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BRIEF INTRODUCTION TO SYSTEM SOFTWARE

This section is intended for beginners who would like to get a bit of background knowledge about System software. If you already know all about it, feel free to skip to the next section...

At the top ("root") level of your hard drive is a folder named "System Folder." This folder contains your "System software." System software is the software that actually makes your computer work. Also known as the operating system or "OS," it is loaded when your computer starts up ("boots") and stays in memory as long as your computer is running, directing all of its operations and functions. There are quite a few different operating systems out there: Mac OS, Windows (both 3.1 and 95), UNIX, NextStep, OS/2, etc. Some of these work on different types of computers, some work on the same computers. More could be listed, but what is important is that there are many different types of computers, and many different operating systems to run them. Fortunately for us, we use the Mac OS.

System File and Finder

The Mac OS consists of two key components, the System file and the Finder, and many smaller files which modify them. The System file contains the instructions and code (in Mac-talk, the "resources") which your computer uses to function in the most basic way. It allows your applications to communicate with your computer's hardware, and also controls how each piece of your computer's hardware talks to the rest of the hardware. The Finder is the interface you use to work with your computer. It is actually an application which is launched when the computer starts up, and provides the graphical user interface (GUI) with which you interact. It provides a way to take advantage of the functionality of your computer, allowing you to do such things as access files, open and close windows, launch applications, etc. While it is possible to use your Mac without the Finder running, most people won't have the occasion, nor the desire, to do so.

Besides the System and Finder, there are many other files which affect the way your computer operates and which dictate the extent of its functionality and its specific abilities. The two main types

are "extensions" and "control panels." These files are sometimes referred to as "startup files" (because they are loaded when your computer starts up) or as "INITs" (see the section titled "Why is it called InformINIT?" in the "Introduction" chapter).

Extensions and Control Panels

An extension is a file that loads code into your System file at startup (before the Finder launches) and temporarily modifies how your computer operates. These modifications can be outright changes in the way the System or particular applications behave, or they can provide added functionality which the System file and Finder alone do not provide. These changes remain in the System file until your computer shuts down. Because of this non-permanence, in order to perpetually gain the functionality which a certain extension provides, it must load every time your computer starts up. Unlike a control panel (below), you typically cannot make changes in the way an extension operates (unless it has a corresponding control panel which provides this functionality). Extensions are located inside your System Folder in a folder called "Extensions."

While the above description is the "official" description of what an extension is, in reality, there are different kinds of extensions: some load at startup as described above, while others wait until they are needed by either the System software or an application (see the "Non-RAM INITs" chapter for examples of these extensions).

There are two different kinds of control panels. The first type are files which provide you with the ability to change the way your System software itself operates. These control panels let you change things such as your monitor resolution, the speed of your mouse, and many other System-related attributes. These files don't load code into your System file at startup, and the settings you choose in them are applied even if the control panel isn't "active" at startup. For example, if you use the Mouse control panel to set your Mouse speed, that setting will remain whether or not the control panel is active (see the chapter on Startup File Management).

The second type of control panels are files which, like extensions, load code into your System file at startup and temporarily change how your computer operates. Their "control panel" interface provides you with the ability to make choices about their behavior. They may also allow you to choose how an accompanying extension (above) affects your computer.

Control Panels are located inside your System Folder, in a folder called "Control Panels." When installed ("enabled"), all control panels are accessible from the "Control Panels" item in the Apple Menu for easy access. The "preferences" (your chosen settings) for control panels are located in one of three places:

    1) Within the control panel itself
    2) In a preferences file in the "Preferences" folder inside your System Folder
    3) In what is know as Parameter RAM, or PRAM (see the chapter on PRAM for details)

Which ones do I need?

Depending upon which Macintosh or Mac clone you have, the control panels and extensions you have and need may vary, as some INITs provide functionality which is not needed on all systems, and some systems require files which are not required on others. In addition, many applications and utilities, both Apple and third-party (non-Apple), install control panels and extensions of their own. However, it is often not clear whether or not you need everything you have, or have everything you need. In addition, and this is the cause of some amount of grief for Mac users, many extensions and control panels conflict with each other, causing strange behavior, crashes and freezes. InformINIT attempts to ameliorate this situation somewhat by informing you as to what various INITs do, whether or not you need them, and whether or not they conflict with anything else. Once you figure out what you need/don't need, you can begin to manage your System software better. This process is covered in the next chapter, "Startup File Management."

Other System-related files

There are many other files which work with your System software and applications to provide added functionality. Most of these are located within your System Folder, and provide support and/or resources. A partial list of these types of files is included in the chapter "System Folder Contents."

SIDE NOTE: What happens when your Mac starts up?

The following is the sequence that occurs when your computer starts up:
• Startup "chime" is played
• The hardware ROM is loaded into memory
• The hardware RAM is tested
• The ADB (keyboard/mouse) port is queried for attached ADB devices and "reset"
• The SCSI port is queried for attached SCSI devices
• The Printer and Modem ports are queried for attached devices
• The PCI expansion card slots are queried for installed PCI cards
• The computer searches for a bootable System Folder. It looks first to the floppy disk drive, then the device selected in the Startup Disk control panel, then internal SCSI ID 0, then 6, 5, 4, 3, 2, and 1, then the external SCSI chain (if your Mac has one) in the same order. NOTE: holding the mouse button down at startup ejects any floppy currently in the floppy drive; holding the "c" key forces the Mac to use a System Folder on the internal CD-ROM drive; shift-option-command-delete forces the computer to ignore whatever device is located at SCSI ID 0 (usually the internal hard drive) when looking for a System Folder.
• The smiling Mac is drawn on the screen
• If a System Enabler is present, it is loaded
• Extensions and Control Panels located in the Extensions folder are loaded in alphabetical order
• Extensions and Control Panels located in the Control Panels folder are loaded in alphabetical order
• Extensions and Control Panels located loose in the System Folder are loaded in alphabetical order
• The Finder is loaded/launched
• Items in the Startup Items folder are launched
• File Sharing starts up (if selected)

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FORMAT OF InformINIT

The content of InformINIT is broken up into chapters based on file type/topic. The chapter pull-down at the bottom of this window and the "Contents" menu in the menu bar list these sections. There is also a table of contents which can be browsed by clicking on the box in the lower left-hand corner or by clicking on the InformINIT icon (below). This icon is also located in the top-right corner of every chapter. NOTE: if you can't seem to find an item, make sure you use the "Find" command and check the "Non-RAM," "Groups" and "Third-Party" chapters. Many items are included there based on their file type, functionality and developer. Clicking the "Find" button in the Find dialog repeatedly will search for multiple occurrences of a word or file name. I say this because many people write me with a message such as "I couldn't find 'xxx' in InformINIT" when it's really in here. Sometimes a file's location isn't quite where you think it might be (i.e., in the "Groups" or "Non-RAM" chapters).

IMPORTANT!
NOTATION LEGEND/DEFINITIONS OF SOME KEY TERMS

Throughout this document, various items contain special notations:

• Items which pertain ONLY to Mac OS 8, or were introduced in Mac OS 8, are marked by OS8.

• Items which pertain ONLY to Mac OS 8.1, or were introduced in Mac OS 8.1, are marked by OS8.1.

• Third-party items which are "officially" compatible with OS 8 or OS 8.1 are marked by OS8 COMPATIBLE, or OS8.1 COMPATIBLE, respectively. NOTE: if an item is not labeled as being OS 8 or OS 8.1 compatible, and the description does not state that it is not compatible, it still may be compatible. However, use it at your own risk, as I have not been able to officially verify compatibility.

• I have tried to include the latest version numbers available. However, sometimes the latest version of a file is only available with the purchase of the latest version of the MacOS (i.e. Mac OS 8 or 8.1). Thus, in the Apple sections, if this is the case, I have tried to include the latest non-OS 8 version first, and the version provided by Mac OS 8/8.1 after it, in blue: (v1.2/v1.2.1)

• Items which pertain ONLY to 680x0 machines are marked by 68K (see "680x0 Macs" below).

• RAM consumption figures are noted by [U/R] (see below).

• Beginning with version 7.6 of the System software, Apple stopped calling their system software "System xxx" and officially began using the term "Mac OS xxx." Thus, v7.5.5 is called "System 7.5.5" while v7.6.1 is called "MacOS 7.6.1." This practice is reflected throughout InformINIT.

• When there is an "x" in the name or version number of an entry, computer model number, or System version, it means that the "x" can stand for several different numbers. For example, "System 7.5.x" means any of the various "System 7.5" versions: 7.5.0, 7.5.1, 7.5.2, 7.5.3, 7.5.5. "Performa 57x" could mean a Performa 575, 576, 578, etc. This notation is merely used as shorthand instead of saying "all of the different versions of System 7.5" or "all of the Performas which have a three-digit number where the first two digits are 57."

• Throughout InformINIT, you will see "NN" and "IE" buttons:

  o If you are running Netscape Navigator, clicking on the "NN" buttons will take you to the corresponding URL. You must have Netscape running for this to work.
    <- Click on this button to launch Netscape Navigator.

  o If you are running Internet Explorer, clicking on the "IE" buttons will take you to the corresponding URL. You must have Explorer running for this to work.
    <- Click on this button to launch Internet Explorer.

MAC MODEL DIFFERENCES

There are frequent mentions of "PCI Macs," "PowerMacs," "680x0 Macs," "PowerPC- native," etc. within InformINIT. Just to clarify for those of you who are unfamiliar with these terms, the following is a primer:

• 680x0 Macs: Macs based on the older Motorola 68K processor. The earliest of these chips was the 68000. As you move up through the 68020, 68030, and, most recently, the 68040 chips (there was no 68010 Mac), clock speeds increase and even the same clock speed is faster (i.e. a 68040 chip running at 33 MHz ['megahertz'] is much faster than a 68030 at 33 MHz). The terms "680x0" and "68K" refer to any/all of these chips. Apple no longer produces any computers with a 680x0 chip; the last 68040 computer was the PowerBook 190.

• PowerMacs/PowerPC Macs/PowerMac clones: newer Macs are based on the "PowerPC" processor chip, developed in cooperation by Motorola, IBM and Apple. The PowerPC chip uses a completely different design and architecture, as well as a different kind of "code" for applications (code is the "language" that a program is written in). This chip is much faster than the 68K chips, and when applications are

written in "native" PowerPC code (code specifically written for the new chip's architecture), the speed increase is very noticeable. Over the past few years, Apple has been gradually moving all of their systems over to the PowerPC. In order to make the transition from 68K to PowerPC as painless as possible, Apple included "emulators" in the Mac System software which allow the PowerPC chip to run applications written for the 68K chips by "emulating" a 68K chip. Unfortunately, 68K applications running in emulation on PowerPC computers can oftentimes run slower than on an actual 68K Mac. Thus whenever possible it is beneficial to have "PowerPC- native" applications.

In 1995 Apple began allowing other computer manufacturers to license the Macintosh architecture and make Macintosh "clones," which are computers not made by Apple, but which run the Macintosh operating system, have Macintosh "ROMs" (the code/ instructions/ information which is actually contained on the computer's logic board), and are basically just Macs made by a company other than Apple. Nearly all, if not all, of these clones use the PowerPC chip.

As with the 68K chips, there are various "models" of the PowerPC chip: 601, 603, 603e, 604, 604e, etc. For the most part, a higher number/ letter means a faster processor, given the same "speed" (i.e. a 100 MHz 604 is much faster than a 100 MHz 601). However, the 603 series is a lower-power and less expensive version of the PowerPC chip (it is used on PowerBooks, Performas, and lower-cost clones), and can at times be slower than the 601 series, given the same clock speed. But this marginal loss in speed has been more than offset by the fact that while the 601 chip topped out at just over 100 MHz, the 603 series has been pushed, at the time of this writing, to 300 MHz. The 604 series of chips are dramatically faster than the 601 and 603 chips, and at the time of this writing offer the fastest performance of any desktop processor in the world.

• PCI Mac: most Macs/Mac clones have "expansion slots" which allow the user to expand the capabilities of their computer. Some examples of these enhancements include video and graphics cards, hard drive interfaces and accelerators, and "MIDI" interfaces. Older Macs use an expansion architecture, called NuBus, which few other computers use (these expansion cards are called "NuBus cards"). Much of the rest of the computer world uses another standard for expansion, called Peripheral Component Interconnect, or "PCI" (these expansion cards are called "PCI cards"). While both the NuBus and PCI architectures have their advantages, the PCI architecture provides speeds up to three times as fast as the NuBus architecture. These performance advantages, in addition to the larger number of PCI cards available and their lower relative cost, led Apple to begin using PCI expansion slots in their computers. The PCI architecture debuted on the PowerMac 9500, then appeared on the 7200/7500/8500 series. Apple has been gradually implementing the PCI bus (the hardware system which uses PCI cards) in all of their new models; there are no longer any desktop Macintosh systems in production which use the NuBus architecture. Most, if not all, Mac clones also use PCI.

There are a few differences with respect to hardware operation and System software because of this different architecture; it is sometimes necessary to refer specifically to these computers. Thus, Macs which use the newer PCI bus are often referred to as "PCI Macs." In addition, since every Mac or Mac clone which uses the PCI architecture also uses the PowerPC chip, all "PCI Macs" are also "PowerMacs" (or PowerMac clones).

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TIPS ON TRANSFERRING FILES / INSTALLING A NEW SYSTEM

If you are installing a new System Folder, or transferring files over from an older Mac to a newer one, the best way to transfer files over from an older System Folder to your new System Folder is this: Don't! For the most problem-free installation, do a "clean" installation of the latest system software for your Mac, apply the appropriate system updates, if necessary, then reinstall all of your peripheral stuff from the original disks. Then, if you don't have fresh copies, transfer over the random extensions and control panels you can't live without. Finally, go through InformINIT and remove/disable the stuff that the System installer installs that you don't need. This is the only way you're assured that you haven't taken something out that you need, nor have you put something in that you don't need.

What is the difference between a "normal" installation and a clean install? A normal system software installation replaces system files which have been updated and adds new ones which are needed, but leaves alone other files which are either still needed or not recognized (i.e. non-Apple files).

If you just click on the "install" button in any Apple system software installer, you will get a normal system software installation. A clean system software installation creates a completely new System Folder on your hard disk. The old System Folder is renamed "Previous System Folder" and remains on your hard drive until you remove it. You can manually move non-Apple extensions, control panel, fonts, etc. from this older System to the new one. Some people don't believe in doing a clean install unless you have problems; I usually take a more proactive approach, and believe that you can avoid problems in the first place by doing a clean install. Your mileage may vary.

For those of you who are unfamiliar with the "clean install" process, there are two different ways to make the installer perform a clean install, depending upon the version of the System software/OS you are installing. In the most recent versions of the OS, there is actually a button in the installer called "Options..." which will provide you with the option of a clean install. In older versions, the trick is to hold down Command-Shift-K from the initial installer dialog box. You will be prompted for either a new system folder or a replacement system folder. If you want the complete, thorough, and extremely loooong instructions, refer to Apple's own Clean Install Tech Note, which is available from the Apple Tech Info Library (see the "Resources" section).

It has been suggested that some conflicts can be avoided by performing a low-level reformat of your hard drive before you install your System software and other files. Personally, I do this whenever I get a new drive, whether it be a hard drive, Zip disk, Jaz disk, etc. However, this is just my preference. Many people never do a low-level reformat, and never have a problem. On an Apple drive, a low-level reformat can be done using Drive Setup (the latest version at the time of this writing was 1.4) or HDSC Setup; for third-party drives, use the latest version of the software that came with the drive. NOTE: before you do a low-level reformat, be sure to backup all of the data on your hard drive, as the reformat will erase all of your data. After you reformat, you can restore all of your data, applications, etc. from the backup. NOTE: Apple, and other hardware manufacturers, advise against doing a low-level reformat of an IDE hard drive. IDE hard drives are found in many PowerBooks, Mac clones, and newer PowerMacs.

Finally, it is also a good idea not to transfer over all of your preferences from the older System Folder. Preference files can become "corrupted" over time, and it is a good idea to create new preference files once in a while. If at all possible, start over and set your preferences running off of the new System. Note that for applications or utilities which maintain elaborate preferences and/or logs, it may be easier to keep your old preferences. NOTE: if you are using the AppleTalk, TCP/IP, and PPP control panels from Apple, you can "Export" your settings to a file. After starting over with a fresh System Folder, you can then "Import" these settings back into the control panels, thus saving yourself the trouble of having to keep track of them!

NOTE: there is a recently-released utility, "Mac OS Installer Helper," which supposedly helps users transfer over preferences, control panels, extensions, etc. after performing a clean install. I have never used it, so I cannot attest to its effectiveness. However, it sounds like it could be promising. If you are interested in this utility, it can be found at:
    <http://www.QuickTimeFAQ.org/software/>

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TIPS/WARNINGS ON "TRASHING" FILES

As you go through InformINIT, there will be many times you will read the description of a file, and think that it's obvious that you don't need it. You may even have a pressing urge to put the file in the trash and delete it :-). However, if you're ever the least bit unsure, it's always a good idea to keep a copy of

the file around. For example, make a folder called "Not Needed?" and put all of the questionable files in there. If your machine runs fine for a while without them, then go ahead and get rid of them. This process will save you a lot of trouble if it turns out you really did need a file, but got rid of it.

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RAM INFO

Throughout this document, I have included RAM info to help you get an idea about how much RAM certain files use and to help you reduce the size of your system file's RAM consumption. The figures following each item are presented in the form of [U/R]. "U" is the RAM (in K) actually used by the item at startup on my system. "R" is the maximum amount requested by the item. There are actually two types of RAM for startup files to use: "system" memory and "high" memory. Since the implications of the two types of memory are the same for most people, I haven't differentiated between the two. At any given time, depending upon the configuration of your system, the amount used can vary. For example, Adobe Type Manager 3.9 will take up more or less memory depending upon how many fonts you have installed. So... "your mileage may vary" -- although for some items, you'll probably never use the full amount "requested." If an item is followed by "[LB]," it means that RAM info on this item isn't discernible due to the fact that it loads, and therefore has allocated memory, before memory statistics can be gathered. If an item is followed by "[NA]," it means that the file does not allocate memory at startup. PLEA FOR HELP: This info is painstakingly difficult to compile, so your assistance is appreciated. If any readers can provide help with this info, please email me.