
NETWORK LAB RECORD

MUHAMMED SONU RIBIN KA
RMCA B 9

TABLE OF CONTENT

EXP NO	EXPERIMENT
1	BASIC LINUX COMMANDS
2	NETWORK COMMANDS
3	LAMP INSTALATION
4	ANSIBLE INSTALLATION
5	TCPDUMP
6	SHELL SCRIPTING
7	DOCKER INSTALLATION
8	WIRESHARK INSTALLATION

TOPIC:

Basic Linux Commands with examples.

Contents:

1. pwd
2. history
3. man
4. ls
5. cd
6. mkdir
7. rmdir
8. touch
9. rm

- 10.cat

BASIC COMMAND IN UBUNTU TERMINALS

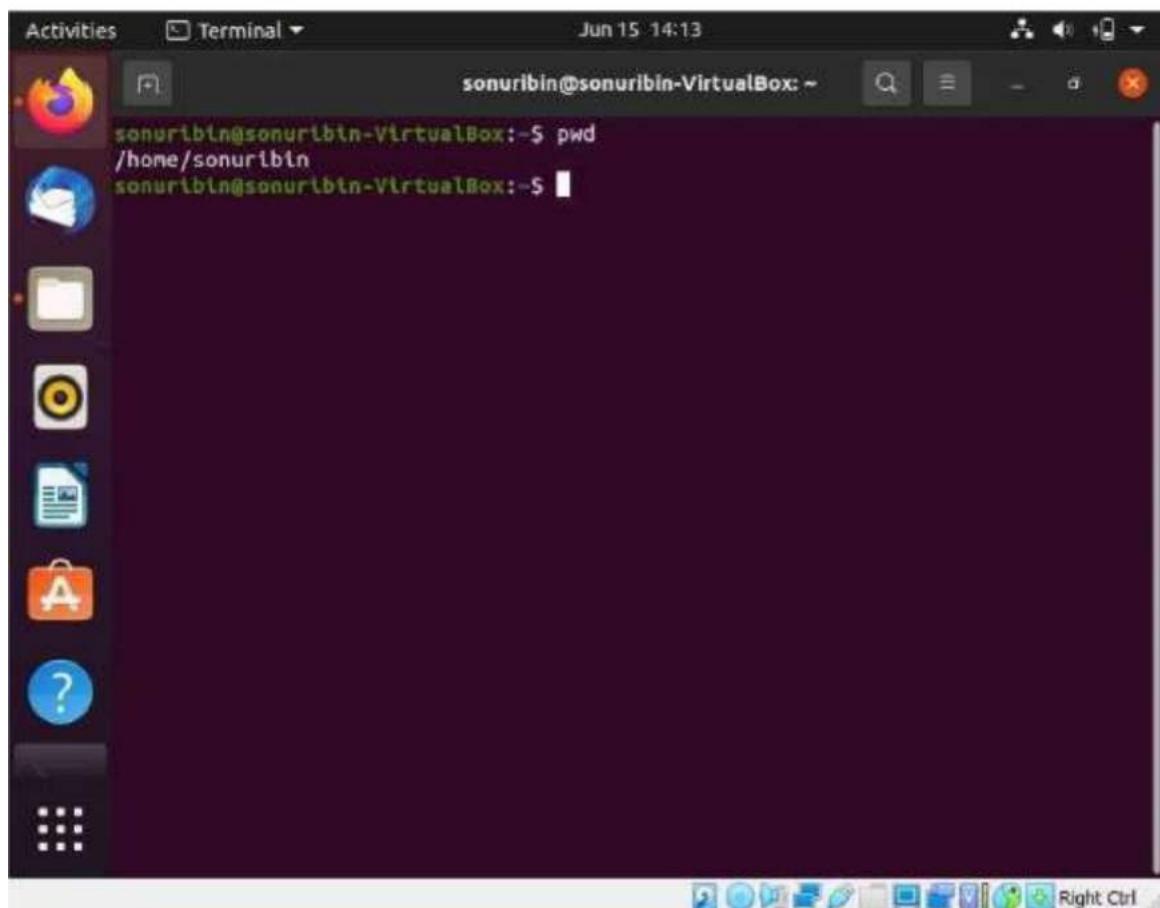
1.pwd:

linux pwd(print working directory) command displays your location currently you are working on .It will gives the whole path starting from the root ending to **the directory**.

Syntax:

\$pwd

Example:



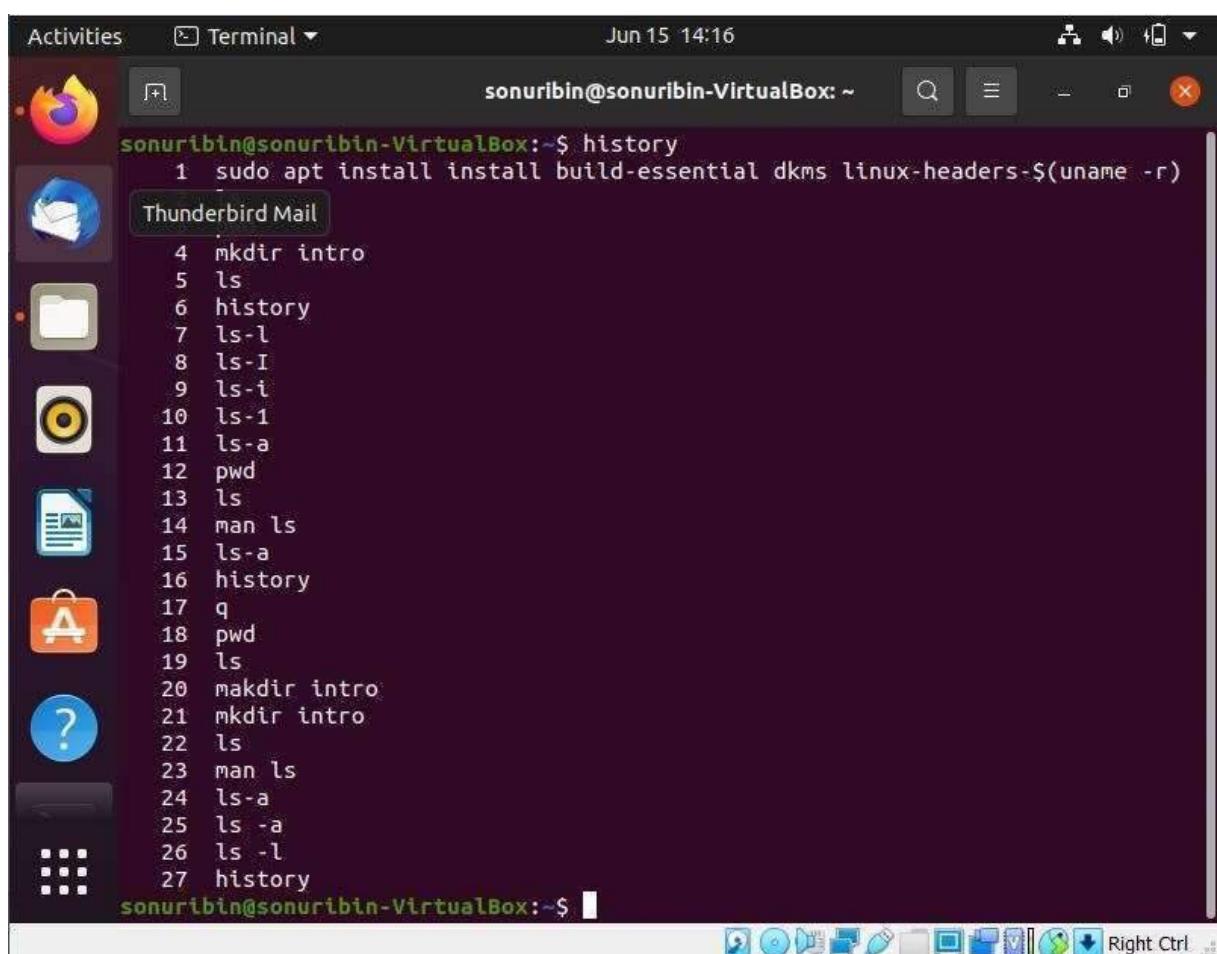
2.history:

History command is used to view the previously executed command . When you have been using Linux for a certain period of time, you will quickly notice that you can run hundreds of commands every day. As such, running history command is particularly useful if you want to review the commands you have entered before.

Syntax:

```
$ history
```

Example:



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Terminal" and the command prompt is "sonuribin@sonuribin-VirtualBox: ~". The window displays the output of the "history" command, which lists 27 previous commands. The commands include various file operations like "ls", "ls -l", "ls -I", "ls -a", "pwd", and "man ls", as well as system management commands like "sudo apt install" and "mkDIR intro". The terminal window is part of a desktop interface with a dock at the bottom containing icons for various applications like a browser, file manager, and system tools.

```
sonuribin@sonuribin-VirtualBox:~$ history
 1 sudo apt install install build-essential dkms linux-headers-$(uname -r)
 2
 3
 4 mkdir intro
 5 ls
 6 history
 7 ls-l
 8 ls-I
 9 ls-i
10 ls-1
11 ls-a
12 pwd
13 ls
14 man ls
15 ls-a
16 history
17 q
18 pwd
19 ls
20 makdir intro
21 mkdir intro
22 ls
23 man ls
24 ls-a
25 ls -a
26 ls -l
27 history
sonuribin@sonuribin-VirtualBox:~$
```

Display the nth commands from the history:

We can display the specific number of commands by specifying it as "`!<command number>`". For example, we want to show the most recent

command which is 500th in our history file, execute the command as follows:

Syntax:

`! Command number`

Example:

Activities Terminal Jun 15 14:17

```
sonuribin@sonuribin-VirtualBox: ~
3 pwd
4 mkdir intro
5 ls
6 history
7 ls-l
8 ls-I
9 ls-i
10 ls-1
11 ls-a
12 pwd
13 ls
14 man ls
15 ls-a
16 history
17 q
18 pwd
19 ls
20 makdir intro
21 mkdir intro
22 ls
23 man ls
24 ls-a
25 ls -a
26 ls -l
27 history
sonuribin@sonuribin-VirtualBox:~$ history !3
history pwd
bash: history: pwd: numeric argument required
sonuribin@sonuribin-VirtualBox:~$
```



Right Ctrl

Basic Linux Commands

- Echo
- Head
- Tail
- read
- more
- less
- cut
- paste
- uname
- cp
- mv
- locate
- find
- grep
- df
- du
- useradd
- userdel
- sudo
- passwd

1.echo:

- echo command is used to move some data into a file.
- echo command in linux is used to display line of text/string that are

- If more than one file name is provided then data from each file is preceded by its file name.

Example:
4 read:

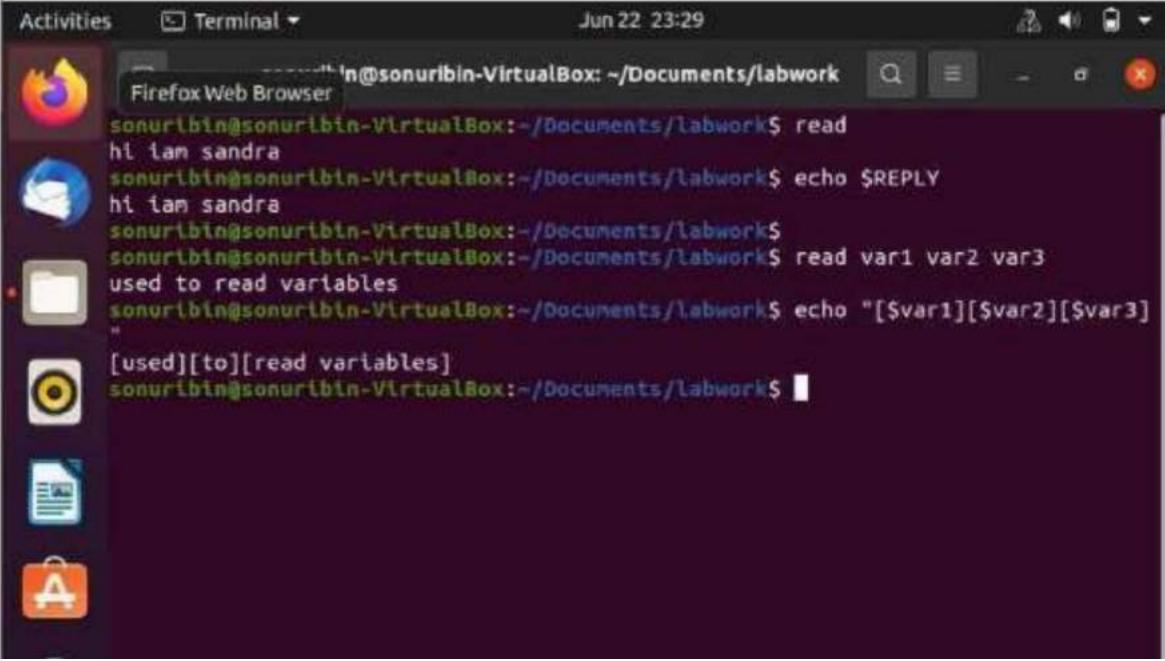
- read the contents of a line into a variable.
- The read command can be used with and without arguments
- read command is used to read [options] [name...]

syntax:

\$read

\$read var1 var2 var3

\$echo "[\\$var1] [\\$var2] [\\$var3]"



The screenshot shows a terminal window titled "Terminal" with the command line "Jun 22 23:29". The terminal displays the following session:

```
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ read
hi iam sandra
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo $REPLY
hi iam sandra
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ 
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ read var1 var2 var3
used to read variables
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo "[\$var1][\$var2][\$var3]"
[used][to][read variables]
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ 
```

5 more:

- Like cat command, more command displays the content of a file.
- Only difference is that, in case of larger files, 'cat' command output will scroll off your screen while 'more' command displays output one screenful at a time.
- Enter key: To scroll down page line by line.
- Space bar: To go to next page.
- b key: To go to the backward page.
- / key: Lets you search the string.
- more -num :Limits the line displayed per page.
- more -d :Displays user message at right corner
- more -s: Squeeze blank lines
- more +/string name: It helps to find the string.
- more +num :Used to display the content from a specific line.

Syntax:

\$more

\$ more /etc/passwd

Example:

```
Activities Terminal Jun 22 23:32
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ more [-d] [-4] [+reset] [+5] [more.txt]
more: stat of [-d] failed: No such file or directory
more: stat of [-4] failed: No such file or directory
more: stat of [+reset] failed: No such file or directory
more: stat of [+5] failed: No such file or directory
more: stat of [more.txt] failed: No such file or directory
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ sonuribin@sonuribin-VirtualBox:~/Documents/labwork$
```

less :

- The 'less' command is same as 'more' command but include some more features.
- It automatically adjust with the width and height of the terminal window,

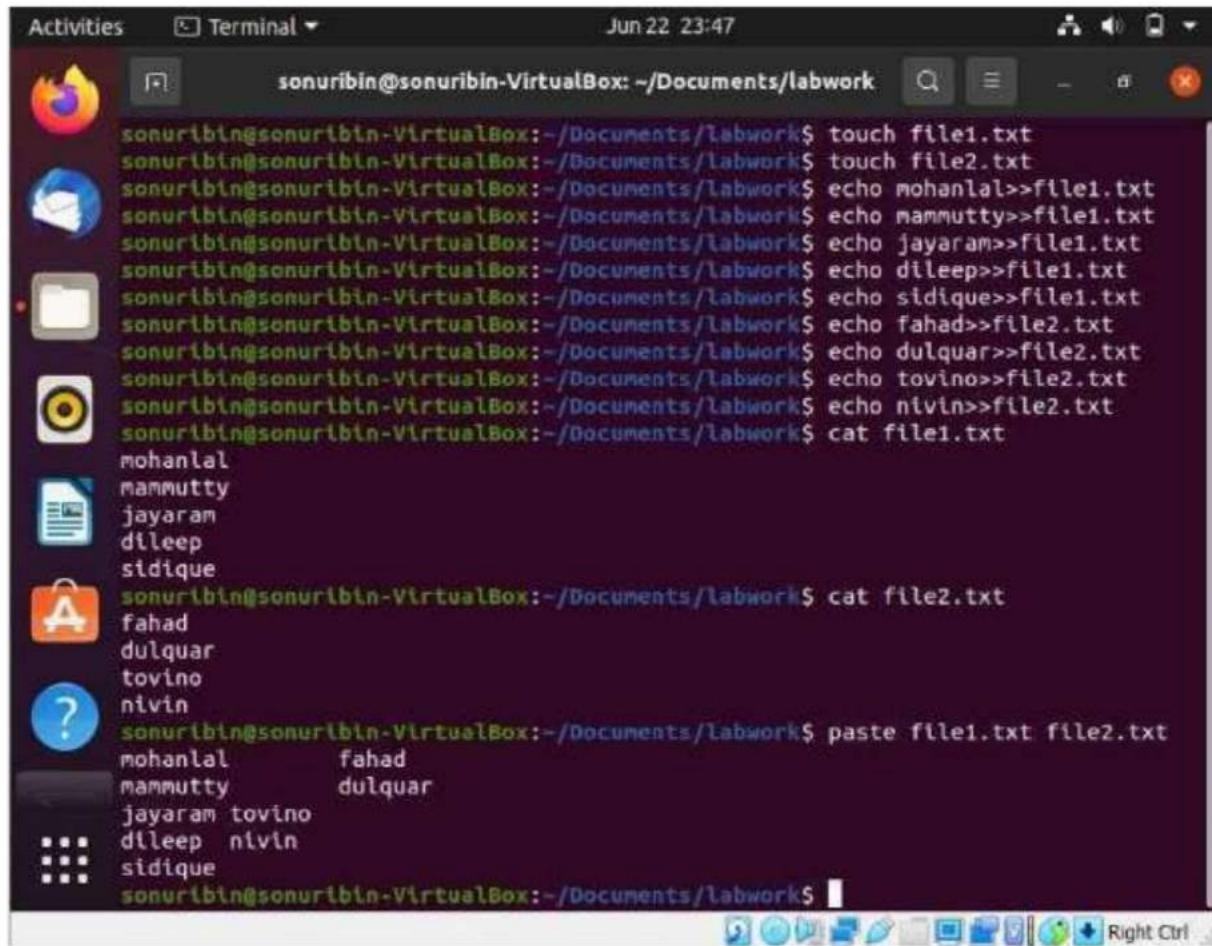
8.paste:

It is used to join files horizontally (parallel merging) by outputting lines consisting of lines from each file specified, separated by tab as delimiter, to the standard output.

Syntax :

```
$ paste [OPTION]... [FILES]...
$ paste file1.txt file2.txt
```

Example:



The screenshot shows a terminal window titled "Terminal" with the command line "sonuribin@sonuribin-VirtualBox: ~/Documents/labwork". The terminal displays the following session:

```
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ touch file1.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ touch file2.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo mohanlal>>file1.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo mammutty>>file1.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo jayaram>>file1.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo dileep>>file1.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo sidique>>file1.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo fahad>>file2.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo dulquar>>file2.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo tovino>>file2.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo nivin>>file2.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ cat file1.txt
mohanlal
mammutty
jayaram
dileep
sidique
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ cat file2.txt
fahad
dulquar
tovino
nivin
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ paste file1.txt file2.txt
mohanlal      fahad
mammutty     dulquar
jayaram      tovino
dileep       nivin
sidique
```

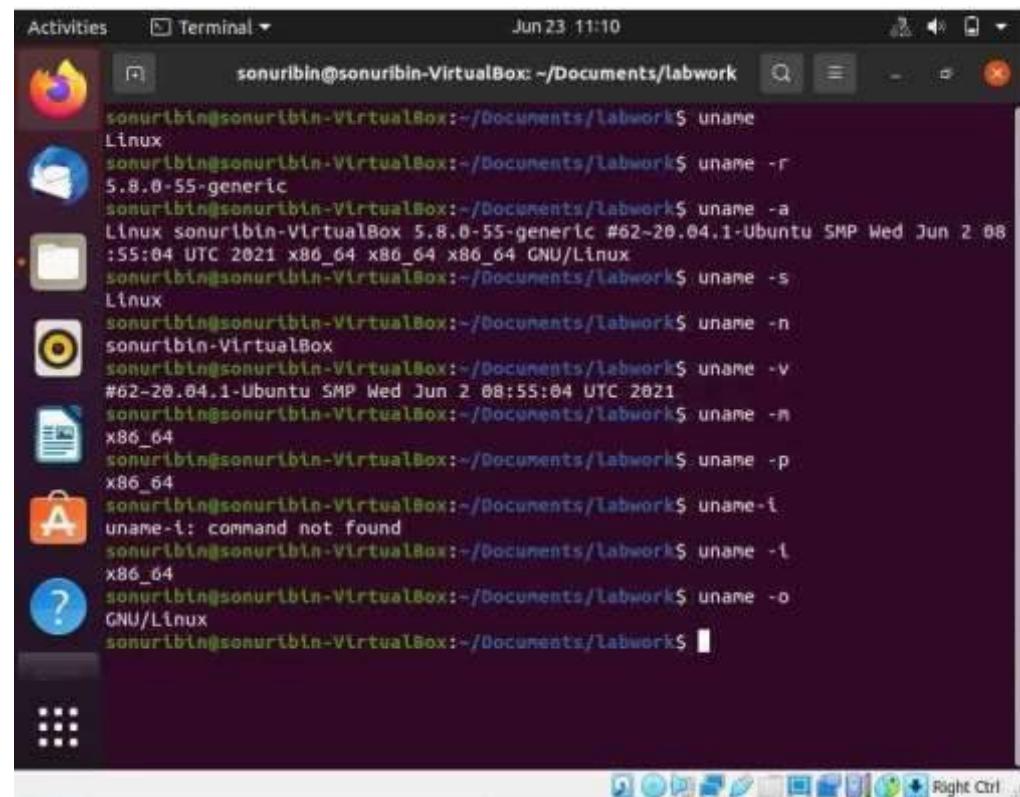
2.uname:

The uname command, short for Unix Name, will print detailed information about your Linux system like the machine name, operating system, kernel, and so on.

Syntax:

```
$uname  
$uname -r  
$uname -a  
$uname -s  
$uname -n  
$uname -v  
$uname -m  
$uname -p  
$uname -i  
$uname -o
```

Examples:



A screenshot of an Ubuntu desktop environment. A terminal window is open in the top panel, titled "Terminal". The terminal shows a series of commands being run by the user "sonuribin" at the prompt "sonuribin@sonuribin-VirtualBox: ~/Documents/labwork\$". The commands and their outputs are as follows:

- uname: Linux
- uname -r: 5.8.0-55-generic
- uname -a: Linux sonuribin-VirtualBox 5.8.0-55-generic #62~20.04.1-Ubuntu SMP Wed Jun 2 08:55:04 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
- uname -s: Linux
- uname -n: sonuribin-VirtualBox
- uname -v: #62~20.04.1-Ubuntu SMP Wed Jun 2 08:55:04 UTC 2021
- uname -m: x86_64
- uname -p: x86_64
- uname -i: command not found
- uname -t: x86_64
- uname -o: GNU/Linux

10.cp

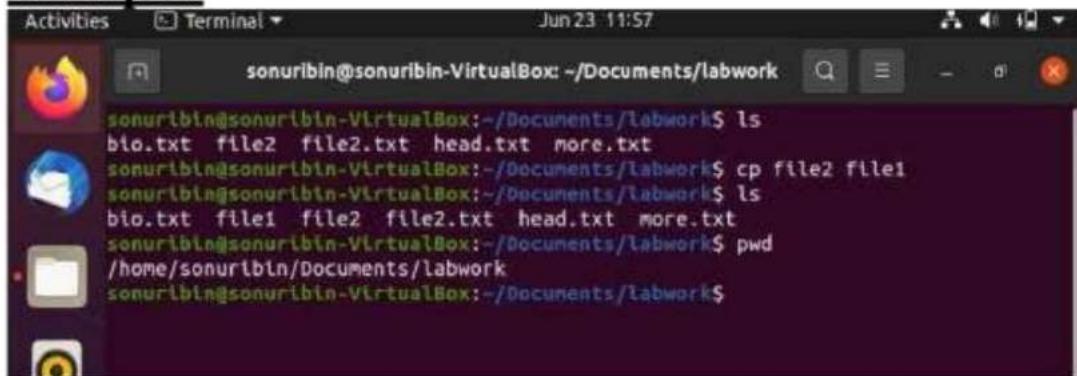
cp command is used to copy files from the current directory to a different directory.

- cp -i will ask for user's consent in case of a potential file overwrite.
- cp -p will preserve source files' mode, ownership and timestamp.
- cp -r will copy directories recursively.
- cp -u copies files only if the destination file is not existing or the source file is newer than the destination file

syntax:

```
cp src_file dest_file
```

example:



```
Activities Terminal Jun 23 11:57
sonuribin@sonuribin-VirtualBox: ~/Documents/labwork$ ls
bio.txt file2 file2.txt head.txt more.txt
sonuribin@sonuribin-VirtualBox: ~/Documents/labwork$ cp file2 file1
sonuribin@sonuribin-VirtualBox: ~/Documents/labwork$ ls
bio.txt file1 file2 file2.txt head.txt more.txt
sonuribin@sonuribin-VirtualBox: ~/Documents/labwork$ pwd
/home/sonuribin/Documents/labwork
sonuribin@sonuribin-VirtualBox: ~/Documents/labwork$
```

If the command has one or more arguments,

Syntax:

```
$Cp src_file1 src_file2 dest_directory
```

11.mv :

The primary use of the mv command is to move files, it can also be used to rename files. The arguments in mv are similar to the cp command. You need to type mv, the file's name, and the destination's directory.

Syntax:

Let us consider 4 files having file1,file2,file3,to rename file ,file1 to linux
\$mv file1 linux

Example:

```
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ ls
bio.txt file1.txt file2.txt head.txt more.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ mv file1.txt linux
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ ls
bio.txt file2.txt head.txt linux more.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ cat linux
mohanlal
mammutty
jayaram
dileep
sidique
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo hai>>linux
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ echo hello>>linux
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ cat file2.txt
mohanlal
mammutty
jayaram
dileep
sidique
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ mv linux file2
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ mv linux file2.txt
mv: cannot stat 'linux': No such file or directory
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ ls
bio.txt file2 file2.txt head.txt more.txt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ cat file2
mohanlal
mammutty
jayaram
dileep
```

12.locate:

- To locate a file, just like the search command in Windows.

14.grep:

Another basic Linux command that is undoubtedly helpful for everyday use is grep. It lets you search through all the text in a given file.

- To illustrate, grep blue notepad.txt will search for the word blue in the notepad file. Lines that contain the searched word will be displayed fully. Usually output of a previous command is piped into the grep command. For example ls -l | grep “kernel”

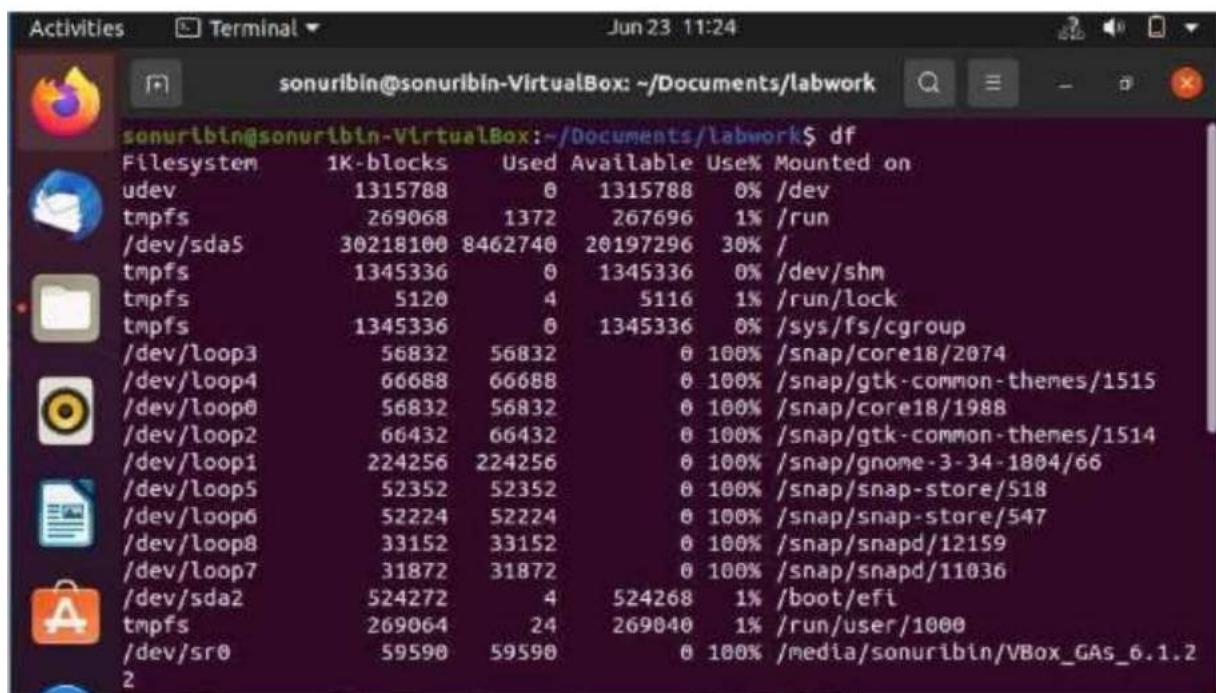
Example:

15.df:

- Use df command to get a report on the system’s disk space usage, shown in percentage and KBs.

If you want to see the report in megabytes, type df -m.

Example:



A screenshot of a Linux desktop environment showing a terminal window. The terminal window title is "Terminal" and the command entered is "df". The output shows disk space usage for various filesystems. The terminal window has a dark background with light-colored text. The desktop interface includes icons for a browser, file manager, and terminal, and a dock at the bottom with several application icons.

```
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev              1315788      0   1315788  0% /dev
tmpfs             269068   1372   267696  1% /run
/dev/sda5        30218100  8462740  20197296  30% /
tmpfs             1345336      0   1345336  0% /dev/shm
tmpfs               5120       4    5116  1% /run/lock
tmpfs             1345336      0   1345336  0% /sys/fs/cgroup
/dev/loop3          56832    56832      0  100% /snap/core18/2874
/dev/loop4          66688    66688      0  100% /snap/gtk-common-themes/1515
/dev/loop0          56832    56832      0  100% /snap/core18/1988
/dev/loop2          66432    66432      0  100% /snap/gtk-common-themes/1514
/dev/loop1          224256   224256      0  100% /snap/gnome-3-34-1804/66
/dev/loop5          52352    52352      0  100% /snap/snap-store/518
/dev/loop6          52224    52224      0  100% /snap/snap-store/547
/dev/loop8          33152    33152      0  100% /snap/snapd/12159
/dev/loop7          31872    31872      0  100% /snap/snapd/11036
/dev/sda2          524272      4   524268  1% /boot/efi
tmpfs             269064     24   269040  1% /run/user/1000
/dev/sr0            59590    59590      0  100% /media/sonuribin/VBox_GAs_6.1.2
2
```

Activities Terminal Jun 23 11:25

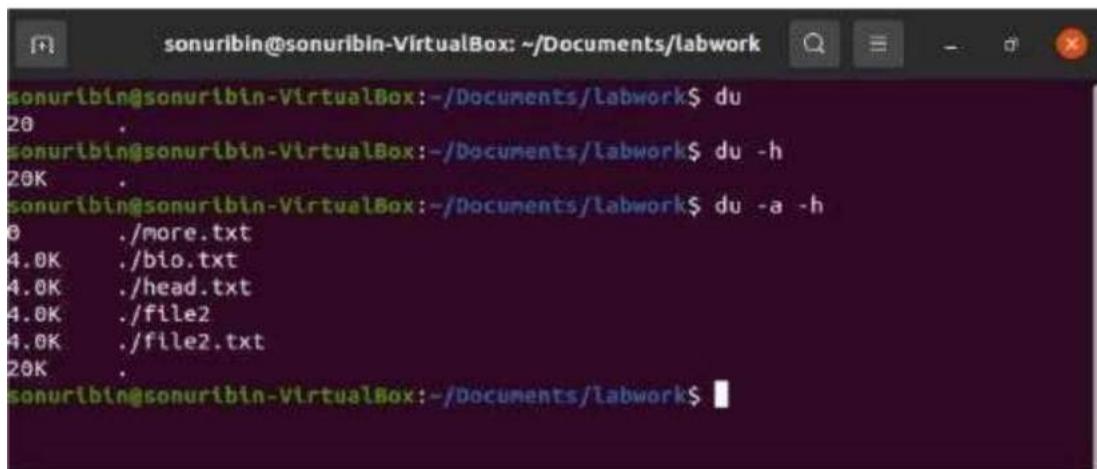
```
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ df -a
Filesystem      1K-blocks    Used Available Use% Mounted on
sysfs                  0      0         0   - /sys
proc                  0      0         0   - /proc
udev                1315788      0  1315788  0% /dev
devpts                 0      0         0   - /dev/pts
tmpfs                 269068    1372   267696  1% /run
/dev/sda5            30218100  8462740  20197296 30% /
securityfs              0      0         0   - /sys/kernel/security
tmpfs                 1345336      0  1345336  0% /dev/shm
tmpfs                  5120      4    5116  1% /run/lock
tmpfs                 1345336      0  1345336  0% /sys/fs/cgroup
cgroup2                 0      0         0   - /sys/fs/cgroup/unified
cgroup                 0      0         0   - /sys/fs/cgroup/systemd
pstore                 0      0         0   - /sys/fs/pstore
none                  0      0         0   - /sys/fs/bpf
cgroup                 0      0         0   - /sys/fs/cgroup/cpu,cpuacct
cgroup                 0      0         0   - /sys/fs/cgroup/rdma
cgroup                 0      0         0   - /sys/fs/cgroup/net_cls,net_prio
cgroup                 0      0         0   - /sys/fs/cgroup/memory
cgroup                 0      0         0   - /sys/fs/cgroup/freezer
cgroup                 0      0         0   - /sys/fs/cgroup/hugetlb
cgroup                 0      0         0   - /sys/fs/cgroup/blkio
cgroup                 0      0         0   - /sys/fs/cgroup/devices
cgroup                 0      0         0   - /sys/fs/cgroup/perf_event
cgroup                 0      0         0   - /sys/fs/cgroup/plids
cgroup                 0      0         0   - /sys/fs/cgroup/cpuset
systemd-1                 0      0         0   - /proc/sys/fs/binfmt_misc
mqueue                 0      0         0   - /dev/mqueue

tracefs                 0      0         0   - /sys/kernel/tracing
debugfs                 0      0         0   - /sys/kernel/debug
hugetlbfs                 0      0         0   - /dev/hugepages
fusectl                 0      0         0   - /sys/fs/fuse/connections
configfs                 0      0         0   - /sys/kernel/config
/dev/loop3               56832  56832     0 100% /snap/core18/2074
/dev/loop4               66688  66688     0 100% /snap/gtk-common-themes/1515
/dev/loop0               56832  56832     0 100% /snap/core18/1988
/dev/loop2               66432  66432     0 100% /snap/gtk-common-themes/1514
/dev/loop1               224256 224256     0 100% /snap/gnome-3-34-1804/66
/dev/loop5               52352  52352     0 100% /snap/snap-store/518
/dev/loop6               52224  52224     0 100% /snap/snap-store/547
/dev/loop8               33152  33152     0 100% /snap/snapd/12159
/dev/loop7               31872  31872     0 100% /snap/snapd/11036
/dev/sda2               524272     4  524268  1% /boot/efi
tmpfs                 269064     24  269040  1% /run/user/1000
gvfsd-fuse                 0      0         0   - /run/user/1000/gvfs
/dev/sr0                59590  59590     0 100% /media/sonuribin/VBox_GAs_6.1.2
2
tmpfs                 269068    1372   267696  1% /run/snapd/ns
nsfs                  0      0         0   - /run/snapd/ns/snap-store.mnt
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$
```

16.du:

- If you want to check how much space a file or a directory takes, the du (Disk Usage) command is the answer. However, the disk usage summary will show disk block numbers instead of the usual size format.
- If you want to see it in bytes, kilobytes, and megabytes, add the -h argument to the command line.
- \$du -h

Examples:



A screenshot of a terminal window titled "sonuribin@sonuribin-VirtualBox: ~/Documents/labwork". The window shows the output of the du command. First, it runs "du" which outputs "20 .". Then it runs "du -h" which outputs "20K .". Finally, it runs "du -a -h" which lists the sizes of individual files: "0 ./more.txt", "4.0K ./bio.txt", "4.0K ./head.txt", "4.0K ./file2", and "4.0K ./file2.txt". The total size is again shown as "20K .".

```
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ du
20 .
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ du -h
20K .
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ du -a -h
0 ./more.txt
4.0K ./bio.txt
4.0K ./head.txt
4.0K ./file2
4.0K ./file2.txt
20K .
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$
```

17.useradd

- This is available only to system admins
- Since Linux is a multi-user system, this means more than one person can interact with the same system at the same time.
- useradd is used to create a new user, while passwd is adding a password to that user's account. To add a new person named John type, useradd John and then to add his password type, passwd 123456789

Example:

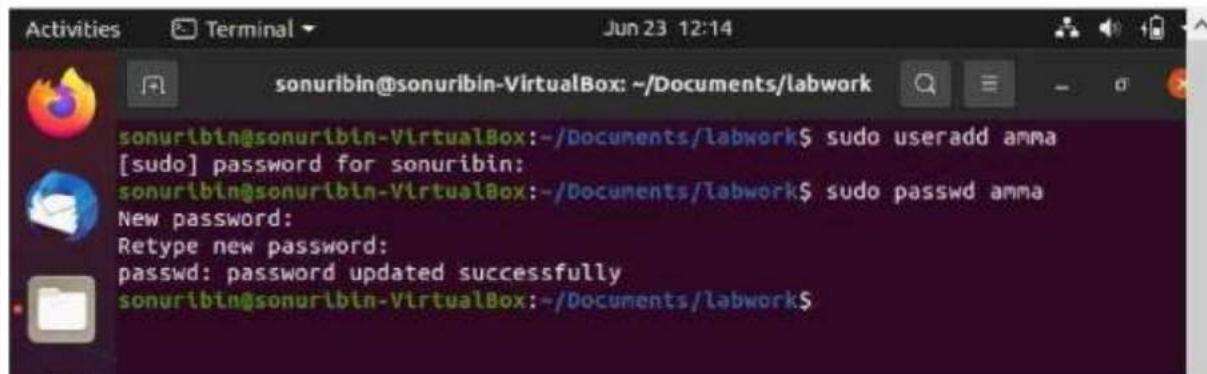
```
sonuribin@sonuribin-VirtualBox: ~/Documents/labwork$ sudo useradd amma  
[sudo] password for sonuribin:
```

19.sudo:

- Short for “SuperUser Do”, this command enables you to perform tasks that require administrative or root permissions. You must have sufficient permissions to use this command.

- sudo useradd amma

Example:



A screenshot of a Linux desktop environment showing a terminal window. The terminal title is "Terminal" and the date and time are "Jun 23 12:14". The terminal window contains the following text:

```
Activities Terminal Jun 23 12:14
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ sudo useradd amma
[sudo] password for sonuribin:
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$ sudo passwd amma
New password:
Retype new password:
passwd: password updated successfully
sonuribin@sonuribin-VirtualBox:~/Documents/labwork$
```

Explain linux commands usermod, groupadd, groups, groupmod, groupdel, chmod, chown, id, ps, top with examples

1. usermod

- usermod command is used to change the properties of a user in Linux through the command line
- command-line utility that allows you to modify a user's login information

- #usermod --help
- #usermod -u 2000 student
-

```
sonuribin@sonuribin:~/Desktop$ usermod --help
Usage: usermod [options] LOGIN

Options:
  -b, --badnames          allow bad names
  -c, --comment COMMENT    new value of the GECOS field
  -d, --home HOME_DIR      new home directory for the user account
  -e, --expiredate EXPIRE_DATE set account expiration date to EXPIRE_DATE
  -f, --inactive INACTIVE   set password inactive after expiration
                            to INACTIVE
  -g, --gid GROUP          force use GROUP as new primary group
  -G, --groups GROUPS      new list of supplementary GROUPS
  -a, --append               append the user to the supplemental GROUPS
                            mentioned by the -G option without removing
                            the user from other groups
  -h, --help                display this help message and exit
  -l, --login NEW_LOGIN     new value of the login name
  -L, --lock                 lock the user account
  -m, --move-home            move contents of the home directory to the
                            new location (use only with -d)
  -o, --non-unique           allow using duplicate (non-unique) UID
  -p, --password PASSWORD    use encrypted password for the new password
  -R, --root CHROOT_DIR      directory to chroot into
  -P, --prefix PREFIX_DIR    prefix directory where are located the /etc/* f
iles
  -s, --shell SHELL          new login shell for the user account
  -u, --uid UID              new UID for the user account
  -U, --unlock                unlock the user account
  -v, --add-suids FIRST-LAST add range of subordinate uids
```

```
sonuribin@sonuribin:~/Desktop$ sudo usermod -u 2000 student
[sudo] password for sonuribin:
usermod: no changes
sonuribin@sonuribin:~/Desktop$
```

2. groupadd

- groupadd command creates a new group account using the values specified on the command line and the default values from the system.

```
sonuribin@sonuribin:~/Desktop$ sudo usermod -u 2000 student
[sudo] password for sonuribin:
usermod: no changes
sonuribin@sonuribin:~/Desktop$ sudo groupadd sonu10
sonuribin@sonuribin:~/Desktop$ sudo groupadd sonu10
groupadd: group 'sonu10' already exists
sonuribin@sonuribin:~/Desktop$ sudo groupadd sonu1
sonuribin@sonuribin:~/Desktop$ sudo groupadd sonu12
sonuribin@sonuribin:~/Desktop$ sudo groupadd sonu13
sonuribin@sonuribin:~/Desktop$ compgen -g sonu
sonuribin
sonu10
sonu1
sonu12
sonu13
```

3. groups - print the groups a user is in

```
sonuribin@sonuribin:~/Desktop$ groups sonuribin
sonuribin : sonuribin adm cdrom sudo dip plugdev lpadmin lxd sambashare
sonuribin@sonuribin:~/Desktop$ █
```

4. groupdel - groupdel command modifies the system account files, deleting all entries that refer to group. The named group must exist

```
sonuribin@sonuribin:~/Desktop$ compgen -g sonu
sonuribin
sonu10
sonu12
sonu13
sonu11
sonuribin@sonuribin:~/Desktop$ sudo groupdel sonu11
[sudo] password for sonuribin:
sonuribin@sonuribin:~/Desktop$ compgen -g sonu
sonuribin
sonu10
sonu12
sonu13
sonuribin@sonuribin:~/Desktop$ █
```

5.groupmod - The groupmod command modifies the definition of the specified group by modifying the appropriate entry in the group database.

```
# groupmod -n group1 group2
```

```
sonuribin@sonuribin:~/Desktop$ compgen -g sonu
sonuribin
sonu10
sonu12
sonu13
sonuribin@sonuribin:~/Desktop$ sudo groupmod -n new_group sonu10
[sudo] password for sonuribin:
sonuribin@sonuribin:~/Desktop$ sudo groupmod -n new_group sonu10
groupmod: group 'sonu10' does not exist
sonuribin@sonuribin:~/Desktop$ compgen -g sonu
sonuribin
sonu12
sonu13
sonuribin@sonuribin:~/Desktop$ compgen -g new_group
new_group
sonuribin@sonuribin:~/Desktop$ █
```

6.chmod - To change directory permissions of file/ Directory in Linux.

```
#chmod whowhatwhich file/directory
```

- chmod +rwx filename to add permissions.
- chmod -rwx directoryname to remove permissions.
- chmod +x filename to allow executable permissions.

- chmod -wx filename to take out write and executable permissions.

```
#chmod u+x test #chmod g-rwx test #chmod o-r test
```

7.chown - The chown command allows you to change the user and/or group ownership of a given file, directory.

```
sonuribin@sonuribin:~/Desktop$ chmod +rwx sonuu.txt  
sonuribin@sonuribin:~/Desktop$
```

```
sonuribin@sonuribin:~/Desktop$ chown sonuribin sonuu.txt  
sonuribin@sonuribin:~/Desktop$ ls -l sonuu.txt  
sonuu.txt
```

8.ps - The ps command, short for Process Status, is a command line utility that is used to display or view information related to the processes running in a Linux system.

- PID – This is the unique process ID
- TTY –This is the type of terminal that the user is logged in to
- TIME – This is the time in minutes and seconds that the process has been running
- CMD – The command that launched the process #ps -a

```
sonuribin@sonuribin:~/Desktop$ ps -a  
PID TTY      TIME CMD  
933 tty2    00:00:03 Xorg  
1061 tty2    00:00:00 gnome-session-b  
2146 pts/0    00:00:00 ps  
sonuribin@sonuribin:~/Desktop$
```

Basic Linux Commands: Explain linux commands wc, tar(create, extract using gzip, xz, bzip2), expr, redirections and piping, ssh, ssh-keygen, scp, ssh-copy-id with examples

1. wc

wc stands for word count.

Used for counting purpose.

It is used to find out number of lines, word count, byte and characters count in the files specified in the file arguments.

```
#wc state.txt  
#wc state.txt capital.txt  
wc -l state.txt  
wc -w state.txt capital.txt  
wc -c state.txt  
wc -m state.txt
```

```
sonuribin@sonuribin:~/Documents/my lab work$ wc name.txt  
3 3 7 name.txt  
sonuribin@sonuribin:~/Documents/my lab work$ wc -l name.txt  
3 name.txt  
sonuribin@sonuribin:~/Documents/my lab work$ wc -c name.txt  
7 name.txt  
sonuribin@sonuribin:~/Documents/my lab work$ wc -m name.txt  
7 name.txt  
sonuribin@sonuribin:~/Documents/my lab work$ wc -w name.txt  
3 name.txt  
sonuribin@sonuribin:~/Documents/my lab work$
```

2. tar

The Linux ‘tar’ stands for tape archive, is used to create Archive and extract the Archive files

Linux tar command to create compressed or uncompressed Archive files

Options:

-c : Creates Archive

-x : Extract the archive

-f : creates archive with given filename

-t : displays or lists files in archived file

-u : archives and adds to an existing archive file

-v : Displays Verbose Information
 -A : Concatenates the archive files
 -z : zip, tells tar command that creates tar file using gzip
 -j : filter archive tar file using tbzip
 -W : Verify a archive file
 -r : update or add file or directory in already existed .tar file
 #tar cf archive.tar state.txt capital.txt //create archive file
 #ls archive.tar
 #tar tf /archive.tar // list contents of tar archive file
 • Extract an archive created with tar
 #mkdir backup
 #cd backup
 #tar xf /home/meera/Documents/Meera_Linux/archive.tar
 • Compression Types
 gzip(z),bzip2(j), xz(J)
 #tar czf /abc.tar.gz /etc
 #mkdir backup2
 #tar cjf /abcd.tar.bz2 /etc
 #cd backup2
 #tar cJf /abcde.tar.xz /etc
 #tar xjf /abcd.tar.bz2
 Extract an archive
 #mkdir backup3
 #mkdir backup1
 #cd backup3
 #cd backup1
 #tar xJf /abcde.tar.xz
 #tar xzf /abc.tar.gz

```

sonuribin@sonuribin:~/Documents$ ls
ls: command not found
sonuribin@sonuribin:~/Documents$ ls
assignments LAB
sonuribin@sonuribin:~/Documents$ cd LAB
sonuribin@sonuribin:~/Documents/LAB$ ls
archive.tar.gz mass.txt name.txt rsa.pub stud.txt
assign master.txt rsa stand.tar
sonuribin@sonuribin:~/Documents/LAB$ pwd
/home/sonuribin/Documents/LAB
sonuribin@sonuribin:~/Documents/LAB$ tar xf /home/sonuribin/Documents/LAB/stand
.tar
sonuribin@sonuribin:~/Documents/LAB$ ls
archive.tar.gz mass.txt name.txt rsa.pub stud.txt
assign master.txt rsa stand.tar
sonuribin@sonuribin:~/Documents/LAB$ cd assign
sonuribin@sonuribin:~/Documents/LAB/assign$ tar xf /home/sonuribin/Documents/LA
B/stand.tar
sonuribin@sonuribin:~/Documents/LAB/assign$ ls
master.txt name.txt stud.txt
sonuribin@sonuribin:~/Documents/LAB/assign$ ■

```

3.expr

The expr command evaluates a given expression and displays its corresponding output. It is used for:

Basic operations like addition, subtraction, multiplication, division, and modulus on integers.

Evaluating regular expressions, string operations like substring, length of strings etc.

Performing operations on variables inside a shell script

```
#expr 10 + 2
```

```
sonuribin@sonuribin:~/Documents/my lab work$ expr 100 + 9  
109  
sonuribin@sonuribin:~/Documents/my lab work$
```

4. Redirections & Piping

A pipe is a form of redirection to send the output of one command/program/process to another command/program/process for further processing.

Pipe is used to combine two or more commands, the output of one command acts as input to another command, and this command's output may act as input to the next command and so on.

```
#ls -l | wc -l  
#cat /etc/passwd.txt | head -7 | tail -5
```

```
sonuribin@sonuribin:~/Documents/my lab work$ ls -l|wc -l  
2  
sonuribin@sonuribin:~/Documents/my lab work$ █
```

5. ssh

ssh stands for “Secure Shell”.

It is a protocol used to securely connect to a remote server/system.

ssh is secure in the sense that it transfers the data in encrypted form between the host and the client.

It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22.

```
#ssh user_name@host(IP/Domain_name)  
#ssh -X root@server1.example.com
```

```
sonuribin@sonuribin:~/Documents/my lab work$ ls -l|wc -l
2
sonuribin@sonuribin:~/Documents/my lab work$ ssh -x root@server1.sonuu.txt
ssh: Could not resolve hostname server1.sonuu.txt: Name or service not known
sonuribin@sonuribin:~/Documents/my lab work$
```

6.ssh-keygen

ssh-keygen command to generate a public/private authentication

10

key pair. Authentication keys allow a user to connect to a remote system without supplying a password. Keys must be generated for each user separately. If you generate key pairs as the root user, only the root can use the keys.

\$ssh-keygen -t rsa

```
sonuribin@sonuribin:~/Documents/my lab work$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/sonuribin/.ssh/id_rsa): rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in rsa
Your public key has been saved in rsa.pub
The key fingerprint is:
SHA256:5nSp2o4xgr97mYL8X5zxLxYKJ2+YqH/91G6y+VM7Pu8 sonuribin@sonuribin
The key's randomart image is:
+---[RSA 3072]---+
| . . .
| S o. B |
| . = *o + o o |
| .... oo*..o o =|
| o....+B. o.. oo.|
| .=*+.oo.o. +OE|
+---[SHA256]---+
sonuribin@sonuribin:~/Documents/my lab work$
```

1. Managing Files, Creating Users and Groups Using Command-line tools

a. Create six files with name of the form songX.mp3

b. Create six files with name of the form snapX.jpg

c. Create six files with name of the form filmX.mp4 (In each set, replace X with the numbers 1 through 6)

```
sonuribin@sonuribin:~/Documents/my lab work$ touch song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3
sonuribin@sonuribin:~/Documents/my lab work$ touch snap1.jpg snap2.jpg snap3.jpg snap4.jpg snap5.jpg snap6.jpg
sonuribin@sonuribin:~/Documents/my lab work$ touch film1.mp4 film2.mp4 film3.mp4 film4.mp4 film5.mp4 film6.mp4
sonuribin@sonuribin:~/Documents/my lab work$ ls
film1.mp4  film4.mp4  snap1.jpg  snap4.jpg  song1.mp3  song4.mp3
film2.mp4  film5.mp4  snap2.jpg  snap5.jpg  song2.mp3  song5.mp3
film3.mp4  film6.mp4  snap3.jpg  snap6.jpg  song3.mp3  song6.mp3
sonuribin@sonuribin:~/Documents/my lab work$
```

2. From your home directory, move the song files into your music subdirectory, the snapshot files into your pictures subdirectory, and the movie files into videos subdirectory.

```
sonuribin@sonuribin:~/Documents/my lab work$ ls
film1.mp4  film4.mp4  music      snap2.jpg  snap5.jpg  song2.mp3  song5.mp3
film2.mp4  film5.mp4  pictures   snap3.jpg  snap6.jpg  song3.mp3  song6.mp3
film3.mp4  film6.mp4  snap1.jpg  snap4.jpg  song1.mp3  song4.mp3  videos
sonuribin@sonuribin:~/Documents/my lab work$ mv *.mp3 ./music/
sonuribin@sonuribin:~/Documents/my lab work$ mv *.jpg ./pictures/
sonuribin@sonuribin:~/Documents/my lab work$ mv *.mp4 ./videos/
mv: target './videos/' is not a directory
sonuribin@sonuribin:~/Documents/my lab work$ mv *.mp4 ./videos/
sonuribin@sonuribin:~/Documents/my lab work$
```

3. In your home directory, create three subdirectories for organizing your files. Call these directories friends, family, and work. Create all three with one command.

```
sonuribin@sonuribin:~/Documents/my lab work$ mkdir -p {friends,famil,work}
sonuribin@sonuribin:~/Documents/my lab work$ ls
famil  friends  music  pictures  videos  work
sonuribin@sonuribin:~/Documents/my lab work$
```

4. Copy song files to the friends folder and snap files to family folder.

```
sonuribin@sonuribin:~/Documents/assignments$ cp /home/sonuribin/documents/assig  
nments/music song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3 /home/  
sonuribin/documents/assignments/friends/
```

```
sonuribin@sonuribin:~$ cp /home/documents/assignments/picture snap1.jpg snap2.j  
pg snap3.jpg snap4.jpg snap5.jpg snap6.jpg /home/documents/assignments/famil/  
y/
```

5. Attempt to delete both family and friends projects with a single rmdir command

```
sonuribin@sonuribin:~/Documents/assignments$ rm dir{friends,family}
```

6. Redirect a long listing of all home directory files, including hidden, into a file named allfiles.txt. Confirm that the file contains the listing.

```
sonuribin@sonuribin:~/Documents/assignments$ ls -a > allfiles.txt  
sonuribin@sonuribin:~/Documents/assignments$ ls  
allfiles.txt music pictures videos work  
sonuribin@sonuribin:~/Documents/assignments$
```

7. In the command window, display today's date with day of the week, month, date and year

```
sonuribin@sonuribin:~/Documents/assignments$ date  
Thursday 19 August 2021 01:03:38 PM IST  
sonuribin@sonuribin:~/Documents/assignments$
```

8. Add the user Juliet

```
sonuribin@sonuribin:~/Desktop$ sudo useradd juliet  
[sudo] password for sonuribin:  
sonuribin@sonuribin:~/Desktop$
```

9. Confirm that Juliet has been added by examining the /etc/passwd file

```
sonuribin@sonuribin:~/Desktop$ sudo useradd juliet
[sudo] password for sonuribin:
sonuribin@sonuribin:~/Desktop$ cat /etc/passwd | grep juliet
juliet:x:2001:2001::/home/juliet:/bin/sh
sonuribin@sonuribin:~/Desktop$
```

10. Use the passwd command to initialize Juliet's password

```
sonuribin@sonuribin:~/Desktop$ sudo passwd juliet
[sudo] password for sonuribin:
New password:
Retype new password:
passwd: password updated successfully
sonuribin@sonuribin:~/Desktop$
```

11. Create a supplementary group called Shakespeare with a group id of 300

```
sonuribin@sonuribin:~/Documents/my lab work$ sudo groupadd -g 30000 mohanlal
[sudo] password for sonuribin:
sonuribin@sonuribin:~/Documents/my lab works$
```

12. Create a supplementary group called artists.

```
sonuribin@sonuribin:~/Desktop$ sudo groupadd artist
```

13. Add the Juliet user to the Shakespeare group as a supplementary group.

```
sonuribin@sonuribin:~/Desktop$ sudo groupmod -g shakespeare juliet
```

14. Confirm that Juliet has been added using the id command.

```
sonuribin@sonuribin:~/Desktop$ id juliet uid=1001(juliet) gid=1001(juliet) groups=1001(juliet),3000shakespeare
```

15. Add Romeo and Hamlet to the Shakespeare group.

```
sonuribin@sonuribin:~/Desktop$ sudo useradd romeo
[sudo] password for sonuribin:
sonuribin@sonuribin:~/Desktop$ sudo useradd hamlet
sonuribin@sonuribin:~/Desktop$ sudo usermod -g shakespeare romeo
sonuribin@sonuribin:~/Desktop$ sudo usermod -g shakespeare hamlet
sonuribin@sonuribin:~/Desktop$
```

16. Add Reba, Dolly and Elvis to the artists group.

```
sonuribin@sonuribin:~/Desktop$ sudo useradd reba
[sudo] password for sonuribin:
sonuribin@sonuribin:~/Desktop$ sudo useradd dolly
sonuribin@sonuribin:~/Desktop$ sudo useradd elvis
```

```
sonuribin@sonuribin:~/Desktop$ sudo usermod -g artist reba
sonuribin@sonuribin:~/Desktop$ sudo usermod -g artist dolly
sonuribin@sonuribin:~/Desktop$ sudo usermod -g artist elvis
sonuribin@sonuribin:~/Desktop$ █
```

17. Attempt to remove user Dolly

```
sonuribin@sonuribin:~/Desktop$ sudo userdel dolly
[sudo] password for sonuribin:
userdel: group dolly not removed because it is not the primary group of user do
lly.
sonuribin@sonuribin:~/Desktop$ █
```

```
> arp -a ..... displays the  
C:\Users\ma_ware>ARP -a  
  
Interface: 192.168.56.1 --- 0xe  
Internet Address Physical Address Type  
192.168.56.255 ff-ff-ff-ff-ff-ff static  
224.0.0.22 01-00-5e-00-00-16 static  
224.0.0.251 01-00-5e-00-00-fb static  
224.0.0.252 01-00-5e-00-00-fc static  
239.255.255.250 01-00-5e-7f-ff-fa static  
255.255.255.255 ff-ff-ff-ff-ff-ff static  
  
Interface: 192.168.15.103 --- 0x10  
Internet Address Physical Address Type  
192.168.15.35 02-78-c7-7a-1c-31 dynamic  
192.168.15.255 ff-ff-ff-ff-ff-ff static  
224.0.0.22 01-00-5e-00-00-16 static  
224.0.0.251 01-00-5e-00-00-fb static  
224.0.0.252 01-00-5e-00-00-fc static  
239.255.255.250 01-00-5e-7f-ff-fa static  
255.255.255.255 ff-ff-ff-ff-ff-ff static
```

```
C:\Users\ma_ware>Getmac  
  
Physical Address Transport Name  
===== =====  
0A-00-27-00-00-0E \Device\Tcpip_{A3144AFB-707C-4696-9636-90E7A0D45A23}  
D0-AB-D5-C8-FB-54 \Device\Tcpip_{D4C2A79E-545F-40AA-9AB2-FE6FE70B77B6}  
80-E8-2C-C6-9E-B7 Media disconnected  
  
C:\Users\ma_ware>
```

```
C:\> C:\WINDOWS\System32\cmd.exe
Microsoft Windows [Version 10.0.19043.1237]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ma_ware>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . . . . . : .local

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix . . . . . :
    Link-local IPv6 Address . . . . . : fe80::8585:8754:69f6:323e%14
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 8:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . . . . . : .local

Wireless LAN adapter Local Area Connection* 10:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . . . . . : .local

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix . . . . . :
    Link-local IPv6 Address . . . . . : fe80::bd36:dd00:c6a:1fe5%16
    IPv4 Address. . . . . : 192.168.15.103
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.15.35
```

```
C:\Users\ma_ware>Nbtstat
```

```
Displays protocol statistics and current TCP/IP connections using NBT  
(NetBIOS over TCP/IP).
```

```
NBTSTAT [ [-a RemoteName] [-A IP address] [-c] [-n]  
          [-r] [-R] [-RR] [-s] [-S] [interval] ]
```

```
-a  (adapter status) Lists the remote machine's name table given its name  
-A  (Adapter status) Lists the remote machine's name table given its  
     IP address.  
-c  (cache)          Lists NBT's cache of remote [machine] names and their IP addr  
-n  (names)          Lists local NetBIOS names.  
-r  (resolved)       Lists names resolved by broadcast and via WINS  
-R  (Reload)         Purges and reloads the remote cache name table  
-S  (Sessions)       Lists sessions table with the destination IP addresses  
-s  (sessions)       Lists sessions table converting destination IP  
                     addresses to computer NETBIOS names.  
-RR  (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh
```

```
RemoteName  Remote host machine name.
```

```
IP address  Dotted decimal representation of the IP address.
```

```
interval    Redisplays selected statistics, pausing interval seconds  
            between each display. Press Ctrl+C to stop redisplaying  
            statistics.
```

```
^C  
C:\Users\ma_ware>netstat -a
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:135	MalWaRE:0	LISTENING
TCP	0.0.0.0:445	MalWaRE:0	LISTENING
TCP	0.0.0.0:1043	MalWaRE:0	LISTENING
TCP	0.0.0.0:5040	MalWaRE:0	LISTENING
TCP	0.0.0.0:8733	MalWaRE:0	LISTENING
TCP	0.0.0.0:27036	MalWaRE:0	LISTENING
TCP	0.0.0.0:30622	MalWaRE:0	LISTENING
TCP	0.0.0.0:49664	MalWaRE:0	LISTENING
TCP	0.0.0.0:49665	MalWaRE:0	LISTENING
TCP	0.0.0.0:49666	MalWaRE:0	LISTENING
TCP	0.0.0.0:49667	MalWaRE:0	LISTENING
TCP	0.0.0.0:49668	MalWaRE:0	LISTENING
TCP	127.0.0.1:2952	MalWaRE:0	LISTENING
TCP	127.0.0.1:3213	MalWaRE:0	LISTENING
TCP	127.0.0.1:4887	MalWaRE:65001	ESTABLISHED
TCP	127.0.0.1:4915	MalWaRE:0	LISTENING
TCP	127.0.0.1:4915	MalWaRE:4939	ESTABLISHED
TCP	127.0.0.1:4939	MalWaRE:4915	ESTABLISHED
TCP	127.0.0.1:8564	MalWaRE:12124	ESTABLISHED
TCP	127.0.0.1:12123	MalWaRE:0	LISTENING
TCP	127.0.0.1:12124	MalWaRE:8564	ESTABLISHED
TCP	127.0.0.1:27017	MalWaRE:0	LISTENING
TCP	127.0.0.1:27060	MalWaRE:0	LISTENING
TCP	127.0.0.1:50911	MalWaRE:0	LISTENING
TCP	127.0.0.1:65001	MalWaRE:0	LISTENING
TCP	127.0.0.1:65001	MalWaRE:4887	ESTABLISHED
TCP	192.168.15.103:139	MalWaRE:0	LISTENING
TCP	192.168.15.103:1360	a-0001:https	ESTABLISHED

```
C:\Users\ma_ware>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:4887	MalWaRE:65001	ESTABLISHED
TCP	127.0.0.1:4915	MalWaRE:4939	ESTABLISHED
TCP	127.0.0.1:4939	MalWaRE:4915	ESTABLISHED
TCP	127.0.0.1:8564	MalWaRE:12124	ESTABLISHED
TCP	127.0.0.1:12124	MalWaRE:8564	ESTABLISHED
TCP	127.0.0.1:65001	MalWaRE:4887	ESTABLISHED
TCP	192.168.15.103:2041	51.105.218.222:https	ESTABLISHED

```
C:\Users\ma_ware>nslookup google.com
DNS request timed out.
    timeout was 2 seconds.
Server:  UnKnown
Address:  192.168.15.35

Non-authoritative answer:
Name:      google.com
Addresses: 2404:6800:4007:80f::200e
          142.250.195.142
```

```
C:\Users\ma_ware>
```

```
C:\Users\ma_ware>

C:\Users\ma_ware>Ping /t 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=1525ms TTL=118
Reply from 8.8.8.8: bytes=32 time=1047ms TTL=118
Reply from 8.8.8.8: bytes=32 time=1177ms TTL=118
Reply from 8.8.8.8: bytes=32 time=1265ms TTL=118
Reply from 8.8.8.8: bytes=32 time=1183ms TTL=118
Reply from 8.8.8.8: bytes=32 time=1273ms TTL=118
```

```
C:\Users\ma_ware>route -cn
```

Manipulates network routing tables.

```
ROUTE [-f] [-p] [-4|-6] command [destination]
      [MASK netmask] [gateway] [METRIC metric] [IF interface]
```

-f Clears the routing tables of all gateway entries. If this is used in conjunction with one of the commands, the tables are cleared prior to running the command.

-p When used with the ADD command, makes a route persistent across boots of the system. By default, routes are not preserved when the system is restarted. Ignored for all other commands, which always affect the appropriate persistent routes.

-4 Force using IPv4.

-6 Force using IPv6.

command One of these:

PRINT	Prints a route
ADD	Adds a route
DELETE	Deletes a route
CHANGE	Modifies an existing route

destination Specifies the host.

MASK Specifies that the next parameter is the 'netmask' value.

netmask Specifies a subnet mask value for this route entry.

If not specified, it defaults to 255.255.255.255.

gateway Specifies gateway.

interface the interface number for the specified route.

METRIC specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database file NETWORKS. The symbolic names for gateway are looked up in the host name database file HOSTS.

```
C:\Users\ma_ware>route -n
```

Manipulates network routing tables.

```
ROUTE [-f] [-p] [-4|-6] command [destination]  
      [MASK netmask]  [gateway] [METRIC metric]  [IF interface]
```

-f Clears the routing tables of all gateway entries. If this is used in conjunction with one of the commands, the tables are cleared prior to running the command.

-p When used with the ADD command, makes a route persistent across boots of the system. By default, routes are not preserved when the system is restarted. Ignored for all other commands, which always affect the appropriate persistent routes.

-4 Force using IPv4.

-6 Force using IPv6.

command One of these:

PRINT	Prints a route
ADD	Adds a route
DELETE	Deletes a route
CHANGE	Modifies an existing route

destination Specifies the host.

MASK Specifies that the next parameter is the 'netmask' value.

netmask Specifies a subnet mask value for this route entry.

If not specified, it defaults to 255.255.255.255.

gateway Specifies gateway.

interface the interface number for the specified route.

METRIC specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database file NETWORKS. The symbolic names for gateway are looked up in the host name

```
C:\Users\ma_ware>route
Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
      [MASK netmask] [gateway] [METRIC metric] [IF interface]

-f      Clears the routing tables of all gateway entries. If this is
used in conjunction with one of the commands, the tables are
cleared prior to running the command.

-p      When used with the ADD command, makes a route persistent across
boots of the system. By default, routes are not preserved
when the system is restarted. Ignored for all other commands,
which always affect the appropriate persistent routes.

-4      Force using IPv4.

-6      Force using IPv6.

command  One of these:
          PRINT   Prints a route
          ADD    Adds a route
          DELETE Deletes a route
          CHANGE Modifies an existing route

destination Specifies the host.
MASK      Specifies that the next parameter is the 'netmask' value.
netmask   Specifies a subnet mask value for this route entry.
          If not specified, it defaults to 255.255.255.255.
gateway   Specifies gateway.
interface  the interface number for the specified route.
METRIC    specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

If the command is PRINT or DELETE, Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only
matching destination routes are printed. The '*' matches any string,
and '?' matches any one char. Examples: 157.*.1, 157.*, 127.?, *224*.

Pattern match is only allowed in PRINT command.

Diagnostic Notes:
  Invalid MASK generates an error, that is when (DEST & MASK) != DEST.
  Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1
          The route addition failed: The specified mask parameter is invalid. (Destination & Mask) != Destination.
```

```
C:\Users\ma_ware>systeminfo

Host Name:          MALWARE
OS Name:           Microsoft Windows 10 Pro for Workstations
OS Version:        10.0.19043 N/A Build 19043
OS Manufacturer:   Microsoft Corporation
OS Configuration: Standalone Workstation
OS Build Type:    Multiprocessor Free
Registered Owner: ma_ware
Registered Organization: HP
Product ID:        00391-80000-00001-AA996
Original Install Date: 12-12-2020, 08:23:05 PM
System Boot Time: 27-09-2021, 09:11:15 AM
System Manufacturer: HP
System Model:      HP Pavilion Gaming Laptop 15-dk0xxx
System Type:       x64-based PC
Processor(s):      1 Processor(s) Installed.
                    [01]: Intel64 Family 6 Model 158 Stepping 10 GenuineIntel ~2400
BIOS Version:      Insyde F.20, 22-11-2019
Windows Directory: C:\WINDOWS
System Directory:  C:\WINDOWS\system32
Boot Device:        \Device\HarddiskVolume4
System Locale:     en-us;English (United States)
Input Locale:      00004009
Time Zone:         (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Total Physical Memory: 8,033 MB
Available Physical Memory: 3,033 MB
Virtual Memory: Max Size: 17,249 MB
Virtual Memory: Available: 9,279 MB
Virtual Memory: In Use: 7,970 MB
Page File Location(s): C:\pagefile.sys
Domain:           WORKGROUP
```

```
C:\Users\ma_ware>tracert -d
A target name or address must be specified.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
              [-R] [-S srcaddr] [-4] [-6] target_name

Options:
  -d                  Do not resolve addresses to hostnames.
  -h maximum_hops    Maximum number of hops to search for target.
  -j host-list       Loose source route along host-list (IPv4-only).
  -w timeout         Wait timeout milliseconds for each reply.
  -R                 Trace round-trip path (IPv6-only).
  -S srcaddr         Source address to use (IPv6-only).
  -4                 Force using IPv4.
  -6                 Force using IPv6.
```

```
C:\Users\ma_ware>
```

```
C:\Users\ma_ware>tracert -j
A target name or address must be specified.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
               [-R] [-S srcaddr] [-4] [-6] target_name

Options:
  -d           Do not resolve addresses to hostnames.
  -h maximum_hops Maximum number of hops to search for target.
  -j host-list   Loose source route along host-list (IPv4-only).
  -w timeout     Wait timeout milliseconds for each reply.
  -R           Trace round-trip path (IPv6-only).
  -S srcaddr    Source address to use (IPv6-only).
  -4           Force using IPv4.
  -6           Force using IPv6.
```

```
C:\Users\ma_ware>
```

```
C:\Users\ma_ware>tracert -s
-s is not a valid command option.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
               [-R] [-S srcaddr] [-4] [-6] target_name

Options:
  -d           Do not resolve addresses to hostnames.
  -h maximum_hops Maximum number of hops to search for target.
  -j host-list   Loose source route along host-list (IPv4-only).
  -w timeout     Wait timeout milliseconds for each reply.
  -R           Trace round-trip path (IPv6-only).
  -S srcaddr    Source address to use (IPv6-only).
  -4           Force using IPv4.
  -6           Force using IPv6.
```

```
C:\Users\ma_ware>
```

```
C:\Users\ma_ware>tracert
```

```
Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
                [-R] [-S srcaddr] [-4] [-6] target_name
```

```
Options:
```

-d	Do not resolve addresses to hostnames.
-h maximum_hops	Maximum number of hops to search for target.
-j host-list	Loose source route along host-list (IPv4-only).
-w timeout	Wait timeout milliseconds for each reply.
-R	Trace round-trip path (IPv6-only).
-S srcaddr	Source address to use (IPv6-only).
-4	Force using IPv4.
-6	Force using IPv6.

```
C:\Users\ma_ware>
```

Sudo apt update

```
File Actions Edit View Help
└─(raman㉿kali)-[~]
$ sudo apt update
[sudo] password for raman:
Ign:1 http://repo.mongodb.org/apt/debian buster/mongodb-org/5.0 InRelease
Hit:2 http://repo.mongodb.org/apt/debian buster/mongodb-org/5.0 Release
Get:3 http://ftp.harukasan.org/kali kali-rolling InRelease [30.5 kB]
Get:5 http://ftp.harukasan.org/kali kali-rolling/main amd64 Packages [17.9 MB]
Get:6 http://ftp.harukasan.org/kali kali-rolling/contrib amd64 Packages [108 kB]
Get:7 http://ftp.harukasan.org/kali kali-rolling/non-free amd64 Packages [209 kB]
Fetched 18.3 MB in 1min 46s (173 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
1486 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

sudo apt install apache2

```
└─(raman㉿kali)-[~]
$ sudo apt install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
apache2 is already the newest version (2.4.48-4).
apache2 is set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 1486 not upgraded.
```

sudo systemctl status apache2

```
└─(raman㉿kali)-[~]
$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor>
   Active: active (running) since Wed 2021-09-29 09:43:05 IST; 4s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 1431 ExecStart=/usr/sbin/apachectl start (code=exited, status>
 Main PID: 1442 (apache2)
    Tasks: 6 (limit: 2309)
   Memory: 17.9M
      CPU: 0.000 CPU(s) since start
     CGroup: /system.slice/apache2.service
             └─1442 /usr/sbin/apache2 -k start
                  ├─1444 /usr/sbin/apache2 -k start
                  ├─1445 /usr/sbin/apache2 -k start
                  ├─1446 /usr/sbin/apache2 -k start
                  ├─1447 /usr/sbin/apache2 -k start
                  ├─1448 /usr/sbin/apache2 -k start

Sep 29 09:43:04 kali systemd[1]: Starting The Apache HTTP Server ...
Sep 29 09:43:05 kali systemd[1]: Started The Apache HTTP Server.
lines 1-18/18 (END)
```

```
sudo apt install apache2
```

```
(raman@kali)-[~]
$ sudo apt install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
apache2 is already the newest version (2.4.48-4).
apache2 set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 1486 not upgraded.
```

```
(raman@kali)-[~]
$ sudo apt install mariadb-server mariadb-client          130 ✘
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required
:
libreadline5
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
default-mysql-server galera-4 mariadb-client-10.5
mariadb-client-core-10.5 mariadb-common mariadb-server-10.5
mariadb-server-core-10.5
Suggested packages:
mailx mariadb-test netcat-openbsd
The following packages will be REMOVED:
galera-3 mariadb-client-10.3 mariadb-client-core-10.3
mariadb-server-10.3 mariadb-server-core-10.3
The following NEW packages will be installed:
galera-4 mariadb-client mariadb-client-10.5 mariadb-client-core-10.5
mariadb-server mariadb-server-10.5 mariadb-server-core-10.5
The following packages will be upgraded:
default-mysql-server mariadb-common
2 upgraded, 7 newly installed, 5 to remove and 1483 not upgraded.
Need to get 14.0 MB of archives.
After this operation, 11.7 MB disk space will be freed.
Do you want to continue? [Y/n] y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 mariadb-common
all 1:10.5.12-1 [36.3 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 default-mysql-s
erver all 1:0.7 [3,712 B]
```

```
—(raman㉿kali)-[~]
$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor>
  Active: active (running) since Wed 2021-09-29 09:43:05 IST; 4s ago
    Docs: https://httpd.apache.org/docs/2.4/
   Process: 1431 ExecStart=/usr/sbin/apachectl start (code=exited, status>
 Main PID: 1442 (apache2)
   Tasks: 6 (limit: 2309)
  Memory: 17.9M
     CGroup: /system.slice/apache2.service
             └─1442 /usr/sbin/apache2 -k start
Home └─1444 /usr/sbin/apache2 -k start
      ├─1445 /usr/sbin/apache2 -k start
      ├─1446 /usr/sbin/apache2 -k start
      ├─1447 /usr/sbin/apache2 -k start
      └─1448 /usr/sbin/apache2 -k start

Sep 29 09:43:04 kali systemd[1]: Starting The Apache HTTP Server ...
Sep 29 09:43:05 kali systemd[1]: Started The Apache HTTP Server.
└─[PID 1-18/18 (FNN)]
```

```
└$ sudo systemctl status mysql
● mariadb.service - MariaDB 10.5.12 database server
  Loaded: loaded (/lib/systemd/system/mariadb.service; disabled; vendor preset: disabled)
  Active: inactive (dead)
    Docs: man:mariadb(8)
          https://mariadb.com/kb/en/library/systemd/
```

```
└$ sudo apt install mariadb-server mariadb-client
Reading package lists ... Done
Building dependency tree
Reading state information ... Done
The following package was automatically installed and is no longer required
:
  libreadline5
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  default-mysql-server galera-4 mariadb-client-10.5
  mariadb-client-core-10.5 mariadb-common mariadb-server-10.5
  mariadb-server-core-10.5
Suggested packages:
  mailx mariadb-test netcat-openbsd
The following packages will be REMOVED:
  galera-3 mariadb-client-10.3 mariadb-client-core-10.3
  mariadb-server-10.3 mariadb-server-core-10.3
The following NEW packages will be installed:
  galera-4 mariadb-client mariadb-client-10.5 mariadb-client-core-10.5
  mariadb-server mariadb-server-10.5 mariadb-server-core-10.5
The following packages will be upgraded:
  default-mysql-server mariadb-common
```

Q. Explain the steps for the installation of ansible with your own screenshots.

Install ansible sudo apt install ansible ansible --version

```
root@LAPTOP-4D3BA01Q:~# sudo apt install ansible
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  cowsay sshpass
The following NEW packages will be installed:
  ansible
0 upgraded, 1 newly installed, 0 to remove and 55 not upgraded.
Need to get 5794 kB of archives.
After this operation, 58.0 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/universe amd64 ansible all 2.9.6+dfsg-1 [5794 kB]
Fetched 5794 kB in 14s (404 kB/s)
Selecting previously unselected package ansible.
(Reading database ... 36333 files and directories currently installed.)
Preparing to unpack .../ansible_2.9.6+dfsg-1_all.deb ...
Unpacking ansible (2.9.6+dfsg-1) ...
Setting up ansible (2.9.6+dfsg-1) ...
Processing triggers for man-db (2.9.1-1) ...
```

```
root@LAPTOP-4D3BA01Q:~# ansible --version
ansible 2.9.6
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /use/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.8.10 (default, Jun  2 2021, 10:49:15) [GCC 9.4.0]
root@LAPTOP-4D3BA01Q:~#
```

Q. Execute tcpdump and its options on your own system, and submit the output screenshot as a document.

Install tcpdump sudo apt update && sudo apt

install tcpdump

```
root@LAPTOP-4DJB01Q:~# sudo apt update && sudo apt install tcpdump
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1256 kB]
Fetched 1584 kB in 7s (217 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
55 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree
Reading state information... Done
tcpdump is already the newest version (4.9.3-4).
0 upgraded, 0 newly installed, 0 to remove and 55 not upgraded.
```

Execute tcpdump

```
root@LAPTOP-4DJB01Q:~# sudo tcpdump
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type ENETTYPE (Ethernet), capture size 262144 bytes
14:58:22.492373 IP LAPTOP-4DJB01Q.wlhome.net.51334 > 239.255.255.250.1988: UDP, length 173
14:58:22.497244 IP 172.39.139.16.59879 > LAPTOP-4DJB01Q.wlhome.net.domain: 43809+ PTR? 239.255.255.250.in-addr.arpa. (46)
14:58:22.500451 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:22.501129 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:22.741922 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:22.742783 IP6 LAPTOP-4DJB01Q.adns > FF02::cb.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:23.489645 IP LAPTOP-4DJB01Q.wlhome.net.51334 > 239.255.255.250.1988: UDP, length 173
14:58:23.490983 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:23.490990 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:23.741726 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:23.748662 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (52)
14:58:23.989479 IP LAPTOP-4DJB01Q.wlhome.net.domain > 172.19.139.16.59879: 43809#0x0main 0/1/0 (183)
14:58:23.989784 IP 172.39.139.16.49053 > LAPTOP-4DJB01Q.wlhome.net.domain: 17822+ PTR? 1.128.19.172.in-addr.arpa. (43)
14:58:23.970755 IP LAPTOP-4DJB01Q.wlhome.net.domain > 172.19.139.16.46953: 17822- 1/0/0 PTR LAPTOP-4DJB01Q.wlhome.net. (109)
14:58:23.973016 IP 172.39.139.16.44463 > LAPTOP-4DJB01Q.wlhome.net.domain: 16045+ PTR? 16.139.19.172.in-addr.arpa. (44)
14:58:23.973871 IP LAPTOP-4DJB01Q.wlhome.net.domain > 172.19.139.16.59879: 43809#0x0main 0/1/0 (183)
14:58:23.973892 IP 172.19.139.16 > LAPTOP-4DJB01Q.wlhome.net: ICMP 172.19.139.16 udp port 59879 unreachable, length 139
14:58:23.973865 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (50)
14:58:23.973161 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (58)
14:58:24.497182 IP LAPTOP-4DJB01Q.wlhome.net.51334 > 239.255.255.250.1988: UDP, length 173
14:58:24.788788 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 239.255.255.250.in-addr.arpa.local. (50)
14:58:24.709731 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (50)
14:58:24.960995 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (50)
14:58:24.967398 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (50)
14:58:25.498645 IP LAPTOP-4DJB01Q.wlhome.net.51334 > 239.255.255.250.1988: UDP, length 173
14:58:25.795079 IP LAPTOP-4DJB01Q.wlhome.net.adns > 224.0.0.251.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (50)
14:58:25.795710 IP6 LAPTOP-4DJB01Q.adns > FF02::fb.adns: 0 PTR (0) 16.139.19.172.in-addr.arpa.local. (50)
14:58:26.224638 IP LAPTOP-4DJB01Q.wlhome.net.domain > 172.19.139.16.44462: 16045#0x0main 0/1/0 (121)
```

```
tcpdump -D
```

```
root@LAPTOP-4DJBA01Q:~# tcpdump -D
1.eth0 [Up, Running]
2.lo [Up, Running, Loopback]
3.any (Pseudo-device that captures on all interfaces) [Up, Running]
4.bluetooth-monitor (Bluetooth Linux Monitor) [none]
5.nflog (Linux netfilter log (NFLOG) interface) [none]
6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
7(dummy0 [none]
8.tunl0 [none]
9.sit0 [none]
10.bond0 [none]
root@LAPTOP-4DJBA01Q:~#
```

```
root@LAPTOP-4DJBA01Q:~# tcpdump -i enp2s0
tcpdump: enp2s0: No such device exists
(SIOCGIFHWADDR: No such device)
```

```
tcpdump -c 5
```

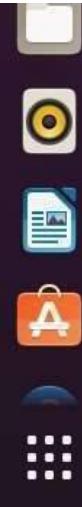
```
root@LAPTOP-4DJBA01Q:~# tcpdump -c 5
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
14:55:20.499848 IP LAPTOP-4DJBA01Q.mshome.net.64256 > 239.255.255.290.1900: UDP, length 173
14:55:20.500511 IP 172.19.139.16.60079 > LAPTOP-4DJBA01Q.mshome.net.domain: 4675+ PTR? 250.255.255.239.in-addr.arpa. (46)
14:55:20.503343 IP LAPTOP-4DJBA01Q.mshome.net.mdns > 224.0.0.251.mdns: 0 PTR (Q)? 250.255.255.239.in-addr.arpa.local. (52)
14:55:20.504224 IP6 LAPTOP-4DJBA01Q.mshome.net.mdns > fff0::fb.mdns: 0 PTR (Q)? 250.255.255.239.in-addr.arpa.local. (52)
14:55:20.727772 IP LAPTOP-4DJBA01Q.mshome.net.mdns > 224.0.0.251.mdns: 0 PTR (Q)? 250.255.255.239.in-addr.arpa.local. (52)
5 packets captured
74 packets received by filter
29 packets dropped by kernel
```

1. vi

```
user@user-VirtualBox:~/Desktop$ vi sonu.sh
user@user-VirtualBox:~/Desktop$ cat vi sonu.sh
cat: vi: No such file or directory

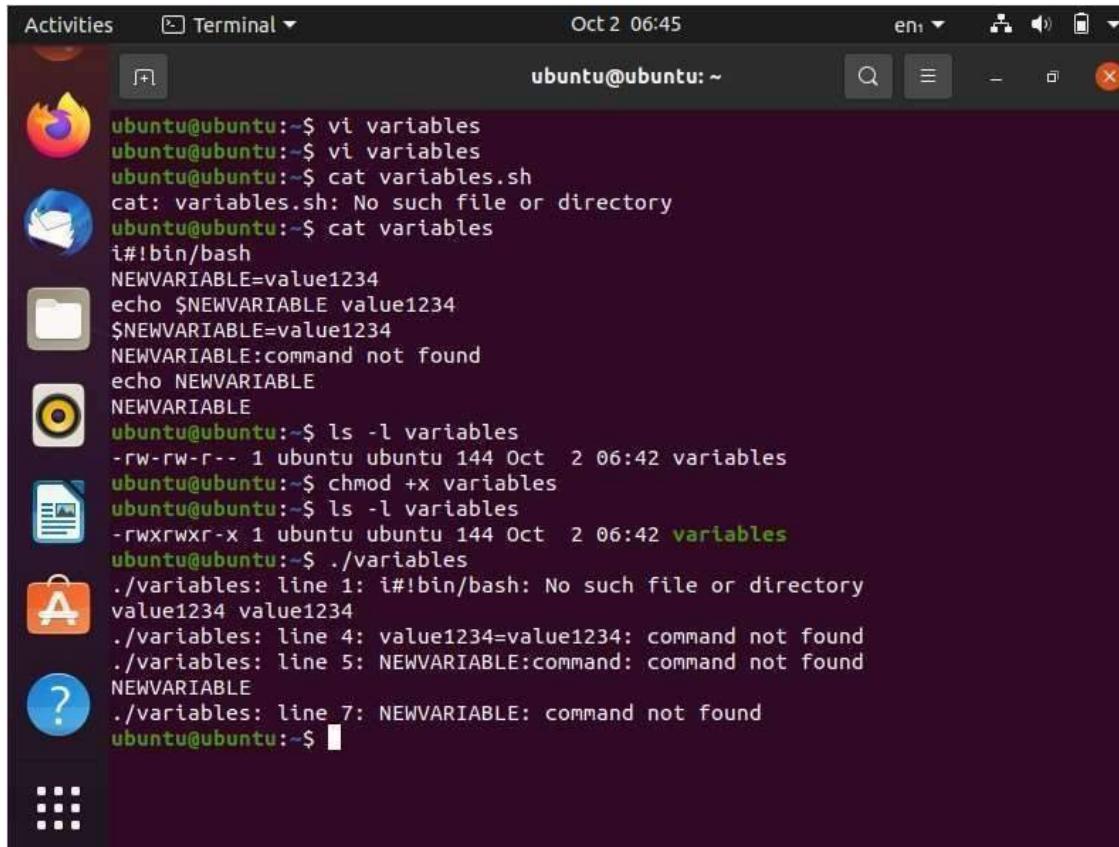
echo enter your name
read sonu
echo enter your college name
read amal jyothi college
echo name:$name
echo college:$amal jyothi college

user@user-VirtualBox:~/Desktop$ ls -l sonu.sh
-rw-r-- 1 user user 137 Oct  2 23:00 sonu.sh
user@user-VirtualBox:~/Desktop$ chmod +x sonu.sh
user@user-VirtualBox:~/Desktop$ ls -l sonu.sh
-rwxrwxr-x 1 user user 137 Oct  2 23:00 sonu.sh
user@user-VirtualBox:~/Desktop$ ./sonu.sh
enter your name
sonu
enter your college name
amal jyothi college
name:
college:amal jyothi college
user@user-VirtualBox:~/Desktop$
```

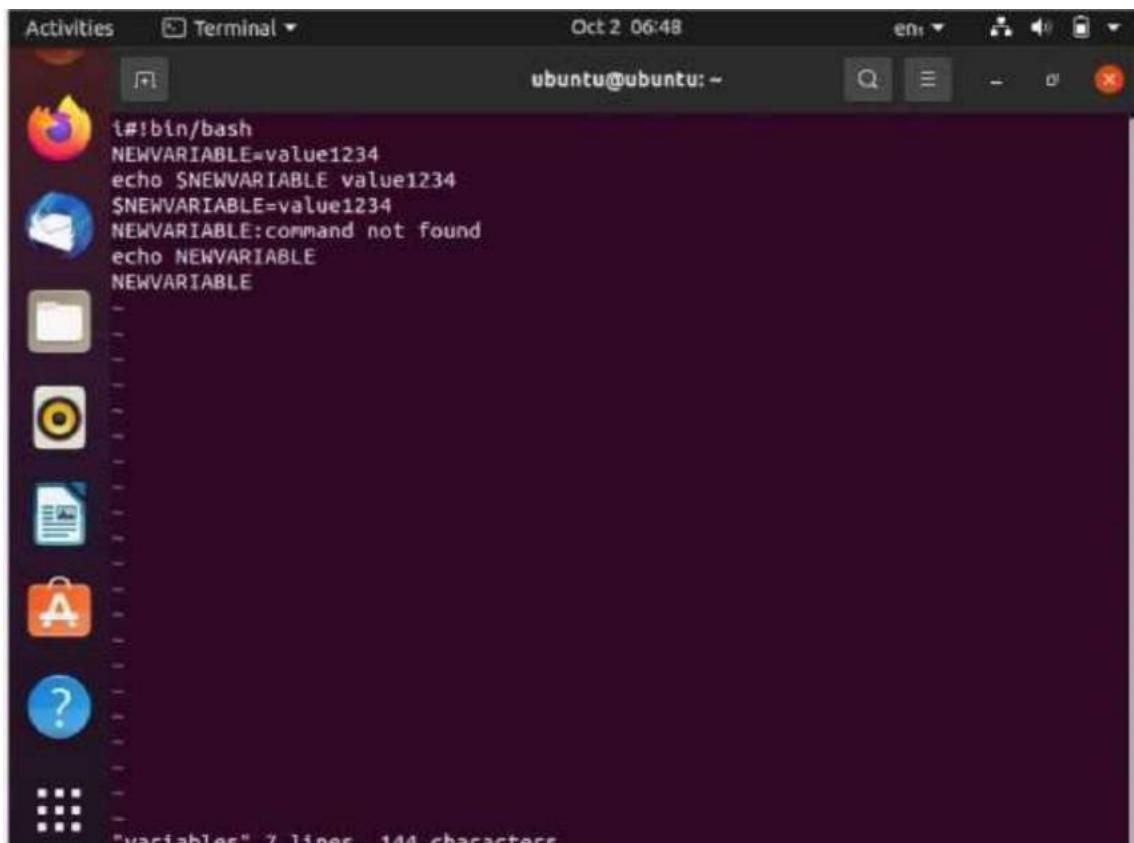
A vertical stack of five small icons representing different applications or files, typical of a Linux desktop environment.

```
ubuntu@ubuntu:~$ ./profile.sh
./profile.sh: line 1: i#!/bin/bash: No such file or directory
Enter your name
sruthy
Enter college name
Amal Jyothi College
Name:
college:Amal Jyothi College
ubuntu@ubuntu:~$ vi profile.sh
ubuntu@ubuntu:~$ ./profile.sh
./profile.sh: line 1: i#!/bin/bash: No such file or directory
Enter your name
Sruthy
Enter college name
Amal Jyothi College
Name:
college:Amal Jyothi College
ubuntu@ubuntu:~$ vi profile.sh
ubuntu@ubuntu:~$
```

2. Write a shell script to set a value for a variable and display it on command line interface.

A screenshot of an Ubuntu desktop environment. In the top left, there's a dock with icons for the Dash, Home, and other applications like a browser and file manager. The main area shows a terminal window titled "Terminal". The terminal output is as follows:

```
Activities Terminal Oct 2 06:45 en: ~
ubuntu@ubuntu:~$ vi variables
ubuntu@ubuntu:~$ vi variables
ubuntu@ubuntu:~$ cat variables.sh
cat: variables.sh: No such file or directory
ubuntu@ubuntu:~$ cat variables
#!/bin/bash
NEWVARIABLE=value1234
echo $NEWWVARIABLE value1234
$NEWWVARIABLE=value1234
NEWWVARIABLE:command not found
echo NEWVARIABLE
NEWWVARIABLE
NEWWVARIABLE
ubuntu@ubuntu:~$ ls -l variables
-rw-rw-r-- 1 ubuntu ubuntu 144 Oct  2 06:42 variables
ubuntu@ubuntu:~$ chmod +x variables
ubuntu@ubuntu:~$ ls -l variables
-rwxrwxr-x 1 ubuntu ubuntu 144 Oct  2 06:42 variables
ubuntu@ubuntu:~$ ./variables
./variables: line 1: #!/bin/bash: No such file or directory
value1234 value1234
./variables: line 4: value1234=value1234: command not found
./variables: line 5: NEWVARIABLE:command: command not found
NEWWVARIABLE
./variables: line 7: NEWVARIABLE: command not found
ubuntu@ubuntu:~$
```

A screenshot of a Ubuntu desktop environment. On the left, there's a vertical dock with icons for the Dash, Home, Applications, and Help. The main area shows a terminal window titled 'Terminal' with the command 'ls' running. The terminal output is:

```
i# bin/bash  
NEWVARIABLE=value1234  
echo SNEWVARIABLE value1234  
SNEWVARIABLE=value1234  
NEWWVARIABLE: command not found  
echo NEWVARIABLE  
NEWWVARIABLE
```

"variables" 7 lines, 144 characters

- 3. Write a shell script to perform addition, substration, multiplication, division with two numbers that is accepted from user.**

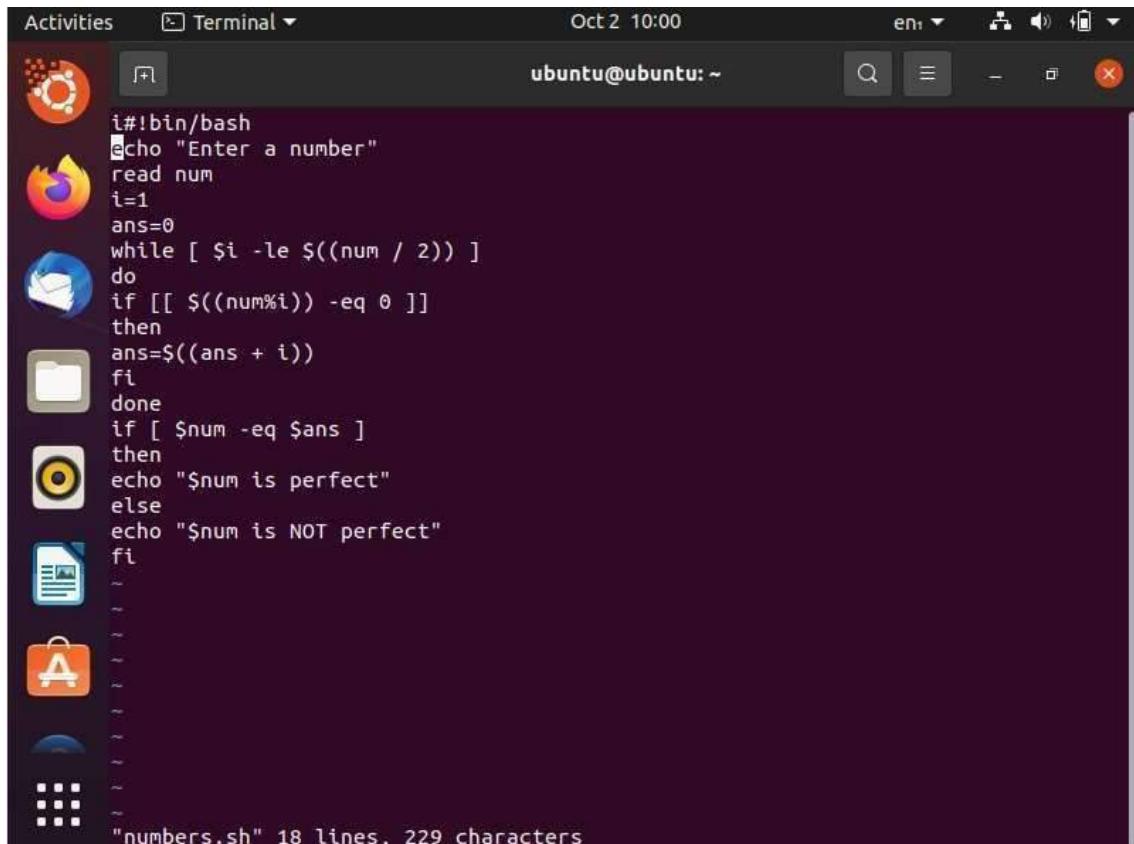
Activities Terminal Oct 2 09:26 en1

```
i#!bin/bash  
a=100  
b=20  
add=$((a + b))  
echo $add  
sub=$((a - b))  
echo $sub  
mul=$((a * b))  
echo $mul  
div=$((a / b))  
echo $div  
~  
~  
~  
~  
~  
~  
~  
~  
operations.sh 16 lines, 129 characters
```

Activities Terminal Oct 2 09:26 en1

```
ubuntu@ubuntu:~$ cat operations.sh  
i#!bin/bash  
a=100  
b=20  
add=$((a + b))  
echo $add  
sub=$((a - b))  
echo $sub  
mul=$((a * b))  
echo $mul  
div=$((a / b))  
echo $div  
ubuntu@ubuntu:~$ ls -l operations.sh  
-rw-rw-r-- 1 ubuntu ubuntu 129 Oct 2 09:24 operations.sh  
ubuntu@ubuntu:~$ chmod +x operations.sh  
ubuntu@ubuntu:~$ ls -l operations.sh  
-rwxrwxr-x 1 ubuntu ubuntu 129 Oct 2 09:24 operations.sh  
ubuntu@ubuntu:~$ ./operations.sh  
. ./operations.sh: line 1: i#!bin/bash: No such file or directory  
120  
80  
2000  
5  
ubuntu@ubuntu:~$
```

4. Write a shell script to check the value of a given number and display whether the number is found or not.



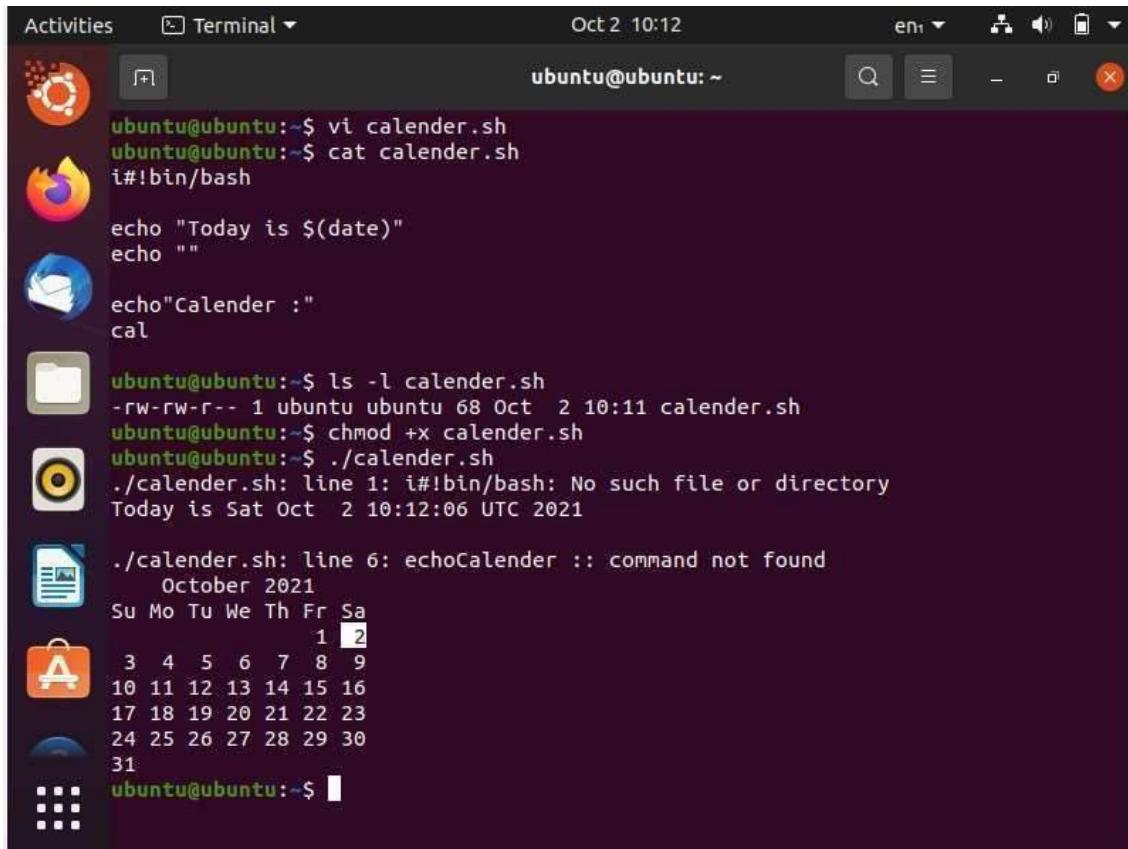
The image shows a screenshot of a terminal window on an Ubuntu desktop environment. The terminal title bar reads "Activities Terminal" and the status bar shows "Oct 2 10:00" and "en1". The terminal window contains a shell script named "numbers.sh" which checks if a given number is perfect. The script uses a loop to sum the divisors of the input number and compares it to the original number. The terminal shows the script's code and its execution results.

```
i#!bin/bash
echo "Enter a number"
read num
i=1
ans=0
while [ $i -le $((num / 2)) ]
do
if [[ $((num%i)) -eq 0 ]]
then
ans=$((ans + i))
fi
done
if [ $num -eq $ans ]
then
echo "$num is perfect"
else
echo "$num is NOT perfect"
fi
~
~
~
~
~
~
~
~
numbers.sh 18 lines, 229 characters
```

Activities Terminal Oct 2 10:05 en1

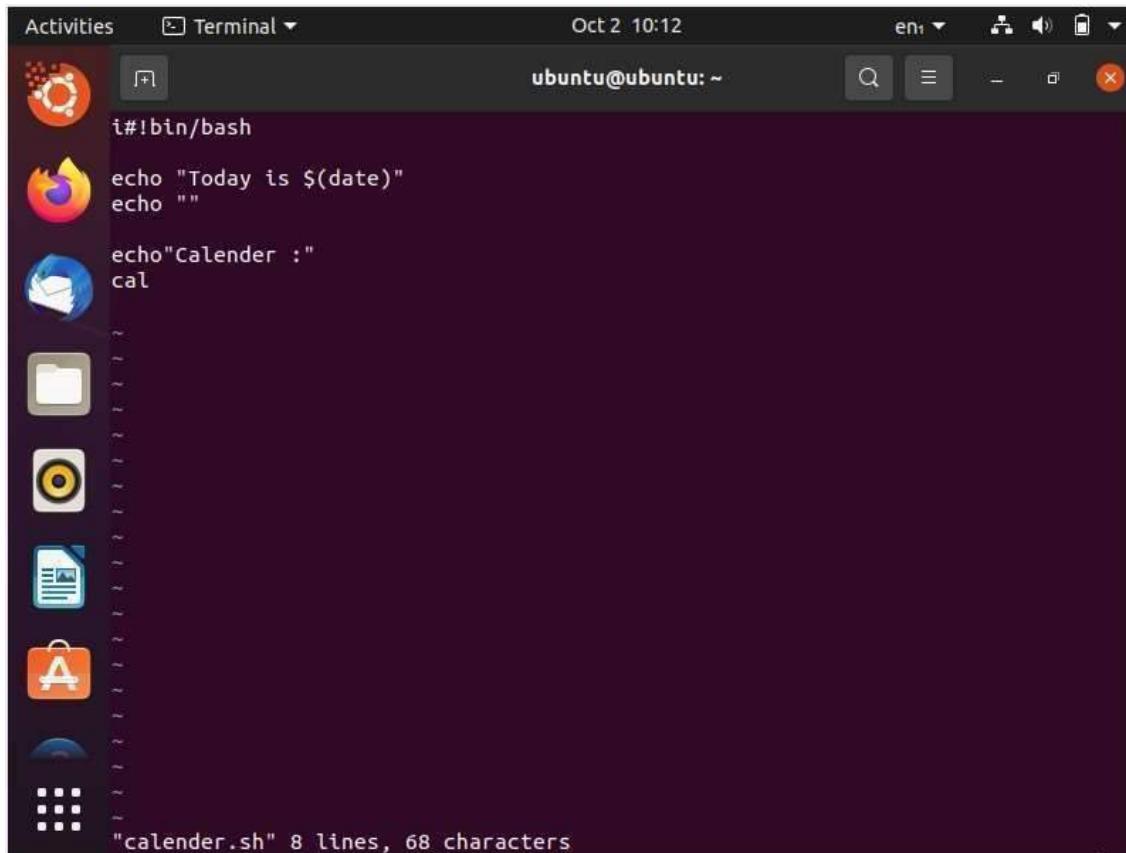
```
echo "Enter a number"
read no
i=1
ans=0
while [ $i -le $(($no / 2)) ]
do
if [ $(($no%i)) -eq 0 ]
then ans=$(($ans + i))
fi
i=$((i + 1))
done
if [ $no -eq $ans ]
then
echo "$no is perfect"
else
echo "no is not perfect"
fi
ubuntu@ubuntu:~$ ls -l number.sh
-rwxrwxr-x 1 ubuntu ubuntu 233 Oct  2 09:42 number.sh
ubuntu@ubuntu:~$ chmod +x number.sh
ubuntu@ubuntu:~$ ls -l number.sh
-rwxrwxr-x 1 ubuntu ubuntu 233 Oct  2 09:42 number.sh
ubuntu@ubuntu:~$ ./number.sh
./number.sh: line 1: i#!/bin/bash: No such file or directory
Enter a number
7
./number.sh: line 6: [: missing `]'
no is not perfect
ubuntu@ubuntu:~$
```

5. Write a shell script to display current date, calendar.



The screenshot shows a terminal window on an Ubuntu desktop. The terminal title is "Terminal". The system status bar at the top right shows "Oct 2 10:12" and "en1". The terminal content is as follows:

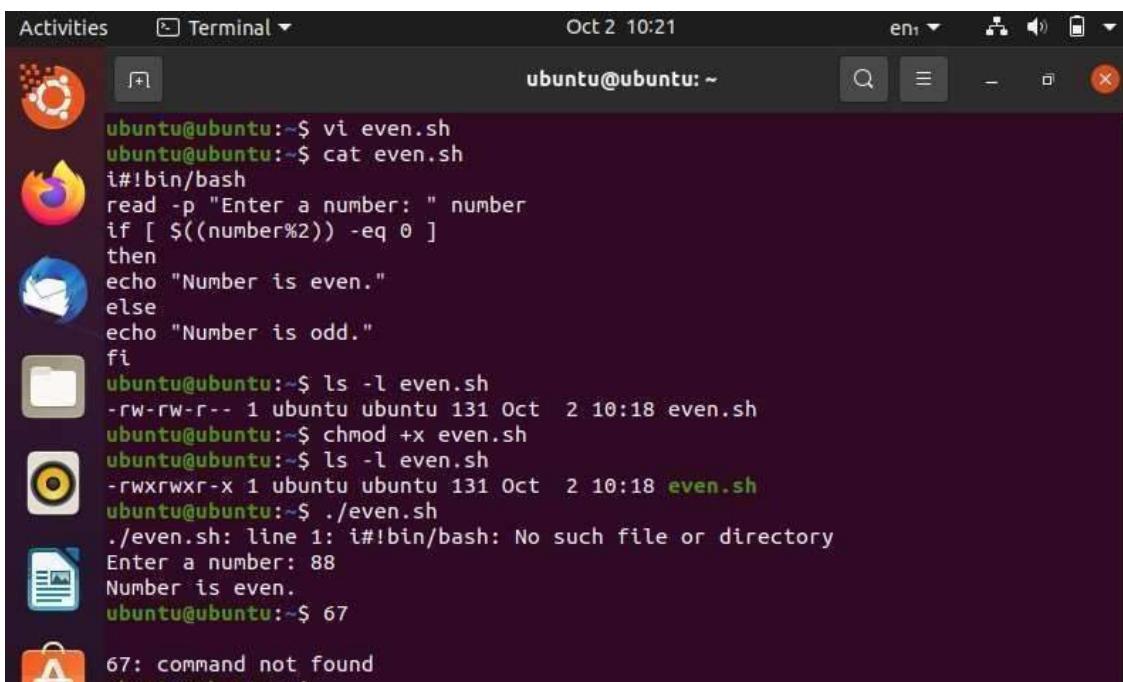
```
Activities Terminal Oct 2 10:12 en1
ubuntu@ubuntu:~$ vi calender.sh
ubuntu@ubuntu:~$ cat calender.sh
#!/bin/bash
echo "Today is $(date)"
echo ""
echo "Calender :"
cal
ubuntu@ubuntu:~$ ls -l calender.sh
-rw-rw-r-- 1 ubuntu ubuntu 68 Oct  2 10:11 calender.sh
ubuntu@ubuntu:~$ chmod +x calender.sh
ubuntu@ubuntu:~$ ./calender.sh
./calender.sh: line 1: i#!bin/bash: No such file or directory
Today is Sat Oct  2 10:12:06 UTC 2021
./calender.sh: line 6: echoCalender :: command not found
          October 2021
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
ubuntu@ubuntu:~$
```



A screenshot of an Ubuntu desktop environment. A terminal window is open in the foreground, showing the following command and output:

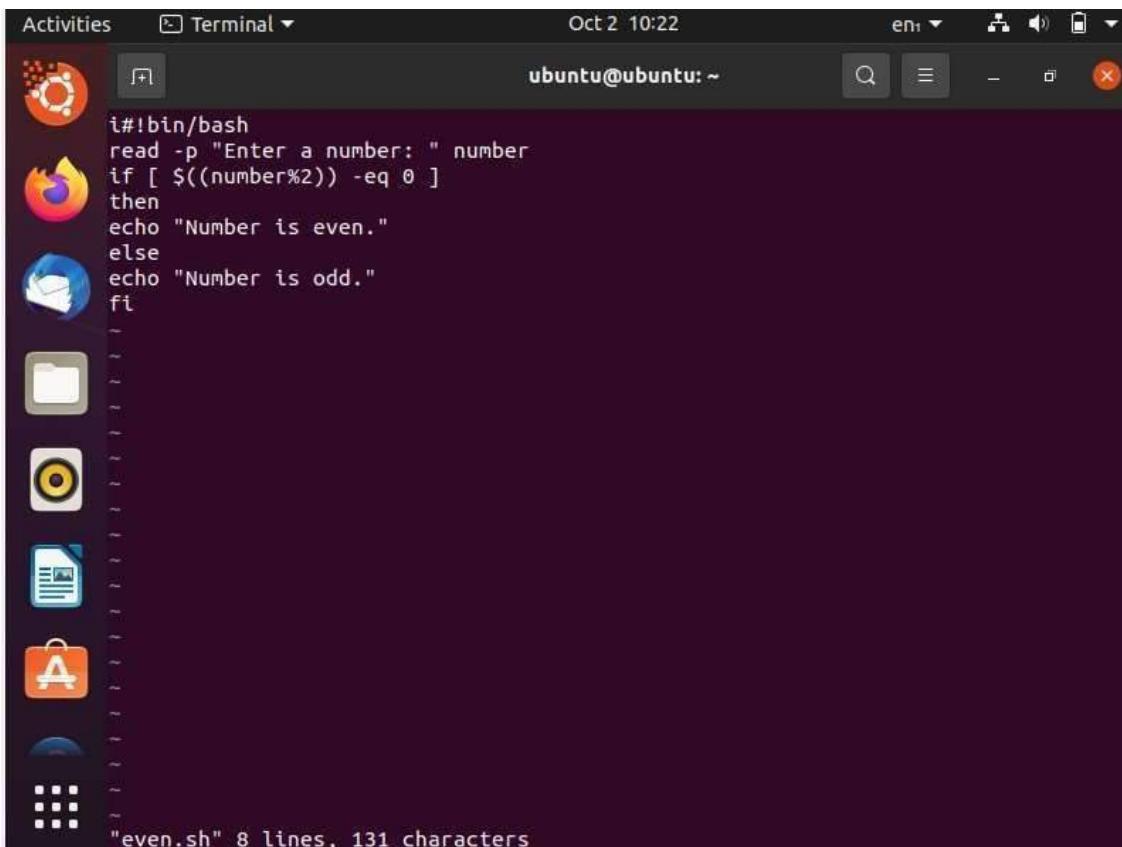
```
i#!bin/bash
echo "Today is $(date)"
echo ""
echo"Calender :"
cal
"calender.sh" 8 lines, 68 characters
```

6. Write a shell script to check a number is even or odd.

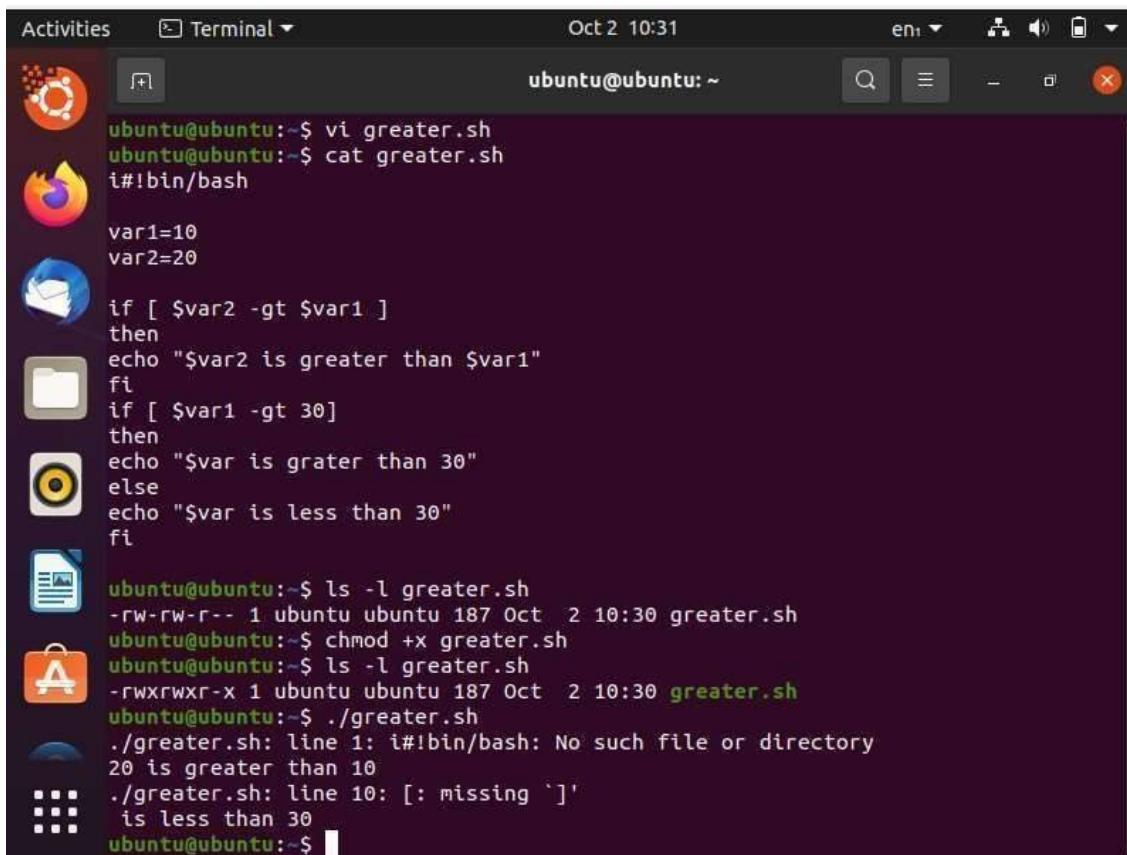


A screenshot of an Ubuntu desktop environment. A terminal window is open in the foreground, showing the creation and execution of a shell script named 'even.sh'.

```
ubuntu@ubuntu:~$ vi even.sh
ubuntu@ubuntu:~$ cat even.sh
i#!bin/bash
read -p "Enter a number: " number
if [ $((number%2)) -eq 0 ]
then
echo "Number is even."
else
echo "Number is odd."
fi
ubuntu@ubuntu:~$ ls -l even.sh
-rw-rw-r-- 1 ubuntu ubuntu 131 Oct  2 10:18 even.sh
ubuntu@ubuntu:~$ chmod +x even.sh
ubuntu@ubuntu:~$ ls -l even.sh
-rwxrwxr-x 1 ubuntu ubuntu 131 Oct  2 10:18 even.sh
ubuntu@ubuntu:~$ ./even.sh
./even.sh: line 1: i#!bin/bash: No such file or directory
Enter a number: 88
Number is even.
ubuntu@ubuntu:~$ 67: command not found
```



7. Write a shell script to check a number is greater than, less than or equal to another number.

A screenshot of an Ubuntu desktop environment. In the top left, there's a dock with icons for Dash, Home, Activities, and Terminal. The terminal window is open and titled 'Terminal'. The window shows the following command-line session:

```
Activities Terminal Oct 2 10:31 en1
ubuntu@ubuntu:~$ vi greater.sh
ubuntu@ubuntu:~$ cat greater.sh
#!/bin/bash

var1=10
var2=20

if [ $var2 -gt $var1 ]
then
echo "$var2 is greater than $var1"
fi
if [ $var1 -gt 30]
then
echo "$var is grater than 30"
else
echo "$var is less than 30"
fi

ubuntu@ubuntu:~$ ls -l greater.sh
-rw-rw-r-- 1 ubuntu ubuntu 187 Oct  2 10:30 greater.sh
ubuntu@ubuntu:~$ chmod +x greater.sh
ubuntu@ubuntu:~$ ls -l greater.sh
-rwxrwxr-x 1 ubuntu ubuntu 187 Oct  2 10:30 greater.sh
ubuntu@ubuntu:~$ ./greater.sh
./greater.sh: line 1: i#!bin/bash: No such file or directory
20 is greater than 10
./greater.sh: line 10: [: missing ']'
is less than 30
ubuntu@ubuntu:~$
```

The terminal window has a dark background with light-colored text. Icons for various applications like Dash, Home, Activities, and Terminal are visible on the left side of the screen.

8. Write a shell script to find sum of first 10 numbers.

Activities Terminal Oct 2 10:42 en1

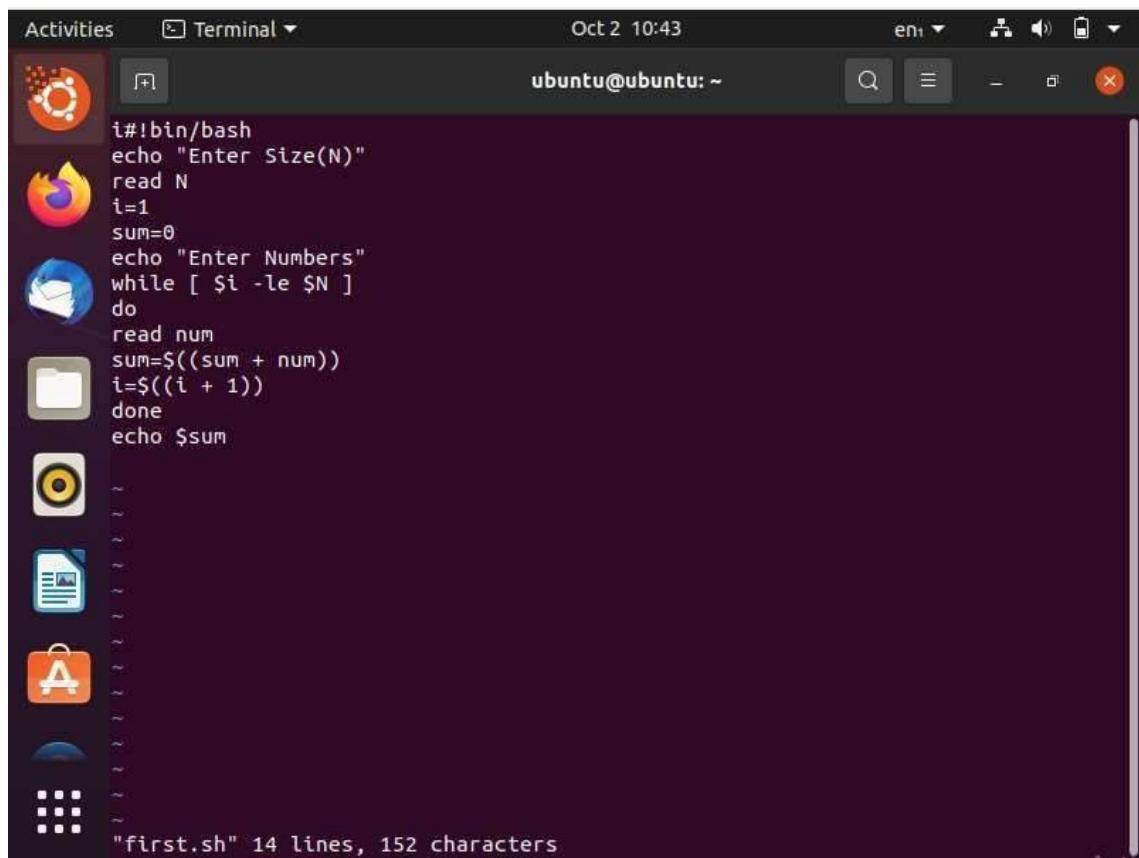
```
ubuntu@ubuntu:~$ vi first.sh
ubuntu@ubuntu:~$ cat first.sh
#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
    read num
    sum=$((sum + num))
    i=$((i + 1))
done
echo $sum

ubuntu@ubuntu:~$ ls -l first.sh
-rw-rw-r-- 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ chmod +x first.sh
ubuntu@ubuntu:~$ ls -l first.sh
-rwxrwxr-x 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ ./first.sh
./first.sh: line 1: i#!/bin/bash: No such file or directory
Enter Size(N)
10
Enter Numbers
1
2
3
```

Activities Terminal Oct 2 10:42 en1

```
ubuntu@ubuntu:~$ 
do
read num
sum=$((sum + num))
i=$((i + 1))
done
echo $sum

ubuntu@ubuntu:~$ ls -l first.sh
-rw-rw-r-- 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ chmod +x first.sh
ubuntu@ubuntu:~$ ls -l first.sh
-rwxrwxr-x 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ ./first.sh
./first.sh: line 1: i#!/bin/bash: No such file or directory
Enter Size(N)
10
Enter Numbers
1
2
3
4
5
6
7
8
9
10
55
```



A screenshot of an Ubuntu desktop environment. In the top left, there's an 'Activities' button and a 'Terminal' button. The top right shows the date 'Oct 2 10:43' and a language indicator 'en1'. The main window is a terminal titled 'ubuntu@ubuntu: ~'. It contains the following shell script:

```
i#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
read num
sum=$((sum + num))
i=$((i + 1))
done
echo $sum
```

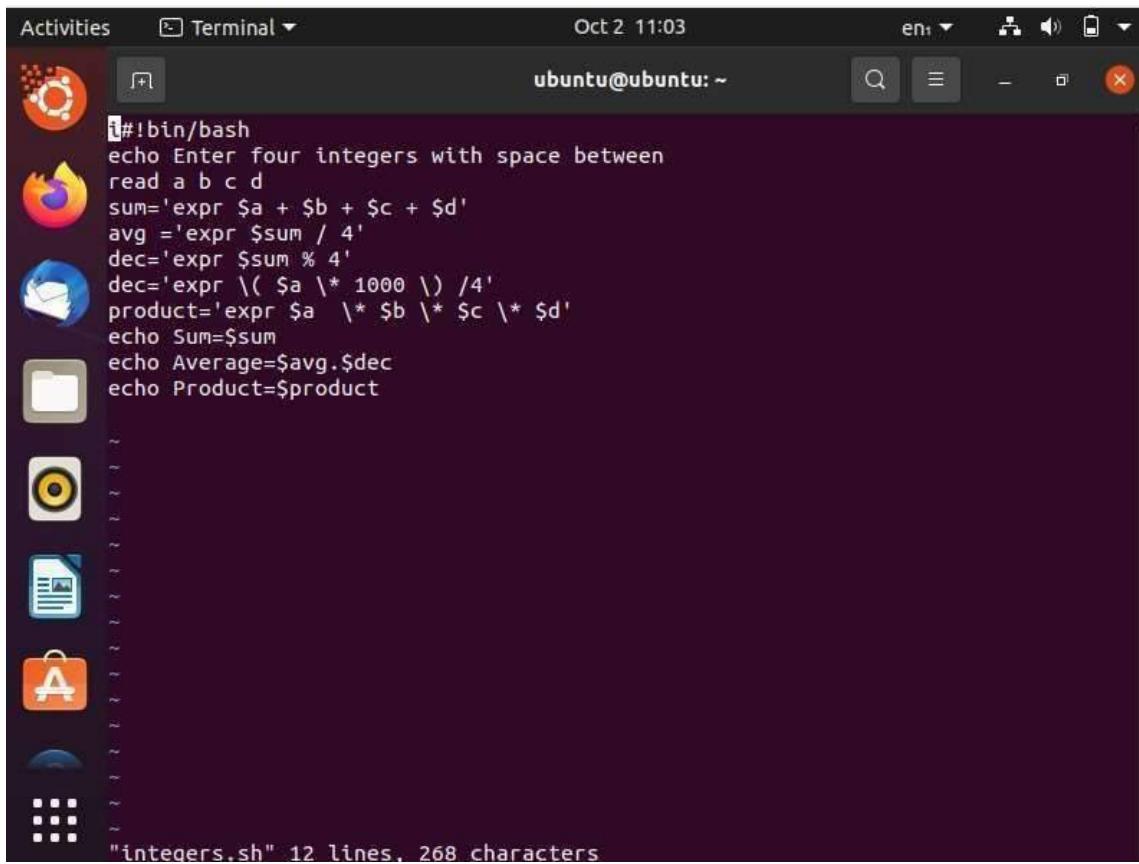
The terminal also shows several blank files (~) and the status message: "first.sh" 14 lines, 152 characters.

9. Write a shell script to find the sum, average and the product of the four integers entered.

Activities Terminal Oct 2 11:02 en+   ubuntu@ubuntu: ~

```
ubuntu@ubuntu:~$ vi integers.sh
ubuntu@ubuntu:~$ cat integers.sh
#!/bin/bash
echo Enter four integers with space between
read a b c d
sum='expr $a + $b + $c + $d'
avg ='expr $sum / 4'
dec='expr $sum % 4'
dec='expr $a \(* 1000 \) /4'
product='expr $a \(* $b \(* $c \(* $d'
echo Sum=$sum
echo Average=$avg.$dec
echo Product=$product

ubuntu@ubuntu:~$ ls -l integers.sh
-rw-rw-r-- 1 ubuntu ubuntu 268 Oct  2 10:59 integers.sh
ubuntu@ubuntu:~$ chmod +x integers.sh
ubuntu@ubuntu:~$ ls -l integers.sh
-rwxrwxr-x 1 ubuntu ubuntu 268 Oct  2 10:59 integers.sh
ubuntu@ubuntu:~$ ./integers.sh
./integers.sh: line 1: i#!bin/bash: No such file or directory
Enter four integers with space between
3
./integers.sh: line 5: avg: command not found
Sum=expr $a + $b + $c + $d
Average=.expr \(* $a \(* 1000 \) /4
Product=expr $a \(* $b \(* $c \(* $d
ubuntu@ubuntu:~$
```

A screenshot of a Ubuntu desktop environment. On the left, there's a vertical dock with icons for Dash, Terminal, Home, Applications, and Settings. The main area shows a terminal window titled "Terminal". The terminal window has a dark background and contains the following text:

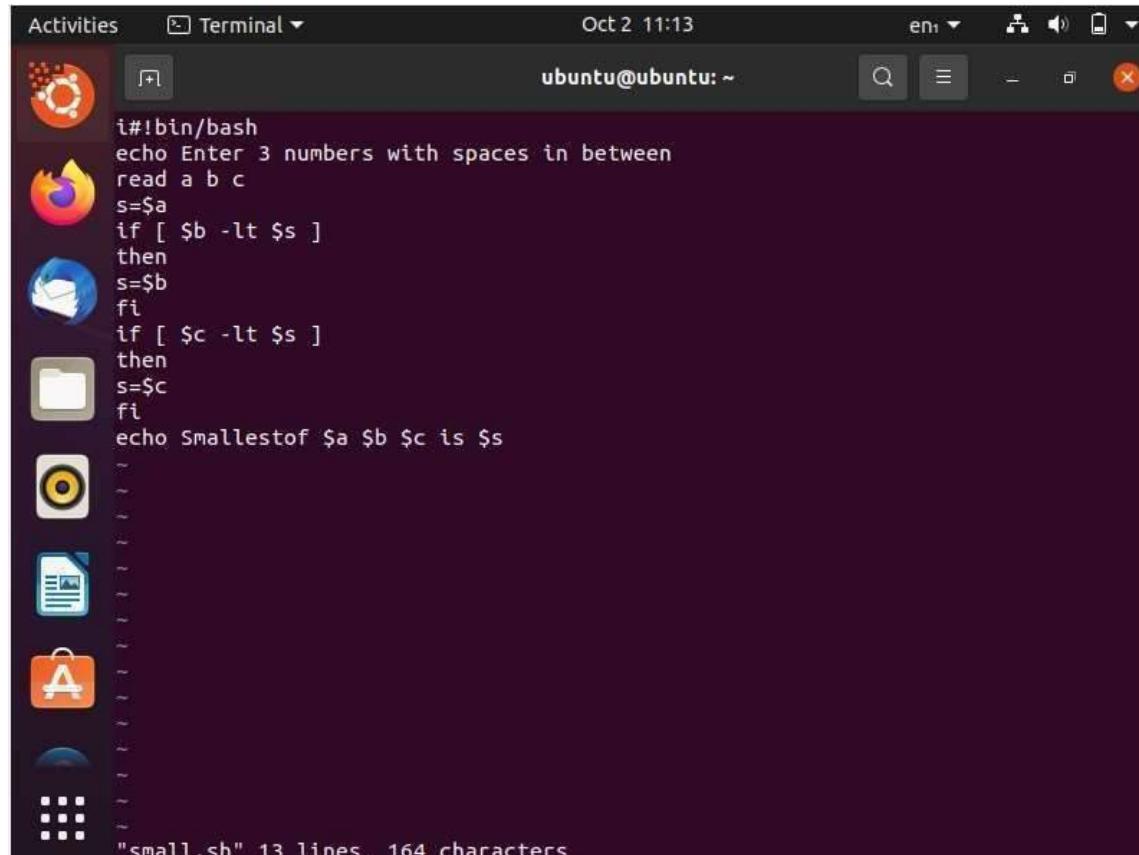
```
i#!bin/bash
echo Enter four integers with space between
read a b c d
sum='expr $a + $b + $c + $d'
avg ='expr $sum / 4'
dec='expr $sum % 4'
dec='expr \( $a \* 1000 \) /4'
product='expr $a \* $b \* $c \* $d'
echo Sum=$sum
echo Average=$avg.$dec
echo Product=$product
```

The terminal window also displays the status bar with "Oct 2 11:03", "en1", and battery information.

10. Write a shell program to find the smallest of three numbers.

Activities Terminal Oct 2 11:12 en1

```
ubuntu@ubuntu:~$ vi small.sh
ubuntu@ubuntu:~$ cat small.sh
#!/bin/bash
echo Enter 3 numbers with spaces in between
read a b c
s=$a
if [ $b -lt $s ]
then
s=$b
fi
if [ $c -lt $s ]
then
s=$c
fi
echo Smallestof $a $b $c is $s
ubuntu@ubuntu:~$ ls -l small.sh
-rw-rw-r-- 1 ubuntu ubuntu 164 Oct  2 11:10 small.sh
ubuntu@ubuntu:~$ chmod +x small.sh
ubuntu@ubuntu:~$ ls -l small.sh
-rwxrwxr-x 1 ubuntu ubuntu 164 Oct  2 11:10 small.sh
ubuntu@ubuntu:~$ ./small.sh
./small.sh: line 1: i#!bin/bash: No such file or directory
Enter 3 numbers with spaces in between
3
./small.sh: line 5: [: -lt: unary operator expected
./small.sh: line 9: [: -lt: unary operator expected
Smallestof 3 is 3
ubuntu@ubuntu:~$ ./small.sh
./small.sh: line 1: i#!bin/bash: No such file or directory
```



A screenshot of an Ubuntu desktop environment. In the top left corner, there's a dock with icons for the Dash, Terminal, Home, and other applications. The main window is a terminal window titled "Terminal". The terminal shows a shell script named "small.sh" with 13 lines and 164 characters. The script reads three numbers from the user and prints the smallest one.

```
i#!bin/bash
echo Enter 3 numbers with spaces in between
read a b c
s=$a
if [ $b -lt $s ]
then
s=$b
fi
if [ $c -lt $s ]
then
s=$c
fi
echo Smallest of $a $b $c is $s
```

"small.sh" 13 lines, 164 characters

11. Write a shell program to find factorial of given number.

Activities Terminal Oct 2 11:18 en1

```
ubuntu@ubuntu:~$ vi fact.sh
ubuntu@ubuntu:~$ cat fact.sh
#!/bin/bash
echo "Enter a number"
read num
fact=1
while [ $num -gt 1 ]
do
fact=$((fact * num))
num=$((num -1))
done
echo $fact

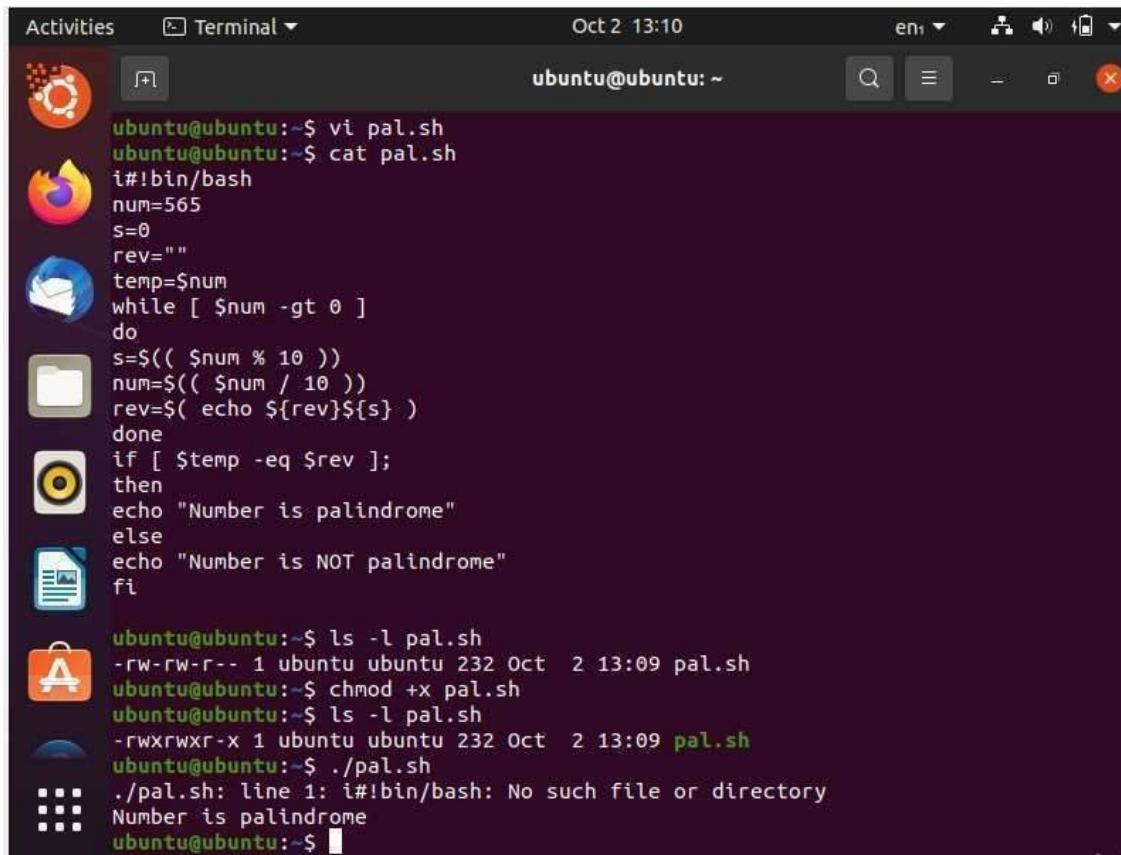
ubuntu@ubuntu:~$ ls -l fact.sh
-rw-rw-r-- 1 ubuntu ubuntu 128 Oct  2 11:17 fact.sh
ubuntu@ubuntu:~$ chmod +x fact.sh
ubuntu@ubuntu:~$ ls -l fact.sh
-rwxrwxr-x 1 ubuntu ubuntu 128 Oct  2 11:17 fact.sh
ubuntu@ubuntu:~$ ./fact.sh
./fact.sh: line 1: i#!bin/bash: No such file or directory
Enter a number
6
720
ubuntu@ubuntu:~$
```

Activities Terminal Oct 2 11:19 en1

```
i#!bin/bash
echo "Enter a number"
read num
fact=1
while [ $num -gt 1 ]
do
fact=$((fact * num))
num=$((num -1))
done
echo $fact

~
~
~
~
~
~
~
~
~
~
~
fact.sh" 11 lines, 128 characters
```

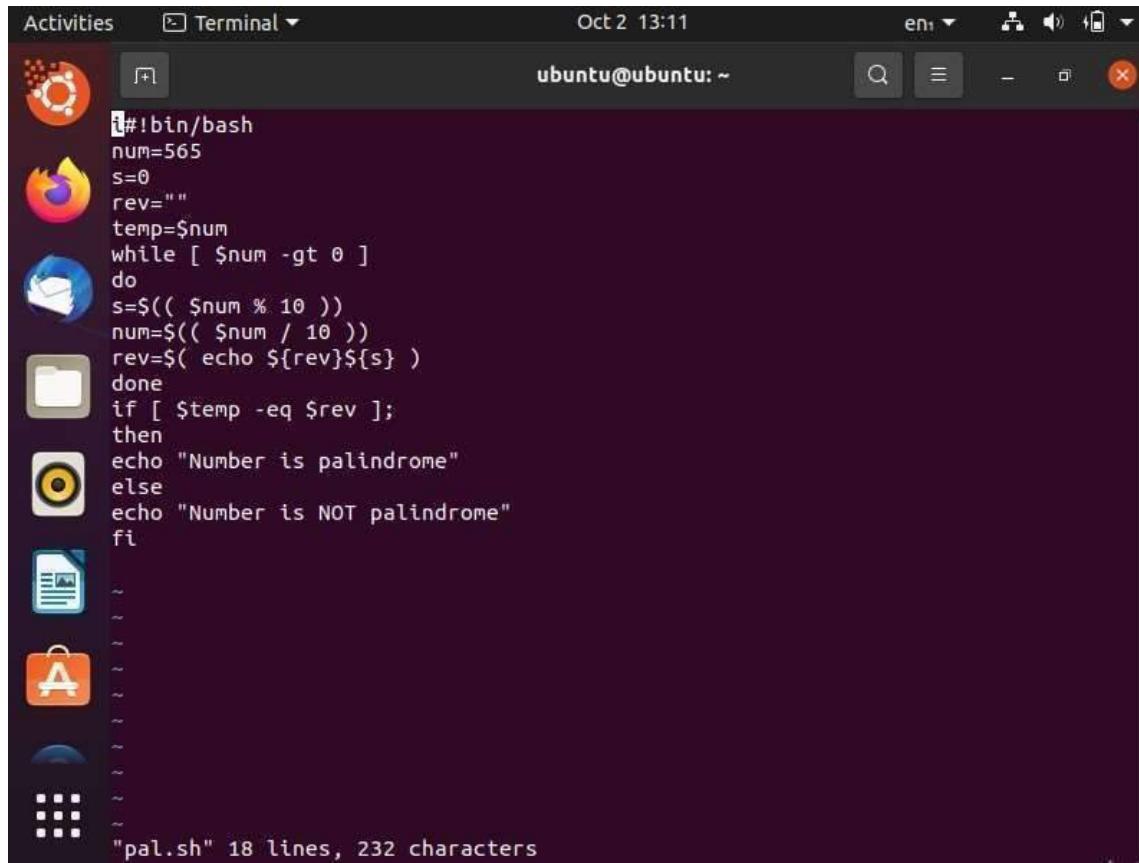
12. Write a shell program to check a number is palindrome or not.



The screenshot shows a terminal window on an Ubuntu desktop. The terminal window title is "Terminal". The terminal content is as follows:

```
Activities Terminal Oct 2 13:10 en: ubunto@ubuntu: ~
ubuntu@ubuntu:~$ vi pal.sh
ubuntu@ubuntu:~$ cat pal.sh
#!/bin/bash
num=565
s=0
rev=""
temp=$num
while [ $num -gt 0 ]
do
s=$(( $num % 10 ))
num=$(( $num / 10 ))
rev=$( echo ${rev}${s} )
done
if [ $temp -eq $rev ];
then
echo "Number is palindrome"
else
echo "Number is NOT palindrome"
fi

ubuntu@ubuntu:~$ ls -l pal.sh
-rw-rw-r-- 1 ubuntu ubuntu 232 Oct  2 13:09 pal.sh
ubuntu@ubuntu:~$ chmod +x pal.sh
ubuntu@ubuntu:~$ ls -l pal.sh
-rwxrwxr-x 1 ubuntu ubuntu 232 Oct  2 13:09 pal.sh
ubuntu@ubuntu:~$ ./pal.sh
./pal.sh: line 1: i#!bin/bash: No such file or directory
Number is palindrome
ubuntu@ubuntu:~$
```



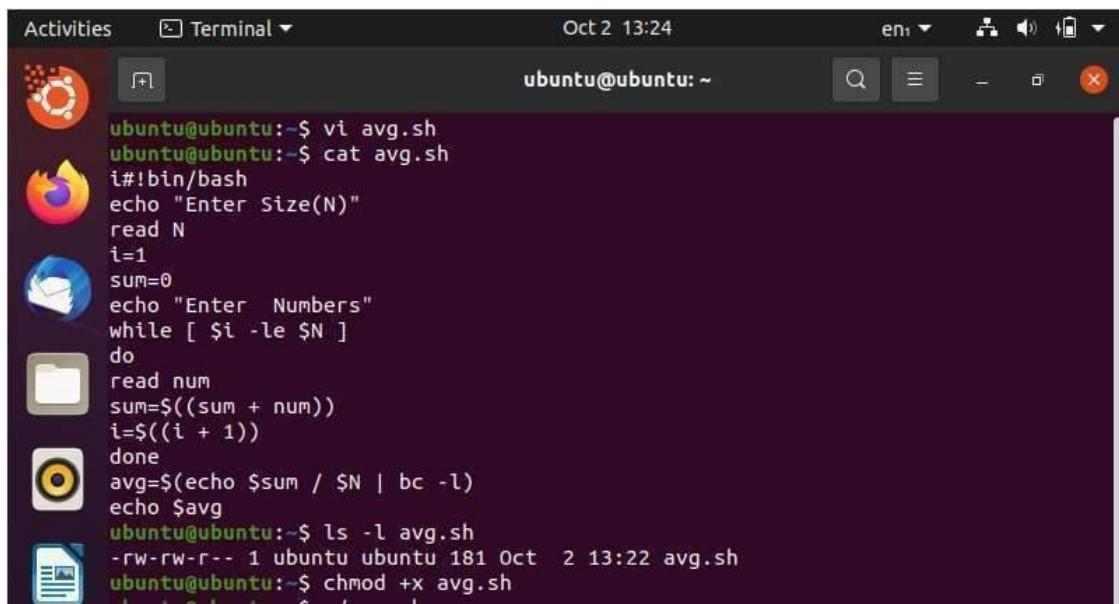
A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window. The terminal window has a dark background and contains the following shell script code:

```
#!/bin/bash
num=565
s=0
rev=""
temp=$num
while [ $num -gt 0 ]
do
s=$(( $num % 10 ))
num=$(( $num / 10 ))
rev=$( echo ${rev}${s} )
done
if [ $temp -eq $rev ];
then
echo "Number is palindrome"
else
echo "Number is NOT palindrome"
fi
```

The terminal also shows the file statistics at the bottom:

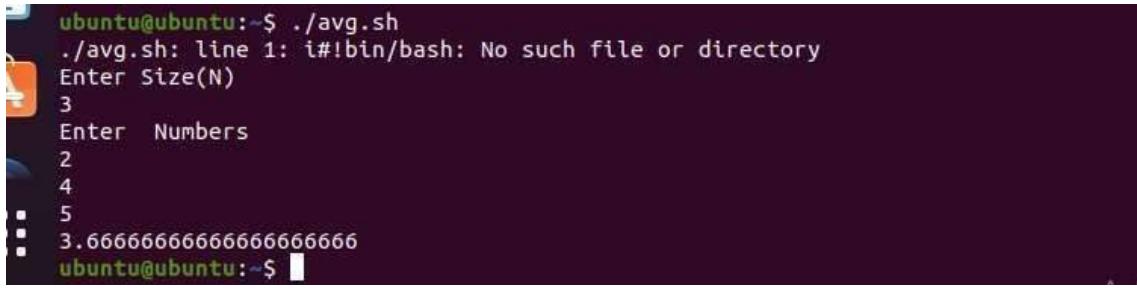
"pal.sh" 18 lines, 232 characters

13. Write a shell script to find the average of the numbers entered in command line.

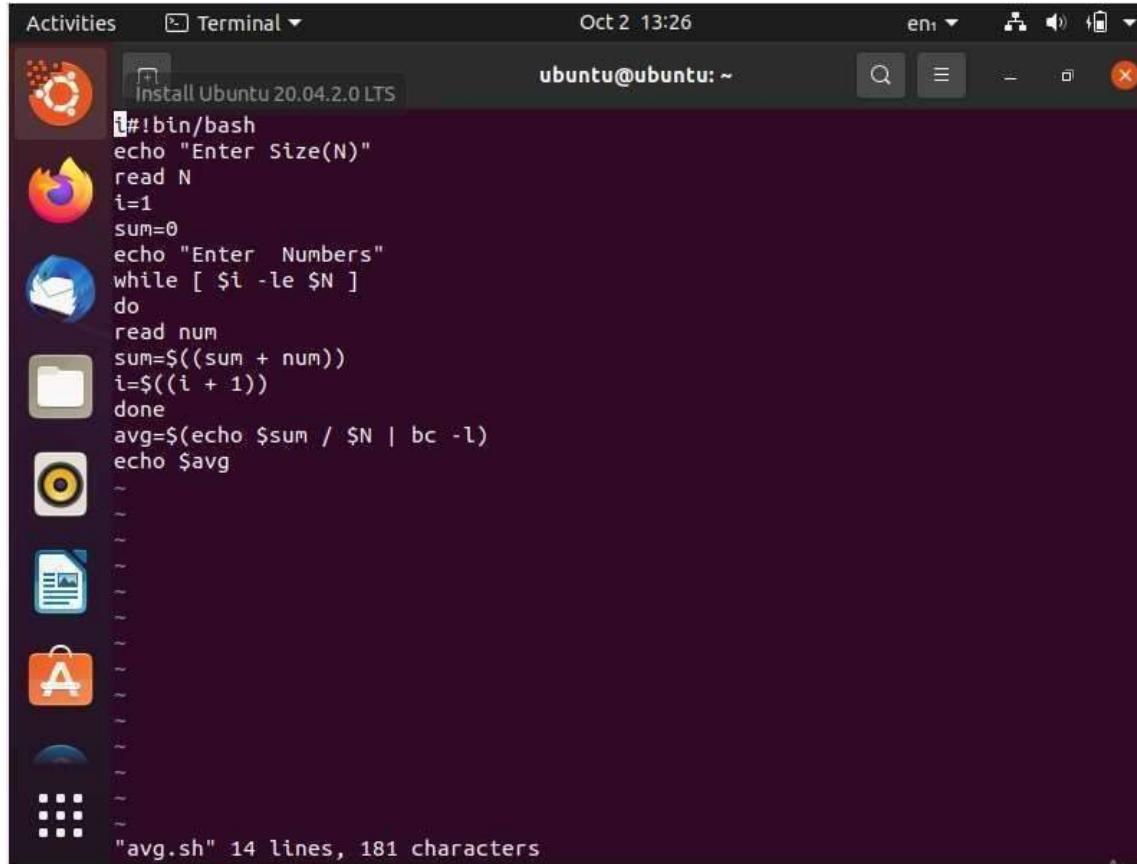


A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window. The terminal window has a dark background and contains the following shell script code:

```
ubuntu@ubuntu:~$ vi avg.sh
ubuntu@ubuntu:~$ cat avg.sh
#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
read num
sum=$((sum + num))
i=$((i + 1))
done
avg=$(echo $sum / $N | bc -l)
echo $avg
ubuntu@ubuntu:~$ ls -l avg.sh
-rw-rw-r-- 1 ubuntu ubuntu 181 Oct  2 13:22 avg.sh
ubuntu@ubuntu:~$ chmod +x avg.sh
```



```
ubuntu@ubuntu:~$ ./avg.sh
./avg.sh: line 1: i#!bin/bash: No such file or directory
Enter Size(N)
3
Enter Numbers
2
4
5
3.666666666666666666666666
ubuntu@ubuntu:~$
```



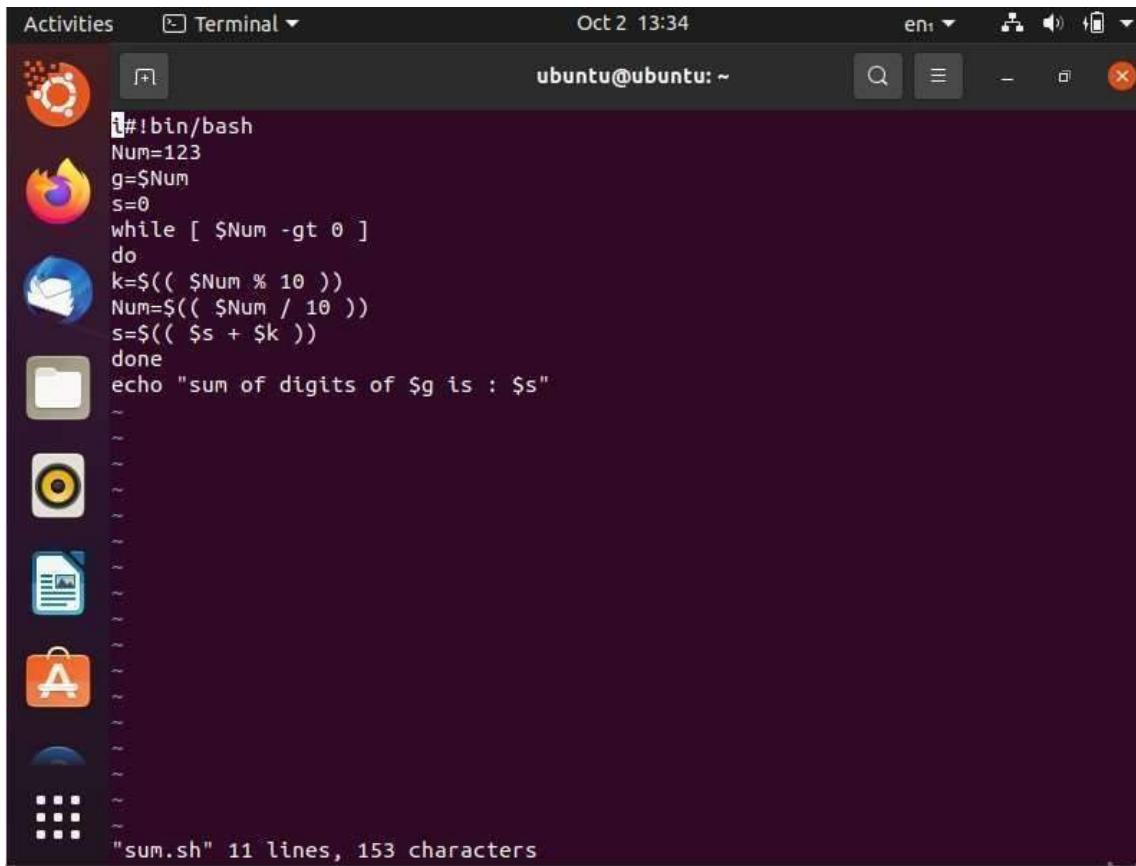
```
#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
    read num
    sum=$((sum + num))
    i=$((i + 1))
done
avg=$(echo $sum / $N | bc -l)
echo $avg
```

"avg.sh" 14 lines, 181 characters

14. Write a shell program to find the sum of all the digits in a number.

Activities Terminal Oct 2 13:33 ene -

```
ubuntu@ubuntu:~$ vi sum.sh
ubuntu@ubuntu:~$ cat sum.sh
#!/bin/bash
Num=123
g=$Num
s=0
while [ $Num -gt 0 ]
do
k=$(( $Num % 10 ))
Num=$(( $Num / 10 ))
s=$(( $s + $k ))
done
echo "sum of digits of $g is : $s"
ubuntu@ubuntu:~$ ls -l sum.sh
-rw-rw-r-- 1 ubuntu ubuntu 153 Oct  2 13:32 sum.sh
ubuntu@ubuntu:~$ chmod +x sum.sh
ubuntu@ubuntu:~$ ls -l sum.sh
-rwxrwxr-x 1 ubuntu ubuntu 153 Oct  2 13:32 sum.sh
ubuntu@ubuntu:~$ ./sum.sh
./sum.sh: line 1: i#!bin/bash: No such file or directory
sum of digits of 123 is : 6
ubuntu@ubuntu:~$
```



A screenshot of an Ubuntu desktop environment. In the top left corner, there's an 'Activities' button and a 'Terminal' button. The top bar shows the date 'Oct 2 13:34' and the user 'ubuntu@ubuntu: ~'. The terminal window has a dark background and contains the following code:

```
#!/bin/bash
Num=123
g=$Num
s=0
while [ $Num -gt 0 ]
do
k=$(( $Num % 10 ))
Num=$(( $Num / 10 ))
s=$(( $s + $k ))
done
echo "sum of digits of $g is : $s"
~
```

The terminal window also displays the message: "sum.sh" 11 lines, 153 characters.

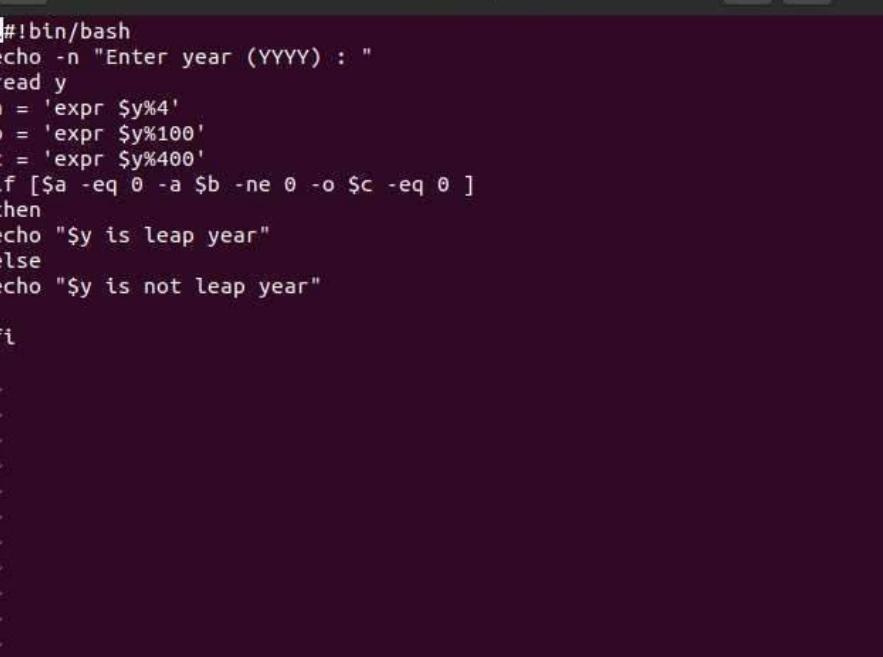
15. Write a shell program to check whether given year is leap year or not.

Activities Terminal Oct 2 13:46 en1

```
ubuntu@ubuntu:~$ vi year.sh
ubuntu@ubuntu:~$ cat year.sh
#!/bin/bash
echo -n "Enter year (YYYY) : "
read y
a = 'expr $y%4'
b = 'expr $y%100'
c = 'expr $y%400'
if [$(a -eq 0 -a $(b -ne 0 -o $(c -eq 0 ))]
then
echo "$y is leap year"
else
echo "$y is not leap year"
fi

ubuntu@ubuntu:~$ ls -l year.sh
-rw-rw-r-- 1 ubuntu ubuntu 206 Oct  2 13:45 year.sh
ubuntu@ubuntu:~$ chmod +x year.sh
ubuntu@ubuntu:~$ ls -l year.sh
-rwxrwxr-x 1 ubuntu ubuntu 206 Oct  2 13:45 year.sh
ubuntu@ubuntu:~$ ./year.sh
./year.sh: line 1: i#!bin/bash: No such file or directory
Enter year (YYYY) : 2024
./year.sh: line 4: a: command not found
./year.sh: line 5: b: command not found
./year.sh: line 6: c: command not found
./year.sh: line 7: [: too many arguments
2024 is not leap year
```

Activities Terminal Oct 2 13:47 en1



```
#!/bin/bash
echo -n "Enter year (YYYY) : "
read y
a = 'expr $y%4'
b = 'expr $y%100'
c = 'expr $y%400'
if [ $a -eq 0 -a $b -ne 0 -o $c -eq 0 ]
then
echo "$y is leap year"
else
echo "$y is not leap year"
fi
~ ~ ~ ~
~ ~ ~ ~
~ ~ ~ ~
~ ~ ~ ~
```

"year.sh" 14 lines, 206 characters

Docker installation on Windows 10

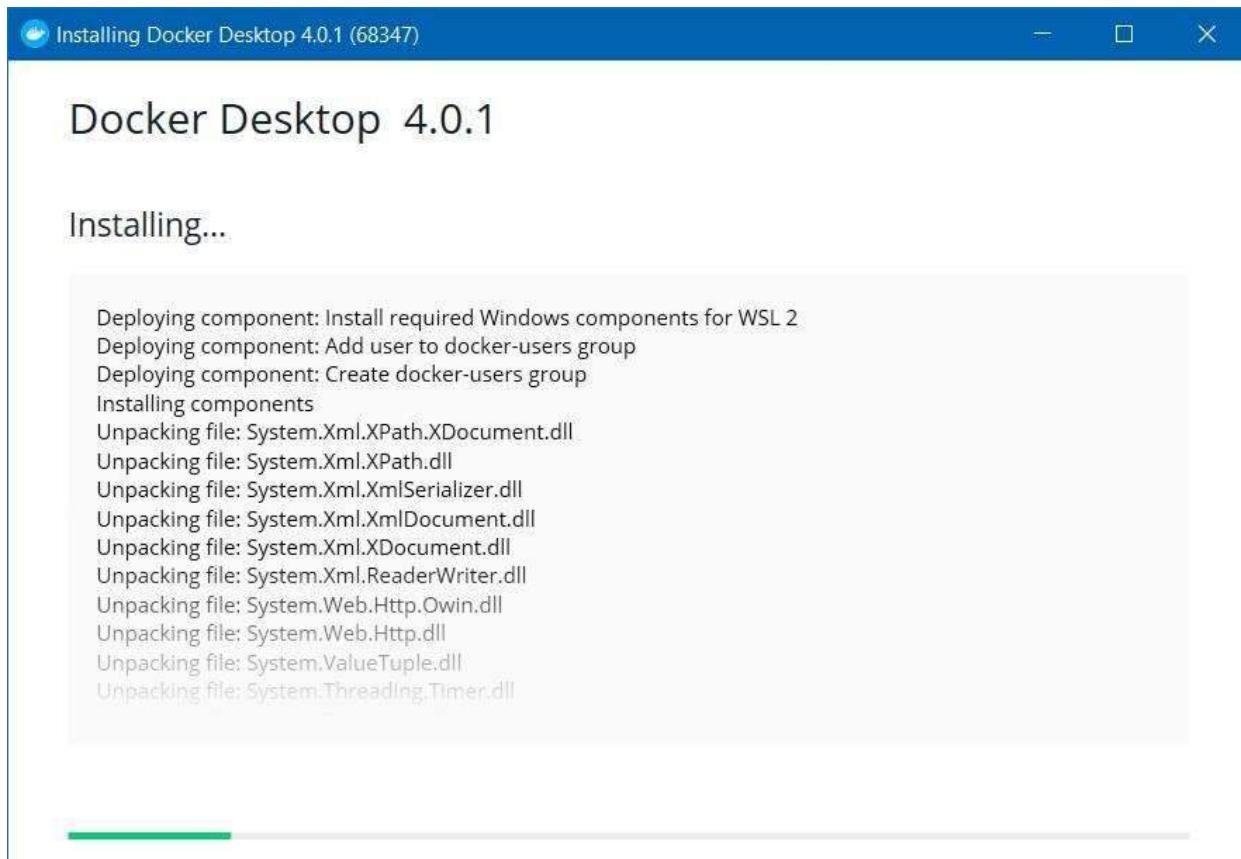
Step-I

Download Docker desktop Installer for Windows from
<https://desktop.docker.com/win/main/amd64/Docker%20Desktop%20Installer.exe>



Step-II

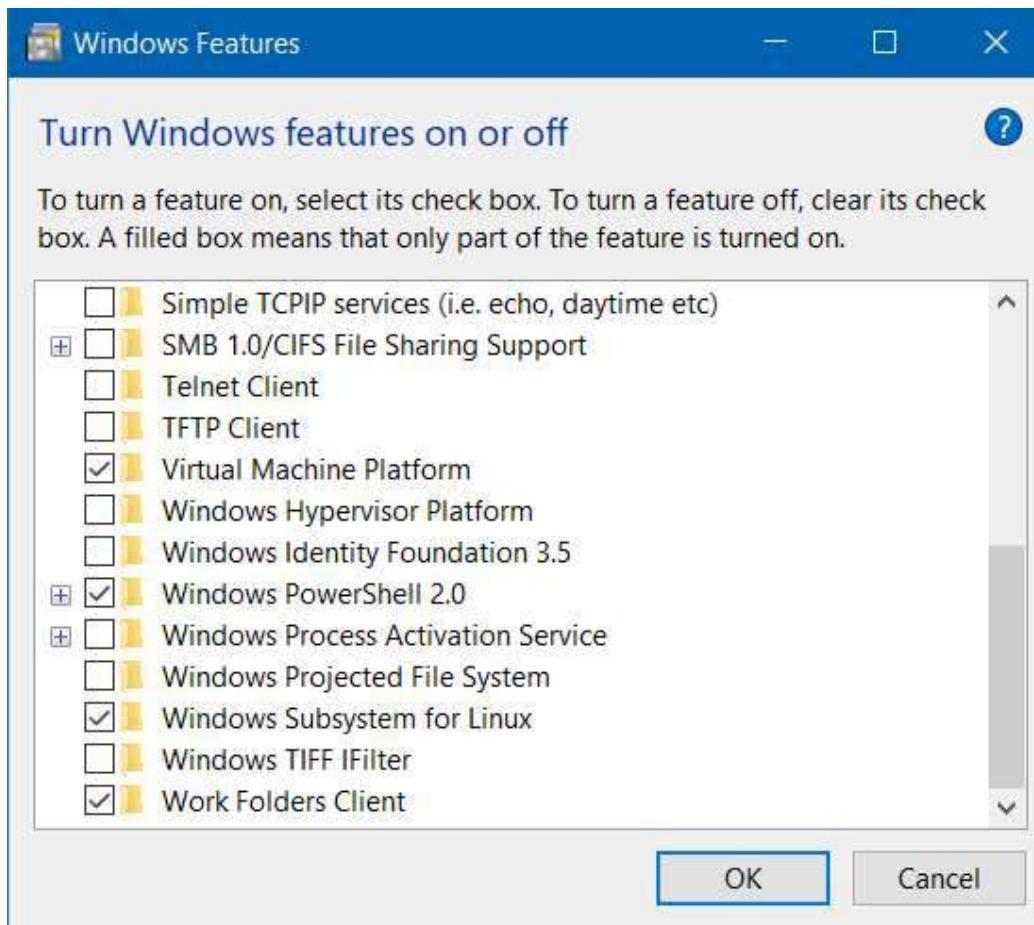
Open the .exe file and follow the steps after clicking install button.



Step-III

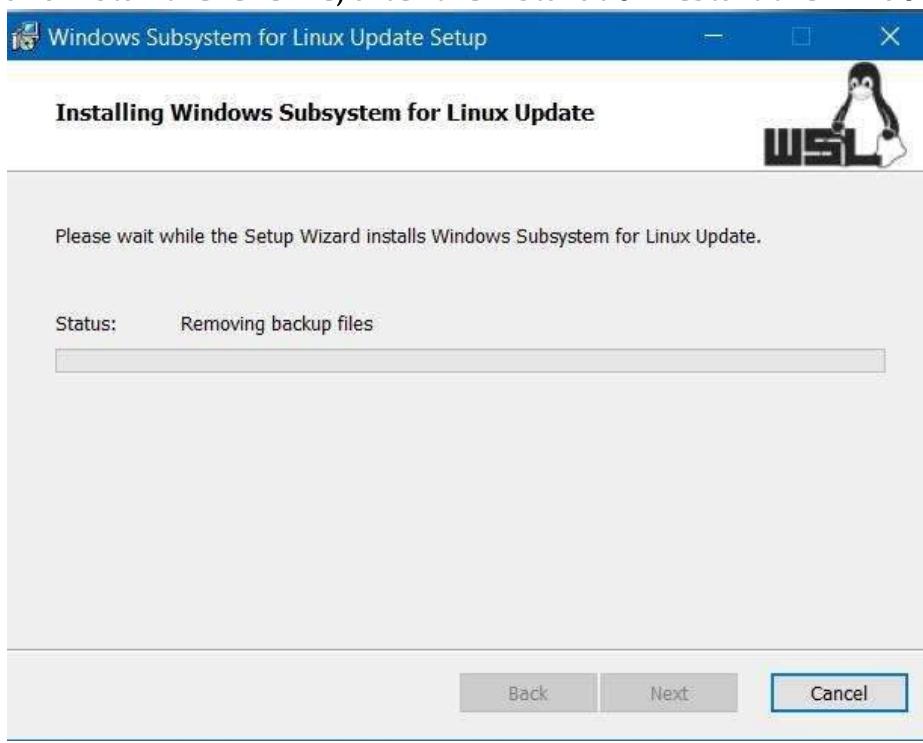
Once installed go to programs and features and click turn on windows features on or off

Scroll to the bottom and select windows subsystem for Linux



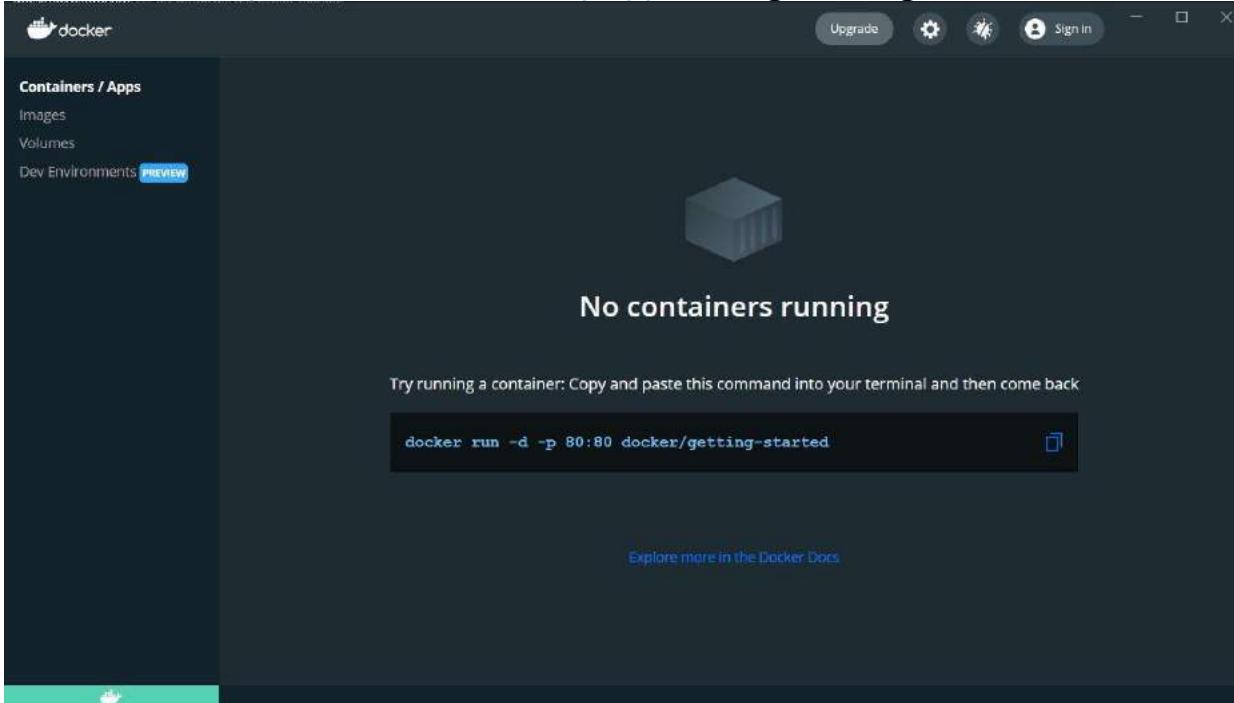
Step-IV

If any WSL 2 error occurs download windows subsystem for linux update package and install the .exe file, after the installation restart the windows device.



Step-V

Once installed, open the docker desktop app, and signin using the dockerID



Step-VI

Now pull any image from docker hub using the docker pull command in the command prompt (eg: docker pull ubuntu)

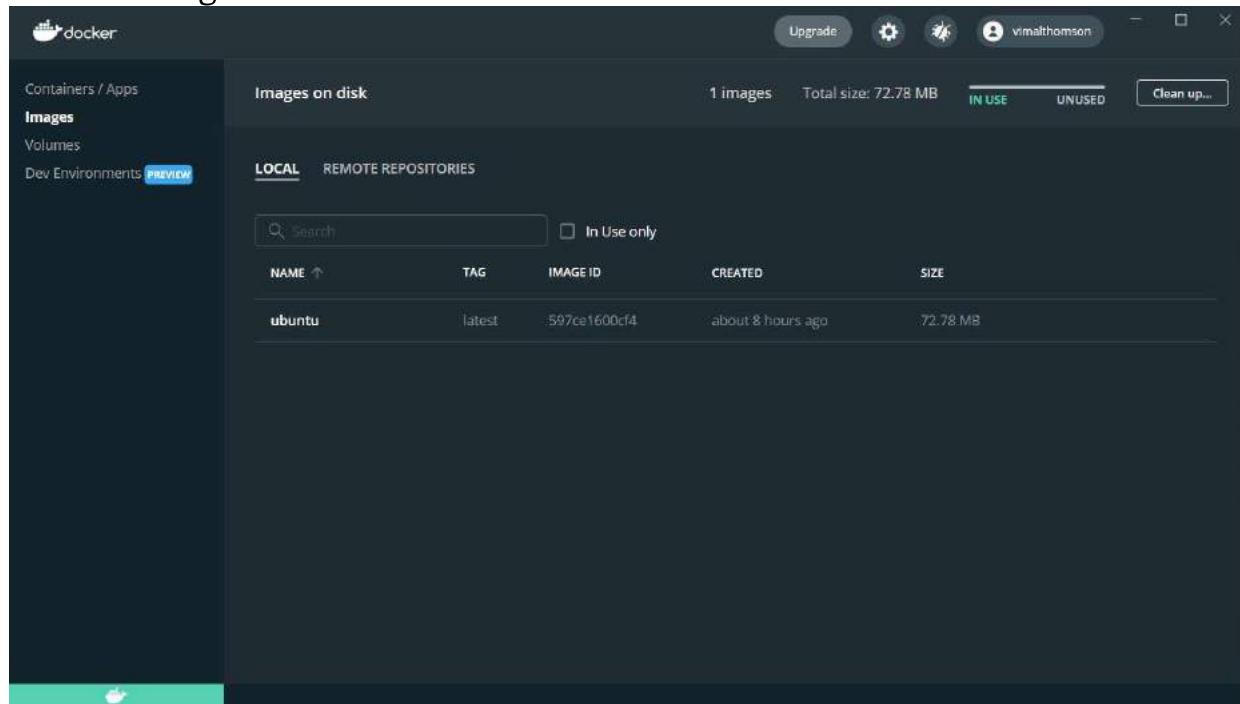
```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1081]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>docker run -d -p 80:80 docker/getting-started
Unable to find image 'docker/getting-started:latest' locally
docker: Error response from daemon: Get "https://registry-1.docker.io/v2/": dial tcp: lookup registry-1.docker.io on 192.168.65.5:53: no such host.
See 'docker run --help'.

C:\Windows\system32>docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
f3ef4ff62e0d: Pull complete
Digest: sha256:65de08a8dabf289ef114053ab32f79e0c333a4fbfa1fe3778bb13ae921a7849b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest

C:\Windows\system32>
```

Now in the images tab an image of ubuntu will be displayed, we can run the ubuntu instance using the cli.



Wireshark installation

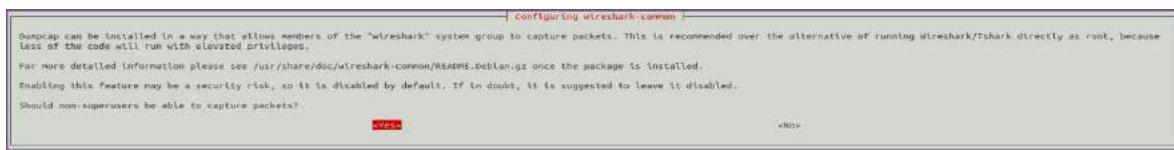
1. Command: sudo apt-get install wireshark

```
vimalthomson@vimal-thomson:~$ sudo apt-get install wireshark
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libnvidia-cfg1-460 libnvidia-common-460 libnvidia-gl-460 libnvidia-ifr1-460 libva-wayland2 libx11-xcb1:i386 libxnvctrl0 nvidia-compute-utils-460 nvidia-kernel-xserver-xorg-video-nvidia-460
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
libdouble-conversion3 libpcre2-16-0 libqt5core5a libqt5dbus libqt5gui5 libqt5multimedias libqt5multimedias-plugins libqt5printsupport5 libqt5svg5 libqt5widgets5 libsmi2l2l1 libspandsp2 libwireshark-data libwireshark13 libwireshark10 libwireshark-common wireshark-qt
Suggested packages:
qt5-image-formats-plugins qtwayland5 snmp-mibs-downloader geolpupdate geolp-database geolp-database-extra libjs-leaflet
The following NEW packages will be installed:
libdouble-conversion3 libpcre2-16-0 libqt5core5a libqt5dbus libqt5gui5 libqt5multimedias libqt5multimedias-plugins libqt5printsupport5 libqt5svg5 libqt5widgets5 libsmi2l2l1 libspandsp2 libwireshark-data libwireshark13 libwireshark10 libwireshark wireshark-common wireshark-qt
0 upgraded, 27 newly installed, 0 to remove and 342 not upgraded.
Need to get 32.6 MB of archives.
After this operation, 162 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libdouble-conversion3 amd64 3.1.5-4ubuntu1 [37.9 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libpcre2-16-0 amd64 10.34-7 [181 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libqt5core5a amd64 5.12.8+dfsg-0ubuntu1 [2,005 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libqt5dbus5 amd64 5.12.8+dfsg-0ubuntu1 [208 kB]
```

2. Command: sudo dpkg-reconfigure wireshark-common

```
vimalthomson@vimal-thomson:~$ sudo dpkg-reconfigure wireshark-common
vimalthomson@vimal-thomson:~$ █
```

3. Command: Select Yes and press enter



4. Open wireshark from the applist

