

Questions 2 to 41

COM 301P

Date: 30/08/2020

CED18I065

Note: Question 1 (1 to 50 LINUX commands) is in the "Question_1_OS.pdf" file. The file you are reading currently only contains Q 2 to 41. This separation is there for readability purposes.

2: Create a directory and create a file inside that directory.

Command used:

'Mkdir' is used to create the directory and 'touch' is used to create the file.

Screenshot:

The screenshot shows a terminal window titled "Terminal" with the following session history:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─ $ls
'Exercise-I LINUX COMMANDS.pdf'      sample1.txt    sample2.txt
└─ $mkdir NewDir
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─ $touch NewDir/new.c
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl] last Frequently
└─ $ls
'Exercise-I LINUX COMMANDS.pdf'  Create NewDir and sample1.txt directory. sample2.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─ $ls NewDir/
4. Show commands to delete empty and non-empty directory.
5. Find the location of the input files using locate and find command.
new.c
```

The terminal interface includes a menu bar with "Applications", "Places", and "Terminal". The status bar at the top right shows the date and time: "Tue 18 Aug 10:11:00". A small icon in the top right corner indicates there is one other terminal window open.

3. List the files and directories that are empty in a working directory.

Command used:

```
find . -type f -empty
```

Screenshot:

The screenshot shows a terminal window with the following session history:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl] first input file
└─ $find . -type f -empty      'sample1.txt'.
./emptyfile
./NewDir/new.c
11. Remove the permission for the users to read, write and execute the file 'sample.txt'.
12. Display the current date with the day of week, month, time and the year.
```

4. Show commands to delete empty and non-empty directory.

Command used:

1. Command to delete empty directory:

`rmdir <dir name>`

2. Command to delete nonempty directory:

`rm -r <dir name>` the `-r` option indicates that we are deleting all the subdirectories and their file recursively.

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls
archive_cwd.tar    friends      NewDirzip.zip   sample2.txt  tar_exp
empty              'hello fiend' newfile.txt    sample3.txt  test_text.txt
emptyfile          Input        print_name.sh  sample.txt   test.txt
'Exercise-I LINUX COMMANDS.pdf' NewDir       ps.txt       sp.txt

[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls empty/
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ rmdir empty/    Command used:
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls NewDir/     Command to delete empty directory:
badhelo.c  new.c      rmdir-<dir name>
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ rm -r NewDir/  2. Command to delete nonempty directory.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl] [directories]
└─$ ls
archive_cwd.tar    friends      print_name.sh  sample.txt   test.txt
empty              'hello fiend' Input        ps.txt       sp.txt
'Exercise-I LINUX COMMANDS.pdf' NewDirzip.zip   newfile.txt  sample3.txt  tar_exp
friends            Input        ps.txt       sample2.txt  test_text.txt
└─$ AnimeshK@kali -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

5. Find the location of the input files using locate and find command.

Command used:

`locate, find`

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $ locate new.c
    Reboot the system using shutdown command.
/opt/arduino-1.8.9/hardware/arduino/avr/cores/arduino/new.cpp
/root/Desktop/C_Programs/new.c
/root/Desktop/P/arduino-1.8.9/hardware/arduino/avr/cores/arduino/new.cpp
/usr/lib/python3/dist-packages/Crypto/Util/_pycache__/_number_new.cpython-37.pyc
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $ find -iname "new.c" ftp command examples
./NewDir/new.c
Both lftp and secure lftp (sftp) has similar commands. To connect to a remote server and download multiple files, do the
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $
```

6. View the user permissions and ownership of the files in the current directory and change the ownership of some selected files to another user.

Command used:

Sudo chown <username> <file1> <file2>

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $ ls -alh
total 144K
drwxr-xr-x 4 AnimeshK AnimeshK 4.0K Aug 18 10:15 .
drwxr-xr-x 3 AnimeshK AnimeshK 4.0K Aug 18 09:58 ..
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:15 emptyfile
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:15 emptyfol
-rw-r--r-- 1 AnimeshK AnimeshK 118K Aug 18 09:53 'Exercise-I LINUX COMMANDS.pdf'
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:10 NewDir.pdf
-rw-r--r-- 1 AnimeshK AnimeshK 906 Aug 18 09:53 sample1.txt
-rw-r--r-- 1 AnimeshK AnimeshK 591 Aug 18 09:53 sample2.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $ sudo chown sam sample1.txt sample2.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $ ls -alh
total 144K
drwxr-xr-x 4 AnimeshK AnimeshK 4.0K Aug 18 10:15 .
drwxr-xr-x 3 AnimeshK AnimeshK 4.0K Aug 18 09:58 ..
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:15 emptyfile
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:15 emptyfol
-rw-r--r-- 1 AnimeshK AnimeshK 118K Aug 18 09:53 'Exercise-I LINUX COMMANDS.pdf'
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:10 NewDir
-rw-r--r-- 1 sam AnimeshK 906 Aug 18 09:53 sample1.txt
-rw-r--r-- 1 sam AnimeshK 591 Aug 18 09:53 sample2.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└── $
```

7. List all the files in the current directory and subdirectories.

Command used:

ls -alhr

(for listing all files in subdirectories(recursively) in a human readable format(file size is in KB, MB))

Screenshot:

```
$ ls -alhr
.:
total 144K
drwxr-xr-x 4 AnimeshK AnimeshK 4.0K Aug 18 10:15 .
drwxr-xr-x 3 AnimeshK AnimeshK 4.0K Aug 18 09:58 ..
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:15 emptyfile
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:15 emptyfol
-rw-r--r-- 1 AnimeshK AnimeshK 118K Aug 18 09:53 'Exercise-I LINUX COMMANDS.pdf'
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:46 NewDir
-rw-r--r-- 1 sam AnimeshK 906 Aug 18 09:53 sample1.txt
-rw-r--r-- 1 sam AnimeshK 591 Aug 18 09:53 sample2.txt

./UNIX Tutorial One
./emptyfol:
total 8.0K
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:15 .
drwxr-xr-x 4 AnimeshK AnimeshK 4.0K Aug 18 10:15 ..

./NewDir:
total 8.0K
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:46 .
drwxr-xr-x 4 AnimeshK AnimeshK 4.0K Aug 18 10:15 ..
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:46 another.txt
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:10 new.c
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

8. Concatenate the two input files: “sample1.txt” and “sample2.txt” and save it to a new file named “Input”.

Command used:

cat - used to concatenate two files content, also used to display content of only one file.

Screenshots:

We follow three steps here-

1. First file and second file content

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample1.txt
This is a test document.
1. Test drive and understand the usage of various commands given in the 50 Most Frequently
Used UNIX / Linux Commands and linuxcommands.pdf
An OS is an interface between a computer user and a computer hardware.
2. Create a directory and create a file inside that directory.
An OS is a software which performs all the basic tasks like file management, memory management, process
management, handling input and output, and controlling peripheral devices such as disk drives and prin
ters.
3. List all the files in the current directory and subdirectories.
Operating system is one of the core subjects in computer science.
4. Show commands to delete empty and non-empty directory.
Operating system is one of the core subjects in computer science.
5. Append the file contents of input file "sample1.txt" to the end of the first input file.
Unix is a great OS.
6. Change the ownership of some selected files to another user.
UNIX is a free OS.
7. Copy the contents of file "sample2.txt" to "sample.txt".
Unix systems use a centralized operating system kernel which manages system and process activities.
8. Erase duplicate records in the file "sample1.txt" and display only the unique records.
Unix is a great OS.
9. Add line numbers to the file "sample2.txt".
UNIX is a free OS.
10. Append the file contents of input file "sample2.txt" to the end of the first input file.
UnixOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
11. Remove the permission for the users to read, write and execute the file "sample.txt".
UNIX is a free OS.
12. Display the current date with the day of week, month, time and the year.
Multiuser operating system.
13. Show the calendar of previous, current and next month.
Yet another powerful OS.
14. Append the file contents of input file "sample2.txt" to the end of the first input file.
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Dougla
s McIlroy, and Joe Ossanna at Bell Labs.
15. Add line numbers to the file "sample2.txt".
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few e
xamples. Linux is also a flavor of Unix which is freely available.
16. Add line numbers to the file "sample2.txt".
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
```

2. Concatenating their content and putting it into sample.txt

```
Applications ▾ Places ▾ Terminal ▾
Tue 18 Aug 21:39:46
Terminal
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a fe
xamples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
2. Create a directory and create a file inside that directory.
Yet another powerful OS.
3. List the files and directories that are empty in a working directory.
4. Show commands to delete empty and non-empty directory.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample1.txt sample2.txt > sample.txt
5. Append the file contents of input file "sample1.txt" and "sample2.txt" and save it to a new file.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample.txt
6. List all the files in the current directory and subdirectories.
This is a test document.
7. Append the file contents of input file "sample1.txt" to the end of the first input file.
An OS is an interface between a computer user and a computer hardware.
8. Change the ownership of the files in the current directory and change the
An OS is a software which performs all the basic tasks like file management, memory management, proc
management, handling input and output, and controlling peripheral devices such as disk drives and p
ters.
9. Copy the contents of file "sample2.txt" to "sample.txt".
Operating system is one of the core subjects in computer science.
10. Erase duplicate records in the file "sample1.txt" and display only the unique records.
Operating system is one of the core subjects in computer science.
11. Append the file contents of input file "sample2.txt" to the end of the first input file.
Unix is a great OS.
12. Add line numbers to the file "sample2.txt".
UNIX is a free OS.
13. Append the file contents of input file "sample2.txt" to the end of the first input file.
Unix systems use a centralized operating system kernel which manages system and process activities.
14. Add line numbers to the file "sample2.txt".
Unix is a great OS.
15. Append the file contents of input file "sample2.txt" to the end of the first input file.
UNIX is a free OS.
16. Append the file contents of input file "sample2.txt" to the end of the first input file.
UnixOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
```

3. Displaying content of sample.txt

The screenshot shows a terminal window with the following content:

```

Applications ▾ Places ▾ Terminal ▾
Tue 18 Aug 21:39:52
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cat sample1.txt sample2.txt > sample.txt
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cat sample.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
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Unix is a great OS.
UNIX is a free OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
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UNIX is a free OS.
UNIXOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson , Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.

```

9. Copy the contents of file 'sample2.txt' to 'sample.txt'

Command used:

`cat , >`

Screenshot:

The screenshot shows a terminal window with the following content:

```

[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ ls
emptyfile  emptyfol  'Exercise-I LINUX COMMANDS.pdf'  Input  NewDir  sample1.txt  sample2.txt
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cat sample2.txt > sample.txt
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cat sample.txt
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Doug McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
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A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.

```

10. Append the file contents of input file 'sample2.txt' to the end of the first input file 'sample1.txt'.

Command used:

`cat, >>`

where `>>` appends the first file's content to second file.

Screenshot:

```

[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ cat sample2.txt >> sample1.txt
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ cat sample1.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
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Unix is a great OS.
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Unix systems use a centralized operating system kernel which manages system and process activities.
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UnixOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
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There are various Unix variants available in the market.Solaris, Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.

```

11. Remove the permission for the users to read, write and execute the file 'sample.txt'.

Command used:

`chmod u-rwx <file>`

this takes away all the r, w and x permissions of the 'user' of the <file>

Screenshot:

```

Applications ▾ Places ▾ Terminal ▾ Tue 18 Aug 21:53:17
Terminal
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:15 emptyfile
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:15 emptyfol
-rw-r--r-- 1 AnimeshK AnimeshK 118K Aug 18 09:53 'Exercise-I LINUX COMMANDS.pdf'
-rw-r--r-- 1 AnimeshK AnimeshK 1.5K Aug 18 10:56 Input
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:46 NewDir
-rw-r--r-- 1 AnimeshK AnimeshK 1.5K Aug 18 21:46 sample1.txt
-rw-r--r-- 1 AnimeshK AnimeshK 591 Aug 18 09:53 sample2.txt
-rw-r--r-- 1 AnimeshK AnimeshK 1.5K Aug 18 21:52 sample.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ chmod u-rwx sample.txt 6. View the user permissions and ownership of the files in the current directory and change the
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls -alh
7. List all the files in the current directory and subdirectories.
total 152K
8. Concatenate the two input files: "sample1.txt" and "sample2.txt" and save it to a new file
drwxr-xr-x 4 AnimeshK AnimeshK 4.0K Aug 18 21:52 .
drwxr-xr-x 3 AnimeshK AnimeshK 4.0K Aug 18 09:58 ...
-rw-r--r-- 1 AnimeshK AnimeshK 0 Aug 18 10:15 emptyfile
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:15 emptyfol
-rw-r--r-- 1 AnimeshK AnimeshK 118K Aug 18 09:53 'Exercise-I LINUX COMMANDS.pdf'
-rw-r--r-- 1 AnimeshK AnimeshK 1.5K Aug 18 10:56 Input
drwxr-xr-x 2 AnimeshK AnimeshK 4.0K Aug 18 10:46 NewDir
-rw-r--r-- 1 AnimeshK AnimeshK 1.5K Aug 18 21:46 sample1.txt
-rw-r--r-- 1 AnimeshK AnimeshK 591 Aug 18 09:53 sample2.txt
-----r--r-- 1 AnimeshK AnimeshK 1.5K Aug 18 21:52 sample.txt only the unique records
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ 17. Find out whether the two pairs of input files are identical or not.

```

12. Display the current date with the day of week, month, time and the year. &

13. Show the calendar of previous, current and next month.

Command used:

`date` - to display current date

`cal -3` - to display prev, current and next month calendars.

Screenshot:

```

Applications ▾ Places ▾ Terminal ▾
Tue 18 Aug 22:00:58
Terminal
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$ date
Tue 18 Aug 21:58:53 IST 2020
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$ cal -3
      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       2  3  4  5  6  7  8   1  2  3  4  5
  5  6  7  8  9 10 11   9 10 11 12 13 14 15   6  7  8  9 10 11 12
12 13 14 15 16 17 18   16 17 18 19 20 21 22   13 14 15 16 17 18 19
19 20 21 22 23 24 25   23 24 25 26 27 28 29   20 21 22 23 24 25 26
26 27 28 29 30 31
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$ 

```

14. Sort the contents of the file 'sample1.txt' in alphabetical order.

Command used:

`sort <filename>`

Screenshot:

1. Contents of the file -

The screenshot shows a terminal window with the following content:

```

[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─ $ cat sample1.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix is a great OS.
UNIX is a free OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
Unix is a great OS.
UNIX is a free OS.
UNIX is a free OS.
UNIxOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS. [AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─ $ sort sample1.txt
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
Multiuser operating system.

```

Terminal status bar: Tue 18 Aug 22:08:23

2. Sorted output

The screenshot shows a terminal window with the following content:

```

UNIxOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS. [AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─ $ sort sample1.txt
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
Multiuser operating system.
Operating system is one of the core subjects in computer science.
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This is a test document.
UNIX is a free OS.
UNIX is a free OS.
UNIX is a free OS.
Unix is a great OS.
Unix is a great OS.
UNIxOS systems use a centralized operating system kernel which manages system and process activities.
Unix systems use a centralized operating system kernel which manages system and process activities.
Yet another powerful OS. [AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]

```

Terminal status bar: Tue 18 Aug 22:08:23

15. Erase duplicate records in the file 'sample1.txt' and display only the unique records

Command used:

```
awk '!seen[$0]++' <filename>
```

Screenshots:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample1.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix is a great OS.
UNIX is a free OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
Unix is a great OS.
UNIX is a free OS.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.
```

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ awk '!seen[$0]++' sample1.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
```

```
Yet another powerful OS.
```

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ awk '!seen[$0]++' sample1.txt
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An OS is an interface between a computer user and a computer hardware.
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Operating system is one of the core subjects in computer science.
Unix is a great OS.
UNIX is a free OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
UnixOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
Multiuser operating system.
Yet another powerful OS.
```

16. Add line numbers to the file 'sample2.txt'

Command used:

sed

Screenshot:

```

Applications ▾ Places ▾ Terminal ▾ Tue 18 Aug 22:34:07
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cat sample2.txt
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.

[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ sed ' ./=' sample2.txt | sed 'N; s/\n/ /'
1 Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
2 There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
3 Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
4 A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
5 UNIX is a free OS.
6 Multiuser operating system.
7 Yet another powerful OS.

[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ 
```

17. Find out whether the two pairs of input files are identical or not.

Compare sample1.txt and sample2.txt

Compare sample2.txt and sample.txt

Command used:

diff -w <file1> <file2>

Screenshot:

```

Applications ▾ Places ▾ Terminal ▾ Tue 18 Aug 22:38:24
Terminal
$diff -w sample1.txt sample2.txt
1,11c1,3
< This is a test document.
< An OS is an interface between a computer user and a computer hardware.
< An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
< Operating system is one of the core subjects in computer science.
< Operating system is one of the core subjects in computer science.
< Unix is a great OS.
< UNIX is a free OS.
< Unix systems use a centralized operating system kernel which manages system and process activities.
< Unix is a great OS.
< UNIX is a free OS.
< UNIxOS systems use a centralized operating system kernel which manages system and process activities.
---
> Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
> There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
> Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
15a8
>
[✗]-[AnimeshK@kali]-[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$diff -w sample2.txt sample1.txt
[✗]-[AnimeshK@kali]-[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]

```

18. Show how the input file “sample1.txt” differs line by line from “sample2.txt” in context and unified mode.

Command used:

1. `diff -u <file1> <file2>` - unified mode
2. `diff -c <file1> <file2>` - context mode

Screenshots:

```
└── $diff -u sample1.txt sample2.txt
--- sample1.txt 2020-08-18 22:32:41.155532166 +0530
+++ sample2.txt 2020-08-18 22:06:09.851456287 +0530
@@ -1,15 +1,8 @@ vali
-This is a test document.
-An OS is an interface between a computer user and a computer hardware.
-An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
+Unix is a great OS.
-Operating system is one of the core subjects in computer science.
-Operating system is one of the core subjects in computer science.
-Unix is a great OS.
-UNIX is a free OS.
-Unix systems use a centralized operating system kernel which manages system and process activities.
-Unix is a great OS.
-UNIX is a free OS.
-UNIX is a free OS.
+Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
+There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
+Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
-Yet another powerful OS.
```

```
Applications ▾ Places ▾ Terminal ▾ Tue 18 Aug 22:46:25
Terminal
-UNIX is a free OS.
-Unix systems use a centralized operating system kernel which manages system and process activities.
-Unix is a great OS.
-UNIX is a free OS.
-UNIX is a free OS.
+Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
+There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
+Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
-Yet another powerful OS.
\ No newline at end of file
+ Yet another powerful OS.
```

```
[x]@[AnimeshK@kali]_[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$diff -c sample1.txt sample2.txt
*** sample1.txt 2020-08-18 22:32:41.155532166 +0530
--- sample2.txt 2020-08-18 22:06:09.851456287 +0530
***** Dev Documents Music Postman Templates
***** Downloads Picturesacheat Linux_and_hacking Videos
! This is a test document.
! An OS is an interface between a computer user and a computer hardware.
! An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
! Operating system is one of the core subjects in computer science.
! Operating system is one of the core subjects in computer science.
! Unix is a great OS.
! UNIX is a free OS.
! Unix systems use a centralized operating system kernel which manages system and process activities.
! Unix is a great OS.
! UNIX is a free OS.
! UNIxOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system?
! Yet another powerful OS.
\ No newline at end of file
```

```
Applications ▾ Places ▾ Terminal ▾ Tue 18 Aug 22:46:31
Terminal
! Operating system is one of the core subjects in computer science.
! Unix is a great OS.
! UNIX is a free OS.
! Unix systems use a centralized operating system kernel which manages system and process activities.
! Unix is a great OS.
! UNIX is a free OS.
! UNIxOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
! Yet another powerful OS.
\ No newline at end of file
--- 1,8 ---- dest.txt listing.c sam1 sam2 sam3 sour.txt
! Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
! There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
! Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
! Yet another powerful OS.
```

19 Solve the arithmetic expression: $((8+12)*(5-3))/2$ using linux commands, &

20. Cut and display the first 10 characters of every line of the file “Input.txt”, &

21. Print the name of the current working directory.

Command used:

1. Basic shell operators for arithmetic operations
2. cut -c-10 <file> for Q 20
3. pwd for Q21

Screenshot:

```

Applications ▾ Places ▾ Terminal ▾ Wed 19 Aug 14:21:26
[AnimeshK@kali]~[/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$echo $(((8+12)*(5-3))/2))                                20. Display the permission for the users to read, write and execute the file 'sample1.txt'.
[AnimeshK@kali]~[/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$cat sample1.txt                                         21. Show the calendar of previous, current and next month.
bash: cat sample1.txt: command not found
[x]~[AnimeshK@kali]~[/Desktop/GATE_Prep/OS/College/LabAssignments/Expl] 16. Add line numbers to the file 'sample2.txt'
This is a test document. 17. Find out whether the two pairs of input files are identical or not.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process
management, handling input and output, and controlling peripheral devices such as disk drives and prin
ters. 18. Show how the input file "sample1.txt" differs line by line from "sample2.txt" in context and
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix is a great OS. 20. Cut and display the first 10 characters of every line of the file "input.txt".
UNIX is a free OS. 21. Print the name of the current working directory.
Unix systems use a centralized operating system kernel which manages system and process activities.
Unix is a great OS. 22. Process Status
UNIX is a free OS. a. List all the running processes with their corresponding PIDs.
UNIXOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS. 23. Print the number of characters, number of lines and number of words all the given input files.
Multiuser operating system.
Yet another powerful OS. [AnimeshK@kali]~[/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$cut -c-10 sample1.txt

```

```

Yet another powerful OS. [AnimeshK@kali]-(~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1)
└─$cut -c-10 sample1.txt
This is a
An OS is a
An OS is a
Operating
Operating
Unix is a
UNIX is a
Unix syste
Unix is a
UNIX is a
UNIX is a
UNixOS sys
A user can
UNIX is a
Multiuser
Yet anothe
[AnimeshK@kali]-(~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1)
└─$pwd
/home/AnimeshK/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1
[AnimeshK@kali]-(~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1)

```

22. Process Status

- a. List all the running processes with their corresponding PIDs.

Command used:

`ps aux`

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ps aux
```

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.1	0.1	165028	8996	?	Ss	09:20	0:21	/sbin/init
root	2	0.0	0.0	0	0	?	SUDH	09:20	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	Arcod	09:20	0:00	[rcu_gp]
root	4	0.0	0.0	0	0	?	I<	09:20	0:00	[rcu_par_gp]
root	6	0.0	0.0	0	0	?	I<	09:20	0:00	[kworker/0:0H-kblockd]
root	8	0.0	0.0	0	0	?	I<	09:20	0:00	[mm_percpu_wq]
Umesh	9	0.0	0.0	0	0	?	S	09:20	0:00	[ksoftirqd/0]
root	10	0.1	0.0	0	0	?	I	09:20	0:20	[rcu_sched]
root	11	0.0	0.0	0	0	?	I	09:20	0:00	[rcu_bh]
Kartikey	12	0.0	0.0	0	0	?	S	09:20	0:00	[migration/0]
Doh	14	0.0	0.0	0	0	?	S	09:20	0:00	[cpuhp/0]
SUDHIR	15	0.0	0.0	0	0	?	S	09:20	0:00	[cpuhp/1]
root	16	0.0	0.0	0	0	?	S	09:20	0:00	[migration/1]
root	17	0.0	0.0	0	0	?	S	09:20	0:00	[ksoftirqd/1]
VPS-1	19	0.0	0.0	0	0	?	I<	09:20	0:00	[kworker/1:0H-kblockd]
root	20	0.0	0.0	0	0	?	S	09:20	0:00	[cpuhp/2]
root	21	0.0	0.0	0	0	?	S	09:20	0:00	[migration/2]
DAA GR	22	0.0	0.0	0	0	?	S	09:20	0:00	[ksoftirqd/2]
root	24	0.0	0.0	0	0	?	I<	09:20	0:00	[kworker/2:0H-kblockd]
root	25	0.0	0.0	0	0	?	S	09:20	0:00	[cpuhp/3]
Dubey	26	0.0	0.0	0	0	?	S	09:20	0:00	[migration/3]
root	27	0.0	0.0	0	0	?	S	09:20	0:00	[ksoftirqd/3]
root	29	0.0	0.0	0	0	?	I<	09:20	0:00	[kworker/3:0H-kblockd]

b. List the processes that are not associated with the terminal.

Command used:

ps aux command is used, pipe filtered using grep. Processes with TTY value ? represent that they are not associated with any terminal at all.

Screenshot:

```
$ps x | grep ?
1291 ? Ss 0:00 /lib/systemd/systemd --user
1292 ? S 0:00 (sd-pam)
1310 ? S<sl 0:01 /usr/bin/pulseaudio --daemonize=no
1312 ? SNs1 0:41 /usr/libexec/tracker-miner-fs
1316 ? Ss 0:01 /usr/bin/dbus-daemon --session --address=systemd: --nofork --nrepidfile
temd-activation --syslog-only
1332 ? Sl 0:00 /usr/bin/gnome-keyring-daemon --daemonize --login
1335 ? Umesh Ssl 0:00 /usr/lib/gvfs/gvfsd
1340 ? odk Sl 0:00 /usr/lib/gvfs/gvfsd-fuse /run/user/1001/gvfs -f -o big_writes
1347 ? Kartikeyan Notebooksup Ssl 0:00 /usr/lib/gvfs/gvfs-udisks2-volume-monitor
1352 ? Doh Ssl 0:00 /usr/lib/gvfs/gvfs-goa-volume-monitor
1356 ? Sl 0:00 /usr/libexec/goa-daemon
1363 ? SUDHIR_DELL Sl 0:00 /usr/libexec/goa-identity-service
1369 ? https://docs.google.com/d... Ssl 0:00 /usr/lib/gvfs/gvfs-mtp-volume-monitor
1373 ? Ssl 0:00 /usr/lib/gvfs/gvfs-gphoto2-volume-monitor
1378 ? VPS-1 class-S Ssl 0:00 /usr/lib/gvfs/gvfs-afc-volume-monitor
1459 ? Sir questions Ss 0:00 /usr/bin/ssh-agent /usr/bin/gnome-session
1465 ? Ssl 0:00 /usr/libexec/at-spi-bus-launcher
1470 ? DAA GROUPS S 0:01 /usr/bin/dbus-daemon --config-file=/usr/share/defaults/at-spi2/accessib
.conf --nofork --print-address 3
1507 ? Ssl 0:00 /usr/libexec/xdg-permission-store
1512 ? Zubey Sl 0:00 /usr/lib/gnome-shell/gnome-shell-calendar-server
1592 ? this bhai to s Slehta h S 0:06 /usr/libexec/at-spi2-registryd --use-gnome-session
1605 ? Ssl 0:00 /usr/lib/evolution/evolution-source-registry
```

c. List the processes that are associated with the terminal.

Command used: ps a lists all such processes which are associated with a terminal.(Please see the TTY value doesn't have ?)

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ ps a
 PID TTY      STAT   TIME  COMMAND
 722 ttys1    Ssl+  0:00 /usr/libexec/gdm-x-session --register-session dbus-run-session -- gnome-sess
 724 ttys1    Sl+   0:24 /usr/lib/xorg/Xorg vt1 -displayfd 3 -auth /run/user/131/gdm/Xauthority -back
1095 ttys1    S+    0:00 dbus-run-session -- gnome-session --autostart /usr/share/gdm/greeter/autosta
1096 ttys1    S+    0:00 dbus-daemon --nofork --print-address 4 --session
1097 ttys1    Sl+   0:00 /usr/lib/gnome-session/gnome-session-binary --autostart /usr/share/gdm/greet
1104 ttys1    Sl+   0:00 /usr/libexec/at-spi-bus-launcher in the format (COE18B002) up to
1109 ttys1    S+    0:00 /usr/bin/dbus-daemon --config-file=/usr/share/defaults/at-spi2/accessibility
1124 ttys1    Sl+   0:09 /usr/bin/gnome-shell ail, more to view the file contents page by page.
1145 ttys1    Sl+   0:00 /usr/libexec/xdg-permission-store file and extract those files from the
1153 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-sharing
1155 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-wacom
1156 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-color
1157 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-keyboard
1158 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-print-notifications
1159 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-rfkill
1160 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-smartcard
1161 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-datetime
1162 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-media-keys
1163 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-screensaver-proxy
1164 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-sound
1165 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-ally-settings
1166 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-housekeeping
1167 ttys1    Sl+   0:00 /usr/lib/gnome-settings-daemon/gsd-power
```

23. Print the number of characters, number of lines and number of words all the given input files. &

24. Print the length of the longest line from all the input files.

Command used:

1. `wc <file1> <file2>...` - lists the number of chars, lines and words of each file.
2. `wc -L <file1> <file2>...` - lists the length of longest line of each file.

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$wc sample1.txt sample2.txt
14 149 906 sample1.txt
8 102 591 sample2.txt
22 251 1497 total
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$wc -L sample1.txt sample2.txt
211 sample1.txt
169 sample2.txt
211 total
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$
```

24. Print the length of the longest line from all the input files.

25. Move the contents of the input file sample.txt to a new file.

Command used:

cat command and > operator

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$cat sample.txt
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Doug
s McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few
examples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.

24. Print the length of the longest line from all the input files.

[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$cat sample.txt > newfile.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$cat newfile.txt
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Doug
s McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few
examples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.
```

24. Print the length of the longest line from all the input files.

25. Reverse the lines of the two input files and concatenate the file contents using a single command.

26. Print the lines from "sample1.txt" that do not match the pattern "OS".

27. Fetch the files that contain the word "OS", "Operating System", "Operating Systems" with its

26. Copy the contents of one directory to another directory.

Command used:

```
cp -r <source> <destination>
```

copies the contents of directory <source> to the directory <destination>

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ ls
empty      'Exercise-I LINUX COMMANDS.pdf'    NewDir      ps.txt      sample2.txt  sample.txt
emptyfile   Input      newfile.txt  sample1.txt  sample3.txt  sp.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ ls NewDir/
another.txt  new.c
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ ls empty
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cp -r NewDir/. empty
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ ls empty
another.txt  new.c
```

27. Reverse the lines of the two input files and concatenate the file contents using a single command.

Command used:

tac <file1> <file2> - works similar to cat, but concatenates the contents of file1 and file2 in reverse order.

Screenshot:

The screenshot shows a terminal window titled "Terminal" with the following content:

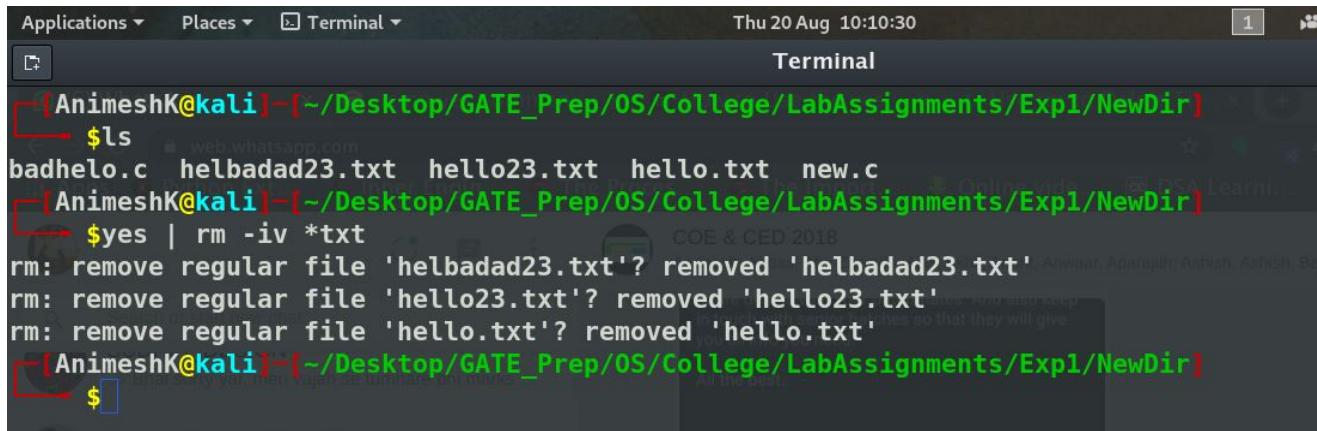
```
[AnimeshK@kali] - [/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ tac sample1.txt sample2.txt
Yet another powerful OS. Multiuser operating system.
UNIX is a free OS.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX systems use a centralized operating system kernel which manages system and process activities.
UNIX is a free OS.
Unix is a great OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
UNIX is a free OS.
25. Move the contents of the input file sample.txt to a new file.
Unix is a great OS.
26. Copy the contents of one directory to another directory.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
29. Given the input file "sample1.txt", print the number of the lines that match the pattern
An OS is an interface between a computer user and a computer hardware.
This is a test document.
30. Having sample1 file as input, print the matched lines that contain the pattern "Unix" as whole words.
Yet another powerful OS.
Multiuser operating system.
UNIX is a free OS.
31. Print the lines from "sample1.txt" that do not match the pattern "OS".
32. Fetch the files that contain the word "OS", "Operating System", "Operating Systems" with its
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a few examples. Linux is also a flavor of Unix which is freely available.
```

28. Delete all the files with *.txt extension from the working directory using yes command.

Command used:

`rm -iv <ext>` deletes all the files with specified extension in a verbose mode, that is, it keeps asking whether to delete something or not. We have piped 'yes' command which keeps printing y(meaning yes) for every prompt the rm- iv command raises.

Screenshot:



The screenshot shows a terminal window with the following session:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/NewDir]
$ ls
badhelo.c helbadad23.txt hello23.txt hello.txt new.c
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/NewDir]
$ yes | rm -iv *txt
rm: remove regular file 'helbadad23.txt'? removed 'helbadad23.txt'
rm: remove regular file 'hello23.txt'? removed 'hello23.txt'
rm: remove regular file 'hello.txt'? removed 'hello.txt'
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/NewDir]
$
```

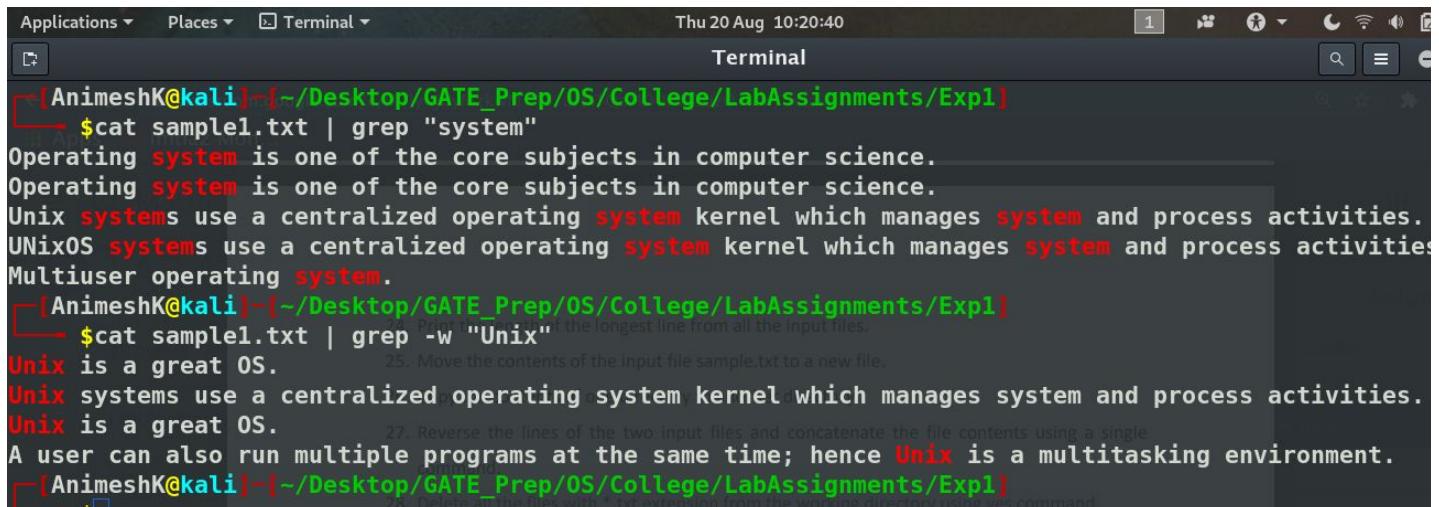
29. Given the input file “sample1.txt”, print the number of the lines that match the pattern, &

30. Having sample1 file as input, print the matched lines that contain the pattern “Unix” as whole words “system”.

Command used:

`cat <filename> | grep 'word'` - this command filter the lines which contain ‘word’, same command with a -w option with grep, chooses only those lines which contains ‘word’ as a whole word.

Screenshot:



The screenshot shows a terminal window with the following session:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$ cat sample1.txt | grep "system"
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix systems use a centralized operating system kernel which manages system and process activities.
UnixOS systems use a centralized operating system kernel which manages system and process activities.
Multiuser operating system.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$ cat sample1.txt | grep -w "Unix"
Unix is a great OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
Unix is a great OS.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

31. Print the lines from “sample1.txt” that do not match the pattern “OS”.

Command used:

`cat <filename> | grep -v 'word'` - cat command to list the file contents, filtered using grep with -v flag, works as a ‘reverse’ of usual grep command, that is, it chooses only those lines who DO NOT contain ‘word’.

Screenshot:

The screenshot shows a terminal window titled "Terminal" with the following content:

```
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ cat sample1.txt | grep -v "OS"
This is a test document.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
Multiuser operating system.
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$
```

32. Fetch the files that contain the word “OS”, “Operating System”, “Operating Systems” with its respective line number. (Ignore the case).

Command used:

`grep "word1\|word2.." -iRn` - this command finds the word1 & word2....and so on, in pwd recursively, ignoring the case of these words, simultaneously listing down the line numbers of all the matches with their respective file names.

Screenshots:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ grep "OS\|Operating system\|Operating Systems" -iRn
newfile.txt:1:Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
newfile.txt:5:UNIX is a free OS.
newfile.txt:6:Multiuser operating system.
newfile.txt:7:Yet another powerful OS.
Binary file Exercise-I LINUX COMMANDS.pdf matches sample.txt to a new file.
sample2.txt:1:Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
sample2.txt:5:UNIX is a free OS.
sample2.txt:6:Multiuser operating system.
sample2.txt:7:Yet another powerful OS.
sample.txt:1:Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
sample.txt:5:UNIX is a free OS.
sample.txt:6:Multiuser operating system.
sample.txt:7:Yet another powerful OS.
sp.txt:2:An OS is an interface between a computer user and a computer hardware.
sp.txt:3:An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
sp.txt:4:Operating system is one of the core subjects in computer science.
sp.txt:5:Operating system is one of the core subjects in computer science.
sp.txt:6:Unix is a great OS.
sp.txt:7:UNIX is a free OS.

sample3.txt:11:Yet another powerful OS.
sample1.txt:2:An OS is an interface between a computer user and a computer hardware.
sample1.txt:3:An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
sample1.txt:4:Operating system is one of the core subjects in computer science.
sample1.txt:5:Operating system is one of the core subjects in computer science.
sample1.txt:6:Unix is a great OS.
sample1.txt:7:UNIX is a free OS.
sample1.txt:8:Unix systems use a centralized operating system kernel which manages system and process activities.
sample1.txt:9:Unix is a great OS.
sample1.txt:10:UNIX is a free OS.
sample1.txt:11:UNIX systems use a centralized operating system kernel which manages system and processes activities.
sample1.txt:13:UNIX is a free OS.
sample1.txt:14:Multiuser operating system.
sample1.txt:15:Yet another powerful OS.
ps.txt:1:Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, Douglas McIlroy, and Joe Ossanna at Bell Labs.
ps.txt:5:UNIX is a free OS.
ps.txt:6:Multiuser operating system.
ps.txt:7:Yet another powerful OS.

[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

33. Having “sample1.txt” and “core” as the input and pattern respectively, along with the matched line print three lines before and after the pattern match.

Command used:

grep “word” -A 3 -B 3 <filename> - A 3 stands for 3 lines after the match

-B 3 stands for 3 lines before the match of the pattern “word” in the <filename> file.

Screenshot:

The screenshot shows a terminal window on a Kali Linux desktop environment. The terminal title is "Terminal". The date and time at the top right are "Fri 21 Aug 16:42:02". The command entered is \$grep "core" -A 3 -B 3 sample1.txt. The output shows the contents of the sample1.txt file, which is a test document about operating systems. The word "core" is highlighted in red, indicating it is the search pattern. The output includes three lines before and three lines after the match, demonstrating the -A and -B options.

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$grep "core" -A 3 -B 3 sample1.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix is a great OS.
UNIX is a free OS.
30. Having sample1 file as input, print the matched lines that contain the pattern "Unix" as whole.
Unix systems use a centralized operating system kernel which manages system and process activities.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$
```

34. Find and replace the string “OS” with “Operating System”.

Command used:

sed -i “s/<find pattern>/<replace pattern>/” <filename>

-i option means ignore the case of the pattern to find <find pattern> in the file <filename>

Screenshot:

1. Before the replacement:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample1.txt
This is a test document.
An OS is an interface between a computer user and a computer hardware.
An OS is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix is a great OS.
UNIX is a free OS.
Unix systems use a centralized operating system kernel which manages system and process activities.
Unix is a great OS.
UNIX is a free OS.
UNIxOS systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.sys templates
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

2. After replacement:

```
[~]-[AnimeshK@kali]-[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ sed -i "s/OS/Operating System/" sample1.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample1.txt
This is a test document.
An Operating System is an interface between a computer user and a computer hardware.
An Operating System is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.
Operating system is one of the core subjects in computer science.
Operating system is one of the core subjects in computer science.
Unix is a great Operating System.
UNIX is a free Operating System.
Unix systems use a centralized operating system kernel which manages system and process activities.
Unix is a great Operating System.
UNIX is a free Operating System.
UNIxOperating System systems use a centralized operating system kernel which manages system and process activities.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free Operating System.
Multiuser operating system.
Yet another powerful Operating System.sys templates
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

35. List only the text files in the current working directory with its corresponding disk space occupied.

Command used:

```
du -ha --max-depth = 1 | grep ".txt"
```

du -ha is used to display disk space occupied by all the files in human readable format(KB, MB), grep is used to filter out all the .txt files. Here the --max-depth = 1 signifies that we want to go only 1 step deep in this directory.(that is we want to restrict to current directory alone)

Screenshot:

```
[AnimeshK@kali]~[/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$du -ha --max-depth=1 | grep ".txt"
4.0K    ./newfile.txt          "system".
4.0K    ./sample2.txt         30. Having sample1 file as input, print the matched lines that contain the pattern "Unix".
4.0K    ./sample.txt          words.
4.0K    ./sp.txt              31. Print the lines from "sample1.txt" that do not match the pattern "OS".
4.0K    ./sample3.txt         32. Fetch the files that contain the word "OS", "Operating System", "Operating Systems"
4.0K    ./sample1.txt          respective line number. (ignore the case).
4.0K    ./test.txt            33. Having "sample1.txt" and "core" as the input and pattern respectively, along
4.0K    ./ps.txt              34. Find and replace the string "OS" with "Operating System"
[AnimeshK@kali]~[/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$
```

36. Show the last modification time of all the input text files.

Command used:

stat -c used to show the last modification time for all the files and "%y" is an access specifier used to list time. Then we use grep to allow only the .txt files.

Screenshot:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls
empty          friends      NewDir      sample1.txt  sample.txt
emptyfile      'hello fiend' newfile.txt  sample2.txt  sp.txt
'Exercise-I LINUX COMMANDS.pdf' Input       ps.txt     sample3.txt  test.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ stat -c '%y : %n' * | grep ".txt"
2020-08-20 09:21:19.480056797 +0530 : newfile.txt
2020-08-18 22:07:39.079460542 +0530 : line number: ps.txt
2020-08-21 16:47:14.144912006 +0530 : sample1.txt and pattern respectively, along with the
2020-08-18 22:06:09.851456287 +0530 : line print three lines before and after the pattern match.
2020-08-18 22:18:59.171492971 +0530 : replace the string "OS" with "Operating System".
2020-08-18 22:37:21.291545524 +0530 : sample.txt
2020-08-18 22:07:15.023459395 +0530 : sp.txt
2020-08-21 16:41:19.676895104 +0530 : test.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$
```

37. Delete the line that has the word “Powerful” from the text file “sample2.txt”.

Command used: sed '/<word to delete>/d' <filename>

Screenshot:

First output is before deletion and second one is after deletion.

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cat sample2.txt
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, D
s McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a
xamples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.
Yet another powerful OS.

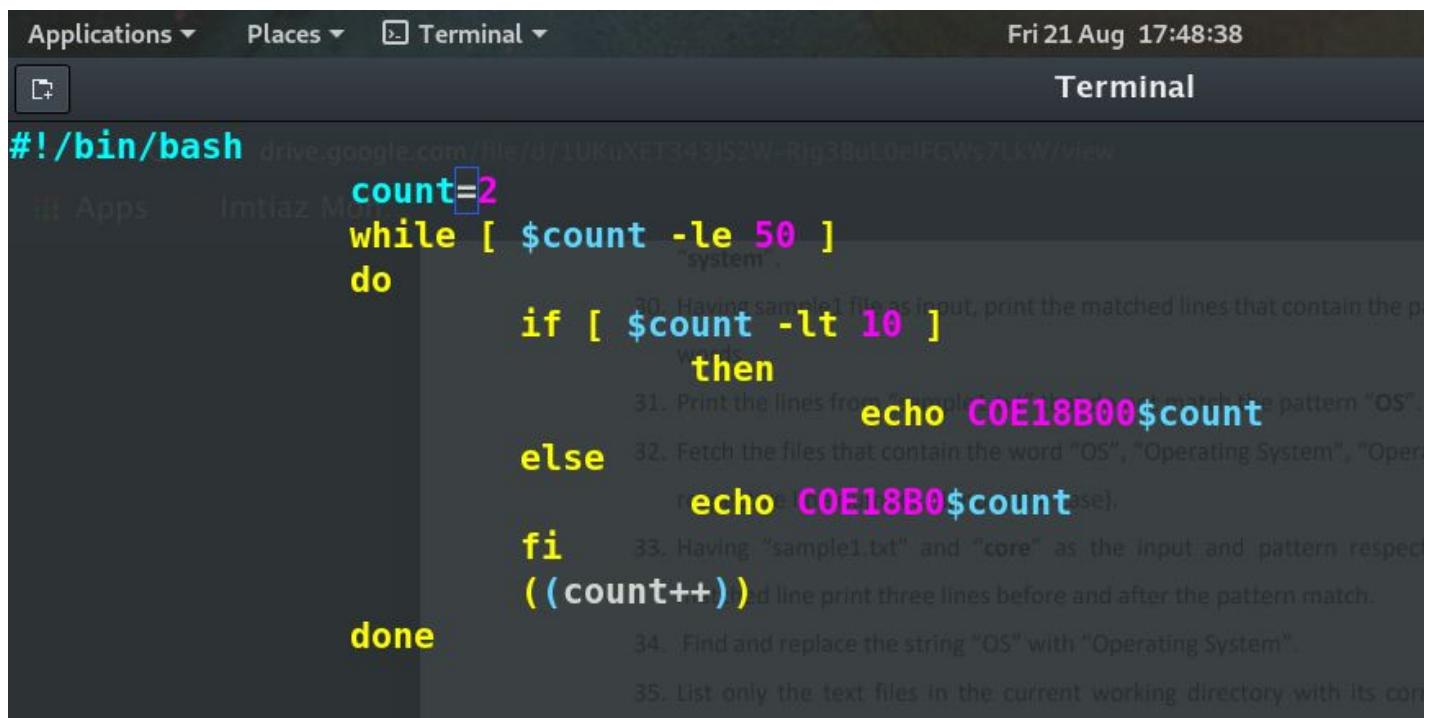
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ sed '/powerful/d' sample2.txt
Unix was originally developed in 1969 by a group of AT&T employees Ken Thompson, Dennis Ritchie, D
s McIlroy, and Joe Ossanna at Bell Labs.
There are various Unix variants available in the market. Solaris Unix, AIX, HP Unix and BSD are a
xamples. Linux is also a flavor of Unix which is freely available.
Several people can use a Unix computer at the same time; hence Unix is called a multiuser system.
A user can also run multiple programs at the same time; hence Unix is a multitasking environment.
UNIX is a free OS.
Multiuser operating system.

[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
```

38. Print the roll numbers that end with even numbers in the format (COE18B002) up to COE18B050.

Logic used:

I wrote a simple bash script for this task, then made it executable using chmod command. Then executed the bash script to do this task. The analogy is the same as the python script. We use a simple while loop to implement this code.



The screenshot shows a terminal window with a dark theme. At the top, there are menu options: Applications, Places, Terminal, and a date/time stamp: Fri 21 Aug 17:48:38. The title bar of the terminal window says "Terminal". The terminal itself contains the following bash script:

```
#!/bin/bash
count=2
while [ $count -le 50 ]
do
    if [ $count -lt 10 ]
        then
            echo COE18B0$count
    else
        echo COE18B0$count
    fi
    ((count++))
done
```

Below the script, there are several numbered annotations:

30. Having sample1.txt as input, print the matched lines that contain the pattern "OS".
31. Print the lines from "sample1.txt" that contain the pattern "OS".
32. Fetch the files that contain the word "OS", "Operating System", "Oper-
33. Having "sample1.txt" and "core" as the input and pattern respec-
34. Find and replace the string "OS" with "Operating System".
35. List only the text files in the current working directory with its con-

Output Screenshots:

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ vim print_name.sh
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ ./print_name.sh
COE18B002
COE18B003
COE18B004
COE18B005
COE18B006
COE18B007
COE18B008
COE18B009
COE18B010
COE18B011
COE18B012
COE18B013
COE18B014
COE18B015
COE18B016
COE18B017
COE18B018
COE18B019
COE18B020
COE18B021
COE18B022
COE18B023
30. Having sample1 file as input, print the matched lines that contain the pattern "Unix" as whole words.
31. Print the lines from "sample1.txt" that do not match the pattern "OS".
32. Fetch the files that contain the word "OS", "Operating System", "Operating Systems" with its respective line number. (Ignore the case).
33. Having "sample1.txt" and "core" as the input and pattern respectively, along with the matched line print three lines before and after the pattern match.
34. Find and replace the string "OS" with "Operating System".
35. List only the text files in the current working directory with its corresponding disk space occupied.
36. Show the last modification time of all the input text files.
37. Delete the line that has the word "Powerful" from text file "sample2.txt".
38. Print the roll numbers that end with even numbers in the format (COE18B002) up to COE18B050.
39. Use filter commands like head, tail, more to view the file contents page by page.
40. Compress the current working directory contents to a tar file and extract those files from the compressed tar file.
41. Compress the files using zip command.
a. Zip the input file "sample1.txt" as samplezip.zip and remove the file from the current directory after zipping.
b. Add "sample1.txt" and update the zip archive.
```

Applications ▾ Places ▾ Terminal ▾ Fri 21 Aug 17:49:05

Terminal

```
COE18B028 ↵ drive.google.com/file/d/1UKuXET343JS2W-Rjg3BuL0eIFGwz7lkW/view
COE18B029 ↵ Intiaz Moh...
COE18B030
COE18B031
COE18B032
COE18B033
COE18B034
COE18B035
COE18B036
COE18B037
COE18B038
COE18B039
COE18B040
COE18B041
COE18B042
COE18B043
COE18B044
COE18B045
COE18B046
COE18B047
COE18B048
COE18B049
COE18B050
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
```

"system".

30. Having sample1 file as input, print the matched lines that contain the pattern "Unix" as whole words.

31. Print the lines from "sample1.txt" that do not match the pattern "OS".

32. Fetch the files that contain the word "OS", "Operating System", "Operating Systems" with its respective line number. (Ignore the case).

33. Having "sample1.txt" and "core" as the input and pattern respectively, along with the matched line print three lines before and after the pattern match.

34. Find and replace the string "OS" with "Operating System".

35. List only the text files in the current working directory with its corresponding disk space occupied.

36. Show the last modification time of all the input text files.

37. Delete the line that has the word "Powerful" from text file "sample2.txt".

38. Print the roll numbers that end with even numbers in the format (COE18B002) up to COE18B050.

39. Use filter commands like head, tail, more to view the file contents page by page.

40. Compress the current working directory contents to a tar file and extract those files from the compressed tar file.

41. Compress the files using zip command.

a. Zip the input file "sample1.txt" as samplezip.zip and remove the file from the current directory after zipping.

b. Add "sample1.txt" and update the zip archive.

39. Use filter commands like head, tail, more to view the file contents page by page.

Command used:

head <filename> used to view 10 lines from the start of the file

tail <filename> used to view 10 lines from the end of the file

more <filename> used to view the full file in a page by page view, the % of file content is always displayed at the bottom of the terminal window.

Screenshot:

Applications ▾ Places ▾ Terminal ▾ Fri 21 Aug 17:56:12

Terminal

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$head test_text.txt
LINUX COMMANDS
1. Test drive and understand the usage of all the commands given in the 50 Most Frequently
Used UNIX / Linux Commands and linuxcommands.pdf with even numbers in the format (COE18B002) up to
2. Create a directory and create a file inside that directory.
3. List the files and directories that are empty in a working directory.
4. Show commands to delete empty and non-empty directory.
5. Find the location of the input files using locate and find command.
6. View the user permissions and ownership of the files in the current directory and change the
ownership of some selected files to another user.
7. List all the files in the current directory and subdirectories.
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$tail test_text.txt
39. Use filter commands like head, tail, more to view the file contents page by page.
40. Compress the current working directory contents to a tar file and extract those files from the
compressed tar file.
41. Compress the files using zip command.
a. Zip the input file "sample1.txt" as samplezip.zip and remove the file from the current
directory after zipping.
b. Add "sample2.txt" and update the zip archive.
c. Zip a directory with all its contents.
d. Remove a file from the zip archive
e. Unzip the contents from samplezip.zip
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$
```

Applications ▾ Places ▾ Terminal ▾ Fri 21 Aug 17:56:38

Terminal

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$more test_text.txt
LINUX COMMANDS
1. Test drive and understand the usage of all the commands given in the 50 Most Frequently
Used UNIX / Linux Commands and linuxcommands.pdf "Powerful" from text file "sample2.txt".
2. Create a directory and create a file inside that directory. the format (COE18B002) up to
3. List the files and directories that are empty in a working directory.
4. Show commands to delete empty and non-empty directory. the file contents page by page.
5. Find the location of the input files using locate and find command.
6. View the user permissions and ownership of the files in the current directory and change the
ownership of some selected files to another user.
7. List all the files in the current directory and subdirectories.
8. Concatenate the two input files: "sample1.txt" and "sample2.txt" and save it to a new file
named "Input".
9. Copy the contents of file 'sample2.txt' to 'sample.txt'
10. Append the file contents of input file 'sample2.txt' to the end of the first input file
'sample1.txt'.
11. Remove the permission for the users to read, write and execute the file 'sample.txt'.
12. Display the current date with the day of week, month, time and the year.
13. Show the calendar of previous, current and next month.
14. Sort the contents of the file 'sample1.txt' in alphabetical order.
15. Erase duplicate records in the file 'sample1.txt' and display only the unique records
16. Add line numbers to the file 'sample2.txt'
17. Find out whether the two pairs of input files are identical or not.
Compare sample1.txt and sample2.txt
Compare sample2.txt and sample.txt
--More-- (36%)
```

Applications ▾ Places ▾ Terminal ▾ Fri 21 Aug 17:56:43 Terminal

```

unified mode.
19. Solve the arithmetic expression: ((8+12)*(5-3))/2 using linux commands,
20. Cut and display the first 10 characters of every line of the file "Input.txt".
21. Print the name of the current working directory.
22. Process Status
38. Print the roll numbers that end with even numbers in the format (COE18B002) up to
a. List all the running processes with their corresponding PIDs.
b. List the processes that are not associated with the terminal.
c. List the processes that are associated with the terminal.
23. Print the number of characters, number of lines and number of words all the given input files.

24. Print the length of the longest line from all the input files.
25. Move the contents of the input file sample.txt to a new file.
26. Copy the contents of one directory to another directory.
27. Reverse the lines of the two input files and concatenate the file contents using a single
command.
c. Zip a directory with all its contents.
28. Delete all the files with *.txt extension from the working directory using yes command.
29. Given the input file "sample1.txt", print the number of the lines that match the pattern
"system".
30. Having sample1 file as input, print the matched lines that contain the pattern "Unix" as whole
words.
31. Print the lines from "sample1.txt" that do not match the pattern "OS".
32. Fetch the files that contain the word "OS", "Operating System", "Operating Systems" with its
respective line number. (Ignore the case).
33. Having "sample1.txt" and "core" as the input and pattern respectively, along with the
--More--(75%)

```

Applications ▾ Places ▾ Terminal ▾ Fri 21 Aug 17:56:48 Terminal

```

31. Print the lines from "sample1.txt" that do not match the pattern "OS".
32. Fetch the files that contain the word "OS", "Operating System", "Operating Systems" with its
respective line number. (Ignore the case).
33. Having "sample1.txt" and "core" as the input and pattern respectively, along with the
38. Print the roll numbers that end with even numbers in the format (COE18B002) up to
... skipping 1 line
COE18B050.
34. Find and replace the string "OS" with "Operating System".
35. List only the text files in the current working directory with its corresponding disk space
occupied.
36. Show the last modification time of all the input text files.
37. Delete the line that has the word "Powerful" from text file "sample2.txt".
38. Print the roll numbers that end with even numbers in the format (COE18B002) up to
COE18B050.
39. Use filter commands like head, tail, more to view the file contents page by page.
40. Compress the current working directory contents to a tar file and extract those files from the
compressed tar file.
d. Remove a file from the zip archive
41. Compress the files using zip command.
a. Zip the input file "sample1.txt" as samplezip.zip and remove the file from the current
directory after zipping.
b. Add "sample2.txt" and update the zip archive.
c. Zip a directory with all its contents.
d. Remove a file from the zip archive
e. Unzip the contents from samplezip.zip
[AnimeshK@kali] - ~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
$ 
```

40. Compress the current working directory contents to a tar file and extract those files from the compressed tar file.

Command used:

1. `tar cvf <tar filename> <dir name>` to compress the <dir name> directory to create a <tar filename> tar file
2. `tar xvf <tar filename>` to expand/uncompress the <tar filename> tar file.

Screenshot:

First, we compress and create a tarfile archive_cwd.tar from current working directory, *.

then, we move this tarfile to to a child directory 'tar_exp/' and then we expand it there, displaying all the contents created/un-compressed.

```
$ ls
empty
emptyfile
'Exercise-I LINUX COMMANDS.pdf'
friends
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
$ tar cvf archive_cwd.tar *
empty/
empty/another.txt
empty/new.c
emptyfile
Exercise-I LINUX COMMANDS.pdf
friends/
hello fiend/
Input
NewDir/ Locations
NewDir/badhelo.c
NewDir/new.c

$ ls
Name      Size
empty      223.5 kB
emptyfile  107.0 kB
friends   106.9 kB
archive_cwd.tar 86.9 kB
'Exercise-I LINUX COMMANDS.pdf' 299.7 kB
friends/  301.4 kB
hello fiend/ 255.4 kB
Input     443.3 kB
NewDir/  407.3 kB
NewDir/badhelo.c 473.1 kB
NewDir/new.c 360.8 kB
Output.png 191.6 kB
sample1.txt 127.5 kB
sample2.txt 144.9 kB
sample3.txt 172.3 kB
sample.txt 161.8 kB
sp.txt    161.8 kB
tar_exp   161.8 kB
test      161.8 kB
test.txt  161.8 kB
test_text.txt 161.8 kB
```

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls
archive_cwd.tar 1.png      friends      newfile.txt  sample2.txt  tar_exp
empty            Screenshot from 2020-08-07 08-31-29.png  'hello fiend'  print_name.sh  sample3.txt  test_text.txt
emptyfile        Screenshot from 2020-08-07 08-31-29.png  Input          ps.txt       sample.txt   test.txt
'Exercise-I LINUX COMMANDS.pdf' NewDir      sample1.txt  sp.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cp archive_cwd.tar tar_exp/
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls tar_exp/
archive_cwd.tar  archive_exp.tar  hello.c  hi.c
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ rm archive_cwd.tar archive_exp.tar hello.c hi.c
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls
friends      newfile.txt  sample2.txt  tar_exp
print_name.sh sample3.txt  sample.txt   test_text.txt
ps.txt       sample1.txt  sp.txt
sample.txt
sp.txt
tar_exp/
tar_exp/hello.c
tar_exp/hi.c
tar_exp/archive_exp.tar
test_text.txt
test.txt
```

Expanding the ‘archive_cwd.tar’ file -

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cd tar_exp/
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/tar_exp]
└─$ ls
archive_cwd.tar  archive_exp.tar  hello.c  hi.c
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/tar_exp]
└─$ tar xvf archive_cwd.tar
empty/
empty/another.txt
empty/new.c
emptyfile
Exercise-I LINUX COMMANDS.pdf
friends/
hello fiend/
Input
NewDir/
NewDir/badhello.c
NewDir/new.c
newfile.txt
print_name.sh
ps.txt
sample1.txt
sample2.txt
sample3.txt
sample.txt
sp.txt
```

41. Compress the files using zip command:

a. Zip the input file “sample1.txt” as samplezip.zip and remove the file from the current directory after zipping. &

Command used: zip <zip file name> <filename>

b. Add “sample2.txt” and update the zip archive. &

Command used: zip <existing zip file name> <filename>

c. Zip a directory with all its contents. &

Command used: zip <zip file name> <dir name>

d. Remove a file from the zip archive &

Command used: zip -d <existing zip file name> <filename to be removed>

```

Applications ▾ Places ▾ Terminal Fri 21 Aug 20:14:01
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ ls
archive_cwd.tar          friends      newfile.txt    sample2.txt    tar_exp
empty                     'hello fiend'  print_name.sh  sample3.txt    test_text.txt
emptyfile                 Input        ps.txt        sample.txt    test.txt
'Exercise-I LINUX COMMANDS.pdf' NewDir      sample1.txt    sp.txt
└─$ zip samplezip.zip sample1.txt
adding: sample1.txt (deflated 62%) commands like head, tail, more to view the file contents page by page.
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ rm sample1.txt
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ zip samplezip.zip sample2.txt
Zip the input file "sample1.txt" as samplezip.zip and remove the file from the current
adding: sample2.txt (deflated 40%)
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ zip NewDir.zip NewDir/
adding: NewDir/ (stored 0%)
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]
└─$ zip -d samplezip "sample1.txt"
deleting: sample1.txt
[AnimeshK@kali] - [~/Desktop/GATE_Prep/OS/College/LabAssignments/Exp1]

```

e. Unzip the contents from samplezip.zip

Command used: `unzip <existing zip file name>`

now we move this samplezip.zip file to 'friends/' directory, there we do unzip this file.

```
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls
archive_cwd.tar    friends      NewDirzip.zip   sample2.txt    sp.txt
empty               'hello fiend' newfile.txt    sample3.txt    tar_exp
emptyfile           Input        print_name.sh  sample.txt    test_text.txt
'Exercise-I LINUX COMMANDS.pdf' NewDir       ps.txt       samplezip.zip test.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ mv samplezip.zip friends
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ ls friends/
samplezip.zip
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl]
└─$ cd friends/
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/friends]
└─$ unzip samplezip.zip
Archive: samplezip.zip
  inflating: sample2.txt
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/friends]
└─$ ls
sample2.txt  samplezip.zip
[AnimeshK@kali] -[~/Desktop/GATE_Prep/OS/College/LabAssignments/Expl/friends]
└─$ 
```

Thanks

Animesh Kumar

CED18I065

Note: Question 1 (1 to 50 LINUX commands) is in the "Question_1_OS.pdf" file. The file you are reading currently only contains Q 2 to 41. This separation is there for readability purposes.

