

Fundamentals of UNIX
Lab 5.5.2 – Directory Listings with Metacharacters
(Estimated time: 30 min.)

Objectives:

- Review some commonly used metacharacters
- Use the **ls** (list files) command with metacharacters
- Use the Asterisk (*) to substitute for zero or more characters
- Use the Question Mark (?) to substitute for a single character
- Use Square Brackets to substitute for a range of characters
- Use the semicolon to execute multiple commands on one command line

Background:

In this lab you will work with various metacharacters and use them with the **ls** command to refine your directory listings. Metacharacters are keyboard characters with special meaning to the shell. A general definition of a metacharacter is any keyboard character that is not alphanumeric. Metacharacters are used with many UNIX commands to provide greater flexibility. Some of the metacharacters used with UNIX are similar in function to those used with DOS. The asterisk (*) and the question mark (?) are metacharacters which are also known as wildcards. You will work with the **ls** command and the following common metacharacters with this lab.

Metacharacter	Name	Function
~	Tilde	Shortcut to home directory
*	Asterisk	Character substitution (also called splat)
?	Question Mark	Character substitution
[]	Square Brackets	Range definition

Tools / Preparation:

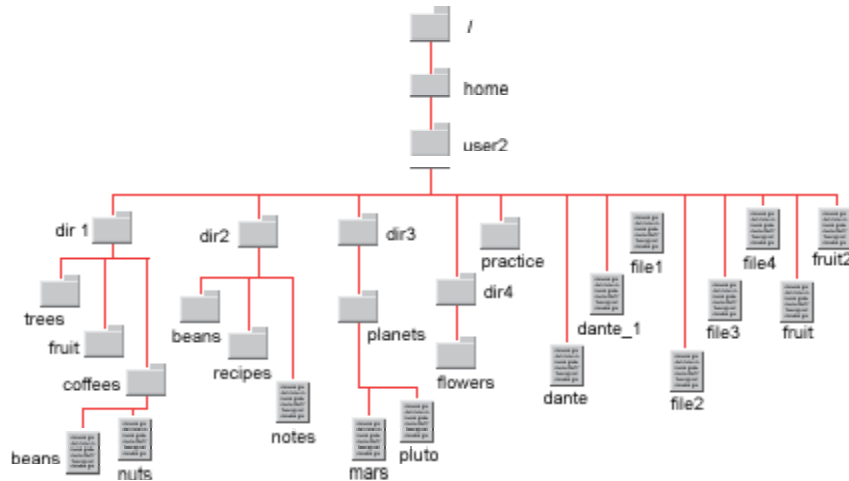
- a) Before starting this lab, review Chapter 5, Section 5 – Identifying and Using Metacharacters
- b) You will need the following:
 1. A login user ID (e.g. user2) and password assigned by your instructor.
 2. A computer running the UNIX operating system with CDE
 3. Networked computers in classroom

Notes:

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**.

- a. Enter the command to change to your home directory. What command did you use? _____
- b. Enter the command to verify the directory you are in. What command did you use? _____
- c. Enter the following command: **\$ ls**
What is displayed? _____

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Step 4. Use the `ls` Command With the Asterisk (*) Metacharacter

The asterisk (*) is a substitution symbol that represents *zero* or *more* characters, except the leading dot on a hidden file. The asterisk is often referred to as a *wildcard* character. If there were a large number of files in a directory and you only wanted to see a listing of project files that started with `p1` you could use the asterisk to limit the numbers of files listed. As an example, the command `ls p1*` would list all files and directories starting with `p1` and any number of characters after that. The asterisk can be placed at the beginning or end of the string being tested (or on both ends it looking for some characters in the middle). If you enter `ls *d` you will see only those files and subdirectories that start with the letter `d` and you will also see all files and any files in subdirectories that start with `d`.

- a. Enter the command to list files and directories in your **home** directory that **start** with the **letter f**. What command did you use? _____
- b. What was listed? _____
- c. Enter the command to list files and directories in your **home** directory that **start** with the **letter d**. What command did you use? _____
- d. What was listed? _____

- e. Enter the command to list files and directories in your **home** directory that **end** with the **number 1**. What command did you use? _____
- f. What was listed? _____
- g. Enter the command to list files and directories in your **home** directory that have the characters '**ru**' in the middle of the file name. What command did you use? _____
- h. What was listed? _____
- i. Enter the command to list files and directories in the **coffees** directory that start with the **letter n** using a **relative pathname**. What command did you use? _____
- j. What was listed? _____

Step 5. Use the `ls` Command With the Question Mark

The question mark (?) is a substitution character that matches any *single* character, except for the leading dot on a hidden file. The question mark is also referred to as a *wildcard* character. The example below shows the use of the `ls` command using the question mark in the fourth position. This indicates that the file or directory name must start with **dir** but any character can be in the fourth position and the file name cannot be more than four characters long.

```
$ ls dir?
```

- a. Enter the command to list files and directories in your **home** directory that **start** with the **letters file** in the first four positions with anything in the fifth position but are not longer than five characters. What command did you use? _____
- b. What was listed? _____

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Worksheet – Cont.

c. Enter the command to list files and directories in your **home** directory that **start** with the **letter f** in the first position with anything in the **second** and **third** positions and the characters **e3** in the last two positions that are not longer than five characters. What command did you use? _____

d. What was listed? _____

Step 6. Use the ls Command With Square Brackets

Square brackets ([]) can be used to match a set or range of characters for a single character position in the file or directory. The characters inside the brackets do not generally need to be in any order; for example, [abc] is the same as [cab]. However, if you are looking for a range of characters, they must be in proper order (for example, [a–z] or [3–9]). If you want to search for all alphabetic characters, whether lowercase or uppercase, use [A–z] for the pattern to match. You can use alphabetic or numeric characters for the search pattern.

The examples below uses square brackets along with the asterisk wildcard character. The first example defines a range and will list all files and directories that start with the lower case letters b through f with anything after that. The second example specifies that the first character must be either the letter a or f and anything can be after that.

```
$ ls [b-f]*
dante    dir1    dir3    file1    file3    fruit    practice
dante_1  dir2    dir4    file2    file4    fruit2
```

```
$ ls [af]*
file1    file2    file3    file4    fruit    fruit2
```

a. Enter the command to list files and directories in your **home** directory that **start** with the **letters f through p** with anything the remaining positions. What command did you use? _____

b. What was listed? _____

c. Enter the command to list files and directories in your **home** directory that **start** with any characters but have the numbers 1 through 3 in the last character. What command did you use? _____

d. What was listed? _____

e. Enter the command to list files and directories in your **home** directory that **start** with either **d** or **p** and have any characters in the remaining positions. What command did you use? _____

f. What was listed? _____

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Step 8. Use the Semicolon to Separate Commands

The semicolon (;) enables you to enter multiple commands on a single command line before pressing enter. The semicolon is also referred to as the *command separator*. The example below shows two examples using the semicolon to separate commands. In the first example, the `clear` command will clear the screen, the `cd` command will return you to your home directory and the `ls` command will list files in that directory. The second example displays the current date and time, and then the calendar for the current month.

```
$ clear;cd;ls
dante  dir1  dir3  file1  file3  fruit  practice
dante_1 dir2  dir4  file2  file4  fruit2
```

```
$ date;cal
Wed Feb 28 11:05:39 MDT 2001
    February 2001
  S  M Tu  W Th  F  S
                1  2  3
  4  5  6  7  8  9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28
```

- a. Enter a series of commands on one line to clear the screen, display the current working directory, and then display a long listing of files in your **home**. What did the series of commands look like?
-

Step 9. 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.