Manual and Assignment for Operating System Lab (CS693)

Lab # 2:

Objectives

- Meta Characters :
  - ***** **wildcard**: The * (asterisk) metacharacter is used to match any and all characters. Typing the following command will list all files in the working directory that begin with the letter l regardless of what characters come after it:

    ```
    $ ls l*
    ```

    The * (asterisk) metacharacter can be used anywhere in the filename. It does not necessarily have to be the last character.

  - **? question mark:** The ? (question mark) metacharacter is used to match a single character in a filename. Typing the following will list all of the files that start with "not" and end with a single character:

    ```
    $ ls not?
    ```

    Like the asterisk, the ? (question mark) metacharacter can be used as a substitution for any character in the filename.

  - **[ ] brackets:** Brackets ([…]) are used to match a set of specified characters. A comma separates each character within the set. Typing the following will list all files beginning with "a", "b", or "c":

    ```
    $ ls [a,b,c]*
    ```

  - **- hyphen:** Using the - (hyphen) metacharacter within [] (brackets) is used to match a specified range of characters. Typing the following will list all files beginning with a lowercase letter of the alphabet:

    ```
    $ ls [a-z]*
    ```

  - > **redirection:** Redirect the standard output to replace the current content. Typing the following command will replace the content of the file note1 by the output of the who command.

    ```
    $who > note.lst
    ```

  - < **redirection:** Redirect the standard input to a particular command. Typing the following command will redirect the content of note.lst to the command wc -l.

    ```
    $wc -l < note.lst
    ```

  - **| pipe:** Pipe | seperates commands to form a pipe. Typing the following command will display the same output which can be obtained by executing previous two commands in sequence.

    ```
    $who | wc -l
    ```

    - **$ <u>(system) variable:</u>** Indicates that the following text is the name of a shell (environment) variable whose value is to be used. Typing the following commands will display the value of a which is 4.

      ```
      $a=4
      $echo $a
      ```

- UNIX commands (cont'd) :
    - **<u>cal:</u>** Shows the current calender in the terminal. It can be used with several options. To learn more type $man cal.
    - **<u>date:</u>** Shows the date and time to the nearest second.
    - **<u>cmp:</u>** It compares two files of any type and writes the results to the standard output. By default, cmp is silent if the files are the same; if they differ, the byte and line number at which the first difference occurred is reported.
    - **<u>comm:</u>** The comm command compares two sorted files line by line. With no options, comm produces three-column output. Column one contains lines unique to FILE1, column two contains lines unique to FILE2, and column three contains lines common to both files.
    - **<u>diff:</u>** It tells which lines of one file have to be changed to make two files identical.
    - **<u>head:</u>** head by default, prints the first 10 lines of each FILE to standard output. With more than one FILE, it precedes each set of output with a header identifying the file name. If no FILE is specified, or when FILE is specified as a dash ("-"), head reads from standard input.
    - **<u>tail:</u>** Print the last 10 lines of each FILE to standard output. With more than one FILE, precede each with a header giving the file name. With no FILE, or when FILE is -, read standard input.
    - **<u>sort:</u>** sort is a simple and very useful command which will rearrange the lines in a text file so that they are sorted, numerically and alphabetically. By default, the rules for sorting are:
        - lines starting with a number will appear before lines starting with a letter;
        - lines starting with a letter that appears earlier in the alphabet will appear before lines starting with a letter that appears later in the alphabet;
        - lines starting with a lowercase letter will appear before lines starting with the same letter in uppercase.

      Sorting can be done in reverse(descending) order with an option -r.
    - bc
    - expr
    - grep

<u>Assignment</u>

0. For each command, give a brief description of what it does and two examples of how it can be used

Command	Description	Syntax	Sample Output

1.

a. Display the current time in 12-hour format.
b. With a user-specified date, display only the day of the week (e.g. Tuesday).

2. Write the command to find the square root of 4.
3. Show how we can calculate the following expression in the terminal of UNIX
A=5, b=6,z=15

Total = (A*b) + (z/A)

Display the Total.

4. How can we sort a list of numbers in a file (both ascending and descending order)?
5. Create the file *student.dat* as follows:
Roll | Name | Dept | Year
105 | Anik | CSE | 1st
101 | Debesh | CSE | 2nd
108 | Aniket | IT | 1st
200 | Mainak | ECE | 2nd
105 | Anik | CSE | 1st
a. Sort the data according to Roll.
b. Sort the data according to Dept.
c. Show only the records of students from the CSE Dept.

6. Show the last 2 lines of the file *animals.txt*.
7. Show the first 3 lines of the file *animals.txt*.
8. (Re-Visit) List only the directory files in your current directory.
9. Count the number of directories in your current directory.
10.
Dog is a domestic animal
Dog hates cat
Cat drinks milk
Dog is bigger than Cat
Cat is also a domestic animal
a. Find the total number of lines contains the word ‘Dog’ in animals.txt.
b. Also find the total number of lines does not contain the word ‘Dog’ in animals.txt.
c. Display the lines in animals.txt that end with the word 'cat'.