

Welcome to the Macintosh Development Environment

These first few pages are important to the first time developer as well as seasoned Mac developers. This is your guide to what material you have received, what is current, and how to make use of it.

For existing developers:

Use this guide as a checklist to make sure that you have all of the current documentation and software. Changes to the old documentation are noted by lines on the right side of the page.

This guide assumes that the user is operating under Monitor 12.2 or equivalent, and has the following named volumes dedicated to system use: LISA:, TLASM:, INTRFC:, OBJ:, MISC:, and MAC:. Workshop users must translate and recompile interfaces and examples on their own.

If you do not have all of the following documentation, or received damaged media, please call Carol Ballard at 408 / 973 - 4067 to obtain a replacement.

The new or recently modified documentation and software are marked with asterisks. The date listed for the software indicates the actual date of last change and does not necessarily coincide with the file date seen in a directory listing.

Packing List

You should have received the following items from Mac Technical Support:

A Mac box containing:

- 1 Mac
- 1 keyboard and cable
- 1 Mouse
- 1 power cord
- 1 programmer's switch (a piece of tan plastic labeled
RESET / INTERRUPT)
- 2 Mac printer cables
- 2 Mac 3 1/2" disk masters (put one aside to initialize blank
disks and to create additional work disks.)
- 5 blank 3 1/2" disks
disk labels
- 3 Lisa 5 1/4" disks

To install the programmer's switch, snap it onto the left side of the Mac (screen facing you) at the bottom corner, toward the rear. This will position the plastic fingers over the internal RESET and INTERRUPT microswitches. *** The programmer's switch may already be in place. ***

About the Macintosh Binders

The Macintosh documentation is contained in three volumes.

Volume 1 contains:

Read Me First (this note)	12/12/83 *
Inside Macintosh: A Road Map	8/8/83
Index to Technical Documentation	10/5/83
Macintosh User Interface Guidelines	10/11/82
The Resource Manager: A Programmer's Guide	10/3/83
QuickDraw: A Programmer's Guide	3/2/83
The Font Manager: A Programmer's Guide	4/22/83
The Event Manager: A Programmer's Guide	6/21/83
The Window Manager: A Programmer's Guide	8/25/83
Macintosh Control Manager Programmer's Guide	3/16/83

Volume 2 contains:

The Menu Manager: A Programmer's Guide	11/1/83
The Dialog Manager: A Programmer's Guide	11/16/83
TextEdit: A Programmer's Guide	9/28/83
CoreEdit: A Programmer's Guide	8/15/83
The Desk Manager: A Programmer's Guide	9/26/83
The Toolbox Utilities: A Programmer's Guide	5/16/83
Macintosh Operating System Reference Manual	2/28/83
The Segment Loader: A Programmer's Guide	6/24/83
The Scrap Manager: A Programmer's Guide	10/21/83
The Memory Manager: A Programmer's Guide	10/10/83
Putting Together A Macintosh Application	7/14/83
Asynchronous Serial Driver	8/23/83
The OS Event Manager	3/9/83
Macintosh Owner's Guide	10/12/83

Volume 3 contains:

Welcome to Macintosh Technical Support! (electronic mail)	no date
HOW TO DOWNLOAD MACINTOSH PROGRAMS TO THE MAC...	no date
SAD MACINTOSH ICON	10/26/83
Monitor filename syntax and file structure	no date
S(ysmgr - System Manager	no date
ROM 7.0 MacsBug Summary	no date
Pascal Program Debug Strategy	no date
Pascal Reference Manual for the Lisa (029-0391-A)	no date
The Pascal Development System Manual pages 1 - 22	2/16/82
Workshop User's Guide for the Lisa - The Assembler	no date
The Pascal Development System Manual pages 37 - 108	2/16/82
Software Localization Guidelines	11/10/83
SUMMARY OF FP68K DOCUMENTS	11/1/83
Pascal Interface to the Memory Manager	9/25/83
The MacPrint Interface	11/7/83
ToolBox Names	7/14/83

The first six documents should be read in the order listed. The remaining can be examined in any order. The order of the documents in the three binders may not be as listed above.

About the Lisa Monitor Development System

The Monitor development system you will create or update is divided into nine volumes. At present, these volumes are named as shown:

Volume Name	Contains
LISA:	all required Pascal and Operating System files
OBJ:	machine readable interface and linker code files
TLASM:	assembly source files
INTRFC:	human readable Pascal unit interfaces
WORK:	your work files
BACK:	a backup copy of your work files
RSRC:	***This volume has no predefined purpose.***
MAC:	files that can be transmitted to and used by the Mac
MISC:	Lisa specific utilities, and sample programs

The Mac development software environment is distributed on three disks: Monitor 12.2 Boot (LISA:), ROM7S: and MONUTIL:.

About the Disk labeled MONITOR 12.2 BOOT

The Monitor 12.2 Boot disk contains the complete Lisa development operating system.

To install the Monitor development software onto a Lisa ProFile for the first time:

Place your ProFile that will receive the Monitor on the built-in parallel port.

Boot the disk marked: MONITOR 12.2 BOOT

(To boot a disk in the upper Lisa drive, turn the Lisa on, and press Apple-1 after the single click and before the double click.)

Once the command line appears, type XDOIT and press RETURN.

(If the command line does not appear initially, and the screen is blank, start over after unplugging the ribbon cable connecting the ProFile to the Lisa. Then plug the ribbon cable back in after the command line appears. Do not turn the ProFile off.)

An exec file will now initialize the ProFile with the Monitor software. This will take about a half an hour.

After the Monitor is installed, you will still boot with the Monitor Boot disk.

If you already have the Monitor installed, you will want to reconstruct the LISA: volume to bring your system up to version 12.2, and to make the needed space for additional files required by the new Mac development system.

From the System Manager, set the working device to the drive containing the Monitor 12.2 Boot disk. (&1 for the upper drive.)

Transfer any files you may have placed for your use in the LISA: volume to a different volume.

Zero the LISA: volume.

Transfer all files from the Monitor 12.2 Boot disk to the LISA: volume.

From the System Manager, set the working device to the ProFile. (&3 for the built-in parallel port)

About the Disk Labeled ROM7S

The disk labeled ROM7S contains all of the special programs, code files, and text sources unique to Mac.

If you already have the Monitor installed:

The most recent revisions to the ToolBox are incompatible with Twiggy-based Macs. If you still have a Twiggy based machine, please contact us.

If you are updating an existing development system, you may want to clear the system volumes to provide adequate space for the files that will be transferred by the exec file. You are able to zero the INTRFC:, TLASM:, MAC:, OBJ:, and MISC: volumes and rebuild them from the ROM7S: and MONUTIL: disks. The update process is not destructive and will not remove or alter any files or volumes other than the files that are updated, but without adequate free space on each volume, the transfer may not be successful.

To install these files for the first time, or to update the existing files already installed on your ProFile:

Place the disk labeled ROM7S in Drive 2. From the command line, type X&2/#5:DOIT and press RETURN.

(If, for some reason, you are not already at the command line, you may get there by pressing the '-' key on the numeric keypad, typing RM and pressing RETURN.)

This exec file will install all unit interfaces and code segments needed to develop Mac software. It will take about 15 minutes.

For existing Monitor users:

You may also find that you do not have adequate space on the LISA: volume to contain all of the needed system files, SENDONE.OBJ, and SENDFILE.OBJ. To free up additional space on the LISA: volume, either zero and reconstruct it as shown above, or move the standalone

utilities, listed below under "About the MISC: Volume," which may be presently resident on the LISA: volume.

About the Disk Labeled MONUTIL

The disk labeled MONUTIL contains Lisa-based utilities that are described in the Monitor documentation, and Mac application programming examples.

If you are updating an existing development system, you may want to crunch or zero the system volumes as discussed above. This exec file is not destructive and will not remove or alter any files or volumes other than the files that are updated.

To install the contents of MONUTIL for the first time, or to update your existing ProFile:

Insert the disk in Drive 2. Then from the command line, type
X&2/#5:DOIT and press RETURN.

MONUTIL contains example programs and packages, such as files required for printing, floating point, and file selection.

For assembly language programmers:

The file MOCPASLIB.TEXT is a mockup of the Pascal Library. This can be linked to or incorporated into an assembly source to allow the assembly program to look like a Pascal program. In this application, MACPASLIB.OBJ is no longer required.

A empty Pascal program shell launches the assembly. It should look like:

```
Program Dummy;  
Uses {$U Obj:QuickDraw} Quickdraw;  
Var global : array [1..x] of integer;  
Procedure MyAssembly; External;  
Begin  
  MyAssembly  
End.
```

Overhead imposed by the Pascal system is reduced to a few dozen bytes. The QuickDraw declaration provides for the global variables that QuickDraw declares. In this program, 'x' is replaced by the required number of words to be reserved as global data, which is accessed by indexing negatively off A5.

Creating a New Mac Master Disk

The files on the MAC: volume can be transmitted to the Mac with the programs SENDONE and SENDFILE. Use SENDFILE to transmit a disk full of files.
*** Executing SENDFILE after compiling frequently causes the Lisa to reboot. If this occurs, just execute SENDFILE again. *** To build a new diskette:

From the Lisa Command line, type XSENDFILE and press RETURN.

Using the mouse, click on the box marked Volume. A blinking circle will appear. Type MAC: and press RETURN.

Next, click on the box marked Pattern. Type = and press RETURN.

Point to and click on the following files:

- DESKTOP.RSRC
- DISKUTIL.RSRC
- FINDER.RSRC
- STARTUP.RSRC
- SYSTEM
- SYSTEM.RSRC

These are the minimum files you can put on a new disk, and be able to use it as an application work disk.

On the Mac, boot one of the master disks provided to you. Double click on the icon labeled 'Disk Utility' to launch this program.

Click on the left button labeled 'eject disk'. Remove the master and put it in a safe place.

Place one of the unlabeled diskettes into the drive. The Mac will attempt to mount the disk. For an uninitialized disk, you should see the words 'Unmounted Volume' in the box labeled 'Internal'.

Select 'format disk'. The format and verification process will take about a minute. Notes should say 'Disk Successfully Formatted!'.

Select 'get file'. The notes box should say 'Waiting for Header...'

On the Lisa, select 'Send It'. Each file will be serially transmitted from the Lisa to the Mac.

On the Lisa, quit the SENDONE program. On the Mac, the Notes box should say 'Flushing Volume (Bye)'. Press the programmer's switch labeled 'Reset'. It is the one closest to you.

The newly created disk should boot. Open the disk icon by double clicking on it. The files DISKUTIL, FINDER, DESKTOP and SYSTEM will appear. Click on DISKUTIL to select it.

*** If your keyboard does not function, you may not have the current boot blocks on your disk. The interim program WRITEBOOT will correct this problem. Download this program to the Mac, then execute it by holding down the Feature (Command) key and double-clicking on the icon. After you reboot the diskette, the keyboard should work properly. ***

You should now be able to run DISKUTIL holding down the Feature (Command) key and double-clicking on the icon. Surprise! It is the same as 'Disk Utility'. Now you can repeat the process to put the

files that you are interested on this disk.

In actual program development, you would use the SENDONE program instead of the SENDFILE program inside an exec file to transfer the program. The steps are described in 'About the Example Programs', below.

About the files on the Mac: Volume

In addition to the sample program files, a number of system files and utilities are provided on the Mac: Volume. These may be transmitted and then used on the Mac: itself. They are:

Program Name	Date	New	Comments
ADEDIT.RSRC	24-Oct-83		an Alert and Dialog Box editor
BOOTCONFIG.RSRC	7-Oct-83		a utility to configure the disk's boot blocks
DESKTOP.RSRC	13-Dec-83	*	a data file for Finder
DISASSEMBLER	14-Jun-83		provides MACSBUG with nonsymbolic disassembly
DISKUTIL.RSRC	19-Oct-83		the disk formatter and file receiving program
EDIT.RSRC	27-Oct-83		a sample program (see below)
FILE.RSRC	27-Oct-83		a sample program (see below)
FINDER.RSRC	13-Dec-83	*	you see this after you boot the master disk
FONTEDITOR.RSRC	14-Nov-83	*	a font editor
FONTS.RSRC	5-Dec-83	*	a collection of predefined fonts
GROW.RSRC	27-Oct-83		a sample program (see below)
ICONEDIT.RSRC	28-Jun-83		an icon editor
IMAGEWRITE.RSRC	8-Dec-83	*	the Imagewriter printing routines (see below)
MACSBUG	31-Aug-83		a nonsymbolic debugger
MACTALK.RSRC	10-Nov-83		a file transmission program
MACTERM.RSRC	3-Dec-83	*	a terminal emulator application
PRINT.RSRC	6-Dec-83	*	prints application output (was called PRAPP.RSRC)
RESCON.RSRC	7-Sep-83		a utility to convert old programs (see below)
RMOVER.RSRC	21-Oct-83		a utility to examine and move resources
SETFILTYPE.RSRC	12-Dec-83	*	a utility to set file types (was called SETICON)
SOUNDLAB.RSRC	19-Aug-83		a demonstration of Mac's sound capability
STARTUP.RSRC	5-Dec-83	*	system resources used only at boot time
SYSTEM	9-Dec-83	*	enhancements to the ToolBox routines
SYSTEM.RSRC	1-Dec-83	*	the system resources
TMACTERM.RSRC	3-Dec-83	*	a special MacTerm version for 5 1/4" Macs
WRITEBOOT.RSRC	6-Dec-83	*	a utility to update the boot tracks (see above)
WMGRDEMO.RSRC	28-Jun-83		a window manager demo

The programs WMGRDEMO.RSRC, SOUNDLAB.RSRC and ICONEDIT.RSRC need to be revised to run under the current ROMs. To bring each up to date, use the RESCON.RSRC program on the Mac to convert the resources of each of these files.

The program MACTERM.RSRC will not run on a disk that contains the DISASSEMBLER. To use MacTerm on a disk with the debugger, rename DISASSEMBLER to a different file name and reboot the disk.

The resource IMAGEWRITE.RSRC should be renamed IMAGEWRITER when transmitted to the Mac to allow printing to function properly.

About the Files on the LISA: Volume

Most of the files on the LISA: volume are used by the system in response to commands like C(ompile or E(dit. A few are directly executed by the user and are specific to the Macintosh development environment.

Program Name	Date	New	Comments
RMAKER.OBJ	27-Oct-83		The resource compiler
SENDONE.OBJ	27-Aug-83		A utility to transmit a single file
SENDFILE.OBJ	29-Aug-83		A utility to transmit multiple files

RMAKER is discussed at length in "Putting Together a Mac Application." *** This document is currently under revision to coincide with the current development environment. ***

About the Files on the INTRFC: Volume

The files on this volume are Pascal interfaces to various ROM or RAM based pieces of the ToolBox.

Program Name	Date	New	Comments
COREEDIT.TEXT	1-Jan-80		See "CoreEdit"
ELEMS.TEXT	17-Nov-83		See "Summary of FP68K Documents"
GRAFUTIL.TEXT	16-Feb-83		See "ToolBox Utilities"
HEAPZONE.TEXT	7-Oct-83		See "Memory Manager"
MACCMGR.TEXT	7-Oct-83		See "Control Manager"
MACDMGR.TEXT	13-Sep-83		See "Dialogue Manager"
MACDSKGR.TEXT	7-Oct-83		See "Desk Manager"
MACEMGR.TEXT	7-Oct-83		See "Event Manager"
MACFMGR.TEXT	3-Jun-83		See "Font Manager"
MACMMGR.TEXT	7-Oct-83		See "Menu Manager"
MACPRINT.TEXT	25-Jul-83		See "The MacPrint Interface"
MACRMGR.TEXT	15-Sep-83		See "Resource Manager"
MACSMGR.TEXT	8-Sep-83		See "Scrap Manager"
MACUMGR.TEXT	7-Oct-83		See "Window Manager"
OSMISC.TEXT	4-May-83		See "OS Reference"
QUICKDRAW.TEXT	27-Oct-83		See "QuickDraw"
QUICKDRAW2.TEXT	27-Oct-83		part 2 of QUICKDRAW.TEXT
SANE.TEXT	1-Nov-83		See "Summary of FP68K Documents"
STDFILE.TEXT	19-Sep-83		*** see note below ***
TEXTEDIT.TEXT	13-Jul-83		See "TextEdit"

The Standard File package allows your application program to present the user with a choice of all applicable data files. It is presently undocumented. Those ambitious enough to use it without documentation are recommended to study the example program "STDTEST" and its resource file "STDTESTREF" on the MISC: volume, as well as the Pascal interface on the INTRFC: volume. An assembly programmer wishing to use the Standard File package will have to mock up a Pascal interface for that purpose. *** NOTE: the example program

references unnecessary units such as PONG and SCRAMBLE. Ignore these. ***

About the Files on the OBJ: Volume

Most of the files on the OBJ: volume are machine readable versions of the human readable INTRFC: Pascal interfaces. These files are described in text form above. The files below are linked with your application:

Program Name	Date	New	Comments
CE.OBJ	25-Oct-83		CoreEdit routines
MACMISC.OBJ	8-Jun-83		Miscellaneous Mac routines
MACPASLIB.OBJ	8-Dec-83	*	Pascal routines like MOD and BLOCKREAD
MEMTRAPS.OBJ	8-Nov-83		Memory Manager "glue"
TOOLTRAPS.OBJ	7-Sep-83		Pascal ToolBox trap table
STDFILE68K.OBJ	2-Oct-83		The standard file package "glue"
ELEMSASM.OBJ	1-Nov-83		The floating point package "glue"
SANEASM.OBJ	1-Nov-83		The 'SANE' numerics package "glue"
PRLINK.OBJ	6-Nov-83		The printing package "glue"

About the Files on the TLASM: Volume

These files are predeclared sources for assembly language programmers.

Program Name	Date	New	Comments
DISKEQU.TEXT	19-Oct-83		disk drive equates (was called SONYEQU.TEXT)
FSEQU.TEXT	9-Nov-83	*	file system equates
GRAFEQU.TEXT	20-Aug-83		QuickDraw equates
GRAFTYPES.TEXT	30-May-83		QuickDraw structures
HEAPDEFS.TEXT	7-Dec-83	*	the system heap
PREQU.TEXT	25-Jul-83	*	printer equates
QUICKMACS.TEXT	14-Oct-83	*	QuickDraw entry macros
RESEQU.TEXT	2-Sep-83		resource equates
SANEMACS.TEXT	1-Nov-83		SANE numerics macros
SYSEQU.TEXT	6-Dec-83	*	system equates
SYSERR.TEXT	24-Oct-83	*	system errors
SYSMACS.TEXT	29-Nov-83	*	system macros
TOOLEQU.TEXT	11-Sep-83		ToolBox equates
TOOLMACS.TEXT	6-Sep-83		ToolBox entry macros

About the Files on the MISC: Volume

These files are examples and utilities which are generally not required in the course of application development, but may be needed in some special cases.

The following files are Lisa utilities that manipulate source or object files:

Program Name	Date	New	Comments
BYTEDIFF.OBJ	28-Mar-83		hex file comparison

CHANGESEG.OBJ	28-Mar-83	change segment name
CHANGETRAP.OBJ	8-Mar-83	change trap handler (no Mac application)
CODESIZE.OBJ	8-Mar-83	size of code segments
DIFF.OBJ	14-Apr-83	text file differences
DUMPHEX.OBJ	8-Mar-83	hexadecimal dump
DUMPO.OBJ	10-Jun-81	limited procedure oriented dump
DUMPOBJ.OBJ	28-Mar-83	disassembler
FILEDIV.OBJ	25-Feb-82	divides a file
FILEJOIN.OBJ	25-Feb-82	joins two or more files
FINDID.OBJ	8-Mar-83	find Pascal substrings
FINDWORD.OBJ	8-Mar-83	find Hex values
GXREF.OBJ	16-Apr-83	global cross reference
OBJDIFF.OBJ	16-Apr-83	object file compare
PATCH.OBJ	8-Mar-83	hard offset patch utility
SEGMAP.OBJ	8-Mar-83	segment map
SETSIZES.OBJ	18-Mar-83	set sizes of heap and stack (no Mac application)

The following files are sample applications and programming examples:

Program Name	Date	New	Comments (also 'About the Example Pgms.,' below)
ADESKACC.TEXT	6-Jul-83		a sample desk accessory (assembly)
E.TEXT	27-Oct-83		EDIT's exec file
EDIT.TEXT	27-Oct-83		the Pascal source to EDIT
EDITRESDEF.TEXT	27-Oct-83		the resource definition for EDIT
F.TEXT	27-Oct-83		FILE's exec file
FILE.TEXT	27-Oct-83		the Pascal source to FILE
FILERESDEF.TEXT	27-Oct-83		the resource definition for FILE
G.TEXT	27-Oct-83		GROW's exec file
GROW.TEXT	27-Oct-83		the Pascal source to GROW
GROWRESDEF.TEXT	27-Oct-83		the resource definition for GROW

The LisaTalk program allows you to receive a file transmitted by the Mac resident MACTALK program.

Program Name	Date	New	Comments
LISATALK.TEXT	29-Oct-83		For now, use this utility to receive, only
STRIPPER.TEXT	9-Nov-83	*	A utility to remove the extra transmitted block

The following files are useful for experienced programmers who wish to know more about the standard file package. This package is not yet documented outside of these files. See additional comments above.

Program Name	Date	New	Comments
STDTEST.TEXT		*	called MFTEST.TEXT in the comment exec file
STDRESDEF.TEXT		*	called TEXTRES.TEXT in the comment exec file
SF.OBJ		*	the standard file package object
SF.TEXT		*	the standard file package source

About the Example Programs

Once these programs are installed, you may examine all of the example files in the Editor. The example files are in the MISC: volume and their filenames end in .TEXT. Each example program consists of three files. The Pascal sources are EDIT, FILE, and GROW. The associated resource definition files are EDITRESDEF, FILERESDEF and GROWRESDEF. The files E.TEXT, F.TEXT and G.TEXT are exec files which will build an application program.

The EDIT sample program is the simplest. GROW adds a variable-sized window and scroll bars to EDIT. FILE adds multiple windows and simple file I/O to EDIT.

To try out an exec file, connect the Mac and Lisa with one of the supplied Mac printer cables. Connect each end to the leftmost serial port, with the front of the machine facing you. Boot the Mac Master diskette. Double click on the disk icon labeled 'Disk Utility.' (On older release disks, it may be labeled 'NewestUtil.')

Click on the GET FILE button on the left side. From the Lisa command line, type XMISC:E (to execute the EDIT exec file) and press RETURN.

The exec file will compile the program EDIT into intermediate code, generate 68000 code, and link in runtime segments. Next, it will execute the program RMAKER, which in turn compiles EDITRESDEF, and links the code segments to the resource definitions. Then, it will execute the program SENDONE, which transmits the complete load module to the Mac. If the transmission is successful, several temporary intermediate files will be removed from the MISC: directory.

To run the transmitted program on the Mac, pull down the Utility menu and select Exit. From the finder, hold down the Feature (Command) key and double-click on the document labeled EDIT to launch this program.

Eventually, much of this information will appear in a more organized form in the 'Putting Together a Mac Application' document.