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Assignment No. 1

Title: Study the essential linux commands for Cloud and DevOps.

Theory:

1. Command Name: **ls**

   Command Description: The ls command is one of the most commonly used commands in daily Linux/UNIX operations. The command is used in listing contents inside a directory and is one of the few commands beginners learn from the onset.

   Command Output:

```
student@student-Vostro-3470:~$ cd Documents
student@student-Vostro-3470:~/Documents$ ls
CAO  Ruthik
student@student-Vostro-3470:~/Documents$
```

```
student@student-Vostro-3470:~/Documents$ ls -l
total 8
drwxrwxr-x 2 student student 4096 Jan  5 13:46 CAO
drwxrwxr-x 2 student student 4096 Jan 17 13:26 Ruthik
student@student-Vostro-3470:~/Documents$
```

2. Command Name: **pwd**

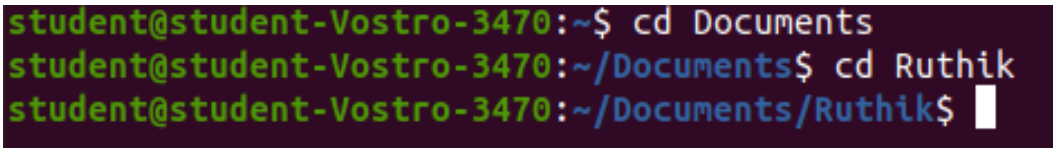
   Command Description: The pwd command writes to standard output the full path name of your current directory (from the root directory). All directories are separated by a / (slash). The root directory is represented by the first /, and the last directory named is your current directory.

   Command Output:

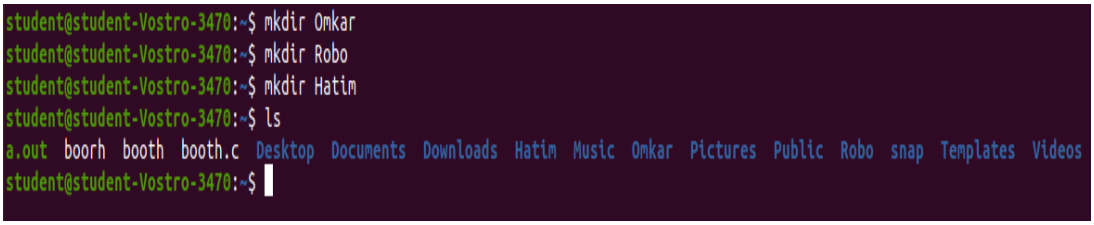
```
student@student-Vostro-3470:~/Documents$ pwd
/home/student/Documents
student@student-Vostro-3470:~/Documents$
```

3. Command Name: **cd**

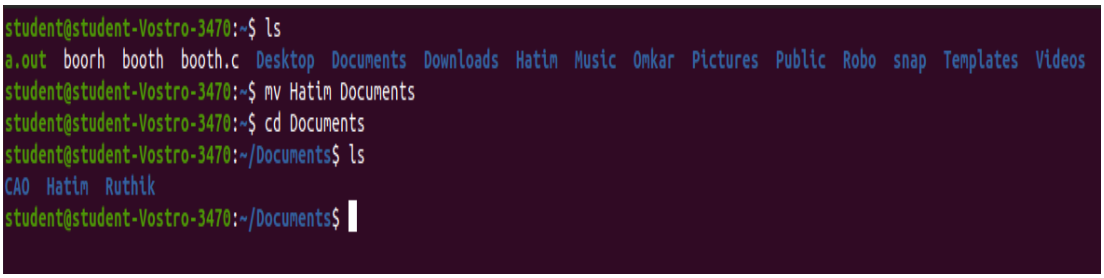
Command Description: Linux cd command is used to change the current working directory (i.e., in which the current user is working). The "cd" stands for 'change directory. ' It is one of the most frequently used commands in the Linux terminal.
Command Output:



4. Command Name: **mkdir**
   Command Description: The mkdir stands for 'make directory'. With the help of mkdir command, you can create a new directory wherever you want in your system. Just type "mkdir <dir name> , in place of <dir name> type the name of the new directory you want to create and then press enter.
   Command Output:



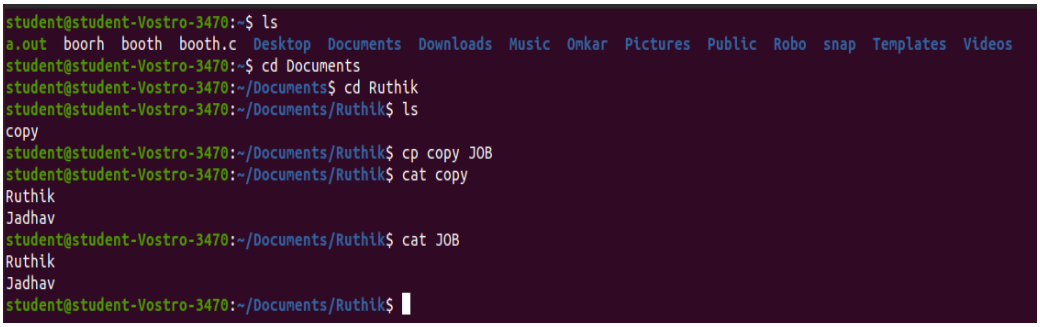
5. Command Name: **mv**
   Command Description: Use the mv command to move files and directories from one directory to another or to rename a file or directory. If you move a file or directory to a new directory without specifying a new name, it retains its original name.
   Command Output:



6. Command Name: **cp**

Command Description: You use the cp command for copying files from one location to another. This command can also copy directories (folders). [file/directory-sources] specifies the sources of the files or directories you want to copy.

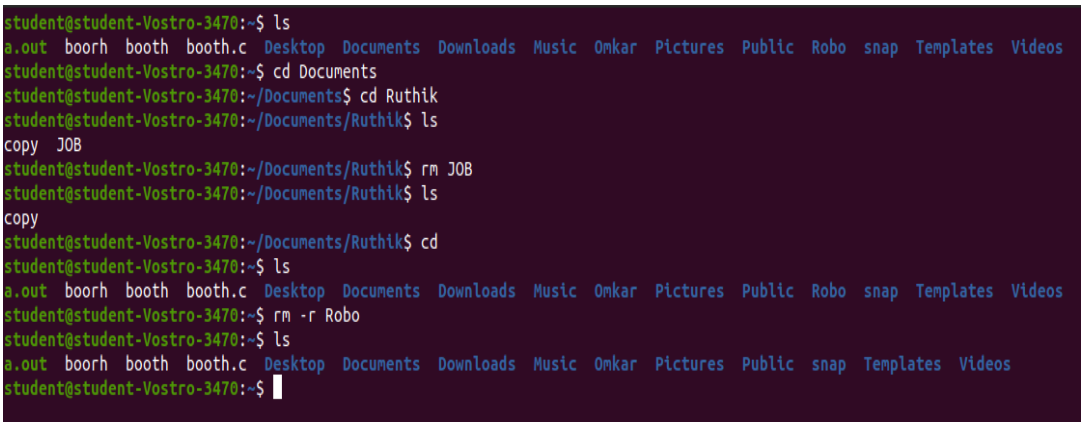
Command Output:



7. Command Name: **rm**

   Command Description: The rm command removes the entries for a specified file, group of files, or certain select files from a list within a directory. User confirmation, read permission, and write permission are not required before a file is removed when you use the rm command.

   Command Output:



8. Command Name: **touch**

   Command Description: It doesn't stand for anything; it's not an abbreviation or initialism. It's a verb. When you touch a file, you're "putting fresh fingerprints on it", updating its last-modified date (or creating it if it did not yet exist).

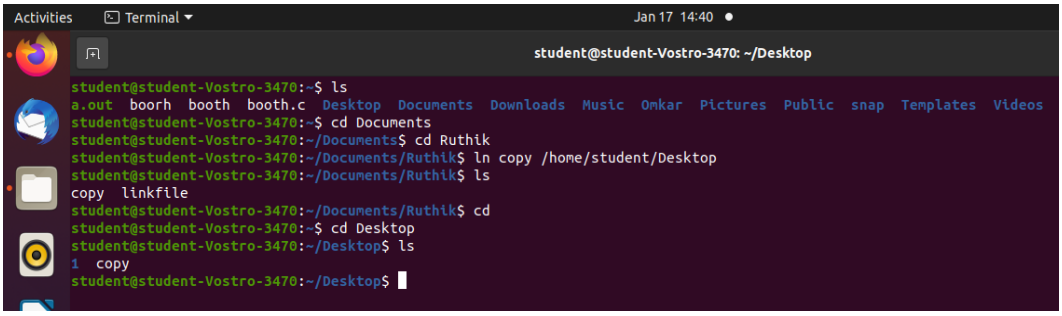
   Command Output:

```
student@student-Vostro-3470:~$ ls
a.out  boorh  booth  booth.c  Desktop  Documents  Downloads  Music  Omkar  Pictures  Public  snap  Templates  Videos
student@student-Vostro-3470:~$ cd Documents
student@student-Vostro-3470:~/Documents$ touch Doc1 Doc2
student@student-Vostro-3470:~/Documents$ ls
CAO  Doc1  Doc2  Hatim  Ruthik
student@student-Vostro-3470:~/Documents$ ll
total 20
drwxr-xr-x  5 student student 4096 Jan 17 14:23 ./
drwxr-xr-x 18 student student 4096 Jan 17 14:20 ../
drwxrwxr-x  2 student student 4096 Jan  5 13:46 CAO/
-rw-rw-r--  1 student student    0 Jan 17 14:23 Doc1
-rw-rw-r--  1 student student    0 Jan 17 14:23 Doc2
drwxrwxr-x  2 student student 4096 Jan 17 13:52 Hatim/
drwxrwxr-x  2 student student 4096 Jan 17 14:19 Ruthik/
student@student-Vostro-3470:~/Documents$
```

9. Command Name: **ln**

   Command Description: The ln command links the file designated in the SourceFile parameter to the file designated by the TargetFile parameter or to the same file name in another directory specified by the TargetDirectory parameter. By default, the ln command creates hard links.

   Command Output:



10. Command Name: **cat**

    Command Description: Cat(concatenate) command is very frequently used in Linux. It reads data from the file and gives their content as output. It helps us to create, view, and concatenate files.

    Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ ls
copy  linkfile
student@student-Vostro-3470:~/Documents/Ruthik$ cat copy
Ruthik
Jadhav
student@student-Vostro-3470:~/Documents/Ruthik$ cat linkfile
Ruthik
Jadhav
student@student-Vostro-3470:~/Documents/Ruthik$
```

11. Command Name: **clear**

    Command Description: Clear Terminal via Ctrl+L / Ctrl+Shift+K Shortcut

    An alternative in some terminal emulators is Ctrl + Shift + K . The command provides the same output as Ctrl + L.

    Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ ls
copy  linkfile
student@student-Vostro-3470:~/Documents/Ruthik$ cat copy
Ruthik
Jadhav
student@student-Vostro-3470:~/Documents/Ruthik$ cat linkfile
Ruthik
Jadhav
student@student-Vostro-3470:~/Documents/Ruthik$ clear
```

```
student@student-Vostro-3470:~/Documents/Ruthik$
```

12. Command Name: **echo**

    Command Description: echo command in linux is used to display lines of text/string that are passed as an argument . This is a built-in command that is mostly used in shell scripts and batch files to output status text to the screen or a file.

    Command Output:

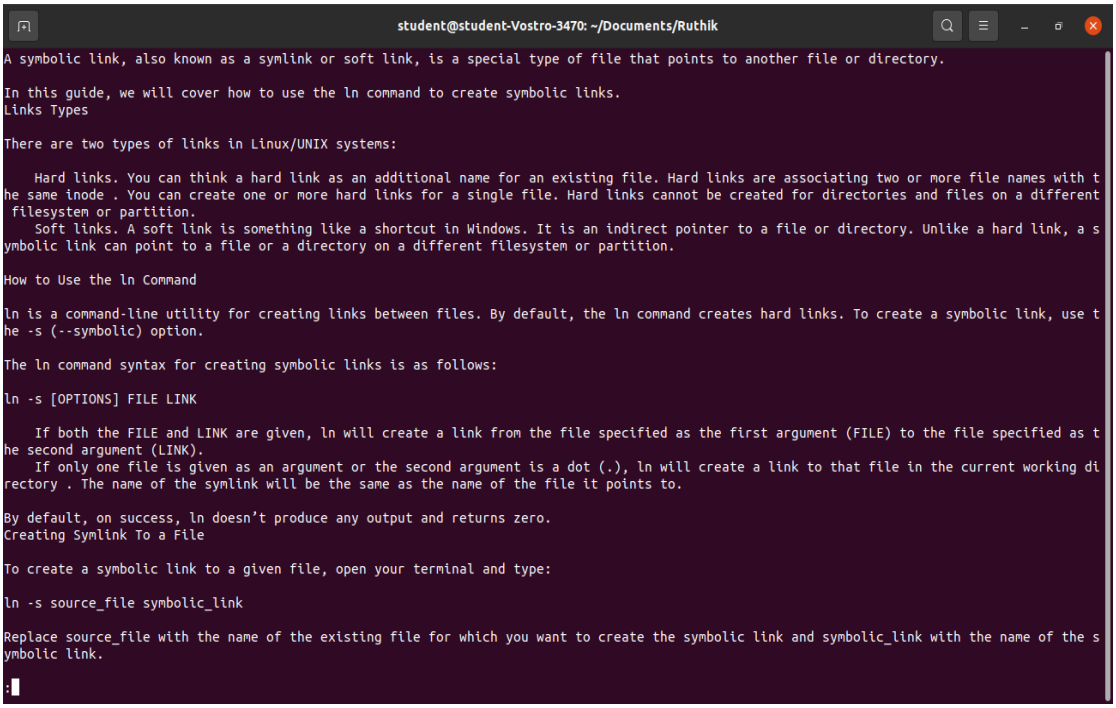
```
student@student-Vostro-3470:~/Documents/Ruthik$ echo "Ruthik Jadhav"
Ruthik Jadhav
student@student-Vostro-3470:~/Documents/Ruthik$
```

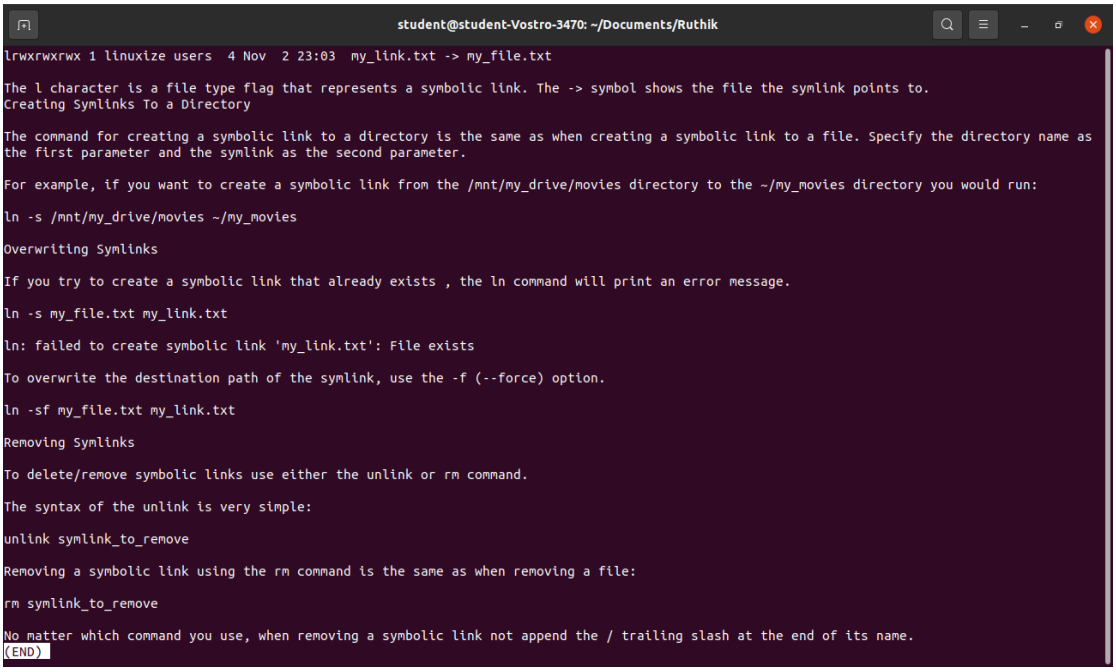
13. Command Name: **less**

    Command Description: The less command is a Linux terminal pager that shows a file's contents one screen at a time. It is useful when dealing with a large text file because it doesn't load the entire file but accesses it page by page, resulting in fast loading speeds.

    Command Output:

```
student@student-Vostro-3470:~$ ls
a.out  boorh  booth  booth.c  Desktop  Documents  Downloads  Music  Omkar  Pictures  Public  snap  Templates  Videos
student@student-Vostro-3470:~$ cd Documents
student@student-Vostro-3470:~/Documents$ cd Ruthik
student@student-Vostro-3470:~/Documents/Ruthik$ less work
```





14. Command Name: **man**

    Command Description: man command in Linux is used to display the user manual of any command that we can run on the terminal. It provides a detailed view of the command which includes NAME, SYNOPSIS, DESCRIPTION,

OPTIONS, EXIT STATUS, RETURN VALUES, ERRORS, FILES, VERSIONS, EXAMPLES, AUTHORS and SEE ALSO.

Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ man man
student@student-Vostro-3470:~/Documents/Ruthik$
```

15. Command Name: **uname**

Command Description: To display system information, use the uname command. Displays the operating system name as well as the system node name, operating system release, operating system version, hardware name, and processor type.

Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ uname
Linux
student@student-Vostro-3470:~/Documents/Ruthik$
```

16. Command Name: **whoami**

Command Description: The whoami command allows Linux users to see the currently logged-in user. The output displays the username of the effective user in

the current shell. Additionally, whoami is useful in bash scripting to show who is running the script.

Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ whoami
student
student@student-Vostro-3470:~/Documents/Ruthik$
```

17. Command Name: **tar**

    Command Description: The Linux 'tar' stands for tape archive, is used to create Archive and extract the Archive files. tar command in Linux is one of the important commands which provides archiving functionality in Linux. We can use Linux tar command to create compressed or uncompressed Archive files and also maintain and modify them.

    Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ tar cvf file.tar *
copy
linkfile
work
student@student-Vostro-3470:~/Documents/Ruthik$ ls
copy  file.tar  linkfile  work
student@student-Vostro-3470:~/Documents/Ruthik$
```

18. Command Name: **grep**

    Command Description: In Linux and Unix Systems Grep, short for "global regular expression print", is a command used in searching and matching text files contained in the regular expressions.

    Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ grep -i "Ruthik" copy
Ruthik
student@student-Vostro-3470:~/Documents/Ruthik$
```

19. Command Name: **head**

    Command Description:The Linux head command prints the first lines of one or more files (or piped data) to standard output. By default, it shows the first 10

lines. However, head provides several arguments you can use to modify the output.

Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ head copy
Ruthik
Jadhav
student@student-Vostro-3470:~/Documents/Ruthik$
```

20. Command Name: **tail**

Command Description: Tail is a command which prints the last few number of lines (10 lines by default) of a certain file, then terminates.

Command Output:

```
student@student-Vostro-3470:~/Documents/Ruthik$ tail linkfile
T
H
I
K
J
A
D
H
A
V
student@student-Vostro-3470:~/Documents/Ruthik$
```

21. Command Name: **diff**

Command Description: diff is a command-line utility that allows you to compare two files line by line. It can also compare the contents of directories. The diff command is most commonly used to create a patch containing the differences between one or more files that can be applied using the patch command. diff stands for difference. This command is used to display the differences in the files by comparing the files line by line. Unlike its fellow members, cmp and comm, it tells us which lines in one file have to be changed to make the two files identical.

Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ cat Copy
Ruthik
Jadhav
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ cat Filelink
R
U
T
H
I
K
J
A
D
H
A
V

(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ diff Copy Filelink
1,2c1,13
< Ruthik
< Jadhav
---
> R
> U
> T
> H
> I
> K
> J
> A
> D
> H
> A
> V
>
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

22. Command Name: **cmp**

    Command Description: The cmp command compares files designated by the File1 and File2 parameters and writes the results to standard output. If you specify a - (minus sign) for either the File1 or File2 parameter, the cmp command reads standard input for that file. Only one file can be read from standard input.

    Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ cmp Copy Filelink
Copy Filelink differ: byte 2, line 1
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

23. Command Name: **comm**

    Command Description: The comm command is a simple Linux utility for comparing files with focus on the common content. The command compares two sorted files line by line and displays results in three columns. The following

guide will explain how to use the Linux comm command with examples. A system running Linux.

Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ cat Copy
Ruthik
Sarthak
Vishnu
Shubham
Akash
Yashraj
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ cat Filelink
Ruthik
Omakr
Vishnu
Shubham
Yashraj
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ comm Copy Filelink
                Ruthik
        Omakr
Sarthak
                Vishnu
comm: file 1 is not in sorted order
comm: file 2 is not in sorted order
                Shubham
Akash
                Yashraj
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

24. Command Name: **sort**

Command Description: The sort command is used in Linux to print the output of a file in given order. This command processes your data (the content of the file or output of any command) and reorders it in the specified way, which helps us to read the data efficiently.

Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ cat Copy
19 Ruthik
24 Sarthak
18 Vishnu
32 Shubham
26 Akash
32 Yashraj
28 Shivam
23 Amit
31 Gaurav
20 Deepak
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ sort Copy
18 Vishnu
19 Ruthik
20 Deepak
23 Amit
24 Sarthak
26 Akash
28 Shivam
31 Gaurav
32 Shubham
32 Yashraj
```

25. Command Name: **export**

Command Description: Export is a built-in command of the Bash shell. It is used to mark variables and functions to be passed to child processes. Basically, a variable will be included in child process environments without affecting other environments.

Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ export
declare -x COLORTERM="truecolor"
declare -x CONDA_DEFAULT_ENV="base"
declare -x CONDA_EXE="/home/student/anaconda3/bin/conda"
declare -x CONDA_PREFIX="/home/student/anaconda3"
declare -x CONDA_PROMPT_MODIFIER="(base) "
declare -x CONDA_PYTHON_EXE="/home/student/anaconda3/bin/python"
declare -x CONDA_SHLVL="1"
declare -x DBUS_SESSION_BUS_ADDRESS="unix:path=/run/user/1000/bus"
declare -x DESKTOP_SESSION="ubuntu"
declare -x DISPLAY=":0"
declare -x GDMSESSION="ubuntu"
declare -x GJS_DEBUG_OUTPUT="stderr"
declare -x GJS_DEBUG_TOPICS="JS ERROR;JS LOG"
declare -x GNOME_DESKTOP_SESSION_ID="this-is-deprecated"
declare -x GNOME_SHELL_SESSION_MODE="ubuntu"
declare -x GNOME_TERMINAL_SCREEN="/org/gnome/Terminal/screen/851a7559_1305_43ce_b09b_27c0a37d2e34"
declare -x GNOME_TERMINAL_SERVICE=":1.146"
declare -x GPG_AGENT_INFO="/run/user/1000/gnupg/S.gpg-agent:0:1"
declare -x GTK_MODULES="gail:atk-bridge"
declare -x HOME="/home/student"
declare -x IM_CONFIG_PHASE="1"
declare -x INVOCATION_ID="e301ab6ffda443c8a0e54cd8c50ecffd"
declare -x JOURNAL_STREAM="8:35842"
declare -x LANG="en_IN"
declare -x LANGUAGE="en_IN:en"
declare -x LESSCLOSE="/usr/bin/lesspipe %s %s"
declare -x LESSOPEN="| /usr/bin/lesspipe %s"
declare -x LOGNAME="student"
```

26. Command Name: **zip**

Command Description: The zip command is a command-line tool in Linux that allows us to create an archive of files and directories. Besides that, it also provides a multitude of functionalities for manipulating an archive. ZIP is a compression and file packaging utility for Unix. Each file is stored in a single .zip {.zip-filename} file with the extension .zip.

zip is used to compress the files to reduce file size and also used as file package utility. zip is available in many operating systems like unix, linux, windows etc.

Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ zip
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] [-xi list]
  The default action is to add or replace zipfile entries from list, which
  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 files
  -d   delete entries in zipfile    -m   move into zipfile (delete OS files)
  -r   recurse into directories     -j   junk (don't record) directory names
  -0   store only                   -l   convert LF to CR LF (-ll CR LF to LF)
  -1   compress faster              -9   compress better
  -q   quiet operation              -v   verbose operation/print version info
  -c   add one-line comments        -z   add zipfile comment
  -@   read names from stdin        -o   make zipfile as old as latest entry
  -x   exclude the following names  -i   include only the following names
  -F   fix zipfile (-FF try harder) -D   do not add directory entries
  -A   adjust self-extracting exe   -J   junk zipfile prefix (unzipsfx)
  -T   test zipfile integrity       -X   eXclude eXtra file attributes
  -y   store symbolic links as the link instead of the referenced file
  -e   encrypt                      -n   don't compress these suffixes
  -h2  show more help
```

27. Command Name: **unzip**

    Command Description: unzip lists, tests, or extracts files from archives of the zip format, which are most commonly found on MS-DOS and Windows systems. The default behavior (with no options) is to extract into the current directory (and possibly the subdirectories below it) all files from the specified zip archive.

    Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ unzip
UnZip 6.00 of 20 April 2009, by Debian. Original by Info-ZIP.

Usage: unzip [-Z] [-opts[modifiers]] file[.zip] [list] [-x xlist] [-d exdir]
  Default action is to extract files in list, except those in xlist, to exdir;
  file[.zip] may be a wildcard.  -Z => ZipInfo mode ("unzip -Z" for usage).

  -p  extract files to pipe, no messages     -l  list files (short format)
  -f  freshen existing files, create none    -t  test compressed archive data
  -u  update files, create if necessary      -z  display archive comment only
  -v  list verbosely/show version info       -T  timestamp archive to latest
  -x  exclude files that follow (in xlist)   -d  extract files into exdir
modifiers:
  -n  never overwrite existing files         -q  quiet mode (-qq => quieter)
  -o  overwrite files WITHOUT prompting      -a  auto-convert any text files
  -j  junk paths (do not make directories)   -aa treat ALL files as text
  -U  use escapes for all non-ASCII Unicode  -UU ignore any Unicode fields
  -C  match filenames case-insensitively     -L  make (some) names lowercase
  -X  restore UID/GID info                   -V  retain VMS version numbers
  -K  keep setuid/setgid/tacky permissions   -M  pipe through "more" pager
  -O CHARSET  specify a character encoding for DOS, Windows and OS/2 archives
  -I CHARSET  specify a character encoding for UNIX and other archives

See "unzip -hh" or unzip.txt for more help.  Examples:
  unzip data1 -x joe   => extract all files except joe from zipfile data1.zip
  unzip -p foo | more  => send contents of foo.zip via pipe into program more
  unzip -fo foo ReadMe => quietly replace existing ReadMe if archive file newer
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

28. Command Name: **ssh**

Command Description: The ssh command provides a secure encrypted connection between two hosts over an insecure network. This connection can also be used for terminal access, file transfers, and for tunneling other applications. Graphical X11 applications can also be run securely over SSH from a remote location.

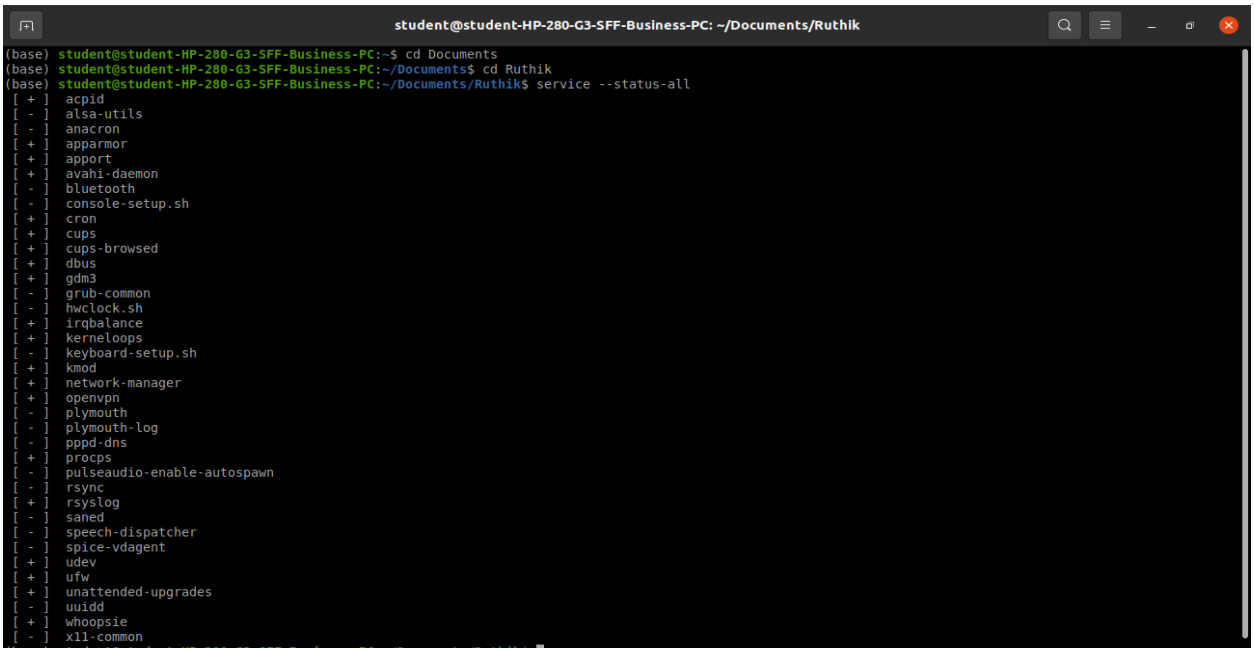
Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~$ cd Documents
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents$ cd Ruthik
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ ssh -v
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
           [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
           [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
           [-i identity_file] [-J [user@]host[:port]] [-L address]
           [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
           [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
           [-w local_tun[:remote_tun]] destination [command]
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/student/.ssh/id_rsa): raju
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in raju
Your public key has been saved in raju.pub
The key fingerprint is:
SHA256:3PSWTg72vzLJBQs4ntyhT2lzmRljH+xpYWgHIQJHjKM student@student-HP-280-G3-SFF-Business-PC
The key's randomart image is:
+---[RSA 3072]----+
|      .=+ . ..   |
|      o... ..    |
|     . . ..  +   |
|    E  .ooo.B.*  |
|       oS=+*=& + |
|        =.*B* *  |
|         + +++   |
|          . =.   |
|             oo. |
+----[SHA256]-----+
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

29. Command Name: **service**

Command Description: The service command starts, stops and restarts a daemon or services by calling the script. Usually all scripts are stored in /etc/init. d directory. It runs a script in as predictable an environment as possible. The service command is used for running these init scripts from the terminal. SystemD, on the other hand, is a recent initialization system that aims to replace SysVInit.

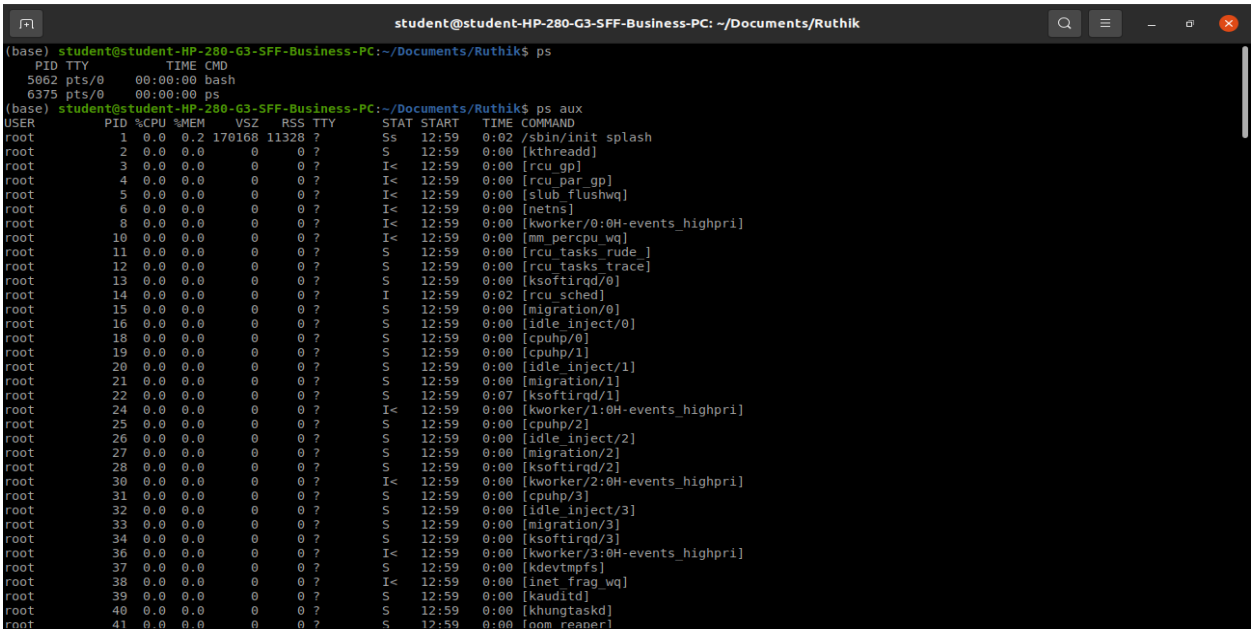
Command Output:



30. Command Name: **ps**

Command Description: The ps command is used to view currently running processes on the system. It helps us to determine which process is doing what in our system, how much memory it is using, how much CPU space it occupies, user ID, command name, etc .

Command Output:



31. Command Name: **kill and killall**

Command Description: The kill command sends a signal to a process. This can terminate a process (the default), interrupt it, suspend it, crash it, and so on. You must own the process, or be the superuser, to affect it. killall [-Z, –context pattern]: It will kill only those processes that have security context. [-e, –exact]: This argument checks for the exact match in the case of very long names. [-g, –process-group]: It will kill the entire process group to which the process belongs.

Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ kill -l
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ ps
    PID TTY          TIME CMD
   5062 pts/0    00:00:00 bash
   6600 pts/0    00:00:00 ps
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ kill 6600
bash: kill: (6600) - No such process
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ killall -l
HUP INT QUIT ILL TRAP ABRT BUS FPE KILL USR1 SEGV USR2 PIPE ALRM TERM STKFLT
CHLD CONT STOP TSTP TTIN TTOU URG XCPU XFSZ VTALRM PROF WINCH POLL PWR SYS
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

32. Command Name: **df**

Command Description:Two related commands that every system administrator runs frequently are df and du. While du reports files' and directories' disk usage, df reports how much disk space your filesystem is using. The df command displays the amount of disk space available on the filesystem with each file name's argument.

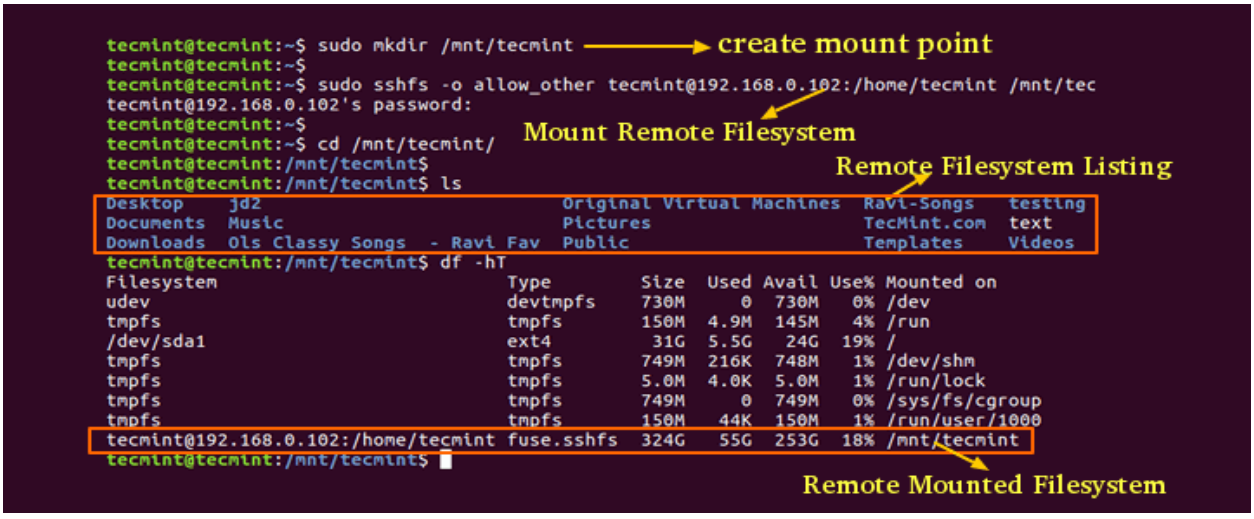
Command Output:

```
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$ df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev             1898936        0   1898936   0% /dev
tmpfs             387488     1848    385640   1% /run
/dev/sda5      959785008 19669236 891287612   3% /
tmpfs            1937424        0   1937424   0% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
tmpfs            1937424        0   1937424   0% /sys/fs/cgroup
/dev/loop1           128      128         0 100% /snap/bare/5
/dev/loop0         56960    56960         0 100% /snap/core18/2566
/dev/loop4         64768    64768         0 100% /snap/core20/1695
/dev/loop13        47104    47104         0 100% /snap/snap-store/599
/dev/loop6         64768    64768         0 100% /snap/core20/1634
/dev/loop14        49152    49152         0 100% /snap/snapd/17029
/dev/loop10        56960    56960         0 100% /snap/core18/2620
/dev/loop2        224256   224256         0 100% /snap/gnome-3-34-1804/66
/dev/loop3        224256   224256         0 100% /snap/gnome-3-34-1804/77
/dev/loop7         66432    66432         0 100% /snap/gtk-common-themes/1514
/dev/loop11        93952    93952         0 100% /snap/gtk-common-themes/1535
/dev/loop15        49152    49152         0 100% /snap/snapd/17336
/dev/loop12        55552    55552         0 100% /snap/snap-store/558
/dev/loop8        604416   604416         0 100% /snap/pycharm-community/310
/dev/loop9        354688   354688         0 100% /snap/gnome-3-38-2004/115
/dev/loop5        354688   354688         0 100% /snap/gnome-3-38-2004/119
/dev/sda1         523248        4    523244   1% /boot/efi
tmpfs             387484       60    387424   1% /run/user/1000
(base) student@student-HP-280-G3-SFF-Business-PC:~/Documents/Ruthik$
```

33. Command Name: **mount**

Command Description: The mount command allows users to mount, i.e., attach additional child file systems to a particular mount point on the currently accessible file system. The command passes the mount instructions to the kernel, which completes the operation.

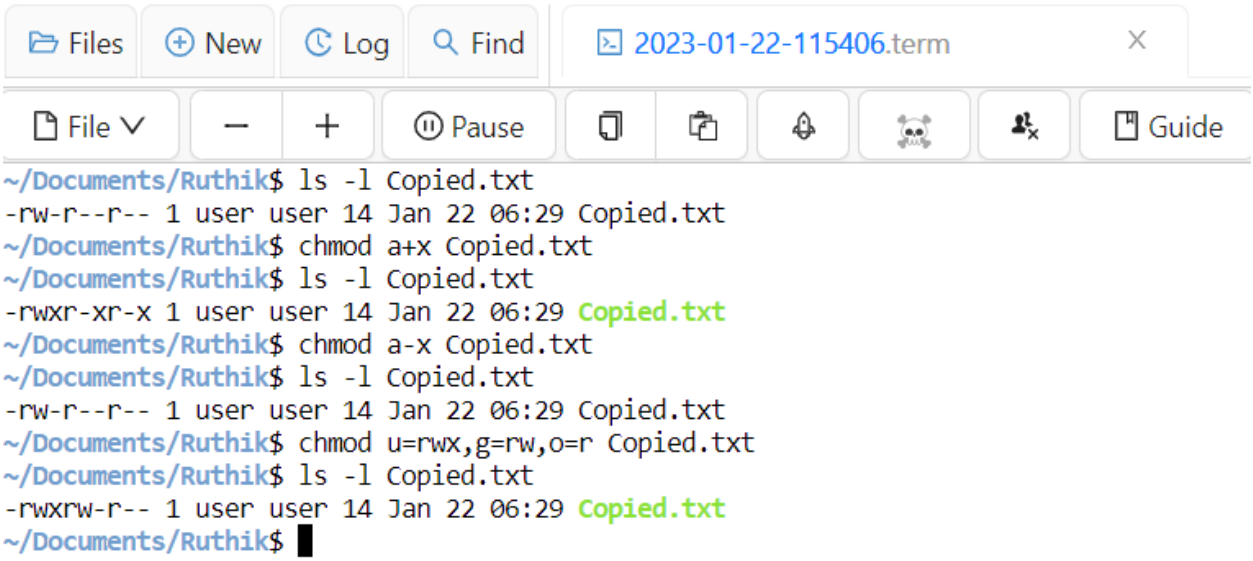
Command Output:



34. Command Name: **chmod**

Command Description: In Unix and Unix-like operating systems, chmod is the command and system call used to change the access permissions and the special mode flags of file system objects. Collectively these were originally called its modes, and the name chmod was chosen as an abbreviation of change mode.

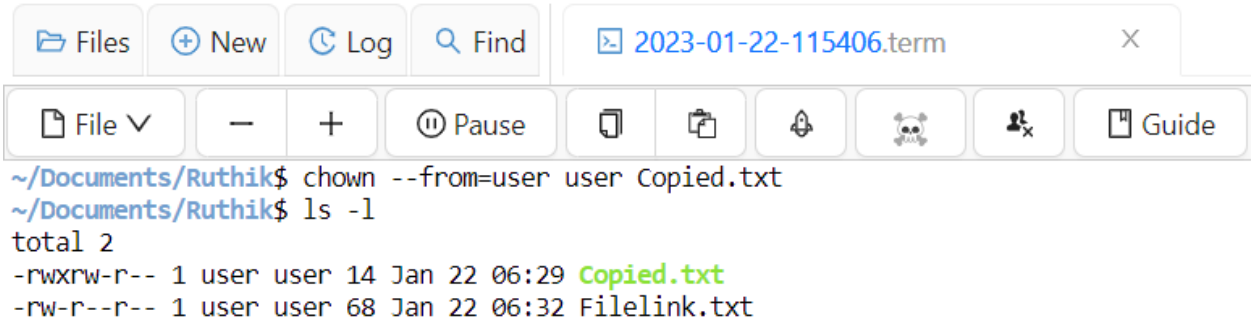
Command Output:



35. Command Name: **chown**

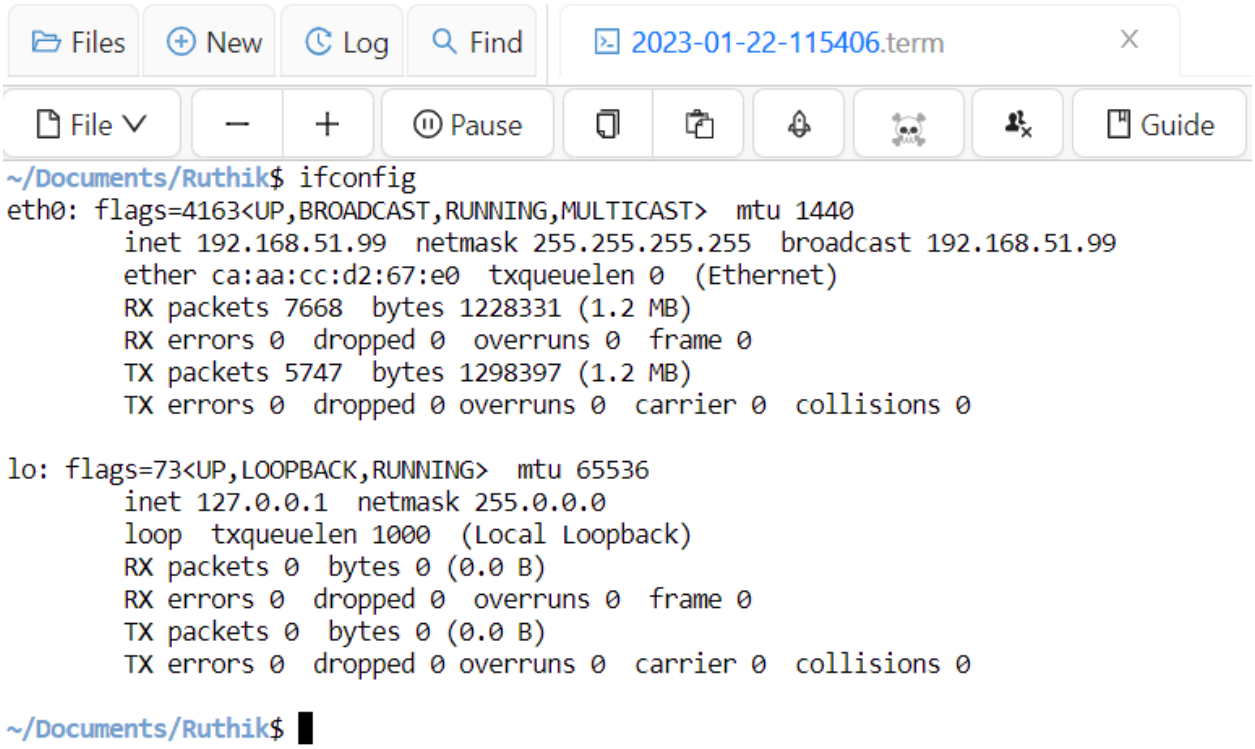
Command Description: The chown command changes the owner of the file or directory specified by the File or Directory parameter to the user specified by the Owner parameter. The value of the Owner parameter can be a user name from the user database or a numeric user ID. Optionally, a group can also be specified.

Command Output:



36. Command Name: **ifconfig**

Command Description: Ifconfig is used to configure the kernel-resident network interfaces. It is used at boot time to set up interfaces as necessary. After that, it is usually only needed when debugging or when system tuning is needed. If no arguments are given, ifconfig displays the status of the currently active interfaces.
Command Output:



37. Command Name: **traceroute**

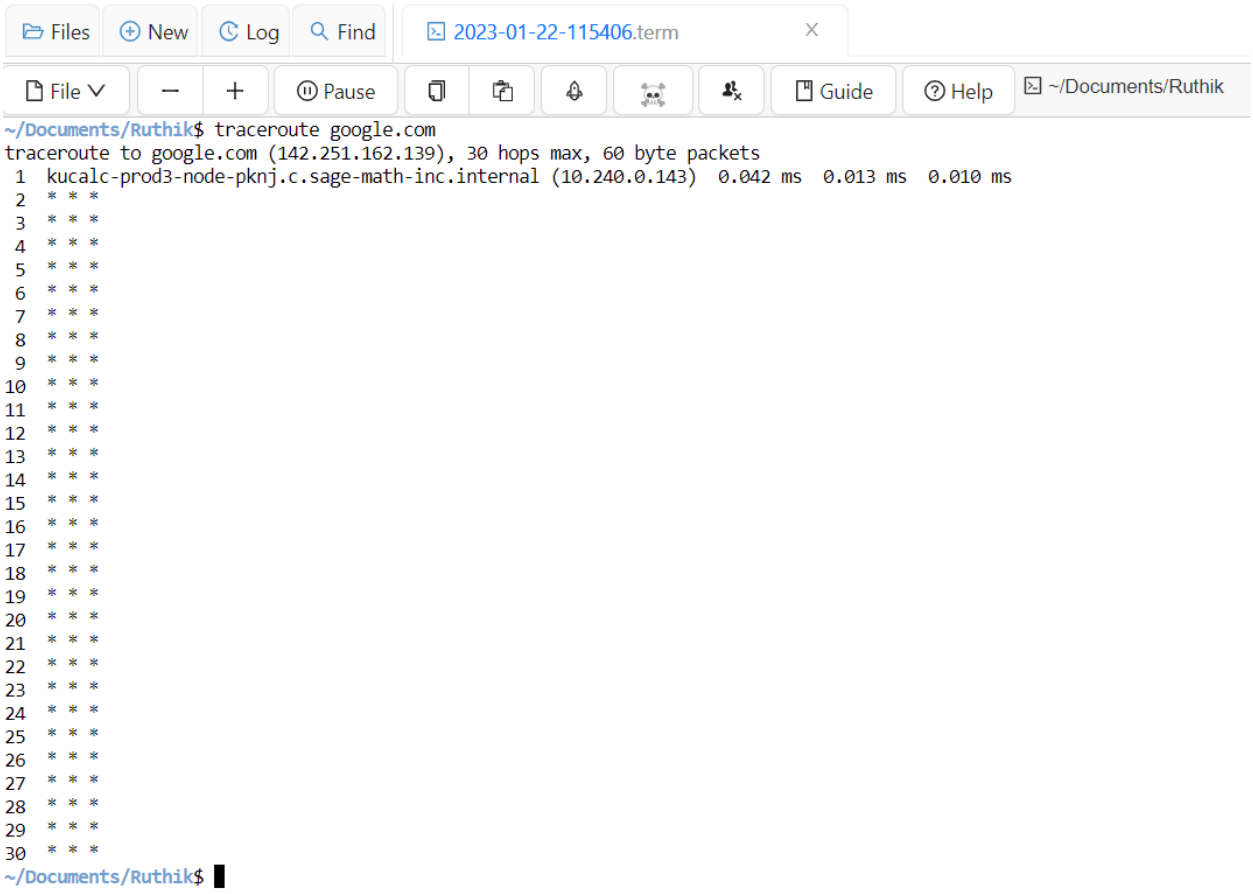
Command Description: The tracert command (in Windows) or traceroute command (in Linux or Mac) is a network analysis tool that can be used to know the path a packet goes through or follows from the source to destination.

In computing, traceroute and tracert are computer network diagnostic commands for displaying possible routes and measuring transit delays of packets across an Internet Protocol network.

To Run Traceroute, Follow the Steps Below:

Type cmd and then click OK. Type tracert, the IP address or website name and then click Enter.

Command Output:



38. Command Name: **wget**

Command Description: Command wget stands for web get. The wget is a free non-interactive file downloader command. Non-interactive means it can work in the background when the user is not logged in. This allows the user to get disconnected with the system while wget finishes its work.

Command Output:

```
(base) student@student-HP:~/Documents/Ruthik$ wget http://example.com/sample.php
--2023-01-23 16:08:23--  http://example.com/sample.php
Resolving example.com (example.com)... 93.184.216.34, 2606:2800:220:1:248:1893:25c8:1946
Connecting to example.com (example.com)|93.184.216.34|:80... connected.
HTTP request sent, awaiting response... 404 Not Found
2023-01-23 16:08:24 ERROR 404: Not Found.

(base) student@student-HP:~/Documents/Ruthik$
```

39. Command Name: **ufw**

Command Description: The Uncomplicated Firewall (ufw) is a frontend for iptables and is particularly well-suited for host-based firewalls. ufw provides a

framework for managing netfilter, as well as a command-line interface for manipulating the firewall.

Command Output:

```
(base) student@student-HP:~/Documents/Ruthik$ sudo ufw status
[sudo] password for student:
Status: inactive
(base) student@student-HP:~/Documents/Ruthik$ sudo ufw enable
Firewall is active and enabled on system startup
(base) student@student-HP:~/Documents/Ruthik$ sudo ufw status
Status: active
(base) student@student-HP:~/Documents/Ruthik$
```

40. Command Name: **iptables**

Command Description: The iptables command is a powerful interface for your local Linux firewall. It provides thousands of network traffic management options through a simple syntax.

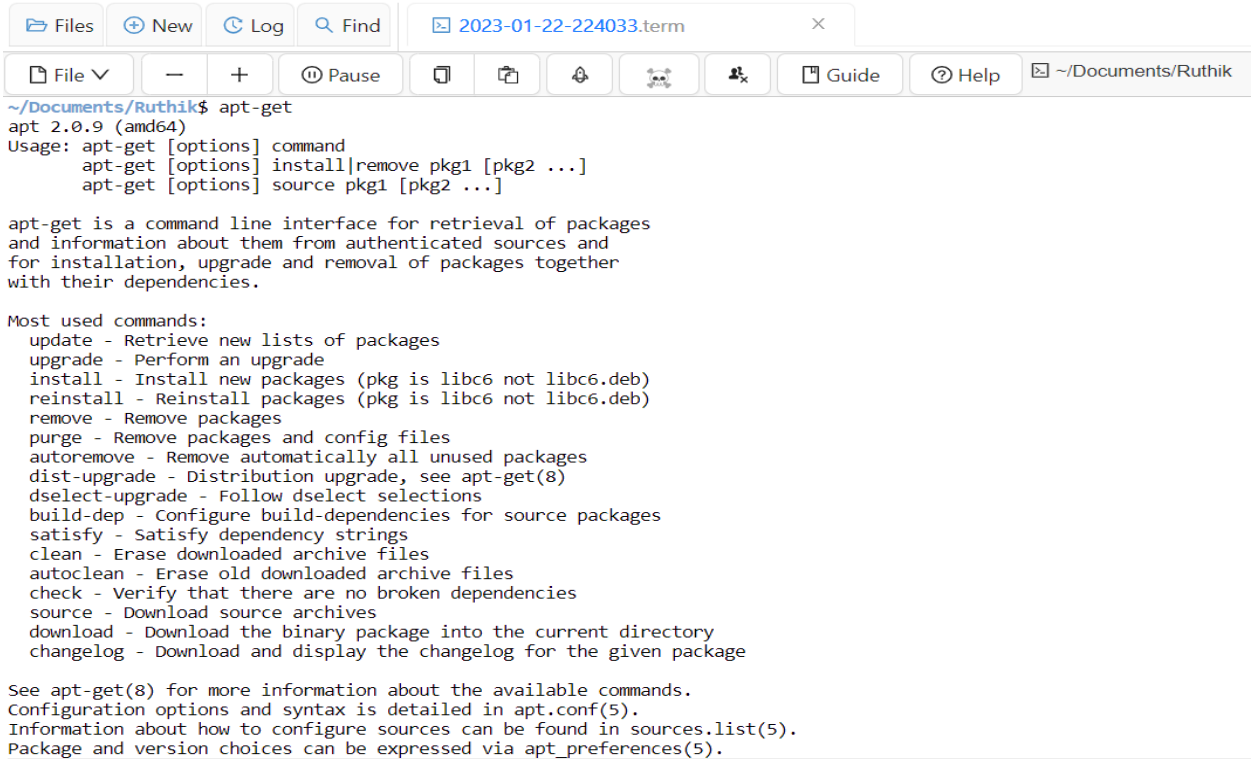
Command Output:

```
(base) student@student-HP:~/Documents/Ruthik$ sudo iptables -L --line-number
Chain INPUT (policy ACCEPT)
num  target     prot opt source               destination
1    ufw-before-logging-input  all  --  anywhere             anywhere
2    ufw-before-input  all  --  anywhere             anywhere
3    ufw-after-input  all  --  anywhere             anywhere
4    ufw-after-logging-input  all  --  anywhere             anywhere
5    ufw-reject-input  all  --  anywhere             anywhere
6    ufw-track-input  all  --  anywhere             anywhere

Chain FORWARD (policy ACCEPT)
num  target     prot opt source               destination
1    ufw-before-logging-forward  all  --  anywhere             anywhere
2    ufw-before-forward  all  --  anywhere             anywhere
3    ufw-after-forward  all  --  anywhere             anywhere
4    ufw-after-logging-forward  all  --  anywhere             anywhere
5    ufw-reject-forward  all  --  anywhere             anywhere
6    ufw-track-forward  all  --  anywhere             anywhere

Chain OUTPUT (policy ACCEPT)
num  target     prot opt source               destination
1    ufw-before-logging-output  all  --  anywhere             anywhere
2    ufw-before-output  all  --  anywhere             anywhere
3    ufw-after-output  all  --  anywhere             anywhere
4    ufw-after-logging-output  all  --  anywhere             anywhere
5    ufw-reject-output  all  --  anywhere             anywhere
6    ufw-track-output  all  --  anywhere             anywhere

Chain ufw-after-forward (1 references)
num  target     prot opt source               destination

Chain ufw-after-input (1 references)
num  target     prot opt source               destination

Chain ufw-after-logging-forward (1 references)
num  target     prot opt source               destination

Chain ufw-after-logging-input (1 references)
num  target     prot opt source               destination

Chain ufw-after-logging-output (1 references)
num  target     prot opt source               destination
```

41. Command Name: **apt**

Command Description: Advanced Package Tool, more commonly known as APT, is a collection of tools used to install, update, remove, and otherwise manage software packages on Debian and its derivative operating systems, including Ubuntu and Linux Mint.

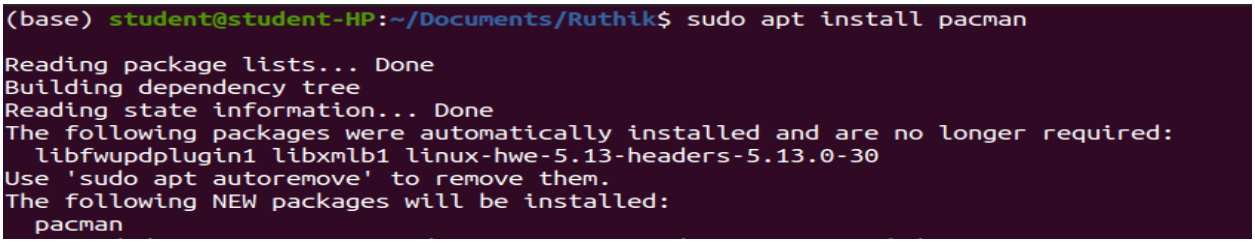
Command Output:



42. Command Name: **pacman**

Command Description: Pacman is a package manager for the arch Linux and arch-based Linux distributions. If you have used Debian-based OS like ubuntu, then the Pacman is similar to the apt command of Debian-based operating systems. Pacman contains the compressed files as a package format and maintains a text-based package database.

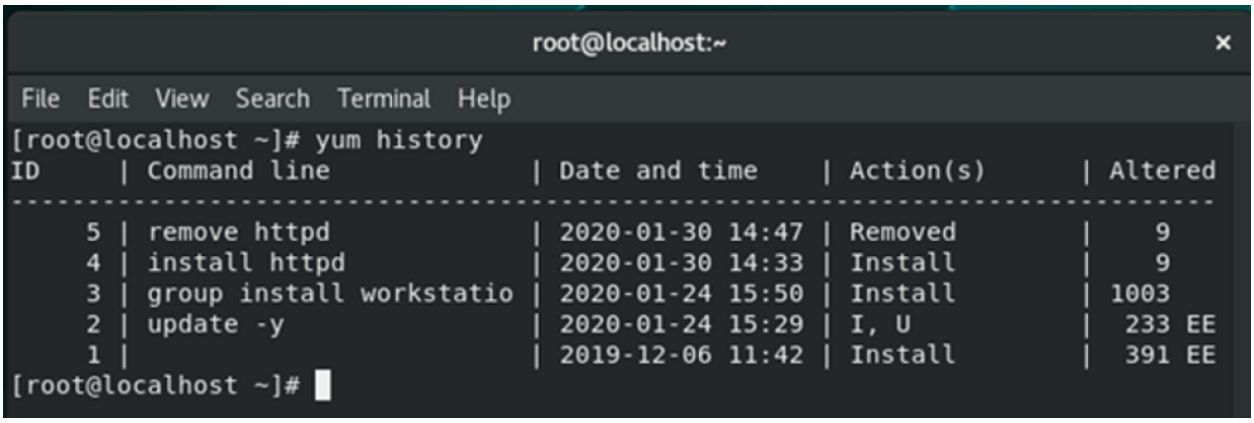
Command Output:



43. Command Name: **yum**

Command Description: Use yum command to install critical and non-critical security updates as well as binary packages. Login as the root user to install and update the system.

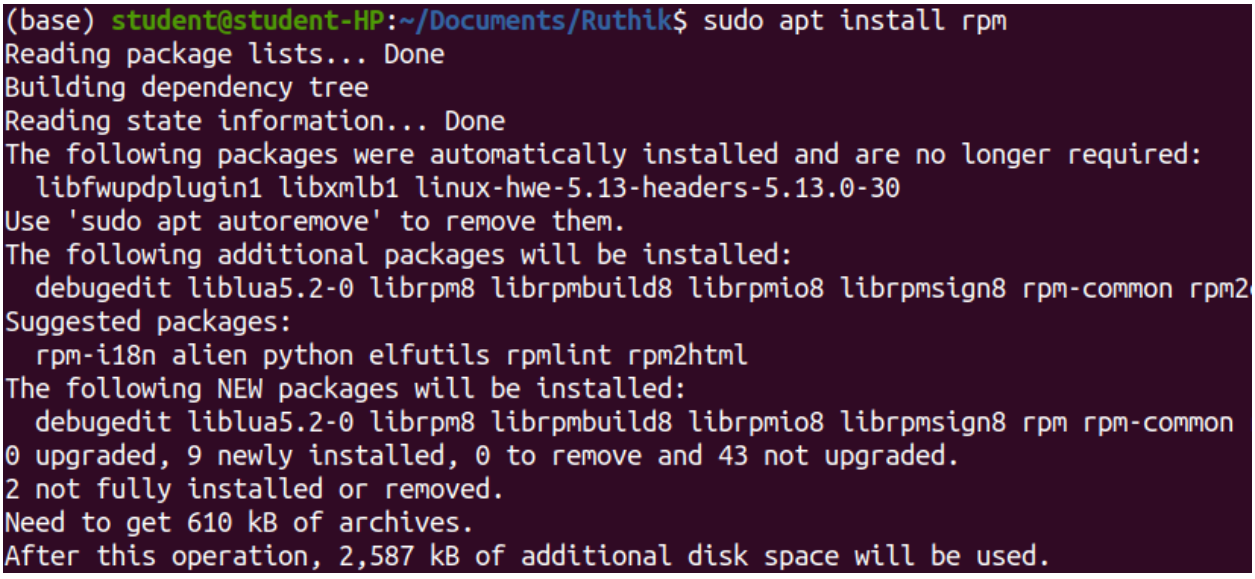
Command Output:



44. Command Name: **rpm**

Command Description: RPM is a command-line utility for managing packages on Unix/Linux systems. It allows you to install, query, update, verify and remove RPM packages. It is the default package manager for Red Hat based systems and only works with the . rpm format.

Command Output:



45. Command Name: **sudo**

Command Description: The Linux sudo command stands for Super User Do. Generally, it is applied as a prefix of a few commands that superuser is allowed to execute. If we prefix the command along with other commands, it would execute that command with high privileges.

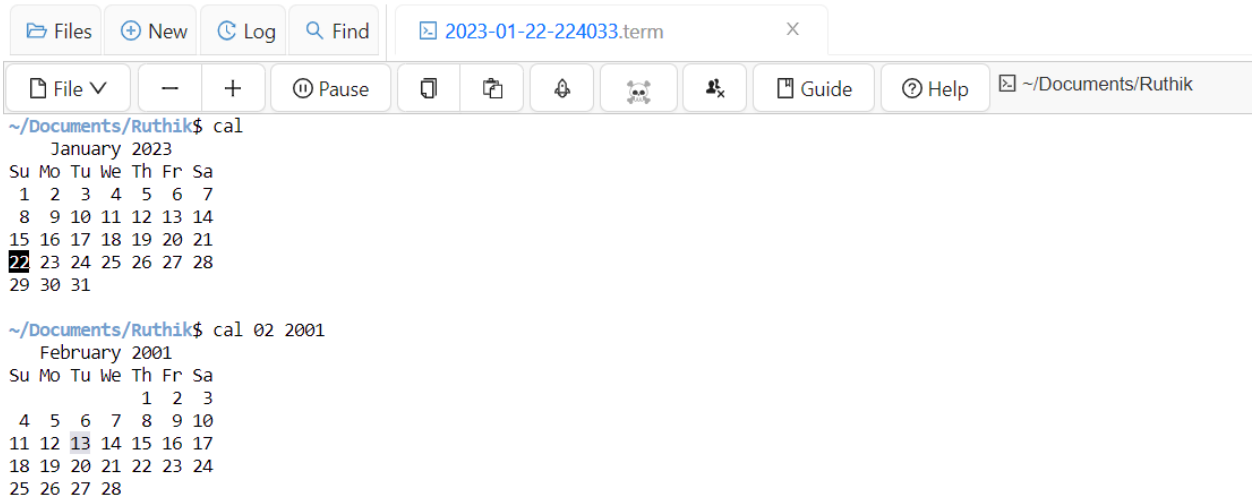
Command Output:

```
(base) student@student-HP:~/Documents/Ruthik$ 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
(base) student@student-HP:~/Documents/Ruthik$ sudo apt-get update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main i386 Packages [543 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [775 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1,959 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2,336 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [320 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [59.9 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [11.7 kB]
Get:12 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [1,463 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [403 kB]
Get:14 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [274 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [16.2 kB]
Get:16 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted i386 Packages [30.4 kB]
Get:17 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1,560 kB]
Get:18 http://in.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [707 kB]
Get:19 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1,017 kB]
Get:20 http://security.ubuntu.com/ubuntu focal-security/restricted i386 Packages [29.1 kB]
Get:21 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [207 kB]
Get:22 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 c-n-f Metadata [624 B]
Get:23 http://security.ubuntu.com/ubuntu focal-security/universe i386 Packages [576 kB]
Get:24 http://in.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [236 kB]
Get:25 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [408 kB]
Get:26 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [23.2 kB]
Get:27 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [944 B]
Get:28 http://in.archive.ubuntu.com/ubuntu focal-backports/main amd64 DEP-11 Metadata [8,012 B]
Get:29 http://in.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [30.5 kB]
Get:30 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [786 kB]
Get:31 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [152 kB]
Get:32 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [94.0 kB]
Get:33 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [16.9 kB]
Get:34 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [940 B]
Fetched 14.4 MB in 50s (289 kB/s)
Reading package lists... Done
(base) student@student-HP:~/Documents/Ruthik$
```

46. Command Name: **cal**

Command Description: The cal command displays a calendar of the specified year or month. The Year parameter names the year for which you want a calendar. Since the cal command can display a calendar for any year from 1 through 9999, you must enter the full year rather than just the last two digits.

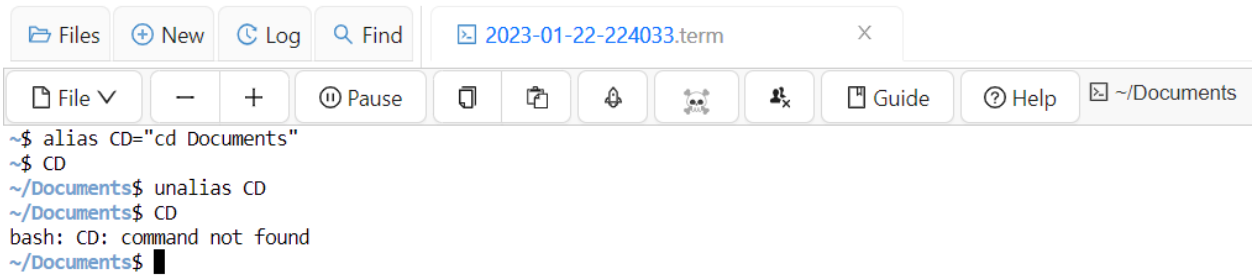
Command Output:



47. Command Name: **alias**

Command Description: alias command instructs the shell to replace one string with another string while executing the commands. When we often have to use a single big command multiple times, in those cases, we create something called an alias for that command.

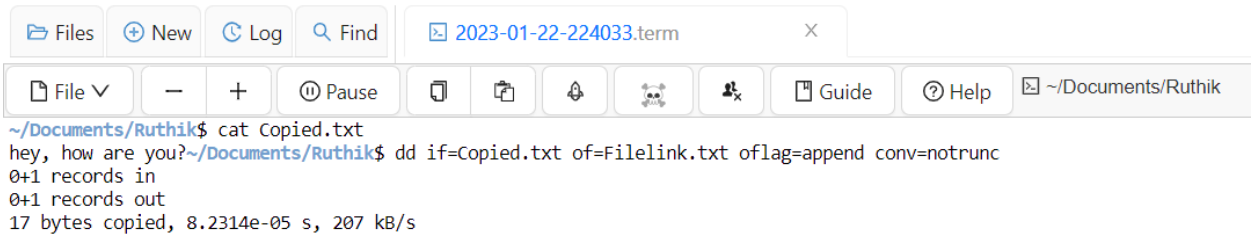
Command Output:



48. Command Name: **dd**

Command Description: dd is a command-line utility for Unix and Unix-like operating systems whose primary purpose is to convert and copy files. On Unix, device drivers for hardware (such as hard disk drives) and special device files (such as /dev/zero and /dev/random) appear in the file system just like normal files.

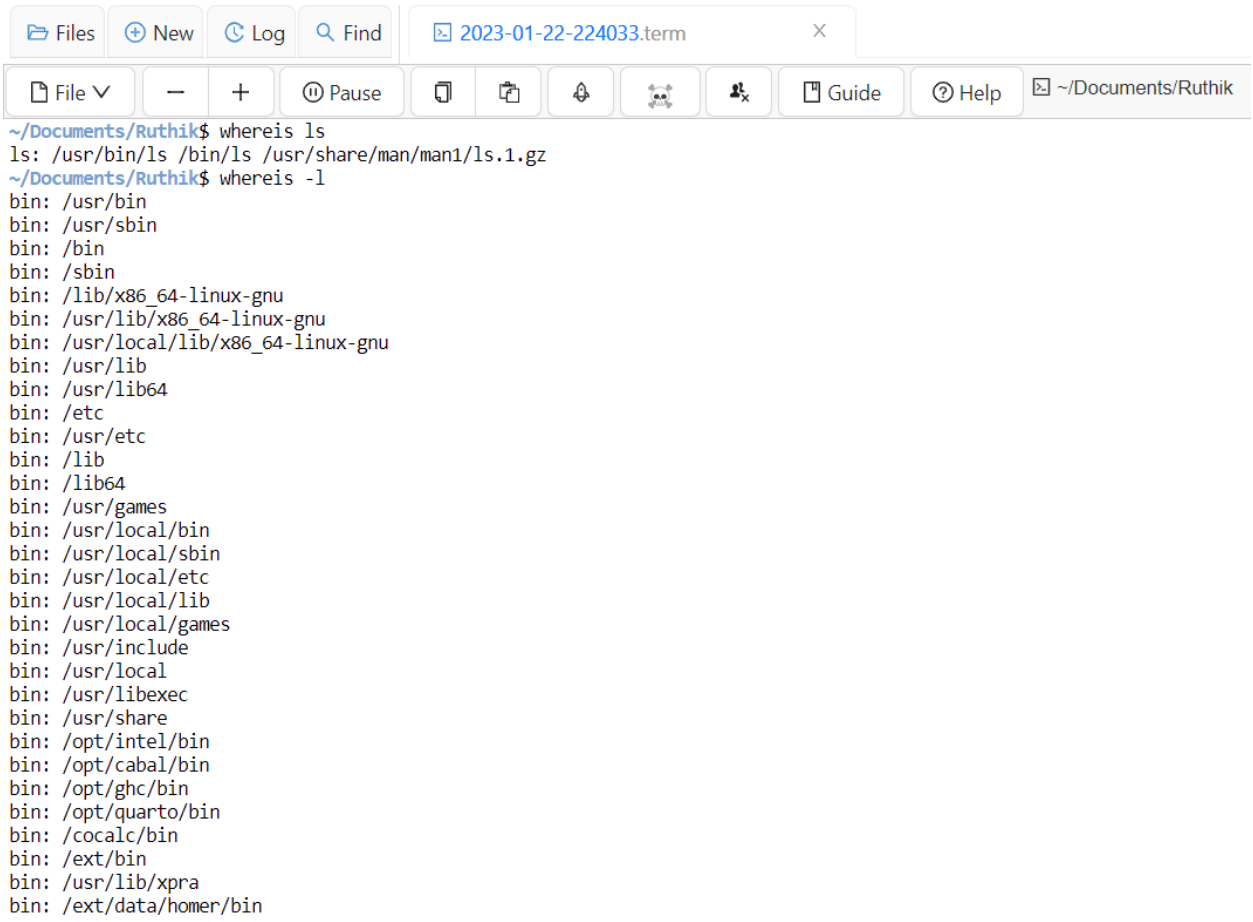
Command Output:



49. Command Name: **whereis**

Command Description: whereis command is used to find the location of source/binary file of a command and manuals sections for a specified file in Linux system.

Command Output:

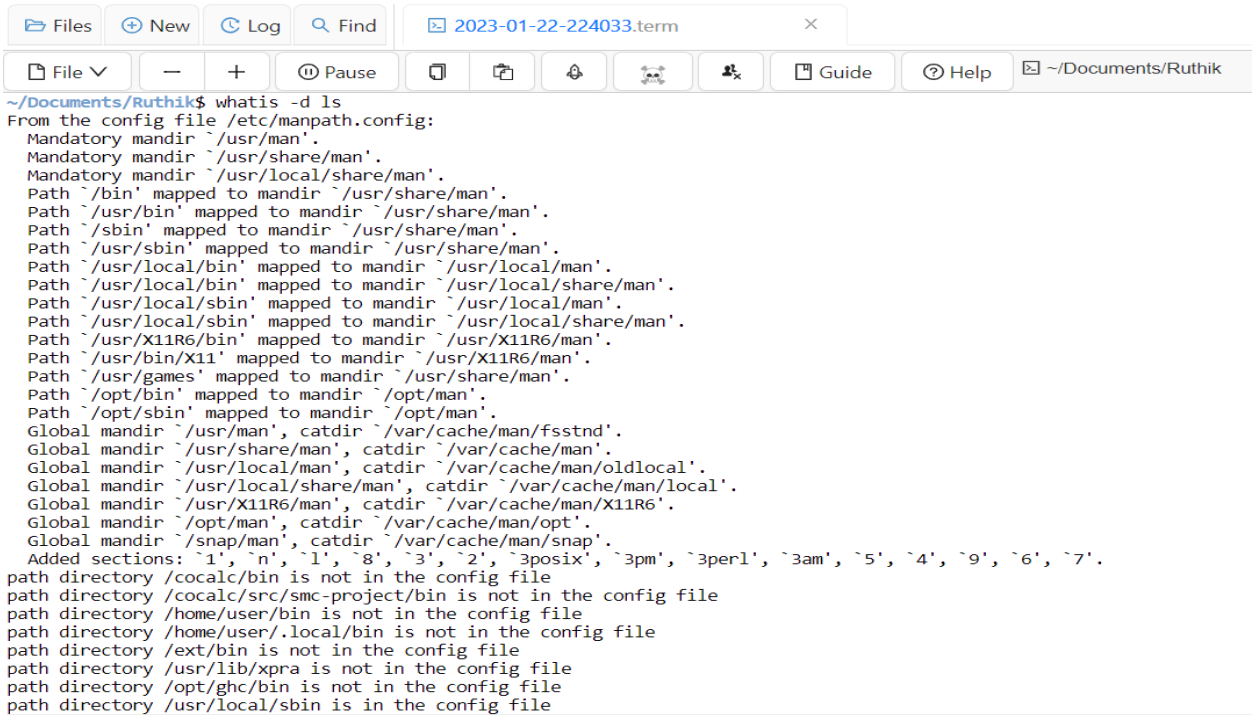


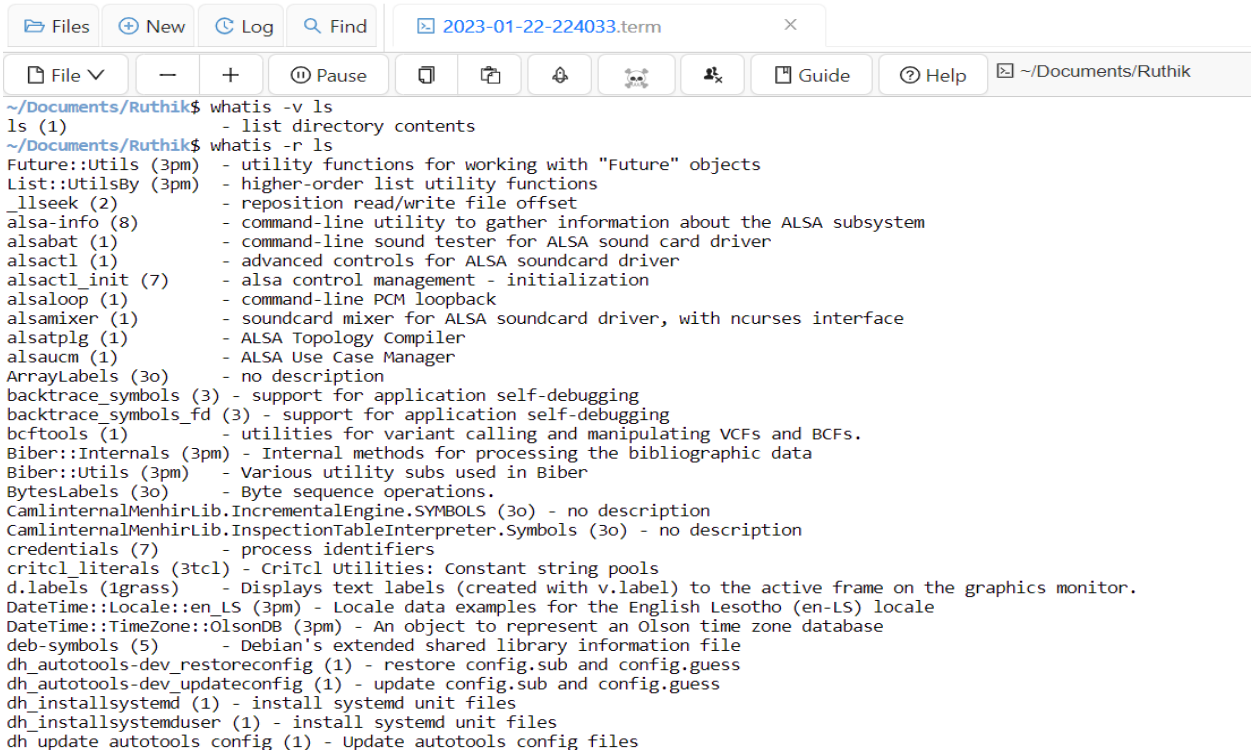
50. Command Name: **whatis**

Command Description: The whatis command is used to get brief information about Linux commands or functions. It displays the manual page description in a

single line of the command that passes with the whatis command. It searches for the strings that have been passed with it from its index databases. Its index database is maintained by the mandb program.

Command Output:

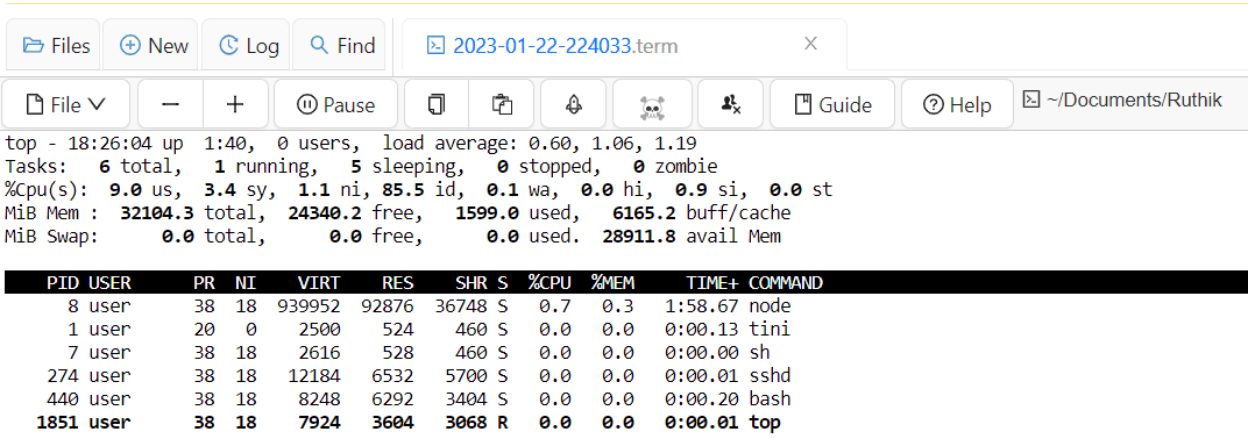




51. Command Name: **top**

Command Description: top command is used to show the Linux processes. It provides a dynamic real-time view of the running system. Usually, this command shows the summary information of the system and the list of processes or threads which are currently managed by the Linux Kernel.

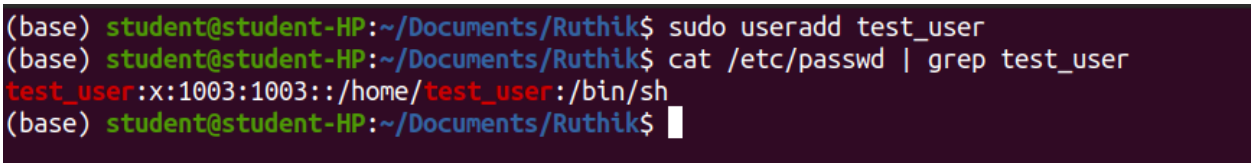
Command Output:

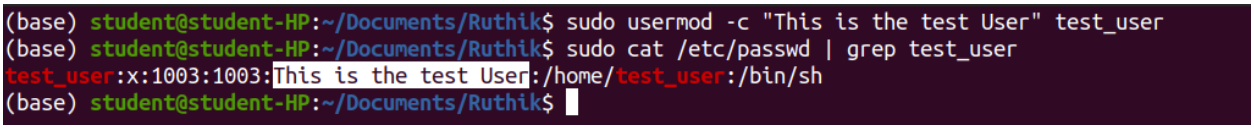


52. Command Name: **useradd and usermod**

Command Description: The difference between useradd and usermod is that the former is used for creating new users and the latter is used for modifying existing users. While useradd can define a Linux user's settings, it does so for new users, not existing users. See our Linux Users and Groups guide for more on the useradd command.

Command Output:





53. Command Name: **passwd**

Command Description: The passwd command changes passwords for user accounts. A normal user may only change the password for their own account,

while the superuser may change the password for any account. passwd also changes the account or associated password validity period.

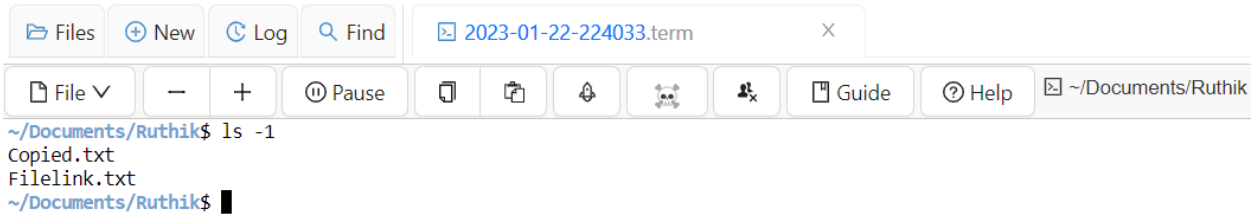
Command Output:

```
(base) student@student-HP:~/Documents/Ruthik$ passwd
Changing password for student.
Current password:
New password:
Retype new password:
passwd: password updated successfully
```

54. Command Name: **ls -1 | wc -l**

Command Description: ls command is used to list the contents of a current directory. Copied! ls lists files and directories in the bare format where details like file types, size, modified date, modified time, permission, links, etc can't be viewed. There are some options that can be used with ls command to change the output format.

Command Output:



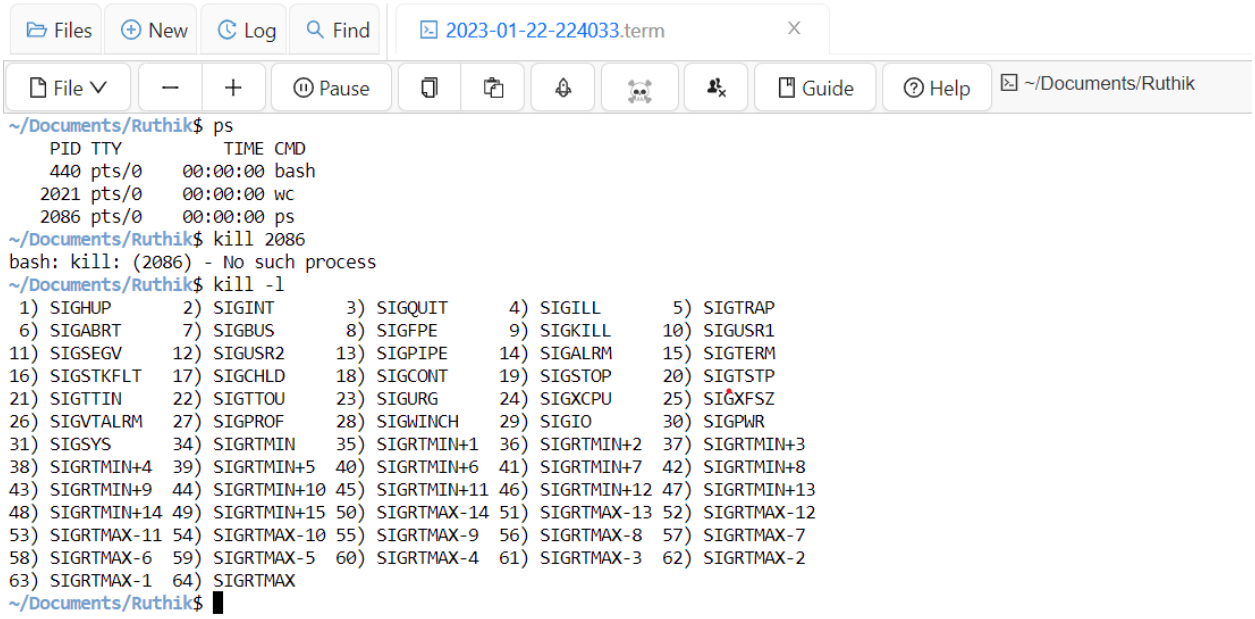
55. Command Name: **kill**

Command Description: kill command in Linux (located in /bin/kill), is a built-in command which is used to terminate processes manually. kill command sends a signal to a process which terminates the process. If the user doesn't specify any signal which is to be sent along with the kill command then a default TERM signal is sent that terminates the process.

Signals can be specified in three ways:

- By number (e.g. -5)
- With SIG prefix (e.g. -SIGkill)
- Without SIG prefix (e.g. -kill)

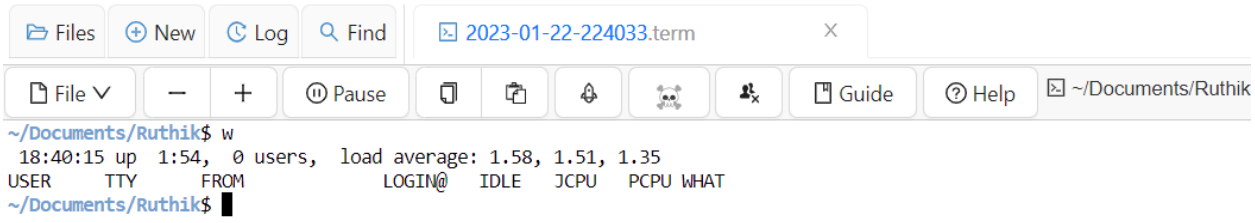
Command Output:



56. Command Name: **w**

Command Description: The w command is a built-in tool that allows administrators to view information about users that are currently logged in. This includes their username, where they are logged in from, and what they are currently doing.

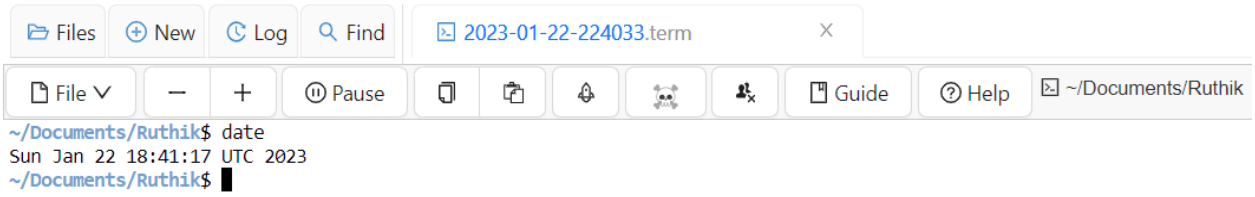
Command Output:



57. Command Name: **date**

Command Description: date command is used to display the system date and time. date command is also used to set date and time of the system. By default the date command displays the date in the time zone on which unix/linux operating system is configured. You must be the super-user (root) to change the date and time.

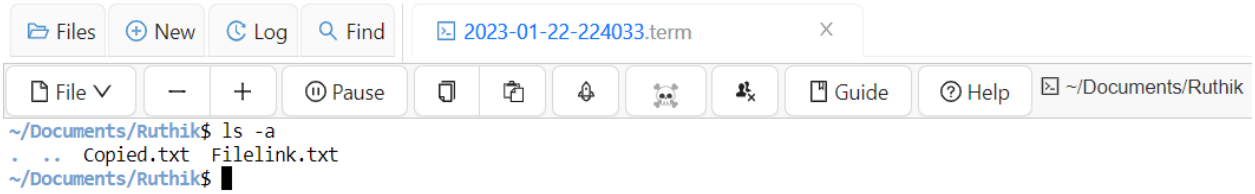
Command Output:



58. Command Name: **ls -a**

Command Description: ls command is used to list contents of present working directory. It can also list contents of any given path be. Path can be both absolute and relative path. We will also learn about certain flags which can be used to modify or narrow down the listing.

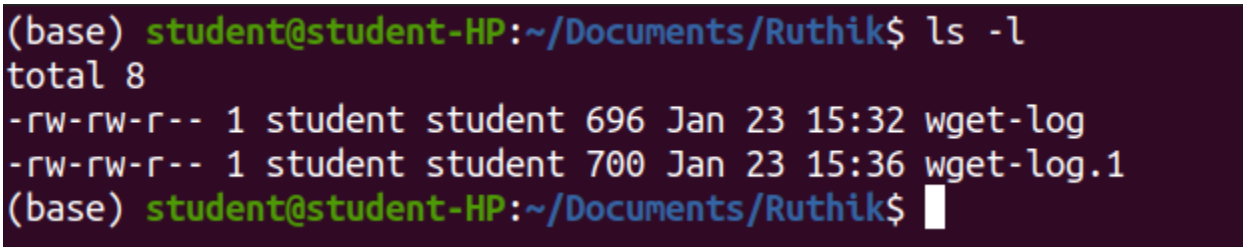
Command Output:



59. Command Name: **ls -l**

Command Description: ls is a Linux shell command that lists directory contents of files and directories. One of the most often used commands in regular Linux/UNIX operations is the ls command.

Command Output:



60. Command Name: **ls -R**

Command Description: ls is a Linux shell command that lists directory contents of files and directories.

Command Output:

```
(base) student@student-HP:~/Documents/Ruthik$ ls -R
.:
wget-log  wget-log.1
(base) student@student-HP:~/Documents/Ruthik$
```

61. Command Name: **rm -rf**

    Command Description: rm stands for remove, and it is used to remove files, directories, and links. By default, it does not remove directories. This command normally works silently and it should be used carefully, because once you delete a file in Linux the content cannot be recovered.

    Command Output: