

**Fundamentals of UNIX**  
**Lab 5.4.6 – Listing Directory Information**  
***(Estimated time: 30 min.)***

**Objectives:**

- Learn to display directory and file information
- Use the ls (list files) command with various options
- Display hidden files
- Display files and file types
- Examine and interpret the results of a long file listing
- List individual directories
- List directories recursively

**Background:**

In this lab, you will use the **ls** command, which is used to determine the contents of a directory. This command will display a listing of all files and directories within the current directory or specified directories. If no pathname is given as an argument, **ls** will display the contents of the current directory. The **ls** command will list any subdirectories and files that are in the current working directory if a pathname is specified. It will also default to a wide listing and display only file and directory names. There are many options that can be used with the **ls** command, which makes it one of the more flexible and useful UNIX commands.

**Command Format:    ls [-option(s)] [pathname(s)]**

**Tools / Preparation:**

- a) Before starting this lab, review Chapter 5, Section 4 – Listing Directory Contents
- b) You will need the following:
  1. A login user ID (e.g. user2) and password assigned by your instructor.
  2. A computer running the UNIX operating system with CDE
  3. Networked computers in classroom

**Notes:**

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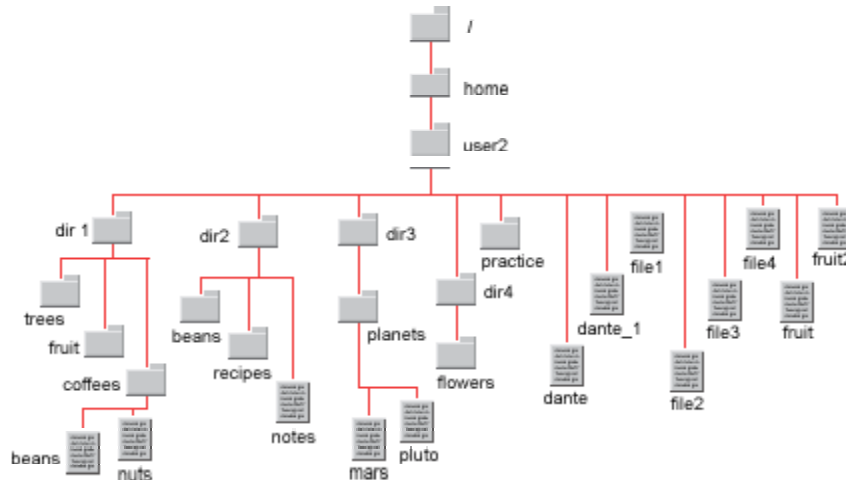
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**Lab 5.4.6 – Listing Directory Information**  
**Worksheet.**

**Use the diagram of the sample Class File system directory tree to assist with this lab.**

## Class File Tree Structure



### Step 1. Log in to CDE

Login with the user name and password assigned to you by your instructor in the CDE entry box.

## Step 2. Access the Command Line

Right click on the **workspace** backdrop and click on **Tools**. Select **Terminal** from the menu to open a terminal window.

### Step 3. Use the Basic `ls` Command

The **ls** (list files) command, when used by itself, will display a listing of all files and directories in the current directory. If you have just logged in your **current directory** should be your **home directory**.

- Enter the command to change to your home directory. What command did you use? \_\_\_\_\_
- Enter the command to verify the directory you are in. What command did you use? \_\_\_\_\_
- Enter the following command: **\$ ls**  
What is displayed? \_\_\_\_\_
- Can you determine whether the items listed are directories or files? \_\_\_\_\_

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**Step 4. Use the ls Command with Arguments**

Arguments for the **ls** command can be directory name(s) (relative or absolute) and file name(s).

- a. Enter the command to display the contents of the **dir2** directory using a relative pathname from your home directory. What command did you use? \_\_\_\_\_
- b. What was the response? \_\_\_\_\_
- c. Enter the command to list the files in the **/etc** directory (a standard UNIX directory under the root) using an **absolute** pathname. What command did you use? \_\_\_\_\_
- d. Enter the command to list the files in the **planets** directory using an **absolute** pathname? What command did you use? \_\_\_\_\_
- e. Enter the command to list only the **dante** file in your home folder (to see if it exists and not see all other files and directories). What command did you use? \_\_\_\_\_

**Step 5. Use the ls Command to see Hidden Files**

File names that begin with a dot (.) are called *hidden* files. Hidden files are frequently used to customize a user's work environment (ex: .profile, .dtpfile, .kshrc, .cshrc etc.). They are not shown by default because they are infrequently edited. The current directory link (.) and parent directory link (..) are also hidden and will not be displayed either since they begin with a dot. Using the **ls** command with the **-a** (all) option will list all files in a directory, including hidden (.) files. Note that the **-a** option is lower case. You should be in your home directory.

- a. Enter the basic **ls** command **without** the any options. Do you to see any hidden files (those that begin with a dot)? \_\_\_\_\_
- b. Enter the command that will allow you to see ALL files in your home directory? \_\_\_\_\_  
How many hidden files are there?  
\_\_\_\_\_
- c. Enter the following to create a new empty file called **.hiddenfile** using the **touch** command (be sure to make the first character a dot). **\$ touch .hiddenfile**
- b. Enter the **ls -a** command again. Is **.hiddenfile** listed? \_\_\_\_\_

**Step 6. Use the ls Command to See File Types**

When using the **ls** command by itself, you can obtain a listing of directory contents but cannot tell which are files and which are directories. By using the **ls** command with the **-F** (File type) you can display a listing with a symbol to tell what the type of the file is. The symbol (if present) is found at the end of the file or directory name. Note that the **-F** option is an upper case F. There are four UNIX file types: Directory, Executable, ASCII text file, and Symbolic link.

**Directory** – A forward slash (/) after the name indicates this is a directory (or subdirectory). A directory is considered a type of file with UNIX.

**ASCII Text File** - If there is no symbol after the name this indicates a plain ASCII text file with no formatting characters in it. (ASCII is the American Standard Code for Information Interchange). An ASCII text file is similar to a DOS text file.

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**Executable** – An asterisk (\*) after the name indicates that this is a command, an application or a script file, which can be run or executed.

**Symbolic Link** – An at sign (@) after the name indicates a symbolic link which is a way of giving a file an alternate name. Symbolic links will not be covered in this course.

- a. From your home directory, enter the basic **ls** command **without** any options. Could you tell whether you are looking at files or directories if it were not for the fact that most of the directories have “dir” in their name? **NO**
- b. Enter the command that will allow you to see the file names in your home directory and their TYPE. List the names of the directories: \_\_\_\_\_
- c. What types of files are present? **Directories (/) and Text Files (no symbol)**
- d. The **/usr/bin** directory contains many UNIX executable commands, some of which you have already used. Enter the command to see the files and types in the **/usr/bin** directory. What command did you use? \_\_\_\_\_
- e. What types of files are present? \_\_\_\_\_
- f. The **/etc** directory contains many different type of UNIX system files. Enter the command to see the files and types in the **/etc** directory. What command did you use? \_\_\_\_\_
- e. Which different kinds of file types do you see? \_\_\_\_\_

**Step 7. Use the ls Command to Displaying a Long Listing**

The previous versions of the **ls** command displayed the names of directories and files in a wide format (across the screen). The **ls** command can be used with the **-l** (long) option to see more detailed information on each file or directory. The **ls -l** option will also distinguish between files and directories. Note that the **-l** option is a lower case letter L.

Shown below is an example of a long listing for a file (dante) and a directory (dir1). The listing is interpreted as follows: The first position of the display indicates whether this is a file or a directory. The lower case letter **d** indicates a **directory**; the **dash** (-) indicates a **file**.

The next group of characters (r,w,x and dashes) are the **permissions** for the file or directory. Next is the number of **links** (1, 5), followed by the **owner** (user2), the **group** (staff), **file size** (320, 512), the **date and time created** (or modified) and then the **name** of the file or directory.

```
-rw-r--r--  1  user2  staff   320   Dec 7  11:43  dante
drwxr-xr-x  5  user2  staff   512   Dec 4  13:43  dir1
```

- a. From your home directory, enter the basic **ls** command **without** any options. What information was displayed on each file or directory listed? \_\_\_\_\_
- b. Enter the command that will allow you to see a **long** listing for the file names in your home directory. What command did you enter? \_\_\_\_\_
- c. How many files are over 300 bytes in size? \_\_\_\_\_

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d. Who is the owner of the files? \_\_\_\_\_

Using -t (time) option will list files with the most recently modified at the top of the list. To get a detailed (long) listing of files sorted by time (most recent at the top) use the **ls -lt** version of the command.

e. Enter the **ls -lt** command. What is the most recently created or modified file?

\_\_\_\_\_

**Step 8. Use the ls Command to List Individual Directories**

Use **ls -ld** to display detailed information about a directory, but not its contents. This is useful when you want to see the permissions on a directory and not the information about its contents.

a. From your home directory, enter the command that will provide a long listing of just the information for the **dir2** directory. \_\_\_\_\_

b. From your home directory, enter the command that will provide a **long** listing for just the information on the **fruit** directory using a relative pathname. \_\_\_\_\_

**Step 9. Use the ls Command to List Directories Recursively**

Use **ls -R** (recursive) to display the contents of a directory and all of its subdirectories. Recursive means to do again and again. This option is useful if you want to see all directories, subdirectories and their contents for a particular part of the directory tree. If this is done at a high level in the directory structure the output can be substantial. Note that the -R option is an upper case R.

a. From your home directory, enter the command that will provide a recursive listing for the **dir2** directory. \_\_\_\_\_

b. What was the result of the command? \_\_\_\_\_

**Step 10. Close the Terminal Window and Logout**

Double click on the dash button in the upper left corner of the screen, then click the **EXIT** icon on the front panel.