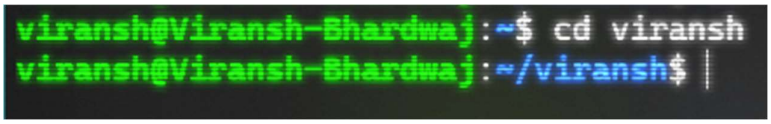
Linux Terminal Commands

1. Mkdir: Creates a directory at the location.

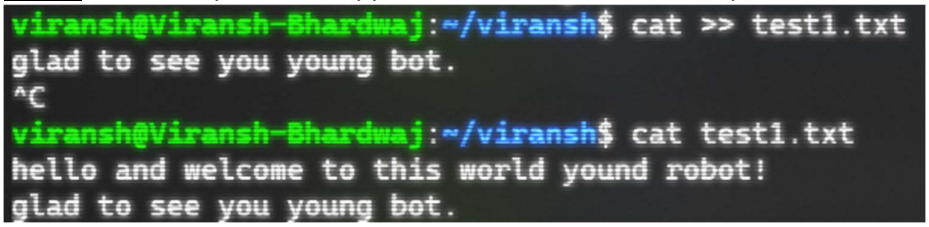
2. Touch: Touch creates a file in the specified location

3. Cd: Used to traverse directories by specifying path

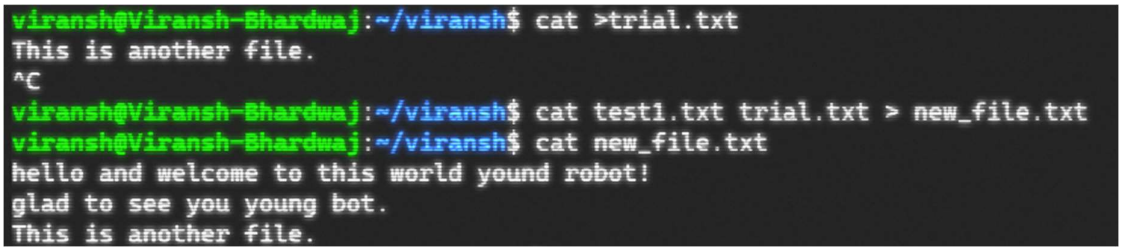


4. Cat >: Used to open file in write mode but deletes all previous data.

5. Cat >>: Used to open file in append mode and adds data to previous data.



6. Cat file1 file2… filen > file: Used to merge and copy contents to another file. Here contents of file and file2 are merged and copied to the file. It can work with one file too.



7. Cat: Used to read contents of a file

```
viransh@Viransh-Bhardwaj:~/viransh$ cat new_file.txt
hello and welcome to this world yound robot!
glad to see you young bot.
This is another file.
```

8. Ls: Used to list all the files and directories in a directory

```
viransh@Viransh-Bhardwaj:~/viransh$ ls
google.py  new_file.txt  test1.txt  test_dir  trial.txt  yahoo.xls
```

9. Ls *<file extension>: Lists only the specified file extensions

```
viransh@Viransh-Bhardwaj:~/viransh$ ls *.txt
new_file.txt  test1.txt  trial.txt
viransh@Viransh-Bhardwaj:~/viransh$ ls *.xls
yahoo.xls
viransh@Viransh-Bhardwaj:~/viransh$ ls *.py
google.py
```

10. Pwd: Gives the current working directory and its file path

```
viransh@Viransh-Bhardwaj:~/viransh$ pwd
/home/viransh/viransh
```

11. Cp: Copy files to a directory

```
viransh@Viransh-Bhardwaj:~/viransh$ cp google.py test_dir
viransh@Viransh-Bhardwaj:~/viransh$ ls
google.py  new_file.txt  test1.txt  test_dir  trial.txt  yahoo.xls
viransh@Viransh-Bhardwaj:~/viransh$ cd test_dir
viransh@Viransh-Bhardwaj:~/viransh/test_dir$ ls
google.py
```

12. Mv: Move files to a directory

```
viransh@Viransh-Bhardwaj:~/viransh$ ls
google.py  new_file.txt  test1.txt  test_dir  trial.txt  yahoo.xls
viransh@Viransh-Bhardwaj:~/viransh$ mv yahoo.xls test_dir
viransh@Viransh-Bhardwaj:~/viransh$ ls
google.py  new_file.txt  test1.txt  test_dir  trial.txt
```

13. Rm: Deletes the file.

```
viransh@Viransh-Bhardwaj:~/viransh$ ls
google.py  new_file.txt  test1.txt  test_dir  trial.txt
viransh@Viransh-Bhardwaj:~/viransh$ rm trial.txt
viransh@Viransh-Bhardwaj:~/viransh$ ls
google.py  new_file.txt  test1.txt  test_dir
```

14. Head: Reads specified number of lines of a file from the start

```
viransh@Viransh-Bhardwaj:~/viransh$ head test1.txt
hello and welcome to this world yound robot!
glad to see you young bot.
```

15. Tail: Reads specified number of lines of a file from the end

```
viransh@Viransh-Bhardwaj:~/viransh$ tail -n1 test1.txt
glad to see you young bot.
```

16. Tac: Reads the lines in opposite order

```
viransh@Viransh-Bha    aj:~/viransh$ tac test1.txt
glad to see you young bot.
hello and welcome to this world yound robot!
```

17. More: Reads the whole file and not part of it

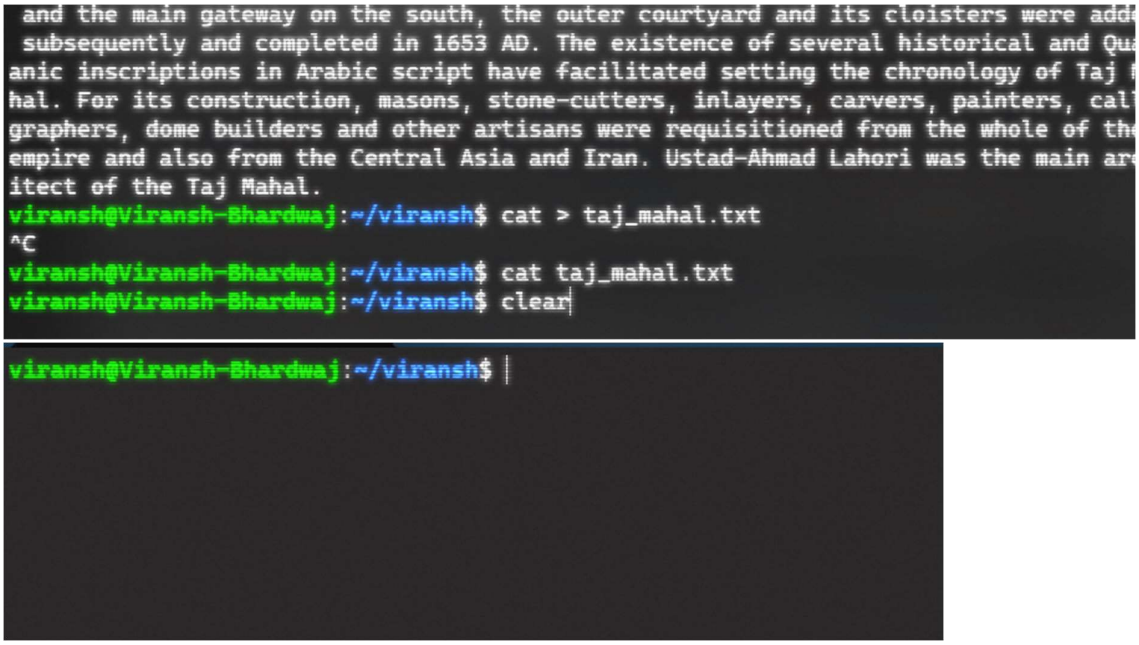
```
viransh@Viransh-Bhardwaj:~/viransh$ more taj_mahal.txt
An immense mausoleum of white marble, built in Agra between 1631 and 1648 by order o
f the Mughal emperor Shah Jahan in memory of his favourite wife, the Taj Mahal is th
e jewel of Muslim art in India and one of the universally admired masterpieces of th
e world's heritage.

The Taj Mahal is located on the right bank of the Yamuna River in a vast Mughal gard
en that encompasses nearly 17 hectares, in the Agra District in Uttar Pradesh. It wa
s built by Mughal Emperor Shah Jahan in memory of his wife Mumtaz Mahal with constru
ction starting in 1632 AD and completed in 1648 AD, with the mosque, the guest house
 and the main gateway on the south, the outer courtyard and its cloisters were added
 subsequently and completed in 1653 AD. The existence of several historical and Quar
anic inscriptions in Arabic script have facilitated setting the chronology of Taj Ma
hal. For its construction, masons, stone-cutters, inlayers, carvers, painters, calli
graphers, dome builders and other artisans were requisitioned from the whole of the
empire and also from the Central Asia and Iran. Ustad-Ahmad Lahori was the main arch
itect of the Taj Mahal.
```

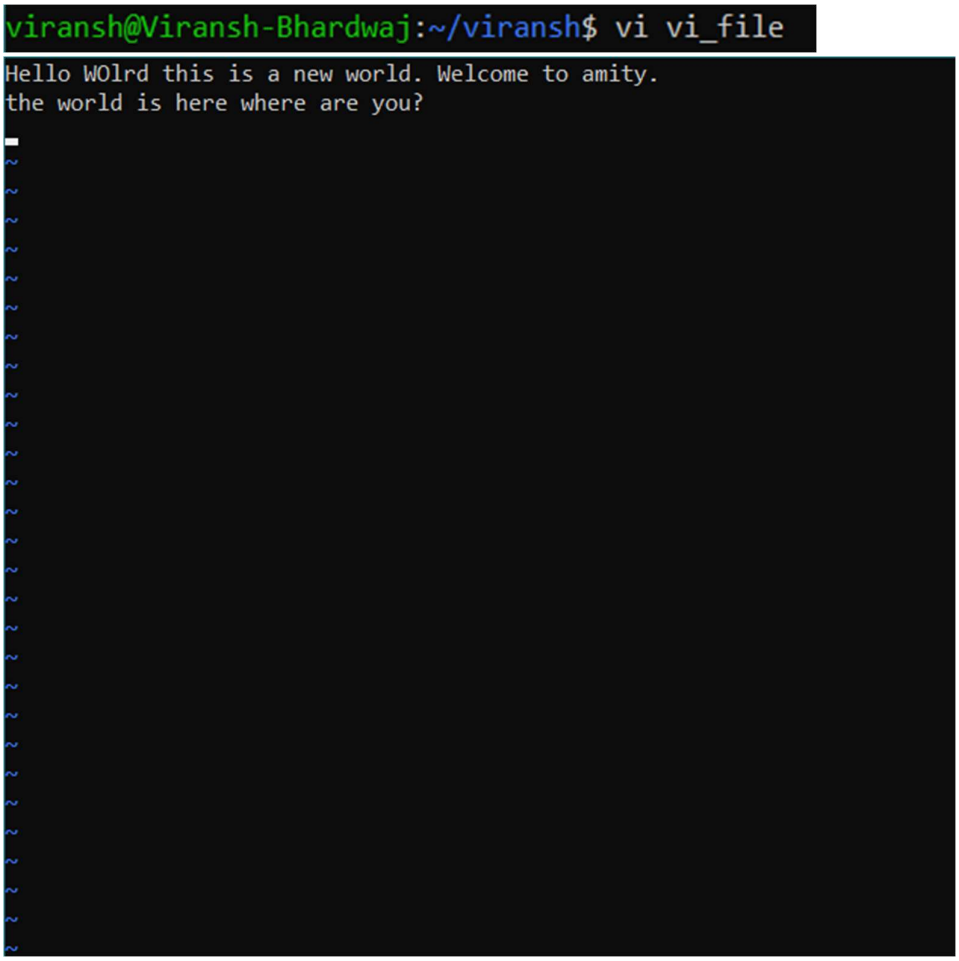
18. Id: Print real and effective user and group IDs

```
viransh@Viransh-Bhardwaj:~/viransh$ id
uid=1000(viransh) gid=1000(viransh) groups=1000(viransh),4(adm),24(cdrom),27(sudo),3
0(dip),46(plugdev)
```

19. Clear: Clear the terminal Screen



20. Vi: Screen-oriented (visual) display editor



21. Grep: print lines matching a pattern

```
viransh@Viransh-Bhardwaj:~/viransh$ cat new_file.txt
hello and welcome to this world yound robot!
glad to see you young bot.
This is another file.
viransh@Viransh-Bhardwaj:~/viransh$ grep This new_file.txt
This is another file.
```

22. Diff: compare files line by line

```
viransh@Viransh-Bhardwaj:~/viransh$ cat test1.txt
hello and welcome to this world yound robot!
glad to see you young bot.
viransh@Viransh-Bhardwaj:~/viransh$ cat new_file.txt
hello and welcome to this world yound robot!
glad to see you young bot.
This is another file.
viransh@Viransh-Bhardwaj:~/viransh$ diff new_file.txt test1.txt
3d2
< This is another file.
```

23. Ping: send ICMP ECHO_REQUEST packets to network hosts

```
shreyas@pop-os:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=52 time=8.24 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=52 time=9.62 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=52 time=9.08 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=52 time=9.36 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=52 time=12.0 ms
```

24. History: Showcase all the previously entered commands

```
viransh@Viransh-Bhardwaj:~$ history
    1  exit
    2  hello
    3  help
    4  exit
    5  pwd
    6  ~
    7  ls
    8  mkdir test
    9  ls
   10  cd test
   11  pwd
   12  ls
   13  cd ..
   14  pwd
   15  rmdir test
   16  ls
   17  mkdir test
   18  cd test
   19  touch hello.sh
   20  ls
   21  nano hello.sh
   22  bat hello.sh
   23  cat hello.sh
   24  nano hello.sh
   25  ls
   26  mkdir a
   27  ls
   28  mkdir test2
   29  cd test2
   30  touch okay
   31  cd ..
```

25. Hostname: show or set the system's host name

```
viransh@Viransh-Bhardwaj:~$ hostname
Viransh-Bhardwaj
```

26. Hostname -i: Display the network address(es) of the host name.

```
viransh@Viransh-Bhardwaj:~$ hostname -i
127.0.1.1
```

27. Chmod: Change file mode bits.

```
viransh@Viransh-Bhardwaj:~/viransh$ chmod u=r taj_mahal.txt
viransh@Viransh-Bhardwaj:~/viransh$ cat>> taj_mahal.txt
-bash: taj_mahal.txt: Permission denied
```

28. Nl: Numbered lines of the file

```
viransh@Viransh-Bhardwaj:~/viransh$ nl new_file.txt
     1  hello and welcome to this world yound robot!
     2  glad to see you young bot.
     3  This is another file.
```

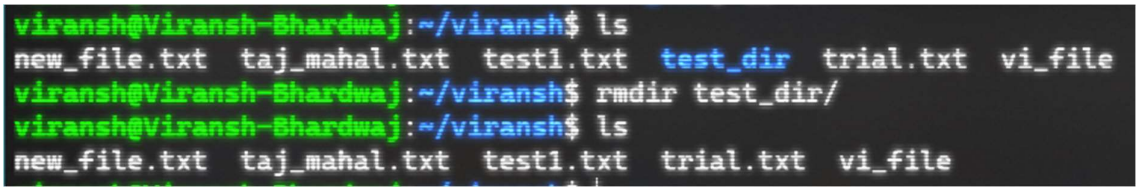
29. Wc: print newline, word, and byte counts for each file

```
viransh@Viransh-Bhardwaj:~/viransh$ wc taj_mahal.txt
   7  597 3558 taj_mahal.txt
```

30. Uniq: report or omit repeated lines

```
viransh@Viransh-Bhardwaj:~/viransh$ cat trial.txt
hello Hello
hello
hello
HEllo
HEllo
Hi
Hi
Hi
hI
hI
viransh@Viransh-Bhardwaj:~/viransh$ uniq trial.txt
hello Hello
hello
HEllo
Hi
hI
```

31. Rmdir: remove empty directories



Linux Shell Commands

1. Listing all the shells.

```
viransh@Viransh-Bhardwaj:~$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/bin/rbash
/bin/dash
```

2. Changing the permissions of the file to executable.

```
shreyas@pop-os:~/test$ ls -al
total 8
drwxrwxr-x  2 shreyas shreyas 4096 Jan 23 19:35 .
drwxr-x--- 22 shreyas shreyas 4096 Jan 23 19:33 ..
-rw-rw-r--  1 shreyas shreyas    0 Jan 23 19:35 test
shreyas@pop-os:~/test$ chmod +x test
shreyas@pop-os:~/test$ ls -al
total 8
drwxrwxr-x  2 shreyas shreyas 4096 Jan 23 19:35 .
drwxr-x--- 22 shreyas shreyas 4096 Jan 23 19:33 ..
-rwxrwxr-x  1 shreyas shreyas    0 Jan 23 19:35 test
shreyas@pop-os:~/test$
```

3. Creating a shell file using vim.

```
echo "Hello world"
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
"test" 1L, 19B                                                1,18          All
```

```
shreyas@pop-os:~/test$ ./test
Hello world
shreyas@pop-os:~/test$
```

4. Using Variables in shell file.

```
echo "Hello world"
age=10
echo $age
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
"test" 3L, 36B                                                3,9           All
```

```
shreyas@pop-os:~/test$ ./test
Hello world
10
shreyas@pop-os:~/test$
```

5. Using commands in shell file.

```
echo "Hello world"
age=10
echo $age

echo "Todays date is `date`"
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
"test" 5L, 66B                                            5,28          All
```

```
shreyas@pop-os:~/test$ ./test
Hello world
10
Todays date is Mon Jan 23 07:45:51 PM IST 2023
shreyas@pop-os:~/test$
```

6. Using Arithmetic in shell file.

```
echo "Hello world"
age=10
echo $age

echo "Todays date is `date`"
echo "10+5"|bc
```

```
-- INSERT --                                                    7,1           All
```

```
shreyas@pop-os:~/test$ ./test
Hello world
10
Todays date is Mon Jan 23 07:52:43 PM IST 2023
15
shreyas@pop-os:~/test$
```

7. Using read statement.

```
echo "Hello world"
age=10
echo $age

echo "Todays date is `date`"
echo "10+5"|bc

read name
echo "$name is executing this file"
```

```
"test" 9L, 128B                                                  9,35          All
```

```
shreyas@pop-os:~/test$ ./test
Hello world
10
Todays date is Mon Jan 23 07:58:45 PM IST 2023
15
Shreyas
Shreyas is executing this file
shreyas@pop-os:~/test$
```

LINUX SHELL SCRIPTING EXERCISES

- Ques: Write a shell script for addition of two numbers.
- Write a shell script for addition of two numbers.
- Write a shell script for calculating the area of circle. Radius is to be entered by user.
- Write a shell script for swapping two numbers:
  - Using third variable
  - Using without third variable

Shell Script

```
read x y
echo "The sum of the two numbers are:`expr $x + $y`"

read rad
echo "The area of the circle is: "
echo "$rad * $rad * 3.14" | bc

read a b
echo "The values of a is $a and b is $b"
t=$a
a=$b
b=$t
echo "The values of a is $a and b is $b"

a=`expr $a + $b`
b=`expr $a - $b`
a=`expr $a - $b`
echo "The values of a is $a and b is $b"
~
~
~
"test" 18L, 338B                                              18,40
```

Output

```
5 10
The sum of the two numbers are:15
15
The area of the circle is:
706.50
5 10
The values of a is 5 and b is 10
The values of a is 10 and b is 5
The values of a is 5 and b is 10
```

Exercise

- Write a shell script to find the factorial of any number.
- Write a shell script to print the Fibonacci series of ‘n’ elements and print the sum of the given series.
- Write a shell script for simple calculator.

Shell Script

```
echo "Enter the number to find factorial of"
read n
fact=1
for((i=1;i<=$n;i++))
do
        fact=$((fact*i))
done
echo "The factorial of the number is $fact"

echo "Enter the limit till u want to print the fibbonacci series"
read l
prev=0
curr=1
for((i=1;i<l;i++))
do
        echo "$prev"
        temp=$((prev))
        prev=$((curr))
        curr=$((curr+temp))
done

echo "Enter the two numbers to preform operation on"
read a b
echo "Enter the operation to preform(1:+ 2:- 3:* 4:/)"
read o
if [ $o -eq 1 ];then
        echo "The answer is:`expr $a + $b`"
elif [ $o -eq 2 ];then
        echo "The answer is:`expr $a - $b`"
elif [ $o -eq 3 ];then
        echo "The answer is:`expr $a * $b`"
elif [ $o -eq 4 ];then
        echo "The answer is:`expr $a / $b`"
else
        echo "Invalid Syntax"
fi
~
~
```

Output

```
Enter the number to find factorial of
5
The factorial of the number is 120
Enter the limit till u want to print the fibbonacci series
5
0
1
1
2
Enter the two numbers to preform operation on
1 2
Enter the operation to preform(1:+ 2:- 3:* 4:/)
1
The answer is:3
```

Exercise

- Write a shell script that accept a file name starting and ending line numbers as arguments and display all the lines between given line nos.
- Write a shell script that delete all lines containing a specified word.
- Write a shell script that displays a list of all the files in the current directory.

Shell Script

```
echo "Enter file name"
read f
echo "Enter the start and end"
read s e
sed -n $s,$e\p $f | cat > newline
cat newline

echo enter file name
read file
echo enter word
read word
echo file before removing $word:
cat $file
grep -v -i $word $file > test_file
mv test_file $file
echo file after removing $word:
cat $file

echo "The files are: `ls`"
~
~
```

Output:

```
shreyas@pop-os:~/test$ ./test
Enter file name
test2.txt
Enter the start and end
1 5
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online for the video that best fits your document.
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 header, and sidebar. Click Insert and then choose the elements you want from the different galleries.
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 apply styles, your headings change to match the new theme.
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here you left off - even on another device.
enter file name
test2.txt
enter word
and
file before removing and:
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file after removing and:
Video provides a powerful way to help you prove your point. When you click Online Video, you can paste in the embed code for the video you want to add. You can also type a keyword to search
online for the video that best fits your document.

The files are: newline
test
test2.txt
```