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

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**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.

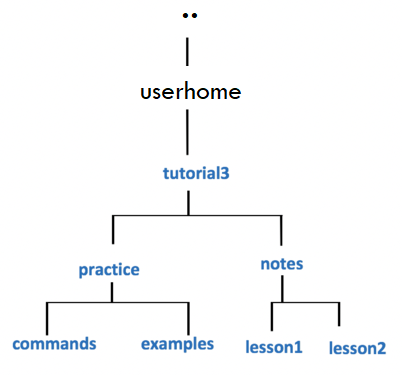
***Example****:* You can use a special character to indicate to the Bash shell to match all files that end with the extension ".txt" in your current working directory:

**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).



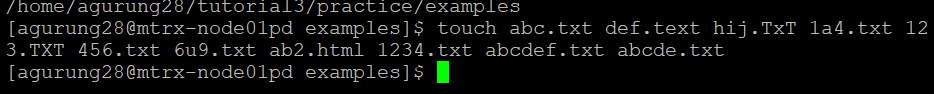
1. Issue a Linux command to confirmed that you have moved to the **examples** directory.

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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**

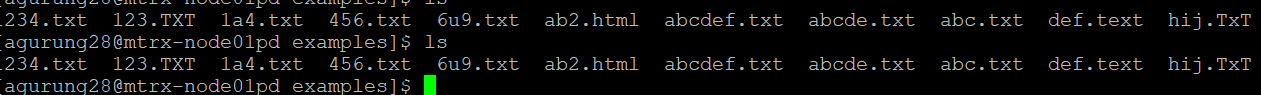
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1. If you encounter errors, then make corrections (eg. **viewing directory contents**, **check for correct filename syntax**, **case sensitivity**, **missing files**, **files in the wrong location**, etc.)

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1. 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)

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.

Maybe the output will be: - 1a4.txt, 6u9.txt, 456.txt, abc.txt

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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.

Maybe the output will be: - abcde.txt

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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.

Maybe the output will be: - abcdef.txt

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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?

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The command didn’t work.

What does this teach you about the character class [ ] symbol?

= The symbol [] matches a single character or a specific range of characters and checks whether any character matches or not.

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.

Maybe the output will be: - 456.txt

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Description automatically generated

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.

Maybe the output will be: - abc.txt

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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.

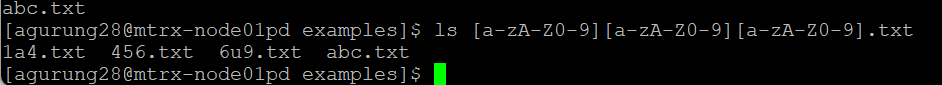
As there are no uppercase file maybe the command will not work.

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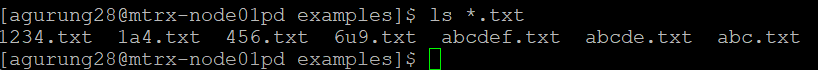
1. What do you think the output will be from the following Linux command (using character class using alpha-numeric characters)?  
   **ls [a-zA-Z0-9][a-zA-Z0-9][a-zA-Z0-9].txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer.

Maybe the output will be: - 456.txt, 1a4.txt, 6u9.txt and abc.txt

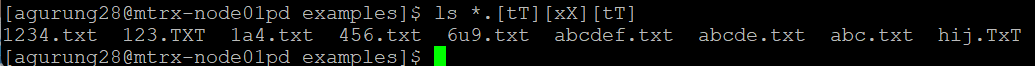


1. What do you think the output will be from the following Linux command?  
   **ls \*.txt**  
   **Write down the expected output** on paper, then **issue the command** to check your answer. Did ALL text files get listed? Why not?

= This command only displays the files with .txt as 1234.txt, 1a4.txt, 456.txt, 6u9.txt, abcdef.txt, abcde.txt, abc.txt. It will not display uppercase even if the spelling of the file name is are same in the both files. As Linux is case sensitive.



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?

Maybe the output will be: - 1234.txt, 1a4.txt, abc.txt, 456.txt, 6u9.txt, abcdef.txt, abcde.txt, hij.TxT,123.TXT.

Not all files are displayed because extensions of files with .html and .text characters are not mentioned in brackets.

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.

1. Issue the following Linux command: **file \*.[tT][xX][tT]**  
   What is the purpose of this command? Which files are contained in this output?

The purpose of this command is to display and recognize the information of the file. Files with extensions like .txt, .Txt, and .TXT are displayed.

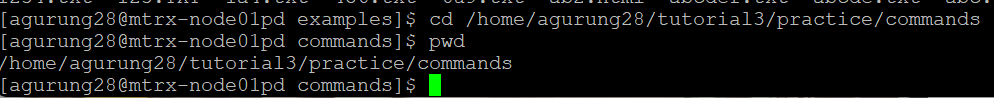
A screen shot of a computer

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



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

=The command copied all the files starting with “I” to command directory from the bin.

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

= The command rm \* will delete all the files from the command directory.

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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 copies 2 digit file starting with ‘”l”.

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

=Delete all the file except ls.

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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

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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

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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

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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?

= The command cat ?? shoes the file with two characters. The output look strange because of the binary file located in the commands folder.

A screenshot of a computer screen

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**NOTE:** Press the keys **ctrl-c** to return to the shell prompt.

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

= The output looks better as file exist as per the command.