1. To implement Linux Commands

1. sudo

Sudo stands for SuperUser DO and is used to access restricted files and operations. By default, Linux restricts access to certain parts of the system preventing sensitive files from being compromised.

```
raj@raj-MS-7B84:~/Desktop$ sudo -V
Sudo version 1.8.31
Sudoers policy plugin version 1.8.31
Sudoers file grammar version 46
Sudoers I/O plugin version 1.8.31
```

2. Apt -get

Apt is a command-line package management utility for Ubuntu and Debian Linux. Apt is used to install, remove, update and upgrade Debian packages from the command line in Ubuntu and Debian systems.

```
raj@raj-MS-7B84:~/Desktop$ apt
apt 2.0.4 (amd64)
Usage: apt [options] command
```

3. Ls

The ls command is used to list files or directories in Linux and other Unixbased operating systems.

```
raj@raj-MS-7B84:~$ ls

Desktop Downloads Pictures raj2.txt Templates

Documents Music Public raj.txt Videos
```

4. Cd

cd command in linux known as change directory command. It is used to change current working directory.

```
raj@raj-MS-7B84:~/Desktop$ cd
raj@raj-MS-7B84:~$ cd Downloads
raj@raj-MS-7B84:~/Downloads$ pwd
/home/raj/Downloads
```

5. Pwd

The pwd command writes to standard output the full path name of your current directory (from the root directory).

```
raj@raj-MS-7B84:~/Downloads$ pwd
/home/raj/Downloads
```

6. Cp

The cp command is used for copying files from one location to another.

```
ReevegReeveG:-5 is

8.expt Documents expt2 Music Public reeve3.txt reeveg.txt reevetxt Templates xaa

Desktop Downloads file.tar Pictures reeve2.sh reeve4.sh reeve.sh snap Videos

reeve@ReeveG:-5 cp reeve3.txt reeveg.txt

reeve@ReeveG:-5
```

7. Mv

It stands for move. mv is used to move one or more files or directories from one place to another in a file system like UNIX

```
raj@raj-MS-7B84:~$ Mv raj.txt Downloads
Mv: command not found
raj@raj-MS-7B84:~$ mv raj.txt Downloads
raj@raj-MS-7B84:~$ cd Downloads
raj@raj-MS-7B84:~/Downloads$ ls
 raj2.txt
            raj.txt 'TEITB_35_Reeve_DevOps EXPT1(1).pdf'
```

8. Rm

It is used to remove objects such as files, directories, symbolic links

```
eeve@ReeveG:~/Downloads$ ls
cn2.2.tcl cn2.3.tcl cn2.4.tcl reevetxt
reeve@ReeveG:~/Downloads$ rm cn2.3.tcl
eeve@ReeveG:-/Downloads$
```

9. Mkdir

mkdir command in Linux allows the user to create directories (also referred to as folders in some operating systems)

```
raj@raj-MS-7B84:~/Downloads$ mkdir --version mkdir (GNU coreutils) 8.30
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <a href="https://gnu.org/licenses/gpl.html">https://gnu.org/licenses/gpl.html</a>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
```

10. History

history command is used to view the previously executed command.

This feature was not available in the Bourne shell.

```
raj@raj-MS-7B84:~/Downloads$ history
       cal 2022
    2
       date
    3
       DS
       time date
    4
    5
       bc
    6
       history
    7
       man
    8
       who
    9
       whoami
   10
       kill
   11
   12
       pwd
   13
       cd Documents
   14
       cat exp2
       cp --help
   15
   16
       ls -lh
   17
       ls -ltr
```

and so on from the file system like UNIX.

11. Df

It is used to display information related to file systems about total space and available space.

```
raj@raj-MS-7B84:~/Downloads$ df
                1K-blocks
Filesystem
                               Used Available Use% Mounted on
                                       4009732
udev
                  4009732
                                  0
                                                 0% /dev
tmpfs
                   808528
                               1904
                                        806624
                                                  1% /run
/dev/sdb5
                454379936 10843228 420385708
                                                 3% /
tmpfs
                  4042632
                                  0
                                       4042632
                                                 0% /dev/shm
                                                     /run/lock
tmpfs
                                          5116
                     5120
                                  4
                                                 1%
                                                 0% /sys/fs/cgroup
tmpfs
                  4042632
                                  0
                                       4042632
/dev/loop1
                      128
                                128
                                             0 100% /snap/bare/5
/dev/loop2
/dev/loop4
                    56960
                                             0 100% /snap/core18/2344
                              56960
                    63488
                              63488
                                             0
                                               100%
                                                     /snap/core20/1405
```

12. Du

It allows a user to gain disk usage information quickly.

13. Free

It outputs a summary of RAM usage, including total, used, free,

shared, and available memory and swap space.

```
raj@raj-MS-7B84:~/Downloads$ free
               total
                                                            buff/cache
                                                                           available
                             used
                                         free
                                                    shared
                                                                2585156
Mem:
             8085268
                           903064
                                      4597048
                                                      9348
                                                                             6908748
Swap:
            2097148
                                0
                                      2097148
```

14. Uname -a

To display system information, use the uname command

```
raj@raj-MS-7B84:~/Downloads$ uname -a
Linux raj-MS-7B84 5.13.0-28-generic #31~20.04.1-Ubuntu SMP
```

15. Top

The top (table of processes) command shows a real-time view of running processes in Linux and displays kernel-managed tasks.

```
top - 13:25:55 up 22 min, 1 user, load average: 0.05, 0.24, 0.39
Tasks: 198 total, 1 running, 197 sleeping, 0 stopped, 0 zomble
%Cpu(s): 5.9 us, 1.7 sy, 0.0 ni, 92.1 id, 0.3 wa, 0.0 hi, 0.0 si, 0.0 st
Mi8 Mem: 2640.0 total, 323.3 free, 956.5 used, 1360.2 buff/cache
Mi8 Swap: 1421.2 total, 1411.4 free, 9.8 used. 1504.3 avail Mem
```

PID U	ISER	PR	NI	VIRT	RES	SHR	S	%CPU	SMEM	TIME+	COMMAND
1393 n	eeve	20	θ	288232	85936	48492	S	3.0	3.2	0:22.12	Xorg
1696 m	reeve	20	θ	3677884	315500	122984	5	3.0	11.7	0:35.51	gnome-shell
2335 n	reeve	20	θ	967704	51148	36892	S	1.7	1.9	0:12.43	gnome-terminal-
4546 r	reeve	20	0	11856	3692	3188	R	0.7	0.1	0:00.05	top
573 m	nessage+	20	0	9844	5900	3440	S	0.3	0.2	0:02.80	dbus-daemon

16. Man

It is used to display the user manual of any command that we can run on the terminal.

```
MAN(1)
                                                                                                                                              Manual pager utils
                       man - an interface to the system reference manuals
SYNOPSIS
                     man [man options] [[section] page ...] ...
man -k [apropos options] regexp ...
man -K [man options] [section] term ...
man -f [whatis options] page ...
man -l [man options] file ...
man -w|-W [man options] page ...
DESCRIPTION
                      man is the system's manual pager. Each page argument given to man is normally the gram, utility or function. The <u>manual page</u> associated with each of these argument and displayed. A <u>section</u>, if provided, will direct man to look only in that <u>sect</u> ual. The default action is to search in all of the available <u>sections</u> following order (see <u>DEFAULTS</u>), and to show only the first <u>page</u> found, even if <u>page</u> exists
                       tions.
```

17. Info

It will give detailed information for a command when compared with the man page.

```
File: dir, Node: Top, This is the top of the INFO tree.

This is the Info main menu (aka directory node).

A few useful Info commands:

'q' quits;

'H' lists all Info commands;

'h' starts the Info tutorial;

'mTexinfo RET' visits the Texinfo manual, etc.
```

18. Passwd

The passwd command changes passwords for user accounts.

```
raj@raj-MS-7B84:~$ passwd
Changing password for raj.
Current password:
New password:
Retype new password:
```

19. Whatis

is used to get a one-line manual page descriptions.

```
raj@raj-MS-7B84:-$ whatis pwd
pwd (1) - print name of current/working directory
```

20. Date

date command is used to display the system date and time. date command is also used to set date and time of the system.

```
raj@raj-MS-7B84: $ date
Thursday 04 August 2022 08:47:34 PM IST
```

21. W

It is a built-in tool that allows administrators to view information about users that are currently logged in.

```
raj@raj-MS-7B84:~$ w
20:47:42 up 44 min, 1 user,
                               load average: 0.18, 0.35, 0.62
USER
         TTY
                  FROM
                                   LOGIN@
                                            IDLE
                                                   JCPU
                                                         PCPU WHAT
raj
         :0
                                   20:03
                                           ?xdm?
                                                   8:37
                                                          0.00s /usr/lib/gdm3/g
                  :0
```

22. Exit

It sends the SIGKILL signal to the running program to force quit the

command

- 23. Shutdown use the command to shut down the system.
- 24. Head prints the first lines of one or more files (or piped data) to standard output.

```
reeve@ReeveG:~/Desktop$ ls
file1 file2 reeve2.txt reeve.txt
reeve@ReeveG:~/Desktop$ head reeve2.txt
ffffffffvvvvvvvv
```

25. Tail

The tail command, as the name implies, print the last N number of data of the given input.

```
reeve@ReeveG:~/Desktop$ ls
file1 file2 reeve2.txt reeve.txt
reeve@ReeveG:~/Desktop$ tail -v reeve.txt
==> reeve.txt <==
fffffffvvvvvvvv
555
reeve</pre>
```

26. Echo

It is used to display line of text/string that are passed as an argument.

```
raj@raj-MS-7B84:~$ echo "Hello World"
Hello World
```

27. Gre

The grep filter searches a file for a particular pattern of characters, and displays all lines that contain that pattern

```
reeve@ReeveG:-/Desktop$ grep -V
grep (GNU grep) 3.4
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <a href="https://gnu.org/licens">https://gnu.org/licens</a>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
```

28. Zip

The zip command is a command-line tool in Linux that allows us to create an archive of files and directories

```
reeve@ReeveG:~/Desktop$ zip home.zip *
  adding: file1/ (stored 0%)
  adding: file2/ (stored 0%)
  adding: reeve2.txt (deflated 44%)
  adding: reeve.txt (deflated 27%)
```

29. Unzip

Extract ZIP file with unzip command

reeve@ReeveG:~/Desktop\$ zip -h

```
reeve@ReeveG:~/Desktop$ unzip home.zip
Archive: home.zip
replace reeve2.txt? [y]es, [n]o, [A]ll, [N]one, [
  inflating: reeve2.txt
replace reeve.txt? [y]es, [n]o, [A]ll, [N]one, [r
```

30. <command name> -h or <command name> -help

```
Copyright (c) 1990-2008 Info-ZIP - Type 'zip "-L"' for software license
Zip 3.0 (July 5th 2008). Usage:
zip [-options] [-b path] [-t mmddyyyy] [-n suffixes] [zipfile list] [-x
 The default action is to add or replace zipfile entries from list, wh
 can include the special name - to compress standard input.
 If zipfile and list are omitted, zip compresses stdin to stdout.
 -f
      freshen: only changed files -u
                                       update: only changed or new fi
 -d delete entries in zipfile
                                  -m
                                       move into zipfile (delete OS f.
     recurse into directories
                                       junk (don't record) directory
 -r
                                  - j
                                  -1
     store only
                                       convert LF to CR LF (-11 CR LF
 -0
                                  -9 compress hetter
 -1
      compress faster
```

2 . To implement Git commands

• Git commands

```
1 . git --version
```

```
MINGW64:/c/Raj

Student@LAB-306-009 MINGW64 /c/Raj

$ git --version
git version 2.37.1.windows.1

Student@LAB-306-009 MINGW64 /c/Raj

$
```

2. git init

```
Student@LAB-306-009 MINGW64 /c/Raj

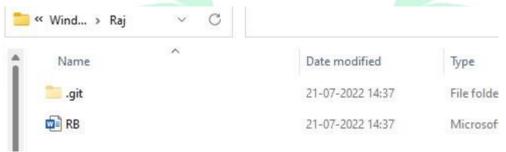
$ git init

Initialized empty Git repository in C:/Raj/.git/

Student@LAB-306-009 MINGW64 /c/Raj (master)

$
```

3. git status



4 . git config

```
2021
```

```
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git config --global user.name 'Raj'
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git config --global --list
user.name=Raj
user.email=rajburkhao03@student.sfit.ac.in
Student@LAB-306-009 MINGW64 /c/Raj (master)
```

5. git add

```
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git add .
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git status
On branch master
No commits yet
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file: RB.docx
       new file: raj_file1.txt
        new file: raj_file2.txt
Student@LAB-306-009 MINGW64 /c/Raj (master)
```

6. git commit

```
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git commit --m 'first commit'
[master (root-commit) 97a3629] first commit
3 files changed, 0 insertions(+), 0 deletions(-)
create mode 100644 RB.docx
create mode 100644 raj_file1.txt
create mode 100644 raj_file2.txt
Student@LAB-306-009 MINGW64 /c/Raj (master)
```

```
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git commit --m 'second commit
[master 392576b] second commit
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 Raj1.txt
```

```
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git commit --m 'third commit
[master 07ae064] third commit
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 raj2.txt
```

7. git log

```
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git log
commit 07ae064a527e3b65ad42bf7adeb2574ebc7a6b9f (HEAD -> master)
Author: Raj <rajburkhao03@student.sfit.ac.in>
Date: Thu Jul 21 14:54:41 2022 +0530
    third commit
commit 392576bff0d1911f891199052dfa35671ceadf98
Author: Raj <rajburkhao03@student.sfit.ac.in>
Date: Thu Jul 21 14:53:52 2022 +0530
    second commit
commit 97a3629c88b0d72f4111f77ffa854c6d24fd806d
Author: Raj <rajburkhao03@student.sfit.ac.in>
Date: Thu Jul 21 14:50:25 2022 +0530
    first commit
Student@LAB-306-009 MINGW64 /c/Raj (master)
Student@LAB-306-009 MINGW64 /c/Raj (master)
$ git log --oneline
07ae064 (HEAD -> master) third commit
392576b second commit
97a3629 first commit
```

Student@LAB-306-009 MINGW64 /c/Raj (master)

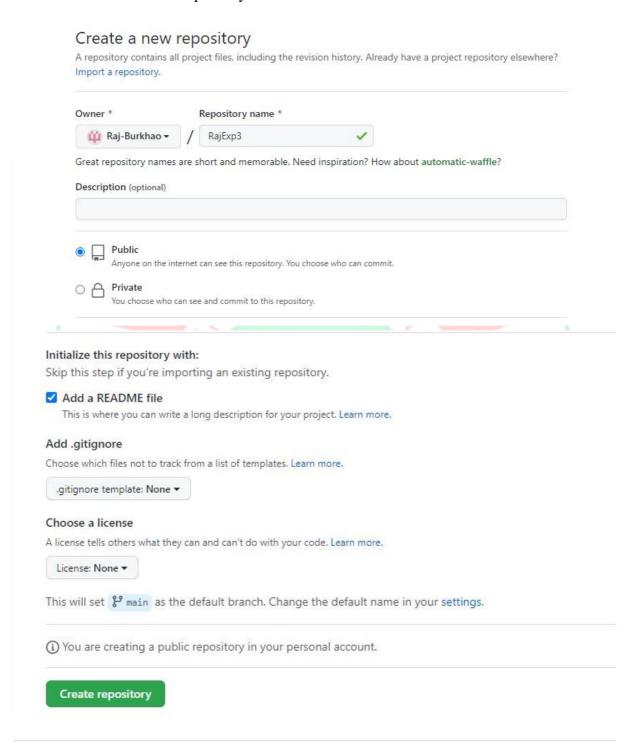
07ae064 (HEAD -> master) third commit

\$ git log --oneline raj2.txt

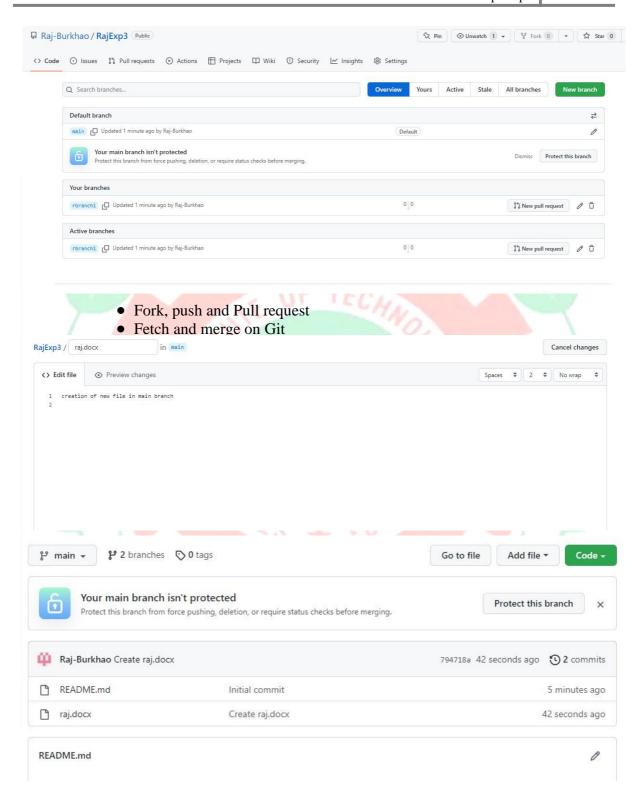
2

3. To implement Pull/Push operations between Git and GitHub

• Create a repository in GitHub



• Create a branch on repository



```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git clone https://github.com/Raj-Burkhao/RajExp3.git
Cloning into 'RajExp3'...
remote: Enumerating objects: 6, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 Receiving objects: 100% (6/6), done.
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
```

RajExp3	04-08-2022 13:47	File folder				
1	04-08-2022 13:36	PNG File	27 KB			
2	04-08-2022 13:36	PNG File	25 KB			
<u></u> 3	04-08-2022 13:38	PNG File	49 KB			
<u></u> 4	04-08-2022 13:41	PNG File	12 KB			
<u> </u>	04-08-2022 13:42	PNG File	27 KB			
6	04-08-2022 13:48	PNG File	13 KB			
0	04-08-2022 13:48	PNG FIIE				

```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git remote add origin https://github.com/Raj-Burkhao/RajExp3.git
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git remote show origin https://github.com/Raj-Burkhao/RajExp3.git
 remote origin
 Fetch URL: https://github.com/Raj-Burkhao/RajExp3.git
 Push URL: https://github.com/Raj-Burkhao/RajExp3.git
 HEAD branch: main
 Remote branches:
   main
            new (next fetch will store in remotes/origin)
   rbranch1 new (next fetch will store in remotes/origin)
 remote https://github.com/Raj-Burkhao/RajExp3.git
 Fetch URL: https://github.com/Raj-Burkhao/RajExp3.git
 Push URL: https://github.com/Raj-Burkhao/RajExp3.git
 HEAD branch: main
```

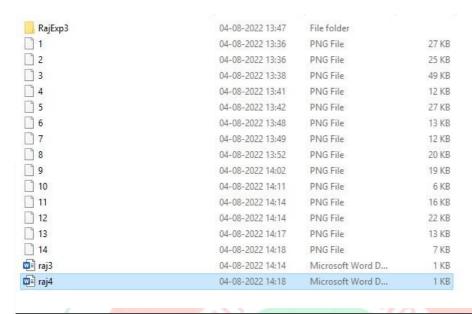
```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git push origin master
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 6 threads
Compressing objects: 100% (10/10), done.
Writing objects: 100% (10/10), 161.89 KiB | 23.13 MiB/s, done.
Total 10 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'master' on GitHub by visiting:
             https://github.com/Raj-Burkhao/RajExp3/pull/new/master
remote:
remote:
To https://github.com/Raj-Burkhao/RajExp3.git
                     master -> master
   [new branch]
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git push origin master
Everything up-to-date
```

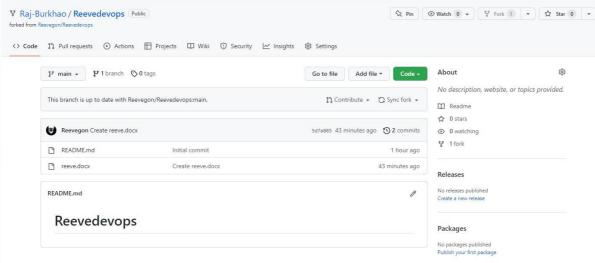
```
TEGLAB-303-019 MINGW64 ~/Documents/raj (master)
$ git pull origin master
From https://github.com/Raj-Burkhao/RajExp3
                                -> FETCH_HEAD
 * branch
                     master
Already up to date.
```

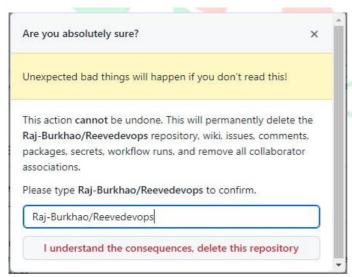
```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git pull origin master
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 Unpacking objects: 100% (3/3), 661 bytes | 6.00 KiB/s, done.
From https://github.com/Raj-Burkhao/RajExp3
 * branch
                       master
                                  -> FETCH_HEAD
   fe2d823..119afba master
                                   -> origin/master
Updating fe2d823..119afba
Fast-forward
raj3.docx | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 raj3.docx
```

Name	Date modified	Туре	Size
RajExp3	04-08-2022 13:47	File folder	
1	04-08-2022 13:36	PNG File	27 KB
2	04-08-2022 13:36	PNG File	25 KB
<u></u> 3	04-08-2022 13:38	PNG File	49 KB
<u></u> 4	04-08-2022 13:41	PNG File	12 KB
<u></u> 5	04-08-2022 13:42	PNG File	27 KB
□ 6	04-08-2022 13:48	PNG File	13 KB
<u>7</u>	04-08-2022 13:49	PNG File	12 KB
□ 8	04-08-2022 13:52	PNG File	20 KB
<u></u> 9	04-08-2022 14:02	PNG File	19 KB
10	04-08-2022 14:11	PNG File	6 KB
11	04-08-2022 14:14	PNG File	16 KB
raj3	04-08-2022 14:14	Microsoft Word D	1 KB

```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git fetch origin master
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 657 bytes | 8.00 KiB/s, done.
From https://github.com/Raj-Burkhao/RajExp3
  branch
                      master
                                  -> FETCH_HEAD
   119afba..f9d454a master
                                   -> origin/master
 FEGLAB-303-019 MINGW64 ~/Documents/raj (master)
$ git merge origin/master
Updating 119afba..f9d454a
Fast-forward
 raj4.docx | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 raj4.docx
```







```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git branch
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git branch raj
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git branch
 raj
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git checkout raj
Switched to branch 'raj'
TE@LAB-303-019 MINGW64 ~/Documents/raj (raj)
$ git branch
 master
FE@LAB-303-019 MINGW64 ~/Documents/raj (raj)
$ git checkout master
Switched to branch 'master'
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git branch
 raj
```

```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git ls-files
1. PNG
2. PNG
3. PNG
4. PNG
5. PNG
6. PNG
7. PNG
8. PNG
RajExp3
raj3.docx
raj4.docx
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git branch -v
  master f9d454a Create raj4.docx
         f9d454a Create raj4.docx
  raj
```

```
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
S git log
commit f9d454a31ba5396f5859770b768e918004b6f19c (HEAD -> master, origin/master, raj)
Author: Raj-Burkhao <110594513+Raj-Burkhao@users.noreply.github.com>
Date: Thu Aug 4 14:16:45 2022 +0530
     Create raj4.docx
 commit 119afba8243d390bf7025013c64d6e5219c943e3
Author: Raj-Burkhao <110594513+Raj-Burkhao@users.noreply.github.com>
Date: Thu Aug 4 14:13:53 2022 +0530
     Create raj3.docx
commit fe2d823359fb43b9991f14097e4c3ce054497dd1
Author: Raj <rajburkhao03@student.sfit.ac.in>
Date: Thu Aug 4 13:59:25 2022 +0530
     commit2
TE@LAB-303-019 MINGW64 ~/Documents/raj (master)
$ git status
On branch master
Untracked files:
(use "git add <file>..." to include in what will be committed)
nothing added to commit but untracked files present (use "git add" to track)
```

```
11.implement docker commands
Docker from start steps:
       docker version
       docker --version
       docker login
       docker pull ubuntu
       docker images
       docker pull ubuntu:bionic
       docker images
       docker run ubuntu
       docker ps
       docker ps -a
       docker run --name reeve_ubunto -it ubuntu bash
       ls
////start reeve_ubunto they apply these commands:
       docker ps
       docker unpause reeve_ubunto
       docker stop reeve_ubuntu
       ps
       docker top reeve_ubunto
       docker inspect ubuntu
```