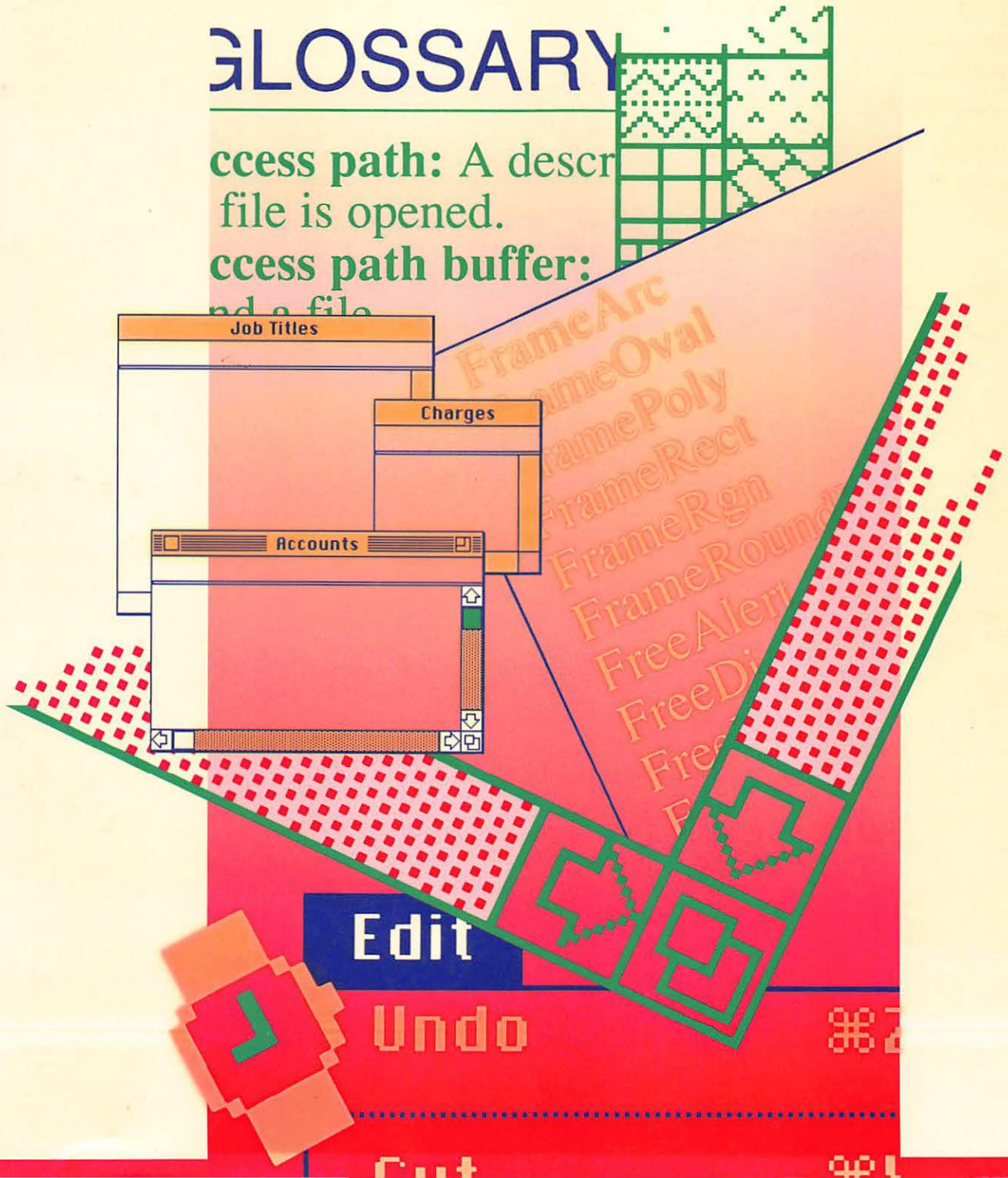
Apple®

Inside Macintosh X-Ref

Your key to Apple's official programming books for the Macintosh® family of computers



Inside Macintosh® X Ref

Addison-Wesley Publishing Company, Inc.
Reading, Massachusetts Menlo Park, California New York
Don Mills, Ontario Wokingham, England Amsterdam Bonn
Sydney Singapore Tokyo Madrid San Juan

APPLE COMPUTER, INC.

Simultaneously published in the United States and Canada.

ISBN 0-201-13694-5
ISBN 0-201-19265-9
CDEFGH-AL-898
Third printing, July 1988

Inside Macintosh X-Ref

WARRANTY INFORMATION

ALL IMPLIED WARRANTIES ON THIS MANUAL, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO NINETY (90) DAYS FROM THE DATE OF THE ORIGINAL RETAIL PURCHASE OF THIS PRODUCT.

Even though Apple has reviewed this manual, **APPLE MAKES NO WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS MANUAL, ITS QUALITY, ACCURACY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. AS A RESULT, THIS MANUAL IS SOLD "AS IS," AND YOU, THE PURCHASER, ARE ASSUMING THE ENTIRE RISK AS TO ITS QUALITY AND ACCURACY.**

IN NO EVENT WILL APPLE BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT OR INACCURACY IN THIS MANUAL, even if advised of the possibility of such damages.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, ORAL OR WRITTEN, EXPRESS OR IMPLIED. No Apple dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Contents

This book was written, edited, and composed on a desktop publishing system using Apple® Macintosh® computers and Microsoft® Word. Proof and final pages were produced on the Apple LaserWriter® Plus Printer. POSTSCRIPT™, the LaserWriter page-description language, was developed by Adobe Systems Incorporated. The text is set in Times® and the display type in Helvetica®.

PREFACE: ABOUT THIS BOOK

The *Inside Macintosh® X-Ref* is your key to Apple's official programming books for the Macintosh family of computers. The *X-Ref* gives you:

- a general index to eight books: all five volumes of *Inside Macintosh*, the *Programmer's Introduction to the Macintosh Family*, the *Technical Introduction to the Macintosh Family*, and *Designing Cards and Drivers for the Macintosh II and Macintosh SE*. The general index also contains references to the *Macintosh Technical Notes* for 1984–1987.
- a complete list of routines that may move or purge memory
- a list of all Macintosh system traps
- a list of all Macintosh global variables
- a comprehensive Macintosh glossary

In addition, the *Inside Macintosh X-Ref* contains a new index, never before published, listing all constants and field names in *Inside Macintosh*.

The books for which the *Inside Macintosh X-Ref* is a cross-reference are published by Addison-Wesley as part of the Apple Technical Library. *Macintosh Technical Notes* may be ordered from APDA, the Apple Programmer's and Developer's Association. For information about APDA, see the inside back cover of this book.

The text of the *Inside Macintosh X-Ref* is also available from APDA in the form of Macintosh text files on a 3.5-inch disk.

INDEX I: GENERAL INDEX

The General Index lists page references for eight books plus the *Macintosh Technical Notes* for 1984–1987. The eight books include all five volumes of *Inside Macintosh*, the *Programmer's Introduction to the Macintosh Family*, the *Technical Introduction to the Macintosh Family*, and *Designing Cards and Drivers for the Macintosh II and Macintosh SE*.

The index entries for the different books are distinguished by letter codes, as follows:

Code	Book	Sample listing
I, II, III, IV, V	*Inside Macintosh*	II-276 = Volume II, page 276
P	*Programmer's Introduction to the Macintosh Family*	P-103 = page 103
T	*Technical Introduction to the Macintosh Family*	T-78 = page 78
C	*Designing Cards and Drivers for the Macintosh II and Macintosh SE*	C8-12 = chapter 8, page 12
N	*Macintosh Technical Notes*	N2 = Technical Note 2

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Z

INDEX II: CONSTANTS AND FIELD NAMES

D

E

F

G

H

I

J, K

L

M

N

O

P

Q

R

S

T

U

V

W

X, Y, Z

APPENDIX A: ROUTINES THAT MAY MOVE OR PURGE MEMORY

This appendix lists all the routines that may move or purge blocks in the heap. As described in *Inside Macintosh*, Volume II, chapter 1, calling these routines may cause problems if a handle has been dereferenced. None of these routines may be called from within an interrupt, such as in a completion routine or a VBL task.

The Pascal name of each routine is shown, except for a few cases where there's no Pascal interface corresponding to a particular trap; in those cases, the trap macro name is shown instead (without its initial underscore character).

ActivatePalette
ADBReInit
AddComp
AddResMenu
AddSearch
Alert
AllocCrsr
AppendMenu
ATPAddRsp
ATPCloseSocket
ATPGetRequest
ATPLoad
ATPOpenSocket
ATPReqCancel
ATPRequest
ATPResponse
ATPRspCancel
ATPSndRequest
ATPSndRsp
ATPUnload
BackColor
BackPat
BackPixPat
BeginUpdate
BringToFront
Button
CalcMenuSize
CalcVis
CalcVisBehind
CautionAlert
Chain
ChangedResource
Char2Pixel
CharWidth
CheckItem
CheckUpdate
ClipAbove
ClipRect
CloseCPort
CloseDialog
ClosePicture
ClosePoly
ClosePort
CloseResFile
CloseRgn
CloseWindow
CMY2RGB
Color2Index
CompactMem
Control
CopyBits
CopyMask
CopyPalette
CopyRgn
CouldAlert
CouldDialog
CreateResFile
CStr2Dec
CTab2Palette
DDPCloseSocket
DDPOpenSocket
DDPRdCancel
DDPRead
DDPWrite
Dec2Str
DelComp
DelMenuItem
DelSearch
DialogSelect
DIBadMount
DiffRgn
DIFormat
DILoad
DiskEject
DispMCInfo
DisposCIcon
DisposCTable
DisposDialog
DisposeControl
DisposeMenu
DisposePalette
DisposeRgn
DisposeWindow
DisposGDevice
DisposHandle
DisposPixMap
DisposPixPat
DisposPtr
DIUnload
DIVerify
DIZero
DlgCopy
DlgCut
DlgDelete
DlgPaste
DragControl
DragGrayRgn
DragWindow
Draw1Control
DrawChar
DrawDialog
DrawGrowIcon
DrawJust
DrawMenuBar
DrawNew
DrawPicture
DrawString
DrawText
DriveStatus
DrvrInstall
DrvrRemove
Eject
EmptyHandle
EndUpdate

EraseArc
EraseOval
ErasePalette
ErasePoly
EraseRect
EraseRgn
EraseRoundRect
EventAvail
ExitToShell
FillArc
FillCArc
FillCOval
FillCPoly
FillCRect
FillCRgn
FillCRoundRect
FillOval
FillPoly
FillRect
FillRgn
FillRoundRect
FindControl
FindDItem
FindWord
Fix2SmallFract
FlashMenuBar
FlushVol
FMSwapFont
Font2Script
FontMetrics
FontScript
ForeColor
FrameArc
FrameOval
FramePoly
FrameRect
FrameRgn
FrameRoundRect
FreeAlert
FreeDialog
FreeMem
Get1IndResource
Get1IndType
Get1NamedResource
Get1Resource
GetAuxCtl
GetCCursor
GetCIcon
GetClip
GetColor
GetCTable
GetCursor
GetDCtlEntry
GetDItem
GetFNum
GetFontInfo
GetFontName
GetGrayRgn
GetIcon
GetIndPattern
GetIndResource
GetIndString
GetKeys
GetMCInfo
GetMenu
GetMenuBar
GetMouse
GetNamedResource
GetNewControl
GetNewCWindow
GetNewDialog
GetNewMBar
GetNewPalette
GetNewWindow
GetNextEvent
GetPattern
GetPicture
GetPixPat
GetResource
GetScrap
GetString
GetStylHandle
GetStylScrap
GetSubTable
GrowWindow
HandAndHand
HandToHand
HideControl
HideDItem
HideWindow
HiliteControl
HiliteMenu
HiliteText
HiliteWindow
HSL2RGB
HSV2RGB
InitAllPacks
InitApplZone
InitCPort
InitFonts
InitGDevice
InitGraf
InitMenus
InitPack
InitPalettes
InitPort
InitPort
InitPRAMRecs
InitProcMenu
InitResources
InitSDeclMgr
InitsRsrcTable
InitWindows
InitZone
InsertMenu
InsertResMenu
InsetRgn
InsMenuItem
IntlScript
InvalRect
InvalRgn
InvertArc
InvertOval
InvertPoly
InvertRect
InvertRgn
InvertRoundRect
IUCompString
IUDatePString
IUDateString
IUEqualString
IUGetIntl
IUMagIDString
IUMagString
IUMetric
IUSetIntl
IUTimePString
IUTimeString
KeyScript
KillControls
KillPicture
KillPoly
LAPCloseProtocol
LAPOpenProtocol
LAPRdCancel
LAPRead
LAPWrite
Launch
Line
LineTo
LoadResource
LoadScrap
LoadSeg
MakeITable
MapRgn
MeasureJust

MeasureText
MenuKey
MenuSelect
ModalDialog
MoreMasters
MoveControl
MoveHHi
MoveWindow
MPPClose
MPPOpen
Munger
NBPConfirm
NBPExtract
NBPLoad
NBPLookup
NBPRegister
NBPRemove
NBPUnload
NewCDialog
NewControl
NewCWindow
NewDialog
NewEmptyHandle
NewGDevice
NewHandle
NewMenu
NewPalette
NewPixMap
NewPixPat
NewPort
NewPtr
NewRgn
NewString
NewWindow
NoteAlert
NumToString
OpenCPicture
OpenCPort
OpenDeskAcc
OpenPicture
OpenPixMap
OpenPoly
OpenPort
OpenResFile
OpenRFPerm
OpenRgn
PaintArc
PaintBehind
PaintOne
PaintOval
PaintPoly
PaintRect
PaintRgn
PaintRoundRect
Palette2CTab
ParamText
PBControl
PBEject
PBFlushVol
PBMountVol
PBOffLine
PBOpen
PBOpenRF
PBStatus
PenNormal
PenPat
PenPixPat
PicComment
Pixel2Char
PlotCIcon
PlotIcon
PMBackColor
PMForeColor
PrClose
PrCloseDoc
PrClosePage
PrCtlCall
PrDrvrClose
PrDrvrDCE
PrDrvrOpen
PrDrvrVers
PrError
PrGeneral
PrintDefault
PrJobDialog
PrJobMerge
PrOpen
PrOpenDoc
PrOpenPage
PrPicFile
PrSetError
PrStlDialog
PrValidate
PStr2Dec
PtrAndHand
PtrToHand
PtrToXHand
PurgeMem
PutScrap
RAMSDClose
RAMSDOpen
RealColor
RealFont
ReallocHandle
RecoverHandle
RectRgn
ReleaseResource
ResrvMem
Restart
RGB2CMY
RGB2HSL
RGB2HSV
RGBBackColor
RGBForeColor
RGetResource
RmveResource
RsrcZoneInit
SaveOld
ScrollRect
SectRgn
SelectWindow
SelIText
SendBehind
SerClrBrk
SerGetBrk
SerHShake
SerReset
SerSetBrk
SerSetBuf
SerStatus
SetApplBase
SetCCursor
SetClip
SetCPixel
SetCTitle
SetCtlColor
SetCtlMax
SetCtlMin
SetCtlValue
SetDeskCPat
SetDItem
SetEmptyRgn
SetFontLock
SetHandleSize
SetItem
SetItemIcon
SetItemMark
SetItemStyle
SetIText
SetMCInfo
SetPtrSize
SetRectRgn
SetResInfo
SetString
SetStylHandle
SetTagBuffer

SetWinColor
SetWTitle
sExec
SFGetFile
SFPGetFile
SFPPutFile
SFPutFile
sGetBlock
sGetcString
sGetDriver
ShowControl
ShowDItem
ShowHide
ShowWindow
ShutDwnInstall
ShutDwnRemove
SizeControl
SizeWindow
SmallFract2Fix
SndAddModifier
SndDisposeChannel
SndNewChannel
sPrimaryInit
StartSound
Status
StdArc
StdBits
StdComment
StdLine
StdOval
StdPoly
StdPutPic
StdRect
StdRgn
StdRRect
StdText
StdTxMeas
StillDown
StopAlert
StopSound
StringToNum
StringWidth
SysBeep
SysError
SystemClick
SystemEdit
SystemMenu
TEActivate
TEAutoView
TECalText
TEClick
TECopy
TECut
TEDeactivate
TEDelete
TEDispose
TEFromScrap
TEGetHeight
TEGetOffset
TEGetPoint
TEGetStyle
TEGetText
TEIdle
TEInit
TEInsert
TEKey
TENew
TEPaste
TEPinScroll
TEReplaceStyle
TEScroll
TESelView
TESetJust
TESetSelect
TESetStyle
TESetText
TestControl
TEStylInsert
TEStylNew
TEStylPaste
TEToScrap
TEUpdate
TextBox
TextWidth
TickCount
TrackBox
TrackControl
TrackGoAway
Transliterate
UnionRgn
UnloadScrap
UnloadSeg
UpdtControl
UpdtDialog
ValidRect
ValidRgn
WaitMouseUp
XorRgn
ZeroScrap
ZoomWindow

APPENDIX B: SYSTEM TRAPS

This appendix lists the trap macros for the Toolbox and Operating System routines and their corresponding trap word values in hexadecimal. The "Name" column gives the trap macro name (without its initial underscore character). In those cases where the name of the equivalent Pascal call is different, the Pascal name appears indented under the main entry. The routines in Macintosh packages are listed under the macros they invoke after pushing a routine selector onto the stack; the routine selector follows the Pascal routine name in parentheses.

There are two tables. The first is ordered alphabetically by name; the second is ordered numerically by trap number, for use when debugging. The trap number is the last two digits of the trap word unless the trap word begins with A9, in which case the trap number is 1 followed by the last two digits of the trap word, or AA, in which case the trap number is 2 followed by the last two digits of the trap word.

Note: The Operating System Utility routines GetTrapAddress and SetTrapAddress take a trap number as a parameter, not a trap word.

Warning: Traps that aren't currently used by the system are reserved for future use.

Name	Trap word
ActivatePalette	AA94
ADBOp	A07C
ADBReInit	A07B
AddComp	AA3B
AddDrive	A04E
(internal use only)	
AddPt	A87E
AddResMenu	A94D
AddResource	A9AB
AddSearch	AA3A
Alert	A985
Allocate	A010
PBAllocate	
AllocCursor	AA1D
AngleFromSlope	A8C4
AnimateEntry	AA99
AnimatePalette	AA9A
AppendMenu	A933
AttachVBL	A071
BackColor	A863
BackPat	A87C
BackPixPat	AA0B
BeginUpdate	A922
BitAnd	A858
BitClr	A85F
BitNot	A85A
BitOr	A85B
BitSet	A85E
BitShift	A85C
BitTst	A85D
BitXor	A859
BlockMove	A02E
BringToFront	A920
Button	A974
CalcCMask	AA4F
CalcMask	A838
CalcMenuSize	A948
CalcVBehind	A90A
CalcVisBehind	
CalcVis	A909
CautionAlert	A988
Chain	A9F3
ChangedResource	A9AA
CharExtra	AA23
CharWidth	A88D
CheckItem	A945
CheckUpdate	A911
ClearMenuBar	A934
ClipAbove	A90B
ClipRect	A87B
Close	A001
PBClose	
CloseCPort	A87D
CloseDeskAcc	A9B7
CloseDialog	A982
ClosePgon	A8CC
ClosePoly	
ClosePicture	A8F4

Name	Trap word
ClosePort	A87D
CloseResFile	A99A
CloseRgn	A8DB
CloseWindow	A92D
CmpString	A03C
EqualString	
ColorBit	A864
Color2Index	AA33
CompactMem	A04C
Control	A004
PBControl	
CopyBits	A8EC
CopyMask	A817
CopyPixMap	AA05
CopyPixPat	AA09
CopyRgn	A8DC
CouldAlert	A989
CouldDialog	A979
Count1Resources	A80D
Count1Types	A81C
CountADBs	A077
CountMItems	A950
CountResources	A99C
CountTypes	A99E
Create	A008
PBCreate	
CreateResFile	A9B1
CTab2Palette	AA9F
CurResFile	A994
Date2Secs	A9C7
Delay	A03B
DelComp	AA4D
Delete	A009
PBDelete	
DeleteMenu	A936
DelMCEntries	AA60
DelMenuItem	A952
DelSearch	AA4C
DeltaPoint	A94F
Dequeue	A96E
DetachResource	A992
DialogSelect	A980
DiffRgn	A8E6
DisableItem	A93A
DispMCInfo	AA63
DisposCCursor	AA26
DisposCIcon	AA25
DisposControl	A955
DisposeControl	
DisposCTable	AA24

Name	Trap word
DisposDialog	A983
DisposGDevice	AA30
DisposHandle	A023
DisposMenu	A932
DisposeMenu	
DisposePalette	AA93
DisposPixMap	AA04
DisposPixPat	AA08
DisposPtr	A01F
DisposRgn	A8D9
DisposeRgn	
DisposWindow	A914
DisposeWindow	
DoVBLTask	A072
DragControl	A967
DragGrayRgn	A905
DragTheRgn	A926
DragWindow	A925
Draw1Control	A96D
DrawChar	A883
DrawControls	A969
DrawDialog	A981
DrawGrowIcon	A904
DrawMenuBar	A937
DrawNew	A90F
DrawPicture	A8F6
DrawString	A884
DrawText	A885
DrvrInstall	A03D
(internal use only)	
DrvrRemove	A03E
(internal use only)	
DTInstall	A082
Ejcct	A017
PBEject	
Elems68K	A9EC
EmptyHandle	A02B
EmptyRect	A8AE
EmptyRgn	A8E2
EnableItem	A939
EndUpdate	A923
Enqueue	A96F
EqualPt	A881
EqualRect	A8A6
EqualRgn	A8E3
EraseArc	A8C0
EraseOval	A8B9
ErasePoly	A8C8
EraseRect	A8A3
EraseRgn	A8D4

Name	Trap word
EraseRoundRect	A8B2
ErrorSound	A98C
EventAvail	A971
ExitToShell	A9F4
FillArc	A8C2
FillCArc	AA11
FillCOval	AA0F
FillCPoly	AA13
FillCRect	AA0E
FillCRgn	AA12
FillCRoundRect	AA10
FillOval	A8BB
FillPoly	A8CA
FillRect	A8A5
FillRgn	A8D6
FillRoundRect	A8B4
FindControl	A96C
FindDItem	A984
FindWindow	A92C
Fix2Frac	A841
Fix2Long	A840
Fix2X	A843
FixAtan2	A818
FixDiv	A84D
FixMul	A868
FixRatio	A869
FixRound	A86C
FlashMenuBar	A94C
FlushEvents	A032
FlushFile PBFlushFile	A045
FlushVol PBFlushVol	A013
FMSwapFont	A901
FontMetrics	A835
ForeColor	A862
FP68K	A9EB
Frac2Fix	A842
Frac2X	A845
FracCos	A847
FracDiv	A84B
FracMul	A84A
FracSin	A848
FracSqrt	A849
FrameArc	A8BE
FrameOval	A8B7
FramePoly	A8C6
FrameRect	A8A1
FrameRgn	A8D2
FrameRoundRect	A8B0

Name	Trap word
FreeAlert	A98A
FreeDialog	A97A
FreeMem	A01C
FrontWindow	A924
GetADBInfo	A079
GetAppParms	A9F5
GetAuxCtl	AA44
GetAuxWin	AA42
GetBackColor	AA1A
GetCCursor	AA1B
GetCIcon	AA1E
GetClip	A87A
GetCPixel	AA17
GetCRefCon	A95A
GetCTable	AA18
GetCTitle	A95E
GetCtlAction	A96A
GetCtlValue	A960
GetCTSeed	AA28
GetCursor	A9B9
GetCVariant	A809
GetCWMgrPort	AA48
GetDefaultStartup	A07D
GetDeviceList	AA29
GetDItem	A98D
GetEntryColor	AA9B
GetEntryUsage	AA9D
GetEOF PBGetEOF	A011
GetFileInfo PBGetFInfo	A00C
GetFName GetFontName	A8FF
GetFNum	A900
GetFontInfo	A88B
GetForeColor	AA19
GetFPos PBGetFPos	A018
GetGDevice	AA32
GetHandleSize	A025
GetIcon	A9BB
GetIndADB	A078
GetIndResource	A99D
GetIndType	A99F
GetItem	A946
GetItemCmd	A84E
GetIText	A990
GetItmIcon GetItemIcon	A93F

Name	Trap word
GetItmMark	A943
GetItemMark	
GetItmStyle	A941
GetItemStyle	
GetKeys	A976
GetMainDevice	AA2A
GetMaxCtl	A962
GetCtlMax	
GetMaxDevice	AA27
GetMCEntry	AA64
GetMCInfo	AA61
GetMenuBar	A93B
GetMHandle	A949
GetMinCtl	A961
GetCtlMin	
GetMouse	A972
GetNamedResource	A9A1
GetNewControl	A9BE
GetNewCWindow	AA46
GetNewDialog	A97C
GetNewMBar	A9C0
GetNewPalette	AA92
GetNewWindow	A9BD
GetNextDevice	AA2B
GetNextEvent	A970
Get1IxResource	A80E
Get1IndResource	
Get1IxType	A80F
Get1IndType	
Get1NamedResource	A820
Get1Resource	A81F
GetOSDefault	A084
GetOSEvent	A031
GetPalette	AA96
GetPattern	A9B8
GetPen	A89A
GetPenState	A898
GetPicture	A9BC
GetPixel	A865
GetPixPat	AA0C
GetPort	A874
GetPtrSize	A021
GetResAttrs	A9A6
GetResFileAttrs	A9F6
GetResInfo	A9A8
GetResource	A9A0
GetRMenu	A9BF
GetMenu	
GetScrap	A9FD
GetString	A9BA

Name	Trap word
GetSubTable	AA37
GetTrapAddress	A146
GetVideoDefault	A080
GetVol	A014
PBGetVol	
GetVolInfo	A007
PBGetVInfo	
GetWindowPic	A92F
GetWMgrPort	A910
GetWRefCon	A917
GetWTitle	A919
GetWVariant	A80A
GetZone	A11A
GlobalToLocal	A871
GrafDevice	A872
GrowWindow	A92B
HandAndHand	A9E4
HandleZone	A126
HandToHand	A9E1
HClrRBit	A068
HFSDispatch	A260
OpenWD	(1)
CloseWD	(2)
CatMove	(5)
DirCreate	(6)
GetWDInfo	(7)
GetFCBInfo	(8)
GetCatInfo	(9)
SetCatInfo	(10)
SetVolInfo	(11)
LockRng	(16)
UnlockRng	(17)
HGetState	A069
HideControl	A958
HideCursor	A852
HideDItem	A827
HidePen	A896
HideWindow	A916
HiliteColor	AA22
HiliteControl	A95D
HiliteMenu	A938
HiliteWindow	A91C
HiWord	A86A
HLock	A029
HNoPurge	A04A
HomeResFile	A9A4
HPurge	A049
HSetRBit	A067
HSetState	A06A
HUnlock	A02A

Name	Trap word
Index2Color	AA34
InfoScrap	A9F9
InitAllPacks	A9E6
InitApplZone	A02C
InitCport	AA01
InitCursor	A850
InitDialogs	A97B
InitFonts	A8FE
InitGDevice	AA2E
InitGraf	A86E
InitMenus	A930
InitPack	A9E5
InitPalettes	AA90
InitPort	A86D
InitProcMenu	A808
InitQueue	A016
FInitQueue	
InitResources	A995
InitUtil	A03F
InitWindows	A912
InitZone	A019
InsertMenu	A935
InsertResMenu	A951
InsetRect	A8A9
InsetRgn	A8E1
InsMenuItem	A826
InternalWait	A07F
SetTimeout	(0)
GetTimeout	(1)
InvalRect	A928
InvalRgn	A927
InverRect	A8A4
InvertRect	
InverRgn	A8D5
InvertRgn	
InverRoundRect	A8B3
InvertRoundRect	
InvertArc	A8C1
InvertColor	AA35
InvertOval	A8BA
InvertPoly	A8C9
IsDialogEvent	A97F
KeyTrans	A9C3
KillControls	A956
KillIO	A006
PBKillIO	
KillPicture	A8F5
KillPoly	A8CD
Launch	A9F2
Line	A892

Name	Trap word
LineTo	A891
LoadResource	A9A2
LoadSeg	A9F0
LocalToGlobal	A870
LodeScrap	A9FB
LoadScrap	
Long2Fix	A83F
LongMul	A867
LoWord	A86B
MakeITable	AA39
MakeRGBPat	AA0D
MapPoly	A8FC
MapPt	A8F9
MapRect	A8FA
MapRgn	A8FB
MaxApplZone	A063
MaxBlock	A061
MaxMem	A11D
MaxSizeRsrc	A821
MeasureText	A837
MenuChoice	AA66
MenuKey	A93E
MenuSelect	A93D
ModalDialog	A991
MoreMasters	A036
MountVol	A00F
PBMountVol	
Move	A894
MoveControl	A959
MoveHHi	A064
MovePortTo	A877
MoveTo	A893
MoveWindow	A91B
Munger	A9E0
NewCDialog	AA4B
NewControl	A954
NewCWindow	AA45
NewDialog	A97D
NewEmptyHandle	A066
NewGDevice	AA2F
NewHandle	A122
NewMenu	A931
NewPalette	AA91
NewPixMap	AA03
NewPixPat	AA07
NewPtr	A11E
NewRgn	A8D8
NewString	A906
NewWindow	A913
NoteAlert	A987

Name	Trap word
ObscureCursor	A856
Offline	A035
PBOffline	
OffsetPoly	A8CE
OffsetRect	A8A8
OfsetRgn	A8E0
OffsetRgn	
OpColor	AA21
Open	A000
PBOpen	
OpenCport	AA00
OpenDeskAcc	A9B6
OpenPicture	A8F3
OpenPoly	A8CB
OpenPort	A86F
OpenResFile	A997
OpenRF	A00A
PBOpenRF	
OpenRFPerm	A9C4
OpenRgn	A8DA
OSEventAvail	A030
Pack0	A9E7
LActivate	(0)
LAddColumn	(4)
LAddRow	(8)
LAddToCell	(12)
LAutoScroll	(16)
LCellSize	(20)
LClick	(24)
LClrCell	(28)
LDelColumn	(32)
LDelRow	(36)
LDispose	(40)
LDoDraw	(44)
LDraw	(48)
LFind	(52)
LGetCell	(56)
LGetSelect	(60)
LLastClick	(64)
LNew	(68)
LNextCell	(72)
LRect	(76)
LScroll	(80)
LSearch	(84)
LSetCell	(88)
LSetSelect	(92)
LSize	(96)
LUpdate	(100)
Pack1	A9E8
(reserved for future use)	

Name	Trap word
Pack2	A9E9
DIBadMount	(0)
DIFormat	(6)
DILoad	(2)
DIUnload	(4)
DIVerify	(8)
DIZero	(10)
Pack3	A9EA
SFGetFile	(2)
SFPGetFile	(4)
SFPPutFile	(3)
SFPutFile	(1)
Pack4	A9EB
Pack5	A9EC
Pack6	A9ED
IUDatePString	(14)
IUDateString	(0)
IUGetIntl	(6)
IUMagIDString	(12)
IUMagString	(10)
IUMetric	(4)
IUSetIntl	(8)
IUTimePString	(16)
IUTimeString	(2)
Pack7	A9EE
NumToString	(0)
StringToNum	(1)
PStr2Dec	(2)
Dec2Str	(3)
CStr2Dec	(4)
Pack8	A816
Pack9	A82B
Pack10	A82C
Pack11	A82D
(Pack 8–11 reserved for future use)	
Pack12	A82E
Fix2SmallFract	(1)
SmallFract2Fix	(2)
CMY2RGB	(3)
RGB2CMY	(4)
HSL2RGB	(5)
RGB2HSL	(6)
HSV2RGB	(7)
RGB2HSV	(8)
GetColor	(9)
Pack13	A82F
Pack14	A830
Pack15	A831
(Pack 13–15 reserved for future use)	
PackBits	A8CF

Name	Trap word
PaintArc	A8BF
PaintBehind	A90D
PaintOne	A90C
PaintOval	A8B8
PaintPoly	A8C7
PaintRect	A8A2
PaintRgn	A8D3
PaintRoundRect	A8B1
Palette2CTab	AAA0
ParamText	A98B
PenMode	A89C
PenNormal	A89E
PenPat	A89D
PenPixPat	AA0A
PenSize	A89B
PicComment	A8F2
PinRect	A94E
PlotCIcon	AA1F
PlotIcon	A94B
PmBackColor	AA98
PmForeColor	AA97
PopUpMenuSelect	A80B
PortSize	A876
PostEvent	A02F
PPostEvent	A12F
PrGlue	A8FD
ProtectEntry	AA3D
Pt2Rect	A8AC
PtInRect	A8AD
PtInRgn	A8E8
PtrAndHand	A9EF
PtrToHand	A9E3
PtrToXHand	A9E2
PtrZone	A148
PtToAngle	A8C3
PurgeMem	A04D
PurgeSpace	A062
PutScrap	A9FE
QDError	AA40
Random	A861
RDrvrInstall	A04F
(internal use only)	
Read	A002
PBRead	
ReadDateTime	A039
RealColor	AA36
RealFont	A902
ReallocHandle	A027
RecoverHandle	A128
RectInRgn	A8E9

Name	Trap word
RectRgn	A8DF
ReleaseResource	A9A3
RelString	A050
Rename	A00B
PBRename	
ResError	A9AF
ReserveEntry	AA3E
ResrvMem	A040
RestoreEntries	AA4A
RGBBackColor	AA15
RGBForeColor	AA14
RGetResource	A80C
RmveResource	A9AD
RsrcMapEntry	A9C5
RsrcZoneInit	A996
RstFilLock	A042
PBRstFLock	
SaveEntries	AA49
SaveOld	A90E
ScalePt	A8F8
ScriptUtil	A8B5
smFontScript	(0)
smIntlScript	(2)
smKybdScript	(4)
smFont2Script	(6)
smGetEnvirons	(8)
smSetEnvirons	(10)
smGetScript	(12)
smSetScript	(14)
smCharByte	(16)
smCharType	(18)
smPixel2Char	(20)
smChar2Pixel	(22)
smTranslit	(24)
smFindWord	(26)
smHiliteText	(28)
smDrawJust	(30)
smMeasureJust	(32)
ScrollRect	A8EF
SCSIDispatch	A815
SCSIReset	(0)
SCSIGet	(1)
SCSISelect	(2)
SCSICmd	(3)
SCSIComplete	(4)
SCSIRead	(5)
SCSIWrite	(6)
SCSIInstall	(7)
SCSIRBlind	(8)
SCSIWBlind	(9)

Name	Trap word
SCSIStat	(10)
SCSISelAtn	(11)
SCSIMsgIn	(12)
SCSIMsgOut	(13)
Secs2Date	A9C6
SectRect	A8AA
SectRgn	A8E4
SeedCFill	AA50
SeedFill	A839
SelectWindow	A91F
SelIText	A97E
SendBehind	A921
SetADBInfo	A07A
SetAppBase	A057
SetApplBase	
SetApplLimit	A02D
SetCCursor	AA1C
SetClientID	AA3C
SetClip	A879
SetCPixel	AA16
SetCPortPix	AA06
SetCRefCon	A95B
SetCTitle	A95F
SetCtlAction	A96B
SetCtlColor	AA43
SetCtlValue	A963
SetCursor	A851
SetDateTime	A03A
SetDefaultStartup	A07E
SetDeskCPat	AA47
SetDeviceAttribute	AA2D
SetDItem	A98E
SetEmptyRgn	A8DD
SetEntries	AA3F
SetEntryColor	AA9C
SetEntryUsage	AA9E
SetEOF	A012
PBSetEOF	
SetFileInfo	A00D
PBSetFInfo	
SetFilLock	A041
PBSetFLock	
SetFilType	A043
PBSetFVers	
SetFontLock	A903
SetFPos	A044
PBSetFPos	
SetFScaleDisable	A834
SetGDevice	AA31
SetGrowZone	A04B

Name	Trap word
SetHandleSize	A024
SetItem	A947
SetItemCmd	A84F
SetIText	A98F
SetItmIcon	A940
SetItemIcon	
SetItmMark	A944
SetItemMark	
SetItmStyle	A942
SetItemStyle	
SetMaxCtl	A965
SetCtlMax	
SetMCEntries	AA65
SetMCInfo	AA62
SetMenuBar	A93C
SetMFlash	A94A
SetMenuFlash	
SetMinCtl	A964
SetCtlMin	
SetOrigin	A878
SetOSDefault	A083
SetPalette	AA95
SetPBits	A875
SetPortBits	
SetPenState	A899
SetPort	A873
SetPt	A880
SetPtrSize	A020
SetRecRgn	A8DE
SetRectRgn	
SetRect	A8A7
SetResAttrs	A9A7
SetResFileAttrs	A9F7
SetResInfo	A9A9
SetResLoad	A99B
SetResPurge	A993
SetStdCProcs	AA4E
SetStdProcs	A8EA
SetString	A907
SetTrapAddress	A047
SetVideoDefault	A081
SetVol	A015
PBSetVol	
SetWinColor	AA41
SetWindowPic	A92E
SetWRefCon	A918
SetWTitle	A91A
SetZone	A01B
ShieldCursor	A855
ShowControl	A957

Name	Trap word
ShowCursor	A853
ShowDItem	A828
ShowHide	A908
ShowPen	A897
ShowWindow	A915
Shutdown	A895
ShutDwnPower	(1)
ShutDwnStart	(2)
ShutDwnInstall	(3)
ShutDwnRemove	(4)
SIntInstall	A075
SIntRemove	A076
SizeControl	A95C
SizeRsrc	A9A5
SizeResource	
SizeWindow	A91D
SlopeFromAngle	A8BC
SlotManager	A06E
sReadByte	(0)
sReadWord	(1)
sReadLong	(2)
sGetcString	(3)
sGetBlock	(5)
sFindStruct	(6)
sReadStruct	(7)
sReadInfo	(16)
sReadPRAMRec	(17)
sPutPRAMRec	(18)
sReadFHeader	(19)
sNextRsrc	(20)
sNextTypesRsrc	(21)
sRsrcInfo	(22)
sDisposePtr	(23)
sCkCardStatus	(24)
sReadDrvrName	(25)
sFindDevBase	(27)
InitSDeclMgr	(32)
sPrimaryInit	(33)
sCardChanged	(34)
sExec	(35)
sOffsetData	(36)
InitPRAMRecs	(37)
sReadPBSize	(38)
sCalcStep	(40)
InitsRsrcTable	(41)
sSearchSRT	(42)
sUpdateSRT	(43)
sCalcsPointer	(44)
sGetDriver	(45)
sPtrToSlot	(46)
sFindsInfoRecPtr	(47)
sFindsRsrcPtr	(48)
sdeleteSRTRec	(49)
SlotVInstall	A06F
SlotVRemove	A070
SndAddModifier	A802
SndControl	A806
SndDisposeChannel	A801
SndDoCommand	A803
SndDoImmediate	A804
SndNewChannel	A807
SndPlay	A805
SpaceExtra	A88E
StackSpace	A065
Status	A005
PBStatus	
StdArc	A8BD
StdBits	A8EB
StdComment	A8F1
StdGetPic	A8EE
StdLine	A890
StdOval	A8B6
StdPoly	A8C5
StdPutPic	A8F0
StdRect	A8A0
StdRgn	A8D1
StdRRect	A8AF
StdText	A882
StdTxMeas	A8ED
StillDown	A973
StopAlert	A986
StringWidth	A88C
StripAddress	A055
StuffHex	A866
SubPt	A87F
SwapMMUMode	A05D
SysBeep	A9C8
SysEdit	A9C2
SystemEdit	
SysEnvirons	A090
SysError	A9C9
SystemClick	A9B3
SystemEvent	A9B2
SystemMenu	A9B5
SystemTask	A9B4
TEActivate	A9D8
TEAutoView	A813
TECalText	A9D0
TEClick	A9D4
TECopy	A9D5

Name	Trap word
TECut	A9D6
TEDeactivate	A9D9
TEDelete	A9D7
TEDispatch	A83D
TEStylePaste	(0)
TESetStyle	(1)
TEReplaceStyle	(2)
TEGetStyle	(3)
GetStyleHandle	(4)
SetStyleHandle	(5)
GetStyleScrap	(6)
TEStyleInsert	(7)
TEGetPoint	(8)
TEGetHeight	(9)
TEDispose	A9CD
TEGetOffset	A83C
TEGetText	A9CB
TEIdle	A9DA
TEInit	A9CC
TEInsert	A9DE
TEKey	A9DC
TENew	A9D2
TEPaste	A9DB
TEPinScroll	A812
TEScroll	A9DD
TESelView	A811
TESetJust	A9DF
TESetSelect	A9D1
TESetText	A9CF
TestControl	A966
TestDeviceAttribute	AA2C
TEStyleNew	A83E
TEUpdate	A9D3
TextBox	A9CE
TextFace	A888
TextFont	A887
TextMode	A889
TextSize	A88A
TextWidth	A886
TickCount	A975
TrackBox	A83B
TrackControl	A968
TrackGoAway	A91E
UnionRect	A8AB
UnionRgn	A8E5
Unique1ID	A810
UniqueID	A9C1
UnloadSeg	A9F1
UnlodeScrap	A9FA
UnloadScrap	
UnmountVol	A00E
PBUnmountVol	
UnpackBits	A8D0
UpdateResFile	A999
UpdtControl	A953
UpdtDialog	A978
UprString	A054
UseResFile	A998
ValidRect	A92A
ValidRgn	A929
VInstall	A033
VRemove	A034
WaitMouseUp	A977
Write	A003
PBWrite	
WriteParam	A038
WriteResource	A9B0
X2Fix	A844
X2Frac	A846
XorRgn	A8E7
ZeroScrap	A9FC
ZoomWindow	A83A

Trap word	Name
A000	Open
	PBOpen
A001	Close
	PBClose
A002	Read
	PBRead
A003	Write
	PBWrite
A004	Control
	PBControl
A005	Status
	PBStatus
A006	KillIO
	PBKillIO
A007	GetVolInfo
	PBGetVInfo
A008	Create
	PBCreate
A009	Delete
	PBDelete

Trap Word	Name
A00A	OpenRF
	PBOpenRF
A00B	Rename
	PBRename
A00C	GetFileInfo
	PBGetInfo
A00D	SetFileInfo
	PBSetFInfo
A00E	UnmountVol
	PBUnmountVol
A00F	MountVol
	PBMountVol
A010	Allocate
	PBAllocate
A011	GetEOF
	PBGetEOF
A012	SetEOF
	PBSetEOF
A013	FlushVol
	PBFlushVol
A014	GetVol
	PBGetVol
A015	SetVol
	PBSetVol
A016	InitQueue
A017	Eject
	PBEject
A018	GetFPos
	PBGetFPos
A019	InitZone
A01B	SetZone
A01C	FreeMem
A01F	DisposPtr
A020	SetPtrSize
A021	GetPtrSize
A023	DisposHandle
A024	SetHandleSize
A025	GetHandleSize
A027	ReallocHandle
A029	HLock
A02A	HUnlock
A02B	EmptyHandle
A02C	InitApplZone
A02D	SetApplLimit
A02E	BlockMove
A02F	PostEvent
A030	OSEventAvail
A031	GetOSEvent
A032	FlushEvents
A033	VInstall

Trap Word	Name
A034	VRemove
A035	Offline
	PBOffline
A036	MoreMasters
A038	WriteParam
A039	ReadDateTime
A03A	SetDateTime
A03B	Delay
A03C	CmpString
	EqualString
A03D	DrvrInstall
	(internal use only)
A03E	DrvrRemove
	(internal use only)
A03F	InitUtil
A040	ResrvMem
A041	SetFilLock
	PBSetFLock
A042	RstFilLock
	PBRstFLock
A043	SetFilType
	PBSetFVers
A044	SetFPos
	PBSetFPos
A045	FlushFile
	PBFlushFile
A047	SetTrapAddress
A049	HPurge
A04A	HNoPurge
A04B	SetGrowZone
A04C	CompactMem
A04D	PurgeMem
A04E	AddDrive
	(internal use only)
A04F	RDrvrInstall
	(internal use only)
A050	RelString
A054	UprString
A055	StripAddress
A057	SetAppBase
	SetApplBase
A05D	SwapMMUMode
A061	MaxBlock
A062	PurgeSpace
A063	MaxApplZone
A064	MoveHHi
A065	StackSpace
A066	NewEmptyHandle
A067	HSetRBit
A068	HClrRBit

Trap Word	Name	
A069	HGetState	
A06A	HSetState	
A06E	SlotManager	
	sReadByte	(0)
	sReadWord	(1)
	sReadLong	(2)
	sGetcString	(3)
	sGetBlock	(5)
	sFindStruct	(6)
	sReadStruct	(7)
	sReadInfo	(16)
	sReadPRAMRec	(17)
	sPutPRAMRec	(18)
	sReadFHeader	(19)
	sNextRsrc	(20)
	sNextTypesRsrc	(21)
	sRsrcInfo	(22)
	sDisposePtr	(23)
	sCkCardStatus	(24)
	sReadDrvrName	(25)
	sFindDevBase	(27)
	sPrimaryInit	(33)
	sCardChanged	(34)
	sExec	(35)
	sOffsetData	(36)
	InitPRAMRecs	(37)
	sReadPBSize	(38)
	sCalcStep	(40)
	InitsRsrcTable	(41)
	sSearchSRT	(42)
	sUpdateSRT	(43)
	sCalcsPointer	(44)
	sGetDriver	(45)
	sPtrToSlot	(46)
	sFindsInfoRecPtr	(47)
	sFindsRsrcPtr	(48)
	sdeleteSRTRec	(49)
A06F	SlotVInstall	
A070	SlotVRemove	
A071	AttachVBL	
A072	DoVBLTask	
A075	DTInstall	
A076	SIntRemove	
A077	CountADBs	
A078	GetIndADB	
A079	GetADBInfo	
A07A	SetADBInfo	
A07B	ADBReInit	
A07C	ADBOp	
A07D	GetDefaultStartup	
A07E	SetDefaultStartup	
A07F	InternalWait	
	SetTimeout	(0)
	GetTimeout	(1)
A080	GetVideoDefault	
A081	SetVideoDefault	
A082	SIntInstall	
A083	SetOSDefault	
A084	GetOSDefault	
A090	SysEnvirons	
A11A	GetZone	
A11D	MaxMem	
A11E	NewPtr	
A122	NewHandle	
A126	HandleZone	
A128	RecoverHandle	
A12F	PPostEvent	
A146	GetTrapAddress	
A148	PtrZone	
A260	HFSDispatch	
	OpenWD	(1)
	CloseWD	(2)
	CatMove	(5)
	DirCreate	(6)
	GetWDInfo	(7)
	GetFCBInfo	(8)
	GetCatInfo	(9)
	SetCatInfo	(10)
	SetVolInfo	(11)
	LockRng	(16)
	UnlockRng	(17)
A801	SndDisposeChannel	
A802	SndAddModifier	
A803	SndDoCommand	
A804	SndDoImmediate	
A805	SndPlay	
A806	SndControl	
A807	SndNewChannel	
A808	InitProcMenu	
A809	GetCVariant	
A80A	GetWVariant	
A80B	PopUpMenuSelect	
A80C	RGetResource	
A80D	Count1Resources	
A80E	Get1IxResource	
	Get1IndResource	
A80F	Get1IxType	
	Get1IndType	
A810	Unique1ID	
A811	TESelView	

Trap Word	Name	
A812	TEPinScroll	
A813	TEAutoView	
A815	SCSIDispatch	
	SCSIReset	(0)
	SCSIGet	(1)
	SCSISelect	(2)
	SCSICmd	(3)
	SCSIComplete	(4)
	SCSIRead	(5)
	SCSIWrite	(6)
	SCSIInstall	(7)
	SCSIRBlind	(8)
	SCSIWBlind	(9)
	SCSIStat	(10)
	SCSISelAtn	(11)
	SCSIMsgIn	(12)
	SCSIMsgOut	(13)
A816	Pack8	
A817	CopyMask	
A818	FixAtan2	
A81C	Count1Types	
A81F	Get1Resource	
A820	Get1NamedResource	
A821	MaxSizeRsrc	
A826	InsMenuItem	
A827	HideDItem	
A828	ShowDItem	
A82B	Pack9	
A82C	Pack10	
A82D	Pack11	
A82E	Pack12	
	Fix2SmallFract	(1)
	SmallFract2Fix	(2)
	CMY2RGB	(3)
	RGB2CMY	(4)
	HSL2RGB	(5)
	RGB2HSL	(6)
	HSV2RGB	(7)
	RGB2HSV	(8)
	GetColor	(9)
A82F	Pack13	
A830	Pack14	
A831	Pack15	
A834	SetFScaleDisable	
A835	FontMetrics	
A836	GetMaskTable	
A837	MeasureText	
A838	CalcMask	
A839	SeedFill	
A83A	ZoomWindow	

Trap Word	Name	
A83B	TrackBox	
A83C	TEGetOffset	
A83D	TEDispatch	
	TEStylePaste	(0)
	TESetStyle	(1)
	TEReplaceStyle	(2)
	TEGetStyle	(3)
	GetStyleHandle	(4)
	SetStyleHandle	(5)
	GetStyleScrap	(6)
	TEStyleInsert	(7)
	TEGetPoint	(8)
	TEGetHeight	(9)
A83E	TEStyleNew	
A83F	Long2Fix	
A840	Fix2Long	
A841	Fix2Frac	
A842	Frac2Fix	
A843	Fix2X	
A844	X2Fix	
A845	Frac2X	
A846	X2Frac	
A847	FracCos	
A848	FracSin	
A849	FracSqrt	
A84A	FracMul	
A84B	FracDiv	
A84D	FixDiv	
A84E	GetItemCmd	
A84F	SetItemCmd	
A850	InitCursor	
A851	SetCursor	
A852	HideCursor	
A853	ShowCursor	
A855	ShieldCursor	
A856	ObscureCursor	
A858	BitAnd	
A859	BitXor	
A85A	BitNot	
A85B	BitOr	
A85C	BitShift	
A85D	BitTst	
A85E	BitSet	
A85F	BitClr	
A861	Random	
A862	ForeColor	
A863	BackColor	
A864	ColorBit	
A865	GetPixel	
A866	StuffHex	

Trap Word	Name
A867	LongMul
A868	FixMul
A869	FixRatio
A86A	HiWord
A86B	LoWord
A86C	FixRound
A86D	InitPort
A86E	InitGraf
A86F	OpenPort
A870	LocalToGlobal
A871	GlobalToLocal
A872	GrafDevice
A873	SetPort
A874	GetPort
A875	SetPBits
	SetPortBits
A876	PortSize
A877	MovePortTo
A878	SetOrigin
A879	SetClip
A87A	GetClip
A87B	ClipRect
A87C	BackPat
A87D	CloseCPort
A87D	ClosePort
A87E	AddPt
A87F	SubPt
A880	SetPt
A881	EqualPt
A882	StdText
A883	DrawChar
A884	DrawString
A885	DrawText
A886	TextWidth
A887	TextFont
A888	TextFace
A889	TextMode
A88A	TextSize
A88B	GetFontInfo
A88C	StringWidth
A88D	CharWidth
A88E	SpaceExtra
A890	StdLine
A891	LineTo
A892	Line
A893	MoveTo
A894	Move
A895	Shutdown
	ShutDwnPower (1)
	ShutDwnStart (2)
	ShutDwnInstall (3)
	ShutDwnRemove (4)
A896	HidePen
A897	ShowPen
A898	GetPenState
A899	SetPenState
A89A	GetPen
A89B	PenSize
A89C	PenMode
A89D	PenPat
A89E	PenNormal
A8A0	StdRect
A8A1	FrameRect
A8A2	PaintRect
A8A3	EraseRect
A8A4	InverRect
	InvertRect
A8A5	FillRect
A8A6	EqualRect
A8A7	SetRect
A8A8	OffsetRect
A8A9	InsetRect
A8AA	SectRect
A8AB	UnionRect
A8AC	Pt2Rect
A8AD	PtInRect
A8AE	EmptyRect
A8AF	StdRRect
A8B0	FrameRoundRect
A8B1	PaintRoundRect
A8B2	EraseRoundRect
A8B3	InverRoundRect
	InvertRoundRect
A8B4	FillRoundRect
A8B5	ScriptUtil
	smFontScript (0)
	smIntlScript (2)
	smKybdScript (4)
	smFont2Script (6)
	smGetEnvirons (8)
	smSetEnvirons (10)
	smGetScript (12)
	smSetScript (14)
	smCharByte (16)
	smCharType (18)
	smPixel2Char (20)
	smChar2Pixel (22)
	smTranslit (24)
	smFindWord (26)
	smHiliteText (28)

Trap Word	Name	
	smDrawJust	(30)
	smMeasureJust	(32)
A8B6	StdOval	
A8B7	FrameOval	
A8B8	PaintOval	
A8B9	EraseOval	
A8BA	InvertOval	
A8BB	FillOval	
A8BC	SlopeFromAngle	
A8BD	StdArc	
A8BE	FrameArc	
A8BF	PaintArc	
A8C0	EraseArc	
A8C1	InvertArc	
A8C2	FillArc	
A8C3	PtToAngle	
A8C4	AngleFromSlope	
A8C5	StdPoly	
A8C6	FramePoly	
A8C7	PaintPoly	
A8C8	ErasePoly	
A8C9	InvertPoly	
A8CA	FillPoly	
A8CB	OpenPoly	
A8CC	ClosePgon	
	ClosePoly	
A8CD	KillPoly	
A8CE	OffsetPoly	
A8CF	PackBits	
A8D0	UnpackBits	
A8D1	StdRgn	
A8D2	FrameRgn	
A8D3	PaintRgn	
A8D4	EraseRgn	
A8D5	InverRgn	
	InvertRgn	
A8D6	FillRgn	
A8D8	NewRgn	
A8D9	DisposRgn	
	DisposeRgn	
A8DA	OpenRgn	
A8DB	CloseRgn	
A8DC	CopyRgn	
A8DD	SetEmptyRgn	
A8DE	SetRecRgn	
A8DF	SetRectRgn	
	RectRgn	
A8E0	OfsetRgn	
	OffsetRgn	
A8E1	InsetRgn	

Trap Word	Name
A8E2	EmptyRgn
A8E3	EqualRgn
A8E4	SectRgn
A8E5	UnionRgn
A8E6	DiffRgn
A8E7	XorRgn
A8E8	PtInRgn
A8E9	RectInRgn
A8EA	SetStdProcs
A8EB	StdBits
A8EC	CopyBits
A8ED	StdTxMeas
A8EE	StdGetPic
A8EF	ScrollRect
A8F0	StdPutPic
A8F1	StdComment
A8F2	PicComment
A8F3	OpenPicture
A8F4	ClosePicture
A8F5	KillPicture
A8F6	DrawPicture
A8F8	ScalePt
A8F9	MapPt
A8FA	MapRect
A8FB	MapRgn
A8FC	MapPoly
A8FD	PrGlue
A8FE	InitFonts
A8FF	GetFName
	GetFontName
A900	GetFNum
A901	FMSwapFont
A902	RealFont
A903	SetFontLock
A904	DrawGrowIcon
A905	DragGrayRgn
A906	NewString
A907	SetString
A908	ShowHide
A909	CalcVis
A90A	CalcVBehind
	CalcVisBehind
A90B	ClipAbove
A90C	PaintOne
A90D	PaintBehind
A90E	SaveOld
A90F	DrawNew
A910	GetWMgrPort
A911	CheckUpdate
A912	InitWindows

Trap Word	Name
A913	NewWindow
A914	DisposWindow
	DisposeWindow
A915	ShowWindow
A916	HideWindow
A917	GetWRefCon
A918	SetWRefCon
A919	GetWTitle
A91A	SetWTitle
A91B	MoveWindow
A91C	HiliteWindow
A91D	SizeWindow
A91E	TrackGoAway
A91F	SelectWindow
A920	BringToFront
A921	SendBehind
A922	BeginUpdate
A923	EndUpdate
A924	FrontWindow
A925	DragWindow
A926	DragTheRgn
A927	InvalRgn
A928	InvalRect
A929	ValidRgn
A92A	ValidRect
A92B	GrowWindow
A92C	FindWindow
A92D	CloseWindow
A92E	SetWindowPic
A92F	GetWindowPic
A930	InitMenus
A931	NewMenu
A932	DisposMenu
	DisposeMenu
A933	AppendMenu
A934	ClearMenuBar
A935	InsertMenu
A936	DeleteMenu
A937	DrawMenuBar
A938	HiliteMenu
A939	EnableItem
A93A	DisableItem
A93B	GetMenuBar
A93C	SetMenuBar
A93D	MenuSelect
A93E	MenuKey
A93F	GetItmIcon
	GetItemIcon
A940	SetItmIcon
	SetItemIcon

Trap Word	Name
A941	GetItmStyle
	GetItemStyle
A942	SetItmStyle
	SetItemStyle
A943	GetItmMark
	GetItemMark
A944	SetItmMark
	SetItemMark
A945	CheckItem
A946	GetItem
A947	SetItem
A948	CalcMenuSize
A949	GetMHandle
A94A	SetMFlash
	SetMenuFlash
A94B	PlotIcon
A94C	FlashMenuBar
A94D	AddResMenu
A94E	PinRect
A94F	DeltaPoint
A950	CountMItems
A951	InsertResMenu
A952	DelMenuItem
A953	UpdtControl
A954	NewControl
A955	DisposControl
	DisposeControl
A956	KillControls
A957	ShowControl
A958	HideControl
A959	MoveControl
A95A	GetCRefCon
A95B	SetCRefCon
A95C	SizeControl
A95D	HiliteControl
A95E	GetCTitle
A95F	SetCTitle
A960	GetCtlValue
A961	GetMinCtl
	GetCtlMin
A962	GetMaxCtl
	GetCtlMax
A963	SetCtlValue
A964	SetMinCtl
	SetCtlMin
A965	SetMaxCtl
	SetCtlMax
A966	TestControl
A967	DragControl
A968	TrackControl

Trap Word	Name
A969	DrawControls
A96A	GetCtlAction
A96B	SetCtlAction
A96C	FindControl
A96D	Draw1Control
A96E	Dequeue
A96F	Enqueue
A970	GetNextEvent
A971	EventAvail
A972	GetMouse
A973	StillDown
A974	Button
A975	TickCount
A976	GetKeys
A977	WaitMouseUp
A978	UpdtDialog
A979	CouldDialog
A97A	FreeDialog
A97B	InitDialogs
A97C	GetNewDialog
A97D	NewDialog
A97E	SelIText
A97F	IsDialogEvent
A980	DialogSelect
A981	DrawDialog
A982	CloseDialog
A983	DisposDialog
A984	FindDItem
A985	Alert
A986	StopAlert
A987	NoteAlert
A988	CautionAlert
A989	CouldAlert
A98A	FreeAlert
A98B	ParamText
A98C	ErrorSound
A98D	GetDItem
A98E	SetDItem
A98F	SetIText
A990	GetIText
A991	ModalDialog
A992	DetachResource
A993	SetResPurge
A994	CurResFile
A995	InitResources
A996	RsrcZoneInit
A997	OpenResFile
A998	UseResFile
A999	UpdateResFile
A99A	CloseResFile

Trap Word	Name
A99B	SetResLoad
A99C	CountResources
A99D	GetIndResource
A99E	CountTypes
A99F	GetIndType
A9A0	GetResource
A9A1	GetNamedResource
A9A2	LoadResource
A9A3	ReleaseResource
A9A4	HomeResFile
A9A5	SizeRsrc SizeResource
A9A6	GetResAttrs
A9A7	SetResAttrs
A9A8	GetResInfo
A9A9	SetResInfo
A9AA	ChangedResource
A9AB	AddResource
A9AD	RmveResource
A9AF	ResError
A9B0	WriteResource
A9B1	CreateResFile
A9B2	SystemEvent
A9B3	SystemClick
A9B4	SystemTask
A9B5	SystemMenu
A9B6	OpenDeskAcc
A9B7	CloseDeskAcc
A9B8	GetPattern
A9B9	GetCursor
A9BA	GetString
A9BB	GetIcon
A9BC	GetPicture
A9BD	GetNewWindow
A9BE	GetNewControl
A9BF	GetRMenu GetMenu
A9C0	GetNewMBar
A9C1	UniqueID
A9C2	SysEdit SystemEdit
A9C3	KeyTrans
A9C4	OpenRFPerm
A9C5	RsrcMapEntry
A9C6	Secs2Date
A9C7	Date2Secs
A9C8	SysBeep
A9C9	SysError
A9CB	TEGetText
A9CC	TEInit

Trap Word	Name	
A9CD	TEDispose	
A9CE	TextBox	
A9CF	TESetText	
A9D0	TECalText	
A9D1	TESetSelect	
A9D2	TENew	
A9D3	TEUpdate	
A9D4	TEClick	
A9D5	TECopy	
A9D6	TECut	
A9D7	TEDelete	
A9D8	TEActivate	
A9D9	TEDeactivate	
A9DA	TEIdle	
A9DB	TEPaste	
A9DC	TEKey	
A9DD	TEScroll	
A9DE	TEInsert	
A9DF	TESetJust	
A9E0	Munger	
A9E1	HandToHand	
A9E2	PtrToXHand	
A9E3	PtrToHand	
A9E4	HandAndHand	
A9E5	InitPack	
A9E6	InitAllPacks	
A9E7	Pack0	
	LActivate	(0)
	LAddColumn	(4)
	LAddRow	(8)
	LAddToCell	(12)
	LAutoScroll	(16)
	LCellSize	(20)
	LClick	(24)
	LClrCell	(28)
	LDelColumn	(32)
	LDelRow	(36)
	LDispose	(40)
	LDoDraw	(44)
	LDraw	(48)
	LFind	(52)
	LGetCell	(56)
	LGetSelect	(60)
	LLastClick	(64)
	LNew	(68)
	LNextCell	(72)
	LRect	(76)
	LScroll	(80)
	LSearch	(84)
	LSetCell	(88)
	LSetSelect	(92)
	LSize	(96)
	LUpdate	(100)
A9E8	Pack1	
	(reserved for future use)	
A9E9	Pack2	
	DIBadMount	(0)
	DILoad	(2)
	DIUnload	(4)
	DIFormat	(6)
	DIVerify	(8)
	DIZero	(10)
A9EA	Pack3	
	SFPutFile	(1)
	SFGetFile	(2)
	SFPPutFile	(3)
	SFPGetFile	(4)
A9EB	Pack4	
	(synonym: FP68K)	
A9EC	Pack5	
	(synonym: Elems68K)	
A9ED	Pack6	
	IUDateString	(0)
	IUTimeString	(2)
	IUMetric	(4)
	IUDGetIntl	(6)
	IUSetIntl	(8)
	IUMagString	(10)
	IUMagIDString	(12)
	IUDatePString	(14)
	IUTimePString	(16)
A9EE	Pack7	
	NumToString	(0)
	StringToNum	(1)
	PStr2Dec	(2)
	CStr2Dec	(4)
A9EF	PtrAndHand	
A9F0	LoadSeg	
A9F1	UnloadSeg	
A9F2	Launch	
A9F3	Chain	
A9F4	ExitToShell	
A9F5	GetAppParms	
A9F6	GetResFileAttrs	
A9F7	SetResFileAttrs	
A9F9	InfoScrap	
A9FA	UnlodeScrap	
	UnloadScrap	
A9FB	LodeScrap	
	LoadScrap	

Trap Word	Name	Trap Word	Name
A9FC	ZeroScrap	AA31	SetGDevice
A9FD	GetScrap	AA32	GetGDevice
A9FE	PutScrap	AA33	Color2Index
AA00	OpenCport	AA34	Index2Color
AA01	InitCport	AA35	InvertColor
AA03	NewPixMap	AA36	RealColor
AA04	DisposPixMap	AA37	GetSubTable
AA05	CopyPixMap	AA39	MakeITable
AA06	SetCPortPix	AA3A	AddSearch
AA07	NewPixPat	AA3B	AddComp
AA08	DisposPixPat	AA3C	SetClientID
AA09	CopyPixPat	AA3D	ProtectEntry
AA0A	PenPixPat	AA3E	ReserveEntry
AA0B	BackPixPat	AA3F	SetEntries
AA0C	GetPixPat	AA40	QDError
AA0D	MakeRGBPat	AA41	SetWinColor
AA0E	FillCRect	AA42	GetAuxWin
AA0F	FillCOval	AA43	SetCtlColor
AA10	FillCRoundRect	AA44	GetAuxCtl
AA11	FillCArc	AA45	NewCWindow
AA12	FillCRgn	AA46	GetNewCWindow
AA13	FillCPoly	AA47	SetDeskCPat
AA14	RGBForeColor	AA48	GetCWMgrPort
AA15	RGBBackColor	AA49	SaveEntries
AA16	SetCPixel	AA4A	RestoreEntries
AA17	GetCPixel	AA4B	NewCDialog
AA18	GetCTable	AA4C	DelSearch
AA19	GetForeColor	AA4D	DelComp
AA1A	GetBackColor	AA4E	SetStdCProcs
AA1B	GetCCursor	AA4F	CalcCMask
AA1C	SetCCursor	AA50	SeedCFill
AA1D	AllocCursor	AA60	DelMCEntries
AA1E	GetCIcon	AA61	GetMCInfo
AA1F	PlotCIcon	AA62	SetMCInfo
AA21	OpColor	AA63	DispMCInfo
AA22	HiliteColor	AA64	GetMCEntry
AA23	CharExtra	AA65	SetMCEntries
AA24	DisposCTable	AA66	MenuChoice
AA25	DisposCIcon	AA90	InitPalettes
AA26	DisposCCursor	AA91	NewPalette
AA27	GetMaxDevice	AA92	GetNewPalette
AA28	GetCTSeed	AA93	DisposePalette
AA29	GetDeviceList	AA94	ActivatePalette
AA2A	GetMainDevice	AA95	SetPalette
AA2B	GetNextDevice	AA96	GetPalette
AA2C	TestDeviceAttribute	AA97	PmForeColor
AA2D	SetDeviceAttribute	AA98	PmBackColor
AA2E	InitGDevice	AA99	AnimateEntry
AA2F	NewGDevice	AA9A	AnimatePalette
AA30	DisposGDevice	AA9B	GetEntryColor

Trap Word	Name
AA9C	SetEntryColor
AA9D	GetEntryUsage
AA9E	SetEntryUsage
AA9F	CTab2Palette
AAA0	Palette2CTab

APPENDIX C: GLOBAL VARIABLES

This appendix gives an alphabetical list of all system global variables described in *Inside Macintosh*, along with their locations in memory.

Name	Location	Contents
ABusVars	$2D8	Pointer to AppleTalk variables
ACount	$A9A	Stage number (0 through 3) of last alert (word)
ANumber	$A98	Resource ID of last alert (word)
ApFontID	$984	Font number of application font (word)
ApplLimit	$130	Application heap limit
ApplScratch	$A78	12-byte scratch area reserved for use by applications
ApplZone	$2AA	Address of application heap zone
AppParmHandle	$AEC	Handle to Finder information
AtMenuBottom	$A0C	Flag for menu scrolling (word)
AuxWinHead	$CD0	Auxiliary window list header (long)
BootDrive	$210	Working directory reference number for system startup volume (word)
BufPtr	$10C	Address of end of jump table
BufTgDate	$304	File tags buffer: date and time of last modification (long)
BufTgFBkNum	$302	File tags buffer: logical block number (word)
BufTgFFlg	$300	File tags buffer: flags (word: bit 1=1 if resource fork)
BufTgFNum	$2FC	File tags buffer: file number (long)
CaretTime	$2F4	Caret-blink interval in ticks (long)
CPUFlag	$12F	Microprocessor in use (word)
CrsrThresh	$8EC	Mouse-scaling threshold (word)
CurActivate	$A64	Pointer to window to receive activate event
CurApName	$910	Name of current application (length byte followed by up to 31 characters)
CurApRefNum	$900	Reference number of current application's resource file (word)
CurDeactive	$A68	Pointer to window to receive deactivate event
CurDirStore	$398	Directory ID of directory last opened (long)
CurJTOffset	$934	Offset to jump table from location pointed to by A5 (word)
CurMap	$A5A	Reference number of current resource file (word)
CurPageOption	$936	Sound/screen buffer configuration passed to Chain or Launch (word)

Name	Location	Contents
CurPitch	$280	Value of count in square-wave synthesizer buffer (word)
CurrentA5	$904	Address of boundary between application globals and application parameters
CurStackBase	$908	Address of base of stack; start of application globals
DABeeper	$A9C	Address of current sound procedure
DAStrings	$AA0	Handles to ParamText strings (16 bytes)
DefltStack	$322	Default space allotment for stack (long)
DefVCBPtr	$352	Pointer to default volume control block
DeskHook	$A6C	Address of procedure for painting desktop or responding to clicks on desktop
DeskPattern	$A3C	Pattern with which desktop is painted (8 bytes)
DeviceList	$8A8	Handle to the first element in the device list
DlgFont	$AFA	Font number for dialogs and alerts (word)
DoubleTime	$2F0	Double-click interval in ticks (long)
DragHook	$9F6	Address of procedure to execute during TrackGoAway, DragWindow, GrowWindow, DragGrayRgn, TrackControl, and DragControl
DragPattern	$A34	Pattern of dragged region's outline (8 bytes)
DrvQHdr	$308	Drive queue header (10 bytes)
DSAlertRect	$3F8	Rectangle enclosing system error alert (8 bytes)
DSAlertTab	$2BA	Pointer to system error alert table in use
DSErrCode	$AF0	Current system error ID (word)
DTQueue	$D92	Deferred task queue header (10 bytes)
EventQueue	$14A	Event queue header (10 bytes)
ExtStsDT	$2BE	External/status interrupt vector table (16 bytes)
FCBSPtr	$34E	Pointer to file-control-block buffer
FinderName	$2E0	Name of the Finder (length byte followed by up to 15 characters)
FractEnable	$BF4	Nonzero to enable fractional widths (byte)
FScaleDisable	$A63	Nonzero to disable font scaling (byte)
FSFCBLen	$3F6	Size of a file control block; on 64K ROM, it contains –1 (word)
FSQHdr	$360	File I/O queue header (10 bytes)
GhostWindow	$A84	Pointer to window never to be considered frontmost
GrayRgn	$9EE	Handle to region drawn as desktop
GZRootHnd	$328	Handle to relocatable block not to be moved by grow zone function

Name	Location	Contents
HeapEnd	$114	Address of end of application heap zone
HiliteMode	$938	Set if highlighting is on
HiliteRGB	$DA0	Default highlight color for the system
IntlSpec	$BA0	International software installed if not equal to –1 (long)
JADBProc	06B8	Pointer to ADBReInit preprocessing/ postprocessing routine
JDTInstall	$D9C	Jump vector for DTInstall routine
JFetch	$8F4	Jump vector for Fetch function
JIODone	$8FC	Jump vector for IODone function
JournalRef	$8E8	Reference number of journaling device driver (word)
JStash	$8F8	Jump vector for Stash function
JVBLTask	$D28	Jump vector for DoVBLTask routine
KbdLast	$218	ADB address of the keyboard last used (byte)
KbdType	$21E	Keyboard type of the keyboard last used (byte)
KeyRepThresh	$190	Auto-key rate (word)
KeyThresh	$18E	Auto-key threshold (word)
LastFOND	$BC2	Handle to last family record used
Lo3Bytes	$31A	$00FFFFFF
Lvl2DT	$1B2	Level-2 secondary interrupt vector table (32 bytes)
MainDevice	$8A4	Handle to the current main device
MBarEnable	$A20	Unique menu ID for active desk accessory, when menu bar belongs to the accessory (word)
MBarHeight	$BAA	Height of menu bar (word)
MBarHook	$A2C	Address of routine called by MenuSelect before menu is drawn
MemErr	$220	Current value of MemError (word)
MemTop	$108	Address of end of RAM (on Macintosh XL, end of RAM available to applications)
MenuCInfo	$D50	Header for menu color information table
MenuDisable	$B54	Menu ID and item for slected diasabled item
MenuFlash	$A24	Count for duration of menu item blinking (word)
MenuHook	$A30	Address of routine called during MenuSelect
MenuList	$A1C	Handle to current menu list
MinStack	$31E	Minimum space allotment for stack (long)
MinusOne	$A06	$FFFFFFFF
MMU32Bit	$CB2	Current address mode (byte)

Name	Location	Contents
OldContent	$9EA	Handle to saved content region
OldStructure	$9E6	Handle to saved structure region
OneOne	$A02	$00010001
PaintWhite	$9DC	Flag for whether to paint window white before update event (word)
PortBUse	$291	Current availability of serial port B (byte)
PrintErr	$944	Result code from last Printing Manager routine (word)
QDColors	$8B0	Default QuickDraw colors
RAMBase	$2B2	Trap dispatch table's base address for routines in RAM
ResErr	$A60	Current value of ResError (word)
ResErrProc	$AF2	Address of resource error procedure
ResLoad	$A5E	Current SetResLoad state (word)
ResumeProc	$A8C	Address of resume procedure
RndSeed	$156	Random number seed (long)
ROM85	$28E	Version number of ROM (word)
ROMBase	$2AE	Base address of ROM
ROMBase	$2AE	Base address of ROM
ROMFont0	$980	Handle to font record for system font
RomMapInsert	$B9E	Flag for whether to insert map to the ROM resources (byte)
SaveUpdate	$9DA	Flag for whether to generate update events (word)
SaveVisRgn	$9F2	Handle to saved visRgn
SCCRd	$1D8	SCC read base address
SCCWr	$1DC	SCC write base address
ScrapCount	$968	Count changed by ZeroScrap (word)
ScrapHandle	$964	Handle to desk scrap in memory
ScrapName	$96C	Pointer to scrap file name (preceded by length byte)
ScrapSize	$960	Size in bytes of desk scrap (long)
ScrapState	$96A	Tells where desk scrap is (word)
Scratch8	$9FA	8-byte scratch area
Scratch20	$1E4	20-byte scratch area
ScrDmpEnb	$2F8	0 if GetNextEvent shouldn't process Command-Shift-number combinations (byte)
ScrHRes	$104	Pixels per inch horizontally (word)
ScrnBase	$824	Address of main screen buffer

Name	Location	Contents
ScrVRes	$102	Pixels per inch vertically (word)
SdVolume	$260	Current speaker volume (byte: low-order three bits only)
SEvtEnb	$15C	0 if SystemEvent should return FALSE (byte)
SFSaveDisk	$214	Negative of volume reference number, used by Standard File Package (word)
SoundBase	$266	Pointer to free-form synthesizer buffer
SoundLevel	$27F	Amplitude in 740-byte buffer (byte)
SoundPtr	$262	Pointer to four-tone record
SPAlarm	$200	Alarm setting (long)
SPATalkA	$1F9	AppleTalk node ID hint for modem port (byte)
SPATalkB	$1FA	AppleTalk node ID hint for printer port (byte)
SPClikCaret	$209	Double-click and caret-blink times (byte)
SPConfig	$1FB	Use types for serial ports (byte)
SPFont	$204	Application font number minus 1 (word)
SPKbd	$206	Auto-key threshold and rate (byte)
SPMisc2	$20B	Mouse scaling, system startup disk, menu blink (byte)
SPPortA	$1FC	Modem port configuration (word)
SPPortB	$1FE	Printer port configuration (word)
SPPrint	$207	Printer connection (byte)
SPValid	$1F8	Validity status (byte)
SPVolCtl	$208	Speaker volume setting in parameter RAM (byte)
SynListHandle	$D32	Handle to synthetic font list
SysEvtMask	$144	System event mask (word)
SysFontFam	$BA6	If nonzero, the font number to use for system font (word)
SysFontSize	$BA8	If nonzero, the size of the system font (word)
SysMap	$A58	Reference number of system resource file (word)
SysMapHndl	$A54	Handle to map of system resource file
SysParam	$1F8	Low-memory copy of parameter RAM (20 bytes)
SysResName	$AD8	Name of system resource file (length byte followed by up to 19 characters)
SysZone	$2A6	Address of system heap zone
TEDoText	$A70	Address of TextEdit multi-purpose routine
TERecal	$A74	Address of routine to recalculate line starts for TextEdit
TEScrpHandle	$AB4	Handle to TextEdit scrap

Name	Location	Contents
TEScrpLength	$AB0	Size in bytes of TextEdit scrap (long)
TheGDevice	$CC8	Handle to current active device (long)
TheMenu	$A26	Menu ID of currently highlighted menu (word)
TheZone	$118	Address of current heap zone
Ticks	$16A	Current number of ticks since system startup (long)
Time	$20C	Seconds since midnight, January 1, 1904 (long)
TimeDBRA	$D00	Number of times the DBRA instruction can be executed per millisecond (word)
TimeSCCDB	$D02	Number of times the SCC can be accessed per millisecond (word)
TimeSCSIDB	$DA6	Number of times the SCSI can be accessed per millisecond (word)
TmpResLoad	$B9F	Temporary SetResLoad state for calls using ROMMapInsert (byte)
ToExtFS	$3F2	Pointer to external file system
ToolScratch	$9CE	8-byte scratch area
TopMapHndl	$A50	Handle to resource map of most recently opened resource file
TopMenuItem	$A0A	Pixel value of top of scrollable menu
UTableBase	$11C	Base address of unit table
VBLQueue	$160	Vertical retrace queue header (10 bytes)
VCBQHdr	$356	Volume-control-block queue header (10 bytes)
VIA	$1DA	VIA base address
WidthListHand	$8E4	Handle to a list of handles to recently-used width tables
WidthPtr	$B10	Pointer to global width table
WidthTabHandle	$B2A	Handle to global width table
WindowList	$9D6	Pointer to first window in window list; 0 if using events but not windows
WMgrPort	$9DE	Pointer to Window Manager port

GLOSSARY

access path: A description of the route that the File Manager follows to access a file; created when a file is opened.

access path buffer: Memory used by the File Manager to transfer data between an application and a file.

acknowledge cycle: For the NuBus: Last period of a transaction during which /ACK is asserted by a slave responding to a master. Often shortened to *ack cycle*.

action procedure: A procedure, used by the Control Manager function TrackControl, that defines an action to be performed repeatedly for as long as the mouse button is held down.

activate event: An event generated by the Window Manager when a window changes from active to inactive or vice versa.

active control: A control that will respond to the user's actions with the mouse.

active end: In a selection, the location to which the insertion point moves to complete the selection.

active window: The frontmost window on the desktop.

ADB device table: A structure in the system heap that lists all devices connected to the Apple DeskTop Bus.

address: A number used to identify a location in the computer's address space. Some locations are allocated to memory, others to I/O devices.

address mark: In a sector, information that's used internally by the Disk Driver, including information it uses to determine the position of the sector on the disk.

ALAP: See **AppleTalk Link Access Protocol**.

ALAP frame: A packet of data transmitted and received by ALAP.

ALAP protocol type: An identifier used to match particular kinds of packets with a particular protocol handler.

alert: A warning or report of an error, in the form of an alert box, sound from the Macintosh's speaker, or both.

alert box: A box that appears on the screen to give a warning or report an error during a Macintosh application.

alert template: A resource that contains information from which the Dialog Manager can create an alert.

alert window: The window in which an alert box is displayed.

alias: A different name for the same entity.

allocate: To reserve an area of memory for use.

allocation block: Volume space composed of an integral number of logical blocks.

amplitude: The maximum vertical distance of a periodic wave from the horizontal line about which the wave oscillates.

AMU (Address Mapping Unit): For the Macintosh II: A custom integrated circuit that allows an operating system to quickly reconfigure the arrangement of memory without physically moving data. Different tasks can be "swapped" within the same space.

anchor point: In a selection, the location of the insertion point when the selection was started.

AppleTalk address: A socket's number and its node ID number.

AppleTalk Link Access Protocol (ALAP): The lowest-level protocol in the AppleTalk architecture, managing node-to-node delivery of frames on a single AppleTalk network.

AppleTalk Manager: An interface to a pair of RAM device drivers that enable programs to send and receive information via an AppleTalk network.

AppleTalk Transaction Protocol (ATP): An AppleTalk protocol that's a DDP client. It allows one ATP client to request another ATP client to perform some activity and report the activity's result as a response to the requesting socket with guaranteed delivery.

application font: The font your application will use unless you specify otherwise—Geneva, by default.

application heap: The portion of the heap available to the running application program and the Toolbox.

application heap limit: The boundary between the space available for the application heap and the space available for the stack.

application heap zone: The heap zone initially provided by the Memory Manager for use by the application program and the Toolbox; initially equivalent to the application heap, but may be subdivided into two or more independent heap zones.

application list: A data structure, kept in the Desktop file, for launching applications from their documents in the hierarchical file system. For each application in the list, an entry is maintained that includes the name and signature of the application, as well as the directory ID of the folder containing it.

application parameters: Thirty-two bytes of memory, located above the application globals, reserved for system use. The first application parameter is the address of the first QuickDraw global variable.

application space: Memory that's available for dynamic allocation by applications.

application window: A window created as the result of something done by the application, either directly or indirectly (as through the Dialog Manager).

arbitration phase: The phase in which an initiator attempts to gain control of the bus.

ascent: The vertical distance from a font's base line to its ascent line.

ascent line: A horizontal line that coincides with the tops of the tallest characters in a font.

asynchronous communication: A method of data transmission where the receiving and sending devices don't share a common timer, and no timing data is transmitted.

asynchronous execution: After calling a routine asynchronously, an application is free to perform other tasks until the routine is completed.

at-least-once transaction: An ATP transaction in which the requested operation is performed at least once, and possibly several times.

ATP: See **AppleTalk Transaction Protocol**.

auto-key event: An event generated repeatedly when the user presses and holds down a character key on the keyboard or keypad.

auto-key rate: The rate at which a character key repeats after it's begun to do so.

auto-key threshold: The length of time a character key must be held down before it begins to repeat.

auxiliary control record: A Control Manager data structure containing the information needed for drawing controls in color.

auxiliary window record: A Window Manager data structure that stores the color information needed for each color window.

background activity: A program or process that runs while the user is engaged with another application.

background procedure: A procedure passed to the Printing Manager to be run during idle times in the printing process.

base line: A horizontal line that coincides with the bottom of each character in a font, excluding descenders (such as the tail of a "p").

baud rate: The measure of the total number of bits sent over a transmission line per second.

Binary-Decimal Conversion Package: A Macintosh package for converting integers to decimal strings and vice versa.

bit image: A collection of bits in memory that have a rectilinear representation. The screen is a visible bit image.

bit map: A set of bits that represent the position and state of a corresponding set of items; in QuickDraw, a pointer to a bit image, the row width of that image, and its boundary rectangle.

BIU (bus interface unit): For the Macintosh II: The electronics connecting the MC68020 bus to the NuBus.

block: A group regarded as a unit; usually refers to data or memory in which data is stored. See **allocation block** and **memory block**.

block contents: The area that's available for use in a memory block.

block device: A device that reads and writes blocks of bytes at a time. It can read or write any accessible block on demand.

block header: The internal "housekeeping" information maintained by the Memory Manager at the beginning of each block in a heap zone.

block map: Same as **volume allocation block map.**

board sResource list: A standard Apple sResource list that must be present in every NuBus slot card that communicates with the Paris.

boundary rectangle: A rectangle, defined as part of a QuickDraw bit map, that encloses the active area of the bit image and imposes a coordinate system on it. Its top left corner is always aligned around the first bit in the bit image.

break table: A list of templates that determine the general rules for making word divisions in a particular script.

break: The condition resulting when a device maintains its transmission line in the space state for at least one frame.

bridge: An intelligent link between two or more AppleTalk networks.

broadcast service: An ALAP service in which a frame is sent to all nodes on an AppleTalk network.

bundle: A resource that maps local IDs of resources to their actual resource IDs; used to provide mappings for file references and icon lists needed by the Finder.

bus free phase: The phase in which no SCSI device is actively using the bus.

button: A standard Macintosh control that causes some immediate or continuous action when clicked or pressed with the mouse. See also **radio button**.

byte lane: Any of the four bytes that make up the NuBus data width. NuBus slot cards may use any or all of the byte lanes to communicate with each other or with the Paris.

byte swapping: The process by which the order of bytes in each 4-byte NuBus word is changed to conform to the byte order of certain processors.

card-generic driver: A driver that is designed to work with a variety of plug-in cards.

card-specific driver: A driver that is designed to work with a single model of plug-in card.

caret-blink time: The interval between blinks of the caret that marks an insertion point.

caret: A generic term meaning a symbol that indicates where something should be inserted in text. The specific symbol used is a vertical bar (|).

catalog tree file: A file that maintains the relationships between the files and directories on a hierarchical directory volume. It corresponds to the file directory on a flat directory volume.

cdev: A resource file containing device information, used by the Control Panel.

cell: The basic component of a list from a structural point of view; a cell is a box in which a list element is displayed.

cGrafPort: The drawing environment in Color QuickDraw, including elements such as a pixel map, pixel patterns, transfer modes, and arithmetic drawing modes.

channel: A queue that's used by an application to send commands to the Sound Manager.

character code: An integer representing the character that a key or combination of keys on the keyboard or keypad stands for.

character device: A device that reads or writes a stream of characters, one at a time. It can neither skip characters nor go back to a previous character.

character image: An arrangement of bits that defines a character in a font.

character key: A key that generates a keyboard event when pressed; any key except Shift, Caps Lock, Command, or Option.

character offset: The horizontal separation between a character rectangle and a font rectangle.

character origin: The point on a base line used as a reference location for drawing a character.

character position: An index into an array containing text, starting at 0 for the first character.

character rectangle: A rectangle enclosing an entire character image. Its sides are defined by the image width and the font height.

character style: A set of stylistic variations, such as bold, italic, and underline. The empty set indicates plain text (no stylistic variations).

character width: The distance to move the pen from one character's origin to the next character's origin.

check box: A standard Macintosh control that displays a setting, either checked (on) or unchecked (off). Clicking inside a check box reverses its setting.

Chooser: A desk accessory that provides a standard interface for device drivers to solicit and accept specific choices from the user.

chunky: A pixel image in which all of a pixel's bits are stored consecutively in memory, all of a row's pixels are stored consecutively, and rowBytes indicates the offset from one row to the next.

clipping: Limiting drawing to within the bounds of a particular area.

clipping region: Same as clipRgn.

clipRgn: The region to which an application limits drawing in a grafPort.

clock chip: A special chip in which are stored parameter RAM and the current setting for the date and time. This chip is powered by a battery when the system is off, thus preserving the information.

close routine: The part of a device driver's code that implements Device Manager Close calls.

closed driver: A device driver that cannot be read from or written to.

closed file: A file without an access path. Closed files cannot be read from or written to.

clump: A group of contiguous allocation blocks. Space is allocated to a new file in clumps to promote file contiguity and avoid fragmentation.

clump size: The number of allocation blocks to be allocated to a new file.

Color Look-Up Table (CLUT): A data structure that maps color indices, specified using QuickDraw, into actual color values. Color Look-Up Tables are internal to certain types of video cards.

Color Look-Up Table device: This kind of video device contains hardware that converts an arbitrary pixel value stored in the frame buffer to some actual RGB video value, which is changeable.

Color Manager: The part of the Toolbox that supplies color-selection support for Color QuickDraw on the Macintosh II.

Color QuickDraw: The part of the Toolbox that performs color graphics operations on the Macintosh II.

color table animation: Color table animation involves changing the index entries in the video device's color table to achieve a change in color, as opposed to changing the pixel values themselves. All pixel values corresponding to the altered index entries suddenly appear on the display device in the new color.

color table: A set of colors is grouped into a QuickDraw data structure called a color table. Applications can pass a handle to this color table in order to use color entries.

command phase: The phase in which the SCSI initiator tells the target what operation to perform.

compaction: The process of moving allocated blocks within a heap zone in order to collect the free space into a single block.

complement: The numerical amount that must be added to a number to give the least number containing one more digit.

completion routine: Any application-defined code to be executed when an asynchronous call to a routine is completed.

content region: The area of a window that the application draws in.

control: An object in a window on the Macintosh screen with which the user, using the mouse, can cause instant action with visible results or change settings to modify a future action.

Control Manager: The part of the Toolbox that provides routines for creating and manipulating controls (such as buttons, check boxes, and scroll bars).

control definition function: A function called by the Control Manager when it needs to perform type-dependent operations on a particular type of control, such as drawing the control.

control definition ID: A number passed to control-creation routines to indicate the type of control. It consists of the control definition function's resource ID and a variation code.

control information: Information transmitted by an application to a device driver. It may select modes of operation, start or stop processes, enable buffers, choose protocols, and so on.

control list: A list of all the controls associated with a given window.

control record: The internal representation of a control, where the Control Manager stores all the information it needs for its operations on that control.

control routine: The part of a device driver's code that implements Device Manager Control and KillIO calls.

control template: A resource that contains information from which the Control Manager can create a control.

coordinate plane: A two-dimensional grid. In QuickDraw, the grid coordinates are integers ranging from –32767 to 32767, and all grid lines are infinitely thin.

current heap zone: The heap zone currently under attention, to which most Memory Manager operations implicitly apply.

current resource file: The last resource file opened, unless you specify otherwise with a Resource Manager routine.

cursor: A 16-by-16 bit image that appears on the screen and is controlled by the mouse; called the "pointer" in Macintosh user manuals.

cursor level: A value, initialized by InitCursor, that keeps track of the number of times the cursor has been hidden.

data bits: Data communications bits that encode transmitted characters.

data buffer: Heap space containing information to be written to a file or device driver from an application, or read from a file or device driver to an application.

data fork: The part of a file that contains data accessed via the File Manager.

data mark: In a sector, information that primarily contains data from an application.

data phase: The phase in which the actual transfer of data between an SCSI initiator and target takes place.

Datagram Delivery Protocol (DDP): An AppleTalk protocol that's an ALAP client, managing socket-to-socket delivery of datagrams over AppleTalk internets.

datagram: A packet of data transmitted by DDP.

date/time record: An alternate representation of the date and time (which is stored on the clock chip in seconds since midnight, January 1, 1904).

DDP: See **Datagram Delivery Protocol**.

declaration ROM: A ROM on a NuBus slot card that contains information about the card and may also contain code or other data.

default button: In an alert box or modal dialog, the button whose effect will occur if the user presses Return or Enter. In an alert box, it's boldly outlined; in a modal dialog, it's boldly outlined or the OK button.

default directory: A directory that will be used in File Manager routines whenever no other directory is specified. It may be the root directory, in which case the default directory is equivalent to the default volume.

default volume: A volume that will receive I/O during a File Manager routine call, whenever no other volume is specified.

deny modes: File access modes that include both the access rights of that path and denial of access to others.

dereference: To refer to a block by its master pointer instead of its handle.

descent: The vertical distance from a font's base line to its descent line.

descent line: A horizontal line that coincides with the bottoms of the characters in a font that extend furthest below the base line.

Desk Manager: The part of the Toolbox that supports the use of desk accessories from an application.

desk accessory: A "mini-application", implemented as a device driver, that can be run at the same time as a Macintosh application.

desk scrap: The place where data is stored when it's cut (or copied) and pasted among applications and desk accessories.

desktop: The screen as a surface for doing work on the Macintosh.

Desktop file: A resource file in which the Finder stores the version data, bundle, icons, and file references for each application on the volume.

destination rectangle: In TextEdit, the rectangle in which the text is drawn.

device: A part of the Macintosh, or a piece of external equipment, that can transfer information into or out of the Macintosh.

device address: A value in the range $00–$0F assigned to each device connected to the Apple DeskTop Bus.

device control entry: A 40-byte relocatable block of heap space that tells the Device Manager the location of a driver's routines, the location of a driver's I/O queue, and other information.

device driver event: An event generated by one of the Macintosh's device drivers.

device driver: A program that controls the exchange of information between an application and a device.

device handler ID: A value that identifies the kind of device connected to the Apple DeskTop Bus.

DeviceList: A linked list containing the gDevice records for a system. One handle to a gDevice record is allocated and initialized for each video card found by the system.

Device Manager: The part of the Operating System that supports device I/O.

device partition map: A data structure that must be placed at the start of physical block 1 of an SCSI device to enable it to perform Macintosh system startup. It describes the allocation of blocks on the device.

device resource file: An extension of the printer resource file, this file contains all the resources needed by the Chooser for operating a particular device (including the device driver code).

dial: A control with a moving indicator that displays a quantitative setting or value. Depending on the type of dial, the user may be able to change the setting by dragging the indicator with the mouse.

dialog: Same as **dialog box.**

dialog box: A box that a Macintosh application displays to request information it needs to complete a command, or to report that it's waiting for a process to complete.

Dialog Manager: The part of the Toolbox that provides routines for implementing dialogs and alerts.

dialog record: The internal representation of a dialog, where the Dialog Manager stores all the information it needs for its operations on that dialog.

dialog template: A resource that contains information from which the Dialog Manager can create a dialog.

dialog window: The window in which a dialog box is displayed.

dimmed: Drawn in gray rather than black

direct device: A video device that has a direct correlation between the value placed in the video card and the color you see on the screen.

directory ID: A unique number assigned to a directory, which the File Manager uses to distinguish it from other directories on the volume. (It's functionally equivalent to the file number assigned to a file; in fact, both directory IDs and file numbers are assigned from the same set of numbers.)

directory: A subdivision of a volume that can contain files as well as other directories; equivalent to a folder.

disabled: A disabled menu item or menu is one that cannot be chosen; the menu item or menu title appears dimmed. A disabled item in a dialog or alert box has no effect when clicked.

Disk Driver: The device driver that controls data storage and retrieval on 3 1/2-inch disks.

Disk Initialization Package: A Macintosh package for initializing and naming new disks; called by the Standard File Package.

disk-inserted event: An event generated when the user inserts a disk in a disk drive or takes any other action that requires a volume to be mounted.

display rectangle: A rectangle that determines where an item is displayed within a dialog or alert box.

dithering: A technique for mixing existing colors together to create the illusion of a third color that may be unavailable on a particular device.

document window: The standard Macintosh window for presenting a document.

double-click time: The greatest interval between a mouse-up and mouse-down event that would qualify two mouse clicks as a double-click.

draft printing: Printing a document immediately as it's drawn in the printing grafPort.

drag delay: A length of time that allows a user to drag diagonally across a main menu, moving from a submenu title into the submenu itself without the submenu disappearing.

drag region: A region in a window frame. Dragging inside this region moves the window to a new location and makes it the active window unless the Command key was down.

drive number: A number used to identify a disk drive. The internal drive is number 1, the external drive is number 2, and any additional drives will have larger numbers.

drive queue: A list of disk drives connected to the Macintosh.

drive queue: A list of disk drives connected to the Macintosh.

driver descriptor map: A data structure that must be placed at the start of physical block 0 of an SCSI device to enable it to perform Macintosh system startup. It identifies the various device drivers on the device.

driver I/O queue: A queue containing the parameter blocks of all I/O requests for one device driver.

driver name: A sequence of up to 255 printing characters used to refer to an open device driver. Driver names always begin with a period (.).

driver reference number: A number from –1 to –32 that uniquely identifies an individual device driver.

Echo Protocol: An echoing service provided on static socket number 4 (the echoer socket) by which any correctly-formed packet will be echoed back to its sender.

edit record: A complete editing environment in TextEdit, which includes the text to be edited, the grafPort and rectangle in which to display the text, the arrangement of the text within the rectangle, and other editing and display information.

empty handle: A handle that points to a NIL master pointer, signifying that the underlying relocatable block has been purged.

empty shape: A shape that contains no bits, such as one defined by only a single point.

end-of-file: See **logical end-of-file** or **physical end-of-file.**

entity name: An identifier for an entity, of the form object:type@zone.

event: A notification to an application of some occurrence that the application may want to respond to.

event code: An integer representing a particular type of event.

Event Manager: See **Toolbox Event Manager** or **Operating System Event Manager.**

event mask: A parameter passed to an Event Manager routine to specify which types of events the routine should apply to.

event message: A field of an event record containing information specific to the particular type of event.

event queue: The Operating System Event Manager's list of pending events.

event record: The internal representation of an event, through which your program learns all pertinent information about that event.

exactly-once transaction: An ATP transaction in which the requested operation is performed only once.

exception: An error or abnormal condition detected by the processor in the course of program execution; includes interrupts and traps.

exception vector: One of 64 vectors in low memory that point to the routines that are to get control in the event of an exception.

extent: A series of contiguous allocation blocks.

extent descriptor: A description of an extent, consisting of the number of the first allocation block of the extent followed by the length of the extent in blocks.

extent record: A data record, stored in the leaf nodes of the extents tree file, that contains three extent descriptors and a key identifying the record.

extents tree file: A file that contains the locations of the files on a volume.

external reference: A reference to a routine or variable defined in a separate compilation or assembly.

family record: A data structure, derived from a family resource, that contains all the information describing a font family.

file: A named, ordered sequence of bytes; a principal means by which data is stored and transmitted on the Macintosh.

file catalog: A hierarchical file directory.

file control block: A fixed-length data structure, contained in the file-control-block buffer, where information about an access path is stored.

file directory: The part of a volume that contains descriptions and locations of all the files and directories on the volume. There are two types of file directories: hierarchical file directories and flat file directories.

file I/O queue: A queue containing parameter blocks for all I/O requests to the File Manager.

File Manager: The part of the Operating System that supports file I/O.

file name: A sequence of up to 255 printing characters, excluding colons (:), that identifies a file.

file number: A unique number assigned to a file, which the File Manager uses to distinguish it from other files on the volume. A file number specifies the file's entry in a file directory.

file reference: A resource that provides the Finder with file and icon information about an application.

file tags: Information associated with each logical block, designed to allow reconstruction of files on a volume whose directory or other file-access information has been destroyed.

file tags buffer: A location in memory where file tags are read from and written to.

file type: A four-character sequence, specified when a file is created, that identifies the type of file.

file-control-block buffer: A nonrelocatable block in the system heap that contains one file control block for each access path.

Finder information: Information that the Finder provides to an application upon starting it up, telling it which documents to open or print.

fixed device: A video device that converts a pixel value to some actual RGB video value, but the hardware colors can't be changed.

fixed-point number: A signed 32-bit quantity containing an integer part in the high-order word and a fractional part in the low-order word.

fixed-width font: A font whose characters all have the same width.

Floating-Point Arithmetic Package: A Macintosh package that supports extended-precision arithmetic according to IEEE Standard 754.

font: A complete set of characters of one typeface, which may be restricted to a particular size and style, or may comprise multiple sizes, or multiple sizes and styles, as in the context of menus.

font characterization table: A table of parameters in a device driver that specifies how best to adapt fonts to that device.

font family: A group of fonts of one basic design but with variations like weight and slant.

font height: The vertical distance from a font's ascent line to its descent line.

Font Manager: The part of the Toolbox that supports the use of various character fonts for QuickDraw when it draws text.

font number: The number by which you identify a font to QuickDraw or the Font Manager.

font record: A data structure, derived from a font resource, that contains all the information describing a font.

font rectangle: The smallest rectangle enclosing all the character images in a font, if the images were all superimposed over the same character origin.

font script: The script used by the font currently designated by thePort; hence the system that determines in what form text characters are displayed to the user.

font size: The size of a font in points; equivalent to the distance between the ascent line of one line of text and the ascent line of the next line of single-spaced text.

fork: One of the two parts of a file; see **data fork** and **resource fork**.

format block: A structure in a declaration ROM that provides a standard entry point for other structures in the ROM.

four-tone record: A data structure describing the tones produced by a four-tone synthesizer.

four-tone synthesizer: The part of the Sound Driver used to make simple harmonic tones, with up to four "voices" producing sound simultaneously.

frame: The time elapsed from the start bit to the last stop bit during serial communication.

frame buffer: A buffer memory in which is stored all the picture elements (pixels) of a frame of video information.

Frame Buffer Controller (FBC): A register-controlled CMOS gate array used to generate and control video data and timing signals.

frame check sequence: A 16-bit value generated by the AppleTalk hardware, used by the receiving node to detect transmission errors.

frame header: Information at the beginning of a packet.

frame pointer: A pointer to the end of the local variables within a routine's stack frame, held in an address register and manipulated with the LINK and UNLK instructions.

frame trailer: Information at the end of an ALAP frame.

framed shape: A shape that's drawn outlined and hollow.

framing error: The condition resulting when a device doesn't receive a stop bit when expected.

free block: A memory block containing space available for allocation.

free-form synthesizer: The part of the Sound Driver used to make complex music and speech.

frequency: The number of cycles per second (also called hertz) at which a wave oscillates.

full pathname: A pathname beginning from the root directory.

full-duplex communication: A method of data transmission where two devices transmit data simultaneously.

gamma table: A table that compensates for nonlinearities in a monitor's color response.

gDevice: A QuickDraw data structure that allows an application to access a given device. A gDevice is a logical device, which the software treats the same whether it is a video card, a display device, or an offscreen pixel map.

global coordinate system: The coordinate system based on the top left corner of the bit image being at (0,0).

global width table: A data structure in the system heap used by the Font Manager to communicate fractional character widths to QuickDraw.

go-away region: A region in a window frame. Clicking inside this region of the active window makes the window close or disappear.

grafPort: A complete drawing environment, including such elements as a bit map, a subset of it in which to draw, a character font, patterns for drawing and erasing, and other pen characteristics.

graphics device: A video card, a printer, a display device, or an offscreen pixel map. Any of these device types may be used with Color QuickDraw.

GrayRgn: The global variable that in the multiple screen desktop describes and defines the desktop, the area on which windows can be dragged.

grow image: The image pulled around when the user drags inside the grow region; whatever is appropriate to show that the window's size will change.

grow region: A window region, usually within the content region, where dragging changes the size of an active window.

grow zone function: A function supplied by the application program to help the Memory Manager create free space within a heap zone.

handle: A pointer to a master pointer, which designates a relocatable block in the heap by double indirection.

hardware overrun error: The condition that occurs when the SCC's buffer becomes full.

heap: The area of memory in which space is dynamically allocated and released on demand, using the Memory Manager.

heap zone: An area of memory initialized by the Memory Manager for heap allocation.

hierarchical menu: A menu that includes, among its various menu choices, the ability to display a submenu. In most cases the submenu appears to the right of the menu item used to select it, and is marked with a filled triangle indicator.

highlight: To display an object on the screen in a distinctive visual way, such as inverting it.

horizontal blanking interval: The time between the display of the rightmost pixel on one line and the leftmost pixel on the next line.

hotSpot: The point in a cursor that's aligned with the mouse location.

I/O queue: See **driver I/O queue** or **file I/O queue**.

I/O request: A request for input from or output to a file or device driver; caused by calling a File Manager or Device Manager routine asynchronously.

icon: A 32-by-32 bit image that graphically represents an object, concept, or message.

icon list: A resource consisting of a list of icons.

icon number: A digit from 1 to 255 to which the Menu Manager adds 256 to get the resource ID of an icon associated with a menu item.

image width: The width of a character image.

inactive control: A control that won't respond to the user's actions with the mouse. An inactive control is highlighted in some special way, such as dimmed.

inactive window: Any window that isn't the frontmost window on the desktop.

indicator: The moving part of a dial that displays its current setting.

initiator device: An SCSI device that initiates a communication by asking another device (known as the target device) to perform a certain operation.

input driver: A device driver that receives serial data via a serial port and transfers it to an application.

insertion point: An empty selection range; the character position where text will be inserted (usually marked with a blinking caret).

interface routine: A routine called from Pascal whose purpose is to trap to a certain Toolbox or Operating System routine.

International Utilities Package: A Macintosh package that gives you access to country-dependent information such as the formats for numbers, currency, dates, and times.

internet: An interconnected group of AppleTalk networks.

internet address: The AppleTalk address and network number of a socket.

interrupt: An exception that's signaled to the processor by a device, to notify the processor of a change in condition of the device, such as the completion of an I/O request.

interrupt handler: A routine that services interrupts.

interrupt priority level: A number identifying the importance of the interrupt. It indicates which device is interrupting, and which interrupt handler should be executed.

interrupt vector: A pointer to an interrupt handler.

invalidation: When a color table is modified, its inverse table must be rebuilt, and the screen should be redrawn to take advantage of this new information. Rather than being reconstructed when the color table is changed, the inverse table is marked invalid, and is automatically rebuilt when next accessed.

inverse table: A special Color Manager data structure arranged in such a manner that, given an arbitrary RGB color, the pixel value can be very rapidly looked up.

invert: To highlight by changing white pixels to black and vice versa.

invisible control: A control that's not drawn in its window.

invisible window: A window that's not drawn in its plane on the desktop.

item: In dialog and alert boxes, a control, icon, picture, or piece of text, each displayed inside its own display rectangle. See also **menu item**.

item list: A list of information about all the items in a dialog or alert box.

item number: The index, starting from 1, of an item in an item list.

IWM: "Integrated Woz Machine"; the custom chip that controls the 3 1/2-inch disk drives.

job dialog: A dialog that sets information about one printing job; associated with the Print command.

journal code: A code passed by a Toolbox Event Manager routine in its Control call to the journaling device driver, to designate which routine is making the Control call.

journaling mechanism: A mechanism that allows you to feed the Toolbox Event Manager events from some source other than the user.

jump table: A table that contains one entry for every routine in an application and is the means by which the loading and unloading of segments is implemented.

justification: The horizontal placement of lines of text relative to the edges of the rectangle in which the text is drawn.

justification gap: The number of pixels that must be added to a line of text to make it exactly fill a given measure. Also called slop.

kern: To draw part of a character so that it overlaps an adjacent character.

key code: An integer representing a key on the keyboard or keypad, without reference to the character that the key stands for.

key script: The system that determines the keyboard layout and input method for the user interface. It may be different from the font script, which determines how text is displayed.

key-down event: An event generated when the user presses a character key on the keyboard or keypad.

key-up event: An event generated when the user releases a character key on the keyboard or keypad.

keyboard configuration: A resource that defines a particular keyboard layout by associating a character code with each key or combination of keys on the keyboard or keypad.

keyboard equivalent: The combination of the Command key and another key, used to invoke a menu item from the keyboard.

keyboard event: An event generated when the user presses, releases, or holds down a character key on the keyboard or keypad; any key-down, key-up, or auto-key event.

leading: The amount of blank vertical space between the descent line of one line of text and the ascent line of the next line of single-spaced text.

ligature: A character that combines two letters.

line-height table: A TextEdit data structure that holds vertical spacing information for an edit record's text.

List Manager: The part of the Operating System that provides routines for creating, displaying, and manipulating lists.

list definition procedure: A procedure called by the List Manager that determines the appearance and behavior of a list.

list element: The basic component of a list from a logical point of view, a list element is simply bytes of data. In a list of names, for instance, the name Melvin might be a list element.

list record: The internal representation of a list, where the List Manager stores all the information it requires for its operations on that list.

list separator: The character that separates numbers, as when a list of numbers is entered by the user.

local coordinate system: The coordinate system local to a grafPort, imposed by the boundary rectangle defined in its bit map.

local ID: A number that refers to an icon list or file reference in an application's resource file and is mapped to an actual resource ID by a bundle.

localization: The process of adapting an application to different languages, including converting its user interface to a different script.

location table: An array of words (one for each character in a font) that specifies the location of each character's image in the font's bit image.

lock: To temporarily prevent a relocatable block from being moved during heap compaction.

lock bit: A bit in the master pointer to a relocatable block that indicates whether the block is currently locked.

locked file: A file whose data cannot be changed.

locked volume: A volume whose data cannot be changed. Volumes can be locked by either a software flag or a mechanical setting.

logical block: Volume space composed of 512 consecutive bytes of standard information and an additional number of bytes of information specific to the Disk Driver.

logical end-of-file: The position of one byte past the last byte in a file; equal to the actual number of bytes in the file.

logical size: The number of bytes in a memory block's contents.

luminance: The intensity of light. Two colors with different luminances will be displayed at different intensities.

M.I.D.I. synthesizer: This synthesizer interfaces with external synthesizers via a Musical Instrument Data Interface (M.I.D.I.) adaptor connected to the serial ports.

magnitude: The vertical distance between any given point on a wave and the horizontal line about which the wave oscillates.

main event loop: In a standard Macintosh application program, a loop that repeatedly calls the Toolbox Event Manager to get events and then responds to them as appropriate.

main screen: On a system with multiple display devices, the screen with the menu bar is called the main screen.

main segment: The segment containing the main program.

mark state: The state of a transmission line indicating a binary 1.

mark: A marker used by the File Manager to keep track of where it is during a read or write operation. It is the position of the next byte in a file that will be read or written.

master directory block: Part of the data structure of a flat directory volume; contains the volume information and the volume allocation block map.

master pointer: A single pointer to a relocatable block, maintained by the Memory Manager and updated whenever the block is moved, purged, or reallocated. All handles to a relocatable block refer to it by double indirection through the master pointer.

Memory Manager: The part of the Operating System that dynamically allocates and releases memory space in the heap.

memory block: An area of contiguous memory within a heap zone.

menu: A list of menu items that appears when the user points to a menu title in the menu bar and presses the mouse button. Dragging through the menu and releasing over an enabled menu item chooses that item.

menu bar: The horizontal strip at the top of the Macintosh screen that contains the menu titles of all menus in the menu list.

menu definition procedure: A procedure called by the Menu Manager when it needs to perform type-dependent operations on a particular type of menu, such as drawing the menu.

menu entry: An entry in a menu color table that defines color values for the menu's title, bar, and items.

menu ID: A number in the menu record that identifies the menu.

menu item: A choice in a menu, usually a command to the current application.

menu item number: The index, starting from 1, of a menu item in a menu.

menu list: A list containing menu handles for all menus in the menu bar, along with information on the position of each menu.

Menu Manager: The part of the Toolbox that deals with setting up menus and letting the user choose from them.

menu record: The internal representation of a menu, where the Menu Manager stores all the information it needs for its operations on that menu.

menu title: A word or phrase in the menu bar that designates one menu.

message phase: The phase in which the target sends one byte of message information back to the initiator.

missing symbol: A character to be drawn in case of a request to draw a character that's missing from a particular font.

modal dialog: A dialog that requires the user to respond before doing any other work on the desktop.

modeless dialog: A dialog that allows the user to work elsewhere on the desktop before responding.

modifier: A program that interprets and processes Sound Manager commands as they pass through a channel.

modifier key: A key (Shift, Caps Lock, Option, or Command) that generates no keyboard events of its own, but changes the meaning of other keys or mouse actions.

mounted volume: A volume that previously was inserted into a disk drive and had descriptive information read from it by the File Manager.

mouse-down event: An event generated when the user presses the mouse button.

mouse scaling: A feature that causes the cursor to move twice as far during a mouse stroke than it would have otherwise, provided the change in the cursor's position exceeds the mouse-scaling threshold within one tick after the mouse is moved.

mouse-scaling threshold: A number of pixels which, if exceeded by the sum of the horizontal and vertical changes in the cursor position during one tick of mouse movement, causes mouse scaling to occur (if that feature is turned on); normally six pixels.

mouse-up event: An event generated when the user releases the mouse button.

Name-Binding Protocol (NBP): An AppleTalk protocol that's a DDP client, used to convert entity names to their internet socket addresses.

name lookup: An NBP operation that allows clients to obtain the internet addresses of entities from their names.

names directory: The union of all name tables in an internet.

names information socket: The socket in a node used to implement NBP (always socket number 2).

names table: A list of each entity's name and internet address in a node.

NBP tuple: An entity name and an internet address.

NBP: See **Name-Binding Protocol**.

network event: An event generated by the AppleTalk Manager.

network number: An identifier for an AppleTalk network.

network-visible entity: A named socket client on an internet.

newline character: Any character, but usually Return (ASCII code $0D), that indicates the end of a sequence of bytes.

newline mode: A mode of reading data where the end of the data is indicated by a newline character (and not by a specific byte count).

node ID: A number, dynamically assigned, that identifies a node.

node: A device that's attached to and communicates via an AppleTalk network.

nonbreaking space: The character with ASCII code $CA; drawn as a space the same width as a digit, but interpreted as a nonblank character for the purposes of word wraparound and selection.

nonrelocatable block: A block whose location in the heap is fixed and can't be moved during heap compaction.

note synthesizer: Functionally equivalent to the old square-wave synthesizer, the note sysntesizer lets you generate simple melodies and informative sounds such as error warnings.

null event: An event reported when there are no other events to report.

null-style record: A TextEdit data structure used to store the style information for a null selection.

off-line volume: A mounted volume with all but the volume control block released.

offset/width table: An array of words that specifies the character offsets and character widths of all characters in a font.

offspring: For a given directory, the set of files and directories for which it is the parent.

on-line volume: A mounted volume with its volume buffer and descriptive information contained in memory.

open driver: A driver that can be read from and written to.

open file: A file with an access path. Open files can be read from and written to.

open permission: Information about a file that indicates whether the file can be read from, written to, or both.

open routine: The part of a device driver's code that implements Device Manager Open calls.

Operating System: The lowest-level software in the Macintosh. It does basic tasks such as I/O, memory management, and interrupt handling.

Operating System Event Manager: The part of the Operating System that reports hardware-related events such as mouse-button presses and keystrokes.

Operating System Utilities: Operating System routines that perform miscellaneous tasks such as getting the date and time, finding out the user's preferred speaker volume and other preferences, and doing simple string comparison.

output driver: A device driver that receives data via a serial port and transfers it to an application.

overrun error: See **hardware overrun error** and **software overrun error.**

Package Manager: The part of the Toolbox that lets you access Macintosh RAM-based packages.

package: A set of routines and data types that's stored as a resource and brought into memory only when needed.

page rectangle: The rectangle marking the boundaries of a printed page image. The boundary rectangle, portRect, and clipRgn of the printing grafPort are set to this rectangle.

palette: A collection of small symbols, usually enclosed in rectangles, that represent operations that can be selected by the user. Also, a collection of colors provided and used by your application according to your needs.

Palette Manager: The part of the Toolbox that establishes and monitors the color environment of the Macintosh II. It gives preference to the color needs of the front window, making the assumption that the front window is of greatest interest to the user.

pane: An independently scrollable area of a window, for showing a different part of the same document.

panel: An area of a window that shows a different interpretation of the same part of a document.

paper rectangle: The rectangle marking the boundaries of the physical sheet of paper on which a page is printed.

parameter block: A data structure used to transfer information between applications and certain Operating System routines.

parameter RAM: In the clock chip, 20 bytes where settings such as those made with the Control Panel desk accessory are preserved.

parent: For a given file or directory, the directory immediately above it in the tree.

parent ID: The directory ID of the directory containing a file or directory.

parity bit: A data communications bit used to verify that data bits received by a device match the data bits transmitted by another device.

parity error: The condition resulting when the parity bit received by a device isn't what was expected.

part code: An integer between 1 and 253 that stands for a particular part of a control (possibly the entire control).

partial pathname: A pathname beginning from any directory other than the root directory.

path reference number: A number that uniquely identifies an individual access path; assigned when the access path is created.

pathname: A series of concatenated directory and file names that identifies a given file or directory. See also **partial pathname** and **full pathname.**

pattern: An 8-by-8 bit image, used to define a repeating design (such as stripes) or tone (such as gray).

pattern transfer mode: One of eight transfer modes for drawing lines or shapes with a pattern.

period: The time elapsed during one complete cycle of a wave.

phase: Some fraction of a wave cycle (measured from a fixed point on the wave).

physical end-of-file: The position of one byte past the last allocation block of a file; equal to 1 more than the maximum number of bytes the file can contain.

physical size: The actual number of bytes a memory block occupies within its heap zone.

picture: A saved sequence of QuickDraw drawing commands (and, optionally, picture comments) that you can play back later with a single procedure call; also, the image resulting from these commands.

picture comments: Data stored in the definition of a picture that doesn't affect the picture's appearance but may be used to provide additional information about the picture when it's played back.

picture frame: A rectangle, defined as part of a picture, that surrounds the picture and gives a frame of reference for scaling when the picture is played back.

PIO (programmed input/output): An interfacing technique where the processor directly accesses registers assigned to I/O devices by executing processor instructions. Memory mapped I/O port registers are addressed as memory locations.

pixel: A dot on a display screen. Pixel is short for picture element.

pixel map: Color QuickDraw's extended data structure, containing the dimensions and content of a pixel image, plus information on the image's storage format, depth, resolution, and color usage.

pixel pattern: The pattern structure used by Color QuickDraw, one of three types: old-style pattern, full color pixel pattern, or RGB pattern.

pixel value: The bits in a pixel, taken together, form a number known as the pixel value. Color QuickDraw represents each pixel on the screen using one, two, four, or eight bits in memory.

plane: The front-to-back position of a window on the desktop.

point: The intersection of a horizontal grid line and a vertical grid line on the coordinate plane, defined by a horizontal and a vertical coordinate; also, a typographical term meaning approximately 1/72 inch.

polygon: A sequence of connected lines, defined by QuickDraw line-drawing commands.

pop-up menu: A menu not located in the menu bar, which appears when the user presses the mouse button in a particular place.

port: See **grafPort**.

portBits: The bit map of a grafPort.

portRect: A rectangle, defined as part of a grafPort, that encloses a subset of the bit map for use by the grafPort.

post: To place an event in the event queue for later processing.

prime routine: The part of a device driver's code that implements Device Manager Read and Write calls.

print record: A record containing all the information needed by the Printing Manager to perform a particular printing job.

Printer Driver: The device driver for the currently installed printer.

printer resource file: A file containing all the resources needed to run the Printing Manager with a particular printer.

Printing Manager: The routines and data types that enable applications to communicate with the Printer Driver to print on any variety of printer via the same interface.

printing grafPort: A special grafPort customized for printing instead of drawing on the screen.

processor priority: Bits 8-10 of the MC68000's status register, indicating which interrupts will be processed and which will be ignored.

proportional font: A font whose characters all have character widths that are proportional to their image width.

protocol: A well-defined set of communications rules.

protocol handler table: A list of the protocol handlers for a node.

protocol handler: A software process in a node that recognizes different kinds of frames by their ALAP type and services them.

purge: To remove a relocatable block from the heap, leaving its master pointer allocated but set to NIL.

purge bit: A bit in the master pointer to a relocatable block that indicates whether the block is currently purgeable.

purge warning procedure: A procedure associated with a particular heap zone that's called whenever a block is purged from that zone.

purgeable block: A relocatable block that can be purged from the heap.

queue: A list of identically structured entries linked together by pointers.

QuickDraw: The part of the Toolbox that performs all graphic operations on the Macintosh screen.

radio button: A standard Macintosh control that displays a setting, either on or off, and is part of a group in which only one button can be on at a time.

RAM: The Macintosh's random access memory, which contains exception vectors, buffers used by hardware devices, the system and application heaps, the stack, and other information used by applications.

range locking: Locking a range of bytes in a file so that other users can't read from or write to that range, but allowing the rest of the file to be accessed.

raw key codes: Hardware-produced key codes on the Macintosh II and Apple Extended Keyboard, which are translated into **virtual key codes** by the 'KMAP' resource.

read/write permission: Information associated with an access path that indicates whether the file can be read from, written to, both read from and written to, or whatever the file's open permission allows.

reallocate: To allocate new space in the heap for a purged block, updating its master pointer to point to its new location.

reference number: A number greater than 0, returned by the Resource Manager when a resource file is opened, by which you can refer to that file. In Resource Manager routines that expect a reference number, 0 represents the system resource file.

reference value: In a window record or control record, a 32-bit field that an application program may store into and access for any purpose.

region: An arbitrary area or set of areas on the QuickDraw coordinate plane. The outline of a region should be one or more closed loops.

register-based routine: A Toolbox or Operating System routine that receives its parameters and returns its results, if any, in registers.

relative handle: A handle to a relocatable block expressed as the offset of its master pointer within the heap zone, rather than as the absolute memory address of the master pointer.

release: To free an allocated area of memory, making it available for reuse.

release timer: A timer for determining when an exactly-once response buffer can be released.

relocatable block: A block that can be moved within the heap during compaction.

reselection phase: An optional phase in which the SCSI initiator allows a target device to reconnect itself to the initiator.

resource: Data or code stored in a resource file and managed by the Resource Manager.

resource attribute: One of several characteristics, specified by bits in a resource reference, that determine how the resource should be dealt with.

resource data: In a resource file, the data that comprises a resource.

resource file: The resource fork of a file.

resource fork: The part of a file that contains data used by an application (such as menus, fonts, and icons). The resource fork of an application file also contains the application code itself.

resource header: At the beginning of a resource file, data that gives the offsets to and lengths of the resource data and resource map.

resource ID: A number that, together with the resource type, identifies a resource in a resource file. Every resource has an ID number.

Resource Manager: The part of the Toolbox that reads and writes resources.

resource map: In a resource file, data that is read into memory when the file is opened and that, given a resource specification, leads to the corresponding resource data.

resource name: A string that, together with the resource type, identifies a resource in a resource file. A resource may or may not have a name.

resource reference: In a resource map, an entry that identifies a resource and contains either an offset to its resource data in the resource file or a handle to the data if it's already been read into memory.

resource specification: A resource type and either a resource ID or a resource name.

resource type: The type of a resource in a resource file, designated by a sequence of four characters (such as 'MENU' for a menu).

response BDS: A data structure used to pass response information to the ATP module.

result code: An integer indicating whether a routine completed its task successfully or was prevented by some error condition (or other special condition, such as reaching the end of a file).

resume procedure: A procedure within an application that allows the application to recover from system errors.

retry count: The maximum number of retransmissions for an NBP or ATP packet.

retry interval: The time between retransmissions of a packet by NBP or ATP.

RGB space: How Color QuickDraw represents colors. Each color has a red, a green, and a blue component, hence the name RGB.

RGB value: Color QuickDraw represents color using the RGBColor record type, which specifies the red, green, and blue components of the color. The RGBColor record is used by an application specifies the colors it needs. The translation from the RGB value to the pixel value is performed at the time the color is drawn.

ROM: The Macintosh's permanent read-only memory, which contains the routines for the Toolbox and Operating System, and the various system traps.

root directory: The directory at the base of a file catalog.

routine selector: A value pushed on the stack to select a particular routine from a group of routines called by a single trap macro.

Routing Table Maintenance Protocol (RTMP): An AppleTalk protocol that's used internally by AppleTalk to maintain tables for routing datagrams through an internet.

routing table: A table in a bridge that contains routing information.

row width: The number of bytes in each row of a bit image.

RTMP: See **Routing Table Maintenance Protocol**.

RTMP socket: The socket in a node used to implement RTMP.

RTMP stub: The RTMP code in a nonbridge node.

sampled sound synthesizer: Functionally equivalent to the old free-form synthesizer, the sample sound synthesizer lets you play pre-recorded sounds or sounds generated by your application.

scaling factor: A value, given as a fraction, that specifies the amount a character should be stretched or shrunk before it's drawn.

SCC: See **Serial Communications Controller.**

Scrap Manager: The part of the Toolbox that enables cutting and pasting between applications, desk accessories, or an application and a desk accessory.

scrap: A place where cut or copied data is stored.

scrap file: The file containing the desk scrap (usually named "Clipboard File").

screen buffer: A block of memory from which the video display reads the information to be displayed.

script: A writing system, such as Cyrillic or Arabic. This book is printed in Roman script.

script interface system: Special software that supports the display and manipulation of a particular script.

SCSI: See **Small Computer Standard Interface.**

SCSI Manager: The part of the Operating System that controls the exchange of information between a Macintosh and peripheral devices connected through the Small Computer Standard Interface (SCSI).

sector: Disk space composed of 512 consecutive bytes of standard information and 12 bytes of file tags.

segment: One of several parts into which the code of an application may be divided. Not all segments need to be in memory at the same time.

Segment Loader: The part of the Operating System that loads the code of an application into memory, either as a single unit or divided into dynamically loaded segments.

selection phase: The phase in which the initiator selects the target device that will be asked to perform a certain operation.

selection range: The series of characters (inversely highlighted), or the character position (marked with a blinking caret), at which the next editing operation will occur.

sequence number: A number from 0 to 7, assigned to an ATP response datagram to indicate its ordering within the response.

Serial Communications Controller (SCC): The chip that handles serial I/O through the modem and printer ports.

Serial Driver: A device driver that controls communication, via serial ports, between applications and serial peripheral devices.

serial data: Data communicated over a single-path communication line, one bit at a time.

server: A node that manages access to a peripheral device.

service request enable: A bit set by a device connected to the Apple DeskTop Bus to tell the system that it needs servicing.

session: A session consists of a series of transactions between two sockets, characterized by the orderly sequencing of requests and responses.

signature: A four-character sequence that uniquely identifies an application to the Finder.

slop: See **justification gap.**

slot exec parameter block: A data structure that provides communication with the Slot Manager routines sMacBoot and sPrimaryInit.

Slot Manager: A set of Macintosh II ROM routines that let applications access declaration ROMs on slot cards.

slot parameter block: A data structure that provides communication with all Slot Manager routines except sMacBoot and sPrimaryInit.

slot resource: A software structure in the declaration ROM of a slot card.

slot space: The upper one sixteenth of the total address space. These addresses are in the form $Fsxx xxxx where *F*, *s*, and *x* are hex digits of 4 bits each. This address space is geographically divided among the NuBus slots according to slot ID number.

Small Computer Standard Interface (SCSI): A specification of mechanical, electrical, and functional standards for connecting small computers with intelligent peripherals such as hard disks, printers, and optical disks.

socket: A logical entity within the node of a network.

socket client: A software process in a node that owns a socket.

socket listener: The portion of a socket client that receives and services datagrams addressed to that socket.

socket number: An identifier for a socket.

socket table: A listing of all the socket listeners for each active socket in a node.

software overrun error: The condition that occurs when an input driver's buffer becomes full.

solid shape: A shape that's filled in with any pattern.

Sound Driver: The device driver that controls sound generation in an application.

sound buffer: A block of memory from which the sound generator reads the information to create an audio waveform.

sound procedure: A procedure associated with an alert that will emit one of up to four sounds from the Macintosh's speaker. Its integer parameter ranges from 0 to 3 and specifies which sound.

source transfer mode: One of eight transfer modes for drawing text or transferring any bit image between two bit maps.

space state: The state of a transmission line indicating a binary 0.

spool printing: Writing a representation of a document's printed image to disk or to memory, and then printing it (as opposed to immediate draft printing).

square-wave synthesizer: The part of the Sound Driver used to produce less harmonic sounds than the four-tone synthesizer, such as beeps.

sResource: See **slot resource.**

sResource directory: The structure in a declaration ROM that provides access to its sResource lists.

sResource list: A list of offsets to sResources.

stack: The area of memory in which space is allocated and released in LIFO (last-in-first-out) order.

stack frame: The area of the stack used by a routine for its parameters, return address, local variables, and temporary storage.

stack-based routine: A Toolbox or Operating System routine that receives its parameters and returns its results, if any, on the stack.

stage: Every alert has four stages, corresponding to consecutive occurrences of the alert, and a different response may be specified for each stage.

Standard File Package: A Macintosh package for presenting the standard user interface when a file is to be saved or opened.

start bit: A serial data communications bit that signals that the next bits transmitted are data bits.

startup screen: When the system is started up, one of the display devices is selected as the startup screen, the screen on which the "happy Macintosh" icon appears.

status information: Information transmitted to an application by a device driver. It may indicate the current mode of operation, the readiness of the device, the occurrence of errors, and so on.

status phase: The phase in which the SCSI target sends one byte of status information back to the initiator.

status routine: The part of a device driver's code that implements Device Manager Status calls.

stop bit: A serial data communications bit that signals the end of data bits.

structure region: An entire window; its complete "structure".

style: See **character style.**

style dialog: A dialog that sets options affecting the page dimensions; associated with the Page Setup command.

style record: A TextEdit data structure that specifies the styles for the edit record's text.

style scrap: A new TextEdit scrap type, 'styl', is used for storing style information in the desk scrap along with the old 'TEXT' scrap.

style table: A TextEdit data structure that contains one entry for each distinct style used in an edit record's text.

subdirectory: Any directory other than the root directory.

submenu delay: The length of time before a submenu appears as a user drags through a hierarchical main menu; it prevents rapid flashing of submenus.

super slot space: The large portion of memory in the range $9000 0000 through $EFFF FFFF. NuBus addresses of the form $sxxx xxxx (that is, $s000 0000 through $sFFF FFFF) reference the super slot space that belongs to the card in slot s, where *s* is an ID digit in the range $9 through $E.

synchronous execution: After calling a routine synchronously, an application cannot continue execution until the routine is completed.

synthesizer: A program which, like a device driver, interprets Sound Manager commands and produces sound. See **free-form, four-tone, or square-wave synthesizer.**

synthesizer buffer: A description of the sound to be generated by a synthesizer.

System Error Handler: The part of the Operating System that assumes control when a fatal system error occurs.

system error alert table: A resource that determines the appearance and function of system error alerts.

system error alert: An alert box displayed by the System Error Handler.

system error ID: An ID number that appears in a system error alert to identify the error.

system event mask: A global event mask that controls which types of events get posted into the event queue.

system font: The font that the system uses (in menus, for example). Its name is Chicago.

system font size: The size of text drawn by the system in the system font; 12 points.

system heap: The portion of the heap reserved for use by the Operating System.

system heap zone: The heap zone provided by the Memory Manager for use by the Operating System; equivalent to the system heap.

system resource: A resource in the system resource file.

system resource file: A resource file containing standard resources, accessed if a requested resource wasn't found in any of the other resource files that were searched.

system startup information: Certain configurable system parameters that are stored in the first two logical blocks of a volume and read in at system startup.

system window: A window in which a desk accessory is displayed.

target device: An SCSI device (typically an intelligent peripheral) that receives a request from an initiator device to perform a certain operation.

text styles: TextEdit records used for communicating style information between the application program and the TextEdit routines.

TextEdit: The part of the Toolbox that supports the basic text entry and editing capabilities of a standard Macintosh application.

TextEdit scrap: The place where certain TextEdit routines store the characters most recently cut or copied from text.

theGDevice: When drawing is being performed on a device, a handle to that device is stored as a global variable **theGDevice.**

thousands separator: The character that separates every three digits to the left of the decimal point.

thumb: The Control Manager's term for the scroll box (the indicator of a scroll bar).

tick: A sixtieth of a second.

Time Manager: The part of the Operating System that lets you schedule a routine to be executed after a given number of milliseconds have elapsed.

Toolbox: Same as **User Interface Toolbox**

Toolbox Event Manager: The part of the Toolbox that allows your application program to monitor the user's actions with the mouse, keyboard, and keypad.

Toolbox Utilities: The part of the Toolbox that performs generally useful operations such as fixed-point arithmetic, string manipulation, and logical operations on bits.

track: Disk space composed of 8 to 12 consecutive sectors. A track corresponds to one ring of constant radius around the disk.

transaction: A request-response communication between two ATP clients. See **transaction request** and **transaction response.**

transaction ID: An identifier assigned to a transaction.

transaction request: The initial part of a transaction in which one socket client asks another to perform an operation and return a response.

transaction response: The concluding part of a transaction in which one socket client returns requested information or simply confirms that a requested operation was performed.

Transcendental Functions Package: A Macintosh package that contains trigonometric, logarithmic, exponential, and financial functions, as well as a random number generator.

transfer mode: A specification of which Boolean operation QuickDraw should perform when drawing or when transferring a bit image from one bit map to another.

trap dispatch table: A table in RAM containing the addresses of all Toolbox and Operating System routines in encoded form.

trap dispatcher: The part of the Operating System that examines a trap word to determine what operation it stands for, looks up the address of the corresponding routine in the trap dispatch table, and jumps to the routine.

trap macro: A macro that assembles into a trap word, used for calling a Toolbox or Operating System routine from assembly language.

trap number: The identifying number of a Toolbox or Operating System routine; an index into the trap dispatch table.

trap word: An unimplemented instruction representing a call to a Toolbox or Operating System routine.

type coercion: Many compilers feature type coercion (also known as typecasting), which allows a data structure of one type to be converted to another type. In many cases, this conversion is simply a relaxation of type-checking in the compiler, allowing the substitution of a differently-typed but equivalent data structure.

unimplemented instruction: An instruction word that doesn't correspond to any valid machine-language instruction but instead causes a trap.

unit number: The number of each device driver's entry in the unit table.

unit table: A 128-byte nonrelocatable block containing a handle to the device control entry for each device driver.

unlock: To allow a relocatable block to be moved during heap compaction.

unmounted volume: A volume that hasn't been inserted into a disk drive and had descriptive information read from it, or a volume that previously was mounted and has since had the memory used by it released.

unpurgeable block: A relocatable block that can't be purged from the heap.

update event: An event generated by the Window Manager when a window's contents need to be redrawn.

update region: A window region consisting of all areas of the content region that have to be redrawn.

User Interface Toolbox: The software in the Macintosh ROM that helps you implement the standard Macintosh user interface in your application.

user bytes: Four bytes in an ATP header provided for use by ATP's clients.

valence: The number of offspring for a given directory.

validity status: A number stored in parameter RAM designating whether the last attempt to write there was successful. (The number is $A8 if so.)

variation code: The part of a window or control definition ID that distinguishes closely related types of windows or controls.

VBL task: A task performed during the vertical retrace interrupt.

vector table: A table of interrupt vectors in low memory.

Versatile Interface Adapter (VIA): The chip that handles most of the Macintosh's I/O and interrupts.

version data: In an application's resource file, a resource that has the application's signature as its resource type; typically a string that gives the name, version number, and date of the application.

version number: A number from 0 to 255 used to distinguish between files with the same name.

Vertical Retrace Manager: The part of the Operating System that schedules and executes tasks during the vertical retrace interrupt.

vertical blanking interrupt: See **vertical retrace interrupt.**

vertical blanking interval: The time between the display of the last pixel on the bottom line of the screen and the first one on the top line.

vertical retrace interrupt: An interrupt generated 60 times a second by the Macintosh video circuitry while the beam of the display tube returns from the bottom of the screen to the top; also known as vertical blanking interrupt.

vertical retrace queue: A list of the tasks to be executed during the vertical retrace interrupt.

VIA: See **Versatile Interface Adapter.**

view rectangle: In TextEdit, the rectangle in which the text is visible.

virtual key codes: The key codes that appear in keyboard events. (See also **raw key codes.**)

visible control: A control that's drawn in its window (but may be completely overlapped by another window or other object on the screen).

visible window: A window that's drawn in its plane on the desktop (but may be completely overlapped by another window or object on the screen).

visRgn: The region of a grafPort, manipulated by the Window Manager, that's actually visible on the screen.

volume: A piece of storage medium formatted to contain files; usually a disk or part of a disk. A 3.5-inch Macintosh disk is one volume.

volume allocation block map: A list of 12-bit entries, one for each allocation block, that indicate whether the block is currently allocated to a file, whether it's free for use, or which block is next in the file. Block maps exist both on flat directory volumes and in memory.

volume attributes: Information contained on volumes and in memory indicating whether the volume is locked, whether it's busy (in memory only), and whether the volume control block matches the volume information (in memory only).

volume bit map: A data structure containing a sequence of bits, one bit for each allocation block, that indicate whether the block is allocated or free for use. Volume bit maps exist both on hierarchical directory volumes and in memory.

volume buffer: Memory used initially to load the master directory block, and used thereafter for reading from files that are opened without an access path buffer.

volume control block: A nonrelocatable block that contains volume-specific information, including the volume information from the master directory block.

volume index: A number identifying a mounted volume listed in the volume-control-block queue. The first volume in the queue has an index of 1, and so on.

volume information block: Part of the data structure of a hierarchical directory volume; it contains the volume information.

volume information: Volume-specific information contained on a volume, including the volume name and the number of files on the volume.

volume name: A sequence of up to 27 printing characters that identifies a volume; followed by a colon (:) in File Manager routine calls, to distinguish it from a file name.

volume reference number: A unique number assigned to a volume as it's mounted, used to refer to the volume.

volume-control-block queue: A list of the volume control blocks for all mounted volumes.

wave table synthesizer: Similar to the old four-tone synthesizer, the wave table synthesizer produces complex sounds and multi-part music.

waveform description: A sequence of bytes describing a waveform.

waveform: The physical shape of a wave.

wavelength: The horizontal extent of one complete cycle of a wave.

window: An object on the desktop that presents information, such as a document or a message.

window class: In a window record, an indication of whether a window is a system window, a dialog or alert window, or a window created directly by the application.

window definition function: A function called by the Window Manager when it needs to perform certain type-dependent operations on a particular type of window, such as drawing the window frame.

window definition ID: A number passed to window-creation routines to indicate the type of window. It consists of the window definition function's resource ID and a variation code.

window frame: The structure region of a window minus its content region.

window list: A list of all windows ordered by their front-to-back positions on the desktop.

Window Manager: The part of the Toolbox that provides routines for creating and manipulating windows.

Window Manager port: A grafPort that has the entire screen as its portRect and is used by the Window Manager to draw window frames.

window record: The internal representation of a window, where the Window Manager stores all the information it needs for its operations on that window.

window template: A resource from which the Window Manager can create a window.

word wraparound: Keeping words from being split between lines when text is drawn.

word-selection break table: A **break table** that is used to find word boundaries for word selection, spelling checking, and so on.

word-wrapping break table: A **break table** that is used to find word boundaries for screen wrapping of text.

working directory: An alternative way of referring to a directory. When opened as a working directory, a directory is given a working directory reference number that's used to refer to it in File Manager calls.

working directory control block: A data structure that contains the directory ID of a working directory, as well as the volume reference number of the volume on which the directory is located.

working directory reference number: A temporary reference number used to identify a working directory. It can be used in place of the volume reference number in all File Manager calls; the File Manager uses it to get the directory ID and volume reference number from the working directory control block.

workstation: A node through which a user can access a server or other nodes.

write data structure: A data structure used to pass information to the ALAP or DDP modules.

X-Ref: An abbreviation for *cross-reference.*

zone: An arbitrary subset of AppleTalk networks in an internet. See also **heap zone.**

zone header: The internal "housekeeping" information maintained by the Memory Manager at the beginning of each heap zone.

zone pointer: A pointer to a zone record.

zone record: A data structure representing a heap zone.

zone trailer: A minimum-size free block marking the end of a heap zone.

Inside Macintosh X-Ref

Welcome to the world of programming for the Macintosh.® No other personal computer has been as enthusiastically received by the programming community, and the large—and growing—body of Macintosh software attests to this. The Macintosh programming books provide the guidelines and technical information you'll need to develop Macintosh programs, but there are many other resources that can help speed and simplify your development efforts.

The Apple Programmer's and Developer's Association

Whether you are a programmer, enthusiast, or make your living developing Apple-compatible products, you need fast access to the latest technical information and development tools. Now there's a source for you: The Apple Programmer's and Developer's Association (APDA).

An independent organization sponsored by Apple Computer, APDA is the one-stop source for the Apple programmer. Members get timely and easy access to technical information and tools that will speed your development efforts.

Whether you're looking for programming tools, technical notes, or manuals, you have a single, convenient source. All these materials—including selected products and materials from Apple and other vendors—are available to APDA members with one simple phone call. Here are some of the products you'll be able to order as an APDA member:

- Tools, system software, technical notes, and manuals for the Apple® II and Macintosh computers.
- Language products from companies such as Think Technologies, Borland, and Consulair.
- Technical books, including the entire Apple Technical Library from Addison-Wesley.

APDA was created to serve the needs of the entire Apple programming community. For membership information, please contact:

APDA
290 SW 43rd Street
Renton, WA 98055
(206) 251-6548
AppleLink: APDA
MCI: 312-7449
CompuServe 73527,27

Programs for the Commercial Developer

If your primary business is developing software products for commercial markets, we strongly suggest that you investigate the Apple Certified Developer Program, an aggressive program designed to help independent software developers get products to market quickly and successfully. For information, write to:

Developer Programs
Apple Computer, Inc.
M/S 27-W
20525 Mariani Avenue
Cupertino, CA 95014

Developer Tools

You won't have to look far to find a development language that suits your specific requirements. A large family of Macintosh languages will serve your development needs, whether your expertise is in Pascal, Assembler, C, FORTH, FORTRAN, COBOL, BASIC, Logo, Lisp, Modula, or one of many others. And the information contained in *Inside Macintosh* can be applied to any of these languages.

Apple offers a number of special products essential to Macintosh programmers. Available through APDA, they include:

- Apple's Macintosh Programmer's Workshop (MPW) and MacApp™ development system products.
- Macintosh utilities, example programs, and source code.
- Preliminary drafts of technical documentation.
- Latest versions of the Macintosh system software.

Apple is constantly updating the tools and utilities you need. Become an APDA member and you'll be kept informed of their availability.

Technical Notes

Macintosh Technical Notes are published on a bi-monthly basis. Available through APDA, user groups, developer consortiums, and electronic information services, they provide timely and helpful information, programming hints, and example code to help make your programming efforts more creative and productive.

Want More Information?

Apple has put together an information packet that includes:

- Information about independent and Apple-sponsored programs for Apple developers.
- Support resources for developers, including names and addresses of Macintosh user groups, developer consortiums, and electronic services that cater to your special needs.
- A current list of Apple and third-party programming languages.
- Other materials of interest to the Apple developer.

This package is yours for the asking. Simply send your request to:

Apple Computer, Inc.
M/S 37-S
20525 Mariani Avenue
Cupertino, CA 95014

Apple® Inside Macintosh X-Ref

> > $9.95 FPT
USA

The Official Publication from Apple Computer, Inc.

Inside Macintosh X-Ref is your key to eight programming books for the Apple Macintosh® family of computers: *Inside Macintosh,* volumes I through V; *Programmer's Introduction to the Macintosh Family; Technical Introduction to the Macintosh Family;* and *Designing Cards and Drivers for Macintosh II and Macintosh SE.* It provides a single general index to all eight volumes, together with three global appendixes, a comprehensive glossary, and a new index of constants and field names.

Written by the people at Apple Computer, the five volumes of *Inside Macintosh* provide the essential information you'll need to write software for the entire Macintosh family. Volume I contains important introductory material and describes the QuickDraw graphics package and important Managers such as the Resource, Font, and Menu Managers. Volume II complements Volume I in describing the Managers that perform such basic routines as file and device I/O, memory management, and interrupt handling. Volume III discusses your program's interface with the Macintosh Finder,™ describes the Macintosh 128K and 512K computers, and provides summaries of all the Managers and other software described in volumes I through III. Volume IV discusses the changes introduced by the Macintosh 512K Enhanced and Macintosh Plus computers, including the Hierarchical File System and the SCSI port. Volume V discusses the changes introduced by the Macintosh SE and Macintosh II computers, including color, NuBus™ slots, and the Apple Desktop Bus.™

Programmer's Introduction to the Macintosh Family provides an overview of software development for all Macintosh computers. It focuses on the differences between event-driven programming and more traditional programming techniques, while explaining topics such as the Macintosh user interface and programming in high-level languages. *Technical Introduction to the Macintosh Family* provides an introduction to the general design, system architecture, and ROM design of Macintosh computers. It introduces the ideas behind the Macintosh user interface and outlines A/UX,® Apple's implementation of the AT&T UNIX® operating system for the Macintosh II. *Designing Cards and Drivers for Macintosh II and Macintosh SE* provides programmers and hardware developers with all the information needed to design Macintosh expansion cards.

Inside Macintosh X-Ref is a valuable guide to Apple Computer's official programmer's references for creating software for the entire family of Macintosh computers.

About the cover: This design represents a new look for the original edition of *Inside Macintosh X-Ref,* and the other books in the Apple Technical Library. The contents have not been changed.

Printed in U.S.A.

50995

9 780201 192650

ISBN 0-201-19265-9

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
TLX 171-576

Addison-Wesley Publishing Company, Inc.