Files and Directories

PART I

Whether you work mainly in a Windows environment or eventually create and maintain your own web site on the Mason mainframe computer you need to understand a few things about file management, directories/folders, and paths.

A computer **file** is an electronically stored collection of characters or data. These files might be variously called documents, programs, graphics, etc. If you were to print out a file, you would then have a paper, or hard copy, file. You could put the paper copy in a folder and then place the folder with other folders in a file cabinet. Whatever organization you envision for a real file cabinet can be achieved as well in the electronic file cabinet.

A collection of electronic files can be stored together in a **directory** or **folder**. (There is no real difference between these two – "folder" is the term used by Windows, while the word "directory" is used by DOS and UNIX. Computer directories are also files.) You can store folders within folders (within yet another folder) if you wish. You could use the term **subdirectory** to mean a directory that is stored within a directory. There can be directories within directories, *etc*.
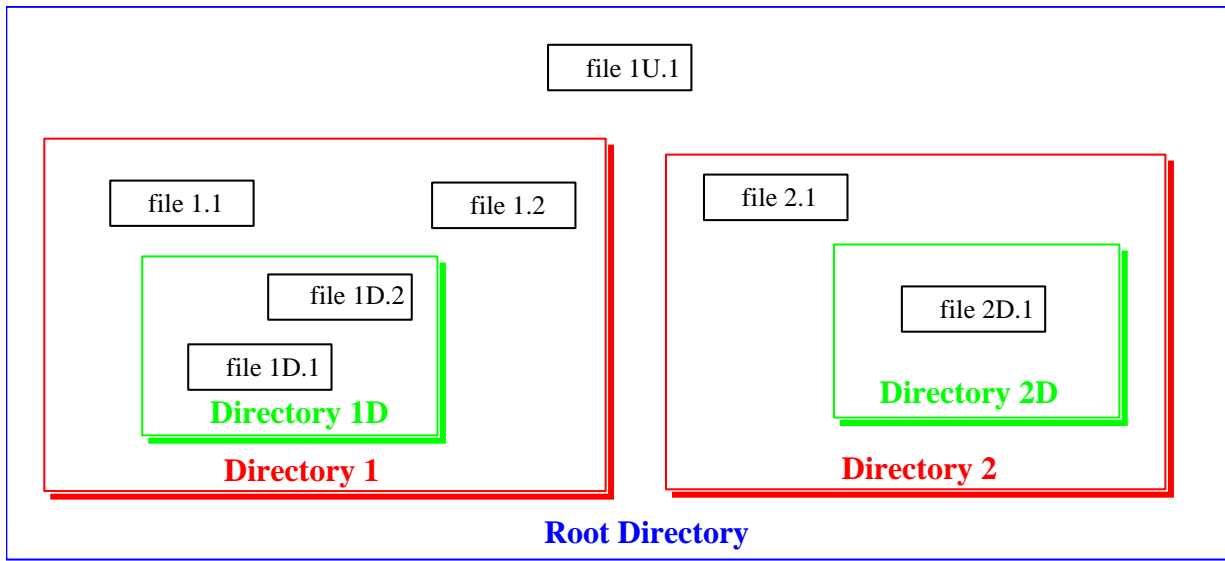

Figure 1

There are several ways to schematically depict a file/directory/folder organization. In *Figure 1*, the main folder is blue, there are two red folders within the main folder, and a green folder within each of the red folders. Each of these folders contains one or more files, although a folder can be empty.

In addition to the file cabinet analogy, we often speak of a **directory tree**. The main, or master directory, is called the **root directory**. Unfortunately, the directory tree is a

"downside up" tree because in the hierarchical structure, the root directory is said to be the highest level, or top, directory, not the lowest one. With this image in mind, *Figure 2* shows the same file structure as *Figure 1*, now shown as an upside-down tree. The main blue directory has two red subdirectory branches that are at the same level. Each of these directories has a green subdirectory branch. In this hierarchy, the blue root directory is the highest level directory and the green directories are two levels below it ("D" in the schematic below means "down"; "U" means "up").
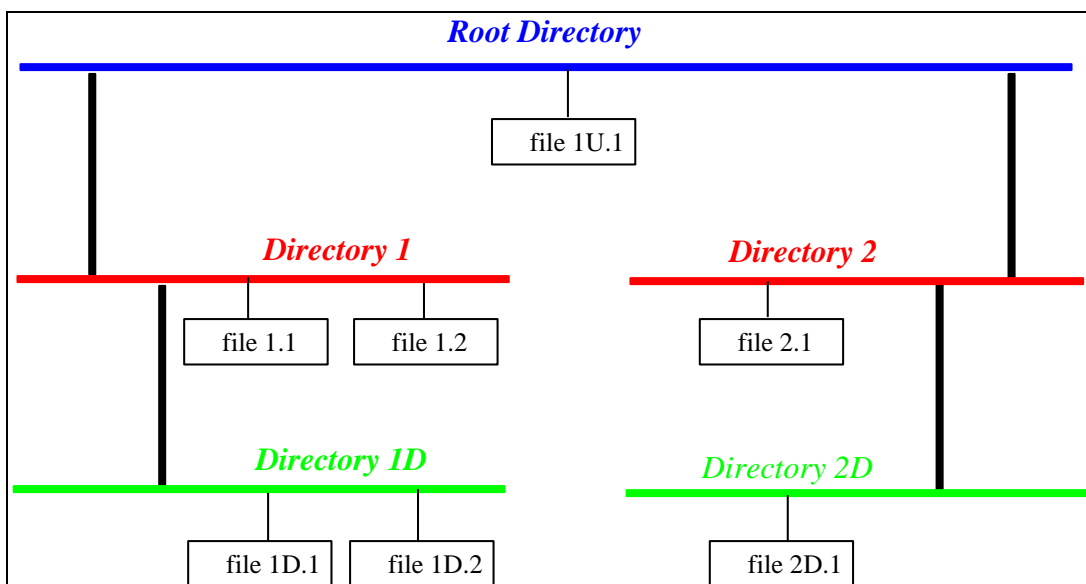

Figure 2

One of our concerns later in building a web site is to describe a **path** that links files and directories at different levels. That is, we write instructions for traversing the directory structure to reach *file 2D.1* from *file 1.1*, for example.

Files and Directories in Windows

Figure 3 below shows how Windows displays the same directory structure as the previous two figures. Be sure to click the "Folders" icon to see this view where the file structure is shown in the left pane and the folder (directory) contents are shown in the right pane. The left pane shows the root directory (A:\) and its subdirectories on a floppy disk. In a sense, the tree directory above has been turned 90 degrees counter-clockwise onto its side.

Directory 1D is highlighted and its contents are shown in the right pane. Selecting any directory on the left shows its contents only at that level, on the right. In the Address bar is shown the **path** from the root directory to Directory 1D. Notice the "backward" slashes separating each directory level.
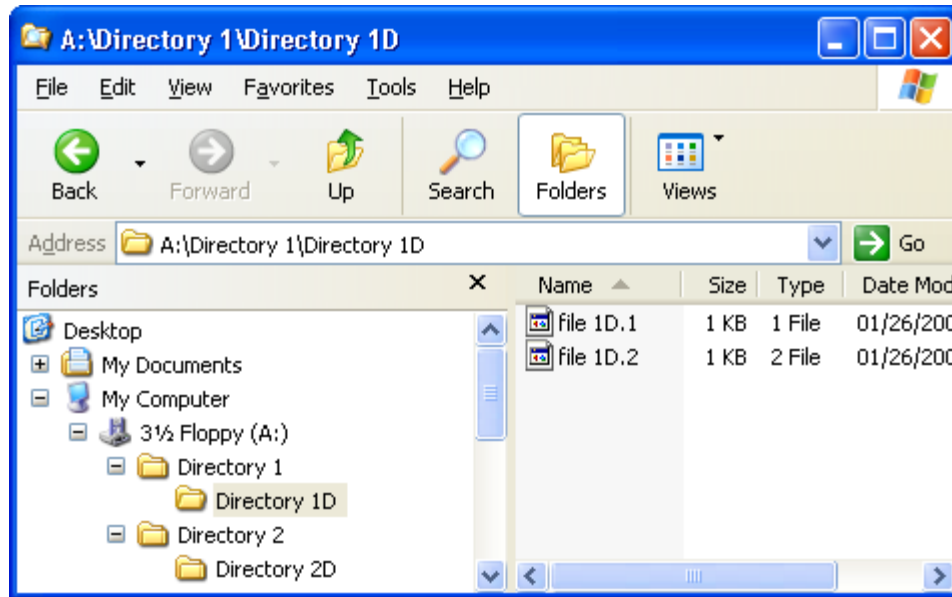
Figure 3

On the toolbar there is a folder icon labeled "Up". Clicking on the icon selects the directory one level above and displays its contents on the right, as you can see below in *Figure 4*. (If you don't see the icon, select **View | Toolbars | Customize** from the menu. To see the file details, (such as Size and Date Modified) select **View | Details** from the menu.)
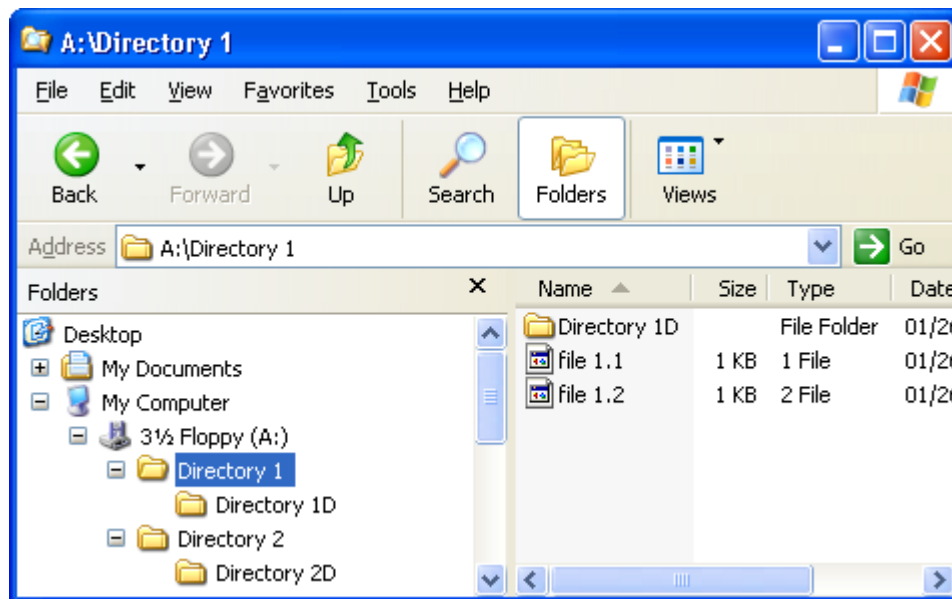

Figure 4

On your PC hard drive, the root directory is almost always called C:\ and there is no higher level. You can make, rename, copy, move and delete directories and files at will on your PC using keyboard shortcuts, clicking icons, or choosing menu items.

You can do these same things within your space on the Mason mainframe computer. On Mason, there are directory levels higher than your **home directory**, but we will consider your home directory to be the highest level you work with.

Files and Directories on the Mason Mainframe

An easy way to see the directory structure of your Mason account is to use the SSH FTP program (FTP = file transfer protocol). Using your username and Mason password, you can access the space on the mainframe that will eventually house your web site and any other electronic documents you wish to store there. When you first connect to Mason using SSH, you should see this window (see the Manual for configuring SSH to connect to your home directory).
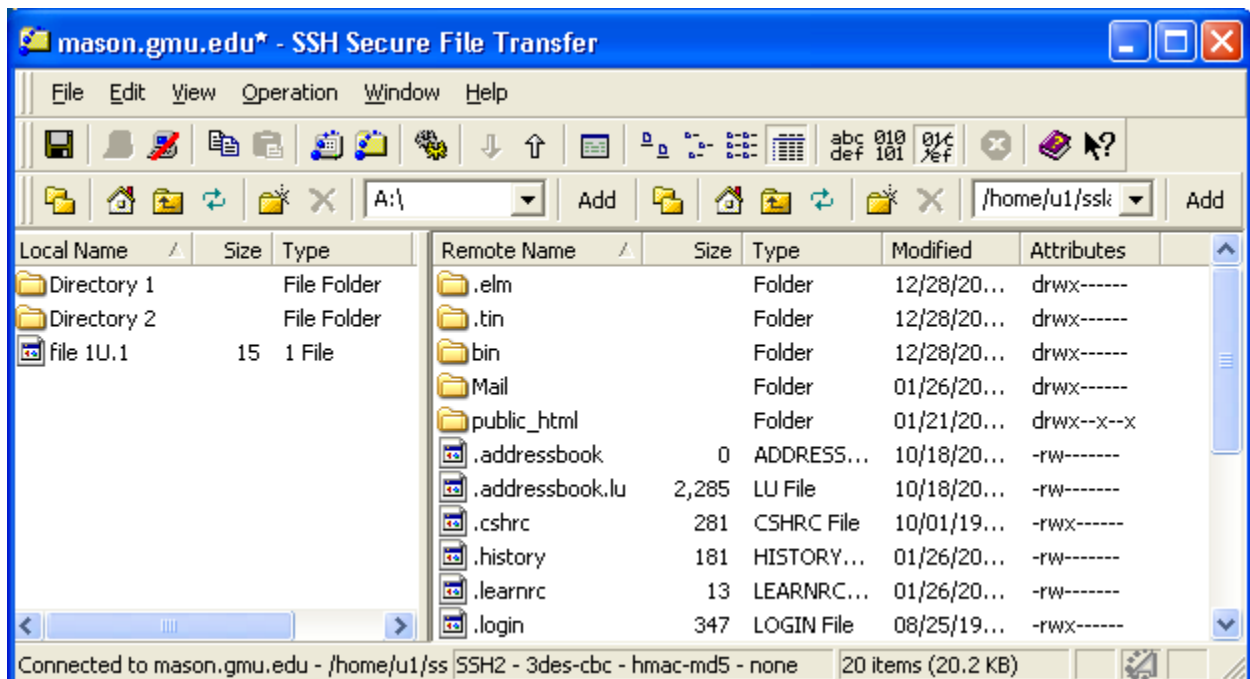

Figure 5

In *Figure 5*, the left pane is your **Local** PC directory, in this case the floppy disk drive, A:\, but if you click on the arrow button (▼) to the right of the Local System address box you will see other accessible drives. (If for some reason SSH does not find your drive, type it in the address box and then add it to your Local favorites. You might have to do this with a flash drive.)

The same directory structure of A:\ as discussed before is partly visible here. Notice the path to the current directory is shown in the box. If you click on the toolbar icon of the folder with an up arrow (↥) the window contents one directory level higher up will display (if it exists). Clicking on a folder in the window will open the folder and display

the file contents in the window. The path shown in the box will change accordingly. In other words, it behaves just like the right pane in Windows Folders view.

The right pane is the **Remote** system that contains several directories and files. (Notice in the local directory the slash after the drive letter is a back slash (\), a DOS and Windows convention, while the slash in the remote system path window is a front slash (/), a UNIX convention.)

The directory *sslayden* is my personal account directory (my root or home directory). Above it, is a directory *u1* (user1). There are several such user directories on Mason, all at the same level. Your account will be in one of the user directories. Above that is a directory named *home*, which is directly below the mainframe's root directory, symbolized by the front slash (/). The contents of the Remote System window specify the path from the root directory of Mason (/) to the current working directory.

Practice

The on-line course Manual chapter "Mainframe Applications" contains more information on using SSH Secure Shell. Follow the instructions there to configure your program.

Configure your FTP program, log on, and look at the directory trees on both your local and remote systems. What is the path to your home directory? Spend some time clicking on various areas of the windows to discover what happens. Make sure you can easily navigate the mainframe as well as your local system.

Set your local system to the root directory, C:\. Practice opening successive lower level directories. Then click the up-arrow to access higher level directories. Watch the path change in the address box and see if you can anticipate what the next change will be.

Practice transferring files between your PC and the mainframe. At the end of the FTP section in the Manual there are a few practice problems.

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