

How to Use System 7

John Norstad
Academic Computing and Network Services
Northwestern University
j-norstad@nwu.edu

May 27, 1991

This document briefly describes the new features of Apple's System 7 for the Macintosh.

We assume that you have already obtained and installed System 7 on your Mac. See the companion document "How to Install System 7" for details.

Mac users who are thoroughly familiar with System 6 should find enough information in this document to learn and begin using all of the significant new features of System 7. This document is not, however, a complete book on System 7, and it is not intended to be a substitute for the Apple System 7 reference manuals. If you want the reference manuals, you must purchase either the System 7 Personal Upgrade Kit or the System 7 Group Upgrade Kit from the Microcomputer Product Center. Call the MPC at 491-3889 for more information.

Several books on System 7 are beginning to appear in the bookstores. You may wish to get one of these books as an alternative to buying an upgrade kit.

You can also find many articles about System 7 in the trade press. Back issues of MacWeek, MacWorld, and MacUser are available in the Information Center at Vogelback.

If you find anything important that we left out of this document, please let the author know.

• The System Folder.

The new System Folder organization was described in some detail in the "How to Install System 7" document. To summarize, there are five new subfolders of the System Folder:

Control Panels: Contains your control panels.

Extensions: Contains system extensions (INITs, printer drivers, etc.)

Apple Menu Items: Contains the objects which appear in the Apple menu.

Preferences: Contains miscellaneous preference files.

Startup Items: Contains objects to be opened automatically at startup.

System 7 is "smart" when you drag an object onto the System Folder icon. Instead of simply placing the object inside the System Folder proper, System 7 will attempt to determine if the object really belongs in one of the new subfolders or in the System file. For example, if you drag a control panel onto the System Folder icon, the system will ask if you want to place it in the new Control Panels folder.

If you do not want an object to be placed in one of the new subfolders, do not drag it on top of the System Folder icon. Instead, open the System Folder and drag the object directly into the System Folder window.

• The System file.

The System file was also described in some detail in "How to Install System 7." To summarize, the System file is a new kind of object called a "suitcase." Suitcases are very similar to folders in that they contain objects and can be opened to display the contained objects in a new window.

The objects contained inside your System file suitcase are your installed fonts and sounds.

Fonts and sounds are often distributed in separate suitcase files. You can double-click on these files to open them and display the contents. You install the fonts and sounds by dragging them onto the System Folder icon, onto the System file icon, or into the System file window. You remove them by dragging them out of the System file window.

An entire suitcase can be installed at once by dragging it onto the System Folder icon, onto the System file icon, or into the System file window.

You can double-click on a font or sound. When you double-click on a font, a window appears which displays a sample of the font. When you double-click on a sound, the sound is played.

• Desk accessories.

System 7 has completely eliminated the old distinction between application programs and desk accessories. They are both represented by simple icons which can be located anywhere in the file system, they can both be opened by double-clicking on the icon, and they can both be installed in the Apple menu. The old Font/DA Mover program is no longer required to install and remove desk accessories.

DAs are usually placed in the Apple Menu Items folder, but this isn't required. You can put them anywhere you please and open them by double-clicking on them.

Old System 6 desk accessories are often distributed inside suitcases. To install such a DA on System 7, simply double-click on the suitcase icon to open it, then drag the DA out of the suitcase window into some other window.

• **Control panels.**

System 7 has also almost completely eliminated the old distinction between application programs and control panels. There is no longer a special Control Panel desk accessory. Instead, control panels are simply individual icons located inside the new Control Panels subfolder of the System Folder. As with applications, you open a control panel by double-clicking on its icon.

In System 7, you can have more than one control panel open at the same time.

Many control panels contain special code which must be executed at system startup time. These control panels will only work properly if they are located in either the Control Panels folder or in the System Folder proper. Control panels which do not contain special system startup code may be located anywhere in the file system.

The standard System 7 configuration includes an alias to the Control Panels folder which is located in the Apple Menu Items folder. This is what makes the "Control Panels" command in the Apple menu work. When you select this command, the system simply opens the Control Panels folder. You then double-click on a control panel to open it.

If you have a control panel which you use very frequently, you can create an alias to it and place the alias in the Apple Menu Items folder or in any other convenient location.

Some control panels which were designed for System 6 don't work properly when placed in the new Control Panels folder. Such a control panel should be placed in the System Folder proper, and an alias to it should be placed in the Control Panels folder. The current version of MacTCP is an example.

There are several new control panels in System 7. We will discuss each of them in later sections of this document.

• **System extensions.**

"System extension" is a new term which includes what used to be called "INITs" or "startup documents" as well as printer drivers, Communications Toolbox tools, and other add-on software which enhances the functionality of your Mac.

System extensions are normally located in the new Extensions subfolder of the System folder. However, as with control panels, some extensions which were designed for System 6 don't work properly when placed in the new Extensions folder. Such an extension should be placed in the System Folder proper. The Disinfectant INIT is an example.

• **Aliases.**

Aliases are one of most useful new features of System 7. We described them briefly in the "How to Install System 7" document.

An alias is an icon which stands for or "points to" some other icon. The original icon is called the "target" of the alias.

When you open an alias, the target is opened. Aliases are very similar to the notion of "links" in the UNIX operating system, but they are much more powerful. You can create aliases to files, folders, disks, and even servers.

To create an alias, first click on the target icon to select it. Then select the "Make Alias" command from the File menu. A new icon will appear with the name of the original icon followed by the word "alias." Alias files always have their names displayed in italics so you can easily distinguish them from normal files.

Alias files are very small (usually less than a kilobyte), even if the targets they point to are very large.

To locate the target of an alias, click on the alias to select it and use the "Get Info" command in the File menu. Click on the "Find Original" button in the Get Info window. The Finder will locate the target, open its window, scroll to the target icon location, and select the target icon automatically.

Aliases are often used with the new subfolders of the System folder. For example, if you have a program that you want to open automatically every time you restart your Mac, you can place the program itself in the Startup Items folder, or you can make an alias to the program and place the alias in the Startup Items folder. People usually use aliases to do this particular operation.

You will find many other uses for aliases. For example, many Mac programs have helper files which must be located in the same folder as the program itself. In the past, the only alternatives were to place the files together in your main disk window, which cluttered up the window, or place the files in a subfolder, which forced you to open the subfolder before you could run the program, or (in some cases), you could place the helper files in the System Folder, which cluttered up the System Folder. With System 7, you can place the files in a subfolder, create an alias to the program, and place just the alias in your main window. When you want to run the program, just double-click on the alias. You'll almost never have to open that stupid subfolder again!

Another popular technique is to create aliases for the objects you use most often (programs, documents, file servers, folders, etc.) and place them in the Apple Menu Items folder. Then you can easily open the objects at any time by simply selecting them from the Apple menu.

Aliases continue to work properly even if you move the target file to some other location, even if it's on a different disk.

You should also feel free to rename alias targets. Any aliases which point to the target will still work properly.

Aliases also work over the network. They are very useful for quickly accessing file servers and objects on file servers.

For example, suppose you frequently use the Plato file server and want to be able to access it quickly. Use the Chooser to log on to the server as usual. Click on the Plato icon to select it. Select the "Make Alias" command to create an alias file. Move the alias file to any convenient location on your hard drive. If you wish, you can even move the alias file to your Apple Menu Items folder to make it appear in the Apple menu.

Later, when you want to access Plato, all you have to do is double-click on the alias icon. System 7 will access the server over the network for you and open the main window for the server on the screen. You don't have to use the Chooser at all! This is a very attractive alternative to mounting file servers automatically every time you start up.

If you create an alias to a server which you accessed via a password, the system will prompt you for the password when you open the alias.

You can also create aliases to objects (files and folders) inside servers. When you open such an alias, if the server is not already mounted, the system will mount it automatically, prompting you for a password if necessary.

You can also create aliases to floppy disks and files and folders on floppy disks. When you open such an alias, if the floppy is not inserted, the system will prompt you to insert the proper floppy by name. This is very useful for archiving large seldom-used files on floppies.

Our final example involves both aliases and the new file sharing feature of System 7. This example is called "carrying your hard drive with you on a floppy." Suppose your Mac is connected to our campus AppleTalk network and you often use other Macs on the network. You would like to be able to easily access your hard drive from the other Macs. If you enable file sharing on your Mac, you can use the Chooser on any other Mac on the network to log on to your Mac and access the contents of your hard drive. This even works on old System 6 Macs! To make this even easier, you can create an alias to your entire hard drive on your Mac, copy the alias to a floppy, and bring the floppy along with you when you travel to the other Mac. To access your hard drive from the remote Mac, all you have to do is insert your floppy, double-click on the alias icon, and enter your password!

• Balloon help.

Balloon help is another major new feature of System 7. It is accessed via the new Help menu at the right side of the menu bar, under the new small icon of a question mark surrounded by a balloon.

To turn on balloon help, select the "Show Balloons" command from the Help menu. When balloon help is on, as you pass the mouse over various objects on your screen, small balloons appear which give brief descriptions of the objects. The mouse is still "hot" and behaves in the usual fashion when you click on objects, so balloon help does not interfere with the normal operation of whatever program you happen to be using.

To turn off balloon help, select the "Hide Balloons" command from the Help menu.

Balloon help also works with menu titles and individual menu commands, and with buttons and other objects inside dialogs.

Balloon help currently works with the Finder windows and icons and with all of the standard Apple system menus and dialogs. It does not yet work with most of the non-Apple programs you will be using, but as time goes on more and more developers will be adding balloon help to their products. Eventually, virtually every program should support it.

Programs can also add their own help commands to the new Help menu. For example, the Finder adds a "Finder Shortcuts" command. When you select this command, the Finder displays a window which summarizes all of the different modifier key shortcuts. This is very useful for quick reference.

• Application menu.

We assume that you are familiar with MultiFinder in System 6, which permits you to open several programs simultaneously on your Mac.

In System 7, MultiFinder is an integral part of the system. It is always active and cannot be disabled.

The new Application menu at the far right side of the menu bar displays all of your open programs. You switch to some other program by selecting it from this menu, or, if one of the other program's windows is visible in the background, you can click on the window. This list of open programs was displayed in System 6 at the bottom of the Apple menu. It will take you a few days to get used to the new location.

The "Hide xxxxx" command in the Application menu (where "xxxxx" is the name of the current program) hides all of the windows for the current program. The program is still active, but its windows are invisible, and its icon is grayed out in the menu.

To make the windows visible again and switch back to the program, select it from the menu.

The "Hide Others" command in the Application menu makes the windows for all other programs invisible.

The "Show All" command in the Application menu makes all invisible windows visible again.

If you hold down the Option key while switching to some other program, the System will make the current program's windows invisible in addition to switching to the other program.

Window hiding is particularly useful if one of your program windows hides the disk and trashcan icons in the Finder.

The HyperCard stack named "Before You Install System 7" on the disk of the same name contains a very nice guided tour of the new Application menu. You should take the tour, especially if you've never used MultiFinder before.

• File sharing.

File sharing is another one of System 7's major new features. Basically, it permits any Mac user to transform all or part of his or her file system into an AppleShare file server, so that other users can access his or her files over the network.

The disk named "Macintosh Networking Basics" contains an excellent guided tour of file sharing. You should definitely take the tour. We will not attempt to describe all the many details of file sharing here, since the tour covers them quite nicely.

File sharing is controlled by three new control panels and a new command.

The new "Sharing Setup" control panel is used to turn file sharing on and off and to give your Mac a name and a password. The password is used to protect against unauthorized access to your Mac. Be very careful to select a secure password and keep it secret, because if you turn on file sharing, anybody who knows your password can gain full access to all the files on your Mac!

The new "Users & Groups" control panel is used to establish accounts on your Mac to control security.

The new "File Sharing Monitor" control panel is used to monitor file sharing activity on your Mac. It shows which folders are being shared over the network and who is currently using them.

The new "Sharing" command in the File menu is used to make a folder available to other network users, and to assign access controls to folders. For each individual folder, you can permit different levels of access to all users, individual users, or groups of users.

Use file sharing with care. Make certain that you understand the security system. For example, it's really stupid to permit guests (any user) to have write access to your entire hard drive. In general, be very careful to limit write access to only trusted individuals, and do not permit write access to folders which contain applications. For example, applications in folders which have write access can become infected by viruses over the network, even if you have virus protection software installed on your Mac.

• TrueType.

Another major new feature of System 7 is outline fonts. Apple's new outline font technology is named "TrueType."

In previous systems, fonts were stored internally as sets of bitmaps, with different sets for each of the different font sizes. TrueType fonts, on the other hand, are stored internally as mathematical descriptions of the character shapes. The TrueType imaging code can scale these shapes to any desired size.

TrueType fonts have the advantages that they require less disk space to store, and more importantly, they look good at any font size, especially large font sizes. In addition, when you print a document which uses TrueType fonts, the printed output is much closer in appearance to the version displayed on your screen.

The standard System 7 includes a mixture of old bitmap fonts and new TrueType fonts. The System also supports the old

Postscript fonts, and documents can be prepared using any mixture of the three kinds of fonts.

You don't have to do anything special to use the new TrueType fonts. Once you have installed them, they will automatically appear in the Font menus of all of your programs.

- **Virtual memory.**

Virtual memory (VM) is another major new feature of System 7. It lets you use part of your hard drive as if it were additional memory.

Virtual memory is turned on and off using the new Memory control panel.

Not all Mac models support virtual memory. If your Mac does not support VM, the VM section of the Memory control panel will be inactive (grayed-out).

Some popular programs and hardware devices are not yet compatible with VM. Before trying to use it, you should check with your hardware and software vendors to make certain that the versions of their products you are using are compatible.

In particular, disk driver software and other driver software products are often incompatible with VM. If you have Apple hard drives, you can use the new System 7 HD Setup program on the Disk Tools disk to upgrade your drivers to the new Apple VM-compatible versions. If you have non-Apple hard drives, check with your vendor to see if your driver is compatible.

You should also be aware that using virtual memory will definitely degrade the performance of your Mac. It should not be considered a substitute for an adequate amount of real physical memory.

- **32-bit addressing.**

32-bit addressing is a new feature of System 7 which permits the use of large amounts of memory (real or virtual) (roughly speaking, more than 8 megabytes.) As with virtual memory, however, some popular programs are not yet "32-bit clean," and can cause crashes or other problems if you turn on 32-bit addressing. Also, as with VM, not all Mac models support 32-bit addressing.

32-bit addressing is turned on and off using the new Memory control panel.

- **Outline views.**

The Finder was completely redesigned and rewritten from scratch for System 7, and outline views are one of its many new major features.

When you select view by name, size, kind, or date in a Finder folder window, an outline view of the folder is presented, sorted as you requested. For each subfolder within the folder, a small triangle is displayed to the left of the folder name. You can click on this triangle to display the subfolder's contents indented beneath the subfolder name. This is much easier to show than it is to describe, and we suggest that you simply try it to see how it works. Click on the triangle again to collapse the subfolder back to a single line. The triangles point to the right when a subfolder is closed, and they point down when a subfolder is open.

These outline views work much the same way as the popular outlining programs on the Mac.

You can select multiple objects spanning different levels of a folder hierarchy by shift-clicking on their names, then copy and move or otherwise manipulate the selected objects as a group.

The following keyboard shortcuts can be used with outline views:

To change the view: Click a view title in the window header.

To expand the outline of the selected folder: Command-Right Arrow.

To collapse the outline of the selected folder: Command-Left Arrow.

To expand the entire outline of the selected folder: Command-Option-Right Arrow.

To collapse the entire outline of the selected folder: Command-Option-Left Arrow.

- **Find and Find Again commands.**

In System 6, to locate a file by name on your hard drive, you had to use the very slow and clumsy Find File desk accessory. System 7 has a much improved and lightning-fast searching facility built-in to the Finder. The joke is that the System 7 Finder is the first Finder that can actually "find."

Use the new "Find" command in the File menu (or Command-F) to locate a file. Simply type all or part of the name of the file you wish to locate and press Return. The Finder will look for the file on all your mounted disks. If it finds the file, it will open the window containing the file, scroll to the file location, and select the file automatically.

To continue a search to find the next file matching the name you typed, use the “Find Again” command in the File menu (or Command-G).

For more sophisticated searching, use the “More Choices” button in the Find dialog. Complicated search criteria can be built based on file name, size, kind, label, creation date, last modification date, version, comments field, and locked/unlocked status.

If you select the “all at once” option, the Finder will locate all the files matching the criteria you specified. The matching files are displayed in an outline view, with each matching file selected.

• **Color windows and icons.**

On a color monitor, you will quickly notice that System 7 makes much more use of color than did System 6. For example, window titles and scroll bars are colored in delicate pastel shades. To change these window colors, or turn off window coloring completely, use the Color control panel.

Many icons are also appear in full color on color monitors in System 7.

• **Custom icons.**

You can customize your file and folder icons very easily in System 7 by using the Get Info command in the File menu. The Get Info window displays the icon in the upper left corner. Simply click on the icon to select it, then use the usual Copy and Paste commands in the Edit menu to copy icons to and from the clipboard.

You can use any painting program to design icons. Design your icon, then copy it to the clipboard, then paste it from the clipboard into the Get Info window. If the picture in the clipboard is not exactly 32 by 32 pixels (the size of an icon), it will be scaled to fit.

If you have customized an icon and then change your mind and want to revert to the original icon, select the icon in the Get Info window and use the Cut command.

Customizing icons is a really great way to waste time in System 7. Unfortunately, making them look good requires much more artistic talent than most of us possess.

• **Labels.**

The System 7 Finder lets you assign “labels” to individual icons using the new “Labels” menu and control panel. The Labels control panel is used to define the labels and associated colors, while the Labels menu is used to actually assign a label to an icon. The View menu lets you sort outline displays by label.

You may find this new feature useful as a way to organize your work, or you may prefer to simply ignore it.

• **Customizing the Finder.**

The new Views control panel is used to customize the Finder. You can select the font and font size for icon names, whether you want icons to be lined up in a straight or staggered grid, and whether you want icons to be automatically “snapped” to the nearest grid point when you drag them. You can also customize the layout of the outline views.

Unfortunately, this new control panel does not support as many options as did the old System 6 “Layout” freeware program. Maybe Apple will fix this some day.

To reverse the setting of the “Always snap to grid” option when moving an icon, hold down the Command key while dragging the icon.

• **Standard file dialogs.**

You will notice several differences in the standard file dialogs in System 7. These are the dialogs you use in programs to open files (the “get” dialog) and create new files (the “put” dialog).

The standard file dialogs now contain a new “desktop” level at the top of the file hierarchy. This level displays all of your disks and any other files or folders you have moved onto the desktop (outside of any window).

The old “Drive” button, which used to cycle among your mounted disks, has been renamed the “Desktop” button. Clicking on this new button jumps back to the desktop level.

You can still cycle among your mounted disks by using the Command-Right Arrow and Command-Left Arrow key combinations.

It will take you some time to get used to this new organization of the standard file dialogs, but we think you will like it

once you get used to it. It is indeed more straightforward than the old method.

In System 6, in the standard get file dialog, you could type the first few characters of a file or folder name to jump to that file or folder. This did not work, however, in the standard put file dialog, since anything you typed was interpreted as the name of the new file.

This problem is fixed in System 7. At any given time, either the scrolling list of files and folders or the file name field is considered to be the “current” field. Typing affects only the current field. The scrolling list is outlined with a black border when it is the current field, and the blinking insertion point appears in the file name field when it is current. You can use the Tab key to change which field is current.

In the standard file dialogs, if you select an alias, the target of the alias is opened.

The standard put file dialog also contains a new button which can be used to create a new folder.

There are a large number of keyboard shortcuts in the new dialogs:

- Up Arrow: Scroll up (backward) through displayed list.
- Down Arrow: Scroll down (forward) through displayed list.
- Command-Up Arrow: Display contents of parent.
- Command-Down Arrow: Display contents of selected directory or volume.
- Command-Left Arrow: Display contents of previous volume.
- Command-Right Arrow: Display contents of next volume.
- Command-Shift-Up Arrow: Display contents of desktop.
- Command-Shift-1: Eject disk in drive 1.
- Command-Shift-2: Eject disk in drive 2.
- Tab: Toggle current field in new file dialog.
- Return or Enter: Open (get file) or Save (put file).
- Escape or Command-Period: Cancel.
- Command-O: Open selected item.
- Command-D: Display contents of desktop.
- Command-N: Create a new folder.
- Option-Command-O or Option-[click Open]: Select the target of the selected alias item instead of opening it.

• **Chooser.**

The System 7 Chooser looks very similar to the System 6 Chooser, but there are some nice enhancements.

You can now use the keyboard to select the device type, zone name, and device name. Just type the first few characters of the name you wish to select (enough to uniquely identify the name.)

The Chooser window contains three fields, one of which is active at any given time. The current active field is outlined with a bold rectangle, and it is that field which is affected by typing. The Tab key cycles through the three fields.

For example, suppose you want to open the Vogelback IC Lab Server in the Plato zone. The new quick way to do this is: Open the Chooser. Then type “a” to select “AppleShare.” Then type Tab and “pl” to select the Plato zone. Then type Tab and “v” to select the “Vogelback IC Lab Server.” Then press the Return key to advance to the logon dialog.

The System 7 Chooser also has more room to display longer zone and device names.

• **Trash.**

The trash works differently in System 7.

First, the trash is no longer emptied automatically when you eject a disk, shut down, restart, or open a program. The trash is now emptied only when you explicitly request that it be emptied with the “Empty Trash” command in the Special menu.

By default, the system presents an alert whenever you try to empty the trash. The alert asks you to confirm the operation. Most people find this incredibly annoying. Fortunately, you can turn off this feature. To turn it off, click on the trashcan icon to select it, select the Get Info command, and turn off the “Warn before emptying” checkbox at the bottom of the Get Info window.

You can also hold down the Option key while emptying the trash to avoid this annoying alert. Holding down the option key while emptying the trash also permits you to trash locked files.

• **Icon dropping.**

Icon dropping is another wonderful feature of the new Finder. If a program knows how to open a file, you can just drag the icon for the file on top of the icon for the program, release the mouse button, and the system will open the program and tell it to open the file. This gesture of dragging one icon on top of another one is called “dropping.”

Dropping is particularly useful with text files, which can be opened by many different kinds of programs. For example, suppose you have just downloaded or FTP'd a text file to your Mac, and you want to open it using your favorite word processor or editor. In System 6, you have to first open the program, then use the Open command to bring up a standard file dialog, then use the standard file dialog to locate, select, and open the text file. In System 7, you can just drop the file icon on top of the program icon.

There's a very nice new system extension named "Understudy" which can be used to make icon dropping even more useful. Understudy is available on the Plato file server, in the folder System Software: System 7.0: Goodies. Hackers only please—you need to use ResEdit to configure it.

- **Keyboard navigation.**

The new Finder lets you use the keyboard to quickly locate and select files in windows.

If you know the name of the file you want, just type the first few characters of the file name (enough to uniquely identify the file.) The Finder will automatically select the file, scrolling the window if necessary to bring it into view.

The Tab key can be used to select the next file in alphabetical order. Shift-Tab selects the previous file in alphabetical order.

The four arrow keys can also be used to move around Finder windows.

- **Editing icon names.**

Editing icon names is done a little bit differently in System 7 than in System 6. If you click on an icon in System 7, the icon is selected, but you cannot just begin typing a new name as you did in System 6. You must first select the icon name itself for editing. You can do this by clicking on the icon name, or by selecting the icon and pressing the Return key. The icon name is outlined when it is selected for editing.

The reason for this change is that the keyboard can now be used in System 7 to locate and select icons in windows, and this conflicts with the use of the keyboard to edit icon names.

- **Displaying a folder path.**

To display a list of all the folders containing a folder (the "path" to the folder), hold down the Command key while clicking on the folder window title. A popup menu will appear listing all the folders containing the folder. To open one of these containing folders, select it from the menu.

- **Cleaning up icons.**

The new Finder does a better job cleaning up icons. The "Clean Up Window" command in the Special menu will clean up all the icons in a window.

If you want to clean up just the selected icons, hold down the Shift key while selecting the "Clean Up Window" command.

You can also clean up and rearrange all the icons in a window into alphabetical order. To do this, first set the window to view by name, then switch back to view by icon. Then hold down the Option key while selecting the "Clean Up Window" command.

Similarly, you can rearrange all the icons in a window sorted by size, kind, or date, by first selecting view by size, by kind, or by date. The Option + Clean Up Windows command uses whatever sorting order was used in the most recent outline view of the window.

- **Background copying.**

In System 7, you can do work in other programs while the Finder is copying files in the background. To do this, you must open the other program first, then start the Finder copy, then switch to the other program.

- **Movable modal dialogs.**

In many places, System 7 uses a new kind of dialog called a "movable modal dialog." For example, the dialog which appears when you copy a large file or folder is one of these new movable modal dialogs.

Movable modal dialog windows have a new distinct appearance. You can move them wherever you want on your screen. The system remembers where you move them, and the next time they are presented, they reappear in the same location.

These dialogs are modal in the sense that you cannot make any other window within the same program active. They are non-modal, however, in the sense that you can switch to some other open program.

• **Finder shortcuts.**

The Finder has many keyboard shortcuts, several of which we have already mentioned. Here's a complete list, copied from the list you get with the new "Finder Shortcuts" command in the Help menu:

To open an icon: Double-click the icon (or press Command-Down Arrow).
To copy an icon into another folder (instead of moving it): Option + drag the icon.
To clean up selected icons: Shift + Clean Up.
To clean up and sort icons: Option + Clean Up.
To select an icon by name: Begin typing the name.
To select the next icon alphabetically: Tab.
To select the previous icon alphabetically: Shift-Tab.
To select an icon to the left or right (in icon views only): Left Arrow or Right Arrow.
To select an icon above or below (in any view): Up Arrow or Down Arrow.
To select more than one icon: Shift + click the icons, or drag to enclose them.
To make the desktop active: Command-Shift-Up Arrow.
To close all windows: Option + Close, or Option + click on the close box.
To move a window without making it active: Command + drag the window.
To display a pop-up menu of the enclosing folders and disk: Command + press the window title.
To open the window that encloses the active window: Command-Up Arrow.
To close a window after opening one of its icons: Option + Open, or Option + double-click the icon.
To zoom a window to the full size of the screen it's on: Option + click the zoom box.
To change the view: Click a view title in the window header.
To expand the outline of the selected folder: Command-Right Arrow.
To collapse the outline of the selected folder: Command-Left Arrow.
To expand the entire outline of the selected folder: Command-Option-Right Arrow.
To collapse the entire outline of the selected folder: Command-Option-Left Arrow.
To take a snapshot of the screen: Command-Shift-3.
To avoid seeing a warning message and to remove locked files: Option + Empty Trash.
To reverse the current setting of "Always snap to grid" while moving an icon: Command + drag the icon.
To rebuild the Desktop file: Hold down Command-Option while your Macintosh starts up.
To turn off all system extensions when starting up: Hold down Shift while your Macintosh starts up.

• **Auto-scrolling.**

Auto-scrolling is a subtle but useful new gesture in the Finder. When you are dragging an icon in a Finder window, if you pause anywhere within a few pixels of the edge of the Finder window, the Finder will begin scrolling the window in the direction opposite to the direction of the drag. This is easier to demonstrate than it is to describe, so we suggest that you try it to see how it works.

This feature is useful when only part of a folder's contents is visible in a Finder window, and you want to move an icon to some location in the folder which is not currently displayed in the window.

• **Icon selection highlighting.**

You can select a group of Finder icons by dragging out a rectangle surrounding them with the mouse. In System 7, the selected icons are highlighted and unhighlighted dynamically as you drag out the rectangle. This makes it easier to see which icons are actually being selected.

• **Disk unmounting.**

In System 6, you eject and unmount a disk by dragging its icon to the trash. This still works in System 7. In addition, you can perform the same operation in System 7 with the "Put Away" command in the File menu.

• **Shrink to fit windows.**

When you zoom a System 7 Finder window, the window is zoomed just large enough to show all the contained icons. In System 6, the window was always zoomed to the full screen size, even if the folder only contained a few icons.

To zoom to the full screen size, hold down the Option key while you click on the zoom box.

• **Stationery pads.**

A "stationery pad" is a special kind of document which provides a reusable template for other documents. When you open a stationery pad document file, the system makes a copy of the file and opens the copy instead of opening the original file.

In System 7, you can create stationery pads for any program, even if the program does not understand the concept. To do

this, first use the program to create and save the template document as usual. Then switch to the Finder and open the Get Info window for the document file you just created. Click on the “Stationery pad” checkbox at the bottom of the Get Info window.

When you want to use your stationery pad, just double-click on it. The system will make a copy and ask you to give a name to the copy, then the copy will be opened.

- **Screen shots.**

As in System 6, you can use Command-Shift-3 to take a screen shot in System 7. Unlike System 6, however, this works even with color monitors and large monitors. The screen shot is saved as a file belonging to TeachText. Double-click on the file to open and view it in TeachText.

- **Startup special keys.**

You can use the following special keys during system startup to do special things. Keep the keys held down throughout the startup sequence.

Shift: Disable extensions. This is incredibly useful if you install a system extension which is so incompatible with System 7 that it crashes during startup. All extensions are disabled, even debuggers.

For a more general-purpose extensions manager which lets you turn extensions on and off individually, you should try the freeware “Extensions Manager” which was designed specifically for System 7. You can get a copy from the Plato file server, in the folder System Software:System 7.0:Goodies.

Option-Command: Rebuild the desktop. If your icons are not being displayed properly, or if your Mac is misbehaving, try rebuilding your desktop.

Option-Command-P-R: Zap parameter RAM. Trust me—you really don’t want to know what this one does. Just remember that if your Mac gets really sick, zapping the parameter RAM can sometimes help. If you have small hands, get a friend to help you hold down all the keys.

- **Killing programs.**

If a program appears to be hung, you can try to kill it by typing Command-Option-Escape. This usually works, but it may fail, because the program may have damaged not only itself, but also the system.

- **Disk Tools disk.**

Since what we used to know as MultiFinder is now a standard part of System 7 which cannot be turned off, and since it’s not possible to build an 800K System 7 startup floppy disk, you may be wondering what you’re supposed to do in those situations where you simply have to get rid of MultiFinder or start up from a floppy.

The answer is the “Disk Tools” disk which is part of the standard System 7 floppy disk set. This disk contains an old System 6.0.7 startup system, plus copies of HD Setup and Disk First Aid.

You should start up from this disk when you need to initialize an Apple hard drive or when you need to repair a damaged hard drive.

This disk should also be used if Disinfectant or some other anti-viral program cannot repair an infected file because it is “busy.” In this case, you should start up using the Disk Tools disk and run the anti-viral program again.

- **Publish and Subscribe.**

Publish and subscribe is a very major new feature of System 7. We have left it for the end of this document not because it’s unimportant, but for the simple reason that very few programs currently support it, so it’s not something you have to know about or worry about yet.

Publish and subscribe is very similar to copy and paste, except that the link between the copied object and the pasted object is permanent. If you make a change to the published object in the publishing document, the change is immediately reflected in the subscribed object in the subscribing document.

When programs begin to appear on the market which support this new feature, it will make possible a whole new kind of “compound document” which combines pieces of other documents.

Publish and subscribe works over the network as well as within a single Mac. This is a powerful feature.

The whole topic of publish and subscribe has been beaten to death in the trade press, and we refer you to the many articles that have been written for more information.

• Apple events.

Apple events are without a doubt the most exciting new feature in System 7. However, as is the case with publish and subscribe (which are in fact built on top of Apple events), there are few programs available today which support Apple events.

Apple events are a way for different programs to send each other messages and hence cooperate to get a job done. When they are widely implemented in the Mac world, it will be possible to build large custom applications which make use of many smaller programs to accomplish a complicated task which none of the individual programs could have done by themselves. Many of us hope that we will begin to see smaller, more focused programs which do a single thing well, rather than today's huge monolithic monster applications which try to do everything and end up doing none of them very well. This new paradigm of using small focused program "objects" and "wiring them together" with Apple events to build tailor-made personal meta-applications has the potential to radically change the way we do our computing.

As a simple example, we are working on adding Apple events to communications programs, compression utilities, and anti-viral utilities. In the near future, you will be able to configure your communications program to automatically decompress files and check them for viruses every time you download them from a bulletin board. Currently, you have to do each separate operation by hand.

Apple events work over a network just as easily as they do on a single isolated Mac. We expect that they will form the foundation for many new distributed applications which make use of many Macs on a network to get a single job done.

Again, Apple events have been thoroughly discussed in the press, and they are not something you need to worry about today. See the articles for more information.

• Scripting.

Watch for new scripting products which will be appearing in the next year or two. Now that we have System 7, it's possible to create object oriented system-wide scripting languages for the Mac based on Apple events. This will finally give Mac users command languages they can use to automate repetitive tasks. More importantly, these languages will form the "glue" that many users will use to build the kinds of meta-applications we discussed in the previous section. These languages are similar to traditional scripting languages on mainframes, in UNIX, and in MS-DOS, but because they are object-oriented languages which uses messages rather than procedural languages which uses parameter passing, they will be much more flexible and powerful.

Several companies, including Userland Software and Apple itself, are working on these kinds of scripting systems. Userland's "Userland Frontier" scripting product is supposed to be released sometime this Fall.

• Conclusion.

I hope that you are as excited about System 7 as I am, and I hope that you find these notes useful in beginning to learn and use the new system. There's lots of great new features that we can all put to good use immediately. More importantly, there's enormous potential in System 7 (in Apple events in particular.) We ought to begin to see this potential realized over the coming months and years.