Sr.No	Experiment Title	Page No		Date of Performance	Date of Submission	Marks	Sign
1.	Practical-1 Study of Basic Commands of Linux						
2.	Practical-2 Study the basics of shell programming Adding of Two Numbers Swap Two Variables without Using Third Variable Average Of 3 Numbers To validate the entered date. (eg. Date format is: dd-mm-yyyy) Calculate Factorial Of Given Number						
3.	Practical-3 Write a shell script to check entered string is palindrome or not Write a shell script to Print an Array						
4.	Practical-4 Write a C program to create a child process						

5.	Practical-5 Finding out biggest number from given three numbers supplied as command line arguments						
6.	Practical-6 Write Shell Script to Print Pyramid						
7.	Practical-7 Shell script to determine whether given file exist or not Write a Shell Script that prints the even number up to the number given by the user.						
8.	Practical-8 Write a program for process creation using C. (Use of goc compiler).						
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PRACTICAL:01

What is an Operating System?

Operating System lies in the category of system software. It basically manages all the resources of the computer. An operating system acts as an interface between the software and different parts of the computer or the computer hardware. The operating system is designed in such a way that it can manage the overall resources and operations of the computer.
Operating System is a fully integrated set of specialized programs that handle all the operations of the computer. It controls and monitors the execution of all other programs that reside in the computer, which also includes application programs and other system software of the computer. Examples of Operating Systems are Windows, Linux, Mac OS, etc.
An Operating System (OS) is a collection of software that manages computer hardware resources and provides common services for computer programs. The operating system is the most important type of system software in a computer system.

Examples of Operating Systems

- **Windows** (GUI-based, PC)
- **GNU/Linux** (Personal, Workstations, ISP, File, and print server, Three-tier client/Server)
- **macOS** (Macintosh), used for Apple's personal computers and workstations (MacBook, iMac).
- **Android** (Google's Operating System for smartphones/tablets/smartwatches)
- **iOS** (Apple's OS for iPhone, iPad, and iPod Touch)

What is Linux Operating System?

The Linux Operating System is a type of operating system that is similar to Unix, and it is built upon the Linux Kernel. The Linux Kernel is like the brain of the operating system because it manages how the computer interacts with its hardware and resources. It makes sure everything works smoothly and efficiently. But the Linux Kernel alone is not enough to make a complete operating system. To create a full and functional system, the Linux Kernel is combined with a collection of software packages and utilities, which are together called Linux distributions. These distributions make the Linux Operating System ready for users to run their applications and perform tasks on their computers securely and effectively. Linux distributions come in different flavors, each tailored to suit the specific needs and preferences of users.

What are basic Linux Commands?

Linux commands :-

1. **ls –** Displays information about files in the current directory. **Syntax-***ls [Options] [File]*

```
root@ubuntu:/# ls
bin   dev  go1.13.5.linux-amd64.tar.gz  initrd.img      lib    lost+found  mnt  proc  run   snap  sys  usr  vmlinuz
boot  etc  home                        initrd.img.old  lib64  media       opt  root  sbin  srv   tmp  var  vmlinuz.old
root@ubuntu:/#
```

Example:-

2. **pwd –** Displays the current working directory. **Syntax-** *$ pwd*

Example:-

```
/home/cg/root/63b31828bde9b
```

3. **mkdir –** Creates a directory.

Syntax: <dir name> , in place of <dir name> type the name of new directory, you want to create and then press enter

Example:

```
main.sh
GeeksForGeeks  main.sh
```

4. **CD–** To navigate between different folders.

Syntax:

Command	**Description**
Cd	to go to the home folder
cd..	to move one directory up
cd-	move to your previous directory

Example:

Example:

```
/home/cg/root/63b3a4b346875
/home/cg/root/63b3a4b346875/GeeksForGeeks
```

5. **RMDIR –** Removes empty directories from the directory lists.

Syntax:

Syntax: $ rmdir <directoryname> Example:

Example:

```
GeeksForGeeks  main.sh
main.sh
```

6.CP – Moves files from one directory to another.

Syntax: *$ cp source file destination file*

Example – to copy the contents of the red file into the blue file.
$ cp red.txt blue.txt

7.MV – Rename and Replace the files
Syntax: to move a file
$ mv <Filename> <Directory_Name>
mv command syntax – to rename a file
mv old_filename new_filename

Example:

```
first.txt   main.sh
main.sh   renamed.txt
```

8.RM – Delete files
Syntax: *$ rm <filename>*
Example:

```
main.sh   renamed.txt
main.sh
```

9.uname – Command to get basic information about the OS Syntax:

Option	Description
-a	this option displays everything
-v	shows the kernel information
-s	displays the kernel version of the system
-r	displays the kernel release

Example:

```
SMP Sun Dec 04 08:06:28 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
```

10.locate– Find a file in the database.

Syntax: $ locate <filename>

Example:

```
locate -e first.txt
```

11.touch – Create empty files

Syntax: **touch command syntax**

$ rmdir <directoryname>

You can also create multiple files simultaneously

$ touch <filename1> <filename2>

Example:-

```
main.sh
GeeksforGeeks.txt   main.sh
```

12. IN– Create shortcuts to other files

Example:-

```
Linked/Demo
```

13.cat – Display file contents on terminal **Syntax of cat command:** *cat <filename.extension>* **Example**:

cat newfile.txt

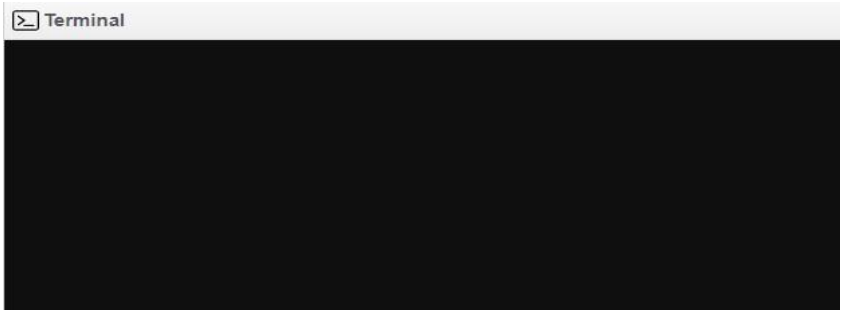
A few other use of **cat** command in Linux:

Option	Function
cat > [fileName]	Create a new file.
cat [old_file] > [new_file]	Copy content from old file to new file.
cat [file1, file2,….] > [new file name]	Concatenate contents of multiple files into one file.
cat –n [File_Name] / cat -b [File_Name]	Display line numbers.
cat -e [fileName]	Display $ character at the end of each line.

Example:

```
this is a File
```

14. clear – Clear terminal
Syntax:- *$ clear*
Example:-


Terminal

15. PS- Display the processes in terminal *Syntax: ps* *Example:*

```
PID TTY          TIME CMD
8454 pts/521  00:00:00 bash
11982 pts/521  00:00:00 bash
11983 pts/521  00:00:00 ps
```

16. man – Access manual for all Linux commands

Syntax: *$ man [Command Name]* *Example:*

```
ls (1) - list directory contents
```

17. grep- Search for a specific string in an output

Syntax:

```
1  cat file.txt
2  cat file.txt | grep "GeeksforGeeks"
```

Example:

```
Hello World
Welcome to GeeksforGeeks
Welcome to GeeksforGeeks
```

18.echo- Display active processes on the terminal

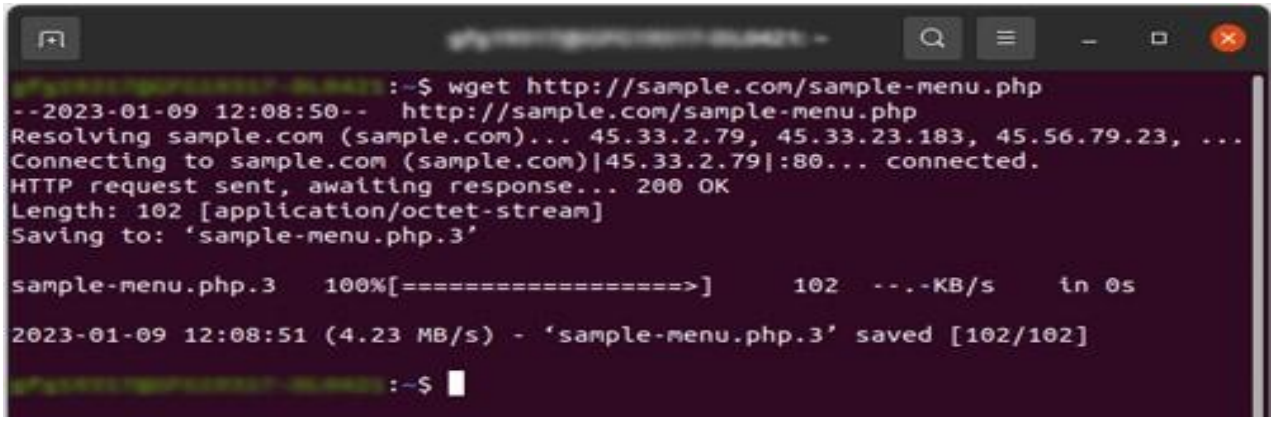
Syntax: *$echo "<String>"* *Example:*

```
Hello World
```

19. wget – download files from the internet

Syntax: wget http://sample.com/sample-menu.php

Example:



20.whoami- Create or update passwords for existing users

Syntax:

```
1 whoami
```

Example:

```
acer
```

21.sort- sort the file content Syntax: sort multiple.txt Example:

```
GeeksforGeeks
Hello World
Thank you
```

22.cal- View Calendar in terminal **Syntax:- cal January 2023** **Example:**

```
January 2023
Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7 8  9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
```

23. whereis – View the exact location of any command types after this command. **Syntax: whereis printf** **Example:**

```
1 whereis printf
```

24.DF – Check the details of the file system **Syntax: df -h** **Example:**

```
Filesystem      Size  Used Avail Use% Mounted on
overlay         875G  120G  711G  15% /
tmpfs            63G     0   63G   0% /dev
tmpfs            63G     0   63G   0% /sys/fs/cgroup
/dev/nvme0n1p3  875G  120G  711G  15% /dev/init
shm              64M     0   64M   0% /dev/shm
tmpfs            63G     0   63G   0% /proc/acpi
tmpfs            63G     0   63G   0% /proc/scsi
tmpfs            63G     0   63G   0% /sys/firmware
```

25.WC – Check the lines, word count, and characters in a file using different options . **Syntax:**

```
1 touch file.txt
2 echo -e "This file has only six words" > file.txt
3 wc -w file.txt
```

Example:

```
6 file.txt
```