FCB Inspector 1.1 is a freeware Control Panel that allows users to peek at a Macintosh's list of open files. It also provides information about these files on demand and can close ones that aren't crucial to system operation. Finally, when using System 6, it allows the maximum number of open files to be changed.

To install it under System 6.0x, drag the **FCB Inspector** file icon into your System Folder and reboot.

To install it under System Software 7.0, drag the **FCB Inspector** file icon over the System Folder icon and click OK to the dialog or drag it directly into the Control Panels folder and reboot. **FCB Inspector** provides balloon help in system 7.

When **FCB Inspector** is opened, it immediately produces a list, located in the upper right pane, of *all* the currently open files (including itself) indicated by each's file name. It continually checks for changes about which files are open and updates the list accordingly. Generally, the list is updated almost immediately after a change occurs. (One instance when this does not occur is during file copying on System 7.) The information is gleaned directly (The Macintosh routine PBGetFCBInfo is not used because it skips certain files and would thus produce an incomplete list) from the Macintosh's own internal list of open files known as the File Control Block Buffer, and each entry is called a File Control Block or FCB for short. Usually, the files appear in the list in the order that they were opened. An unnamed file is simply called "Unnamed File". (This string can be changed by editing the second string in 'STR#' resource -4048.) One of these unnamed files is the file containing a volume's extents, which refers to information about the location of files on a volume, and the other is a file containing a volume's catalog, which refers to information about the hierarchy of folders on a volume.

To find out more about a particular open file, click on its name in the list or use the arrow keys (up arrow goes up the list one selection at a time and down arrow for the reverse; right arrow jumps to the end, and left arrow to the top) to select it. **FCB Inspector** displays most of the information available in the Macintosh's FCB list. Previously, the file list would update the file information items whenever the mouse was clicked in the list. However, it didn't always update the information if a different file became selected. Now it updates the information when the selected file changes. Here's a breakdown of this information field by field:

ioVRefNum — volume reference number. A number that can be used to access information about the volume it specifies.

ioRefNum — file reference number. A number that can be used to access information about the file it specifies. It is actually just an offset into the FCB buffer.

ioFCBFlNm — file number. Apparently not used, this number is not related to file ID's in System 7.

ioFCBFlags — a flag byte describing some characteristics of the file. It is indicated in **FCB Inspector** with abbreviations: rd meaning read-only access, rdwr meaning read-write access; data meaning data fork open, res meaning resource fork open (files are divided into two forks or parts; generally, document files contain their data in data forks and have no resource forks whereas programs contain code and related material exclusively in their resource fork but have no data fork. Each open fork is a separate entry in the FCB); noMod meaning file (in the volume buffer) hasn't been changed since last write, and mod meaning file has been modified since last write.

ioFCBStBlk — first allocation block (space is managed in terms of allocation blocks, which are multiples of logical blocks. A logical block is 512 bytes) of file. Though, this field does not specify the actual value.

ioFCBEOF — logical end of file. That is, the last byte in the file that contains data plus one (because the bytes are numbered from zero). This is the same as the size of the file.

ioFCBPLen — physical end of file. That is, the last byte in the file's last allocation block plus one (because the bytes are numbered from zero).

ioFCBCrPs — current position or mark. The byte where the next read or write operation on the file will take place.

ioFCBClpSiz — file's clump size. The number of bytes (a multiple of the allocation block size) allocated when Allocate is called or end-of-file is reached during a Write routine.

ioFCBParID — parent directory ID. The directory ID of the folder that contains the file.

ioFCBFType — file type. A four-character constant indicating the file's type, such as "APPL" for application, and "cdev" for Control Panel.

To close a file in the list, select it and click the "Close" button. For files that are crucial to system operation such as the System file, the button is dimmed, and it is not possible to close them. This does not mean that just because the button is not dim, it is safe to close a file, and for that reason, it is necessary to click the button. Typing return or enter or double-clicking the filename has no effect. Mostly, the files you want to close are ones opened by a program you are developing and running. Be sure, however, that once you close a file in **FCB Inspector** that you don't try to close it in your own code. If you want to change the files for which the "Close" button is dimmed, they are in 'STR#' resource -4046, and you can edit them there.

FCB Inspector displays and can alter the maximum number of open files allowed. Previously, changing the maximum files number of files on System 7 would cause the system to hang if more than 40 files were opened. Though it is possible to make this feature work, it really isn't required. System 7 doubles the current maximum whenever it is going to be exceeded; hence, the buttons controlling it are dimmed in System 7. However, the feature is still available in System 6. In addition, the displayed maximum number of open files is also updated (in System 7, it changes whenever the current maximum is going to be exceeded). The maximum number of open files is indicated in the boot blocks in a roundabout way. The number there must be multiplied by 10 to get actual maximum. Because this forces the maximum number to be a multiple of 4, and since **FCB Inspector** allows the maximum to be changed in one file increments, it uses another method to set the maximum. This number is derived by first by subtracting two from the first word in the buffer pointed to by FCBSPtr, which indicates the total length, to

eliminate the extra two bytes this word itself adds to the total. Then the result is divided by the size of a single FCB, stored in the word pointed to by FSFCBLen, which is 94 bytes. The default number of open files is 40. To change this number, click and hold the arrow button in the second pane on the left of the **FCB Inspector** display until the desired number is reached in the "New Max" button. The minimum allowed is 40 and the maximum is 348. Finally, click the button, which dims to indicate that this new setting is now the one currently in effect. The change, which involves altering of the total length word of the FCB buffer and the sizing of the buffer accordingly, actually occurs at startup. Since the change occurs in memory only, **FCB Inspector** must be loaded at every startup that you wish the maximum number of open files to be altered.

In the previous version, **FCB Inspector** would crash occasionally while running in the background. This problem is due to a bug in Multifinder (in System 6). **FCB Inspector** now accommodates for this bug. It was also possible for the **FCB Inspector** control panel not to launch in System 7. It now launches properly.

To disable **FCB Inspector** from loading at startup hold down the shift key.

Distribution of **FCB Inspector** must be accompanied with this documentation.

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