LAB – 1: BASIC LINUX COMMANDS

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Problem Statement:

Execution of basic Linux commands

Objectives:

1. To understand how to use Unix commands.
2. To understand How and Why they are used in Shell Programming

Description:

To execute a command, type its name, options and arguments at the shell prompt.

<command> -<option> <argument>

General Purpose Commands:

1. *date*: To display current date & time of the system.

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date
Thursday 11 January 2024 09:14:32 PM IST
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date -d "2000-11-22 09:10:15"
Wednesday 22 November 2000 09:10:15 AM IST
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date --date="09/10/1960"
Saturday 10 September 1960 12:00:00 AM IST
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date +"Year: %Y, Month: %m, Day: %d"
Year: 2024, Month: 01, Day: 11
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date --date="next monday"
Monday 15 January 2024 12:00:00 AM IST
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date -d 'TZ="Australia/Sydney" 04:30 next Monday'
Sunday 14 January 2024 11:00:00 PM IST
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date +%s
1704987921
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat datefile
Sep 10 2023
10/12/2022
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ date --file=datefile
Sunday 10 September 2023 12:00:00 AM IST
Wednesday 12 October 2022 12:00:00 AM IST
```

2. *cal*: To display calendar of current month.

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cal
    January 2024
Su Mo Tu We Th Fr Sa
    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 29 30 31
```

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cal -y
                             2024
       January                February                March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
    1  2  3  4  5  6                1  2  3                   1  2
 7  8  9 10 11 12 13    4  5  6  7  8  9 10    3  4  5  6  7  8  9
14 15 16 17 18 19 20   11 12 13 14 15 16 17   10 11 12 13 14 15 16
21 22 23 24 25 26 27   18 19 20 21 22 23 24   17 18 19 20 21 22 23
28 29 30 31            25 26 27 28 29         24 25 26 27 28 29 30
                                              31

        April                   May                    June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
    1  2  3  4  5  6             1  2  3  4                      1
 7  8  9 10 11 12 13    5  6  7  8  9 10 11    2  3  4  5  6  7  8
14 15 16 17 18 19 20   12 13 14 15 16 17 18    9 10 11 12 13 14 15
21 22 23 24 25 26 27   19 20 21 22 23 24 25   16 17 18 19 20 21 22
28 29 30               26 27 28 29 30 31      23 24 25 26 27 28 29
                                              30

         July                  August               September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
    1  2  3  4  5  6                1  2  3    1  2  3  4  5  6  7
 7  8  9 10 11 12 13    4  5  6  7  8  9 10    8  9 10 11 12 13 14
14 15 16 17 18 19 20   11 12 13 14 15 16 17   15 16 17 18 19 20 21
21 22 23 24 25 26 27   18 19 20 21 22 23 24   22 23 24 25 26 27 28
28 29 30 31            25 26 27 28 29 30 31   29 30

       October               November               December
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
    1  2  3  4  5                   1  2    1  2  3  4  5  6  7
 6  7  8  9 10 11 12    3  4  5  6  7  8  9    8  9 10 11 12 13 14
13 14 15 16 17 18 19   10 11 12 13 14 15 16   15 16 17 18 19 20 21
20 21 22 23 24 25 26   17 18 19 20 21 22 23   22 23 24 25 26 27 28
27 28 29 30 31         24 25 26 27 28 29 30   29 30 31

shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cal 08 2022
     August 2022
Su Mo Tu We Th Fr Sa
    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 29 30 31

shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cal 2023
                             2023
       January                February                March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7             1  2  3  4             1  2  3  4
 8  9 10 11 12 13 14    5  6  7  8  9 10 11    5  6  7  8  9 10 11
15 16 17 18 19 20 21   12 13 14 15 16 17 18   12 13 14 15 16 17 18
22 23 24 25 26 27 28   19 20 21 22 23 24 25   19 20 21 22 23 24 25
29 30 31               26 27 28               26 27 28 29 30 31

        April                   May                    June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
                   1       1  2  3  4  5  6                1  2  3
 2  3  4  5  6  7  8    7  8  9 10 11 12 13    4  5  6  7  8  9 10
 9 10 11 12 13 14 15   14 15 16 17 18 19 20   11 12 13 14 15 16 17
16 17 18 19 20 21 22   21 22 23 24 25 26 27   18 19 20 21 22 23 24
23 24 25 26 27 28 29   28 29 30 31            25 26 27 28 29 30
30

         July                  August               September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
                   1       1  2  3  4  5                   1  2
 2  3  4  5  6  7  8    6  7  8  9 10 11 12    3  4  5  6  7  8  9
 9 10 11 12 13 14 15   13 14 15 16 17 18 19   10 11 12 13 14 15 16
16 17 18 19 20 21 22   20 21 22 23 24 25 26   17 18 19 20 21 22 23
23 24 25 26 27 28 29   27 28 29 30 31         24 25 26 27 28 29 30
30 31

       October               November               December
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7             1  2  3  4                   1  2
 8  9 10 11 12 13 14    5  6  7  8  9 10 11    3  4  5  6  7  8  9
15 16 17 18 19 20 21   12 13 14 15 16 17 18   10 11 12 13 14 15 16
22 23 24 25 26 27 28   19 20 21 22 23 24 25   17 18 19 20 21 22 23
29 30 31               26 27 28 29 30         24 25 26 27 28 29 30
                                              31

shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cal -3
     December 2023           January 2024          February 2024
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
                1  2       1  2  3  4  5  6                1  2  3
 3  4  5  6  7  8  9    7  8  9 10 11 12 13    4  5  6  7  8  9 10
10 11 12 13 14 15 16   14 15 16 17 18 19 20   11 12 13 14 15 16 17
17 18 19 20 21 22 23   21 22 23 24 25 26 27   18 19 20 21 22 23 24
24 25 26 27 28 29 30   28 29 30 31            25 26 27 28 29
31
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cal -j
       January 2024
 Su  Mo  Tu  We  Th  Fr  Sa
               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  29  30  31
```

3. *who*: List who is currently logged on to the system.

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ who
shrutisd :0           2024-01-11 20:54 (:0)
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ who -a
           system boot  2024-01-11 20:53
           run-level 5  2024-01-11 20:53
shrutisd ? :0           2024-01-11 20:54    ?         1521 (:0)
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ who -b
           system boot  2024-01-11 20:53
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ who -H
NAME     LINE           TIME            COMMENT
shrutisd :0           2024-01-11 20:54 (:0)
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ who -q
shrutisd
# users=1
```

4. *whoami*: Report what user you are logged on as.

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ whoami
shrutisd
```

5. *echo*: Echo a string (or list of arguments) to the terminal

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ echo "hello world bye"
hello world bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ echo -e "hello \bworld \bbye"
helloworldbye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ echo -e "hello \nworld \nbye"
hello
world
bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ echo -e "hello \tworld \tbye"
hello    world    bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ echo -e "hello \vworld \vbye"
hello
      world
            bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ echo "hello" > output.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat output.txt
hello
```

6. *bc*: To perform mathematical operations

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ bc
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2012-2017 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.
5/6
0
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ bc -l
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2012-2017 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.
5/6
.83333333333333333333
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat temp
scale=2
print "\nConvert Fahrenheit degrees to Celsius\n\n"
print "Enter temperature in Fahrenheit: " ; fah = read()
print "\n"
print "The equivalent Temperature in Celsius is: "
(fah - 32.0) * 5.0 / 9.0
quit
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ bc -q temp

Convert Fahrenheit degrees to Celsius

Enter temperature in Fahrenheit: 79

The equivalent Temperature in Celsius is: 26.11
```

7. *clear*: To clear the screen

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ clear
```

8. *alias*: Used to tailor commands

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ alias l="ls -al"
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ l
total 24
drwxrwxr-x 2 shrutisd shrutisd 4096 Jan 11 23:37 .
drwxrwxr-x 5 shrutisd shrutisd 4096 Jan 11 20:54 ..
-rw-rw-r-- 1 shrutisd shrutisd   23 Jan 11 21:11 datefile
-rw-rw-r-- 1 shrutisd shrutisd    6 Jan 11 22:03 output.txt
-rwxrwxr-x 1 shrutisd shrutisd  123 Jan 11 21:42 run_date.sh
-rw-rw-r-- 1 shrutisd shrutisd  209 Jan 11 23:37 temp
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ unalias l
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ l
l: command not found
```

9. *man <cmd name>*: To get help for any command

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ man ls
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$
```

```
LS(1)                                                      User Commands

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List information about the FILEs (the current directory by default).  Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

       Mandatory arguments to long options are mandatory for short options too.

       -a, --all
              do not ignore entries starting with .

       -A, --almost-all
              do not list implied . and ..

       --author
              with -l, print the author of each file

       -b, --escape
              print C-style escapes for nongraphic characters

       --block-size=SIZE
              with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below

       -B, --ignore-backups
              do not list implied entries ending with ~

       -c     with -lt: sort by, and show, ctime (time of last modification of file status information); with -l: show ctime and sort by name; otherwise: sort by ctime, newest first

       -C     list entries by columns

       --color[=WHEN]
              colorize the output; WHEN can be 'always' (default if omitted), 'auto', or 'never'; more info below

       -d, --directory
              list directories themselves, not their contents

       -D, --dired
              generate output designed for Emacs' dired mode
Manual page ls(1) line 1 (press h for help or q to quit)
```

10. *passwd*: To change the password

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ passwd
Changing password for shrutisd.
Current password:
New password:
Retype new password:
passwd: password updated successfully
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ passwd -S
shrutisd P 01/14/2024 0 99999 7 -1
```

11. *exit*: To logout from the terminal

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ exit
```

File & Directory Related Commands:

1. *cp <fromfile> <tofile>*: Copy from the <fromfile> to the <tofile>

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cp file dest
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cd dest
shrutisd@shrutisd:~/Desktop/SHRUTI/OS/dest$ ls
file
shrutisd@shrutisd:~/Desktop/SHRUTI/OS/dest$ cd ..
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cp -f file dest
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cp -i file dest
cp: overwrite 'dest/file'? y
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cp -u file dest
```

2. *mv <fromfile> <tofile>*: Move/rename the <fromfile> to the <tofile>

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mv file file1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mv -v file1 file
renamed 'file1' -> 'file'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mv -v file dest
renamed 'file' -> 'dest/file'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cd dest
shrutisd@shrutisd:~/Desktop/SHRUTI/OS/dest$ ls
file
```

3. *rm <file>*: Remove the file named <file>

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file1  file2.txt  file3.txt  file4.txt  file5
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file1  file2  file3  file4  file5
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rm file5
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file1  file2  file3  file4
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rm -i file4
rm: remove regular empty file 'file4'? y
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dest  file1  file2  file3
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rm -d dest
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
file1  file2  file3
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rm -v file3
removed 'file3'
```

4. *mkdir <newdir>*: Make a new directory called <newdir>

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mkdir dir1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dir1  file1  file2
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mkdir -m a=r dir2
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dir1  dir2  file1  file2
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mkdir -v -p first/second
mkdir: created directory 'first'
mkdir: created directory 'first/second'
```

5. *rmdir <dir>*: Remove an (empty) directory

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rmdir dir1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dir2  file1  file2  first
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rmdir -v dir2
rmdir: removing directory, 'dir2'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ rmdir -v -p first/second
rmdir: removing directory, 'first/second'
rmdir: removing directory, 'first'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
file1  file2
```

6. *cd <dir>*: Change the current working directory to dir

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
file1  file2
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ mkdir dir
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cd dir
shrutisd@shrutisd:~/Desktop/SHRUTI/OS/dir$ cd ..
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cd ~
shrutisd@shrutisd:~$
```

7. *pwd*: Print (display) the working directory

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ pwd
/home/shrutisd/Desktop/SHRUTI/OS
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$
```

8. *cat > <file>*: To create new file n save it by pressing ^d

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat > file.txt
hello
bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file.txt
hello
bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
this is file 1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file2.txt
this is file 2
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.tx file2.txt > file3.txt
cat: file1.tx: No such file or directory
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt file2.txt > file3.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file3.txt
this is file 1
this is file 2
```

9. *cat >> <file>*: To append contents into file

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
this is file 1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat >> file1.txt
hello
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
this is file 1
hello
```

10. *cat <file>*: To see the contents of existing file

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
this is file 1
hello
        bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat -E file1.txt
this is file 1$
hello$
        bye$
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat -n file1.txt
     1  this is file 1
     2  hello
     3          bye
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat -T file1.txt
this is file 1
hello
^Ibye
```

11. *more <file>*: Paging out the contents of file

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ more file.txt
In a village nestled amidst emerald valleys lived a dog named Rusty. Unlike his wild cousins, Rusty enjoyed a life of comfort and routine. He had a warm bed by the hearth, a belly full of scraps from his
 kind master, and days filled with playful chases in the sun-drenched fields.

One blustery winter night, a starving wolf named Fang stumbled upon the village. Weak and weary, he sought refuge from the biting wind and gnawing hunger. He found Rusty basking in the warm glow of the m
aster's cottage.

"Spare a scrap, good friend?" Fang rasped, his eyes gleaming with desperation.

Rusty, despite his comfortable life, knew the hardship of an empty stomach. He shared his supper with the wolf, feeling a pang of sympathy for his wild kin.

"Stay with me," Rusty offered, "My master is kind, and there's always warmth and food by the fire."

Fang hesitated. The offer was tempting, but his heart belonged to the moonlit forests and the thrill of the hunt. He glanced at Rusty, his collar glinting in the firelight.

"But your freedom seems...confined," Fang remarked, his voice laced with curiosity.

Rusty looked down at his collar, a symbol of his security but also a reminder of his limitations. He sighed. "Perhaps, but I have no fear of hunger or the bite of winter. And Master's affection fills my
days with joy."

Fang spent the night by the fire, listening to Rusty's tales of life with the master. He witnessed the master's gentle touch and the love shared between them. But with the rising sun, the call of the wil
d grew stronger.

"Thank you, friend, for your kindness," Fang said, his voice filled with newfound resolve. "But my path lies amongst the trees, under the open sky."

Rusty, although a little sad, understood. He bid Fang farewell, watching as the wolf melted into the snow-covered forest, a silhouette of freedom against the dawn.

As the seasons turned, Rusty continued his life of comfort, but Fang's image remained etched in his memory. He learned that happiness takes many forms, and freedom's song sings differently in each heart.
 The wolf's visit had been a gentle reminder that contentment comes not just from comfort, but from embracing the choices we make, whether bound by a collar or guided by the stars.
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ more -5 file.txt
In a village nestled amidst emerald valleys lived a dog named Rusty. Unlike his wild cousins, Rusty enjoyed a life of comfort and routine. He had a warm bed by the hearth, a belly full of scraps from his
 kind master, and days filled with playful chases in the sun-drenched fields.

One blustery winter night, a starving wolf named Fang stumbled upon the village. Weak and weary, he sought refuge from the biting wind and gnawing hunger. He found Rusty basking in the warm glow of the m
aster's cottage.
```

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ more file.txt file1.txt
::::::::::::::
file.txt
::::::::::::::
In a village nestled amidst emerald valleys lived a dog named Rusty. Unlike his wild cousins, Rusty enjoyed a life of comfort and routine. He had a warm bed by the hearth, a belly full of scraps from his
 kind master, and days filled with playful chases in the sun-drenched fields.

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 The wolf's visit had been a gentle reminder that contentment comes not just from comfort, but from embracing the choices we make, whether bound by a collar or guided by the stars.
::::::::::::::
file1.txt
::::::::::::::
this is file 1
hello       bye
```

12. *file <file>*: To check the type of file

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file file1.txt
file1.txt: ASCII text
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file -i file1.txt
file1.txt: text/plain; charset=us-ascii
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file -b file1.txt
ASCII text
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file -L file1.txt
file1.txt: ASCII text
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file *.txt
file1.txt: ASCII text
file2.txt: ASCII text
file3.txt: ASCII text
file.txt:  ASCII text, with very long lines
```

13. *wc <file>*: To count lines, words, characters of file

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file file1.txt
file1.txt: ASCII text
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file -i file1.txt
file1.txt: text/plain; charset=us-ascii
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file -b file1.txt
ASCII text
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file -L file1.txt
file1.txt: ASCII text
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ file *.txt
file1.txt: ASCII text
file2.txt: ASCII text
file3.txt: ASCII text
file.txt:  ASCII text, with very long lines
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ wc file.txt
  23  385 2241 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ wc -l file.txt
23 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ wc -w file.txt
385 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ wc -c file.txt
2241 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ wc file.txt file1.txt
  23  385 2241 file.txt
   3    6   26 file1.txt
  26  391 2267 total
```

14. *cmp <file1> <file2>*: To compare two files

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
this is file 1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file2.txt
this is a file
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file3.txt
this is a file
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cmp file1.txt file2.txt
file1.txt file2.txt differ: byte 9, line 1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cmp file2.txt file3.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cmp -b file1.txt file2.txt
file1.txt file2.txt differ: byte 9, line 1 is 146 f 141 a
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cmp -i 3 file1.txt file2.txt
file1.txt file2.txt differ: byte 6, line 1
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cmp -l file1.txt file2.txt
 9 146 141
10 151  40
11 154 146
12 145 151
13  40 154
14  61 145
```

15. *comm <file1> <file2>*: To display common values between two files

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
apple
banana
cherry
orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file2.txt
apple
mango
strawberry
banana
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm file1.txt file2.txt
		apple
banana
cherry
	mango
orange
	strawberry
comm: file 2 is not in sorted order
	banana
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm -1 file1.txt file2.txt
	apple
mango
strawberry
comm: file 2 is not in sorted order
banana
```

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm -2 file1.txt file2.txt
        apple
banana
cherry
orange
comm: file 2 is not in sorted order
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm -3 file1.txt file2.txt
banana
cherry
        mango
orange
        strawberry
comm: file 2 is not in sorted order
        banana
```

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm --check-order file1.txt file2.txt
        apple
banana
cherry
        mango
orange
        strawberry
comm: file 2 is not in sorted order
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm --nocheck-order file1.txt file2.txt
        apple
banana
cherry
        mango
orange
        strawberry
        banana
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ comm --output-delimiter=+ file1.txt file2.txt
++apple
banana
cherry
+mango
orange
+strawberry
comm: file 2 is not in sorted order
+banana
```

16.*diff <file1> <file2>*: To convert one file to another

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
apple
banana
cherry
orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file2.txt
apple
mango
strawberry
banana
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ diff file1.txt file2.txt
1a2,3
> mango
> strawberry
3,4d4
< cherry
< orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ diff -u file1.txt file2.txt
--- file1.txt   2024-01-14 21:07:28.410829573 +0530
+++ file2.txt   2024-01-14 21:07:53.554613954 +0530
@@ -1,4 +1,4 @@
 apple
+mango
+strawberry
 banana
-cherry
-orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ diff -q file1.txt file2.txt
Files file1.txt and file2.txt differ
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ diff -s file1.txt file2.txt
1a2,3
> mango
> strawberry
3,4d4
< cherry
< orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ diff -b file1.txt file2.txt
1a2,3
> mango
> strawberry
3,4d4
< cherry
< orange
```

17. *gzip <file>*: To compress the file

18. *gunzip <file>*: To unzip the contents of zipped file

19.*ls*: List the files in the current working directory

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dir  file1.txt  file2.txt  file3.txt  file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -l
total 20
drwxrwxr-x 2 shrutisd shrutisd 4096 Jan 14 15:05 dir
-rw-rw-r-- 1 shrutisd shrutisd   27 Jan 14 21:07 file1.txt
-rw-rw-r-- 1 shrutisd shrutisd   30 Jan 14 21:07 file2.txt
-rw-rw-r-- 1 shrutisd shrutisd   15 Jan 14 20:57 file3.txt
-rw-rw-r-- 1 shrutisd shrutisd 2241 Jan 14 20:43 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -L
dir  file1.txt  file2.txt  file3.txt  file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -m
dir, file1.txt, file2.txt, file3.txt, file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -n
total 20
drwxrwxr-x 2 1000 1000 4096 Jan 14 15:05 dir
-rw-rw-r-- 1 1000 1000   27 Jan 14 21:07 file1.txt
-rw-rw-r-- 1 1000 1000   30 Jan 14 21:07 file2.txt
-rw-rw-r-- 1 1000 1000   15 Jan 14 20:57 file3.txt
-rw-rw-r-- 1 1000 1000 2241 Jan 14 20:43 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -o
total 20
drwxrwxr-x 2 shrutisd 4096 Jan 14 15:05 dir
-rw-rw-r-- 1 shrutisd   27 Jan 14 21:07 file1.txt
-rw-rw-r-- 1 shrutisd   30 Jan 14 21:07 file2.txt
-rw-rw-r-- 1 shrutisd   15 Jan 14 20:57 file3.txt
-rw-rw-r-- 1 shrutisd 2241 Jan 14 20:43 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -s
total 20
4 dir  4 file1.txt  4 file2.txt  4 file3.txt  4 file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -S
dir  file.txt  file2.txt  file1.txt  file3.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -r
file.txt  file3.txt  file2.txt  file1.txt  dir
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -t
file2.txt  file1.txt  file3.txt  file.txt  dir
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -1
dir
file1.txt
file2.txt
file3.txt
file.txt
```

20.*ls <dir>*: List all files & directories in given directory

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls dir
file4.txt  file5.txt  file6.txt  file7.txt
```

21.*ln <fromfile><tofile>*: Creates a symbolic link to a file

```
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dir  file1.txt  file2.txt  file3.txt  file.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat file1.txt
apple
banana
cherry
orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ln file1.txt linkfile.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ cat linkfile.txt
apple
banana
cherry
orange
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls
dir  file1.txt  file2.txt  file3.txt  file.txt  linkfile.txt
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ln -v file1.txt linkfile.txt
ln: failed to create hard link 'linkfile.txt': File exists
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ln -v file1.txt linkfile2.txt
'linkfile2.txt' => 'file1.txt'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ln -v -b file1.txt linkfile3.txt
'linkfile3.txt' => 'file1.txt'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ln -v -i file1.txt linkfile4.txt
'linkfile4.txt' => 'file1.txt'
shrutisd@shrutisd:~/Desktop/SHRUTI/OS$ ls -lhr
total 36K
-rw-rw-r-- 5 shrutisd shrutisd   27 Jan 14 21:07 linkfile.txt
-rw-rw-r-- 5 shrutisd shrutisd   27 Jan 14 21:07 linkfile4.txt
-rw-rw-r-- 5 shrutisd shrutisd   27 Jan 14 21:07 linkfile3.txt
-rw-rw-r-- 5 shrutisd shrutisd   27 Jan 14 21:07 linkfile2.txt
-rw-rw-r-- 1 shrutisd shrutisd 2.2K Jan 14 20:43 file.txt
-rw-rw-r-- 1 shrutisd shrutisd   15 Jan 14 20:57 file3.txt
-rw-rw-r-- 1 shrutisd shrutisd   30 Jan 14 21:07 file2.txt
-rw-rw-r-- 5 shrutisd shrutisd   27 Jan 14 21:07 file1.txt
drwxrwxr-x 2 shrutisd shrutisd 4.0K Jan 15 21:32 dir
```

Conclusion: We have studied basic Linux command