

# Managing Files and Directories with UNIX Commands

## PART II

The on-line course Manual chapter “Mainframe Applications” has instructions for configuring and using **SSH Secure Shell** which is the terminal emulation program used at GMU. You should also install the program on your home computer.

Open a terminal window and log on to Mason using SSH or some other terminal emulation program. After logging on, you are in your **home directory**.

The Mason mainframe computers run Unix as the operating system. Unix is a command-line system, that is, you must type in commands to the computer before they can be carried out. The system is not “friendly” and will not give you much feedback when you do something either correctly or incorrectly.

Unix is case-sensitive, so capital and lower case letters are different! Always press **[Enter]** after every command you type.

### *Where Am I?*

A very useful command is **pwd** (**print working directory**). Here, print means “on-screen”. In general, you cannot set the UNIX prompt to tell you what directory you are in and **pwd** is the way to find out where you are.

### *How Do I Get Home?*

If you ever get lost (and you can easily get lost!), type **cd** (**change directory**), which takes you directly to your home directory.

### *Listing Files and Directories (ls)*

You probably don't have very many files or directories on your Mason account unless you've taken a course that uses it or you've already set up a web site. To see what you do have in your home directory, type **ls** (**list**). The problem with this command is that you cannot differentiate between files and directories and there is not much useful information. There are also some files (called dot files because they begin with “.”) that you don't see listed. There are many **options** you can type that modify the basic **command**.

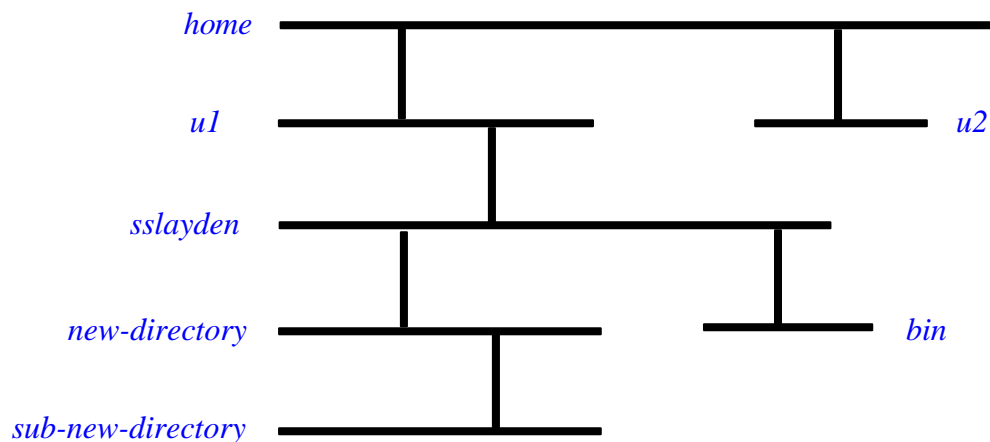
Type **ls -p** with a space after the “s”. The “p” option puts a slash after a directory name. You probably have a “bin” directory. Now type **ls -alp** (all, long). You can now see the “dot files” listed along with a lot of other information about the files. Here is a typical line from a listing:

```
-rw----- 1 sslayden 109 19 Jan 29 14:06 new-file
```

From right to left, the details are the name of the file, the time and date it was modified (after the current year the time is replaced by the year), file size in bytes, the group owner, the owner of the file, the number of links to (names) the file. The columns at the far left are the access “permissions”, to be discussed later.

### **Changing directories command (*cd*)**

Your personal account is not at the top level of the Mason directory structure as you surmised from the `pwd` command. There is also at least one other directory below your home/root directory as you saw from the `ls -p` command.



**RELATIVE PATHNAMES** --Changing directories relative to the current working directory.

#### **Lower level directories**

To go to the *bin* directory that is down one level from your current directory, type **cd bin** (remember, UNIX is case-sensitive). Type **pwd**.

You can go to progressively lower subdirectories whenever there is a (sub)directory within a directory you want to go to. Type **cd** followed by the directory name. This takes you to one level lower each time you issue the command (assuming there are directories below to go to).

To go from a higher to a lower subdirectory several levels down, using just a one-line command, type **cd dir1/dir2/dir3** where each subdirectory is separated by a front slash, /. For example, if the working directory is *u1*, type **cd sslayden/new-directory/sub-new-directory**.

### Higher level directories

When you were in the *bin* subdirectory you were only one directory level away from home. You can get home a couple of ways: type **cd** (always takes you home, wherever you are) or type **cd ..** (dot dot), which changes to the directory one level up (relative to wherever you are). If you want to move up two or more directory levels, type **cd ../..** where each pair of dots moves you up one level. The forward slash separates directories.

It is interesting to see where your account is on the mainframe. Go one level up from your home directory, and then up one level again. After each change, type **pwd** and then **list** the directory contents. Go home by typing **cd**.

To go directly to the root directory of the system, type **cd /**.

### Same level directories

If you want to go to a directory on the same level as the current directory (suppose you are in *bin* and want to go to *new-directory*), type **cd ../new-directory**. That is, first you go up a level and then down again (overall a lateral change). You end up at the same level at which you started, but in a different directory. You can use any combination of dot-dots and front slashes to go to a directory up and then down from your present location.

**FULL (ABSOLUTE) PATHNAMES** – Changing directories by giving a complete path from the root directory (top level) of the Unix file system.

When you type “pwd” you see the full path name to the current working directory. Rather than taking several short, maybe zigzag, relative commands to change to a directory, it may be easier to give the full path.

If I am in *new-directory* and want to go to *bin*, the change directory command followed by the full path from the Unix root directory is **cd /home/u1/sslayden/bin**. However, there are often some practical problems with this approach and you are usually better off using the relative pathnames.

A substitute character for your home directory is the tilde, **~**. You can type a command such as **ls** or **cd** and use the tilde for the absolute path into your home directory and

then specify subdirectories afterwards. For example, from anywhere type **cd ~/new-directory/sub-new-directory** (substituting names for actual directories in your account).

You can also type other commands using the tilde, for example type **ls ~/new-directory** to list the contents of that directory. You remain wherever you are.

There is a link to a practice problem in the on-line Manual.

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