly; and (4) give the document a title.

Multiplan has a quick way to add blank rows:

- Place the cursor on Row header 2, one of the numbers on the left.
- Press the *Shift* key. This turns the cursor from a cross to a device resembling a brick with an arrow pointing down from it.

- Click the mouse button. The Macintosh whirs a bit, and Rows 2 and below shuffle down one. The contents of former Row 2 are now in Row 3, Row 3 in Row 4, and so on. The new Row 2 is blank.
- Release the Shift key.

Now place the cursor on Row header 6 and perform the same operation: Shift, click, release Shift. The *TOTAL* row detaches from the rest of the spreadsheet. It's easy at first to get confused about where to place the cursor. It may help to think of the brick-and-arrow cursor as glued to the row header it stands on, prepared to separate it from all above.

Centering the spreadsheet is simple. To add three blank rows at the top, place the cursor on Row header 1, press Shift, and click three times. Three blank rows appear above the document. You can move the spreadsheet to the right by essentially the same method:

- Place the cursor over Column header 1.
- Press Shift. The cursor becomes a brick with an arrow toward the right.
- Click the mouse. The spreadsheet inches to the right one column, leaving Column 1 blank.
- Release Shift.

Next, you'll need to widen the city name column, now Column 2. Again, *Multiplan* has a special feature to perform the task:

- Place the cursor on the right-hand edge of the header of the column you wish to alter. Here, it goes on the line between 2 and 3. Note that again it changes shape, becoming a vertical line with arrows right and left.
- Click and move the cursor to the right as far as you want. Release.

Note that you expand Column 2 at no sacrifice to the other columns, which retain their original width. Moreover, if you want to narrow a column, as you might if it contained, say, a list of two-digit numbers, you simply move the cursor left instead of right.

Finally, let's give the document a title. Call it *Performance of Salespeople* and place it on Row 2. To center it properly, you'll need to begin about two-thirds of the way across cell R2C2:

- Click R2C2.
- Press the space bar until you're about two-thirds across. The cell

stays dark until you type a character, so if you aren't sure where you are, type anything, then press Backspace to erase it.

- Type **Performance of Salespeople**. You'll see only a few letters in R2C2, but the whole phrase appears above in the formula bar to the right of the cell reference box.
- Press Enter. The walls of cells R2C3 and R2C4 disappear, and the entire title appears across the top of the spreadsheet.

Figure 6-12. The Finished Product

File Edit Select Format Options Calculate

R14C5

	1	2	3	4	5	6
1						
2						
3		Performance of Salespeople				
4			Mr. Puget	Ms. Huron	TOTAL	
5						
6						
7		Tulsa	\$3,000.00	\$2,500.00	\$5,500.00	
8		Palm Beach	\$800.00	\$2,700.00	\$3,500.00	
9		Elko	\$200.00	\$450.00	\$650.00	
10						
11		TOTAL	\$4,000.00	\$5,650.00	\$9,650.00	
12						

You now have a real, working spreadsheet, humble though it is. You've gone through the five main steps, and seen several ways of selecting, entering, and formatting material. But there's much more to *Multiplan* than this example suggests.

Some Shortcuts

Multiplan has numerous shortcuts which can save considerable time in creating spreadsheets. These shortcuts can also give you a greater sense of spreadsheet competence and improve your appreciation of the program.

Selection

Multiplan lets you select more than just single cells, short rows and columns, and rectangles. It permits selection of the following items:

Unconnected areas. You can select several separated areas at the same time, then Enter. This feature is very important. For instance, you could have selected both label areas in the example at once and then simply typed in all labels. To do so, you need to (1) select one area, (2) hold down the Command key (⌘), and (3) select all other areas. For instance, in the spreadsheet above, you would:

- Drag the cursor from R2C1 to R5C1, darkening a four-cell column, and release the mouse button.
- Press Command.
- Drag the cursor from R1C2 to R1C4, darkening a separate three-cell row.
- Release Command.

Now, two distinct blocks are selected. Once again, for smooth typing, you have to understand the order in which the white box moves. With two blocks, as here, it simply proceeds through one, then jumps to the upper-left cell of the other. With three or more blocks, the white box follows the order in which you selected the blocks. If your blocks are individual cells, you can return the white box to the starting point after selection by pressing the Enter key.

However, if your blocks are quite large, you have to keep pressing Enter—while the white box progresses through the final block—before it will hop back to the start. You can eliminate this irritation by selecting your second block first, then your third, and so on—and your initial block last.

Irregular areas. You can select irregular areas (like T-shaped areas) by selecting two different blocks adjacent to each other. For entry purposes, however, the computer still sees them as different blocks, and the white box progresses through them one block at a time.

Entire row. To select all 63 cells in a row, click the row header. The row goes dark.

Entire column. To select the 255 cells in a column, click the column header. The column goes dark.

Entire spreadsheet. To select every cell, pull down the *Select* menu and release at *All Cells*. The whole spreadsheet goes dark.

Entry

Multiplan also has several shortcuts for entering information:

Cell copying. *Fill Down* and *Fill Right* replicate cell contents

down or across many other cells. But you may just want to duplicate a cell or block of cells at another location, without releasing a string of clones along the way. You can do so by following a procedure very similar to *Cut* and *Paste* in Microsoft Word:

Selection

- Select the area to be copied.
- Choose *Copy* from the *Edit* menu.
- Click the cursor at the upper-left corner of the area you wish to copy to. An insertion point, a dark cross with its lower and right-hand bars elongated, appears. This marker indicates the area to receive the copied material.

Entry

- Choose *Paste* from the *Edit* menu.

(If you wish to move cell contents without leaving an original behind, choose *Cut* from the *Edit* menu instead of *Copy*.)

Formulas. *Paste Function* provides one way to enter formulas into cells, but there are several others. You can, for instance, simply type the formula in, entering cells by clicking them. For instance:

- Type = (equal sign). You must begin every typed formula with this character. Otherwise, *Multiplan* will think you're entering text.
- Click the first cell of the formula, say, R5C2.
- Type an arithmetic operator, that is, + (addition), - (subtraction), * (multiplication), / (division), % (percent), or ^ (exponentiation). If you want to add, you can omit the operator. *Multiplan* also has comparison operators, such as = and >.
- Click the next cell of the formula, say, R3C6.
- Continue until your formula is complete.
- Press Enter.

When you click a cell, *Multiplan* does not enter its cell name, such as R3C6, but rather directions to the cell, such as RC[-4]. This method means that you can fill down formulas, and they'll refer to the contents of their own rows or columns, as you saw in the example. Instead of clicking cells, you can type their cell names in if you like, and *Multiplan* will carry out the formula. You can also use the *Define Names* option, as *Multiplan's* manual explains.

Retracting mistakes. If you're mortal, you'll occasionally enter a piece of data incorrectly. Whenever you want to take anything back:

- Choose *Undo* from the *Edit* menu.

The exact name of this helpful function changes according to the act it's ready to undo, but it's always the first option on the *Edit* menu. If you undo something, then want it back, you can also undo the undo. However, you can withdraw only the last thing you did. You can't keep choosing *Undo* till you're halfway back through spreadsheet creation. To simply erase a selected cell or block:

- Choose *Clear* from the *Edit* menu.

The *Clear* command is something of a roving garbage disposal, and most people find it very helpful.

Formatting

Multiplan has useful formatting tricks as well:

Changing all column widths. You can alter the width of all columns in a few quick steps:

- Choose *All Cells* from the *Select* menu, darkening the spreadsheet.
- Choose *Column Width* from the *Format* menu.
- Type 16.
- Click OK.

The columns are all now 16 characters wide.

Splitting the screen. You may have reason to work on two, three, or four different parts of the spreadsheet at once. Rather than going back and forth, you can split the screen into different panes and operate on them simultaneously. The more panes you have, of course, the less screen space each will have, though you can set their size. Each pane gives you a window onto the whole spreadsheet, so you could also, if you wanted, examine the same section of *Multiplan* in four different panes. The panes have their own scroll bars, so you can move them around independently of each other. Here's how to create them:

- Place the cursor atop one of the small, black split bars. There are two of them, located to the left and on top of the scroll bars.
- Drag the split bar into the scroll bar. To create two panes of equal size, drag it halfway through. Twin solid lines now bisect the screen, and two scroll bars have appeared where once there was one. By dragging the white square in either scroll bar, you can move the panes about.

This much introduction will take you far. It's still not everything *Multiplan* can offer, but it gives you the groundwork. Let's start creating some elementary accounting templates.

Accounts Receivable

We'll begin with a spreadsheet to keep track of accounts receivable.

The first step is to ask, "What do I want such a spreadsheet to do?" Of course, you want it to indicate the total accounts receivable so that you can post this amount to the general ledger. This task entails adding the debits for a certain period, adding the credits, and subtracting the credits from the debits. As the sample spreadsheet indicates, *Multiplan* will not groan under the weight of this task.

Second, you should be able to isolate individual accounts, to stay up-to-date on their status. A typical accounts receivable ledger contains separate accounts for each customer, and you enter credit transactions into them as they occur. These accounts are physically separate, on different pieces of paper. Conceivably, you could arrange them all alphabetically on one list, with Customer A's debits and credits appearing, then Customer B's, and so on. To maintain alphabetical order on paper, however, you would have to wedge new transactions in between old ones, and the list would quickly become a jumble. On *Multiplan*, this barrier disappears. You can therefore include (a) a means of alphabetizing customers' names and (b) a means of checking the current balance on each customer's account.

Finally, you can add a few optional extras. Suppose you're running a retail furniture outlet. You might want to note the item purchased after each debit. You also might desire some indication of the nature of the credit entries—usually cash, but sometimes returns, allowances, or other things. You would, of course, want the date of each transaction and the posting reference.

A skeleton outline of the spreadsheet is already apparent. In the upper left will appear the *Totals* block: total debits, credits, and overall balance. Conventionally, totals have appeared beneath a column of figures because some person has had to use that column to add them up. But since *Multiplan* calculates figures automatically, you can put totals wherever you want, and the upper left is a salient, easily referenced spot.

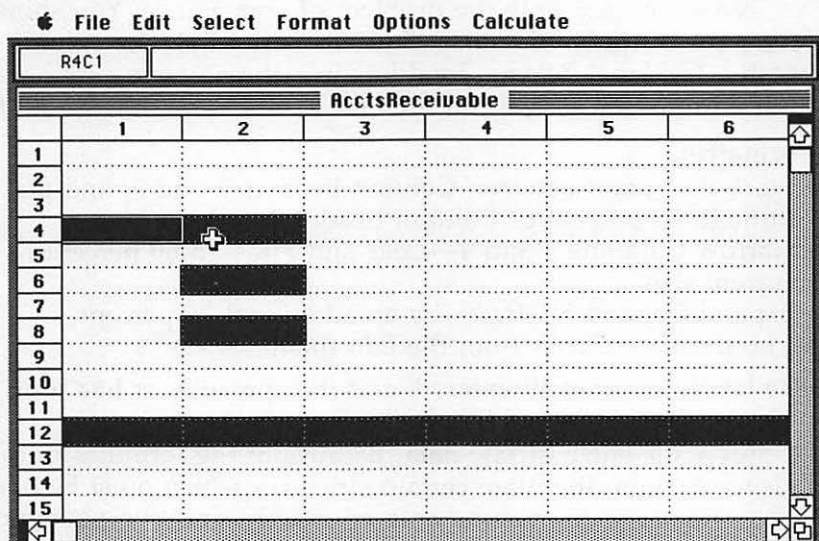
The main block of data will spread out beneath. Each row will be devoted to a single transaction, and the columns will give

you information about that transaction. You can create the following columns: *Date*, *Customer*, *Code*, *P.R.* (Posting Reference), *Item*, *Debit*, *Credit*, *Credit Type*, and *Balance*. To find totals of individual accounts receivable, you have to give each customer a numerical code, hence, the *Code* column. The *Balance* column will contain these running totals themselves.

You could extend the columns further to the right and include information regarding, for example, aging the receivables. For instance, you could create a series of columns for overdue bills, with headings like *1-30 Days*, *31-60 Days*, and so forth, and these might give you valuable information about uncollectibles. But let's stick with the kernel of the spreadsheet here.

Putting the template on *Multiplan* is next. Step 2 involves entering the labels. You'll start by selecting the whole label area at once, going from the second block to the end, and back to the first, so the white box winds up in the upper left, where you want to start.

Figure 6-13. Accounts Receivable Selection



Selection

- Click R6C2, for *Credit Total*. This will be the second block in the string.
- Press Command.

- Click R8C2, for *Balance Total*. This block will come third.
- Drag from R12C1 across to R12C9 and release. This nine-cell label row extends beyond the screen, but when you pull the cursor to the edge, the screen scrolls automatically to the right.
- Drag from R4C1 to R4C2, for *TOTALS* and *Debit Total*.
- Release Command.

The white box is in R4C1, and you're ready to enter.

Entry

There are four blocks here, and so the order of entry must be figured out. The white box goes from R4C1 to R4C2, then jumps. Where? It drops to R6C2, *Credit Total*, which is where you began, and then follows the order of selection.

- Type **TOTALS** <Enter>, **Debit Total** <Enter>, **Credit Total** <Enter>, **Balance Total** <Enter>, **Date** <Enter>, **Customer** <Enter>, **Code** <Enter>, **P.R.** <Enter>, **Item** <Enter>, **Debit** <Enter>, **Credit** <Enter>, **Credit Type** <Enter>, and **Balance** <Enter>.

Now you face only the problem of appearance. You should center these heads, of course. But let's first adjust the column widths. The label *Balance Total* juts into the adjoining cell, and there's no reason to wait till the end to eliminate this irritation:

Formatting

- Place the cursor between Column headers 2 and 3, and pull it through 75 percent of Column header 3. Release.
- Narrow Columns 3 and 4—*Code* and *P.R.*—to 60 percent of their current size.
- Expand Column 5—*Item*—by an additional 75 percent.
- Choose *Align Center* from the *Edit* menu.

The labels are now all entered, and the spreadsheet has rudimentary shape. It should look like Figure 6-14.

Step 3 is entry of raw data. Because of the formulas in the *Balance* column, there are certain strictures which must be obeyed. The customer code must be entered exactly, and two people cannot have the same code. Customer names should not vary, though slightly more latitude is available here. But if you enter an individual once as *Smith, Bill* and next as *Bill Smith*, this spreadsheet will think them different people. Finally, be certain to leave Row 13, the row beneath the main label row, blank. It's more than a matter of esthetics.

Figure 6-14. Accounts Receivable Skeleton

AcctsReceivable								
1	2	3	4	5	6	7	8	9
1								
2								
3								
4	TOTALS	Debit Total						
5								
6		Credit Total						
7								
8		Balance Total						
9								
10								
11								
12	Date	Customer	Code	P.R.	Item	Debit	Credit	Credit Type
13								Balance
14								
15								

Selection

The block for raw data in your model is seven rows deep—there have been seven transactions—and extends from the *Date* column on the left through the *Credit Type* column, Column 8. It does not include the *Balance* column, which will be all formulas.

- Drag from R14C1 down and across to R20C8. This block again covers an area wider than the screen.

Entry

The entry plan here is extremely simple—left-to-right, down, Return, left-to-right. You can also enter the transactions in any order you want, for you're going to arrange them alphabetically and, within each group, chronologically. However, be sure to format dates with two digits for each variable, like 03/08/85 rather than 3/8/85. If you omit the zeros, *Multiplan* will treat 3/11/85 as if it comes before 3/8/85.

- Enter the unordered data (see Figure 6-15).

Figure 6-15. Data Entry

AcctsReceivable								
1	2	3	4	5	6	7	8	9
9								
10								
11								
12	Date	Customer	Code	P.R.	Item	Debit	Credit	Credit Type
13								Balance
14	03/08/85	Deodar, Donna	27	4			300	Cash
15	03/01/85	Cravat, Walter	83	2	Chesterfield	1800		
16	03/10/85	Deodar, Donna	27	2	8-pc. Dinette Set	2800		
17	03/03/85	Auckland, Liz	55	2	Mahogany Desk	900		
18	03/02/85	Deodar, Donna	27	2	Bookcase	280		
19	03/04/85	Auckland, Liz	55	5			900	Refund
20	03/08/85	Cravat, Walter	83	4			625	Cash
21								
22								
23								

Formatting

Now you should sort chronologically and alphabetically. As between two sorts on a list of data, one must take precedence over the other. The dominant sort determines overall rank; the subsort ranks items equal on the dominant sort. The dominant sort is always done last so that it can have finality. The dominant sort here is the alphabetical, so you'll begin with the subsort, the chronological:

- Select R14C1 through R20C1, darkening seven cells in the *Date* column.
- Choose *Sort* from the *Edit* menu. When the dialog box appears, leave it at *Ascending Order*. Now the transactions are displayed chronologically, and you can sort alphabetically.
- Select R14C2 through R20C2, darkening seven cells in the *Customer* column.
- Choose *Sort* from the *Edit* menu. Again, leave it in *Ascending Order*.

Data entry is now complete. Individual customers are isolated, and their accounts displayed in chronological order.

Figure 6-16. Sort Selections for Accounts Receivable

AcctsReceivable									
	1	2	3	4	5	6	7	8	9
9									
10									
11									
12	Date	Customer	Code	P.R.	Item	Debit	Credit	Credit Type	Balance
13									
14	03/03/85	Auckland, Liz	55	2	Mahogany Desk	900			
15	03/04/85	Auckland, Liz	55	5			900	Refund	
16	03/01/85	Cravat, Walter	83	2	Chesterfield	1800			
17	03/08/85	Cravat, Walter	83	4			625	Cash	
18	03/02/85	Deodar, Donna	27	2	Bookcase	280			
19	03/08/85	Deodar, Donna	27	4			300	Cash	
20	03/10/85	Deodar, Donna	27	2	6-pc. Dinette Set	2800			
21									
22									
23									

All you need now are the formulas to quicken the table.

Step 4 involves devising and entering formulas. The formulas here will be of two different degrees of difficulty. The totals formulas will be simple, and those in the *Balance* column somewhat more complex. Let's start with the totals.

You have three totals: *Debit*, *Credit*, and *Balance*. *Debit* and *Credit* totals are simply the sums of Columns 6 and 7, respectively. *Balance Total* is the difference between the two sums. Let's do *Debit Total* first:

Selection

- Click R5C2.

Entry

- Choose *Paste Function* from the *Edit* menu.
- Choose *SUM()*.
- Click Column header 6. You've now entered all of the *Debit* column into the *SUM* formula.
- Press Enter.

The number 5780 appears immediately in R5C2.

Figure 6-17. *Debit Total*

File Edit Select Format Options Calculate

R5C2

=SUM(C1+4)

AcctsReceivable

	2	3	4	5	+	
2						
3						
4	Debit Total					
5	5780					
6	Credit Total					
7						
8	Balance Total					
9						
10						
11						
12	Customer	Code	P.R.	Item	Debit	Cr
13						
14	Auckland, Liz	55	2	Mahogany Desk	900	
15	Auckland, Liz	55	5			
16	Cravat, Walter	83	2	Chesterfield	1800	

Repeat the process for the *Credit Total*:

- Choose *Paste Function* from the *Edit* menu.
- Choose *SUM()*.
- Click Column header 7, selecting the whole *Credit* column for entry into the formula.
- Press Enter. The number 1825 should appear.

Balance Total is a difference rather than a sum, and no formula exists under *Paste Function* for differences. You have to enter the formula yourself:

tomers. If they matched, there would be. However, the *Multiplan* match formula refuses to work with text. It checks only numbers. Hence, you have a column for numerical codes. Hence, too, you need the blank row above the data block; otherwise, the formula will compare numbers to labels and give an error message. The strategy starts to make sense. What you'll do is ask the program to compare the current code with the previous code. If they don't match, you have a new account, and want only debit minus credit. If they *do* match, you have an existing account, and want previous balance, plus debit minus credit.

All this can be accomplished in the IF statement, one of the more complex logic operations available in *Multiplan*. It has a four-part structure. First is the command =IF. Then, within parentheses, are three formulas separated by commas. The first is the condition, the second the action to take if it's true, and the third the action to take if it's false. For instance, suppose you wanted to express

If A equals B, do 1, otherwise do 2


Using the IF statement, you'd write =IF(A=B,1,2).

With all this in mind, here are the steps to follow:

- Click R14C9.
- Type =IF(.
- Click R14C3, the *Current Code*.
- Type =.
- Click the cell above, R13C3, the *Previous Code*. (Note that since *Multiplan* enters cell names in relative terms, it doesn't matter that there can be no previous code here. This formula will work fine on rows further down.)
- Type ,. The comma ends the condition, and now you type in the action *Multiplan* takes if the condition is *true*.
- Click R13C9, the *Previous Balance*.
- Type +. You don't have to type this plus sign, since if you type nothing between clicks, *Multiplan* assumes you want to add. The sign is included here only for clarity.
- Click R14C6, the *Current Debit* cell.
- Type -.
- Click R14C7, the *Current Credit* cell.
- Type ,. This ends the action if true. Now specify the action if the condition is false and the two codes do not match.
- Click R14C6, the *Current Debit* cell.
- Type -

- Click R14C7, the *Current Credit* cell.
- Type). The statement is complete.
- Press Enter. The number 900 should appear in the cell. If you look at the formula bar, you'll see the entire expression as *Mutliplan* understands it.

Figure 6-19. Balance Formula


File Edit Select Format Options Calculate

R14C9

=IF(RC[-6]=R[-1]C[-6],R[-1]C+RC[-3]-RC[-2],RC[-3]-RC[-2])

AcctsReceivable

	6	7	8	9	10	11
9						
10						
11						
12	Debit	Credit	Credit Type	Balance		
13						
14	900			900		
15		900	Refund			
16	1800					
17		625	Cash			
18	280					
19		300	Cash			
20	2800					
21						
22						
23						

Now you need to enter this long formula into the rest of Column 9, so you'll call upon the *Fill Down* function.

- Select R14C9 through R20C9, a seven-cell column.
- Choose *Fill Down* from the *Edit* menu. The column fills up with numbers. All the formulas are entered.

Remember, of course, that you've selected only cells R14C9 through R20C9. You could have extended the fill further down into rows which as yet have no entries. In that case, the formula would give zeros in the new cells, which would change as soon as more transactions were entered. But unless you want a tower of goose eggs in Column 9, you must remember to extend the formula every time you make new entries.

The spreadsheet now lacks only one thing: a title. This omission is easily remedied:

- Click R2C4.
- Type **ACCOUNTS RECEIVABLE** <Enter>.

And that's it. The Accounts Receivable template is done and ready to keep track of the credit you've bestowed.

Figure 6-20. Accounts Receivable Template

RcctsReceivable									
1	2	3	4	5	6	7	8	9	
2				ACCOUNTS RECEIVABLE					
3									
4	TOTALS	Debit Total							
5		5780							
6		Credit Total							
7		1825							
8		Balance Total							
9		3955							
10									
11									
12	Date	Customer	Code	P.R.	Item	Debit	Credit	Credit Type	Balance
13									
14	03/03/85	Auckland, Liz	55	2	Mahogany Desk	900			900
15	03/04/85	Auckland, Liz	55	5			900	Refund	0
16	03/01/85	Cravat, Walter	83	2	Chesterfield	1800			1800
17	03/08/85	Cravat, Walter	83	4			625	Cash	1175
18	03/02/85	Deodar, Donna	27	2	Bookcase	280			280
19	03/08/85	Deodar, Donna	27	4			300	Cash	-20
20	03/10/85	Deodar, Donna	27	2	6-pc. Dinette Set	2600			2780
21									
22									
23									
24									

After a time, you may want to print out the spreadsheet. The screen provides a running indication of how many pages it will occupy, by bold dashed lines. Notice that in Figure 6-20 there are dashed lines between Columns 5 and 6, and 11 and 12. There's also a dashed line after every 39 rows. Since this spreadsheet is 9 columns \times 20 rows, it will fit on two sheets of paper. When you choose *Print* from the *File* menu, the computer will automatically print the left part of the spreadsheet first, then the right. It will, however, give you the entire two pages, down to Row 39. If you want to limit printout to your actual spreadsheet, select it, then click *Selection* in the *Print* dialog box.

You've done one whole, usable spreadsheet. It's very basic, and if you want to expand it, you can easily add more columns to the right. But it *will* work as is. And it leads right into a separate, but related, spreadsheet, one for accounts payable.

Accounts Payable

Accounts payable are, of course, very similar to accounts receivable, except that you owe money rather than anticipate it. You can therefore use the Accounts Receivable template as the framework for an accounts payable spreadsheet.

The first step is to duplicate the existing template:

- Choose *Save As* from the *File* menu.
- Type **AcctsPayable**.
- Click *Save*.

After humming briefly, the Macintosh displays *AcctsPayable* on the title line. Everything else looks the same, but in fact you're now on a completely different spreadsheet. *AcctsReceivable* is stored in memory, and you have the copy, so you can alter it at will.

Now, what do you need to do? First, you need to adjust some labels. *Customer* is no longer apt, so replace it with **Seller**. **AC-COUNTS RECEIVABLE** becomes **ACCOUNTS PAYABLE**, and *Credit Type* becomes **Debit Type**. Get rid of the *Items* column to show a little more of what *Multiplan* can do. (You may very well wish to retain it, with perhaps a new title of *Explanation*, to record the nature of your expenses.) Moreover, since now your credits—your obligations—exceed your debits—your actual payments—you must alter our *Totals* headings and formulas. You must also enter completely new data, easy in concept, wearying in practice. And finally, to act on this data, you need a slightly different Balance formula. Since here you're mainly adjusting a spreadsheet rather than creating one from scratch, you'll proceed from block to block: (1) Labels, (2) Totals block, (3) Data block, and (4) the Balance column, its own little world.

First, change the labels:

Selection

- Click R12C2, *Customer*.
- Press Command.
- Click R12C7, *Credit Type*.
- Click R2C4, **ACCOUNTS RECEIVABLE**. This cell is your starting point.
- Release Command.

Entry

- Type **ACCOUNTS PAYABLE** <Enter>, **Seller** <Enter>, **Debit Type** <Enter>.

Next, clear the *Item* column:

Selection

- Click Column header 5.

of course, leave them in this order. *Multiplan* doesn't care. But then you'd have to change the formula under *Balance Total*, since it subtracts the lower number from the higher. You'd also be stuck with a strange-looking fossil from the accounts receivable document. So let's reverse the labels.

Selection

- Click R6C2, *Credit Total*. (You'll want to start entering data at *Debit Total*.)
- Press Command.
- Click R4C2, *Debit Total*.
- Release Command.

Entry

- Type **Credit Total** <Enter> and **Debit Total** <Enter>.

Now go to the formulas themselves. The only one that needs alteration is the *Debit Total* formula. The formula beneath the new *Credit Total* label adds up the numbers in Column 6, which fortunately is now the *Credit* column by virtue of shifting to the left. It doesn't need to be touched. The formula under *Debit Total*, however, adds Column 7, and instead should be adding Column 5. Hence:

Selection

- Click R7C2. The old formula appears in the formula bar.

Entry

- Choose *Paste Function* from the *Edit* menu.
- Choose *SUM()*.
- Click the header of Column 5, the *Debits* column.
- Press Enter. The number 5780 appears, and -3955 shows up as the *Balance Total* as in Figure 6-22.

The Totals block is now taken care of—let's move to the data block.

Selection

- Drag the cursor from R14C1 to R20C7, darkening a large 7 × 7 rectangle.

Again, refrain from selecting the *Balance* column, for it's not raw data. (Notice, however, that the numbers in it remain the same. The relative addresses of the cells it refers to haven't changed.)

Figure 6-22. Altering a Formula

File Edit Select Format Options Calculate

R7C2 =SUM(C[+3])

AcctsPayable						
	1	2	3	4	+5	6
4	TOTALS	Credit Total				
5		1825				
6		Debit Total				
7		5780				
8		Balance Total				
9		-3955				
10						
11						
12	Date	Seller	Code	P.R.	Debit	Credit
13						
14	03/03/85	Auckland, Liz	55	2	900	
15	03/04/85	Auckland, Liz	55	5		900
16	03/01/85	Cravat, Walter	83	2	1800	
17	03/08/85	Cravat, Walter	83	4		625
18	03/02/85	Deodar, Donna	27	2	280	

Entry

- Type in the data, row by row, which you see in Figure 6-23. To erase a cell you now want blank, such as R14C5, the first debit cell, press Backspace and Enter.

Figure 6-23. Accounts Payable Data

AcctsPayable								
	1	2	3	4	5	6	7	8
1								
2								
3								
4	TOTALS	Credit Total						
5		6900						
6		Debit Total						
7		3980						
8		Balance Total						
9		2920						
10								
11								
12	Date	Seller	Code	P.R.	Debit	Credit	Debit Type	Balance
13								
14	03/11/85	Adler Supplies	80	3		1400		-1400
15	03/04/85	Olat Distributors	90	3		350		-350
16	03/09/85	JLM Security	50	5	1280		Refund	1280
17	03/01/85	Olat Distributors	90	3		1700		-1700
18	03/01/85	JLM Security	50	3		1230		-1280
19	03/12/85	Adler Supplies	80	4	2700		Cash	2700
20	03/01/85	Adler Supplies	80	3		2170		530
21								

The data, now entered, must be sorted just as with the accounts receivable information:

Formatting

- Drag from R14C1 down to R20C1, darkening a column of seven dates.
- Choose *Sort (Ascending)* from the *Edit* menu.
- Drag from R14C2 down to R20C2, darkening a column of seven sellers.
- Choose *Sort (Ascending)* from the *Edit* menu.

The sellers are sorted alphabetically and subsorted chronologically by date of transaction. The formula in the *Balance* column can now work.

Let's look at that *Balance* column. The formula is still subtracting credits from debits. But, since credits are now larger than debits, you really want the reverse. In all its intricate finery, you want the Balance formula to look like this: IF Current Seller equals Previous Seller, add Previous Balance to Current Credit and subtract Current Debit, OTHERWISE take Current Credit and subtract Current Debit. It's very close to the formula you used earlier.

Selection

- Drag the cursor from R14C8 down to R20C8, darkening a seven-cell column.

Entry

- Type =IF(.
- Click R14C3, the *Current Code*.
- Type =.
- Click R13C3, the *Previous Code*.
- Type ,. (The IF condition is ended, and you can proceed to the course of action if it's true.)
- Click R13C8, the *Previous Balance*.
- Type +.
- Click R14C6, the *Current Credit*.
- Type -.
- Click R14C5, the *Current Debit*.
- Type ,. (The action if true is now stated, and you can move on to the OTHERWISE action, the action if false.)
- Click R14C6, the *Current Credit*.
- Type -.
- Click R14C5, the *Current Debit*.

- Type). The right parenthesis ends the formula.
- Press Enter. Now, in the topmost cell, -1400 becomes 1400. You can easily enter the formula into the remaining cells of the column.
- Choose *Fill Down* from the *Edit* menu.

The spreadsheet is complete. Again, it's only a basis, a foundation, and you may wish to expand upon it.

Figure 6-24. The Accounts Payable Spreadsheet

AcctsPayable								
1	2	3	4	5	6	7	8	9
2					ACCOUNTS PAYABLE			
3								
4	TOTALS	Credit Total						
5		6900						
6		Debit Total						
7		3980						
8		Balance Total						
9		2920						
10								
11								
12	Date	Seller	Code	P.R.	Debit	Credit	Debit Type	Balance
13								
14	03/01/85	Adler Supplies	80	3		2170		2170
15	03/11/85	Adler Supplies	80	3		1400		3570
16	03/12/85	Adler Supplies	80	4	2700		Cash	870
17	03/01/85	JLM Security	50	3		1280		1280
18	03/09/85	JLM Security	50	5	1280		Refund	0
19	03/01/85	Olof Distributors	90	3		1700		1700
20	03/04/85	Olof Distributors	90	3		350		2050
21								
22								
23								
24								

Balance Sheet

Finally, let's create a simple balance sheet. As before, you'll start by asking what you want it to do. The balance sheet should total up assets in the lefthand column, and liabilities and proprietorship in the right. It can also figure subtotals, such as for fixed and current assets. Finally, it can figure out the proprietorship itself. The net worth of an enterprise is constantly changing, and it helps to have the spreadsheet keep track of it.

The labels in this spreadsheet will be vertical rather than horizontal, and will fill two columns. You can get them in easily:

Selection

- Drag from R2C3 to R15C3.
- Press Command.
- Drag from R2C1 to R15C1.
- Release Command. The white box is now at R2C1, ready to enter.

Entry

- Enter the labels, as shown in Figure 6-25. Many of them overlap into the next cell, so you need to widen the column widths.

Figure 6-25. Balance Sheet Labels

File Edit Select Format Options Calculate

R2C1 Current Assets

	1	2	3	4	5	6
1						
2	Current Assets		Liabilities			
3	Cash		Accounts Payable			
4	Merchandise		Salary Payable			
5	Accounts Receivable		Rent Payable			
6	Supplies		Mortgage Payable			
7	Subtotal		Total Liabilities			
8						
9	Fixed Assets					
10	Building					
11	Land					
12	Equipment		Proprietorship			
13	Subtotal					
14			Total Liabilities			
15	Total Assets		and Proprietorship			

Formatting

- Pull Column 1 completely across Column 2.
- Pull Column 3 completely across Column 4. You've doubled the size of the label columns. They need it.

Figure 6-26. Increase Column Widths

File Edit Select Format Options Calculate

R2C1		Current Assets	
BalanceSheet			
	1	2	3
1			
2	Current Assets		Liabilities
3	Cash		Accounts Payable
4	Merchandise		Salary Payable
5	Accounts Receivable		Rent Payable
6	Supplies		Mortgage Payable
7	Subtotal		Total Liabilities
8			
9	Fixed Assets		
10	Building		
11	Land		
12	Equipment		Proprietorship
13	Subtotal		
14			Total Liabilities
15	Total Assets		and Proprietorship

Next, enter data—the sums of the fundamental kinds of assets and liabilities:

Selection

- Drag from R2C4 down to R15C4.
- Press Command.
- Drag from R2C2 down to R15C2.
- Release Command. A purist would select three blocks here since there are three small blocks of data, but these two columns will let you get through almost as fast.

Entry

- Type <Enter>, 9000 <Enter>, 55000 <Enter>, 14000 <Enter>, 950 <Enter>, <Enter>, <Enter>, <Enter>, 17500 <Enter>, 12750 <Enter>, 2000 <Enter>, <Enter>, <Enter>, <Enter>, <Enter>, 15000 <Enter>, 3000 <Enter>, 4000 <Enter>, 10000 <Enter>.

Formatting

- Choose *Commas* from the *Format* menu. Many of these numbers are in the tens of thousands and commas are almost necessary. When you've done this, the spreadsheet on your screen should look like Figure 6-27.

Figure 6-27. Data Entered and Commas Added

File Edit Select Format Options Calculate

R15C4

BalanceSheet				
	1	2	3	4
1				
2	Current Assets		Liabilities	
3	Cash	9,000	Accounts Payable	15,000
4	Merchandise	55,000	Salary Payable	3,000
5	Accounts Receivable	14,000	Rent Payable	4,000
6	Supplies	950	Mortgage Payable	10,000
7	Subtotal		Total Liabilities	
8				
9	Fixed Assets			
10	Building	17,500		
11	Land	12,750		
12	Equipment	2,000	Proprietorship	
13	Subtotal			
14			Total Liabilities and Proprietorship	
15	Total Assets			

You're left with six formulas to enter. All are simple:

Selection

- Click R7C2, the first *Subtotal*.
- Press Command.
- Click R13C2, the second *Subtotal*.
- Click R15C2, *Total Assets*.
- Click R7C4, *Total Liabilities*.
- Click R12C4, *Proprietorship*.
- Click R15C4, *Total Liabilities and Proprietorship*.
- Press Enter to return to R7C2.

Entry

The first formula is a simple summation of the four numbers above the cell. You've done it several times before:

- Choose *Paste Function* from the *Edit* menu.
- Choose *SUM()*.
- Drag from R3C2 down to R6C2.
- Press Enter.

The second formula, another subtotal, is the same:

- Choose *Paste Function* from the *Edit* menu.
- Choose *SUM()*.
- Drag from R10C2 down to R12C2.
- Press Enter.

The third formula adds these two subtotals together. With only a pair of numbers, click your entries in:

- Type =.
- Click R7C2, then R13C2. *Multiplan* inserts the plus sign.
- Press Enter.

Now jump to the second column, to R7C4, *Total Liabilities*. Again, sum up a column of figures:

- Choose *Paste Function* from the *Edit* menu.
- Choose *SUM()*.
- Drag from R3C4 down to R6C4.
- Press Enter.

You've reached *Proprietorship*, the fifth and penultimate formula. The basic accounting formula, taught on the first day of every beginning accounting class, is $\text{Assets} = \text{Liabilities} + \text{Proprietorship}$. It's always true, because *Proprietorship* is defined as *Assets minus Liabilities*. You can stick *Assets minus Liabilities* right into the R12C4 *Proprietorship* cell:

- Type =.
- Click R15C2, *Total Assets*.
- Type -.
- Click R7C4, *Total Liabilities*.
- Press Enter.

The final formula adds up *Total Liabilities* and *Proprietorship*. Since this amount always equals *Total Assets*, by virtue of the formula, you could cheat and take it directly from the *Total Assets* cell. But let's do it correctly:

- Type =.
- Click R7C4, *Total Liabilities*, then R12C4, *Proprietorship*.
- Press Enter.

Figure 6-28. Balanced Formulas

File Edit Select Format Options Calculate

R7C2 =SUM(R[-4]C:R[-1]C)

BalanceSheet				
	1	2	3	4
1				
2	Current Assets		Liabilities	
3	Cash	9,000	Accounts Payable	15,000
4	Merchandise	55,000	Salary Payable	3,000
5	Accounts Receivable	14,000	Rent Payable	4,000
6	Supplies	950	Mortgage Payable	10,000
7	Subtotal	78,950	Total Liabilities	32,000
8				
9	Fixed Assets			
10	Building	17,500		
11	Land	12,750		
12	Equipment	2,000	Proprietorship	79,200
13	Subtotal	32,250		
14			Total Liabilities and Proprietorship	
15	Total Assets	111,200		111,200

You're almost done. The spreadsheet could use a title and a date of compilation. But there's only one row at the top. You need to create more space.

- Place the cursor on Row header 1.
- Press Shift.
- Click four times.

Now you're ready to cap it all off:

Selection

- Click R2C3.
- Press Command.
- Click R4C3.
- Release Command.
- Press Enter.

Entry

- Type **BALANCE SHEET** <Enter> and **December 31, 1984** <Enter>.

Formatting

- Choose *Align Center* from the *Format* menu and things should look like Figure 6-29.

Figure 6-29. Final Balance Sheet

File Edit Select Format Options Calculate

R2C3 BALANCE SHEET

BalanceSheet

	1	2	3	4
1				
2			BALANCE SHEET	
3				
4			December 31, 1984	
5				
6	Current Assets		Liabilities	
7	Cash	9,000	Accounts Payable	15,000
8	Merchandise	55,000	Salary Payable	3,000
9	Accounts Receivable	14,000	Rent Payable	4,000
10	Supplies	950	Mortgage Payable	10,000
11	Subtotal	78,950	Total Liabilities	32,000
12				
13	Fixed Assets			
14	Building	17,500		
15	Land	12,750		

That's it.

And it's also just the beginning. In fact, spreadsheets can simplify so many other accounting documents that it almost seems they were invented to brighten the accountant's day. And, as you may have sensed, *Multiplan* on the Macintosh is one of the most pleasant programs around.

Chapter 7

Reporting in Pictures: Using *Chart*



Reporting in Pictures: Using *Chart*

Charles Brannon



The preceding chapters have shown the Macintosh's power in manipulating text in multiple fonts and styles, its ease in managing large amounts of information, and its ability to juggle numbers and calculations with ease. But if anything, the Macintosh is known for graphics, partly due to the visual design of the Macintosh user interface, partly due to the Macintosh's exceptional screen clarity and resolution.

Graphics bring text and numbers to life. If a picture is worth a thousand words, a chart must be worth a thousand numbers. Numbers are everywhere, filling spreadsheets, databases, and disk upon disk with statistics, annual reports, tables of brine shrimp behavior, marketing forecasts, company budgets, tax tables, amortization schedules, and much more.

A chart illuminates an otherwise obscure table of numbers. Patterns and relationships between series of numbers instantly become recognizable. Future trends can be seen in the extension of a single line. Charts even let you "slant" the facts, emphasizing one relationship between numbers while de-emphasizing others. Where a monthly chart of profits may show frightening dips, a ten-year chart tends to smooth out the jags by shrinking them in scale. Charts are the darling of meetings, presentations, and portfolios.

Before computers, chart making was an arcane art, requiring painstaking precision. Using pen, ruler, and a list of data, the chart maker tediously drew in the points and lines. Mistakes became ugly blotches. Coffee cups were used to draw circles. Labels were hand-scrawled. The rough draft of the chart illustrated the data, but was as ugly as rust on chrome. The chart was sometimes redrawn by an art department or service, but it lost some of its accuracy as it was retraced or redrawn. A chart, though valuable, was often not worth the trouble it took to create.

Microsoft's *Chart* ends the pain. It actually encourages you to develop charts, and gives you the flexibility to manipulate and customize your chart. *Chart* is a general-purpose chart-creation program. It can create almost any conceivable chart. With this

flexibility comes great complexity. Fortunately, the Macintosh's user interface makes the program manageable.

Fundamentals of Charting

The six basic kinds of charts in Microsoft's *Chart* are *area*, *bar*, *column*, *line*, *pie*, and *scatter*. They have several things in common: bar and column charts are just variations in direction. Bar charts run horizontally, column charts vertically. Area charts are like line charts with the area beneath (or above) the line filled. Scatter charts are like line charts with just the points on the line displayed. Pie charts are in a class of their own and don't have as many options as the others.

Most charts have both a vertical (also referred to as Y) and a horizontal (X) axis. The vertical axis represents values, while the horizontal represents category. *Chart* can automatically fill in the categories with sequential numbers or dates. You can define your own categories as well, with either text or numbers.

Entering Data

The data for the chart comes from small windows called *series*. Each series holds both the X and Y values for a chart. A value associated with its category is called a *data point*. Say, you had a series charting the number of beans required to fill various sizes of cans. A data point on this series would be the bean count of a particular size of can.

To produce a chart, you must first create any series required to plot the data. *Chart* can automatically fill in the category (X) information for you with a sequential list of numbers or by date. Or you can fill in the category axis yourself with text or numbers.

The type of series you create is determined by the *Data* menu. When typing in new data, as opposed to changing the type of data, always bring the *New Series* window to the front by clicking on it. (You may need to move some windows to find it.) With the *New Series* window active, select one of the *Data* types: *Sequence*, *Date*, *Text*, or *Number*. A dialog box appears, allowing you to name the series, the category axis, and the value axis. By default, the series is named after the current time. The category axis is called X and the value axis, Y. If this is acceptable, just click *OK* or press Enter. Otherwise, use the Tab key to switch between the edit fields (or click on the field you want to change), and type new entries.

For *Sequence* series, you can either accept the default starting number and increment, or change them by clicking on the field you want to change and start typing. If you just begin typing with the *New Series* window active, *Chart* will choose for you a *Sequence* chart, automatically filling in the categories with 1, 2, 3, 4, and so on, as you type. *Date* series allow you to set the starting date with the three-digit month abbreviation, the day of the month, and the four-digit year. The current date is used by default. You can increment the date by year, month, day, or weekdays. In our example, we'll select a *Date* series starting with January 1981, incremented by month. We'll be plotting the number of pages of a magazine over several years of its circulation.

Figure 7-1. Date Series

Date Series

Series Name: 1981

Category Name: Issue

Value Name: #pages

First Category: Jan 1, 1981

Increment Each Category By

☐ Years ☒ Months ☐ Days ☐ Weekdays

OK Cancel

If you use a *Date* or *Sequence* series, you just enter data in the value area. Type in all values as raw numbers. Don't try to format your values with dollar signs or text. You do this by selecting *Values* from the *Format* menu. This allows you to select between various display formats, including dollar, scientific notation, and variable number of decimal points. You can even include text before and after the numbers. These settings also affect the labeling of the Y-axis on the chart. If you use a *Number* or *Text* series, you can toggle back and forth between editing categories and values with the Tab key. You can also double-click on an entry to edit it. The Enter key is used to go from field to field in a series, and Return puts the cursor in the same column, but down one line.

1981	
Order: <input type="text"/>	
<input type="checkbox"/> Plot Series	
Issue	#pages
Jan	144
Feb	142
Mar	168
Apr	176
May	160

You've begun to enter the data for the year 1981. The horizontal insertion bar shows where the next entry will appear. *Chart* fills in the date for you as you go along, with the medium length form of the date. You can select *Categories* from the *Format* menu to prevent the year from being tagged onto each month. Here's the data for 1981:

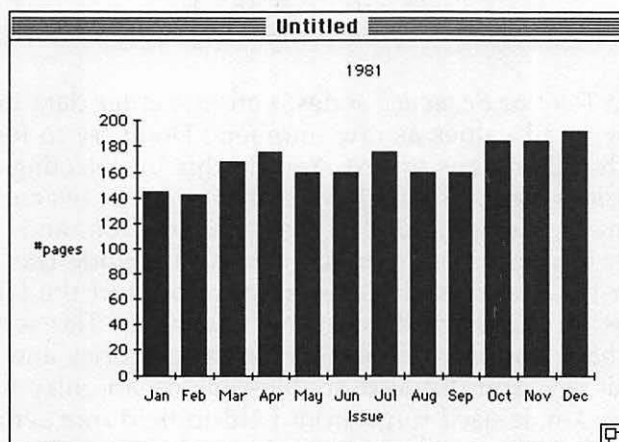
Issue	Number of pages
Jan	144
Feb	142
Mar	168
Apr	176
May	160
Jun	160

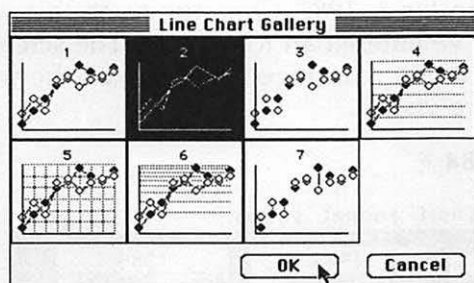
Issue	Number of pages
Jul	176
Aug	160
Sep	160
Oct	184
Nov	184
Dec	192

After you've completed entering the data for 1981, you can click on the *Plot Series* box to graph the data. *Chart* automatically displays a column chart. The series windows are still in front, so click anywhere on the chart to bring it to the front.

The Chart Appears

Figure 7-2. Default Column Chart for 1981 Data

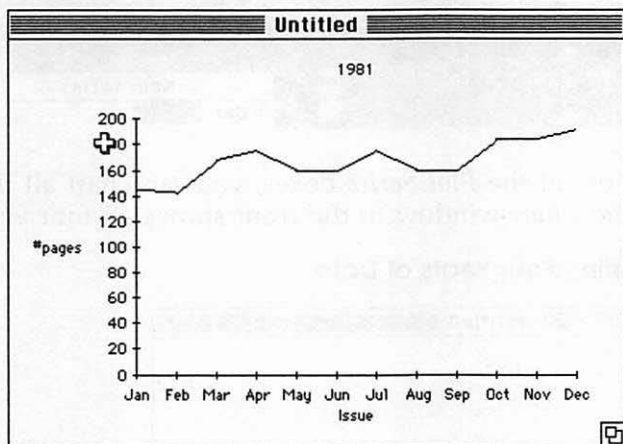




The goal in charting the increase and decrease in the magazine's page size is to identify seasonal variations. By plotting several years of data, you'll be able to see if the seasonal variations are consistent year to year. For our purposes, a line chart is more useful than this col-

umn chart, since a line chart fills in the gaps between data points and highlights the dips and rises. The easiest way to change this column chart to a line chart is through the *Gallery*. Select *Line* from the *Gallery* chart to open the Line Chart Gallery. Choose line chart 2 to avoid plotting the data points themselves. At this stage, you're just interested in the trends, not the actual points on the lines.

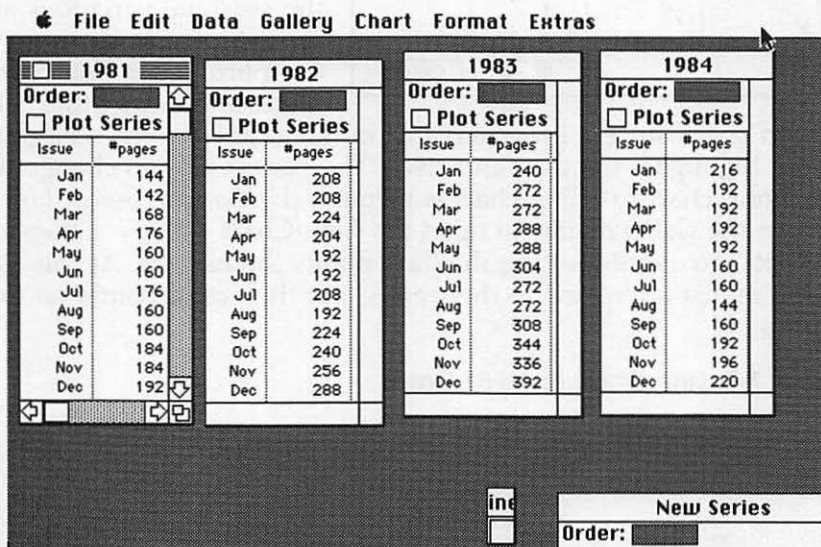
Figure 7-3. Line Chart for 1981 Data



You can see that there's a dip at the beginning of the year, followed by a sharp rise. The number of pages falls in early summer, peaks in July, falls in the autumn, and rises again near Christmas. Now let's enter some more data and see how it compares. (Figure 7-4 shows the data for all years.) Bring the *New Series* window to the front, and select *Date* from the *Data* menu to create a new series. All you change is the name of the series to

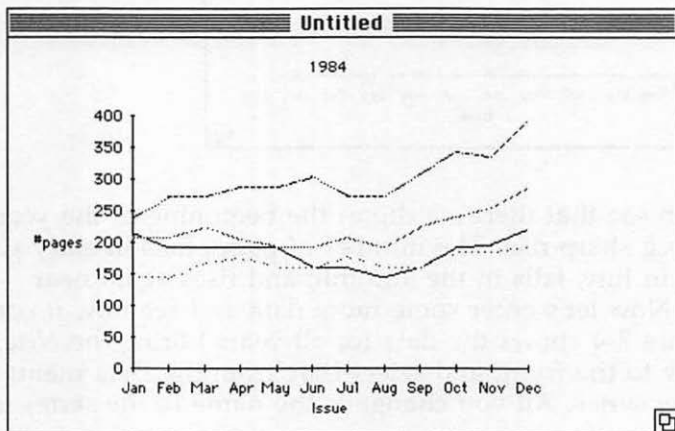
1982 and the starting date to *Jan 1, 1982*. Continue to do this with the other months until you've entered all four years. The screen would look like Figure 7-4 if you rearranged and resized the windows so that all entries were visible.

Figure 7-4. Series for 1981-1984



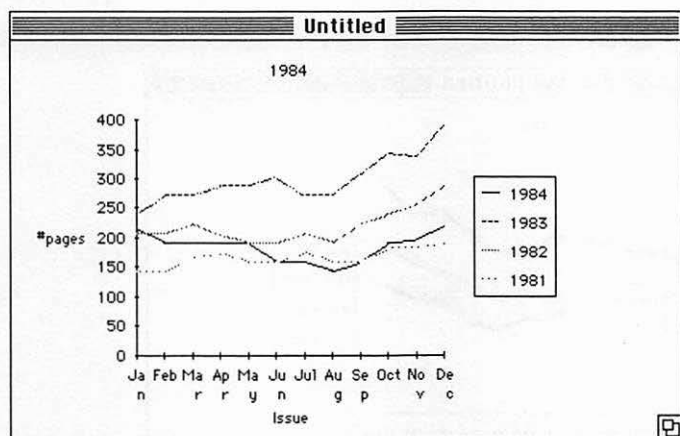
By clicking on all the *Plot Series* boxes, you can chart all the data. Bringing the *Chart* window to the front shows all four years:

Figure 7-5. Comparing Four Years of Data

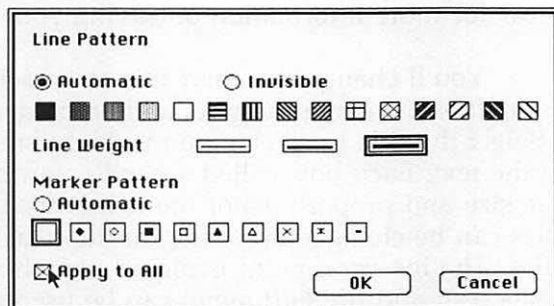


Unfortunately, you can't tell which year is which. A *legend* to show which pattern goes with which year would be handy. By selecting *Add Legend* from the *Chart* menu, you do just that. The chart shrinks to accommodate the legend.

Figure 7-6. Comparative Line Chart with Legend Added



The legend can even be customized with *Legend* from the *Format* menu. You can change the font, font size, and style. The legend can be oriented vertically and positioned on the side of the chart or in a corner, or it can be displayed horizontally, with each legend entry next to the other. You can also control how tightly the legend entries are spaced. With *Patterns* (*Format* menu), you can change the background and border pattern, the border thickness, and the border style (normal, bevel, double, round, or shadow).

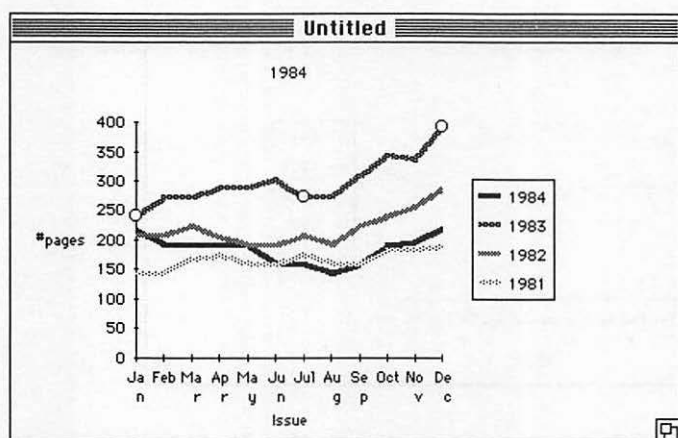


The legend helps you tell which chart goes with which year, but it would be even easier if you thickened the lines a bit. You can do this by clicking on any of the lines. Hollow circles appear at certain points along the line

to let you know you've made the selection. You can now choose

Patterns from the *Format* menu to select a thicker line weight. By clicking on *Apply To All*, you thicken them all. This dialog box also lets you select the pattern of the line (which is set automatically) and the type of data point marker you'd like. At the moment, you're using an invisible pattern for data points since you don't need them displayed.

Figure 7-7. The Plot Thickens



You've got your basic chart completed, but there are still a few things you can change to improve its appearance. The title of the chart is chosen from the first series plotted, in this case, *1984*. (The title of the chart window is *Untitled*. This will change to the file's name when you save the chart with *Save As* from the *File* menu. When developing the figures, I naturally had to save my work along the way, so the actual chart window title will vary in these figures. See below for more information on saving your chart.)

You'll change the chart title to *Seasonal Variations*, enlarge the title, and embolden it. Select the title by clicking on it. Eight small boxes appear around the text. Each box, called a *handle*, can be dragged to change the size and proportions of the text entry box. Text inside the handles can be changed according to the usual Macintosh editing rules. The insertion point is placed anywhere within. Dragging selects text, and the *Edit* menu can be used to cut, paste, and clear text.

window to the upper left of the screen and drag the size box in the lower-right corner of the *Chart* window to extend it as far as possible. This gives a bigger workspace. Now choose *Select Chart* (or press Command-A) from the *Chart* menu. This places handles on the screen for the chart. Drag the lower-right handle all the way down and across. The chart now uses the full screen area. You can similarly select *Select Plot Area* from the *Chart* menu to extend the size and change the position of the area of the window where the chart itself is plotted. This is normally set automatically. You might want to limit the plot area to insert large sections of text.

Figure 7-9. Completed Line Chart Comparing Seasonal Variations

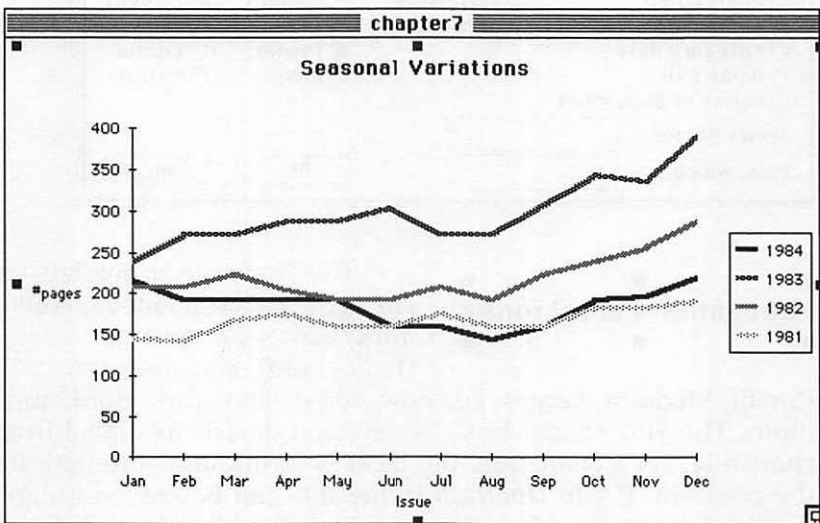
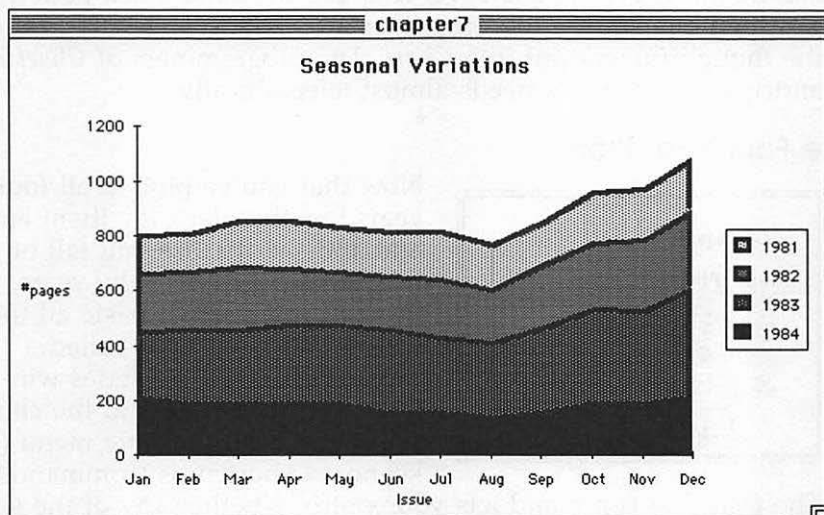


Chart at Work

The seasonal variations are easier to see now that all the years are plotted together. There's a consistent drop around August and a predictable rise in December. If you change to an area chart, you can highlight these similarities. Again, the easiest way to do this is through the *Gallery* menu, but you can also just pull down *Main Chart Type* from the *Chart* menu and choose the *Area* chart type.

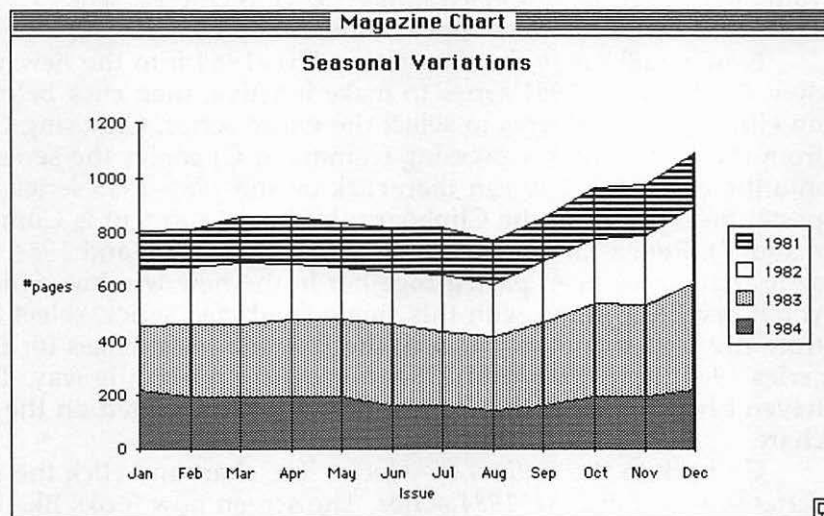
This is how the chart looks after you've selected a *stacked* area chart. Each data point is stacked upon the next, so the points

Figure 7-10. Stacked Area Chart Exaggerating Seasonal Similarities



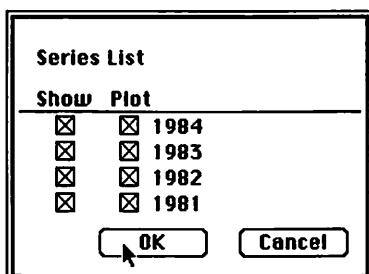
match more closely, highly exaggerating the seasonal similarities, which is just what you're looking for. The thick line borders are distracting, so you may want to change the border weight with *Patterns* (Format menu).

Figure 7-11. Area Chart with Drop Lines



Here we've selected *Drop Lines* via *Main Chart* from the *Format* menu. Cleverly, *Chart* has changed the solid black pattern to a striped one so that the drop lines are visible. This is typical of the thoughtfulness put into *Chart*. The programmers of *Chart* have anticipated the user's needs almost telepathically.

The Four-Year Plan



Now that you've plotted all four years together, let's lay them end to end and see the rise and fall of magazine pages over the years. To do this, you need to paste all the data into a new series called 1981-1984. Since the series windows are hidden behind the chart, select *List* from the *Data* menu (the keyboard shortcut is Command-L).

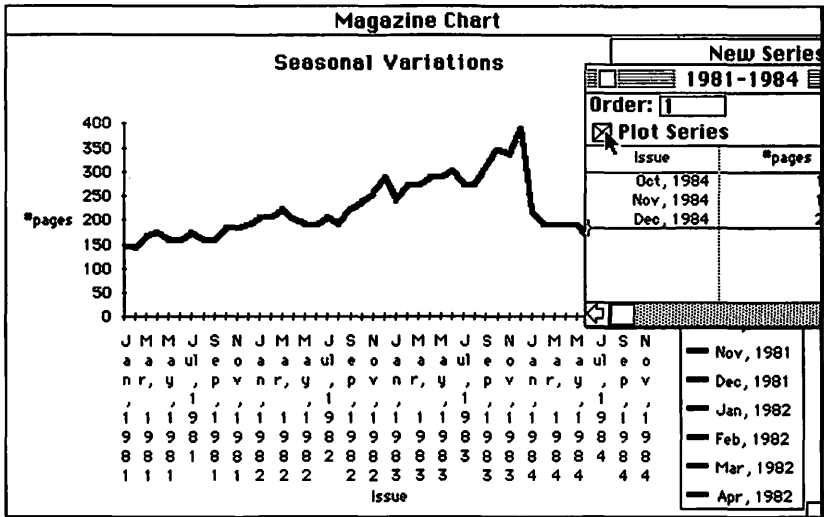
The *Data List* command lets you control whether any of the series are shown on the screen and whether or not you want a series plotted. Just click on a box to turn the cross (X) on or off. When you click *OK*, the series reappear.

To create the combined series, bring the *New Series* window to the front and pull down *Date* from the *Data* menu to start a new series. Change the series name to 1981-1984 and the starting date to *Jan 1, 1981*, incremented by month. The category and value names, *Issue* and *#pages*, have to be reentered. The 1981-1984 series window appears after you click *OK*.

Now you'll move the data from 1981-1984 into the new window. Click on the 1981 series to make it active, then click below on either *Issue* or *#pages* to select the entire series. Choosing *Copy* from the *Edit* menu (or pressing Command-C) copies the series into the clipboard. You can then click on the 1981-1985 series and paste the series from the Clipboard (keyboard shortcut is Command-V). Repeat the process with series 1982, 1983, and 1984. All series have now been pasted together in the new window. Since you'll just be working with this single combined series, select *List* from the *Data* menu and unclick the *Plot* and *Show* boxes for the series 1981, 1982, 1983, and 1984 to get them out of the way. They haven't been deleted; they're just not visible or plotted on the chart.

Go back to the *Gallery* to select a line chart and click the *Plot Series* box on the 1981-1984 series. The screen now looks like Figure 7-12.

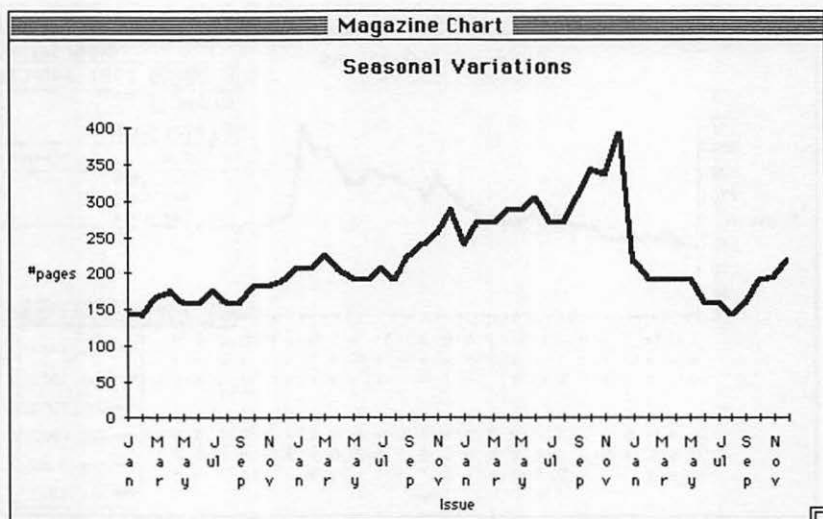
Figure 7-12. Preliminary Year-To-Year Line Chart



You obviously need to clean a few things up. For one thing, the dates are all too long—select *Categories* from the *Format* menu and click off the *Year* box to remove the display of years. By the way, if you've been following along with *Chart*, you'll find that it takes quite awhile to redraw the chart. The data series are *linked* directly to the chart. If you make a change in a plotted series, the chart changes automatically. *Chart* needs some time to calculate how to redraw a large chart, so you may want to select *Manual Redraw* from the *Chart* menu and use *Redraw Now* (or press Command-=) when you want to redraw the chart. You can also click off the *Plot Series* box on the series to prevent the chart from being plotted. After you make all your changes, you can turn automatic charting back on or reclick the *Plot Series* box.

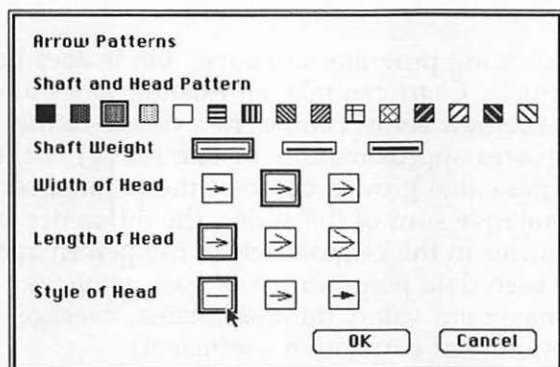
Since the legend is no longer necessary (nor informative), select the legend and choose *Delete Legend* from the *Chart* menu to remove it. The complete chart should now look much like Figure 7-13.

Figure 7-13. Legend Gone, Dates Shortened



As you can see, there's not enough room to display all the months on the chart. *Chart* tries to fit the months in, but the white space around the text erases the previous month. Also, since the letter *l* is so thin, the month *Jul* isn't formatted like the others. No matter how big you make the chart, the problem won't go away. There just isn't a text size small enough to fit all the months in. The chart can be saved as a *MacPaint* file, though, and edited by *MacPaint*, where you can draw in tiny months with *FatBits*, or use the text tool along with a very small font. You'll see how to do this a bit later.

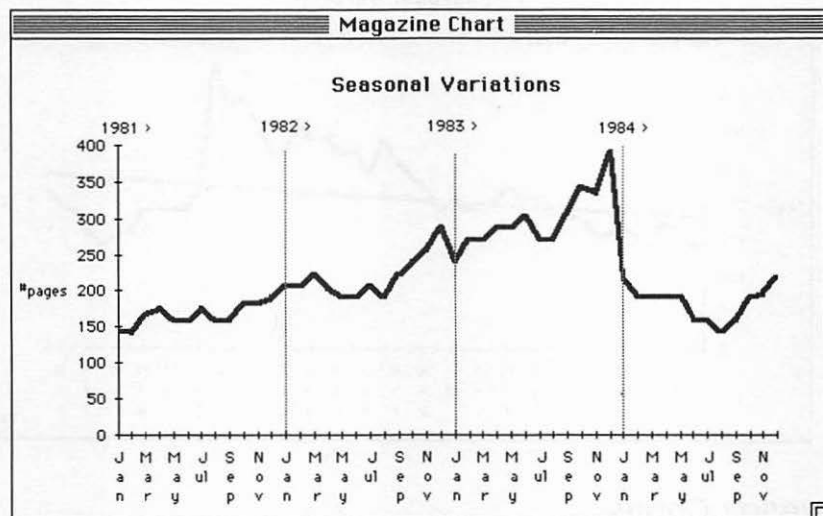
Right now, add some drop lines (lines extending from data points to the X-axis) to divide the chart by year, and label these drop lines. *Chart* has an automatic drop line feature that can be selected with *Main Chart* from the *Format* menu, but this feature adds drop lines for all data points. You just want to use them between years.



The drop lines will be constructed from arrows with the heads removed. First, click near (but not too near) the second occurrence of *Jan*. The hollow cross appears. To create the arrow, select *Add Arrow* from the *Chart* menu. Two handles

appear. The handles are used to move either end of the arrow. Before you move the arrow, select *Patterns* from the *Format* menu. Use a checkered pattern and no arrow tip. The checkered pattern gives a dotted line. You can now drag either end of the arrow into place above and on *Jan*. The entire arrow can be moved by dragging it near the middle. Finally, finish up the lines by adding text labels at the top tip.

Figure 7-14. Labels and Custom Drop Lines Added

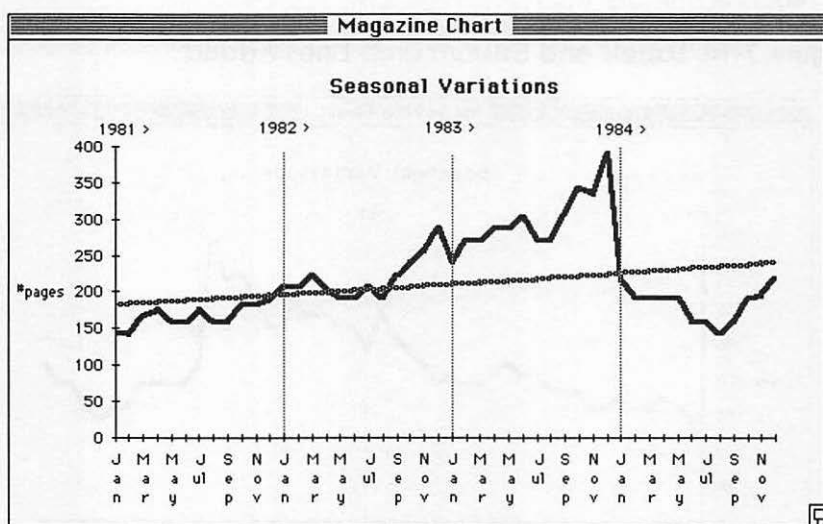


Forecasting

Chart is primarily a charting program, of course, but it does have a few calculation features. *Chart* can take an existing series and create a new series. The new series can be the average of the series, a trend (least squares approximation, or line fitting) of the original series, an exponential growth curve of the original series (curve fitting), a cumulative sum of the series, the difference between consecutive entries in the original series, the percentage of total represented by each data point, or list of basic statistics (number of points, maximum value, minimum value, average, median, standard deviation, and correlation coefficient).

Let's use the curve-fitting function (*Growth*) to try to foresee the future page size of the magazine. Bring the 1981–1984 series to the front, and select *Analyze* from the *Data* menu, then click on *Growth*. The *Growth* series is calculated, so you can now select the *Plot Series* box to display the growth curve.

Figure 7-15. Curve Fitting

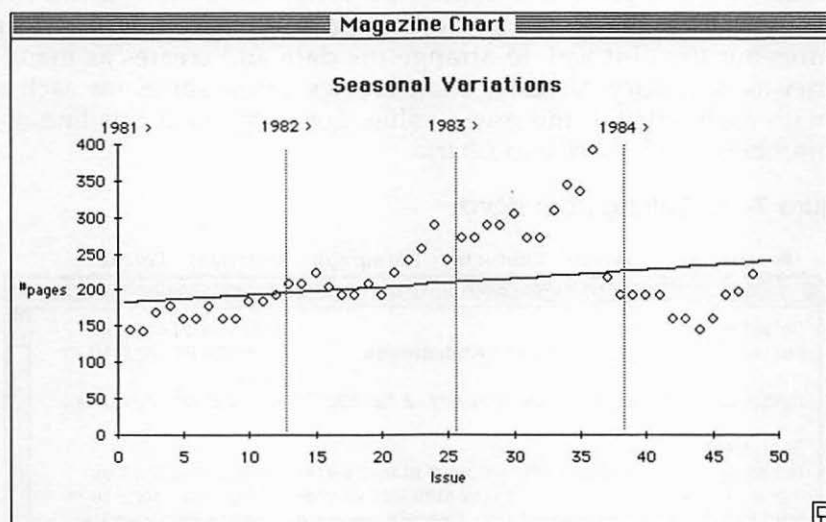


Overlay Charts

It's not hard to see the direction that page size is going—up, but not too precipitously. Curve fitting is best illustrated by using an overlay chart. With each data point displayed using the *Scatter* chart type, you can use a line chart to plot the *Growth* curve. It's

easy to see how well the curve fits the points. There are a few combination charts in the *Gallery*, but they don't fit our needs since they're combinations of column and line charts. Instead, you should select *Main Chart Type* from the *Chart* menu to change the main chart (representing the series 1981–1984) into a scatter chart. The scatter chart is invisible since you didn't plot the data points when you used a line chart; select *Main Chart* from the *Format* menu, and click on *Markers for Data Points*. A shortcut to this would be to select scatter chart 2 from the *Gallery*. You can now select *Overlay Chart Type* from the *Chart* menu and choose a *Line* overlay chart type. Select *Overlay Chart* from the *Format* menu to disable *Markers for Data Points*.

Figure 7-16. Overlaying Charts



File Operations

After you've finished your chart, or even while you're working on it, it's a good idea to save the chart to disk. Even if you finished the chart, you don't want to print it out and turn off the computer, only to discover a mistake in the chart. To save your data, just select *Save* or *Save As* from the *File* menu, give the chart a name if necessary, and the chart and all series are saved. You can *Open* a new chart and bring in the complete chart with data, just the chart format, or just the series. The *New Data* entry clears out

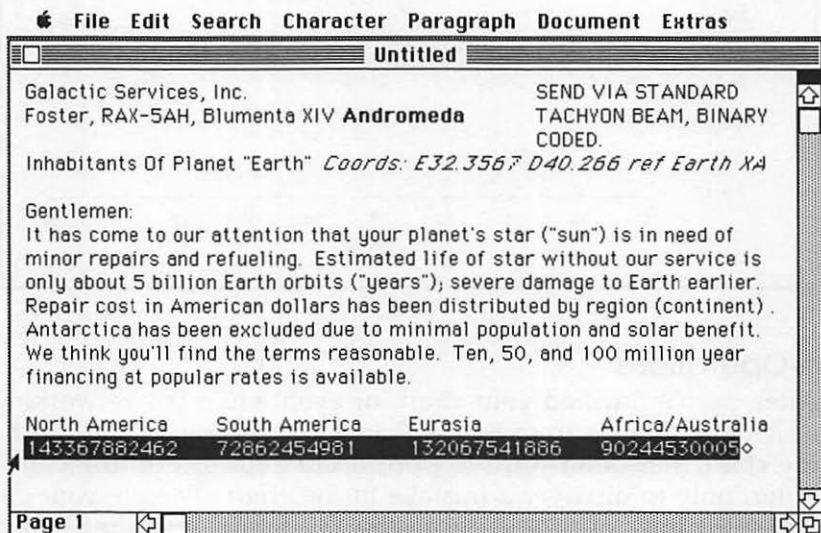
all series, and *New Format* resets and removes all customized chart features.

When you're ready to print, select *Print* from the *File* menu. If you're using special paper or a special printer, you may need to use *Page Setup* from the *File* menu before printing. The chart is printed with higher resolution (more detail) on paper, so be prepared to wait awhile for your hardcopy.

Charting Data from Other Programs

Chart was designed to be able to integrate information from other programs, primarily Microsoft's *Multiplan* spreadsheet. All transfer is through the Clipboard, using the standard cut and paste functions. You can also pull a table of numbers from *Word* or *MacWrite* and paste it into the *New Series* window. You can even cut text from the Note Pad and create a series from it. *Chart* figures out the best way to arrange the data and creates as many series as necessary. Usually, *Chart* creates a new series for each row, with each entry in the row a value. Let's try to cut this line of numbers from *Word* into *Chart*:

Figure 7-17. Cutting from *Word*



The line of numbers from this whimsical letter is made up of simple numbers with no commas, dollar signs, or other manual formatting. You must remove any dollar signs, commas, trailing minus signs, or text before you copy the numbers into the Clipboard. Each number is separated from the next by tabs (the Tab key was pressed between each number). The tabs are *delimiters*. Spaces are not legal delimiters for *Chart*. If you want to make sure that a number is treated as text, enclose it in double-quote characters. You can now drag across the numbers and select *Copy* from the *Edit* menu. The numbers are copied into the Clipboard. Since the Clipboard is transient, also pull out the Scrapbook (see Chapter 1) and *Paste* the text into it.

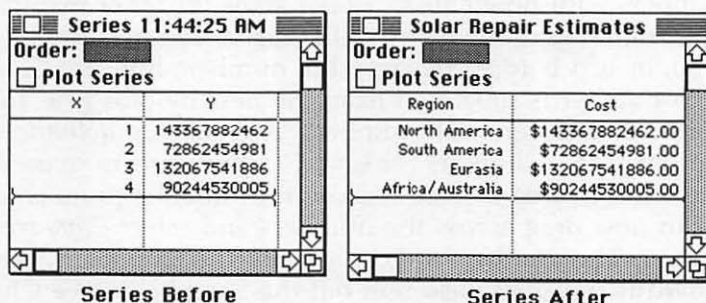
You're now ready to open *Chart* and paste the numbers into a new series. Unfortunately, there's a problem. The Clipboard isn't universal among all programs, but is stored only in memory, or on the startup disk if it can't fit in memory. The same is true for the Scrapbook.

If you go back to the Finder and start up *Chart*, for instance, you'll be using the Clipboard and Scrapbook from the *Chart* disk. If you have both applications on the same disk, there's no problem. Otherwise, you'll have to copy the Scrapbook file (usually found in the System Folder) onto the *Chart* disk. You follow this same procedure anytime you need to move information via the Clipboard and Scrapbook between disks.

You can then open the Scrapbook from within *Chart* and copy the numbers into the Clipboard, ready to paste.

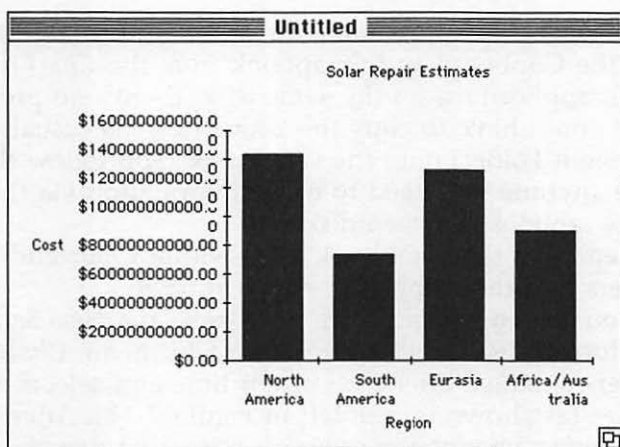
However you solved the problem, now bring the *New Series* window to the fore and select *Paste* from the *Edit* menu. *Chart* creates a new series named after the current time and selects a *Sequence* data series (as shown on the left in Figure 7-18). After you switch to a text series, change the category and value names, change the formatting of the value field, and type in the names of the continental areas, the series appears as shown on the right (you'll need to expand the window and adjust the column width to see all the data, as was done here).

Figure 7-18. Series Created from Clipboard



It's now a simple matter of clicking the *Plot Series* box to get the complete chart.

Figure 7-19. Chart from Word

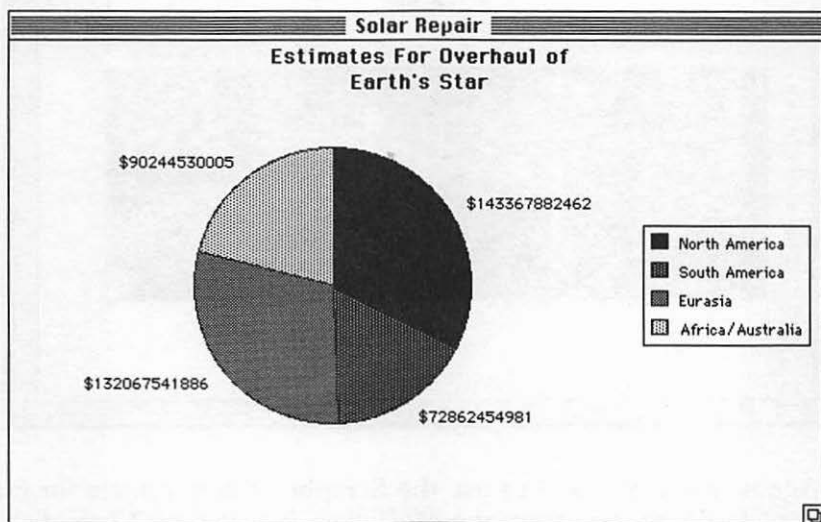


The numbers used for the chart were too big to fit on the chart page (nobody said overhauling a star was cheap!). You can solve this in three ways: retype the data series to scale it down and label the chart as charting data in the billions; remove the value axis tick mark labels and add free-floating labels to take their places; or expand the chart as was done before to fit it all in. It's easiest just to expand the chart.

Or you can use a pie chart. A pie chart can show relative relationships quite concisely. To get this chart, select pie chart 5 from the *Gallery*, then select each text label, and with *Text* from

Format, click on *Show*, then *Value*, for each text label. This displays the dollar amount instead of the region name for each slice. Use *Add Legend* to make the regions clear.

Figure 7-20. Pie Chart from *Word*



Linking with *Multiplan*

Chart can set up a permanent link with *Multiplan*. If you change your spreadsheet, *Chart* can look at the spreadsheet file and recalculate the chart. To set up the link, you must first define the area of the spreadsheet you want to plot, copy this area of cells into the Clipboard, then run *Chart* and paste the cells into an empty series window. When you run *Chart* and open the chart file, *Chart* will ask you to insert the disk containing your spreadsheet so that it can update the series.

Text Series

Series Name:

Category Name:

Value Name:

This spreadsheet is being used to record the finishing positions of the three horse races in the Triple Crown (the data is fictional, of course). The area we want to plot has been ranged by dragging from the upper-left cell. Select *Copy*

from the *Edit* menu to copy the selected range into the Clipboard.

Figure 7-21. *Multiplan* Worksheet with Cells to Be Charted Selected

🍏 File Edit Select Format Options Calculate					
9R x 4C		Bert's Lamb			
Horse Spread					
	1	2	3	4	5
1					
2		Kentucky Derby	Belmont Stakes	Preakness	
3	Bert's Lamb	2	1	4	
4	Buckeroo	1	2	6	
5	Crazy Moon	7	5	3	
6	Forever Yet Never	6	3	7	
7	Lucky Loo	4	9	9	
8	Marauder	3	4	2	
9	Never Fails	8	8	8	
10	Risky Proposition	5	7	1	
11	Skye's Unlimited	9	6	5	
12					
13			note: 9=no show		
14					
15					

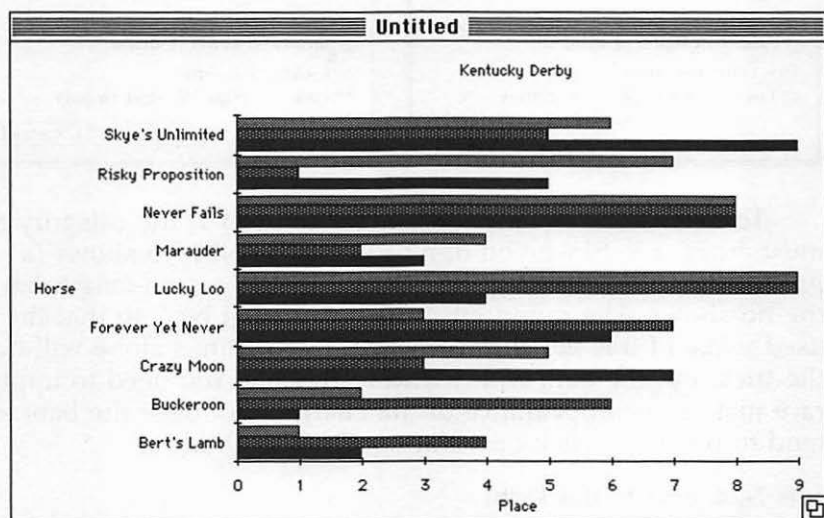
Again, you may need to use the Scrapbook as a vehicle for moving Clipboard data from the *Multiplan* disk to your *Chart* disk unless you have both programs on the same disk. An ideal alternative is to use *Switcher* (see Chapters 9 and 11), which lets you use a common Clipboard between applications.

You're ready to paste the data from the Clipboard. You're going to be creating a text series, with the categories being the names of the horses and the values being the place each horse finished. Select *Text* from the *Data* menu and fill it out as shown in the figure at the bottom of the previous page. This creates a series for the first race, the Kentucky Derby, and sets up the format for the other two series.

Make sure the *Kentucky Derby* series is the active window, then select *Paste and Link* from the *Edit* menu. You could also simply select *Paste*, but your series would then not be updated if you later change your spreadsheet. If you need to remove the link later, just select *Unlink* from the *Edit* menu. After *Paste and Link*, *Chart* creates three new series, one for each race. During this process, if *Chart* can't find the original spreadsheet file, you'll see a dialog box which will insist that you insert the disk containing the file. This same process will occur when you open the chart in the future.

It's now simply a matter of changing the series names to the names of the races (it's not possible to cut the names of the races from the spreadsheet) using *Text* from the *Data* menu, then selecting a chart type from the *Gallery*. Try using a horizontal bar chart, which is ideal for representing a race. Bar chart 1 will serve admirably. After expanding the chart area, the chart should look like this.

Figure 7-22. Derby Bar Chart



The bar chart seems to imply that the losers are ahead of the winners. You need to reverse not merely the direction of the bars, but the way the bars are plotted. As is, the bars start from 1 (first place) and extend to 8 (last place) and 9 (horse didn't race). You need the beginning point to be 9 so that the bars extend from last place toward first place. And you don't want the no-shows to appear on the chart at all. So, first click on the value (horizontal) axis and change it to read as shown on the right in Figure 7-23.

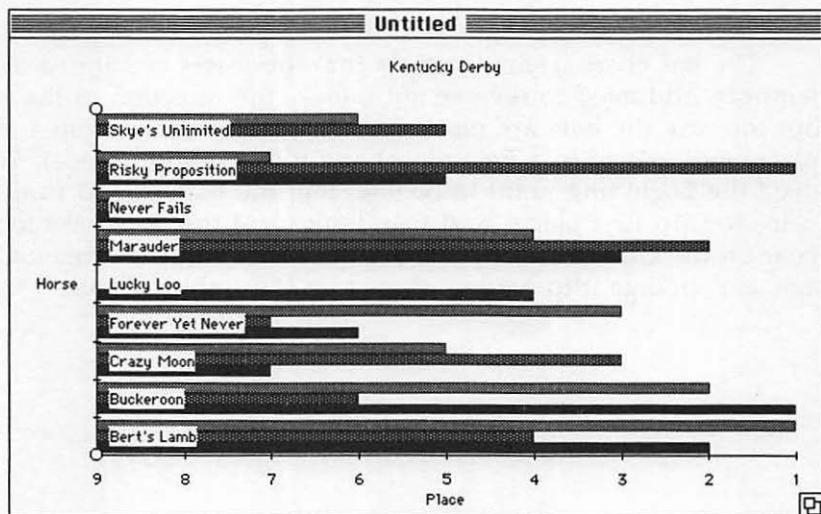
Figure 7-23. Value Axis

Value Axis		Automatic
Range		
Minimum	0	<input checked="" type="checkbox"/>
Maximum	9	<input checked="" type="checkbox"/>
Major Unit:	1	<input checked="" type="checkbox"/>
Minor Unit:	0.2	<input checked="" type="checkbox"/>
Category Axis		
Crosses At:	0	<input checked="" type="checkbox"/>
<input type="checkbox"/> Logarithmic Scale <input type="checkbox"/> Values In Reverse Order		
Tick Label Position		
<input type="radio"/> Low <input type="radio"/> High <input checked="" type="radio"/> Next to Axis		
OK		Cancel

Value Axis		Automatic
Range		
Minimum	1	<input type="checkbox"/>
Maximum	9	<input checked="" type="checkbox"/>
Major Unit:	1	<input checked="" type="checkbox"/>
Minor Unit:	0.2	<input checked="" type="checkbox"/>
Category Axis		
Crosses At:	9	<input type="checkbox"/>
<input type="checkbox"/> Logarithmic Scale <input checked="" type="checkbox"/> Values In Reverse Order		
Tick Label Position		
<input type="radio"/> Low <input type="radio"/> High <input checked="" type="radio"/> Next to Axis		
OK		Cancel

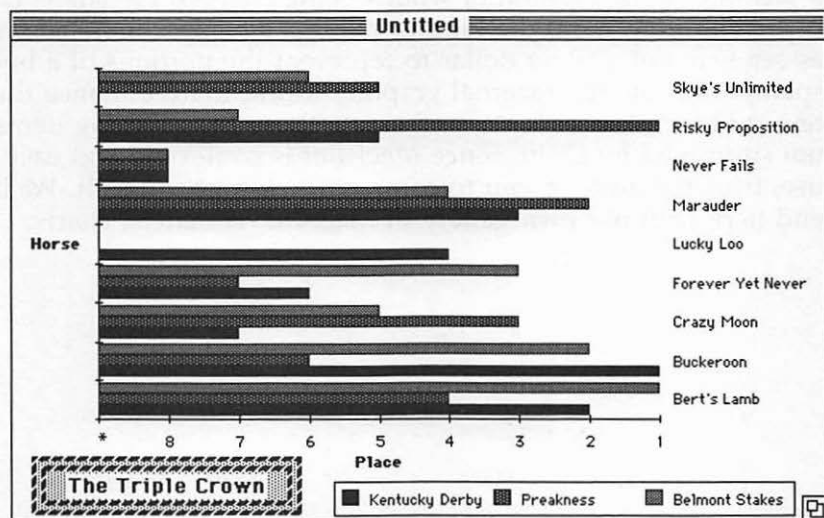
To make the bars start at 9 and extend to 1, the category axis must cross at 9. Since you don't want to display no-shows (a place value of 9), starting the bar at 9 makes a zero-length bar for the no-shows. The minimum chart value must be 1 so that the unused value of 0 is *not* charted. These two settings alone will do the trick, but the bars will extend to the left. You need to imply a race just by the appearance of the chart, so to make the bars extend to the right, click on *Values in Reverse Order*.

Figure 7-24. Bars to the Right



The chart is finished by adding a horizontal bottom legend, changing the title to *The Triple Crown* instead of the default *Kentucky Derby*, and moving the category tick labels to the right side of the chart so that they don't interfere with the bars. Create the legend by selecting *Add Legend* from *Chart*, click on the legend, then choose *Legend* from *Format* and select a *Bottom* legend type. Move the tick labels by clicking on the category (vertical) axis and selecting *Axis* from the *Format* menu. Clicking on *Low* moves the labels to the low (right, since the values are in reverse order) side of the axis. The title can be enhanced with both *Text* and *Patterns* from the *Format* menu. The title is *Unattached* so that it can be moved to the bottom of the chart. Finally, cover up the 9 on the chart, which is misleading, with an asterisk. Your final result should resemble Figure 7-25.

Figure 7-25. The Triple Crown



MacPaint Your Chart

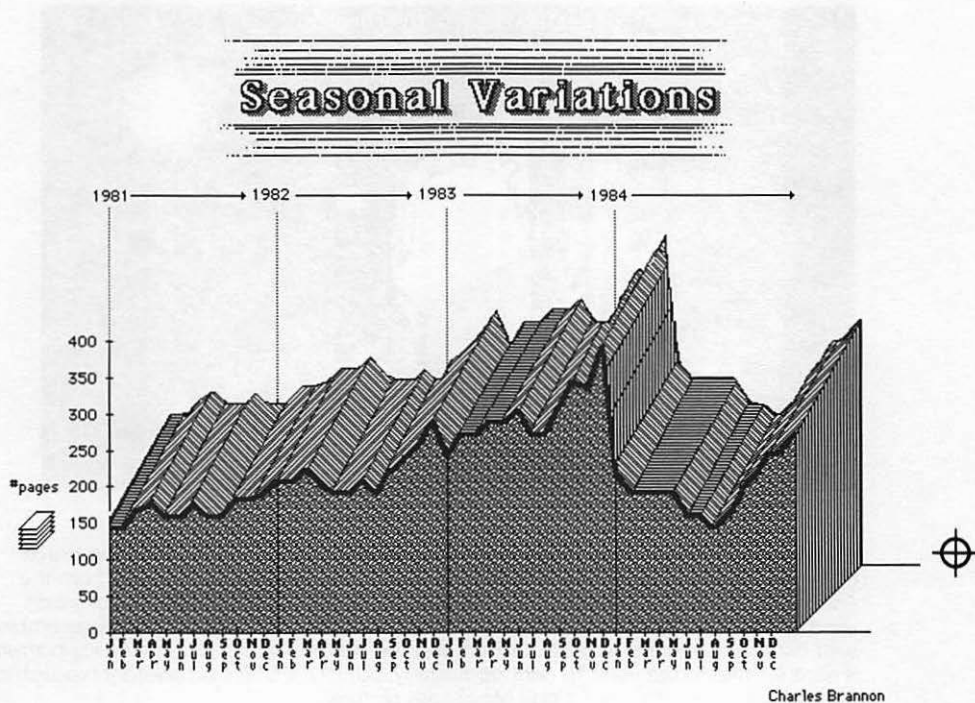
You can even copy the chart as a graphics item and edit it with *MacPaint*. Either press Command-Shift-3 to dump the entire screen to a *MacPaint* file called *Screen 0*, *Screen 1*, *Screen 2*, and so on, or select *Copy Chart* from *Edit* when the *Chart* window is active. If you use *Copy Chart*, select the option *As Shown on Screen* instead of *As Shown when Printed*. You can then paste the chart

into *MacPaint* (again, it's often best to do this through the Scrapbook). *Copy Chart* is neater than dumping the entire screen; only the graphics inside the window are copied. However, it's good only when the chart is smaller than the *MacPaint* window since that's as big a picture as *MacPaint* will accept from the Clipboard.

If you use Command-Shift-3, you can load the screen dump directly into *MacPaint*. You'll usually want to remove (using the marquee selection tool and *Clear* from the *Edit* menu) all the extraneous screen stuff, like the title bars and window edges. *Show Page* from the *Goodies* menu is very helpful here; just drag outside the dotted-line window to push those portions of the drawing you want to remove off the paper. When you click *OK*, these portions are gone. If you made a mistake, you can always use *Undo* from *Edit* or *Revert* from *File*.

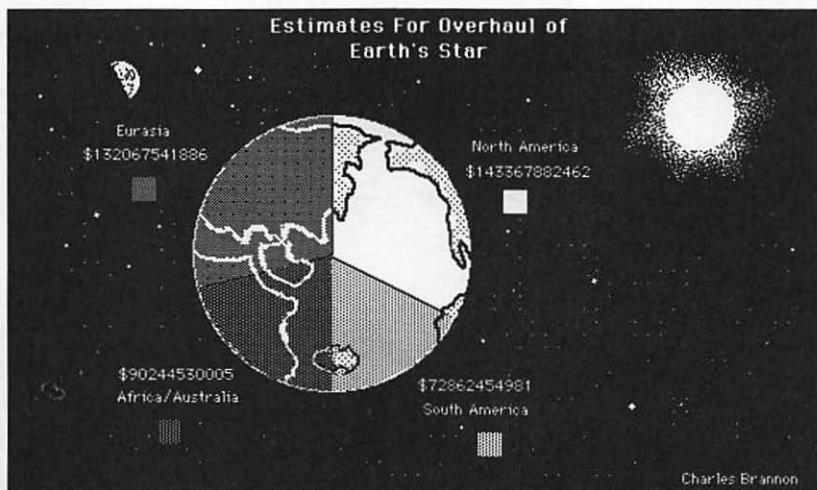
You can now add that personal artistic touch which makes a chart stand out among all others. Bar charts can be illustrated with a pictorial representation of what's being charted. Pie charts can be made to represent the kind of pie that's being illustrated (such as segments of a silver dollar to represent the portions of a budget spent). You can add external graphics to the chart, enhance the text, add text in new fonts, and create those few charting items not supported by *Chart*. Since *MacPaint* is so flexible and easy to use, trust the artist in you to come up with a good result. We'll end here with our own gallery of *MacPaint*-enhanced charts.

Figure 7-26. MacPaint-Enhanced Line Chart



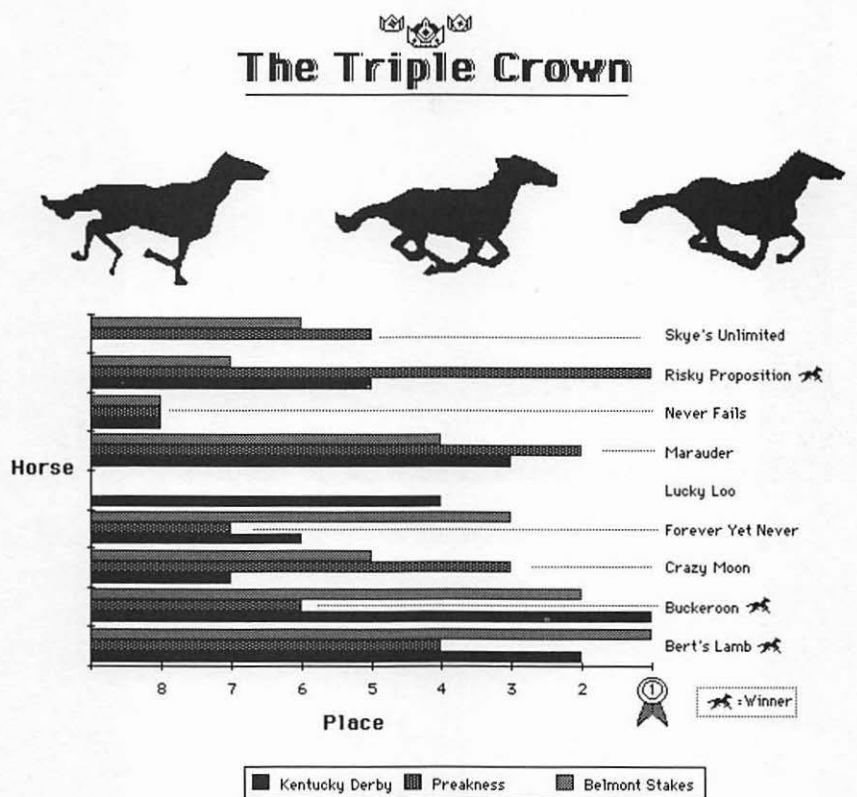
Compare with Figure 7-14. New tiny text is added to fit in all the months. Arrows replace > symbols near years at top of chart. Line was copied and shifted up and to the right, then lines were drawn to connect points. Three-dimensional illusion enhanced with pattern shading. Icon drawn near #pages indication.

Figure 7-27. MacPaint-Enhanced Pie Chart



Compare with Figure 7-20. I took a bit more artistic liberty with this one. The entire chart was selected in pieces with the marquee, then reversed with *Invert* from the *Edit* menu. The sun was created with a solid white circle, with the spray paint can used to fuzz out the edges of the sun's luminosity. The chart legend was disassembled with the marquee and redistributed among the dollar amounts. Such a black pattern is hard for the Imagewriter to print accurately, but COMPUTE!'s proprietary typesetting techniques let us print very clean Macintosh pictures.

Figure 7-28. Triple Crown Winner



Charles Brannon

Compare with Figure 7-25. Tiny horse icons represent the winners of each race. The asterisk used to cover up the 9 is neatly erased. A "blue ribbon" is placed around the first-place position. Dotted lines extend from the center of each cluster of bars to the horse's name. The title is customized by designing a special font effect and adding art. Finally, the large horses were added by tracing them through a sheet of transparent plastic, then affixing the plastic to the screen and tracing the outlines with the paintbrush. FatBits was used to clean up loose bits.

Chapter 8

Sharing with *MacTerminal*



Sharing with *MacTerminal*

Arlan R. Levitan



Telecomputing, the process of sending computer data over regular phone lines, enables you to transfer work which you've produced with your Microsoft applications to other Macintosh systems in remote locations. The remote system may be across town or across an ocean. The process is exactly the same, regardless of the distance involved.

A complete Microsoft *File* database, along with instructions for its use contained in a Microsoft *Word* document, can be transmitted via phone lines to virtually any Macintosh user. Telecomputing can even bridge the gap between Microsoft applications on different computers. For instance, *Multiplan* and *Chart* files may be interchanged between your Macintosh and an IBM PC or PC-compatible. With the proper PC utility, you can even convert *VisiCalc* or *Lotus 1-2-3* files into formats compatible with *Multiplan* or *Chart*.

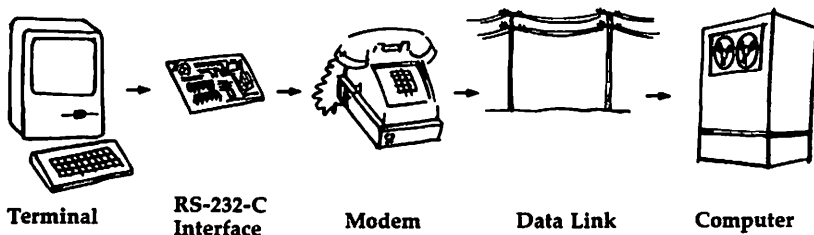
This sharing of information over both long and short distances can be invaluable to your business. Employees spread across the country can keep in close contact with the main office, even receive up-to-date instructions and data concerning clients, sales leads, and product availability. Electronic communications can take the place of long-distance phone calls or overnight mail services. Instead of waiting to deliver something the next morning, telecomputing lets you do it now, this minute.

Telecomputing Theory

Before getting into the specifics of turning your Macintosh into an electronic information system, however, some background information is in order. Telecommunications involves its own jargon. Understanding the concepts involved can help stack the odds of success in your favor.

In its simplest form, a telecomputing link consists of five elements: a terminal, RS-232-C interfaces, modems, a data link, and a computer (also called the *host* system).

Figure 8-1. The Telecomputing Link



Your Macintosh, when running a program like *MacTerminal*, is your *terminal*. Your phone line is the *data link*, and the Macintosh already comes equipped with an *RS-232-C interface* (the connector on the back of the machine with the phone symbol). Thus, you need to buy only one piece of hardware to equip your system for telecomputing—a *modem* (pronounced MOE-DEM).

A modem's job is to turn numeric data within computers into sound (modulation), and change sound back into data (demodulation). Such a device MODulates and DEModulates, hence the name *modem*. (*Direct-connect* modems, like the Apple 1200, hook right into your modular telephone jack and account for the bulk of modems purchased today.)

The *remote computer*, or host, on the other end of the telecomputing link can be anything from another Macintosh to a large mainframe which supports multiple users.

Looking for a Modem

Since you have everything else (we're assuming that you're using *MacTerminal*), the only thing you need to buy is the right modem. That can be confusing. There are hundreds of different brands available and usually several models of each brand. Finding the best to fit your needs, and your pocketbook, can be intimidating.

Fortunately, there are few things you must deal with to choose a modem that's right for you and your Macintosh. Compatibility with both your computer and the terminal software you intend to use is foremost. A modem that won't "talk" to your Macintosh or the terminal software is of little use.

For many Macintosh owners, the most prudent purchase will be one of the modems marketed by Apple. Their prices include the proper cable to connect Macintosh and modem, and their instruction booklets include chapters that deal specifically with

using them with the computer. Another advantage is that since it's the manufacturer's de facto standard modem, the special features of the Apple modems are likely to be supported by most terminal software. The Apple modems also represent a fair value for your dollar. Their pricing places them squarely in the middle of the range for units offering similar features.

Other Brands

Modems made by other companies generally don't come with connecting cables since there's some variation in the type of RS-232-C plugs found on the back of different computers. A cable designed to connect these modems with a Macintosh must usually be purchased separately.

How Much to Spend?

The major determinants of a modem's price are the maximum speed at which it can send and receive data, and the number and variety of other features it includes.

A low-end modem's top speed is usually 300 bits per second (bps). Bits per second may sound somewhat technical, but since it takes 10 bits to send one character, just remember that a speed of 300 bps means approximately 30 characters are transmitted each second. That's about 180 characters a minute. A modem in the low end can range from \$80 to \$280, depending on what other features are included.

Modems which can handle data transmissions at both 300 and 1200 bps (30 or 120 characters per second, respectively) cost from \$200 to \$600.

Also available are 2400 bps modems which are twice as fast as 1200 bps units, and operate on standard voice grade telephone lines. They command a premium price (\$700 to \$1,000). Most 2400 bps units are also capable of 1200 and 300 bps transmission.

Is the premium commanded by medium- or high-speed units a worthwhile investment? That depends. You must balance total communications costs against the lesser amount of time required to receive and/or transmit a given amount of data. The faster you transmit data, for instance, the lower your long-distance phone charges will be.

Features

Here are some of the features to look for when you're shopping for a modem:

- **Autodial.** Almost every modem marketed for the Macintosh can automatically dial the telephone numbers of remote computer systems. A few keystrokes or a couple of clicks of the mouse place the call.

A flexible autodial system will support both pulse (rotary type) and tone dialing. The ability to mix pulse and tone dialing in the same sequence is a must if you live where the local telephone exchange does not react to tone dialing, or if you want to use alternative long-distance services like MCI and Sprint.

- **Autoanswer.** Autoanswer allows your Macintosh, with the appropriate software, to automatically receive files from other computers that call in. This could be vital if you're expecting to have others—your field agents or salespeople, for instance—send data to you outside office hours.
- **Call Status Monitor.** Some modems have internal speakers which allow you to listen to the progress of the call, making it easy to tell if the system is busy, or let you hear recorded messages informing you of a changed or disconnected number.

The bottom line? Stick with autodial modems like the Apple modems or modems billed as Hayes (a very popular brand) compatible. Make sure the modem you buy is supported by the terminal software you wish to use. Let your pocketbook and intended use dictate the top speed of the modem.

Inside a Macintosh File

Your Macintosh is a unique computer. The file structure implemented in the Finder (Macintosh's user interface) and the way it allows applications to handle files impose some special restrictions upon transferring Macintosh files between other Macintosh systems or between a Macintosh and other types of computers.

Macintosh files consist of two elements, called *forks*. Most Macintosh files contain both a *data fork* and a *resource fork*. Consider a letter written with Microsoft Word. The letter appears in the Finder of your system as a document file. If the *View* option is changed to anything other than *By Icon*, the Finder displays information about the file rather than a pictorial icon. One of the pieces of information is the *Kind* of file.

Macintosh files are typically either *applications*, such as Microsoft Word, or *documents*, which are normally associated with the application used to create them. This relationship is referred to as *ownership*. For example, a letter created with Microsoft Word

is usually owned by *Word*. Opening the letter by either double-clicking its icon or selecting the icon and then choosing *Open* from the *File* menu makes the Macintosh attempt to call the application which owns the letter. If the application is available, the computer then loads the file. If the owner of the document is not available on any disk in the system, the Finder tells you. Of course, the document is then not opened.

Information relating to the kind of file and ownership is stored in the resource fork of a Macintosh file. The resource fork also contains special information about the file's appearance. For instance, a *Word* document's resource fork carries all the information concerning the fonts used and the layout of the printed form. For an application file, the resource fork holds information about the environment the program expects to run in, including data which defines the appearance of the application's icon.

On the other hand, the data fork of a *Word* document contains the actual text of the letter. There's no information in the data fork itself about the appearance of the text on the Macintosh screen. Similarly, the data fork of an application contains the actual code executed by the Macintosh when the application is run. Yet the application cannot be run without other information in its resource fork.

You don't see data and resource forks on the Macintosh desktop. The Finder hides the file structure from you and presents a unified icon.

There's a special type of Macintosh document file, a *text* file. Text files are generally used to move textual data between different Macintosh applications. The rules of ownership for these files are slightly relaxed, and applications must be specially constructed to recognize and manipulate them. For example, it's possible to load a text-only file created by Microsoft BASIC into *Word*. Text-only files have little or no resource fork data and are also fairly easy to transfer between the Macintosh and non-Mac systems.

What does this all mean when it comes to file transfers? When transferring files over telephone lines, it necessitates special handling by the sending and receiving terminal software. To transfer both the resource and data forks of a file directly, both the sending and receiving systems must be aware of this special file structure.

The What and Why of XMODEM

An error in transmitting information may not be critical in some cases. If the word *COMPUTE!* were changed to *COMPOTE!* during transmission by line noise or some other error, you'd most likely notice the mistake and be able to infer what the original word was. You could change the error after the file was received by loading the file into a word processor and editing the text.

That's not the case with much of the information in Macintosh files. Because much of the resource fork information is rigidly formatted, the received copy of a file must be an *exact* duplicate of the original.

Trashing one or more pieces of information in a Macintosh file is usually disastrous. Macintosh files transmitted with errors are likely to be unusable.

The need for a reliable way to transfer perfectly exact copies of files was something discovered early in telecommunications. Ward Christensen, one of the coauthors of the first microcomputer bulletin board system (BBS), developed a public domain terminal program for CP/M computers called *MODEM7*. When *MODEM7* users logged onto Christensen's BBS and wanted to transfer a file between the two systems, they instructed the BBS to use a utility program called *XMODEM*.

The ground rules laid down by Christensen back in 1976 are still with us today, and the methodology is used by almost every piece of terminal software around, including those that run on the Macintosh.

How XMODEM Works

The file to be transmitted is essentially chopped up into pieces (blocks) as it's being sent by the terminal software. Each XMODEM block consists of the following elements:

- A special character that delineates the beginning of the block. This character is the same for every block and is called a *start of header* (SOH) character.
- A number which identifies the sequence number of the block. Each time a new block is sent, this number is incremented by one.
- A number used to insure that the block number is correct.
- A 128-byte chunk of the file being transferred. The file is chopped up into these blocks on the sending end and is re-assembled on the receiving end.

- A number used to verify that the 128-byte block received is the same that was sent. This number is called a *checksum*. The sum of the hexadecimal values of all 128 characters in the block is used to check that the data was cleanly received.

Here's what happens during a *MacTerminal* XMODEM file transfer.

- If *MacTerminal* has been told that the remote system is another Macintosh running *MacTerminal*, some special characters are sent which tell the remote system the name of the file being sent and its size.
- The remote system then sends an acknowledgment signal consisting of a single character referred to as an ACK. The first ACK received by your copy of *MacTerminal* means that the remote system is ready for the next block.
- A single XMODEM block is then sent to the remote system. The *MacTerminal* software on the remote end starts to dissect the block. It looks for the start of header character. By convention, the block number is then checked for both validity and proper sequence. It examines the 128 bytes of data and calculates what it believes the checksum result should be. It then compares this with the checksum that was tacked onto the end of the XMODEM block by the sending system. If both the sent and calculated checksums are the same, you can be reasonably sure that the data received has no mistakes in it.
- As each block is successfully received by the remote system, another ACK is sent. If the block number or data was found to be in error, or if a specified amount of time goes by without another block being received, the remote *MacTerminal* software sends a character referred to as a NAK (negative acknowledgment). A NAK indicates a problem with the last block, and it should be resent.
- When the file transfer is complete, a signal called *end of transmission* (EOT) is sent instead of an XMODEM block, concluding the file transfer. A file transfer may be aborted if a single block must be resent more than an agreed-upon number of times (usually ten).

Downloading Via XMODEM

Sending a file is often referred to as *uploading*. Receiving a file is commonly referred to as *downloading*. Once you understand uploading, downloading is easy. The downloading process just places your system on the receiving end of a file transfer.

Getting Started

Make sure that you have the following:

- Modem with power supply and modular phone cords.
- Mac-to-modem cable (supplied with Apple brand modems—purchased separately for most others).
- Small screwdriver with insulated handle (not necessary for Apple brand modem cable).

Follow these next steps to connect your modem and get your system ready to download a file.

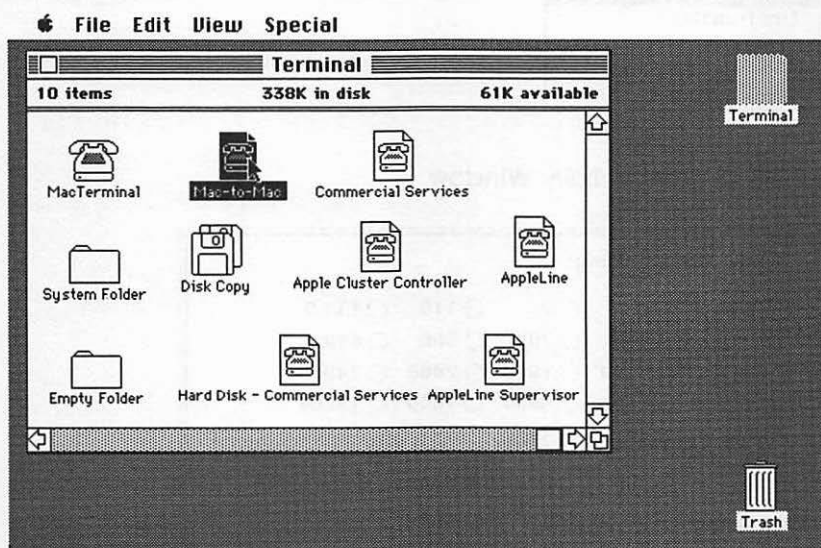
1. Turn the Macintosh's power off and unplug it from the wall outlet.
2. Discharge any static electricity that may have built up on your body by touching the outside edge of one of the empty connectors on the back of the Macintosh. This is just a precaution to minimize the chance of a static discharge, which could inadvertently damage some of the more sensitive components on the Macintosh motherboard. Better safe than sorry.
3. Attach one end of the Mac-to-modem cable to your modem. Only one end will fit. Tighten any screws just enough to firmly secure plug to jack.
4. Attach end of cable with nine-pin connector to the Macintosh connector symbolized by the phone symbol. Tighten any screws just enough to firmly secure plug to jack.
5. Examine the modular jacks on the modem. Connect the modem to the phone line as detailed in the manufacturer's instructions.
6. Most modems come with an external power transformer. Plug one end into the external power jack of the modem and the other end into a power outlet.
7. Turn the modem's power switch to the *on* position. If there is an external switch on the modem labeled *Voice/Data*, make sure it's in the *Voice* position.
8. Plug your Macintosh back into its outlet.
9. Verify that your telephone is still working by lifting the receiver off the hook and listening for a dial tone. If there's none, double-check the accuracy and integrity of all your modular jack connections.

Now let's take a look at how to transfer files from Mac-to-Mac via *MacTerminal*. Remember that two Macintosh systems are involved.

Starting MacTerminal

Turn on your Macintosh and insert the *MacTerminal* disk. The *MacTerminal* icon will appear, along with several *MacTerminal* documents.

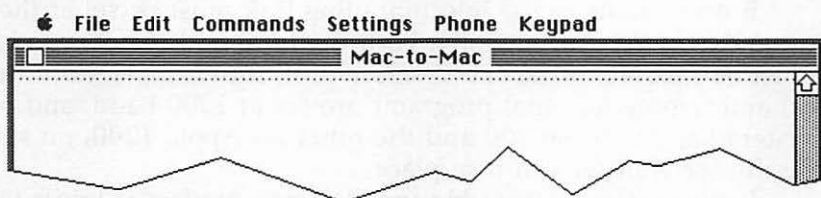
Figure 8-2. *MacTerminal* Desktop



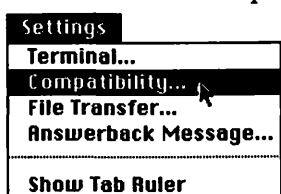
Double-click on the *MacTerminal* document labeled *Mac-to-Mac*. This document has almost all the settings necessary for a Mac-to-Mac transfer ready for you.

A telecomputing session with another computer takes place within *MacTerminal* documents. The menu bar contains pull-down menus which are used to set up terminal parameters and initiate file transfers.

Figure 8-3. *MacTerminal* Introduction Screen

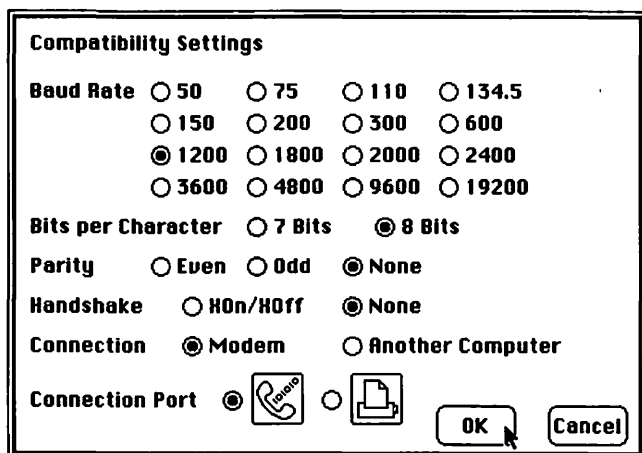


The cursor appears at the location where incoming or outgoing data may appear in the terminal display area. During XMODEM Mac-to-Mac transfers, there will be very little to see since the actual data is not displayed as it's sent and received.



Select *Compatibility* from the *Settings* menu. The following window will appear:

Figure 8-4. *Compatibility* Window



The only item you need set is *Baud Rate*. This sets the transmission speed in bits per second. The use of the term *baud* is not quite correct here. A 1200 bps modem, for example, actually operates at 600 baud. To be consistent with *MacTerminal*, however, we'll use baud instead of bps.

Both systems in the telecomputing link must be set at the same baud rate. Additionally, both the local and remote modems must be capable of the speed selected. If, for example, both the local and remote terminal programs are set at 1200 baud, and one system has an Apple 300 and the other an Apple 1200, no successful file transfer can take place.

If the maximum possible speed of one modem is lower than

the maximum speed of the other, opt for the lower baud rate at both ends. When you're done, click OK.

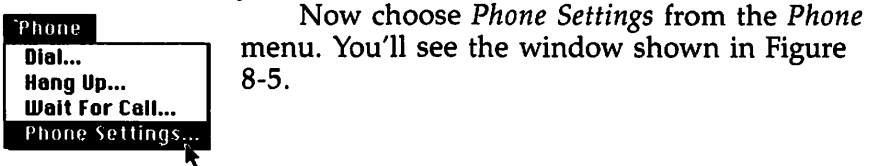
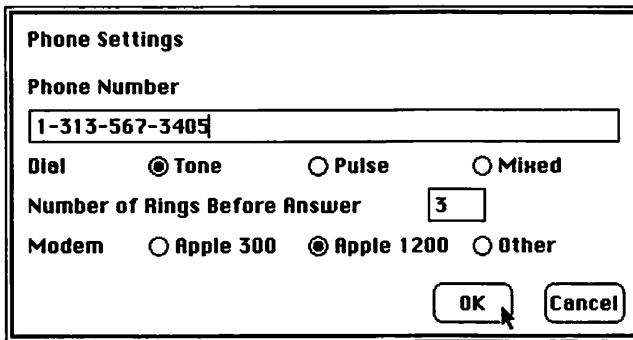
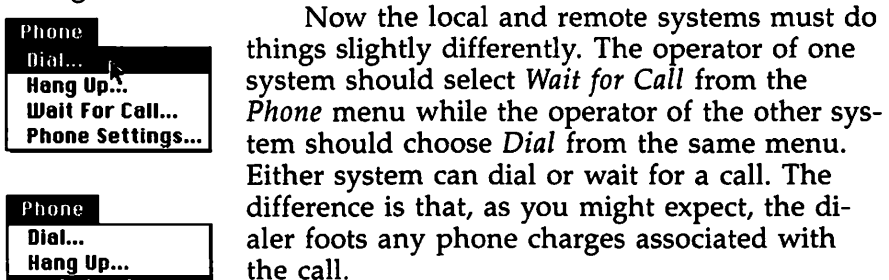


Figure 8-5. Phone Settings Window



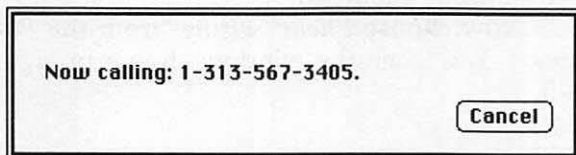
Type in the complete phone number of the remote system. If your phone line doesn't support tone dialing, click the button marked *Pulse*. When you're through, click OK.

If you'll be transferring files between the remote location and your Macintosh in the future, use *Save As* from the *File* menu. Name the file appropriately. If you're transferring files between your Macintosh and the Zug Island office, *Zug Island Office* would be a good choice.



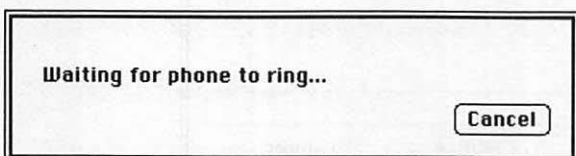
The caller will see a dialog box similar to the one in Figure 8-6.

Figure 8-6. Dial Window



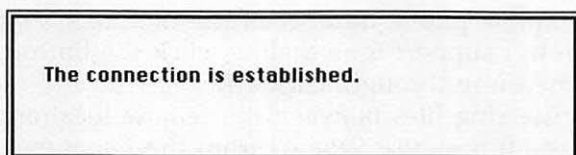
However, the "callee" will see this:

Figure 8-7. Wait for Call



When the calling system is answered, you'll hear a high-pitched tone for a second or two. Then a dialog box will appear stating that the connection has been established.

Figure 8-8. Connection Established



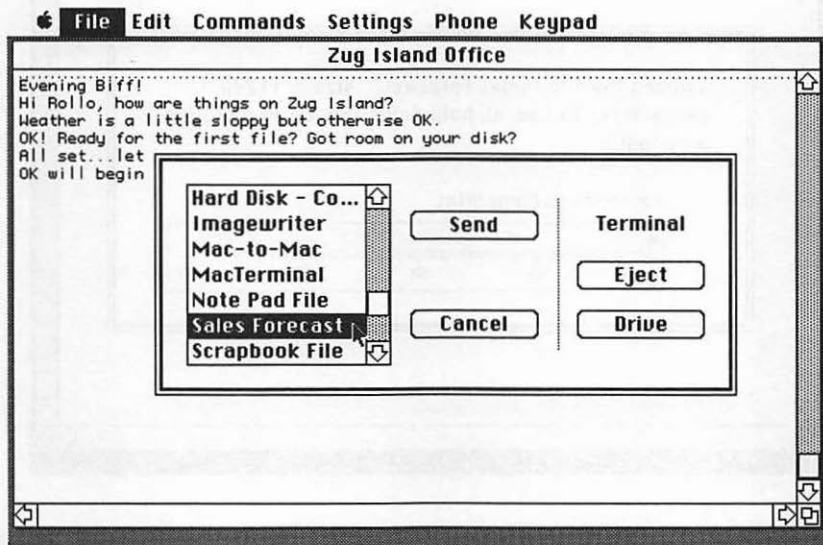
To insure that everything is all right, try typing some messages back and forth, hitting the Return key after each line is entered. Your dialog might look something like this:

Figure 8-9. Pretransfer Dialog



The party wishing to send a file then selects *Send File* from the *File* menu. The standard Macintosh file selection window will be presented.

Figure 8-10. *File* Window

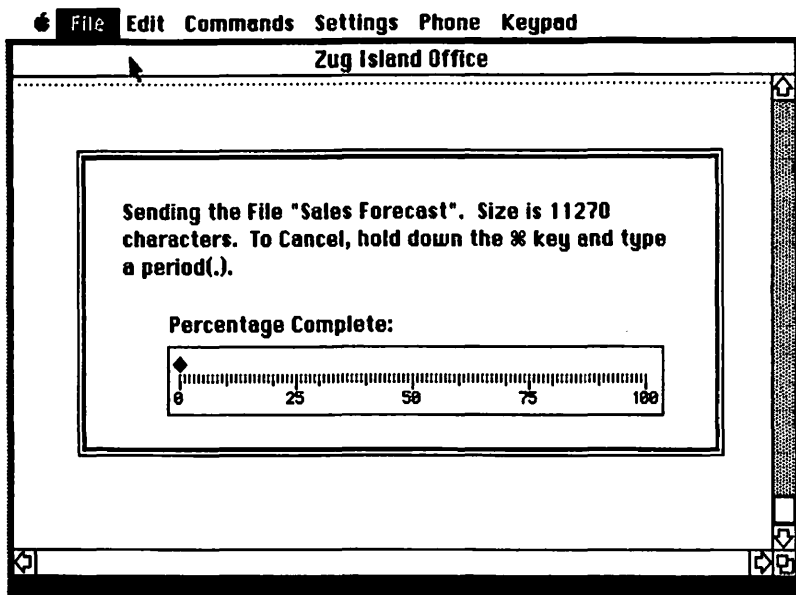


If the file you're transferring is on the current disk, double-click on its name. If you have an external drive, it's an excellent idea to keep the files you're sending and receiving on that drive, which may be selected by using the *Drive* button of the *File* window. If you're using a single-drive Macintosh and the file you want to send is on a different disk, click *Eject* and insert the other disk.

A scale will appear in the window, with a moving pointer showing the progress of the file transmission.

If for some reason you decide to stop sending the file in the middle of the process, hold down the Command key (⌘) and hit the period (.). Otherwise, just sit back and relax, for the file transfer continues on its own. After the transfer is through, you can type another message or two, such as "Got that, Herb" to make sure everything went right. You may then choose to send another file or switch roles with the other system. Its operator would send you a file by selecting *Send File* on the other Macintosh.

Figure 8-11. XMODEM Scale



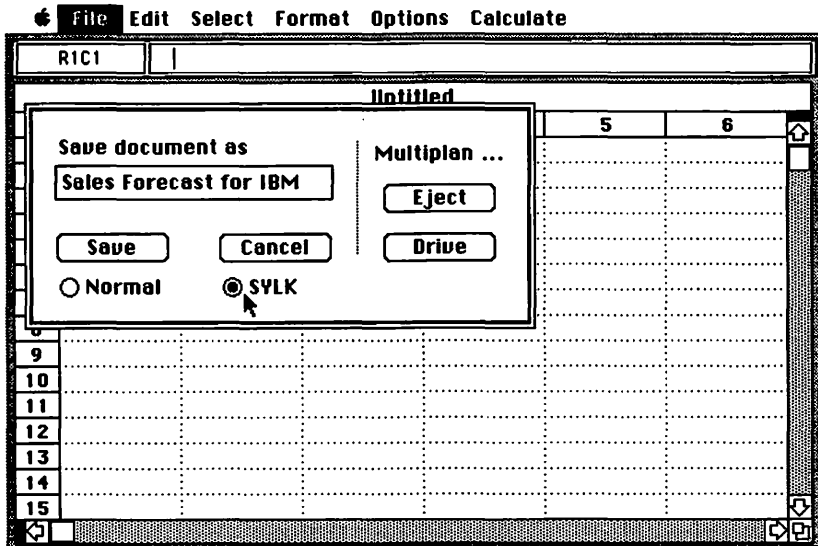
The real beauty of using *MacTerminal* in this manner is that no action is required from the operator of the receiving system other than placing the system in the *Wait for Call* mode. This means that someone could just set the Zug Island Macintosh in *Wait* mode and leave the system unattended. The sender can call at any time and the receiving *MacTerminal* will automatically take care of saving and naming all the files that are sent to it.

When you've finished sending and/or receiving all the desired files, either Macintosh operator should select *Hang Up* from the *Phone* menu. You may then choose *Quit* from the *File* menu and return to the Macintosh desktop. Any files you received will be waiting for you there.

Mac to Other Systems

File interchangeability—*Multiplan* and *Chart*—special formats. SYLK (SYmbolic LinK) files are specially formatted ASCII files that make it possible to exchange documents among selected Microsoft applications running on different machines. SYLK files are created by using the SYLK option of the *Save As* menu selections of both *Multiplan* and *Chart*.

Figure 8-12. SYLK Option Save



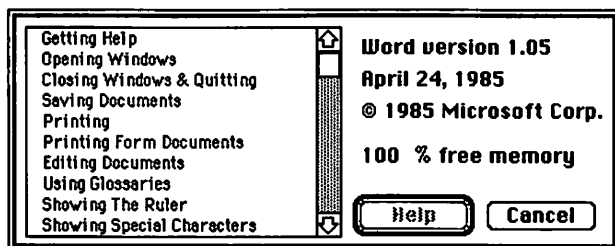
Non-Mac versions of these packages include facilities for saving their work as SYLK files also. IBM PC users who have the PC versions of *Multiplan* and *Chart* can freely exchange their work to and from the Macintosh and IBM program versions by moving documents saved in SYLK format via a telecomputing file transfer. A detailed description of the SYLK file format can be found in the appendices of both the *Multiplan* and *Chart* manuals.

Some spreadsheet applications on the IBM PC use other special formats, notably DIF (Data Interchange Format), which is used by *VisiCalc*, and DIF2 (DIF version 2), used by *Lotus 1-2-3*. Utilities are available for the PC that will convert DIF and other special formats to SYLK (one such utility, called *CONVERTD*, is included with Release 2.0 of *Microsoft Word* for the IBM PC). Once converted, they may be transferred directly into Macintosh *Multiplan* or *Chart*.

File interchangeability—Word—special formats. There are currently some limitations on moving formatted files between the Macintosh and IBM versions of *Microsoft Word*. Release 1.05 (and after) of *Word* for the Macintosh includes a separate, external utility program that will convert formatted IBM PC *Word* files into Macintosh *Word* format.

If you're unsure of what *Word* release you own, check the *About Microsoft Word* command of the pull-down Apple menu within *Word*.

Figure 8-13. *About Microsoft Word*



If you have an earlier release and need the conversion program, contact Microsoft Product Support at 1-800-426-9400 for further information on upgrading your copy.

As of this writing, no utility is available that will convert formatted Macintosh *Word* documents into IBM *Word* format. Macintosh *Word* documents may be transferred into PC *Word* by using the *Text Only* option of the Macintosh *Word Save As* Command. After the text file has been transmitted to the PC, it may be loaded into IBM *Word*. The document will lose all formatting, including justification, centering, spacing, and character formats, but the text itself will be intact.

Similarly, an ASCII (text only) file created by a word processor on any other microcomputer may be transferred and then loaded into Macintosh *Word*. The file will probably need extensive formatting and editing on the Macintosh to work it into the desired appearance.

File interchangeability—Microsoft File. At this time, Microsoft *File* is available only for the Macintosh. You can, however, move a certain type of formatted text document into *File*. The text document is organized by separating values with tab characters and ending each line with a carriage return. *File* interprets each tab-separated value as a field and each return-separated line as a record. (See Chapter 4 for more information concerning fields and records in *File*.) Such a text document can be merged into an existing data file by selecting it from *File's* *Open Datafile* dialog box. This type of text file can also be loaded into *Multiplan* and

Chart. On the IBM PC, the *CONVERTD* utility, included with Release 2.0 of *Word* for the PC, will change files created by PC database programs such as *DBASE II* into formatted text files suitable for *File*.

Transferring Files Between Macintosh and Non-Macintosh

The only change in *MacTerminal* parameters that differs from our previous example is selecting *Other* as the type of remote system in the *File Transfer Settings* option of the *Settings* menu.

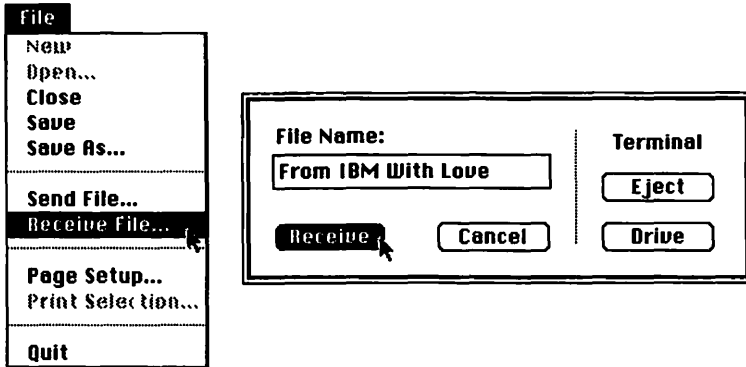
The other computer should be running terminal software that supports XMODEM file transfers. Both systems should have the same baud rate set. In addition, insure that the non-Macintosh computer has the following options set:

- Local echo—**On** (also called *half duplex*)
This insures that any messages typed on the other computer's keyboard will be visible to both parties.
- Bits per character—**8** (also called *word length*)
This option refers to the number of bits that comprise a character.
- Parity—**None**
Parity schemes were once used to implement a simple form of error checking. It is rarely used these days.
- Stop bits—**1** (optional)
Some computers have this setting available. It specifies how many bits are used to indicate the end of a character. The default value is usually 1; the only other valid value for this parameter is 2, and it is rarely used.

One computer should be set to answer the phone. The other should be instructed to dial its counterpart. After the connection is established, the *Receive* function should be invoked by the operator of the target system and the *Send* function by the operator of the system transmitting a file.

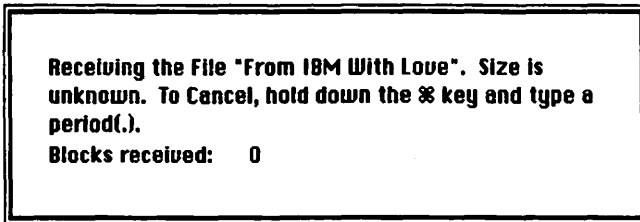
The method of invoking the *Send* procedure on the Macintosh remains exactly the same as before. If the Macintosh is receiving a file, *Receive File* is selected from the *File* menu and a name manually assigned to the incoming file.

Figure 8-14. File Menu and Receive File



During the receive operation, the XMODEM scale is replaced by a slightly different dialog box.

Figure 8-15. Receive Dialog Box



The operator of the other system must insure that the commands required to invoke XMODEM *Send* and/or *Receive* are selected.

Mac to Other Systems via Local Attachment

It's also possible to move data between systems located nearby without using modems. The purpose of a modem is to turn data into a form which can be sent as an audible signal over a phone line. If the two systems are in the same room, a simple cable connection between the two systems will suffice. Since such a cable obviates the need for using a modem on each computer, it's called a *modem eliminator*, or *null modem*.

A modem eliminator will typically be used for transferring data between two unlike computers. After all, if the two comput-

ers are both Macintoshes, it's easier just to make a copy of the disk rather than fool around with file transfers.

Eliminating the modem from a transfer link also allows you to use higher transmission speeds since the data rate of the modem is no longer a factor. Transmission rates of 4800 or 9600 bps are typically used for file transmission via null modem. A terminal program running in the non-Macintosh computer is used to send or receive data to and from the Macintosh end.

Your local Macintosh dealer should be able to put together a null modem cable for you.

Notes for Non-Apple Modem Users

MacTerminal is somewhat finicky about what it expects to receive from the modem. If the modem doesn't act just like an Apple modem, you may be told that *no modem is attached*. Fortunately, owners of most Hayes-compatible modems can set their modems so that *MacTerminal* thinks it's a genuine Apple. When the *MacTerminal* screen first appears, type the following:

ATE0 (hit Return key)

ATV0 (hit Return key)

If you don't shut off the power to your modem between sessions, these commands need not be entered again. An alternative is to set the option switches of your modem so that (a) the modem does not echo commands sent from the keyboard, and (b) numeric rather than verbal result codes are used. Consult the manual of your Hayes-compatible modem for the location of the switches that control these options.

Owners of modems which accept a standard 25-pin RS-232 plug do not necessarily have to build a separate null modem cable to transfer files directly from their Macintosh to another computer in the same room. The plug may be removed from the modem and plugged directly into the RS-232 port of the other system (a female-to-female adapter plug may be required, depending upon the type of plugs that must be mated together). While the cable is not physically wired in the same way as a null modem, a special option of *MacTerminal* can reverse the necessary connections. Setting *Connection to Another Computer* in the *Compatibility* dialog box will temporarily turn the regular modem cable into a null modem cable.

Using Information Services for Intermediate Storage

Many of the commercial information services, like CompuServe and The Source, offer file areas which subscribers may use to store and retrieve files. Here, also, XMODEM file transfer is the preferred method of moving data to and from your Macintosh.

Why would you want to take advantage of such a storage area? Consider our original file transfer example. Since only one office needed a copy of the documents to be sent, it made sense to call Zug Island directly. But what if 5 or even 50 offices were involved? The local office could transfer a copy of the needed file(s) only once to the file area of an information service. The remote offices could all get the files by dialing into the information service and downloading them. While all the phone calls would usually be local rather than long distance, you must add in the hourly access charge of the service when comparing the cost of using this file storage area rather than dialing each office directly.

MacTerminal does impose a limitation on using information services for file transfer. Since *MacTerminal* will not transfer the resource fork information for a Macintosh file to anything other than another Macintosh running *MacTerminal*, Mac files other than text-only documents must be run through a conversion program. This conversion process turns the entire file into another type of file called *hexadecimal*, or *hex* for short. The ASCII hex file is then uploaded to the service. When downloaded by another *MacTerminal* user, the hex file must be run through yet another conversion process which will reverse the initial conversion and go from hex to binary.

Fortunately, there is a widely used, inexpensive program for the Macintosh called *BinHex* which will perform such conversions. It's readily available at no charge from Macintosh user groups or can be obtained for \$10 from its author, Yves Lempereur, 28611B Canwood Street, Agoura Hills, California 91301.

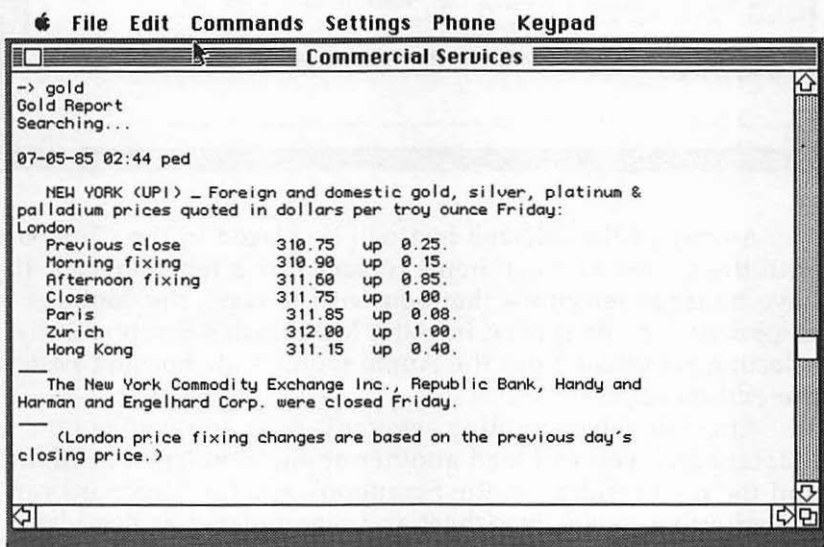
If you're willing to forgo using *MacTerminal*, there's an excellent terminal program called *Red Ryder* which is also available from user groups. Release 5.0 and above of *Red Ryder* allows direct transfer of almost all Macintosh files to and from information services with no conversion required. *Red Ryder* is also not subject to the file size limitations of *MacTerminal* (*MacTerminal* will XMODEM-transfer files and documents smaller than 50K to and from non-Macintosh systems). If you need more information about the latest release of *Red Ryder*, contact the FreeSoft Company, 10828 Lacklink, St. Louis, Missouri 63114.

Copying Data from *MacTerminal* to Other Applications

New *MacTerminal* documents are preset to record incoming or outgoing data (with the exception of data transferred via XMODEM) as it scrolls off the top of the terminal screen. You can select all or part of the data in a *MacTerminal* document and then copy it to the Macintosh's Clipboard using the copy options provided. If the data is in columnar format, a special copy option is available which makes moving such data into *Word*, *Chart*, *Multiplan*, or *File* a snap.

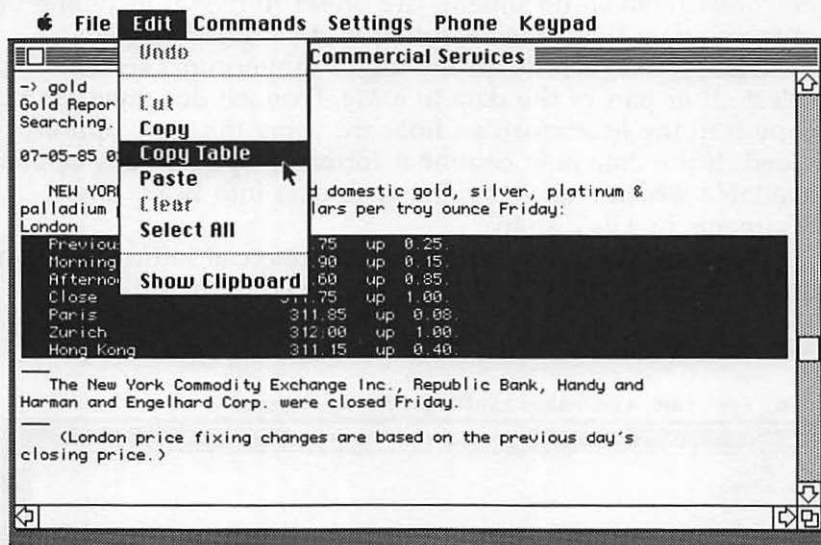
Suppose you're logged onto a commercial information service and have the following information on your screen:

Figure 8-16. Gold Quote Screen



You can select the text you desire by dragging the mouse cursor across it, or by choosing an insertion point at one end of the text, holding down the Shift key, and clicking where you want to end the selection. Choose the *Copy Table* command from the *Edit* menu.

Figure 8-17. Copy Table Screen



A copy of the selected text will be placed in the Clipboard with the spaces between items replaced by a tab character. If you have multiple selections that you wish to copy, the contents of the Clipboard may be moved into the Macintosh's Scrapbook by selecting *Scrapbook* from the Apple menu and choosing *Paste* from the *Edit* menu.

After the telecomputing session is over and you've quit *MacTerminal*, you can load another application (such as *Multiplan*), and the data residing in the Scrapbook and/or Clipboard can be pasted into a new spreadsheet and manipulated as need be.

Figure 8-18. Multiplan Gold Screen

	1	2	3	4	5
1	Previous close	310.75	up	0.25.	
2	Morning fixing	310.9	up	0.15.	
3	Afternoon fixing	311.6	up	0.85.	
4	Close	311.75	up	1.00.	
5	Paris	311.85	up	0.08.	
6	Zurich	312	up	1.00.	
7	Hong Kong	311.15	up	0.40.	
8					
9					
10					
11					
12					
13					
14					
15					

The Information Services

When you go online with an information service, a whole new world of information opens up. You can gather a wide variety of information without ever leaving your home, and this information can either be printed out or stored in compact form as disk files. Here are some of the services you're likely to see offered:

General

News, sports, and weather. Many services carry stories from the UPI and/or AP wires. The service may offer a menu of the latest stories or allow you to search the wire for a particular story or type of story. Online editions of daily newspapers, such as the *Washington Post*, are also commonly found.

Online magazines. These magazines range from electronic editions of print publications (like *Popular Science* or *Family Computing*) to online exclusives.

Travel information. Airline scheduling and price information, including the definitive (and somewhat expensive) online version of the *Official Airline Guide*, is often available. Restaurant and hotel guides are common and may be more current than printed versions.

Government publications. Some databases carry the text of Internal Revenue and/or Social Security Administration publications.

Research. Research databases let you search through abstracts of thousands of magazine and journal articles drawn from the technical and professional literature in selected subject areas such as medicine, engineering, chemistry, education, social sciences, and religion.

Many of the general information services feature an online edition of an entire encyclopedia. Articles may be retrieved by title (and in some cases by subject reference).

Financial

Business and financial information. Stock price quotations are the most prevalent feature, but many services also include fundamental financial data about major corporations, economic analysis and forecasts, business news, journal articles, and employment services.

Banking. Information utilities like CompuServe and Delphi offer accounts through a number of banks, and the Bank of America has recently announced its own version of the electronic account. Most such accounts, for example, offer checkless electronic funds transfers for paying bills to thousands of institutions.

Stock transactions. Brokerage accounts are available that allow you to transact business online. The most ambitious of these is the program announced by The Source in connection with Spear Securities. This service lets you receive confirmation within a couple of minutes of ordering. It provides many other benefits such as automatic portfolio tracking (even putting together and tracking paper portfolios to test a strategy without investing any money). It even allows investors to get up-to-the-minute quote information (without the usual exchange delay) before placing orders.

Communications

One of the strong points of telecomputing services is their ability to facilitate communication. Often, other computer users prove to be a more valuable source of information than the pages of text stored on a system. The services that are offered in this area include electronic mail, message boards, and direct online communications (computer conferencing).

Electronic mail. Electronic mail is a service whereby one user can send a message to another. Typically, the user either

composes the message online, or writes it offline, saves it to a file, and then transfers that file.

Message boards. Message boards work somewhat like the bulletin board in your local supermarket. Users can leave messages of general interest for all others to read. These boards are usually organized by the subject of the messages (such as a particular computer, like the Macintosh). Message boards are an excellent place to buy or sell equipment, ask questions, and gain the benefits of other users' experiences. Included in this category are public file access areas, where users can retrieve program files containing software written by others.

Conferencing. *Conferencing* is a term which is meant to include all direct user-to-user communication. During a conference, everything that's typed at one user's keyboard appears on the other's display screen. Two users may carry on a private conversation or many users may participate in a spirited free-for-all.

The Services at a Glance

MacTerminal comes packaged with a number of special offers for membership in various commercial information services. Here's a brief compendium of the most popular information services in operation today.

CompuServe's Consumer Information Service

CompuServe Information Service
5000 Arlington Centre Boulevard
P.O. Box 20212
Columbus, Ohio 43220
(800) 848-8199
(614) 457-0802 (in Ohio)

CompuServe is a consumer-oriented videotex service, with more than 140,000 active subscribers. The Consumer Information Service (CIS) contains hundreds of databases, and CompuServe has tried to structure this mammoth service so that it contains something to please everyone. Because of its low prices, variety of service, easy access, and easy-to-use structure of multiple menus and online aids, joining CIS is an ideal way for average users to become acquainted with the advantages of telecomputing.

Along with the benefits, however, come several drawbacks. The system is so large as to overwhelm and dismay beginners. Even seasoned users may find it difficult to navigate. At times there are so many users on the system that it's sluggish and unresponsive, especially during peak hours.

Despite these minor problems, new users continue to pour into the system. The reason is simple. For what's offered, the price is hard to beat.

CompuServe's Executive Information Service

CompuServe Information Service
5000 Arlington Centre Boulevard
P.O. Box 20212
Columbus, Ohio 43220
(800) 848-8199
(614) 457-0802 (in Ohio)

The boom in business use of personal computers inspired CompuServe to develop an additional service for people who had never debugged a program or played a computer game. The Executive Information Service is CompuServe with a touch of class. It contains most of the databases as the Consumer Service, only clustered differently to appeal to business and professional users. Some new services have also been added to beef up business and investment coverage. All Executive Service subscribers also have complete access to the Consumer Service, at the same rates as any other member.

The Executive Information Service doesn't offer all that much more than CompuServe's Consumer Service, but on the other hand it doesn't cost much more, either. If you need financial information or the news clipping service, you'll appreciate the improved layout and superior documentation offered by this service.

The Source

Source Telecomputing Corporation
1616 Anderson Road
McLean, Virginia 22102
(800) 336-3366
(703) 821-6666 (in Virginia)

Although it has fewer subscribers than CompuServe, The Source appears to operate on the premise that quality is more important than quantity.

It may not feature all the databases offered by CompuServe, but it still offers almost every conceivable type of online service. The Source is a smooth-running system that strikes a good balance between ease of use for beginners and power and flexibility for more advanced users. It is a premium information service at popular prices.

Dow Jones News/Retrieval

Dow Jones and Company, Inc.

P.O. Box 300

Princeton, New Jersey 08540

(800) 257-5114

(609) 452-2000 (in New Jersey)

Dow Jones News/Retrieval provides detailed financial information about public and private companies, current and historical stock market quotes and averages, research and economic survey services, and business and economic news services that range from current capsule summaries to the full text of the *Wall Street Journal*. In addition, it offers more general information services.

Dow Jones does not come cheap. Because of the rather steep fee structure, prospective users of this service should be aware that the same types of services (and in some cases, the same databases) are often available elsewhere for a fraction of the cost.

Despite its relatively high cost and difficulty of use, Dow Jones may be of interest to business users because of its dedication to quality and its high level of support.

Delphi

General Videotex Corporation

3 Blackstone Street

Cambridge, Massachusetts 02139

(617) 491-3393

Delphi is a relatively new information utility, but it already offers services that rival, and in some cases surpass, those of the established giants. It offers full-featured database services, but is very easy to operate. The electronic mail and conference sections are very well implemented, and Delphi has some unique features, such as the ability to send electronic mail to users of The Source and CompuServe.

The biggest drawback to Delphi is its relatively small base of users. With fewer than 6,000 subscribers, it's quite possible to log on and be the only one on the system. Within its limits, Delphi is a friendly, responsive system, with about the lowest possible connect-time charges. Moreover, Delphi has some big changes planned, which could make it more competitive with the major information services.

NewsNet

945 Haverford Road
Bryn Mawr, Pennsylvania 19010
(800) 345-1301
(215) 527-8030 (in Pennsylvania)

NewsNet is a research service that features the full text of dozens of private industry newsletters, plus the UPI wire. It has innovative features such as an electronic clipping service that automatically deposits items on a designated subject into your electronic mailbox.

The service carries newsletters in a wide range of subject categories from advertising and marketing to real estate and taxation.

MCI Mail

MCI Mail
Box 1001
1900 M Street, NW
Washington, DC 20036
(800) 624-2255

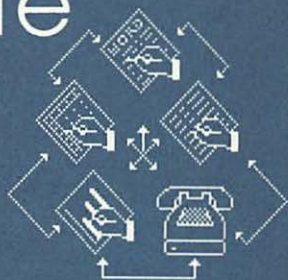
Electronic mail may be here, but it has yet to catch on in a big way. There are a number of different services, such as Western Union's Easylink and the Postal Service's Ecom, but they allow electronic delivery only to subscribers of the same service. Of the electronic mail services, MCI Mail does seem to come closest to delivering on the promise of electronic communications. Paper correspondence sent by MCI Mail can be customized with the sender's letterhead and signatures so that it looks like a real letter.

Not the End

This chapter has shown how to transfer files from your Macintosh to almost any other type of computer. But it's just briefly touched on telecomputing theory and the world of information accessible via a modem-equipped Macintosh running sophisticated terminal software. The *MacTerminal* manual contains more detailed information on operating *MacTerminal* and the other features it provides. Readers who want more information on telecomputing should consider acquiring an entire book devoted to the subject. If your curiosity has been "double-clicked" by this chapter, you may want to take note of COMPUTE!'s book *MacTalk, Telecomputing on the Macintosh* for future reference.

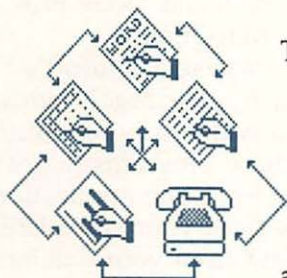
Chapter 9

The Complete MacOffice



The Complete MacOffice

Vahé Guzelimian



The word *personal* in personal computing implies independence. With a computer, you can do things it previously took an entire staff to do. If only for that reason, personal computers are revolutionizing today's office. You can have independence, for you're able to create your own reports, manage your own accounts, and locate almost any

kind of information. A word processor makes it easy to construct anything ranging from annual reports to business letters. A spreadsheet program can help track accounts payable and accounts receivable, providing up-to-date figures for the bottom line on demand. A database program can retrieve information very quickly.

But you also can use a personal computer to maintain direct control over your office environment. Not just your own desk, but throughout your office or even throughout your entire company. Your support staff, consisting of secretaries, file clerks, accountants, graphic artists, project managers, and others, offer extended office capabilities, but sometimes it's difficult to get the parts to act as a whole. The computer allows you to directly supervise personnel in the office next door or in the branch office across the country.

With the electronic office, you can retain control *and* maintain independence.

Putting It All Together

The Macintosh's office presence is spreading. It's so quick and easy to use that any executive can carry out many of the tasks typically relegated to a support staff. And many of those functions remaining with the staff can be reviewed quickly and on demand.

The vice president of a software development firm boots her Macintosh and starts a spreadsheet program, runs some calculations, and copies a range of numbers to the Clipboard. She quits the spreadsheet program and opens a graphics program, instructing it to represent the data as a pie chart. She copies the graphics into the Clipboard, opens the word processor, and types in a

letter. She pastes the chart into the letter to describe the numbers she's referring to. The result is handsome and presentable.

The Macintosh was designed to let you orchestrate several programs to perform together in a harmonious manner. This chapter shows how you can integrate several stand-alone programs to increase your productivity in the MacOffice.

In previous chapters, you learned how to use Microsoft's *Multiplan*, *Chart*, *Word*, and *File*, as well as Apple's *MacTerminal*. These are powerful applications, offering a wide array of features to fill your business needs. The value of these programs increases dramatically when you learn to move data from one application to another. You can create charts and reports from your spreadsheet calculations or write letters that include data from your database and spreadsheet documents. It's all quite simple with the Macintosh.

Free Integration

Several commercially available integrated software packages for the Macintosh offer you a collection of programs that produce data which can be moved from one component to another. Unfortunately, this capability has its price, a rather steep one. To fit all these large applications into a disk that can hold only 400K of information, integrated software must pare the features the individual components provide. What you end up with is one powerful central component, such as a spreadsheet or database, and a number of weaker applications to support it. If you were shopping for software, you'd probably never give these secondary programs serious consideration as separate applications. As Steven Jobs, chairman of Apple Computer, puts it, "It's almost impossible to have the best version of each program in the [integrated] package," adding that he thinks most integrated software "is a compromise" (*Computer Systems News*, May 6, 1985).

Why buy integrated software when you already have a number of powerful applications, like Microsoft *Multiplan* and *Chart*, that you can integrate yourself? With a free program called *Switcher* (available from Apple dealers and on CompuServe's MAUG Forum, among other places), you can integrate the programs of your choice. *Switcher* lets you move from one program to another even faster than you can with integrated packages. *Switcher* also allows quick and easy transfer of data between files of different programs.

In this chapter of *MacOffice: Using the Macintosh for Everything*, you'll learn how to use *Multiplan*, *File*, *Chart*, *MacTerminal*, and *Word* to perform a single task.

Figure 9-1. Software for Integration



We call the task *project management*. Our example is a simple business application. We've emphasized the integration of the applications rather than the applications themselves. Once you understand how to integrate data from several stand-alone programs, you can develop your own more complex integrated Macintosh systems.

Project Management

Project management can be a very useful and time-saving task for Macintosh computers in a business environment. In our example, several projects are being worked on by several employees at the same time, but in different offices. Employees enter their time cards into their own *Multiplan* worksheets and send the information via telephone lines and modem each week to a project manager. The project manager uses a second *Multiplan* worksheet to summarize all the time cards for that week. The manager then uses *Microsoft File* to maintain a database of weekly time card summaries. This database is updated each week to track the time spent on various jobs, informing the manager which employees are working on which jobs, how much time each employee is spending on each job, and how much total time each job is taking. *File* enables the manager to produce a variety of reports that present this data according to specified criteria. *Chart* can be used to create a pie chart to describe how an employee's time is divided among several different jobs. Finally, the project manager can use *Microsoft Word* to prepare a letter containing the pie chart from *Chart*, and perhaps a series of numbers from *File*, and send it by modem to officers of the company.

Integration allows businesses to make more efficient use of data generated by specialized programs. The Macintosh automates the process of collecting, transmitting, and analyzing weekly data.

It then gives you the freedom to incorporate the results into charts, reports, and letters. Projects can be tracked as they develop.

Creating the Time Card

In our example, each employee fills out a time card each week to track the number of hours spent on each job. The time cards are sent to the project manager by a modem controlled by *Mac-Terminal*. The manager uses a job summary template to collect all the data from the time cards automatically, summarizing all the hours spent on all the jobs by all the employees each week. In this section, you'll see how to create just such a time card for each employee of your firm.

Setting Up the Labels and Formatting

Your first task as project manager is to create a *Multiplan* worksheet to serve as the time card. Insert your *Multiplan* disk and double-click its icon to open the spreadsheet. First, you'll enter the labels above the dashed line as they appear in Figure 9-2.

Figure 9-2. Starting the Timecard Template

Time Card 1									
	1	2	3	4	5	6	7	8	9
1	Time Card								
2	Employee Name:								
3	Week Ending:								
4	-----								
5	Job Number	Total	Sat	Sun	Mon	Tue	Wed	Thur	Fri
6	-----								
7		0							
8		0							
9		0							
10		0							
11		0							
12		0							
13		0							
14	-----								
15		0	0	0	0	0	0	0	0

Select the first cell, type in **Time Card**, and press the Enter key. Click on the Row 2, Column 2 cell (R2C2), type **Employee**

Name; and press Enter. Don't worry about typing more characters than the cell can hold. When you press Enter after making an entry, *Multiplan* displays all the typed text into that cell, spilling its extra into empty cells to the right.

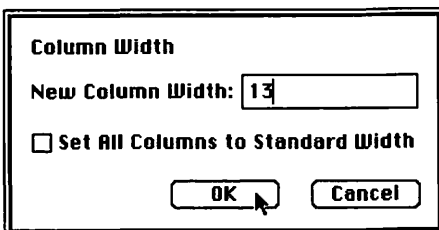
In the same way, type **Week Ending:** in cell R3C2 and press Enter. Now you'll enter a series of labels for Row 5. The best way to do this is to select all the Row 5 cells into which you'll enter labels by dragging the mouse pointer from R5C1 to R5C9. All selected cells are highlighted. The current cell for data entry is cell R5C1. Type **Job Number** and press Enter (remember to press the Enter key, *not* Return). The current cell indicator moves to the next highlighted cell. Type **Total** into this cell and press Enter. Type **Sun** into the next cell, **Mon** into the next, and so on, until you've entered all the days of the week.



But the labels—Time Card, Job Number, the days of the week, and Total—would look better centered. To do that, select them all by clicking on the Row 5 head (which displays the row number) to select this row, and Command-click (hold down the ⌘ while you click the mouse's button) cell R1C1 to select it, too. Then choose *Align Center* from the *Format* menu to complete the centering procedure.

Now you can adjust the column widths to make your worksheet look like that of Figure 9-2. Select the column head for Column 1, choose *Column Width* from the *Format* menu, and specify 13 for the number of spaces (Figure 9-3).

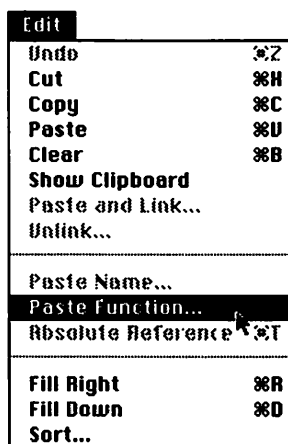
Figure 9-3. Setting Column Width



Columns 3 through 9 contain the days of the week. Drag the pointer from the Column 3 head to the Column 9 head to highlight them. Use the *Cell Width* option from the *Format* menu to set the width to 5. Now click on the head for Column 2 and set Column width to 9.

The easiest way to enter the dividing lines is to use the repeat function. The syntax for the repeat function is

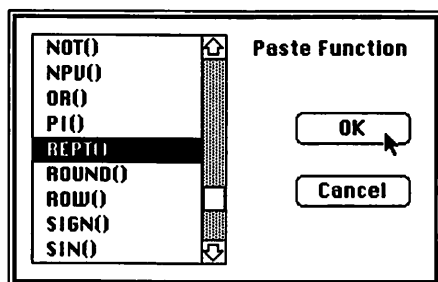
REPT("character",number of repetitions)



Click on R6C1 and enter **=REPT("=",63)**. This will enter 63 equal (=) characters stretched across Row 6. Another way to enter the repeat function is to choose *Paste Function* from the *Edit* menu.

You can scroll through the various formulas listed with the scroll bar on the right side of the *Paste Function* dialog box. When you find the formula, click to highlight the repeat formula (Figure 9-4).

Figure 9-4. Formula Choices



Clicking *OK* enters the formula into the selected worksheet cell with the blinking cursor inside the parentheses, waiting for your entry. Type in **"=",63** and press Enter.

The easiest way to enter the dividing line for Row 14 (again, refer to Figure 9-2) is to copy the formula for the dividing line from Row 6. Click cell R14C1, type an equal sign, click cell R6C1,

and press Enter. This copies cell R6C1's contents into R14C1. If you ever go back and change the contents of cell R6C1, the Row 14 contents will also change automatically. This worksheet gives you seven rows, for up to seven different jobs. You could add more rows if you needed to track more jobs.

Entering the Formulas

Now you're ready to enter the formulas that will do all your calculations. The formulas you need will calculate the row sums for the employee's total time spent on each job and the column sums, which show the total hours the employee spent working on each day of that particular week.

Multiplan makes it very easy for you to enter formulas that refer to other cells of the worksheet. Rather than typing R9C2, for example, to refer to that particular cell, all you have to do is click on the cell and *Multiplan* enters a relative cell reference into your formula. The formula shows the location of this cell relative to the cell in which you're entering the formula. If you were typing the formula in cell R10C6 and clicked on the example cell R9C2, *Multiplan* would enter that cell reference as R[-1]C[-4]. The contents of the square brackets count how many rows and columns *Multiplan* must backtrack to get to the chosen cell. Notice that R9C2 is one row up (-1) from and 4 columns to the left (-4) of R10C6. You can enter references to a range of adjacent cells by dragging the pointer, as you'll see in a moment.

To enter the first row sum equation, click cell R7C2 and type an equal sign (=). This lets *Multiplan* know you're going to enter a formula rather than a label or number. Choose *Paste Function* from the *Edit* menu and scroll through the formulas until you find SUM(). Click it, then click OK to insert the SUM formula in your cell. SUM is used in several places to calculate totals of two or more cells. The syntax for SUM is

SUM(starting cell:ending cell)

To enter the range of cells you want to sum, drag the pointer arrow across the cells from R7C8 to R7C2. *Multiplan* puts the reference to this range of cells automatically into your formula.

Displayed in the bar above your spreadsheet, your formula looks like this: =SUM(RC[+1]:RC[+7]). (The colon in the middle of the formula is the symbol for a range of cells.) This tells *Multiplan* that you want a reference to the cells that extend from one column to the right within this row (RC[+1]) to the cell seven

columns to the right (RC[+7]). Press Enter. Since no values have been typed into these summed cells, the total in the cell containing the formula is zero.

Let's see exactly how valuable relative cell references can be. You must enter sum equations into the cells below cell R7C2. *Multiplan's Fill Down* and *Fill Right* commands from the *Edit* menu make it easy to copy cell contents into succeeding cells. To copy your sum formula into the cells for the various jobs, drag the mouse pointer from R7C2 to R13C2 to select these cells. Choose *Fill Down* from the *Edit* menu, and you've finished.

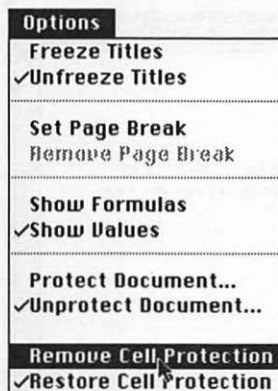
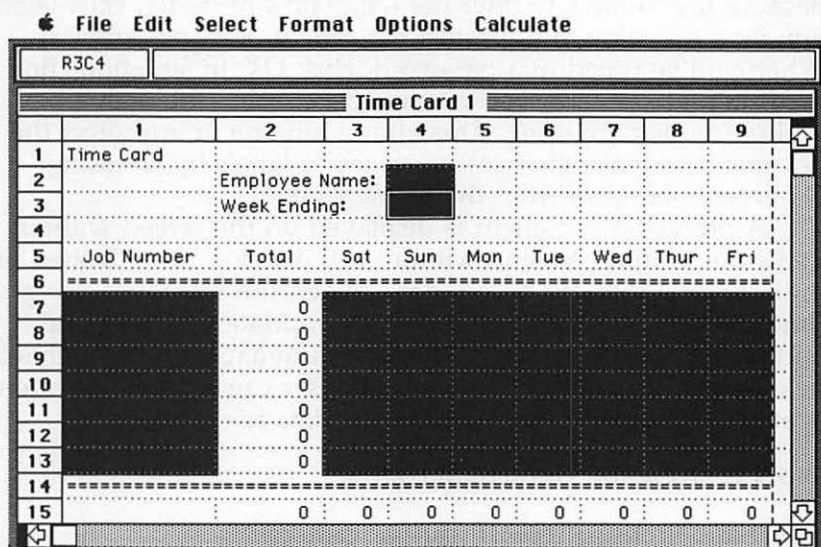
You'll enter the totals for the columns that contain the number of hours spent working each day in the same way. Click cell R15C2 and enter the SUM formula with the *Paste Function* command from the *Edit* menu. Now drag the mouse pointer from R7C2 to R13C2 and press Enter. To put the formulas into the remaining cells, drag the pointer arrow from cells R15C2 to R15C9 and choose *Fill Right* from the *Edit* menu. Your time card is now ready for use.

Protecting the Worksheet

Only some of the cells in the time card require data entry. The rest of the cells—those that contain labels and formulas—can be protected so that they can't accidentally be altered by anyone using the time card. Worksheets are protected with a password which must be entered to reverse the protection. Before you protect it, you must first define as unprotected any cells that are to contain values put in by the user.

Highlight the blocks of cells for number entry. Select R7C1 through R13C1, then with Command-click, select both R7C3 through R13C9 and the cells for the name and week ending entries, R2C5 and R3C5 (Figure 9-5).

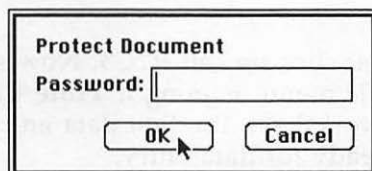
Figure 9-5. Selecting Unprotected Cells



Choose *Remove Cell Protection* from the *Options* menu.

Now choose *Protect Document* from the *Options* menu. The dialog box (Figure 9-6) prompts you to specify a password.

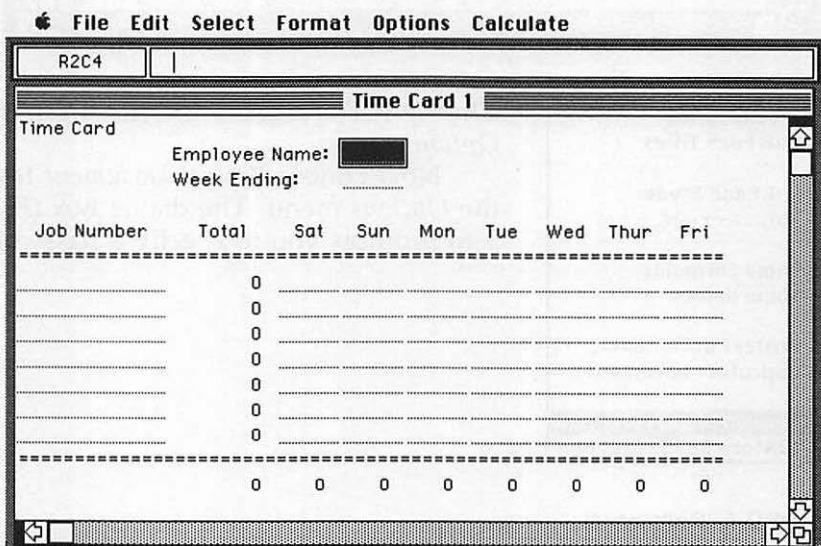
Figure 9-6. Password



Make sure that you keep a record of the password you type in, because if you have to alter the template's protected cells later, you won't be able to unprotect the cells unless you know it. When you've typed in a password, click *OK*. In situations not requiring a password, you can just click *OK* in the dialog box without typing anything. This allows anyone to unprotect the document to make changes in values or labels by choosing *Unprotect Document* from the *Options* menu.

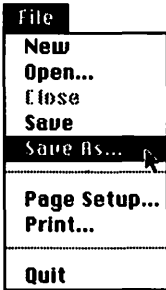
A protected document is displayed on the screen without row and column numbers and without cell division lines. Dotted lines indicate cells that can accept data. When the employee using the time card types data into the first appropriate cell (don't do it yet) and presses the Enter key, *Multiplan* automatically highlights the next data entry cell. In this way, the user can move from one unprotected cell to another until all the data is entered.

Figure 9-7. Protected Document Format



Before you save the worksheet, click on cell R2C5. Now save it by choosing *Save As* from the *File* menu, naming it **Time Card 1**. When an employee opens the worksheet, the first data entry cell (R2C5) will appear selected, ready for data entry.

A Time Card for Each Employee



For this simple example, there are only three employees. That means you need two more time cards for the other two employees. With Time Card 1 still on the screen, choose *Save As* from the *File* menu and type in the name **Time Card 2**.

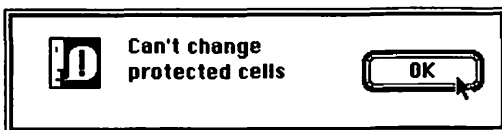
Click the *Save* button to save this worksheet on your disk. Choose *Save As* again and type **Time Card 3**. Now you have three different time card templates on your disk, one for each employee.

Using the Time Card

The time card templates are ready to use. You distribute copies of these time cards to the three employees required to keep track of the time they spend on each job each week. Employees should be instructed to fill in the time card with numbers assigned to the various jobs they're working on. Each business uses a different coding system for such job numbers. Frequently, these numbers give valuable information about the jobs or projects. For example, a software manufacturer's job number 300.20.45 might suggest that this job is for the Macintosh division (300), that the specific job is to develop an accounting program (20), and that this time is being spent on the user's manual for the product (45).

Try filling in a time card. Notice what happens if you select and try to fill in a cell other than those you've unprotected. For instance, try to fill in a space in the row labeled *Time Card*. You'll see the dialog box shown in Figure 9-8.

Figure 9-8. Can't Change



Take a look at Figure 9-9—it shows a sample time card after it's filled out by an employee.

Figure 9-9. Completed Time Card

File Edit Select Format Options Calculate

R15C14

Time Card 1

Time Card

Employee Name: Smith, John
 Week Ending: 1/10/86

Job Number	Total	Sat	Sun	Mon	Tue	Wed	Thur	Fri
100.23.17	18			4	3	2	7	2
62.09.04	17			3	4	3	1	6
101.00.00	5			1	1	3		
	0							
	0							
	0							
	0							
	40	0	0	8	8	8	8	8

Now you're ready to design the second *Multiplan* worksheet.

Creating the Job Summary Worksheet

The Job Summary worksheet will automatically collect information from all three time cards (Time Card 1, Time Card 2, and Time Card 3 worksheets). This extraction of data from one worksheet into another is accomplished by a powerful *Multiplan* feature called *linking*. Once you learn how to use linking, you'll be able to design worksheets to perform sophisticated calculations based on results from other, supporting worksheets. In this example, the time cards are the supporting worksheets for the job summary worksheet. When a worksheet that's set up with links to a supporting worksheet is opened, it automatically fetches the values from the cells of the supporting worksheet it's linked to. Every time the time cards are updated for successive weeks, the Job Summary worksheet, when opened, will have the new data from all the time cards it's linked to.

Creating the Labels

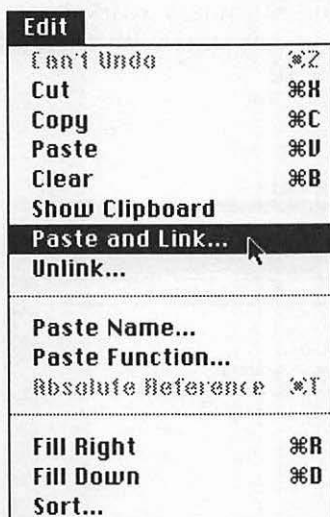
First, you'll set up the labels for the Job Summary worksheet. Choose *New* from the *File* menu so you can start with a blank worksheet. Enter the labels in Figure 9-10.

Figure 9-10. Job Summary Labels

	1	2	3	4	5
1	Job Summary				
2					
3	Job Number	Hours	Employee	Week ending	
4	=====				
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

In Column 1, click cell R1C1 and Command-click cell R3C2 to select both these cells. Choose *Align Center* from the *Format* menu. Drag across the heads for Columns 3 and 4 to select both columns, and again choose *Align Center*. Click cell R4C1 and enter the formula `=REPT("=",63)` to insert the dividing line. (Remember, you can save yourself some typing by using the *Paste Function* command from the *Edit* menu to insert the formula.) Change the width of the columns—highlight each by clicking on the column head and selecting *Column Width* from the *Format* menu. Modify Columns 1, 2, 3, and 4 so that they are 13, 7, 15, and 12 wide, respectively. Now choose *Save As* from the *File* menu, give this worksheet the title **Job Summary**, and click the *Save* button.

Establishing the Links

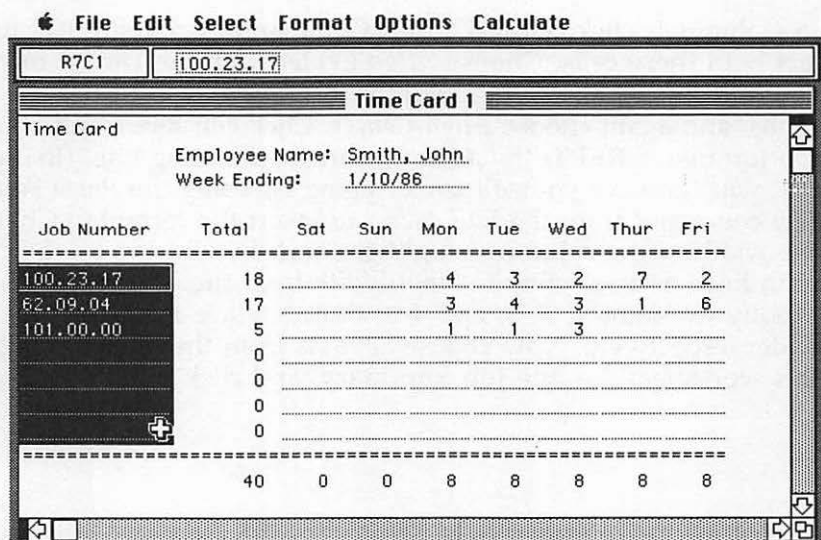


To tell *Multiplan* which cells the Job Summary worksheet should extract from the Time Card worksheet, you'll copy the cells to be linked from the Time Card worksheet into the Clipboard with the *Copy* command, then open the Job Summary worksheet, click where the information is to go in, and choose *Paste and Link*.

Follow these steps to form your links:

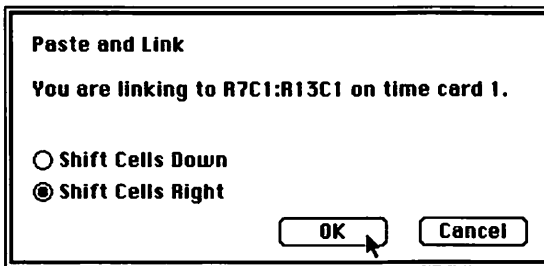
- Open Time Card 1.
- Select the range of cells in Column 1 for the Job Number by dragging (Figure 9-11).

Figure 9-11. Dragging Column 1



- Choose *Copy* from the *Edit* menu to copy this range of cells into the Clipboard.
- Choose *Open* from the *File* menu and double-click the Job Summary worksheet
- Click cell R5C1 as the insertion point, and choose *Paste and Link* from the *Edit* menu. Click *OK* in the dialog box (Figure 9-12).

Figure 9-12. *Paste and Link*



- Before you go any further, save this worksheet using *Save* from the *File* menu. (Note that the cells in Column 1 from Row 5 to Row 11 have the contents Time Card 1 R7C1:R13C1. This defines the worksheet from which the data is to be taken (Time Card 1) and the range of cells from which the data is to be extracted (R7C1 to R13C1).

Let's continue with the total hours for each job. These values are in Column 2.

- Open Time Card 1.
- Select the range of cells in the Total column (Figure 9-13).
- Choose *Copy* from the *File* menu to copy the range of these cells into the Clipboard.
- Choose *Open* from the *File* menu and double-click the Job Summary worksheet.
- Click cell R5C2 as the insertion point and choose *Paste and Link* from the *Edit* menu.
- Save this worksheet before you go any further.

Next, you'll copy the name of the employee from Time Card 1 and link it to the Job Summary worksheet.

- Open Time Card 1.
- Copy the contents of the employee name cell, R2C5, into the Clipboard.
- Open the Job Summary worksheet.
- Click to select cell R5C3.

Figure 9-13. Choosing from the Total Column

Time Card 1

Employee Name: Smith, John
Week Ending: 1/10/86

Job Number	Total	Sat	Sun	Mon	Tue	Wed	Thur	Fri
100.23.17	18			4	3	2	7	2
62.09.04	17			3	4	3	1	6
101.00.00	5			1	1	3		
	0							
	0							
	0							
	0							
	40	0	0	8	8	8	8	8

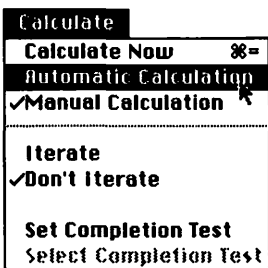
- Choose *Paste and Link* from the *Edit* menu to complete the link. Since the employee's name should be in the cells below R5C3, carry out the following steps.
- Click to select R6C3.
- Type an equal sign (=) to start a formula entry.
- Click on cell R5C3, and press Enter.

This formula puts whatever is in cell R5C3 into R6C3. To repeat this formula in the cells below, drag from R6C3 to R11C3 to select this range of cells in Column 3, and choose *Fill Down* from the *Edit* menu. Save before you proceed.

Go back to the Time Card 1 worksheet and repeat the process to link cell R3C5 for the *Week Ending* entry into R5C4 of the Job Summary worksheet. Make sure you fill the cells below with week ending values as you did for the employee name column. Save this worksheet before you proceed.

Now that you've established these links, each time the Job Summary worksheet is opened, the linked values from Time Card 1 will be automatically inserted into Job Summary. This will save the project manager a great deal of time. But you're not finished yet. You still have to establish links for the other two employees, those using Time Cards 2 and 3.

- Open Time Card 2.
- Select the range of cells for the job number in Column 1.
- Choose *Copy* from the *File* menu to copy the range of these cells into the Clipboard.
- Open the Job Summary worksheet.
- Click cell R12C1 as the insertion point (immediately below the last linked cell from Time Card 1) and choose *Paste and Link* from the *Edit* menu. Save this worksheet.
- Proceed as you did for Time Card 1 until the hours, employee name, and week ending cells are all linked to the Job Summary worksheet.

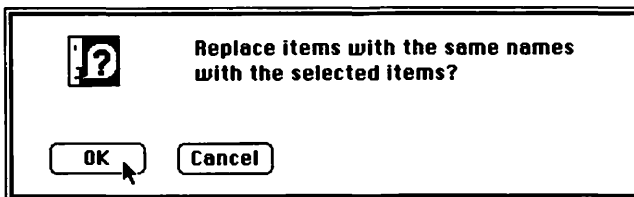


Repeat this process for Time Card 3. Before you save the Job Summary worksheet, make sure that *Automatic Calculation* is selected from the *Calculate* menu. This insures that the employee names and week ending dates get copied into the cells below the ones linked to the time cards. Finally, quit *Multiplan*.

Setting Up the Database Form


Once the project manager receives time cards from the three employees, he or she puts them on the same disk as the Job Summary worksheet while in the Finder. When the dialog box asks if the items are to be replaced (refer to Figure 9-14), the manager should answer yes, replacing the old time card values with the current week's values.

Figure 9-14. Replacing Old with New



Opening the Job Summary worksheet automatically pulls in all the required data from the three time cards (Figure 9-15).

Figure 9-15. Automatic Entry


File Edit Select Format Options Calculate

R27C11

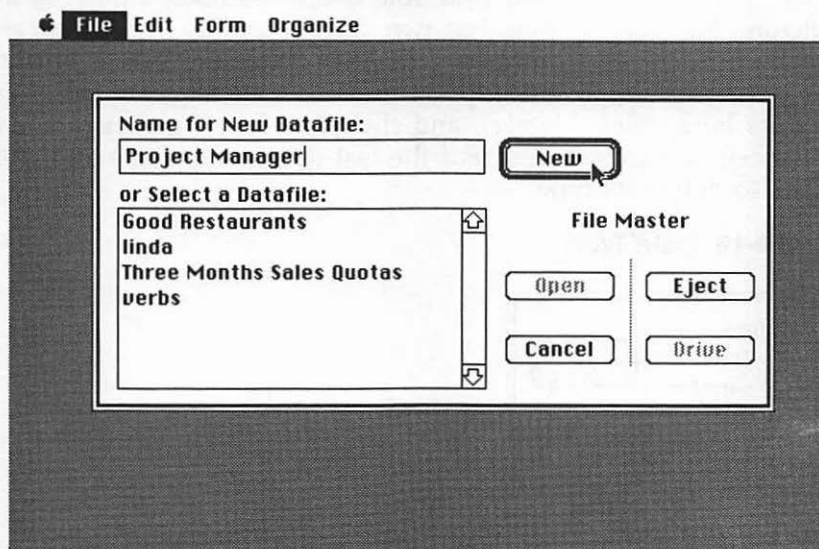
Job Summary					
	1	2	3	4	5
1	Job Summary				
2					
3	Job Number	Hours	Employee	Week ending	
4	=====				
5	100.23.17	18	Smith, John	1/10/86	
6	62.09.04	17	Smith, John	1/10/86	
7	101.00.00	5	Smith, John	1/10/86	
8		0	Smith, John	1/10/86	
9		0	Smith, John	1/10/86	
10		0	Smith, John	1/10/86	
11		0	Smith, John	1/10/86	
12	108.22.22	18	Nawabi, Suzi	1/10/86	
13	62.09.04	7	Nawabi, Suzi	1/10/86	
14	100.29.00	15	Nawabi, Suzi	1/10/86	
15		0	Nawabi, Suzi	1/10/86	

Next, the project manager will take information from the Job Summary worksheet and put it into a Microsoft *File* document. As information in *File*, the data can be manipulated to yield a variety of reports. Each week's data is added to this database. *File* is the collecting and sorting facility for the project management application.

Keep in mind that the Time Card and Job Summary worksheets are volatile. Each week, new data is entered into a time card and sent to the project manager, and the old time cards are replaced with new values, which in turn feed into the job summary to create a new summary for that particular week. The stability in this project management paradigm comes from *File*. *File* is the storehouse for all the information. Each week, new information is pasted into *File*, along with the previous week's data. The *File* document you'll prepare here will store a cumulative compilation of all the data brought in from the time cards.

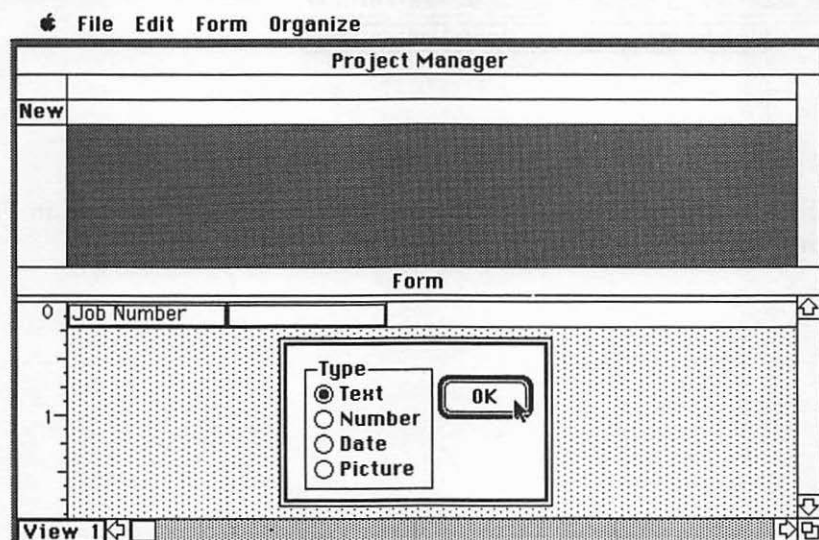
Creating the *File* Form

When you open Microsoft *File*, you're immediately presented with a dialog box. Type **Project Manager** in the box labeled *Name for New Datafile* and click the *New* button, just as illustrated in Figure 9-16.

Figure 9-16. Opening *File* Dialog Box

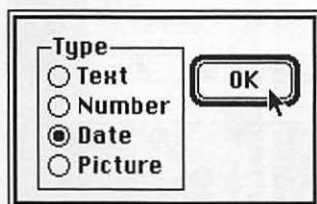
This starts a new data file titled *Project Manager*. Before you can put information into a data file, you must design a form that contains the field names you want. The first field you'll use is Job Number, so type **Job Number** at the insertion point (Figure 9-17) and press Enter.

Figure 9-17. First Field



File asks if this field is to hold text, a number, a date, or a picture. Your job number has two decimal points in it, so it can't really function as a number. Treat it as text. Click *OK* to accept it as text data. The insertion point moves to the adjacent cell. Type **Hours** here, select *Number*, and click *OK*. Type **Employee** in the next cell and choose *Text*. For the last field, enter **Date** and choose *Date* to define its type.

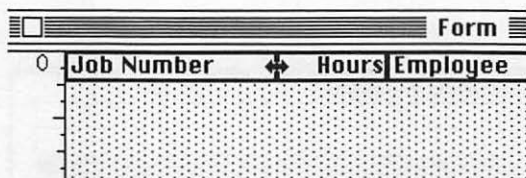
Figure 9-18. Date Type



Notice that as you added fields to the form, they're duplicated in the *List Helper* window above the *Form* window.

Each field is the same width at this point. To adjust their column widths, move the mouse pointer to the lines between fields. When the pointer changes to a double-headed arrow,

Figure 9-19. Column Widths



drag to the right or left until your form resembles the one in Figure 9-20 (you don't have to be exact).

Figure 9-20. *File Form*

File Edit Form Organize

Time Budgeting

	Job Number	Hours	Employee	Date
New				

Form

0	Job Number	Hours	Employee	Date
1				

View 1

Pasting the Data

Data from the Job Summary worksheet must now be pasted into the data file.

- Quit *File* and eject the disk.
- Insert *Multiplan* and open it.
- Open the Job Summary worksheet. Assuming that the three time cards have data in them and that all three are on the same disk as the Job Summary worksheet, the data from the time cards will automatically be pulled into the Job Summary worksheet by the links you established earlier.
- Select all of the data by dragging the mouse diagonally from the top-left corner cell of the block of data to the bottom-right corner (Figure 9-21). When you reach the bottom of the screen and continue to move the mouse down, the entries will scroll upward to allow you to select more items. Don't select the labels.

Figure 9-21. Choosing Data from Job Summary

File Edit Select Format Options Calculate

R5C1 [time card 1 R7C1:R13C1]

Job Summary					
	1	2	3	4	5
15		0	Nawabi, Suzi	1/10/86	
16		0	Nawabi, Suzi	1/10/86	
17		0	Nawabi, Suzi	1/10/86	
18		0	Nawabi, Suzi	1/10/86	
19	101.00.00	9	Jones, Bill	1/10/86	
20	62.09.04	9	Jones, Bill	1/10/86	
21	108.22.22	6	Jones, Bill	1/10/86	
22	100.23.17	6	Jones, Bill	1/10/86	
23	200.30.23	16	Jones, Bill	1/10/86	
24		0	Jones, Bill	1/10/86	
25		0	Jones, Bill	1/10/86	
26					
27					
28					
29					

- Choose *Copy* from the *Edit* menu to copy this data into the Clipboard.
- Quit *Multiplan* and eject your *Multiplan* disk.
- Without turning off the Macintosh, insert the *File* disk. Double-click on the *Project Manager* data file name to open.
- Click on the word *New*. This selects the New record as the insertion point for the data you're about to paste in.
- Choose *Paste* from the *Edit* window, and voilà! Your data appears in your data file (Figure 9-22).

If you hear your disk drive spin once in a while, don't worry. Microsoft *File* automatically saves the file to disk every few seconds to prevent the accidental loss of data. When you quit *File*, your data file is automatically saved for you.

Each week, the project manager will copy the data from the Job Summary worksheet into the Clipboard and paste it into the *File* document. *File* makes it easy to analyze this data by allowing you to sort your records in various ways.

Figure 9-22. Data There

File Edit Form Organize

	Job Number	Hours	Employee	Date	
7		0	Smith, John	Jan 10, 1986	
8	108.22.22	18	Nawabi, Suzi	Jan 10, 1986	
9	62.09.04	7	Nawabi, Suzi	Jan 10, 1986	
10	100.29.00	15	Nawabi, Suzi	Jan 10, 1986	
11		0	Nawabi, Suzi	Jan 10, 1986	
12		0	Nawabi, Suzi	Jan 10, 1986	
13		0	Nawabi, Suzi	Jan 10, 1986	
14		0	Nawabi, Suzi	Jan 10, 1986	
15	101.00.00	18	Jones, Bill	Jan 10, 1986	
16	62.09.04	9	Jones, Bill	Jan 10, 1986	
17	108.22.22	6	Jones, Bill	Jan 10, 1986	
18	100.23.17	7	Jones, Bill	Jan 10, 1986	
19		0	Jones, Bill	Jan 10, 1986	
20		0	Jones, Bill	Jan 10, 1986	
21		0	Jones, Bill	Jan 10, 1986	
New					
21/21					

Sorting the Records

Organize	
Find...	⌘F
Hide Records	⌘H
Show All Records	
<hr/>	
Sort...	⌘S
<hr/>	
Report...	⌘R

Let's look at one way of sorting these records. Suppose you want to have all entries for each job number together. This type of sort is simple with *File*. Choose *Sort* from the *Organize* menu and click in the box for Job Number.

The number 1, followed by A->Z appears (Figure 9-23).

This lets you know that the Job Number is the first sort field (1), that entries in this field will be read as text (A and Z), and that it will be sorted in ascending order (->). If you click on A->Z, it turns into Z->A. You can toggle the order of sorting by doing this. Start the process by clicking the *Sort* button. Your results should resemble those shown in Figure 9-24.

Figure 9-23. Starting a Sort

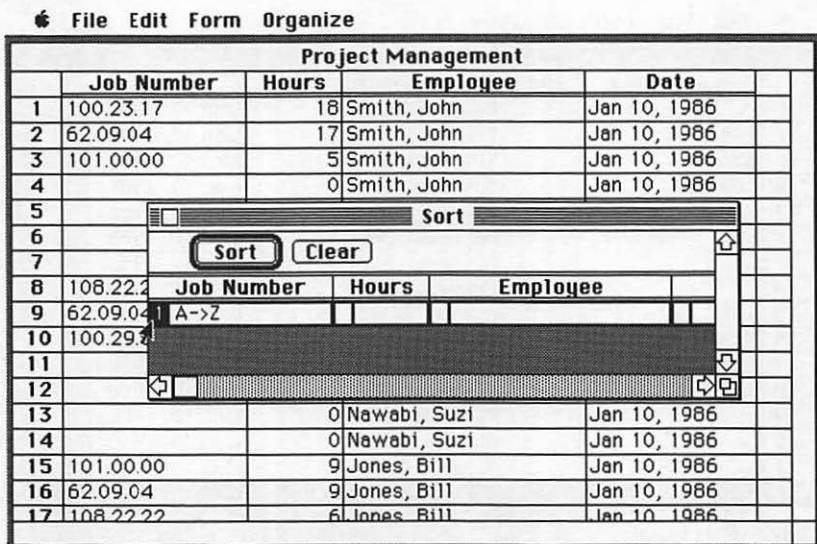
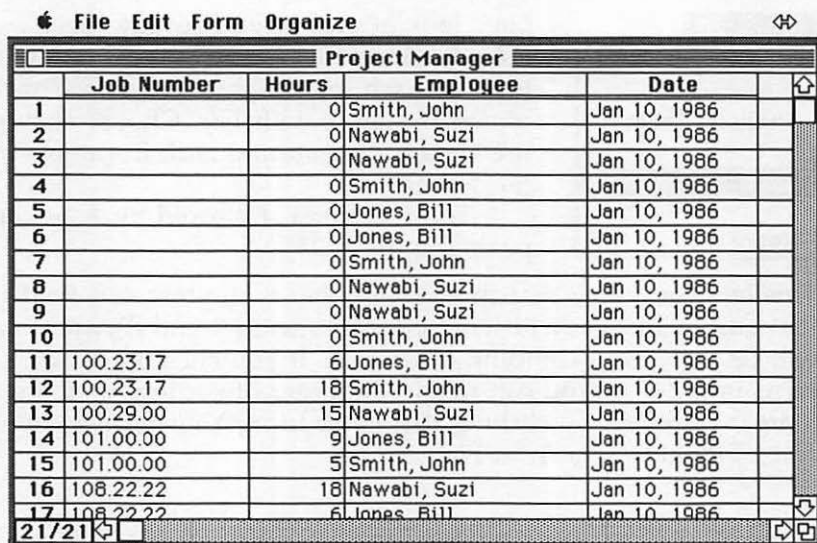


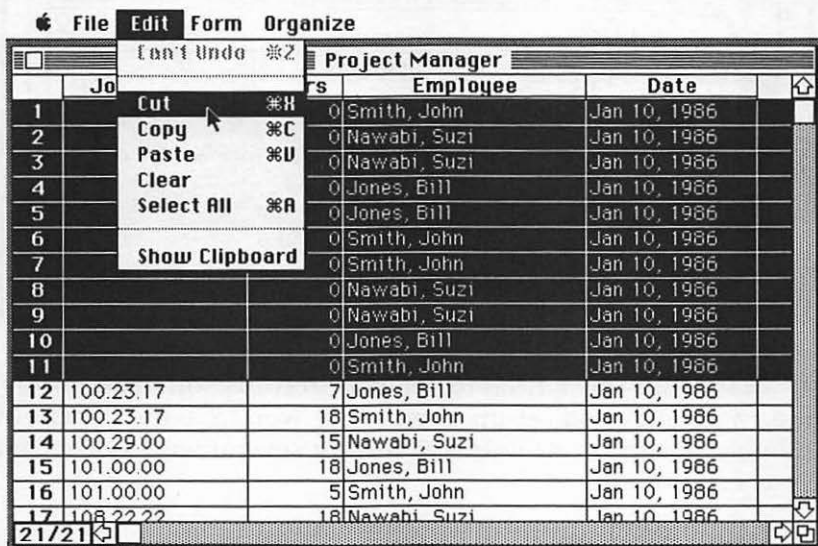
Figure 9-24. Sorted by Job Number



The job number field is treated as a text field because of the double decimal. For this reason, the sort is performed on only the first part of the job numbers, from the first digit to the first decimal point. This is acceptable in this example because you're interested only in having all entries for each job number sorted together. Having them in numeric order isn't really important.

You'll see that there are a number of records which have zero hours assigned to them. They're the unused rows of the time cards. There's no point in keeping these records in the data file, so you should delete them. Use the scroll box on the right to find the beginning of a series of zero-hour entries, drag across the header for each one, where the record number is, and choose *Cut* from the *Edit* menu.

Figure 9-25. Deleting Records

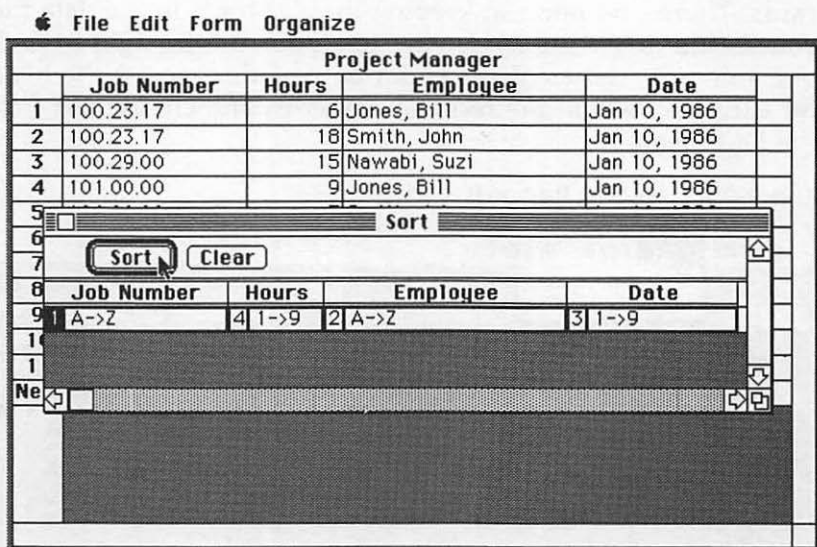


Scroll down to the next series of zero records and cut those in the same way. Continue until all zero entries have been removed from the data file.

Now try sorting on all fields. Choose *Sort* from the *Organize* menu, and click the hours, employee, and date fields. The 2 followed by A->Z lets you know that the employee field is the second field and that it will be sorted as text in ascending alphabetic order. The 3 and 1->9 in the date field let you know that the date

field is the third sort field, that it's a number field, and that it will be sorted in ascending order. The 4 followed by 1->9 in the hours field indicates that this is the fourth sort, in ascending numeric order. Each low-level sort is carried out within the previous level sort. This means, for example, that the hours within a series of identical date fields will be sorted in ascending order.

Figure 9-26. All Sorts Ready



Click the *Sort* button to see your records sorted according to the parameters you set up. (You really won't see the benefit of this number of sort levels unless you have several weeks of records in your *File* document.)

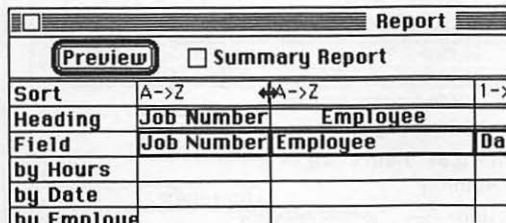
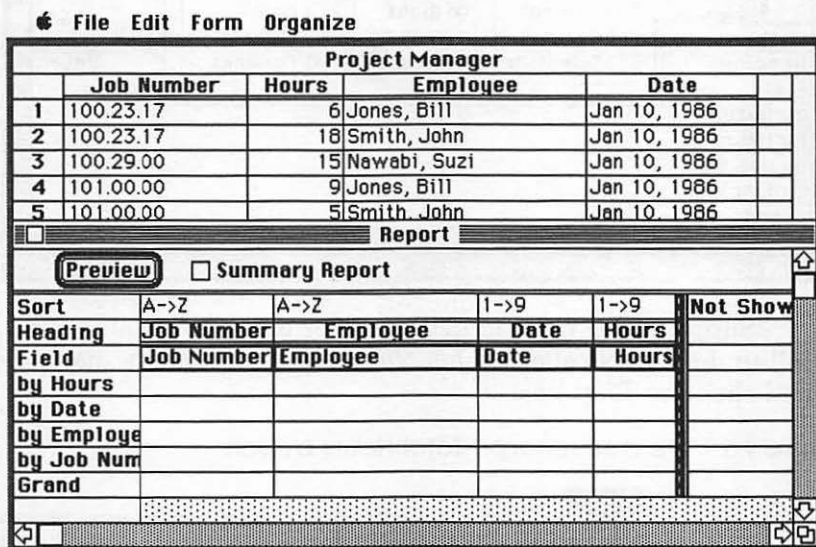
Creating Reports

File makes it easy to create a variety of reports from the data file the project manager updates with each week's job summary information. These reports will prepare the data in an organized, tabular format with mathematical calculations carried out, if necessary, on some of the fields. Unlike *File*'s computed number fields, a report's mathematical feature allows you to get totals based on all the records in the data file. This can help the project manager quickly obtain individual job totals, for example, as well as grand totals for the hours spent by all employees.



To create a report, choose *Report* from the *Organize* menu. You'll see that a *Report* window opens with all your fields listed, and with all the sort conditions indicated.

Figure 9-27. Creating a Report

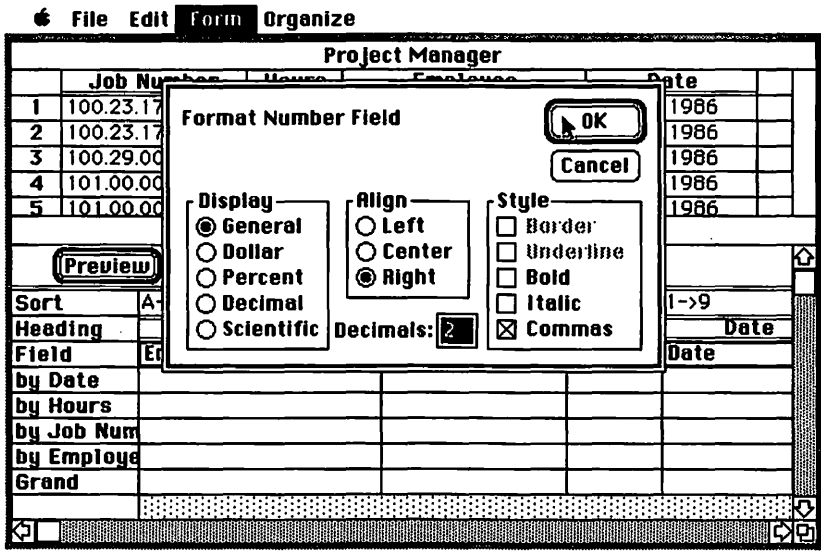


If you move the pointer between field division lines, the pointer arrow will change to one which points in four directions. Drag the field borders to widen or narrow your field widths.

These changes will be reflected in the reports that are generated.

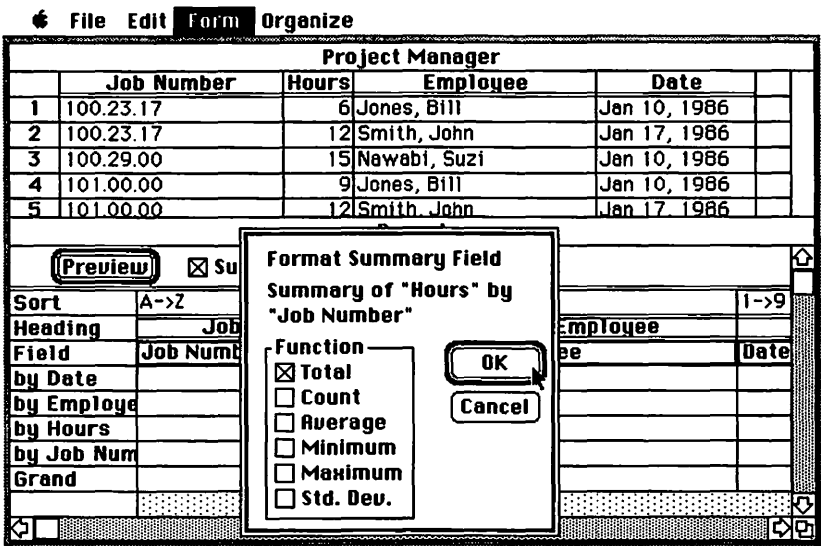
You can alter the format of a field by double-clicking its name. The *Hours* field will show a dialog box that looks like the one in Figure 9-28.

Figure 9-28. Format Field Dialog Box



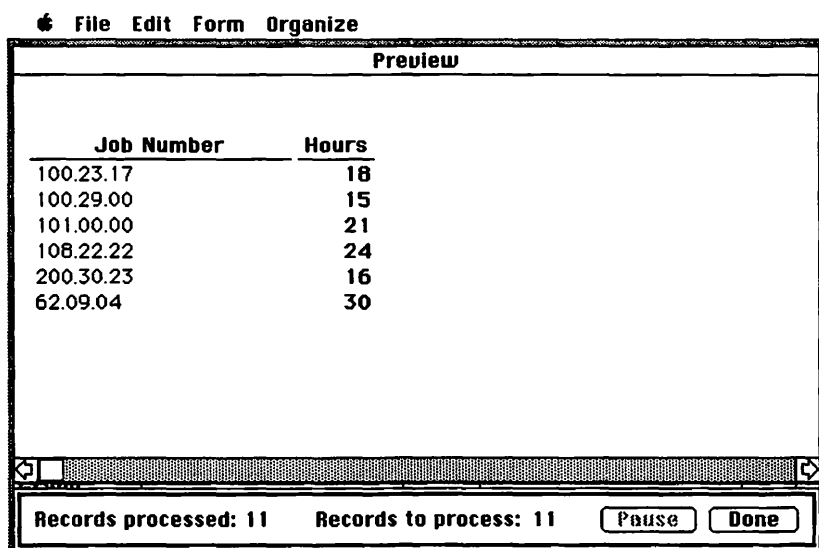
Suppose you want to get totals for each job. Double-click the cell under *Hours* called *by Job Num* to get a *Summary* dialog box and click the *Total* box:

Figure 9-29. Field Summary—Total Hours by Job



Now click the *Summary Report* button, then click the *Preview* button to have the report you've designed printed to the screen for your examination. *File* will take a moment to do its work, and shortly you'll see your report. It will resemble the one in Figure 9-30.

Figure 9-30. Total Hours Report



Job Number	Hours
100.23.17	18
100.29.00	15
101.00.00	21
108.22.22	24
200.30.23	16
62.09.04	30

Records processed: 11 Records to process: 11

This example presents very little data from your data file because it shows only grand totals for each job number. You can get more information on your report by specifying that you also want the total hours spent on each job by each employee. Double-click the cell at the intersection of *by Employee* and *Hours*, click the *Total* box, and click OK. Now click *Preview* again to see your result on the screen. Use the *Pause* button to freeze the scrolling report if necessary.

Figure 9-31. Previewing

Preview		
Job Number	Hours	Employee
100.23.17	6	Jones, Bill
100.23.17	12	Smith, John
Total for 100.23.17:		18
100.29.00	15	Newabi, Suzi
Total for 100.29.00:		15
101.00.00	9	Jones, Bill
101.00.00	12	Smith, John
Total for 101.00.00:		21

Records processed: 4 Records to process: 11

File	
New Report	⌘N
Open Report...	⌘O
Close	⌘W
Save Report	
Save Report As...	
Page Setup...	
Print Report...	⌘P
Quit	⌘Q

Now you can print your report by choosing *Print Report* from the *File* menu.

You can see that as your records grow after months of entries, *File's* reporting capability will prove to be a valuable way for you to keep track of your projects by printing out reports based on sorts and calculations that you can define to suit your own information needs.

File's reporting capabilities give you a wide range of tools for analyzing your data.

Spend some time experimenting with its features to learn how they can help you. It's not difficult to use, but some practice is required to understand its powers and learn how to tap them.

Integrating Chart and Multiplan

Integrated software packages allow you to create charts and graphs from data generated from worksheets. You can do the same thing with data from *Multiplan*. Charts and graphs will describe your data visually so that the viewer can draw conclusions more quickly and easily. Microsoft *Chart* is a powerful charting

program, offering features that graphics components of integrated packages sometimes lack.

As an example of moving data from *Multiplan* to *Chart*, let's take the total number of hours that employee Bill Jones spent on each job and create a pie chart from these values, expressed as percentages of the total time worked. This will help the project manager understand how much time is being spent in each job as a percentage of the total hours Jones works in a week. It will make it easier for the manager to track the progress of the jobs and estimate job costs.

- Start *Multiplan*.
- Open Time Card 3, Jones's current time card.
- Drag to select the ranges of cells that contain the job numbers and the total hours for each job.

Figure 9-32. Selecting Job Numbers

The screenshot shows the 'Time Card 3' window in the Multiplan application. The menu bar includes Apple logo, File, Edit, Select, Format, Options, and Calculate. The window title is 'R7C1' and '101.00.00'. The 'Time Card' section displays the following information:

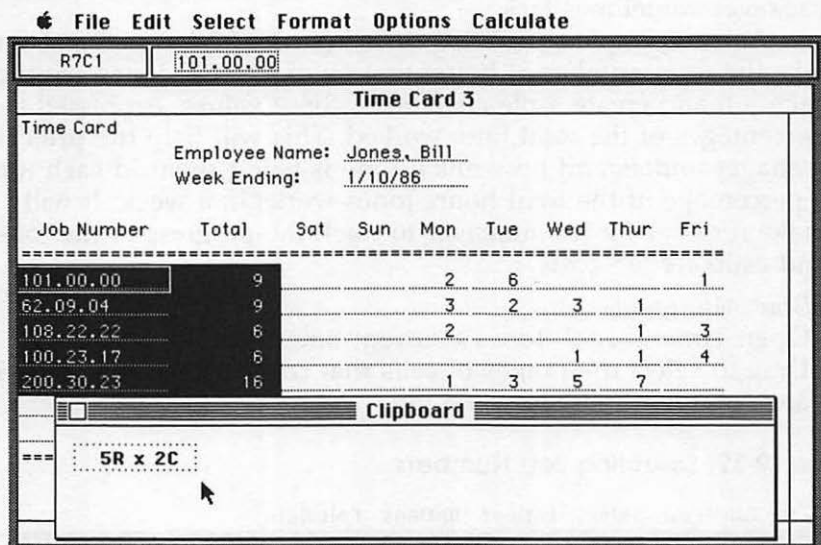
Employee Name: Jones, Bill
Week Ending: 1/10/86

Job Number	Total	Sat	Sun	Mon	Tue	Wed	Thur	Fri
101.00.00	9			2	6			1
62.09.04	9			3	2	3	1	
108.22.22	6			2			1	3
100.23.17	6					1	1	4
200.30.23	16			1	3	5	7	
	0							
	0							
	46	0	0	8	11	9	10	8

The 'Total' column is highlighted with a dark background. A small crosshair cursor is visible over the '0' in the row below the last data row.

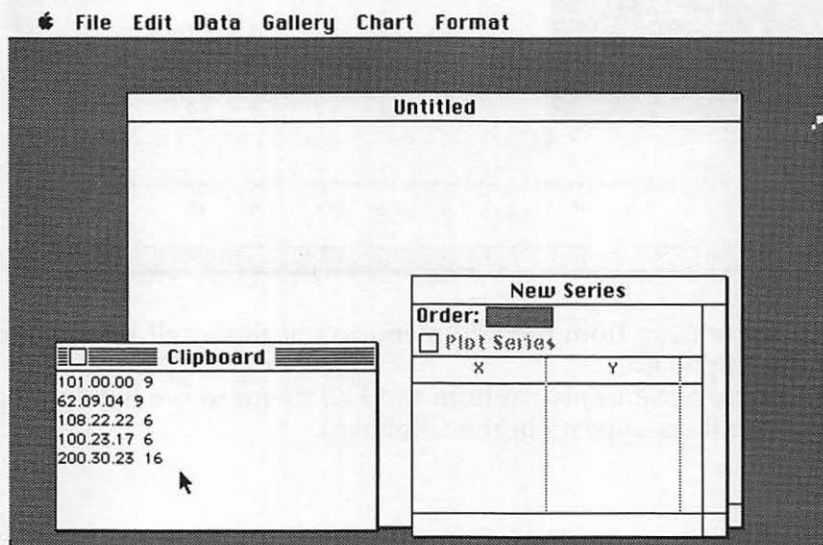
- Choose *Copy* from the *Edit* menu to put these cell ranges into the Clipboard.
- Choose *Show Clipboard* from the *Edit* menu to see how a range of numbers appears in the Clipboard.

Figure 9-33. What's in the Clipboard



- Quit *Multiplan*.
- Start *Chart*.
- Choose *Show Clipboard* from the *Edit* menu to see the numbers stored there.

Figure 9-34. How Chart Shows Clipboard



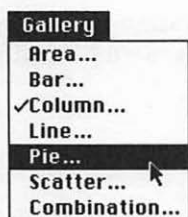
- Choose *Paste* from the *Edit* menu to paste the range of job numbers and hours from the Clipboard into the *New Series* window.

Figure 9-35. *New Series*

Job Number	Total Hours
101.00.00	9
62.09.04	9
108.22.22	6
100.23.17	6
200.30.23	16

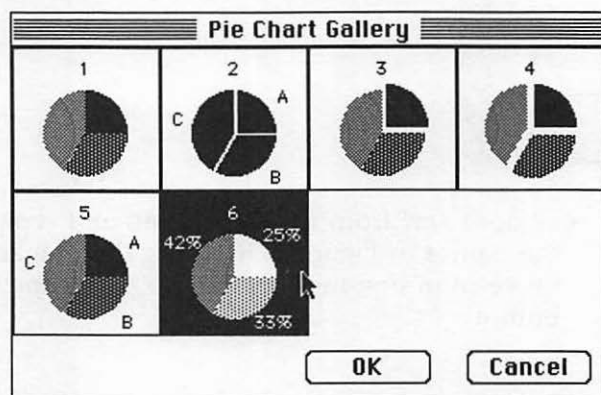
- Choose *Text* from the *Data* menu and type in the names in Figure 9-36, using the Tab key to move from one field to another. Click the OK button.

Figure 9-36. Time Allocation, Job Number, and Total Hours

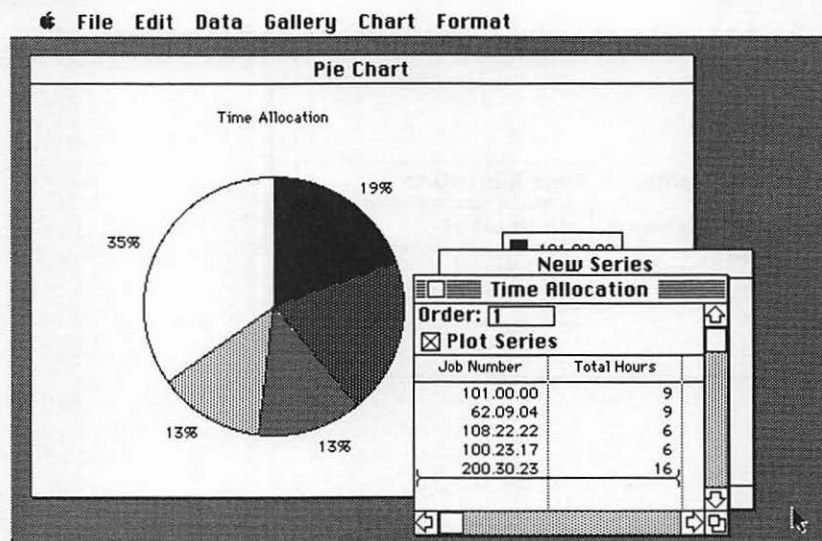


- Choose *Pie* from the *Gallery* menu, then select pie number 6, the one that shows percentages.

Figure 9-37. Choose the Right Chart



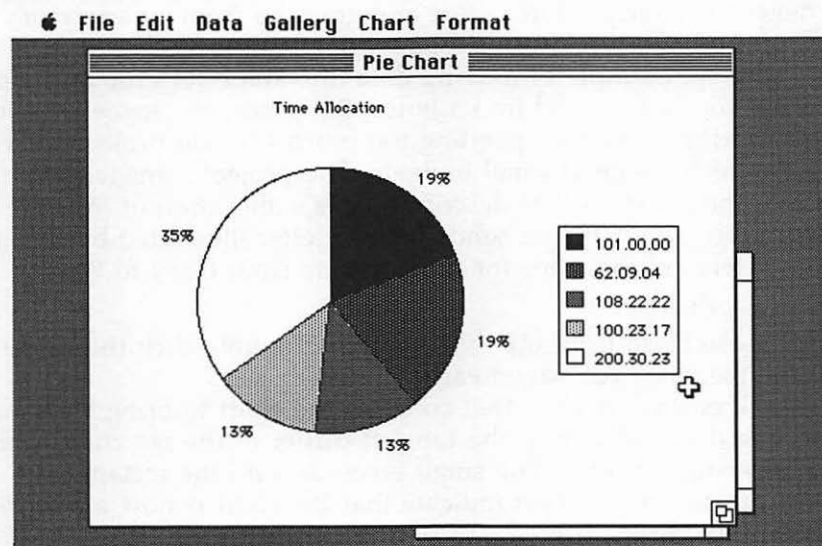
- Click the *Plot* box in the *Data* window to draw your chart.

Figure 9-38. Click *Plot*



• Click on the *Chart* window to bring it forward and choose *Add Legend* from the *Chart* menu to get the result shown in Figure 9-39.

Figure 9-39. Final Pie



- Now you can save and print your chart.

It's easy to move data from *Multiplan* to *Chart*. However, you must plan for this in the design of your *Multiplan* worksheet. Whenever two sets of data (such as the job number and total hours in our example) are to be moved as X- and Y-axes into *Chart*, these ranges must be in adjacent columns in the *Multiplan*

worksheet. If you had the total hours in Column 9 of the Time Card worksheet, as logic would dictate, you would have been forced to take extra, time-consuming steps to get both ranges into *Chart*. Planning ahead can save you considerable time and frustration.

Moving Data into Word

Word is a full-featured word processor. It can display text in columns, allow you to use footnotes, and even let you have four word processing documents open at one time. For the purposes of data integration, you can use *Word* as a host application for accumulating data from a number of sources. In our example, the project manager can draft a letter and paste in a range of numbers from *Multiplan* to support his or her decisions. Graphs from *Chart* and several records from *File* can be imbedded within the letter. This sort of integration can add value to your business correspondence. The integration of text and graphics from a variety of sources is the Macintosh's main strength.

As an example of moving data into *Word*, let's move the pie chart you just created into a letter. Bill Jones, employee number 3, is working overtime, spending too much time on projects that have been assigned small budgets. The project manager sees this from the pie chart that describes Jones's allocation of his time for each job. The manager sends Jones a letter illustrated by the chart.

Here are the steps for moving data from *Chart* to *Word*:

- Open *Chart*.
- Choose *Open* from the *File* menu and double-click the name of the pie chart you saved earlier.
- Click on the window that contains the chart to bring it forward.
- Drag diagonally from the top-left corner of the pie chart to the lower-right corner. The small boxes around the rectangular perimeter of the chart indicate that the chart is now a selected item. (Figure 9-40)
- Choose *Copy Chart* from the *Edit* menu to put the pie chart into the Clipboard.
- Click *As Shown on Screen* in the dialog box, then click *OK* to put the box away (Figure 9-41).

Figure 9-40. Selecting the Chart

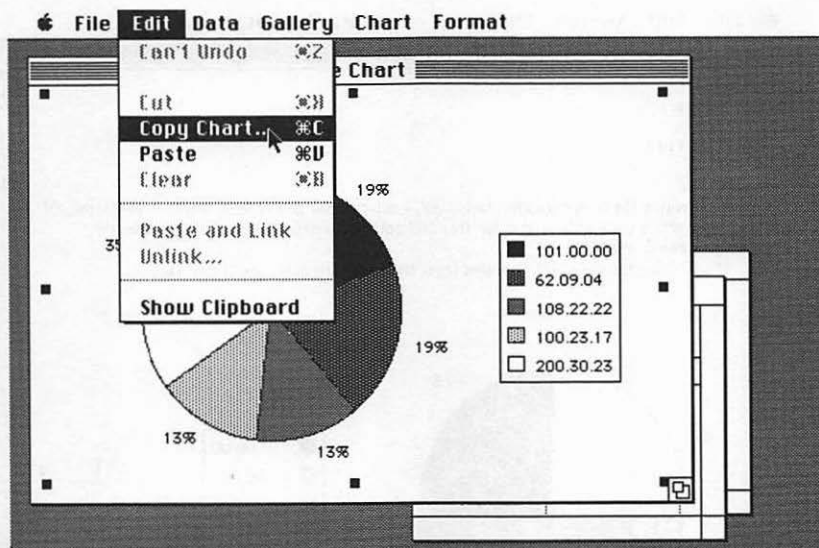
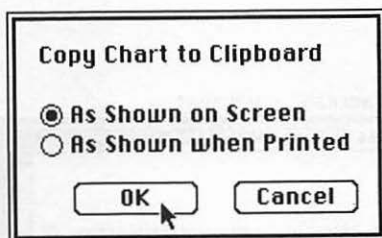
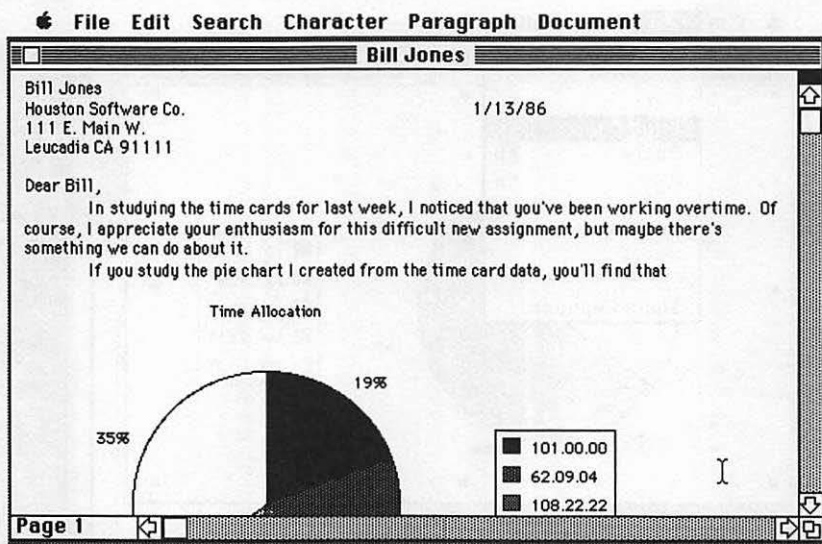


Figure 9-41. Put It Away



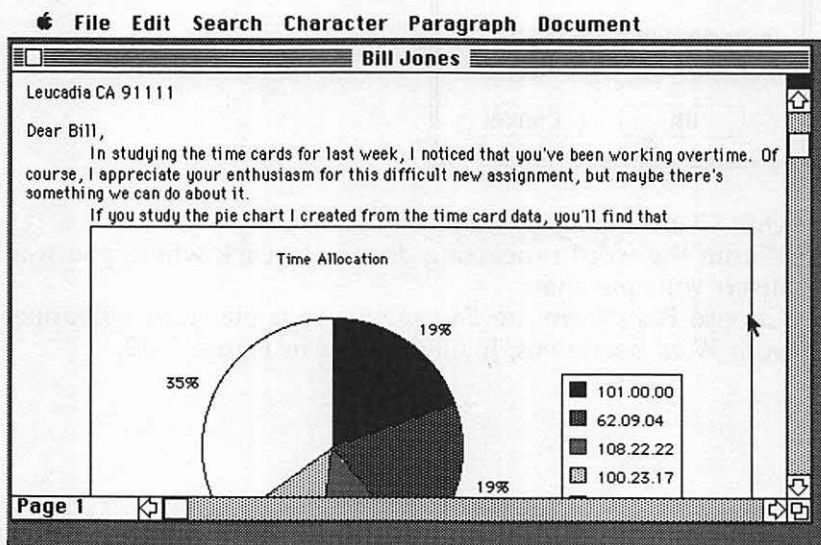
- Quit *Chart* and open *Word*.
- Within the word processing document click where you want to insert your pie chart.
- Choose *Paste* from the *Edit* menu. Your pie chart will appear in your *Word* document, just as shown in Figure 9-42.

Figure 9-42. Chart Pasted In



- To center your chart, first click it to select. A box will appear around the chart. Drag the right bordering line of the chart to the right until the chart is centered.

Figure 9-43. Chart Centered



Following similar steps, you can paste items from *Multiplan*, *Chart*, *File*, or most other Macintosh application programs into your *Word* document. In this way you can let *Word* be the integration vehicle for all the various applications you're working in harmony.

Sending Files with *MacTerminal*

To get the most benefit from your MacOffice and the integration capabilities described here, you can use telecommunications to transmit files from one Macintosh to another. All you need is an Apple modem, or another Macintosh-compatible modem, and a terminal program such as *MacTerminal*. In our example, this will let employees send their weekly time cards to the project manager instantly for immediate analysis.

Using *MacTerminal*

Phone

Dial...

Hang Up...

Wait For Call...

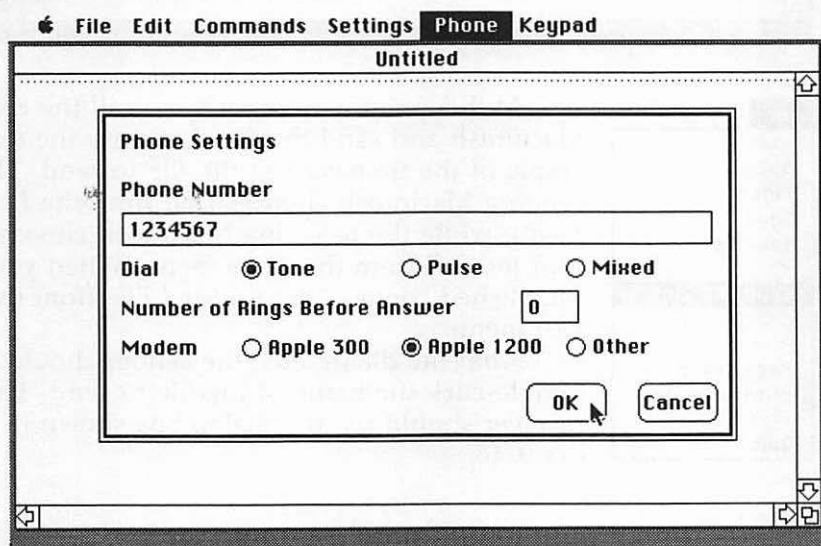
Phone Settings...

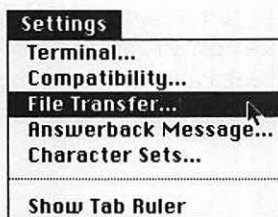
Insert your *MacTerminal* program disk and double-click the *MacTerminal* application icon.

Now you must set some of the parameters in order to prepare for communicating with another Macintosh. Choose *Phone Settings* from

the *Phone* menu and type in the phone number of the line the Macintosh on the receiving end is using. Set your modem's baud rate.

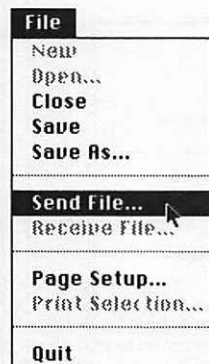
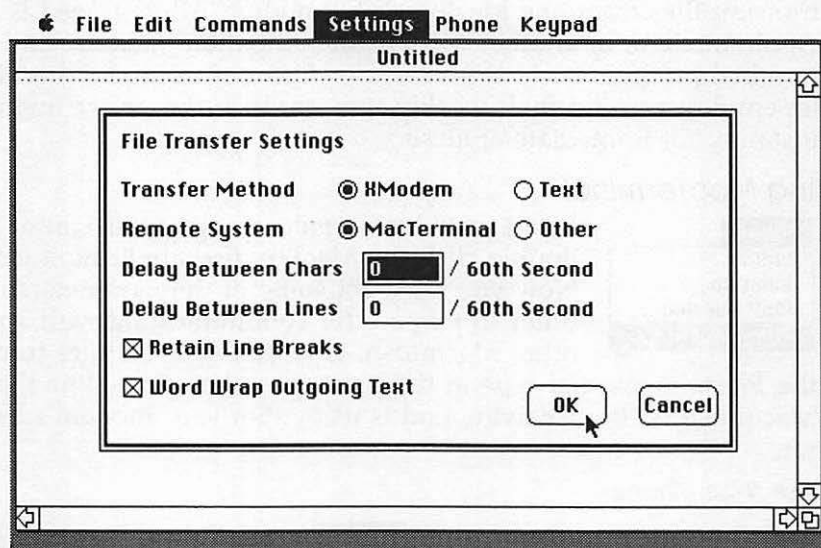
Figure 9-44. *Phone*





Choose *File Transfer* from the *Settings* menu and check *XModem* and *MacTerminal*.

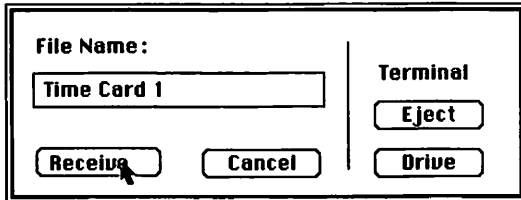
Figure 9-45. Ready to Transmit



At this point, you're ready to call the remote Macintosh and send the file. Let's use the example of the time card as the file to send. The sending Macintosh chooses *Dial* from the *Phone* menu, while the receiving Macintosh chooses *Wait for Call* from the same menu. When you've established contact, choose *Send File* from the *Edit* menu.

From the dialog box, the sender should double-click the name of the file to send. The receiver should see the dialog box shown in Figure 9-46.

Figure 9-46. Receive



At this point the receiver can choose which drive the file will be recorded on by clicking the *Drive* button.

Both the sender and the receiver will see a dialog box which shows the progress of the transfer in terms of percentage completion. The file will be written to the receiver's disk. When the transmission is complete, the file will appear in the receiver's disk window of the Finder. Both parties can now choose *Hang Up* from the *Phone* menu.

Quit *MacTerminal*, eject the disk, insert *Multiplan*, and open it. Choose *Open* from the *File* menu and double-click the name of the file you received. It will open in the normal way.

Compiling the Received Data

After receiving all the time cards, the project manager must insure that they are named Time Card 1, Time Card 2, and Time Card 3, just the way they were originally named when the Job Summary worksheet was linked to the time cards. When the Job Summary worksheet is opened, it will search the disk for these files by these names. Remember, the job summary and time card files must be on the same disk or at least in the external drive if you have one. When the Job Summary worksheet is opened, the values from the time cards are automatically inserted. Each week, new time cards and a new job summary will be generated and compiled into the Microsoft *File* form for analysis.

Using *Switcher* for Better Integration

When you're integrating data from several applications as described here, you'll find that a lot of time is spent quitting programs and juggling disks in and out of drives. This problem can be resolved to some extent with the purchase of a hard disk drive. By putting all your application programs and their associated documents on the hard disk, you can quit one and open another more quickly than by using individual application and data disks.

Switch and Paste



A better resolution is a small program called *Switcher*. *Switcher* is a utility program that makes integration between stand-alone programs extremely fast and easy. Working with Macintoshes with at least 512K of RAM, *Switcher* allows you to load several application programs into the machine's RAM and have them all active at the same time. You can switch from one program to the other and back again with the click of the mouse.

Data can be moved from one program to the other with *Switcher* via the Clipboard. For example, you can take a range of numbers from *Multiplan*, copy it into the Clipboard, switch to *File* (without swapping disks), and paste the data into a data file. Then you can create a report from *File* and paste it into *Word* just by switching.

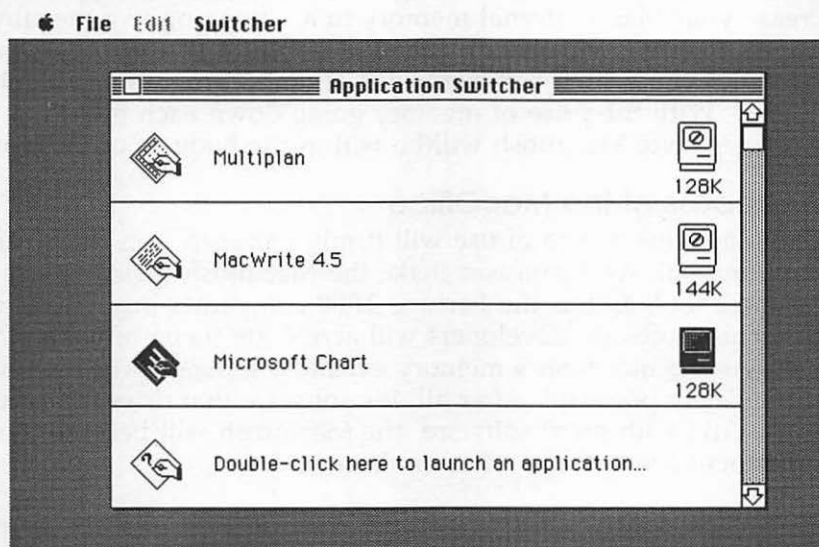
In our project management example, you had to do a lot of disk juggling to create your pie chart and paste it into *Word*. With *Switcher*, you can do it like this:

- Copy a range of numbers from *Multiplan* into the Clipboard.
- Switch to *Chart* and paste them into the *New Series* window.
- Create a chart and copy it into the Clipboard.
- Switch to *Word* and paste the chart into your letter.

Without *Switcher*, this process would have taken at least ten times longer. You would have had to quit, eject, and open three times. Going back to the Finder each time takes a great deal of time. You can switch between programs in this way faster than you can with commercially sold integrated programs that cost over \$500. *Switcher* makes the Macintosh a joy to use.

Save Several Sets

With Macintosh application programs as large as Microsoft's, you can have only three applications running at one time in a 512K Macintosh. You can have *Multiplan*, *File*, and *Word* for one situation, and *Multiplan*, *Chart*, and *MacTerminal* for another.

Figure 9-47. *Switcher*

Switcher Set

Once you set up a series of applications, you can save these sets as files on disk and open the one of your choice when needed.

As mentioned earlier, *Switcher* is free. Apple has released *Switcher* to the public domain. You can get a copy of it from an Apple dealer or by logging onto CompuServe with *MacTerminal*, going to the Macintosh area, and downloading it. (The process isn't quite as simple as the description, but it's not overly difficult. Have someone familiar with CompuServe and the Apple Forum area give you a hand if you've never downloaded anything before.)

Switching to the Finder

By selecting the Finder as one of the programs to switch to, you can go to the Finder from an application program such as *Multiplan* and do some file management, such as deleting and copying files, and then switch back to *Multiplan*. This can save you even more time.

Switcher with Two-Megabyte Macs

Macintosh memory upgrades of at least two megabytes of RAM are available from at least two third-party developers (see below).

For less than the cost of the original upgrade to 512K, you can increase your Mac's internal memory to a whopping two megabytes! In this roomy environment, *Switcher* is free to perform at its peak. It can let you switch between eight different programs in a split second. With the price of memory going down each month, a two-megabyte Macintosh will be within the budgets of most of us.

The Success of the MacOffice

The Macintosh's ease of use will firmly entrench it in the business environment. As businesses make the Macintosh their preferred business tool, and as the Fortune 1000 companies buy them by the score, software developers will accelerate their software offerings. As the machines's memory expands, software will become increasingly powerful. After all, it's software that drives the hardware. And with more software, the Macintosh will become the prominent force in the office environment.

RAM Upgrade Vendors

Bech-Tech (one-megabyte upgrades)

41 Tunnel Road

Hotel Claremont

Berkeley, CA 94705

(415) 548-4054

Levco (two-megabyte upgrades)

6160 Lusk Blvd., Suite C203

San Diego, CA, 92121

(619) 755-7827

Mass Tech (one-megabyte upgrades)

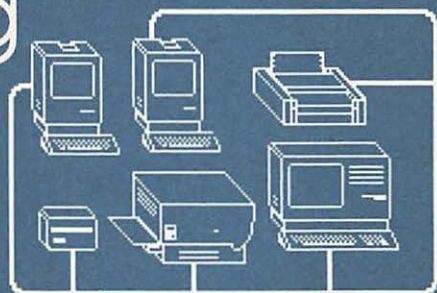
773 Boston Road

Groton, MA, 01450

(617) 448-3450

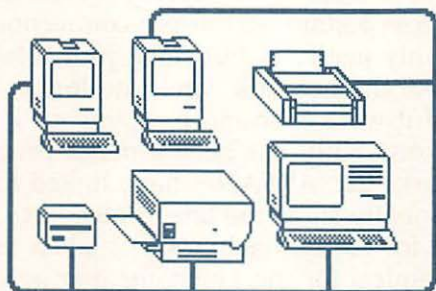
Chapter 10

Beyond MacOffice— Networking



Beyond MacOffice— Networking

Paul Freiberger and Dan McNeill



Let's pull back now, rise up through the ceiling of the MacOffice as if we're on a movie crane, and survey the entire floor. From our airy perspective, it's a warren of cubicles, with people moving back and forth in the halls.

Some are carrying documents

from one office to another. Others are heading for the copier, and still others are seated at their desks, working with *Word* or *File*.

Inspect the floor a little more closely—look for printers. Company printers can be laid out in two basic patterns. In the first, there are numerous printers, one on each desktop. This approach may seem commonsensical, but it's actually inefficient. If there are 20 offices in the firm and printers cost \$500 apiece, the total price of the machines is \$10,000. Yet for most of the day, each one is idle. Moreover, a \$500 printer isn't exactly at the peak of technology. It's usually slow and noisy, and its output may even be unsightly.

In the second pattern, the entire business has one printer. All 20 computers are connected to it and can use it at will. The company pays, say, \$7,000 for Apple's LaserWriter, saving \$3,000. In return, it gets an excellent machine that can render almost typeset quality results, enhancing the general company output and saving even more on third-party typographic jobs.

Such an arrangement is called a *network*, or, sometimes, a *local area network* (LAN), to distinguish it from the wide-area networks that may cover states, nations, or even the entire globe. Networking is possible because electricity travels at the speed of light. If you have a mass-storage device like a hard disk on your desk, your computer communicates with it almost instantaneously. You can put the hard disk in the basement of your building and communicate with it at virtually the same speed. In fact, you can put it halfway around the world, in Sydney or New Delhi, and still work with it. And if your computer can access

printers and hard disks at a distance, others should be able to string wires to them and access them, too. If you all share them, naturally, you can pool the cost.

Since economy is a main objective of a network, its price should not turn its savings into a laughable memory. In the example above, if the network cost \$3,000—\$150 per connection—its greater quality could certainly justify it, but since your total outlay would again be \$10,000, the network would no longer be the fiscal hero of the office. If it were even more expensive, it could be pointless. In fact, affordability has been a major problem in this field. Wide-area networks like ARPANet have linked mainframes and minicomputers globally since the late 1960s, but they've been costly, designed for costly machines. It's taken time to make the technology economical for the much cheaper personal computers. The first LAN was Ethernet, introduced commercially by Xerox at the end of the 1970s, and since then LANs have gradually become more feasible.

Yet they've hardly spun webs throughout the corporate world. Their price tags, while not forbidding, have remained disturbing: from several hundred to over a thousand dollars per connection. And since most require expensive cables which must be installed and maintained by professional contractors—at even further expense—they've acquired a daunting mystique. Moreover, since they've not been prevalent, little software has appeared for them, stunting their utility and so, in the classic computer vicious circle, curbing their prevalence.

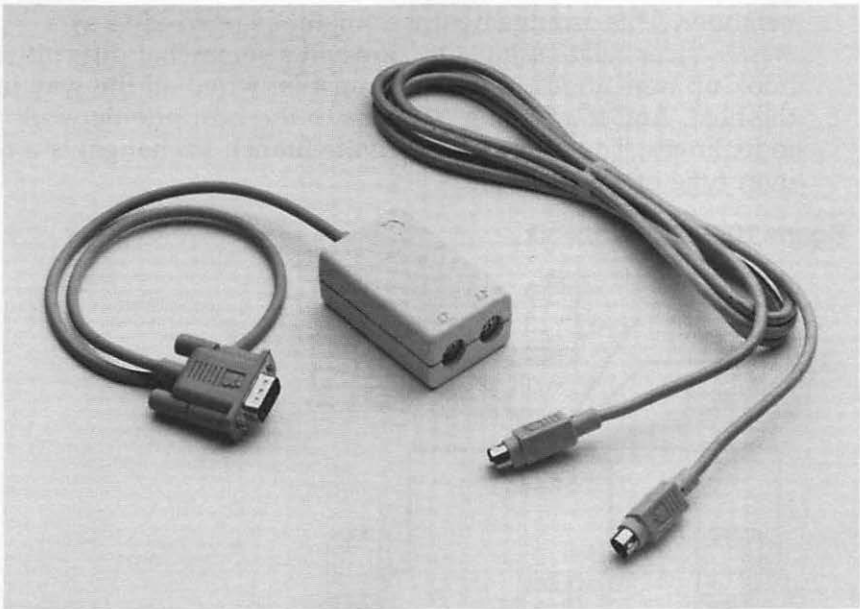
Yet a network called AppleTalk may soon alter this situation. AT&T Information Systems estimates network product sales will reach \$287 million in 1985 and climb to \$720 million by 1987. If the field really does triple in three years, much of the credit will likely go to this product.

AppleTalk

When Apple formally announced its Macintosh Office in January 1985, it unveiled its new approach to linking office computers—the AppleTalk Personal Network. AppleTalk was different. Until it, most LAN manufacturers offered relatively high cable speed, lengths of several miles, and support for hundreds of users. There's nothing wrong with this, but their price had an unfriendly effect on the wallet.

In contrast, AppleTalk is inexpensive. It costs \$50 per Macintosh, and its cable is also very cheap. Almost anyone who can follow instructions can install it. Software seems to be appearing for it at a decent clip, helping it realize its potential. AppleTalk is also gregarious. You can use it not only with the Macintosh, but with Apple II-series computers and almost any other personal computer including the IBM PC.

Figure 10-1. AppleTalk



The AppleTalk Network connection takes only a few minutes to install.

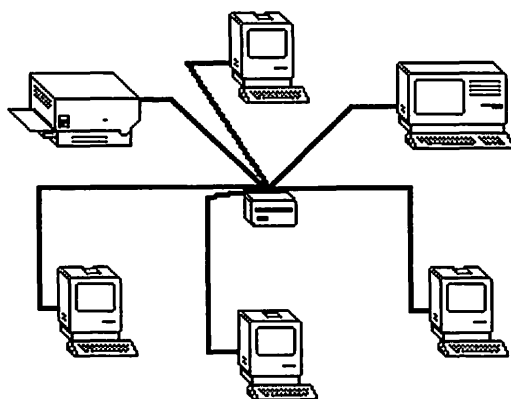
“We think networking is going to start from the bottom up in small work groups,” says former Apple chairman Steve Jobs, and the network reflects this small-is-sensible philosophy. It supports only 32 users. It can extend no further than 1000 feet before data begins to deteriorate. And its cable speed is somewhat slower than its competitors’. These *are* real technical limitations, yet they’ve helped slash the price of the system. More important, their ultimate impact on quality has been slight. Apple has cleverly compensated for reduced size and cable speed, as you’ll see.

The Elements of AppleTalk

To make an economical, easy-to-use network, Apple first had to decide on its structure. Networks come in several different structures, but three have achieved the greatest prominence:

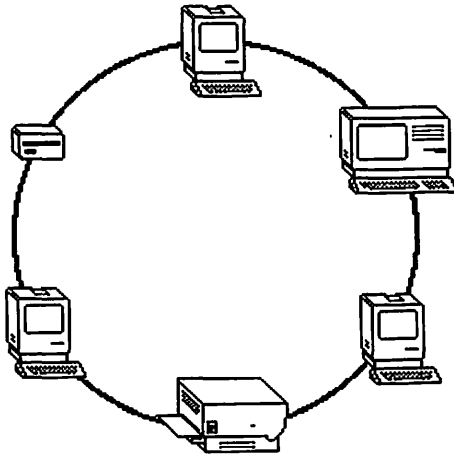
- **Star.** A star network is shaped like an asterisk. At the hub is a main switching station, which routes information from one computer or peripheral—one *node*—to another. If you send a spreadsheet to the individual in the next office, for instance, it travels from your Macintosh to the central host and back out to your neighbor. This arrangement is sometimes referred to as a *master/slave relationship*. Of course, it's somewhat difficult to hook up new nodes, since they must be wired all the way in to the host. And if anything happens to the host, the network falls to its knees. The office PBX (Private Branch Exchange) is a common type of star network.

Figure 10-2. Star Network



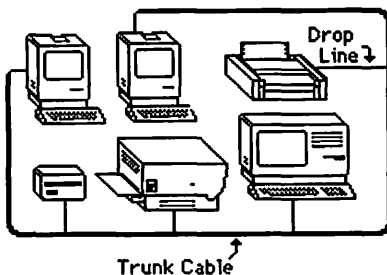
- **Ring.** As a star network is completely centralized, so a ring is completely decentralized. In a ring network, each computer is linked directly to the two computers closest to it, in daisychain fashion. Messages constantly enter your computer, which checks to see if it should receive them. If not, it hands them on to the next. Thus, if you were to send a spreadsheet to someone on the other side of the building, it would computer-hop until it found its destination. A drawback to this structure is that if the ring breaks at any point the network collapses.

Figure 10-3. Ring Network



- **Linear bus.** The linear bus is something of a cross between the star and the ring, and can be visualized as a freeway with on- and off-ramps. The freeway proper is the *trunk cable*, which runs near the computers and peripherals without passing through any of them. Wires called *droplines* act as ramps between the nodes and the cable. It's very easy to add or remove a computer from such a system, and problems in one machine don't break the back of the operation.

Figure 10-4. Linear Bus Network



Apple chose the linear bus for AppleTalk, and its components are few. It requires, first, a trunk cable, available from Apple in lengths of two or ten meters. This cable costs from 15 to 30 cents per foot, compared with the \$4 per foot for Ethernet's thick yellow

cable. The difference in cost comes from the AppleTalk cable's slower absolute speed and its consequent easier availability.

Second, it needs droplines so that computers can tap into the trunk cable. An AppleTalk dropline is a cord with a small white box on one end and a plug on the other. The box, called the *connector module*, measures $3 \times 2 \times 1$ inches, and attaches to the trunk cable. The other end plugs into the computer. The \$50 AppleTalk Connector Kit, which each node requires, comes with a dropline, two meters of trunk cable, and a small *cable extender*, to let you fit one length of cable into another.

Third, each computer needs an interface device. An interface lets the computer communicate with the network. It usually comes in two parts, one oriented to the machine, the other to the network. A modem is one kind of interface, translating between computer and phone lines. The Macintosh network interface is already built-in, in a Zilog 8530 communications chip, and thus costs you nothing. Apple IIs and the IBM PC lack such a chip, and require extra interface boards which may run a few hundred dollars.

Fourth, you need software, a set of instructions to tell your computer how to exploit the linkup. Hardware without software is about as useful as a book with blank pages. The AppleTalk systems software is called the *Macintosh AppleTalk Manager*. It becomes a part of the Macintosh operating system, filling about 6K and enabling application programs to use AppleTalk. Of course, you need applications to perform all the special tasks the network is capable of, such as electronic mail and mass-storage access. There are many third-party software packages for AppleTalk, and Apple Computer has actively fostered their development.

Let's return to our baseline example. Installing AppleTalk in a 20-Macintosh company would cost \$1,000 for the Kits, perhaps \$200 for the cable, nothing for the interfaces, and, if you wished to use only the LaserWriter, nothing for extra software. The total price would be \$8,200, a savings of \$1,800 over 20 cheap printers. Of course, you might well want to purchase additional software for applications like electronic mail, and such enhancements increase your cost. But they also give you powers impossible without a network.

Capacities

Two prime virtues of AppleTalk are, of course, its cost and ease of use. But the network is not simply a stripped-down version of more expensive offerings. It's reasonably fast and compatible with non-Apple computers, and these qualities make it a highly professional system.

The AppleTalk cable is something less than the Bonneville Salt Flats of network wiring. It carries information at the "moderate" velocity of 230,400 bits per second (bps). It's thus much faster than a modem, which has a standard speed of 1200 bps, and a normal upper limit of around 9600 bps. At the same time, it cannot compare with a network like Ethernet, which whisks data about at ten million bits per second or more.

But bits per second is not the only measure of network speed. A second factor, with the somewhat jargony name of *throughput*, is also important. Throughput refers to the amount of data passing through the cable. In general, the more nodes you link up to a network, the slower the throughput. A system like Ethernet can have thousands of nodes, whose combined messages can congest the lines. In contrast, since AppleTalk holds no more than 32, its avenues are relatively free.

AppleTalk throughput is heightened by Apple's "smart-node strategy." "The decision we made was fundamental: put intelligence in the peripherals," says Jobs. The LaserWriter printer, for instance, has more computational power than a Fat Mac. As a result, communication can be much less literal. The nodes can reduce messages to a skeletal code, send them, and reconstruct them at the other end. For instance, if you wished to send a page of typeset-quality graphics from an IBM PC to a printer via IBM's PC Network, you'd have to transmit every bit, that is, over 1000K. But by using AppleTalk and a graphics language (called PostScript) in the LaserWriter, you can cut this total to about 10K. Fewer bits per message means greater throughput and faster speed.

AppleTalk is also nonexclusive. Apple itself is building the means for it to communicate with the IBM PC, so the Macintosh can enter the bailiwick of this widespread product. Moreover, third parties are making it possible for almost any machine to hook up to AppleTalk. Already, there are linkages to machines that use the CP/M and Unix operating systems, and these, together with IBM's MS-DOS, cover the majority of personal business computers in the United States today.

Setting It Up

Setting up the AppleTalk network is simple, but nonetheless demands a few precautions. Here are the basic steps:

Lay out the lengths of cable. You should first map out a route for the cable; a floor plan may help you fix the location of present and future nodes in your office. Once you know where it's going, you can lay pieces of cable down, generally along the base of the wall or elsewhere out of the way. The order in which you string the nodes together makes no difference, but you must bear certain rules in mind:

- Form the cable into a line, never a circle or a T. The line can have as many bends or curlicues as you like, but it must have two—and only two—identifiable ends.
- Do not leave a cable dangling at the end. The ends of the network must be actual machines.
- Limit the network to 1000 feet in length. If you need more cable, the best thing to do is set up a second AppleTalk network. Two networks can communicate between each other.
- For safety reasons, do not lay cables outdoors, through walls, or in places where people might step on them. If you want the cable to pass through walls, you need either a metal conduit or the Teflon-coated cable found in the AppleTalk Custom Wiring Kit.

Plug the cable into the connector modules. This links the cable into a single line. Remember that you can have only 32 connector modules per network.

Turn off every machine you'll attach to the cable. If the machines are on, the network may inadvertently give two nodes the same identification number, causing needless grief and confusion.

Plug the droplines into the machines. If you have a Macintosh, the plug goes into the printer port. If you have a Macintosh XL or a Lisa (they're the same machine, just different names), it goes into serial port B.

When adding new machines to the network, you basically adhere to this outline. If you're adding a computer to one end of the network, first plug the new length of cable into the new connector module, attach that new cable to the last connector module at the end of the network, then switch off the machine and plug the dropline into it.

If you're inserting a machine in the middle of the network, the process is similar, but you must halt network operation mo-

mentarily. After plugging the new cable into the new connector module, you unplug existing cable from an existing connector. Then you just slip the new cable-connector hookup in between. Finally, you turn off the new machine and plug in the dropline.

If you want to remove a computer, say, to take a Macintosh home for the night, just turn off the machine and unplug it from the dropline. Since the connection between the cable and the connector module remains intact, the network continues to function. (A dangling dropline is okay; a dangling cable is not.)

Configurations

You can arrange an AppleTalk network in numerous ways, and this flexibility helps the system overcome the apparent limitation of its size. The first three of the following configurations are intramural variations, means of arranging nodes within a single network. The last two are intermural, means of linking AppleTalk to other networks and greatly expanding its range.

- **The solo computer.** The Macintosh has a small, fixed number of ports in the back. If you want to use more peripherals than these ports can accommodate, you can connect the computer to AppleTalk and string your peripherals along the bus.
- **Computers-only network.** You can have nothing but computers at the nodes, and use the network to shuttle documents back and forth by electronic mail. This doesn't make best use of a network's capacities, but you may have special need for it.
- **The classic arrangement.** Most people attach numerous computers to a few costly peripherals, such as a printer or hard disk.
- **AppleTalk-to-AppleTalk.** If your company has more than 32 nodes, you can still use AppleTalk. Apple says its research shows that "knowledge workers" spend 80 percent of their time interacting closely with 5 to 25 other people. In the remaining 20 percent, they're dealing with individuals beyond this sphere. So it devised AppleTalk networks to communicate to each other, with *bridges* that can fuse two or more networks into larger networks. AppleTalk uses three kinds of bridges: (1) The *local bridge* connects networks within the same building; (2) the *half-bridge* connects those that are remote, by means of modem, satellite dish, or other method; and (3) the *backbone bridge* unites AppleTalk networks via a high-speed system like Ethernet.
- **Beyond AppleTalk.** AppleTalk can also link up to mainframe networks and other kinds of LANs, using gateways, which are analogous to bridges.

You'll see the intermural configurations at the end of this chapter, but for now, let's turn to the principal bait Apple is waving before potential AppleTalk customers: the LaserWriter printer.

Printing

Printing is a key aspect of personal computers. Anyone who works with words needs hardcopies, and often these copies serve important esthetic functions. You don't want the business report you labored on for months to look like it gushed forth from the campus computer lab.

Yet most printers for personal computers have certain inherent flaws. Letter-quality printers, for instance, work like typewriters and yield solid, high-grade characters. But they're noisy and slow and render graphics about as well as a monkey paints with its toes. Dot-matrix printers are faster and do graphics well, but they're also noisy and sometimes the dots are apparent in their characters. Inkjet printers resemble dot-matrixes in quality, except that they're very quiet. The champion, however, is the laser printer. This device is exceedingly quick, silent, and versatile, and its quality is outstanding. In fact, it has had no real defect at all, *except* an astronomical cost.

But that cost is falling fast. For instance, the Hewlett-Packard LaserJet now sells for \$3,500, one of the lowest prices around. Apple's LaserWriter goes for \$7,000, twice that amount. But the LaserWriter offers so much more for the money that comparing the two is rather like comparing the Macintosh with a game computer. They're both in the same category, but they dwell in separate worlds. Laser printers work very differently from other kinds of printers. Letter-quality and dot-matrix machines, for instance, actually strike the paper, hence their penetrating buzz-saw whine. Inkjets squirt tiny bursts of ink onto the page. But laser printers use the technology of office copiers. In fact, the heart of both the HP LaserJet and Apple's LaserWriter is made by Canon, the copier company.

This mechanism is called the *print engine*. It works by shooting a very fine laser beam at a rotating drum which has a positive electrical charge. Wherever the beam strikes, it neutralizes the charge on the drum. The neutral spots attract the toner, a fine inky powder which also has a positive charge and is therefore repelled by the rest of the drum. The drum continues to rotate and soon touches paper with a negative charge. Positive and negative

attract, and the toner moves from drum to paper. The paper then slides through heated rollers, and the heat and pressure fuse the toner to the page. A moment or so later, the printed paper emerges from the machine, still a bit warm.

LaserWriter

The LaserWriter is fast. It can emit a page once every eight seconds. That's 300 characters per second (cps). By contrast, the popular ImageWriter prints its coarse draft-quality letters at 120 cps, and its high-quality is slower still. Since the LaserWriter has no element or pinheads hitting the paper, it's almost silent. And laser technology permits exceptional quality. The resolution of such a printer depends not on the size of the mechanical pinheads, as with a dot-matrix, but on the size of the laser beam itself. And that beam can be minute. The LaserWriter generates images with a resolution of 300 dots per inch (dpi). In comparison, the ImageWriter prints out about 80 dpi. The contrast is startling. Indeed, LaserWriter output is so fine that you may confuse it with typeset material from 2000-dpi printers, which cost tens of thousands of dollars.

Figure 10-5. Apple's LaserWriter



The LaserWriter, which retails for \$6,995, offers Macintosh business users close-to-typeset-quality graphics and documents.

The LaserWriter has still another advantage. Apple has minimized its maintenance problems. Its toner cartridge, which easily

slips in and out, also contains the parts of the printer most likely to wear out, so you don't have to tolerate slowly worsening quality or wait for the repair person every time some small problem appears. The cartridge costs \$99, and should be replaced every 2000 to 3000 pages, meaning that you pay from 3-1/3 to 5 cents per page, depending on how much toner your work requires. Apple says that the machine will probably need service once every 40,000 pages, and major maintenance every 100,000.

This printer is an excellent example of the AppleTalk strategy of maximizing intelligence at the nodes to minimize transmission through the wires. The printer contains 1.5 megabytes of RAM—1500K—three times that of the Fat Mac and 20 times that of the HP LaserJet. The advantage of so much memory is that the LaserWriter can hold full-page images of graphics, a feature worth having since each LaserWriter page can have 6,800,000 dots. Since laser printers print out a page at a time, this memory makes it possible for the LaserWriter to crank out its graphics at impressive speed.

The machine also has 500K of ROM. Its ROM contains an assortment of type fonts and a special page-description programming language called PostScript. Developed by a company called Adobe, PostScript is one of the treasures of the LaserWriter. The type fonts are outlines of characters in four different styles: Times Roman, Helvetica, Courier, and Symbol. (Fifty or more others will soon become available.) The machine saves memory by not storing complete images of each font at every different size. Rather, it uses PostScript to create fonts of any size you want. PostScript can do this because it describes characters in proportional, not absolute, terms. For example, instead of treating a certain *L* as an object ten dots high with a four-dot projection to the right from the base, PostScript describes it as a figure whose baseline is 40 percent as long as its stem. PostScript also adapts fonts to the high-resolution LaserWriter environment. Thus, whereas the ImageWriter renders curves of certain sizes with jagged edges, like a staircase, PostScript rounds every letter off carefully, no matter how large. Moreover, this software already makes it possible for the Macintosh to work directly with true typeset-quality printers. "PostScript is more important, in a way, than the LaserWriter," Jobs says.

Let's look at the process of using AppleTalk to operate the LaserWriter. First, of course, you must link the printer to the network. Then you create pages on the Macintosh screen. Finally, you send the pages to the LaserWriter and watch it take over.

Hooking Up the LaserWriter

The LaserWriter is just one more node in the network and so is fairly easy to set up. It does have a few special requirements that you must address, but this effort will not tax your abilities.

First, like all nodes, the LaserWriter requires a dropline. You buy a Kit for \$50, and plug in the dropline exactly as you did with the computers. In addition, however, you have to set the mode switch on the back of the LaserWriter to AppleTalk. You also need to purchase a toner cartridge, which isn't included with the printer. Finally, when everything is attached, you turn the device on. The LaserWriter needs two minutes to warm the rollers up every time you use it, so be careful not to send your document while it's still cold. When ready, it emits a test print, a piece of paper which tells you how many copies it has generated since first use, as well as information about its port and switch settings.

The LaserWriter comes with a test disk, which has been preset to work on the printer. Try printing out the document on this disk. If something goes awry, the problem is in the network. (The printer has proven itself by generating the test print.) The test disk also has version 4.5 of *MacWrite*, which you may wish to use for future word processing.

The printer comes with a *LaserWriter Installation Disk*, which enables you to put the necessary printer software and fonts on your startup disks. You must place this software on every disk you intend to print from.

If your network has more than one LaserWriter, you must give each a different name so that you can specify the printer you wish to send to. This operation is done with software, according to instructions in the manual and again is magnificently simple.

Setting Type on the Screen

To print out, of course, you must first have a document. The LaserWriter will work with any Macintosh software that has a Macintosh print manager—that is, almost all of it. A few companies, such as PFS, have previously offered their own printer drivers, and PFS at least is making its programs compatible with the LaserWriter. Of course, with a LaserWriter file in the Macintosh System Folder, you'll have new fonts available onscreen. For instance, if you wish the document to appear in 12-point Helvetica, you pull down the *Font* menu. Helvetica appears as a selection, and you click it.

If you're producing newsletters or other documents that need

a slick layout, you may want to consider a program called *PageMaker*, sold for \$495 by the Aldus Corporation, of Seattle, Washington. (The company is named for Aldus Manutius, the sixteenth century Venetian printer-scholar credited with inventing italics.) *PageMaker* is an electronic paste-up board, which enables you to lay out pages for publication. Most Macintosh word processors have a rudimentary layout capacity, allowing you, for instance, to center passages. *PageMaker* greatly expands these features. It lets you easily place and crop graphics on the layout, set column widths, and otherwise adorn the page. Then you fill the empty spaces with text, correct it, move parts over to the next page, and generally manipulate it at your convenience. *PageMaker* was written with graphic artists in mind, and they seem to appreciate it. It requires a 512K Macintosh or a Macintosh XL, an external disk drive (or the built-in hard disk on the XL), and either an ImageWriter or the LaserWriter.

Transmitting to the LaserWriter

When ready to print, you select *Print* from the *File* menu, just as if you had a desktop printer. A dialog box appears, and you choose the options you want. Then you click *OK*. The print manager begins translating your file into the PostScript commands of the LaserWriter. The Macintosh sends PostScript commands to the printer one page at a time.

In a network, when two or more people want to use the LaserWriter at once, backups can occur. You may have to wait until someone else has finished before you can use the printer. A type of software called a *print spooler* solves this problem, letting the printer store the incoming document temporarily while it works on something else. When the printer is free, it starts on your document. The only current print spooler for the LaserWriter requires an Ethernet connection, but AppleTalk print spoolers should be available by late 1985.

When the document reaches the LaserWriter, the machine transforms PostScript commands into a dot pattern, which replicates in memory a map of the page. Following this map, the printer directs its laser beam at the drum, and soon you have a printed copy of what was on your Macintosh screen just a moment ago.

Printing is a vital office function, and a network can enhance it for everyone. But an even more basic task is storage, for a computer can act only on what it has in memory. Here, too, a network can be extremely valuable.

Memory

Memory has always been a limitation of the Macintosh. Unfortunately, mass-storage devices like hard disks remain expensive, currently starting at \$1,000 to \$2,000. Moreover, if every desktop had a hard disk, your company would again face cost and use inefficiencies. With 20 offices, mass storage would cost between \$20,000 and \$40,000. Duplication would be inevitable as several people stored the same files. In addition, a good part of this expense would simply be wasted, since the larger the hard disk, the better the bargain. One hard disk with 100 megabytes is much cheaper than 20 with only 5 megabytes apiece. Thus, if a single mass-storage device could serve the whole network as the LaserWriter does, you would again save money and increase overall performance.

Hard disks can indeed function for a network, but often they're enhanced and called *file servers*. A file server is a hard disk with special features for multiple users. The main difference between the two devices involves the number of people who can simultaneously access a file. A file server lets several people use the same file at once, while a hard disk limits access to one at a time. A file server can also be adapted to network use in other ways. It may let you have a greater number of different files or files of larger size than a hard disk. And a good file server may go straight to the page of the document you want rather than stopping for directions at every fork in the path. Think of a file server as a file clerk, bringing you the information you request, while a hard disk is simply the inert file of data, which you must pick through yourself.

Apple has announced an AppleTalk file server for late 1985, but a number of third-party memory products are already available. Before we discuss them, however, some caveats are in order. This listing is far from complete, even as it's written, and new products are springing upon the marketplace every week. Moreover, prices are always shifting, and those given here may have changed by the time you start shopping. Most important, our descriptions of these items are neither reviews nor recommendations. We mention them mainly to give you an idea of the state of the market, and you should approach your purchase with your normal discretion, as you would anything on display in a window.

The Keeper

The Keeper, made by Micro-Design of Austin, Texas, is a mass-storage device that works either with one Macintosh as a hard disk or with an AppleTalk network as a file server. It comes in six different versions, three with fixed drives, three with removable ones. The fixed-drive file servers have 10, 20, or 30 megabytes and currently sell for \$2,195, \$2,695, and \$3,295, respectively. Of the remaining three, one comes with a single 5-megabyte removable drive (\$2,295), the second with two 5-megabyte removable drives (\$3,595), and the third with one 5-megabyte removable and one 5-megabyte fixed drives (\$3,595). Extra 5-megabyte cartridges cost \$17 apiece. The advantage of fixed drives, of course, is that all information is instantly available. The disadvantage is that once you fill the memory up, you need another file server. Removable drives, on the other hand, may not always be there when you want them, but they allow the file server vast capacity and permit you to physically transport data.

The Keeper has other qualities. It has a built-in computer, with 512K of RAM, so it can run more efficiently on AppleTalk. You can also attach more than one of them to the network, in which case you must give each a name. The disk manager program then keeps track of them for you. The device also allows for security. You can establish passwords to gain access to certain volumes of files. For added security, of course, you can always place confidential data on a removable disk.

Bernoulli Box

Another file server is the Bernoulli Box, made by Iomega, of Roy, Utah. The Bernoulli Box uses five-megabyte removable cartridges and retails for \$1,895. This machine is partitioned into units of one megabyte, which can be password-protected. The user selects from among the different compartments. Only one person can access any one-megabyte division at a time, but he or she can have several units on the Macintosh concurrently.

OmniDrive

Corvus, of San Jose, California, makes a "shared hard disk" called OmniDrive. OmniDrive is a fixed drive available in five sizes: 5-megabyte (\$1,495), 11-megabyte (\$1,995), 21-megabyte (\$2,995), 45-megabyte (\$5,195), and 126-megabyte (\$9,495). While the Keeper and the Bernoulli Box include software as part of the pur-

chase price, Corvus sells its *OmniTalk* program separately for \$395. *OmniDrive* prices illustrate the savings from buying large. With software, a 126-megabyte *OmniDrive* costs about \$9,900. If it were in a company with 20 computers, each computer could have around 6 megabytes for \$495 apiece. In contrast, a single 5-megabyte *OmniDrive* with software costs about \$1,900.

The *OmniTalk* program makes a personal hard disk over into a shared network system. It divides disk space into three categories: private, public, and controlled. Private volumes "belong" to individuals, who can thus read and write to specific parts of the drive. Corvus anticipates that most disk space will be taken up by private volumes, which will hold reports and memos of interest mainly to the volume owner. Public volumes can be read by all users, rather like bulletin boards or those all-personnel memos that always add a laugh to the day. These volumes would include application programs and common information needed by many people in the network, like certain databases. Normally, only a few people possess the power to write to public volumes. Controlled volumes can be read by anyone and written to by anyone, but only one person can write to them at a time. They provide a means of sending electronic mail.

XL/Serve

If you have a Macintosh XL and would rather have the network use its ten-megabyte hard disk than buy extra hardware, the *XL/Serve* program, from Infosphere, of Portland, Oregon, will let it do so. For \$195, *XL/Serve* enhances the *MacWorks XL* software to divide the hard disk into as many as 16 subvolumes. *XL/Serve* offers password protection, and volumes that can be either "shared" (read-only) or "private" (read-write). It permits multiple XLs in the network to increase network memory. *XL/Serve* also lets other computers use the XL's printer, and it provides for print spooling, so users need not wait in line for printout. However, though the software is compatible with the LaserWriter, it cannot spool print for it.

Though Apple has discontinued the Macintosh XL, Infosphere remains optimistic about *XL/Serve*. Company spokesman David Baasch says it will actively pursue the 40,000 to 50,000 existing XL owners for whom the product will remain useful. But the software is not tied to the XL, he says, and Infosphere is already adapting it for other hard disks. When it appears for them, of course, it will probably have a different name.

Communication

Communication, both intra- and inter-network, is a prime goal of linking computers together. It's also a function that even the most elementary network can carry out. Yet we've saved it till last for several reasons. One is that some communication devices enable you to reach out beyond AppleTalk itself, to connect with the world; the topic thus has the greatest periphery of all. Another is that many of the items below come in families, with special products for printing, storing, and other capacities which you've already seen. Hence, this is both a capstone and a catchall category, united by the thread of communications, but otherwise farflung and diverse.

One relatively simple program is *Mail Center*, offered by Videx, of Corvallis, Oregon. *Mail Center* lets you send text and graphics among AppleTalk computers. When you want to transmit a document, you open a window which displays all computers in the network able to receive. You select those you wish to receive the message and then dispatch it. The program keeps a record of successful receipts in a Send Log. This feature resembles certified mail and, like it, protects you from accusations at the other end that the document never came through.

Mail Center computers can receive messages even if they're currently engaged, say, in word processing. You know that mail is arriving when your disk drive starts to run and the solid apple atop the menu bar changes to a blinking postal letter icon. To read your correspondence, you click that letter icon and then the icon of the new file. *Mail Center* comes in two different packets: one for two Macintoshes (\$299) and another for six (\$499). Thus, if you wanted to link up 18 computers, it would cost about \$1,500.

Ultra-Talk, from Lutzky-Baird Associates, of Culver City, California, links AppleTalks to a computer based on AT&T's Unix operating system. The software is sold in two parts. That for the Unix machine costs \$2,000, and that for each Macintosh in the network is \$300. *Ultra-Talk* is an all-purpose program, and one of its major features involves using the Unix computer as a central file library for data storage. (Unix machines are well-suited for storage because their powerful file structure makes retrieval fast and simple.) Files in this library may be designated originals or copies. Whoever holds the original can read and write to it. Anyone who accesses a copy can alter only that copy, not the original. *Ultra-Talk* also supports high-speed printers like the LaserWriter

and allows electronic mail to one or many recipients in the system. Moreover, it oversees communication with other networks and even with remote computers containing giant databases. The software, finally, provides a backup capacity to insure against data loss as well as security measures to keep out browsers.

Tri-Data of Mountain View, California, markets an AppleTalk gateway it calls Netway 1000A. The Netway 1000A lets the Macintosh communicate with either an IBM 3270 BSC or an IBM 3270 SNA/SDLC minicomputer. It does so by getting the IBM host to look upon the Netway 1000A as an IBM minicomputer controller. Yet the Macintosh retains its distinctive pull-down menus, mouse control, and cut-and-paste abilities. The device comes with 128K RAM and one AppleTalk connection. Since it constitutes a node in the network, it can support 31 Macintoshes. It's about $3 \times 10 \times 8$ inches and weighs about 14 pounds. An AppleTalk network can have several Netway 1000As. The hardware and software together cost \$2,525.

Centram Systems West, of Berkeley, California, sells the Transcendental Networking System—also called Tops—which performs a panoply of tasks. It is actually available as an LAN itself, complete with hardware, but its software will work with an existing AppleTalk network. Hookups are about \$100 per Macintosh, and \$300 per IBM PC.

Tops has interesting communications and memory capabilities. First, it does file conversion, translating files created on one operating system into files for another. For instance, you can view the directory of a remote hard disk of an IBM PC. Though its files are oriented to the alien MS-DOS operating system, they appear onscreen as Macintosh icons. If the application program at both computers is the same—say, *Multiplan*—you can then access the file you want by clicking. The Tops network converts it into its own “standardized environment,” carries it to the Macintosh, and converts it again to run on the Macintosh operating system. You can then manipulate it exactly as if it were originally written for a Macintosh. The user of the remote computer does not realize that a file has been accessed, and the transaction occurs as fast as if the file were stored on your disk drive. Tops is compatible with MS-DOS, Macintosh DOS, Lisa DOS, CP/M 80, and Unix, and Centram says it can add other operating systems at the request of manufacturers. Tops also supports the LaserWriter.

The second intriguing aspect of this product involves memory. Tops allows any computer in the network to read files on the

disk drives of any other computer. It treats floppy disks the same as hard disks so that, in effect, it converts the total disk memory of the network into a pool which everyone can use—though you can also protect specific files from undesired inspection. “You shouldn’t have to buy an expensive server to use the network,” says Centram president Nat Goldhaber. Goldhaber concedes that this approach is not particularly useful with floppy disks alone, but says that some people do find it practical. If the network has several Macintosh XLs, it can exploit their hard disk capacity and become more generally useful. Centram plans to make Tops compatible with any hard disk for the Macintosh.

Perhaps the best-known existing network is Ethernet, marketed by 3Com, of Mountain View, California. Ethernet was invented by 3Com president Robert Metcalfe in 1973, while he was at Xerox. Since then, Metcalfe has worked with Xerox, Intel, and DEC to popularize the network, and he estimates that there are between 10,000 and 20,000 of them installed. Under the rubric EtherMac, 3Com makes a variety of products which enable AppleTalk users to tap into its network.

First, there is its 3Server, a \$7,995 file server which offers 36 megabytes in fixed format, 512K RAM, an optional 60-megabyte tape backup unit, and storage expandability to 252 megabytes. The 3Server needs a port expansion board (\$625) for the AppleTalk dropline, and can handle up to 50 computers on AppleTalk and Ethernet simultaneously. Thus, the file server can deal with up to 31 Macintoshes on AppleTalk and 19 others on Ethernet, all at once.

The 3Server also requires the software *EtherShare* (\$695), which supports Macintoshes connected via AppleTalk as well as IBM PCs and compatibles connected via Ethernet. This software allows file conversion between IBM PCs and Macintoshes, so the two computers can swap information. It supports up to 200 volumes per 3Server, and these volumes can range in size from 64K to 32 megabytes. Volumes can have password protection, and they come in three different categories: private, public, and shared. *EtherShare* also allows you to use Ethernet as a backbone bridge to connect separate AppleTalks.

Also, 3Com offers the optional program *EtherPrint*, which performs print spooling with the LaserWriter. To use it, you must first connect the printer to the 3Server by a serial cable. When you’re ready to print, you issue the command on the Macintosh. The computer sends the document to the 3Server, which stores it

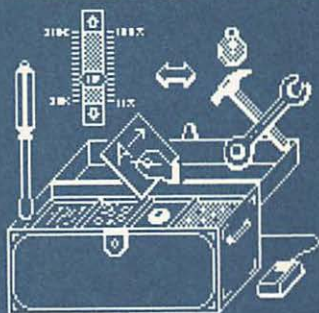
until the LaserWriter can get to it. During this time, the Macintosh is available for other tasks, so you don't have to sit drumming your fingers on your desk till printout. EtherPrint also enables IBM PCs to use the LaserWriter for ASCII text documents.

Finally, you might look for a communications product from Sytek, of Mountain View, California. Sytek has chosen to remain mum about rumors of this forthcoming item, but we mention it anyway because this company developed the hardware for IBM's PC Network. If it is, as most suspect, a gateway between the PC Network and AppleTalk, the product could be significant.

AppleTalk itself is already significant. It offers a way to cut the cost and improve the quality of office automation at the same time. It also offers capacities like electronic mail and file conversion which are hard to arrange without it. It isn't the most powerful network available, but it's one of the cleverest and least expensive, and its presence suggests that the Day of the Office Network may be arriving at last.

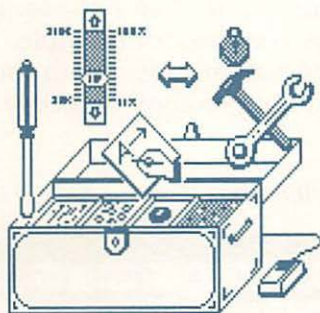
Chapter 11

Macintosh Utilities



Macintosh Utilities

Sharon Zardetto Aker



Even if you've mastered the workings of the Macintosh and the programs demonstrated in this book, there are still things you can do to increase your computer's productivity. Numerous programs—*utilities*—can help you do such things as increase the speed and efficiency of other applications, make more room on your disks, and secure

your files from unauthorized access. Some of these special utilities are described here, along with suggestions on how to make the best use of them. Although the first two are strictly for 512K Macs, the others can be used on 128K machines. You'll find a complete listing of the products and their manufacturers at the chapter's end.

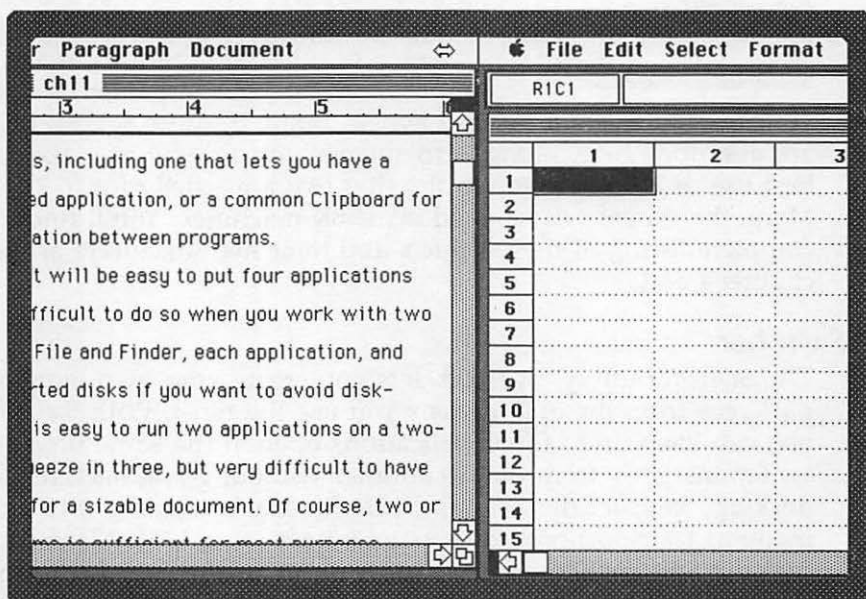
Switcher

The *Switcher* utility, in effect, lets you create your own integrated packages from the applications you use the most. With *Switcher*, you can keep up to four applications open at the same time and switch instantly from one to another without going back to the desktop. *Switcher* divides the 512K Fat Mac's memory into as many as four portions. Each segment acts as a 128K Macintosh, running any installed application. A click in the *Switcher* arrow at the top of the screen, or a press of Command-[or Command-], slides the current program off the screen and another one onto it.

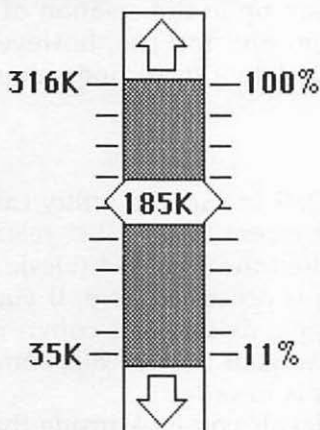
Switcher has a number of options, including one that lets you have a separate Clipboard for each installed application, or a common Clipboard for easy and instant transfer of information between programs. If you have a hard disk system, it will be easy to put four applications into *Switcher* at once. It's more difficult to do so when you work with two microfloppy drives, because the System Folder (consisting of the System file, Finder, and ImageWriter icons at the least), each application, and your documents must all be on inserted disks if you want to avoid disk swapping while you're working. It's easy to run two applications on a dual-drive system, and reasonable to squeeze in three, but very difficult to

have four available and still leave room for a sizable document. Of course, two or three applications running at one time is sufficient for most purposes. Another great feature of *Switcher* is that it lets you load the same application into more than one segment of the partitioned memory. This means you can, for example, have up to four *Multiplans* running concurrently; and with four spreadsheets open at the same time, cutting or copying between them or linking cells is a breeze.

Figure 11-1. *Switcher* Slides *Word* and *Multiplan*



Mac•Memory Disk



A RAM disk is an area of the computer's memory that's treated just like a disk: a disk icon appears on the desktop, you can copy applications and/or documents to it, and do anything else that you normally can with a microfloppy disk. The advantage of a RAM disk is that the transfer of data between it and the application you're running is instantaneous. The *Mac•Memory Disk* from Assimilation is a RAM disk utility that lets you set aside up to 316K for the RAM disk. By sliding a bar up a *memory scale*, you indicate how large the RAM disk should be.

You can create a RAM disk anytime you want to work with one, or specify that one be created automatically whenever you use the current physical disk as the startup disk. You can also have files automatically copied to the RAM disk when it's created. If you define the RAM disk to be the startup disk, it will need the System and Finder copied to it, as well as the application you want to run. With the basic System at 150K, the Finder at 45K, and *Word* at 125K, you'll have a hard time squeezing some configurations onto a 316K RAM disk. (You'll also need the 25K ImageWriter file if you're going to do any printing.) You will have to alter the System file, as described later in this chapter, so that it takes less room. Once you have an application on the RAM disk, there are no disk-access delays when you're using it. Dialog boxes appear instantly on the screen, *Cut* and *Paste* operations are done in the blink of an eye, and the usual delay between giving a *Print* command and the actual printing is cut down to seconds when the file to print is saved to the RAM disk instead of a physical disk. You shouldn't keep your document on the RAM disk (you probably won't have room, anyway); like all RAM, if there's a power interruption, all information is lost.

Using a RAM disk with two drives actually gives you the benefit of a third drive. When your application is on the RAM disk, you can open a document on a disk in one drive and save it onto a different disk in the second drive. Normally, moving a file from one document disk to another involves a lot of disk swapping. A RAM disk also makes System file changes a breeze. When

you use the *Font and Desk Accessory Mover* on a regular disk, as described a bit later, a lot of time is taken up in the creation of new files and the updating of the System file. You can, however, put the System file on the RAM disk, update it in seconds, then drag it back to the physical disk.

Font/DA Mover



Font/DA Mover

Apple's original *System Disk* included a utility called the *Font Mover*; the most recent *System Disk* release includes a new utility called the *Font/DA (Desk Accessory) Mover*, which is described here. If you don't have the new *Mover*, ask your Apple dealer for a copy.

Before we explore how you can alter your System file, some general information about desktop files is in order:



Note Pad File



Scrapbook file

The System Folder. If you look inside the System Folder on your desktop, you'll find six icons: System file, Finder, ImageWriter, Clipboard file, Scrapbook file, and Note Pad file. The two desk accessory files contain the information you have put in the Scrapbook and Note Pad.



Imagewriter

The amount of space these files take up varies with how much information you've stored. The standard Scrapbook comes with about 9K of data in it, while the Note Pad can hold a maximum of 2K.

You can put any of these icons in the Trashcan and erase them from the disk. The next time you select the related desk accessory from the Apple menu, you'll find it empty; a new file is created as soon as you make the selection.

The Clipboard icon is always empty when you start; its contents—the things you *Cut* or *Copy*—disappear when you turn off the computer.

The ImageWriter file lets your Macintosh and the application you're using communicate with the printer. An update of the ImageWriter file adds a new option, *50 percent reduction*, to the *Page Setup* dialog box.



Finder

The Finder is the program that gives you your desktop: the pull-down menus, the commands available in the menus, the option of erasing disks or removing files from them, and so on. The most recent version of the Finder, at this writing, is 4.1; it takes about 41K of space on the disk. (To find out what version you have, select *About the*

Finder from the Apple menu.) Soon the Finder will be built into the Macintosh's hardware and you won't have to give up any disk space for it.

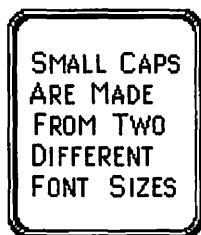


System File

The System file defines the Macintosh environment. It contains, among other things, information about what fonts are available when you use a font menu in any application, and what desk accessories are available under the Apple menu. The System file generally takes about 150K of space. However, since you can strip it of many fonts and accessories, or add new ones to the System, the size can vary greatly.

Moving fonts. To get an idea of why you might want to remove some fonts from the System, all you need to do is look at how much room each font takes (1024 bytes make 1K, or kilobyte).

Font	Size	Bytes	Font	Size	Bytes
Chicago*	12	2940	New York	9	032
Geneva*	9	2152	New York	10	2200
Geneva	10	2200	New York	12	2734
Geneva*	12	2734	New York	14	3352
Geneva	14	3568	New York	18	4516
Geneva	18	4864	New York	20	5260
Geneva	20	5848	New York	24	6832
Geneva	24	7568	New York	36	13,780
Monaco*	9	2026	* System Fonts		
Monaco	12	2464			

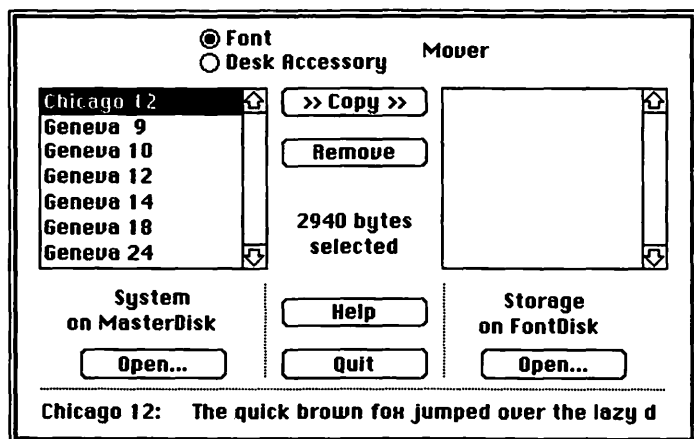


If you don't need the New York font for your writing with *Word*, you can free up 40,706 bytes (about 40K) by removing it. The fonts marked with asterisks should always be kept in the System; these *System Fonts* are used by the Macintosh for menus, dialog boxes, and on the desktop. When you decide which font you want to keep for your own use, make sure you keep both the size you intend to use and the one twice that size. When you print in high-quality Geneva-12, for instance, the Macintosh looks to Geneva-24 for its "map." And, if you use *Word's* *Small Caps* option, remember that it needs the uppercase letters from two different font sizes. Small Caps-12 uses 14-point letters whenever you use the Shift key.

Before you remove a font from the System file, you should

make a copy of it; you can then save it in a separate file and load it back into the System if you need it. Other fonts can be installed into the system, too; in addition to Apple's Cairo and Los Angeles fonts included on its *System Disk*, there are many companies that make disks full of font files for you to use. Some are foreign language fonts, some include special symbols for such areas as electrical engineering, and some are decorative fonts for announcements and letterheads. To use the *Font/DA Mover*, open it by double-clicking on the icon. The *Mover's* screen has two buttons so you can choose between working with fonts or with desk accessories; click on the *Font* button.

Figure 11-2. *Font/DA Mover* Screen



Below the left window is the title *System on (diskname)*, and the window shows the fonts installed in the current system. To copy any unwanted fonts into a new file, you have to create that new file. Click on the *Open* button beneath the right window, type the file name **Fonts** in the dialog box that appears, and click in the *Create* button. The title *Fonts on (diskname)* appears below the right window.

Click on an unwanted font in the left window; a sample of the font appears at the bottom of the screen, and the number of bytes that font uses is noted in the center. Drag or Shift-click to select all the unwanted fonts and sizes in the System file; the total number of bytes for all fonts is shown on the screen. Click in the *Copy* button; the arrows will be pointing toward the right win-

dow, the one you're copying to. After the fonts are copied to the new file, you can click in the *Remove* button under the right window, and the selected fonts will be erased from the System. When you quit the *Mover*, you'll find a new icon on the desktop, the file with the copied fonts, labeled *Fonts*.



Fonts

This icon can be dragged to another disk to give more room on the original disk. You may want to store each font, with all its sizes, in its own appropriately named file to make it easy to find. Use a similar procedure to install a font into the System. Installed fonts still appear in the left window. Instead of creating a new file for the right window, open the one that has the fonts you want. The file you open may be a font file you created earlier, one from a commercial font disk, or even a System file from another disk. Select the desired fonts in the right window, and click the *Copy* button to copy them into the current System.

Moving desk accessories. The desk accessories under the Apple menu can also be removed in order to make more room on the disk. As charming as the Puzzle is, you might rather have the extra 1K available for something else.



Alarm Clock
Calculator
Control Panel
Key Caps
Note Pad
Puzzle
Scrapbook

The standard accessories use a total of approximately 28K space on the disk:

Accessory	Bytes
Alarm Clock	4008
Calculator	2444
Control Panel	7951
Key Caps	1645
Note Pad	2512
Puzzle	932
Scrapbook	3109



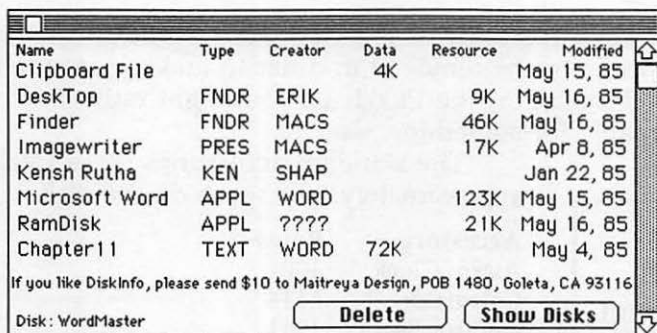
Puzzle

In addition to the room for the accessory itself, some accessories need extra space for the data files which store the information you've created—like the Scrapbook and Note Pad files mentioned earlier. The procedure for copying, removing, and installing desk accessories is similar to that for moving fonts. You'll find a special desk accessory icon on the desktop when you create an accessory file.

Many desk accessories besides the standard ones are available. Some are in the public domain, which means they're free. If you belong to a user group or use one of the large information

services like CompuServe, it's easy to get the public domain accessories. Another category of accessories is *shareware*; these programs can also be obtained through user groups and CompuServe. A shareware program is nominally priced, and you send money to the author only if you like the program enough to use it. Finally, there are accessories available commercially. Many of these are variations on the Note Pad and Calculator; there are numerous calendars and phone/address books. Some are full-blown desk management systems; others are handy utilities that make computing life easier. An especially convenient accessory called *DiskInfo* is available as shareware. Once it's installed in your system, you can check what is on any disk without leaving the application.

Figure 11-3. *DiskInfo*



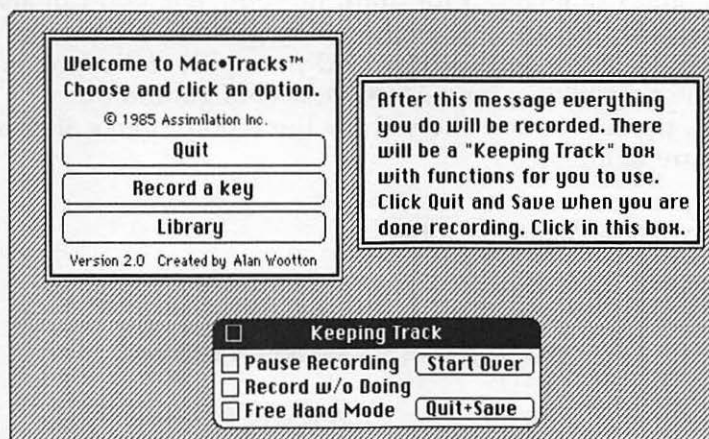
DiskInfo lets you delete a file without going back to the desktop; this feature is missing from almost all Macintosh applications and is hard to live without once you've used it a few times. Two of the most versatile commercial desk accessories are described below.

Mac•Tracks

The single most useful utility program for any Macintosh application is *Mac•Tracks*. It installs as a desk accessory, so it's always available from the Apple menu. With *Mac•Tracks*, you can define your own Command-key sequences. You may have noticed that the earlier Microsoft Macintosh programs have fewer Command-key options than the later ones. *Multiplan*, for instance, does not use Command-O for *Open*. You can remedy the situation by installing *Mac•Tracks* on the *Multiplan* disk. When you select

Mac•Tracks from your Apple menu, you're asked whether you want to see the Library (a list of the sequences already defined) or add a new command. To add a command, you press the Command key (⌘) and the letter or number that will stand for the command; Mac•Tracks then begins "recording" your actions. Both keyboard and mouse are recorded.

Figure 11-4. Mac•Tracks



To add an *Open* option to *Multiplan*, for instance, you would press Command-O, then pull down the *File* menu and select *Open*. Mac•Tracks gives you the option of having an action recorded, but not actually performed; you can also turn off the recording process or begin it over again. A Mac•Tracks key option overrides one already in a program; you can, for example, define Command-N as *New* in *Multiplan*, overriding the original *Name* command that comes with the application. In addition to using the Command and the "storage" key, you can add either the Shift or Option key, or both. As a result, most letters and numbers on the keyboard can store four commands: Command-key, Command-Option-key, Command-Shift-key, and Command-Shift-Option-key. (Some exceptions: Command-Shift-1 ejects the internal disk, and Command-Shift-2 the external one; these cannot be overridden by Mac•Tracks.) So, if you use Command-N for *New* in *Multiplan*, you could define Command-Shift-N for the *Name* function.

You can also record more than one action on a key. Command-Q is the *Quit* option for most applications. You might define Command-Shift-Q as a *Save and Quit* instead of always using two menu or keyboard commands for that sequence. There's no practical limit to the number of sequences you can put in *Mac•Tracks*. A convenient series for any application is one that chooses *Print* from the *File* menu, selects a quality print, and clicks the OK button: try Command-1 for high-quality printing, Command-2 for standard, and Command-3 for draft. In *Multiplan*, you can also add Command-Option-1 for high-quality printing of only the selected portion of the spreadsheet, and so on. The following table gives some possibilities for a *Mac•Tracks* configuration of *Multiplan*; the illustration shows how the Library looks after all the keys are defined.

Possible *Mac•Tracks Multiplan* Table

Command	Keys	Comments
File menu		
New	⌘ -N	Replaces N for <i>Name</i>
Open	⌘ -O	
Close	⌘ -W	W is used for <i>Close</i> in <i>Word</i>
Save	⌘ -S	Replaces S for <i>Show Active Cell</i>
Save As	⌘ -A	Replaces A for <i>All Cells</i>
Print	⌘ -P	Replaces P for <i>Page Break</i>
Edit menu		
Paste and Link	⌘ -L	
Unlink	⌘ -U	Replaces U for <i>Remove Cell Protection</i>
Sort	⌘ -Shift-S	
Select menu		
All Cells	⌘ -Option-A	All <i>Select</i> menu items use Option
Last Cell	⌘ -Option-E	E for <i>End</i>
Name	⌘ -Option-N	
Link	⌘ -Option-L	
Show Active Cell	⌘ -Option-S	
Define Name	⌘ -Option-Shift-N	
Delete Name	⌘ -Option-D	

Format menu

General	⌘-G	Replaces G for <i>Center Alignment</i>
Dollar	⌘-4	The 4 key has the \$ sign on it
Percent	⌘-5	The 5 key has the % sign on it
No Decimal	⌘-/	
Decimal	⌘-.	
Scientific	⌘-E	E is used in scientific notation
Bar Graph	⌘-Shift-B	B without Shift already in use
Align Left	⌘-Shift-L	Easier to remember than program's F
Align Center	⌘-Shift-C	Easier to remember than program's G
Align Right	⌘-Shift-R	Easier to remember than program's H
Commas	⌘-,	
Column Width	⌘-Shift-W	W without Shift already in use

Option menu

Freeze Titles	⌘-Option-Z	All <i>Option</i> menu items use Option
Unfreeze Titles	⌘-Option-Shift-Z	
Set Page Break	⌘-Option-K	Program's P used elsewhere
Remove Page Break	⌘-Option-Shift-K	
Show Formulas	⌘-Option-F	
Show Values	⌘-Option-V	
Protect Document	⌘-Option-P	
Unprotect Document	⌘-Option-Shift-P	
Remove Cell Protection	⌘-Option-Shift-C	Program's U used elsewhere
Restore Cell Protection	⌘-Option-C	

Calculate menu

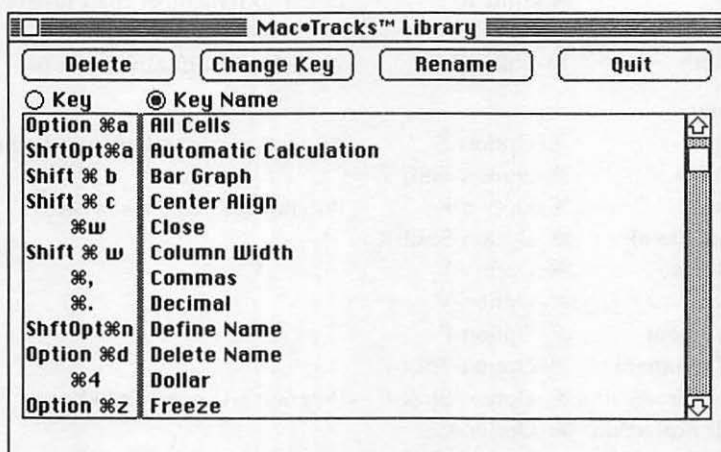
Automatic Calculation	⌘-Option-Shift-A
Manual Calculation	⌘-Option-Shift-M
Iterate	⌘-I
Don't Iterate	⌘-Shift-I

Miscellaneous

Save and Quit	⌘-Shift-Q	
Print High Quality	⌘-1	Using default settings
Print Standard Quality	⌘-2	
Print Draft Quality	⌘-3	
Print Selection-High	⌘-1	Click in <i>Selection Only</i> button
Print Selection-Standard	⌘-2	
Print Selection-Draft	⌘-3	
Scroll screen up	⌘-Option-Shift-U	Record click in scroll bar
Scroll screen down	⌘-Option-Shift-D	
Scroll screen right	⌘-Option-Shift-R	
Scroll screen left	⌘-Option-Shift-L	

When you define a lot of functions in a single application, use a system that will help you remember which key does what. In this *Multiplan* configuration, for instance, when a function is represented by a certain key sequence, its opposite uses the same key sequence with the Shift key added—*Freeze* and *Unfreeze Titles*, *Set* and *Remove Page Break*, *Protect* and *Unprotect Documents*; all the items in the *Option* and *Select* menus use the Option key in the command sequence.

Figure 11-5. Mac•Tracks Library



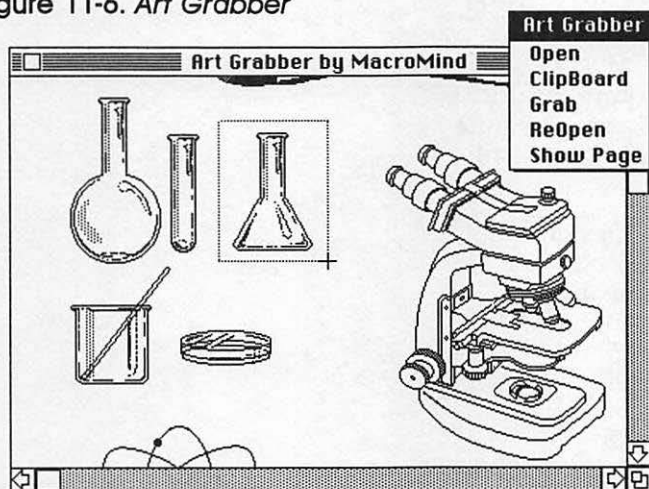
Mac•Tracks would be a wonderful utility even if it stopped there, but there's more. You can record keyboard sequences, which means you can print things like your name and address with two keystrokes—it's like having *Word's Glossary* feature in every application. You can even store paragraphs of text on a single key, so you can print form letters with standard clauses with only a few keystrokes. When you get *Mac•Tracks* (and you should!), defining all your key options is easier if the first recording you make is the one that selects *Mac•Tracks* from the Apple menu and clicks the *Add a key* button.

Art Grabber

If you incorporate *MacPaint* graphics into any of your documents—whether as letterheads, illustrations, or enhanced *Chart* graphics—*Art Grabber* is a desk accessory you'll greatly appreciate. The *Art Grabber* utility lets you open a *MacPaint* file from

within any application. So, if you're working in *Word* and want to get the illustration you need for your report, you can open the *MacPaint* document without leaving *Word*, trace the section you want copied to the Clipboard, close the *Art Grabber* window, and paste the graphic into the *Word* document. This is much easier than trying to keep an active Clipboard from *MacPaint* to *Word*, or preparing a Scrapbook in *MacPaint* and transferring it to the *Word* disk.

Figure 11-6. *Art Grabber*



Another advantage to using *Art Grabber* is that its window opens to the size of the Macintosh screen, so you can get a larger figure copied onto the Clipboard than if you're working in *MacPaint*'s window. (This feature is usable only on the 512K Macintosh; memory constraints on the 128K Macintosh keep the traceable area to about 2×4 inches.)

Lock•It

A utility called *Lock•It* will prevent anyone without the correct password from opening any document you've secured. *Lock•It* lets you assign a Master Password to the documents on a disk; this Master Password lets you add, edit, and delete the passwords for individual documents, which are assigned through the *Lock•It* program.



Lock-It

When you try to open a document that has been protected, a dialog box asks for the correct password; only if it's supplied will the document open properly. In addition to locking documents, *Lock•It* encrypts their contents; if anyone opens a locked document with another utility program, the document will still be unreadable.

Product Information

Switcher

Font/DA Mover

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014

DiskInfo

Maitreya Design
P.O. Box 1480
Goleta, CA 93116

Mac•Tracks

Mac•Memory Disk

Lock•It

Assimilation

Los Gatos, CA 95030

Art Grabber

Hayden Software
600 Suffolk Street
Lowell, MA 01854

The MacOffice Authors

Sharon Zardetto Aker is a freelance journalist whose specialty is the Macintosh. She is a regular contributor to *A+*, *MacWorld*, *Family Computing*, *Macazine*, and *MacUser*. Two of her recent books are *The MacPack* (Ashton-Tate) and *Microsoft BASIC Programming for the Mac* (Scott Foresman). She lives in Wantage, New Jersey—"Twenty miles north of civilization"—with one husband, two children, and, at last count, seven computers.

Selby Bateman, features editor for COMPUTE! Publications, writes, edits, and coordinates feature articles and product reviews for COMPUTE! and COMPUTE!'s *Gazette* magazines.

Charles Brannon has been writing about and programming on a wide variety of microcomputers for over six years. Program editor for COMPUTE! Publications, he pioneered the development of COMPUTE!'s programming department and introduced unique program typing aids to the readers of COMPUTE! publications. Charles is also the creator of the bestselling word processor *SpeedScript* and author of three books on *SpeedScript* for the Commodore 64/VIC-20, Apple, and Atari computers.

Paul Freiberger is a West Coast editor for *Popular Computing* magazine and a columnist for the *San Jose Mercury News*. He is coauthor of several books about computers, including the bestselling *Fire in the Valley: The Making of the Personal Computer* (Osborne/McGraw-Hill) and *The Apple IIc: Your First Computer* (COMPUTE! Books). He also enjoys writing children's books and playing his clarinet.

Vahé Guzelimian is a writer and computer consultant who lives in Cardiff by the Sea, California. He is the author of *Becoming a MacArtist* (COMPUTE! Books) as well as a frequent contributor to magazines like *Macworld* and COMPUTE!'s *Apple Applications Special*.

Arlan R. Levitan is a staff regional systems engineer for Amdahl Corporation and telecomputing columnist for COMPUTE! magazine. Born on Peter Sellers' birthday, he is coauthor of *MacTalk: Telecomputing on the Macintosh* (COMPUTE! Books), *COMPUTE!'s Telecomputing on the IBM* (COMPUTE! Books), and *Home User's Guide to Atari Computers* (Consumers' Guide).

His hobbies include anything that involves lasers and freestyle Crayola with drawing partner Mira, his two-year-old daughter.

Dan McNeill is a writer based in San Francisco and Los Angeles. A native of Mill Valley, California, he is coauthor (with Paul Freiberger) of *The Apple IIc: Your First Computer* (COMPUTE! Books). His work has appeared in numerous magazines.

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Sharon Zardetto Aker
Selby Bateman
Charles Brannon
Paul Freiburger

Vah
Arla
Dan McNeill

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These well-known writers know how to use the Macintosh and its business software—and they know how to communicate that knowledge to you. *MacOffice: Using the Macintosh for Everything* reveals the power of the Macintosh and five application packages—Microsoft's *Word*, *File*, *Chart*, and *Multiplan*, and Apple's *MacTerminal*—as it shows you how to transform your office into an efficient MacOffice.

There are practical applications you can use immediately. Techniques are demonstrated step by step. Tips, and tricks abound. Scores of illustrations show what you see on the screen at almost every turn. From disk management to data files, from client lists to customizing your working environment, *MacOffice* includes everything you need to create a complete computerized office.

Here are just some of the things you'll find inside:

- Discussions of the Macintosh user interface, its desktop, and desk accessories
- How to use *Word* to create form letters, even how to merge information from *File*
- Complete instructions for setting up client and customer lists with *File*
- *Multiplan* accounts receivable, accounts payable, and balance sheet templates
- Examples of generating charts and graphs using *Chart*—and how to customize them with *MacPaint*
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- How to integrate all five applications, turning your Macintosh into a complete office system
- What to look for in networks, hard disks, and laser printers, and how to connect them all
- And evaluations of valuable Macintosh utilities which make your computer and office even more powerful

Written clearly and concisely, *MacOffice* offers a complete package—details on the Macintosh and some of its best software, practical applications, and inside information—that will make any office efficient and effective.