**OPS102 – Week 3 – File Systems - Sample Lab**

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**ALL ANSWERS ARE HIGHLIGHTED**

**Activity 1: File Globing**

When issuing Linux or Windows commands, it may be **more efficient** (less typing) to use **filename expansion symbols** also called **File Globing** to match files that share similar characteristics (e.g. same file extension) when issuing Linux commands.

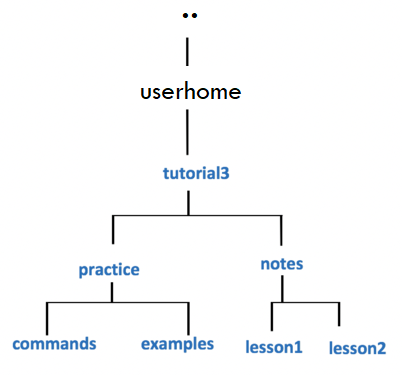
***Example****:* You can use a special character to indicate to the Bash shell to match all files that end with the extension ".txt" in your current working directory:

**ls \*.txt**  
a.txt b.txt c.txt 1.txt 2.txt 3.txt abc.txt work.txt

Below are the most common Filename Expansion symbols and how they are used for filename expansion:

|  |  |
| --- | --- |
| **Filename Expansion Symbol** | **Purpose** |
| **\*** | Asterisk (\*) to represent **0 or more characters** |
| **?** | Question mark (?) to represent **exactly one character (any character)** |
| **[ ]** | Square brackets ([ ]) to represent and match for the  **character enclosed within the square brackets**. It represents ONLY ONE character - it's like a **Question Mark (?)** but with **conditions or restrictions.** |
| **[! ]** | Square brackets containing an exclamation mark immediately after the open square bracket ([! ]) to represent and match and **OPPOSITE** character for the character enclosed within the square brackets. |

Consider following file hierarchy for the activities in this section. This applies to both of Linux and Windows.



You will now get practice issuing file management commands using **filename expansion symbols**. We will be using the directory structure given above.

A great way to practice filename expansion, use the **touch** command on Linux to create a lot of empty filenames (for windows use any preferred way to create such files.), write the **ls/dir** commands that use **filename expansion**, predict the filenames that will be display, and finally run the command to check your work.

**Perform the following steps for Linux and repeat them for windows using equivalent commands learnt previously:**

1. Issue a Linux command to move to the **examples** directory  
   (i.e. under *practice* directory as shown in diagram to the right).

cd tutorial3/practice/examples/

1. Issue a Linux command to confirmed that you have moved to the **examples** directory.

pwd

1. Issue the **touch** command to create the following empty text files in the *examples* directory:  
   (note *upper* and *lowercase* letters)

**abc.txt  
def.text  
hij.TxT  
1a4.txt  
123.TXT  
456.txt  
6u9.txt  
ab2.html  
1234.txt  
abcdef.txt  
abcde.txt**

touch abc.txt def.text hij.TxT 1a4.txt 123.TXT 456.txt 6u9.txt ab2.html 1234.txt abcdef.txt abcde.txt

1. If you encounter errors, then make corrections (eg. **viewing directory contents**, **check for correct filename syntax**, **case sensitivity**, **missing files**, **files in the wrong location**, etc.)
2. Issue the **ls** command to get a listing of files in your *examples* directory.

The output should look identical to the diagram displayed below.  
You can refer to this listing to see all files so you can then predict the output from Linux commands that use filename expansion symbols.

[Listing-1.png](https://wiki.cdot.senecacollege.ca/wiki/File:Listing-1.png)

ls

1. What do you think the output will be from the following Linux command?  
   **ls ???.txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Filename should be 3 characters with extension .txt

**Expected:**  
1a4.txt 456.txt 6u9.txt abc.txt

**Actual:**  
1a4.txt 456.txt 6u9.txt abc.txt

1. What do you think the output will be from the following Linux command?  
   **ls ?????.txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Filename should be 5 characters with extension .txt

**Expected:**  
abcde.txt

**Actual:**  
abcde.txt

1. What do you think the output will be from the following Linux command?  
   **ls ??????.txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Filename should be 6 characters with extension .txt

**Expected:**  
abcdef.txt

**Actual:**  
abcdef.txt

1. What do you think the output will be from the following Linux command?  
   **ls [0-9].txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.br>Did the command work?  
   What does this teach you about the character class [ ] symbol?

No filename has 1 number with extension .txt

**Expected:**  
“No such file or directory”

**Actual:**  
“ls: cannot access [0-9].txt: No such file or directory”

1. What do you think the output will be from the following Linux command?  
   **ls [0-9][0-9][0-9].txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Filename should be 3 numbers with extension .txt

**Expected:**

456.txt

**Actual:**  
456.txt

1. What do you think the output will be from the following Linux command?  
   **ls [a-z][a-z][a-z].txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Filename should be 3 lowercase letters with extension .txt

**Expected:**

abc.txt

**Actual:**  
abc.txt

1. What do you think the output will be from the following Linux command (using character class with UPPERCASE letters)?:  
   **ls [A-Z][A-Z][A-Z].txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

No filename has 3 capital letters with extension .txt

**Expected:**

“No such file or directory”

**Actual:**  
abc.txt

1. What do you think the output will be from the following Linux command (using character class using alpha-numeric characters)?  
   **ls [a-zA-Z0-9][a-zA-Z0-9][a-zA-Z0-9].txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Filename should be 3 characters, either number and/or a letter of any case, with extension .txt

**Expected:**

1a4.txt 456.txt 6u9.txt abc.txt

**Actual:**  
abc.txt

1. What do you think the output will be from the following Linux command?  
   **ls \*.txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer. Did ALL text files get listed? Why not?

Filename should be 3 characters, either number and/or a letter of any case, with extension .txt

**Expected:**

1234.txt 1a4.txt 456.txt 6u9.txt abcdef.txt abcde.txt abc.txt

**Actual:**  
1234.txt 1a4.txt 456.txt 6u9.txt abcdef.txt abcde.txt abc.txt

1. What do you think the output will be from the following Linux command?  
   **ls \*.[tT][xX][tT]**  
   **Write down the expected output** on paper, then **issue the command** to check your answer. Did ALL text files get listed this time? If so, why?

Filename should any name, with extension being any case variation of .txt

**Expected:**

1234.txt 123.TXT 1a4.txt 456.txt 6u9.txt abcdef.txt abcde.txt abc.txt hij.TxT

**Actual:**  
1234.txt 123.TXT 1a4.txt 456.txt 6u9.txt abcdef.txt abcde.txt abc.txt hij.TxT

1. **NOTE:** We have just been using filename expansion symbols just with the ls command.  
   Filename expansion symbols can be used for ANY Linux file management command (e.g. **cat**, **more**, **less**, **cp**, **mv**, **rm**, **ls**, etc.).  
   Let's get some practice issuing these other Linux file management commands.
2. Issue the following Linux command: **file \*.[tT][xX][tT]**  
   What is the purpose of this command? Which files are contained in this output?

**Output:**

1234.txt: empty

123.TXT: empty

1a4.txt: empty

456.txt: empty

6u9.txt: empty

abcdef.txt: empty

abcde.txt: empty

abc.txt: empty

hij.TxT: empty

The **file** command is used to determine the type of a file. In this case, it is checking for files that have any name, with extension being any case variation of .txt

1. Change to the **commands** directory using an **absolute** pathname  
   (use the diagram on right-side for reference).

cd /home/gnovello/tutorial3/practice/commands/

1. Issue a Linux command to confirm that you are now in the **commands** directory.

pwd

1. Issue the following Linux command (lowercase "l" NOT the number "1"):  
   **cp /bin/l\*   .**  
   View the contents of the contents directory. What did this command do?

It copied all the files in /bin/ that began with the letter “l” into the current directory.

1. Issue the following Linux command: **rm \***  
   View the contents of the contents directory. What did this command do?

It removed all the files in the current directory.

1. Issue the following Linux command (lowercase "l" NOT the number "1"):  
   **cp /bin/l?   .**  
   View the contents of the contents directory. What did this command do?

It copied all the files in /bin/ that began with the letter “l”, and are only 2 characters, into the current directory.

1. Issue the following Linux command: **rm l[!s]**  
   View the contents of the contents directory. What did this command do?

It removed all the files began with the letter “l”, unless the second character is an “s”, in the current directory.

1. Use a text editor (nano or vi) to create the file called **ab** in the **commands** directory that contains the line of text below,  
   and then save editing changes to this file:  
   This is file ab

nano ab ~/tutorial3/practice/commands/ab

1. Use a text editor (nano or vi) to create the file called **cd** in the **commands** directory that contains the line of text below,  
   and then save editing changes to this file:  
   This is file cd

nano cd ~/tutorial3/practice/commands/cd

1. Use a text editor (nano or vi) to create the file called **ef** in the **commands** directory that contains the line of text below,  
   and then save editing changes to this file:  
   This is file ef

nano ef ~/tutorial3/practice/commands/ef

1. Issue the following Linux command: **cat ??**  
   View the contents of the contents directory. What did this command do? Why does the output look strange?  
   **NOTE:** Press the keys **ctrl-c** to return to the shell prompt.

This command outputs all the text in files that have filenames with 2 characters, that are in the current directory. This includes the ‘ls’ file that was copied from the ~/bin/ directory, which contains unreadable text.

1. Issue the following Linux command: **cat [!l][!s]**  
   View the contents of the contents directory. What did this command do? Does the output look better? If so, why?

This command outputs all the text in files that are in the current directory, that have filenames with 2 characters, and that do not contain the letter “l” as the first character, and the letter “s” as the second character. This excludes the ‘ls’ file that was copied from the ~/bin/ directory, which contains unreadable text, and only outputs the 3 files created previously.