

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No.: 1**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: A**

**Date: 18-03-2022**

### **Aim**

Identify major components of a computer system, Such as:

- ❖ Mother board
- ❖ Ram Modules
- ❖ Daughter Cards
- ❖ Bus slots
- ❖ SMPS
- ❖ Internal Storage Devices
- ❖ Interfacing Ports

### **Procedure**

#### **Mother board**

The motherboard serves as a single platform to connect all of the parts of a computer together. It connects the CPU, memory, hard drives, optical drives, video card, sound card, and other ports and expansion cards directly or via cables. It can be considered as the backbone of a computer.

#### **Ram Modules**

Random-access memory (RAM) is a form of computer memory that can be read and changed in any order, typically used to store working data and machine code. A random-access memory device allows data items to be read or written in almost the same amount of time irrespective of the physical location of data inside the memory, in contrast with other direct-access data storage media (such as hard disks, CD-RWs, DVD-RWs and the older magnetic tapes and drum memory), where the time required to read and write data items varies significantly depending on their physical locations on the recording medium, due to mechanical limitations such as media rotation speeds and arm movement.

## Daughter Cards

A daughtercard or daughterboard is a type of circuit board that gets added to an existing one. Its name is appropriate for its use, since it is connected to a “motherboard” or “main board.” The motherboard is the primary circuit board for a device. It is usually in the device as it is shipped from the factory. A daughtercard may be added later.

- ◆ **Graphics Cards:** A graphics card is an expansion card for your PC that is responsible for rendering images to the display. A graphics card provides high-quality visual display by processing and executing graphical data using advanced graphical techniques, features and functions.
- ◆ **Network Cards:** network interface card (NIC) is a hardware component without which a computer cannot be connected over a network. It is a circuit board installed in a computer that provides a dedicated network connection to the computer. It is also called network interface controller, network adapter or LAN adapter.
- ◆ **Audio Cards:** A sound card (also known as an audio card) is an internal expansion card that provides input and output of audio signals to and from a computer under control of computer programs. The term sound card is also applied to external audio interfaces used for professional audio applications.

## Bus Slots

An expansion slot is a socket on the motherboard that is used to insert an expansion card (or circuit board), which provides additional features to a computer such as video, sound, advanced graphics, Ethernet or memory.

## SMPS

A switched-mode power supply (SMPS) is an electronic circuit that converts power using switching devices that are turned on and off at high frequencies, and storage components such as inductors or capacitors to supply power when the switching device is in its non-conduction state.

Switching power supplies have high efficiency and are widely used in a variety of electronic equipment, including computers and other sensitive equipment requiring stable and efficient power supply.

A switched-mode power supply is also known as a switch-mode power supply or switching-mode power supply.

## Internal Storage Devices

Most computers have some form of internal storage. The most common type of internal storage is the hard disk. At the most basic level, internal storage is needed to hold the operating system so that the computer is able to access the input and output devices. Hard disk, also called hard disk drive or hard drive, magnetic storage medium for a computer. Hard disks are flat circular plates made of aluminium or glass and coated with a magnetic material.

### 3 types of internal storage

- ◆ Optical
  - ◆ Magnetic
  - ◆ Semiconductor.
- 
- ◆ RAM Computer memory or Random Access Memory (RAM) is your system's short-term data storage; it stores the information your computer is actively using so that it can be accessed quickly.
  - ◆ ROM which stands for read only memory, is a memory device or storage medium that stores information permanently. It is also the primary memory unit of a computer along with the Random Access Memory (RAM). It is called read only memory as we can only read the programs and data stored on it but cannot write on it.

## Interfacing Ports

A port is a physical docking point using which an external device can be connected to the computer. It can also be programmatic docking point through which information flows from a program to the computer or over the Internet.

### Serial Port

- Used for external modems and older computer mouse
- Two versions: 9 pin, 25 pin model

### Parallel Port

- Used for scanners and printers
- Also called printer port
- 25 pin model

### PS/2 Port

- Used for old computer keyboard and mouse
- Also called mouse port
- Most of the old computers provide two PS/2 port, each for the mouse and keyboard

### Universal Serial Bus (or USB) Port

- It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.
- Most of the computers provide two USB ports as minimum.
- USB compliant devices can get power from a USB port.

### VGA Port

- Connects monitor to a computer's video card.
- It has 15 holes.
- Similar to the serial port connector. However, serial port connector has pins, VGA port has holes.

### Power Connector

- Three-pronged plug.
- Connects to the computer's power cable that plugs into a power bar or wall socket.

### Firewire Port

- Transfers large amount of data at very fast speed.
- Connects camcorders and video equipment to the computer.

### Modem Port

- Connects a PC's modem to the telephone network.

### Ethernet Port

- Connects to a network and high speed Internet.
- Connects the network cable to a computer.
- This port resides on an Ethernet Card.

### Game Port

- Connect a joystick to a PC
- Now replaced by USB

### Digital Video Interface, DVI port

- Connects Flat panel LCD monitor to the computer's high-end video graphic cards.
- Very popular among video card manufacturers.

## Sockets

- Sockets connect the microphone and speakers to the sound card of the computer.

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No.: 2**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: A**

**Date: 18-02-2022**

### **Aim**

Prepare a computer study of specifications of Desktops and Server class computers

### **Procedure**

#### **Desktop Computer Specifications**

Minimum Requirements:

We support the following minimum computer configurations.

Note: The following lists minimum requirements that allow for network connectivity and other basic functions. If you are planning on purchasing a new computer, please use the recommended configurations above.

Processor (CPU): Intel Core i3 (sixth generation or newer) or equivalent

Operating System: Microsoft Windows 10 x64

(free via Azure Dev Tools for Teaching. Restrictions apply.)

Memory: 8 GB RAM

Storage: 500 GB internal storage drive

Monitor/Display: 15" LCD monitor

Other: 802.11ac 2.4/5 GHz wireless adapter

Recommended Configurations:

Recommend systems that meet or exceed the following specifications:

Processor (CPU):	Intel Core i5 (sixth generation or newer) or equivalent
Operating System:	Microsoft Windows 10 Professional x64 (free via Azure Dev Tools for Teaching. Restrictions apply.)
Memory:	16 GB RAM
Storage:	512 GB internal Solid State Drive (SSD) or 1 TB inter
Sustainability	EPEAT Silver rating (preferably EPEAT Gold)
Monitor/Display:	24" LCD monitor
Network Adaptor:	802.11ac 2.4/5 GHz wireless adapter
Other:	Webcam, lock, external drive for backups

### Server Class Computer Specification

#### Minimum System Requirements:

The minimum requirement for a single-computer installation is a computer with the following features:

- A modern multi-core CPU.
- 4 GB dedicated RAM with an extra 1.5 GB RAM for any additional language servers.
- Additional 4 GB of RAM for running the Analytics server.
- 5 GB of free hard disk space in the installation directory.

The hardware requirements for each language server, the Analytics server, and the core server in a distributed installation are the same as for a single-computer installation. These requirements also apply for installations in virtualized environments.

#### Best Practice System Requirements:

The best practice is to run the language servers on the same machine as the core server. We recommend that you use a computer with the following features:

- A modern multi-core CPU with one CPU core available per service.

- 8 GB dedicated RAM with an extra 4 GB RAM for any additional language servers.
- Additional 8 GB of RAM for running the Analytics server.
- 20 GB of free hard disk space in the installation directory.

## Software Requirements

The Core Platform or its components (core server, language servers) require a computer with a supported operating system. The Core Platform requires a compatible web browser and the Java Development Kit (JDK). You can either use Oracle Java SE 8 JDK x64 or IBM Java 8 SDK 64-bit.

## NETWORKING & SYSTEM ADMINISTRATION LAB

### Experiment No.: 3

Name: ALLEN S PHILIP

Roll No:20

Batch: A

Date:21-03-2022

### Aim

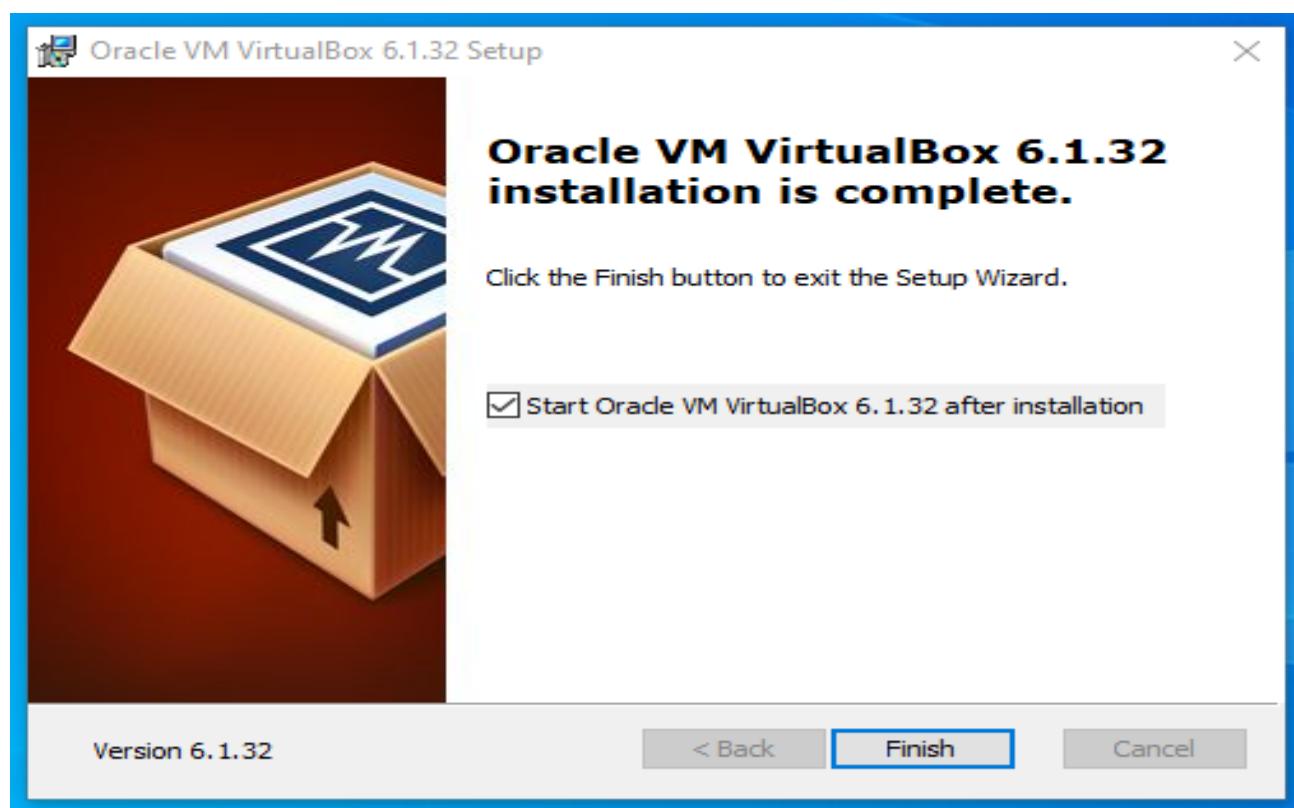
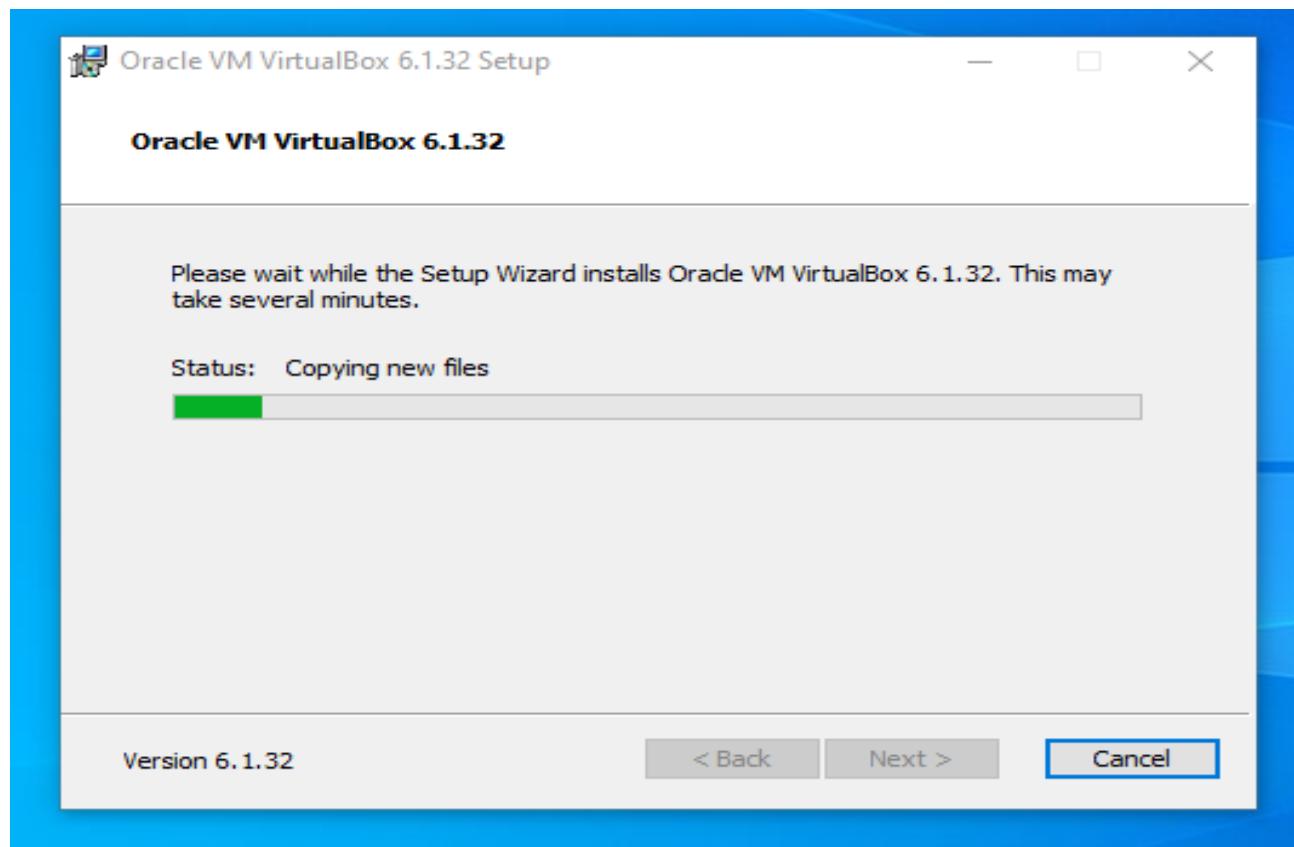
You are given a computer with very low hardware resources it is to be used as a kiosk identify and install a suitable linux distribution you can simulate it in a virtual environment?

### Procedure

#### **Step 1**

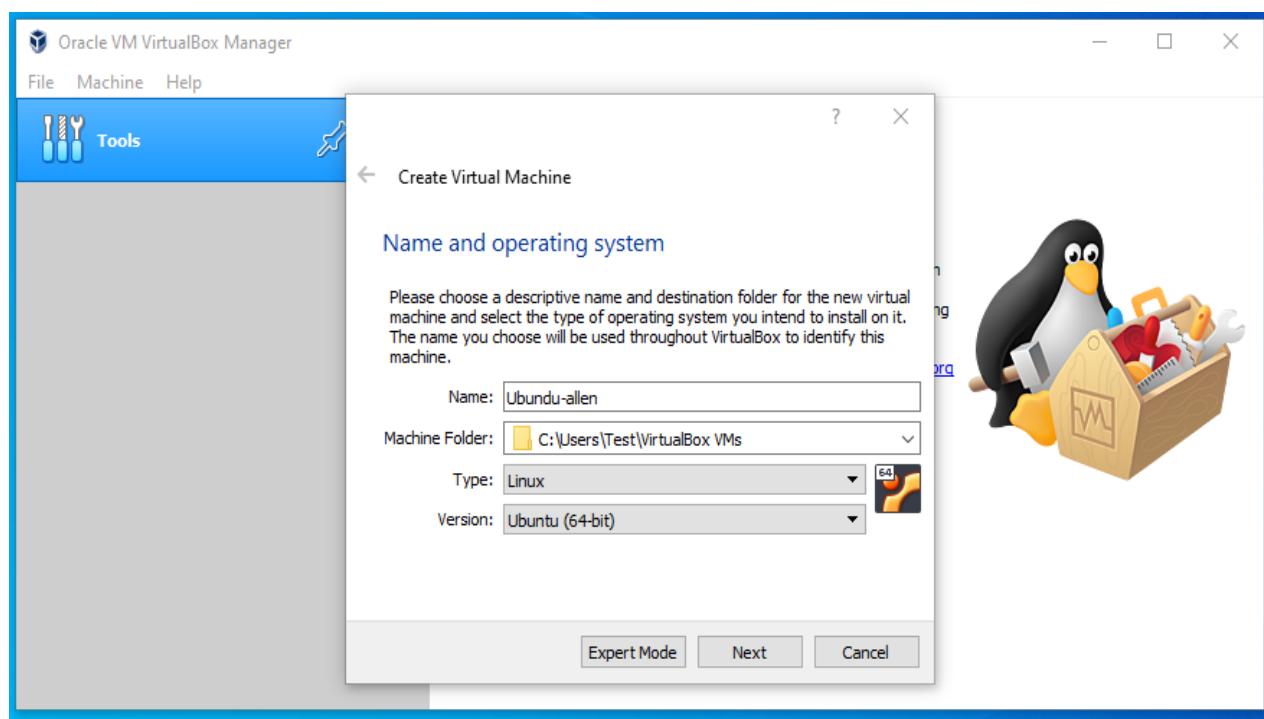
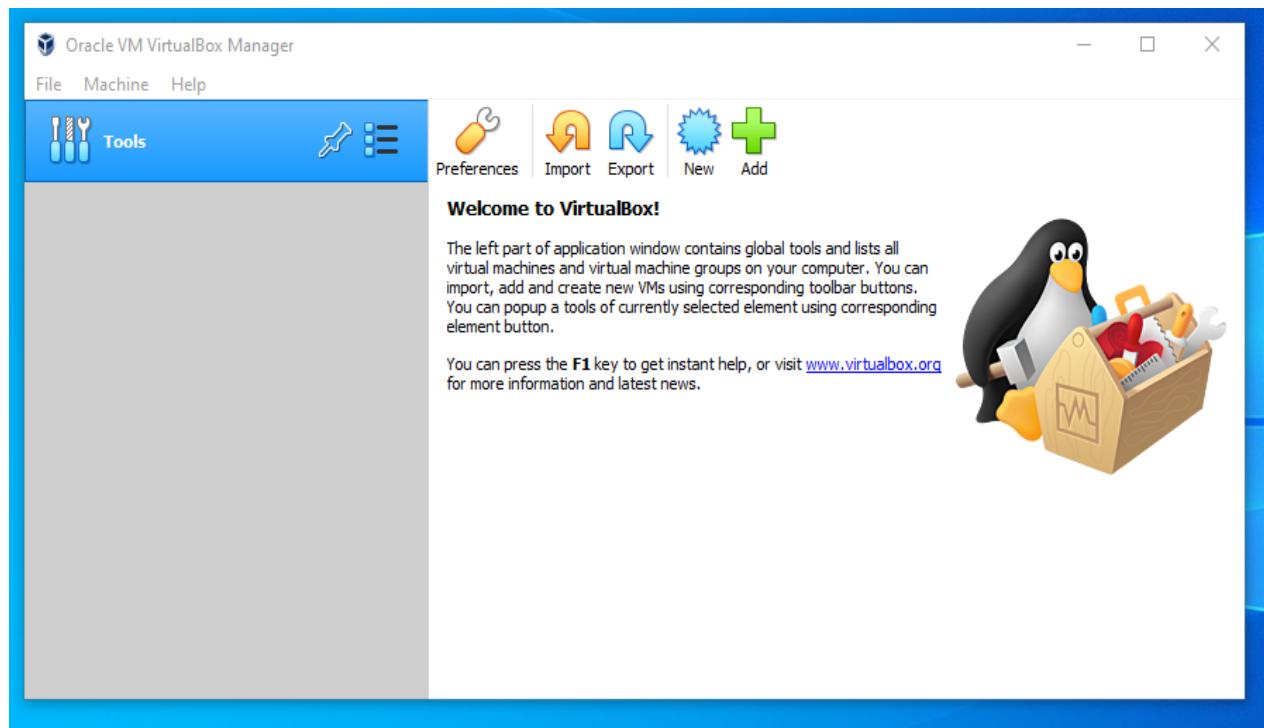
Install virtual box.





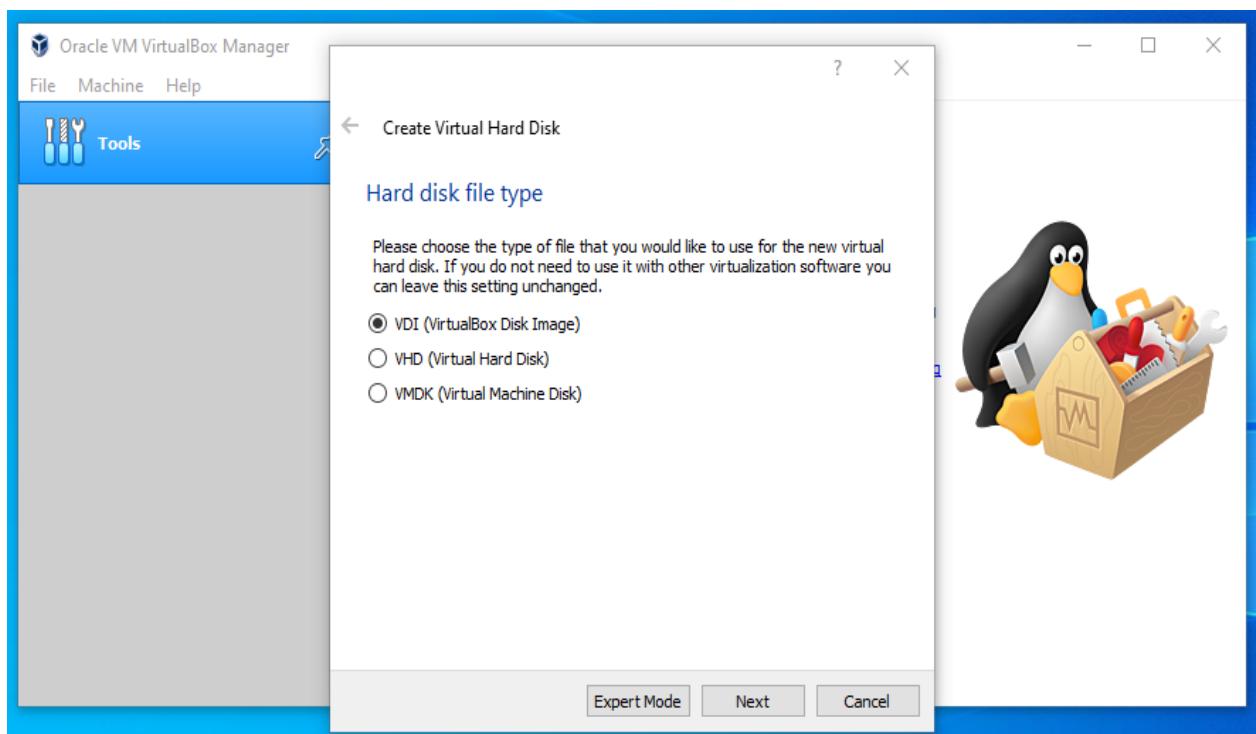
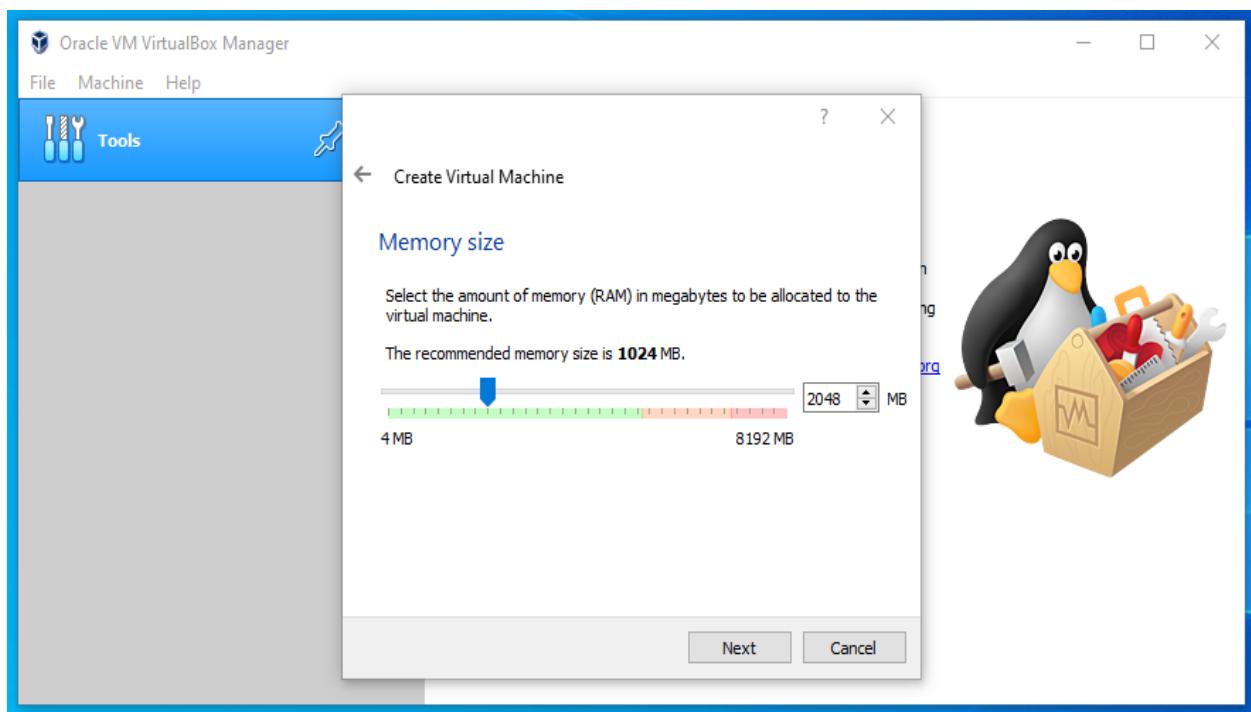
## Step 2

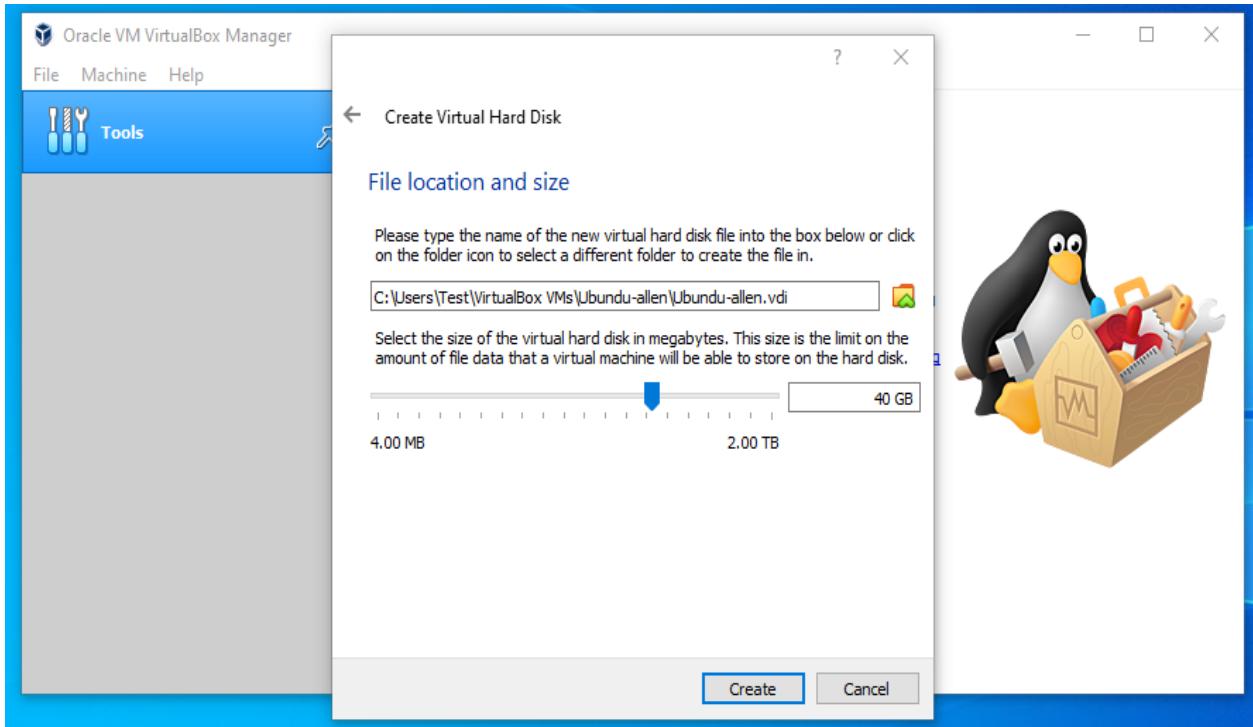
Click new to add new operating system and give it a name.



### Step 3

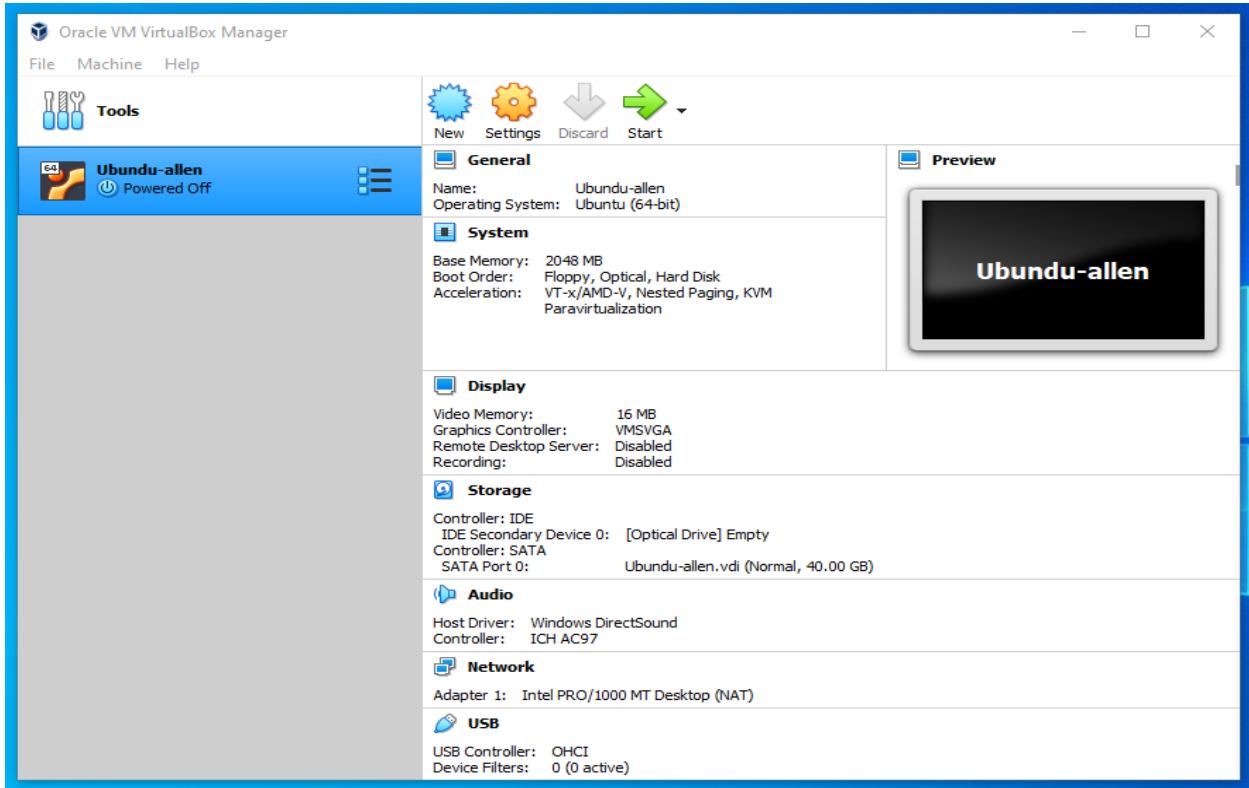
Set size of ram required and create a virtual hard disk.

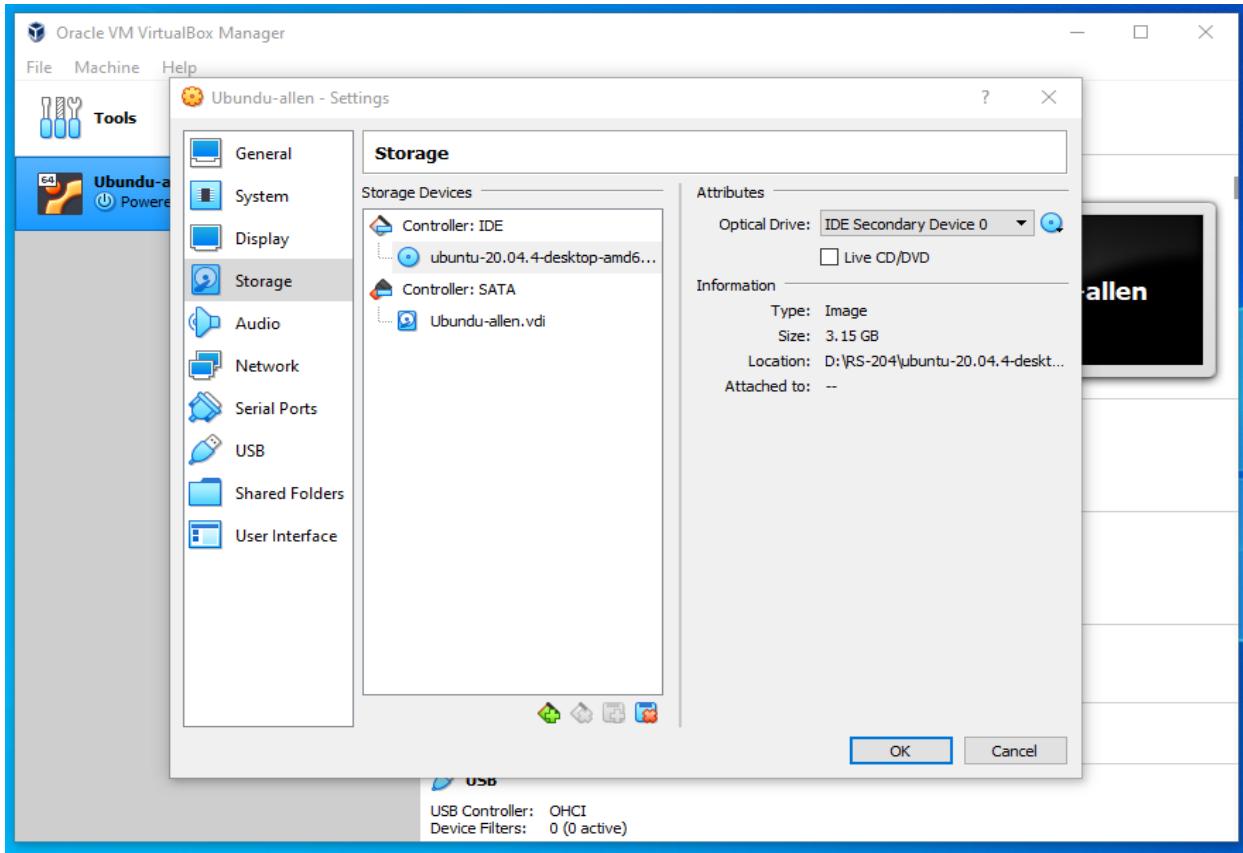




## Step 4

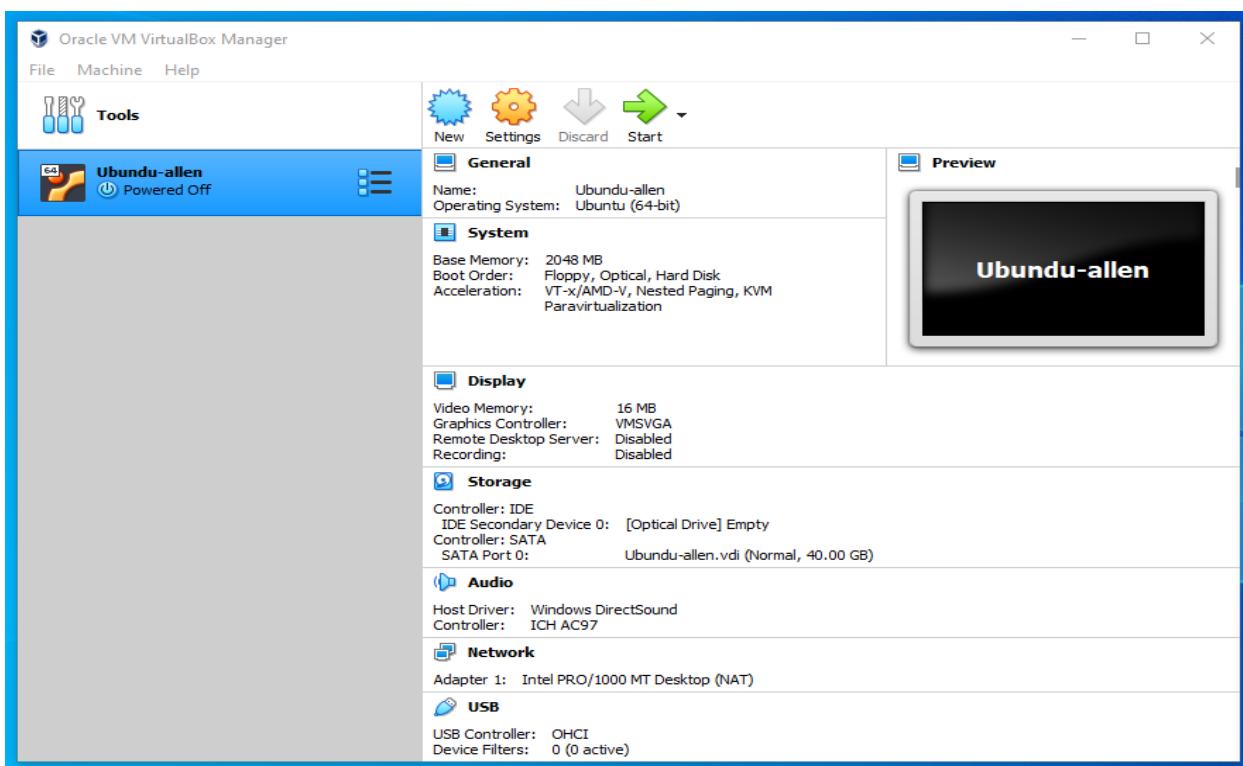
Add location of the iso file.

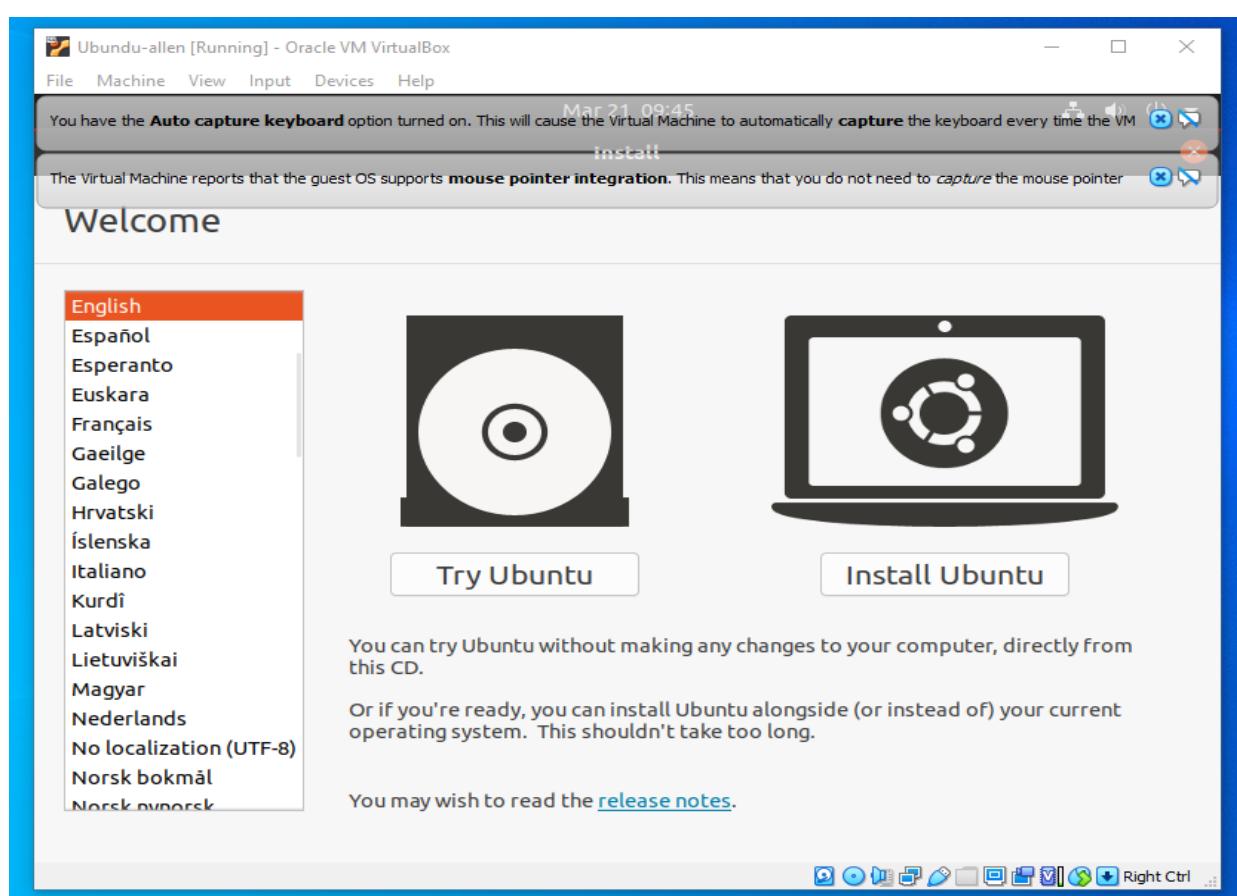
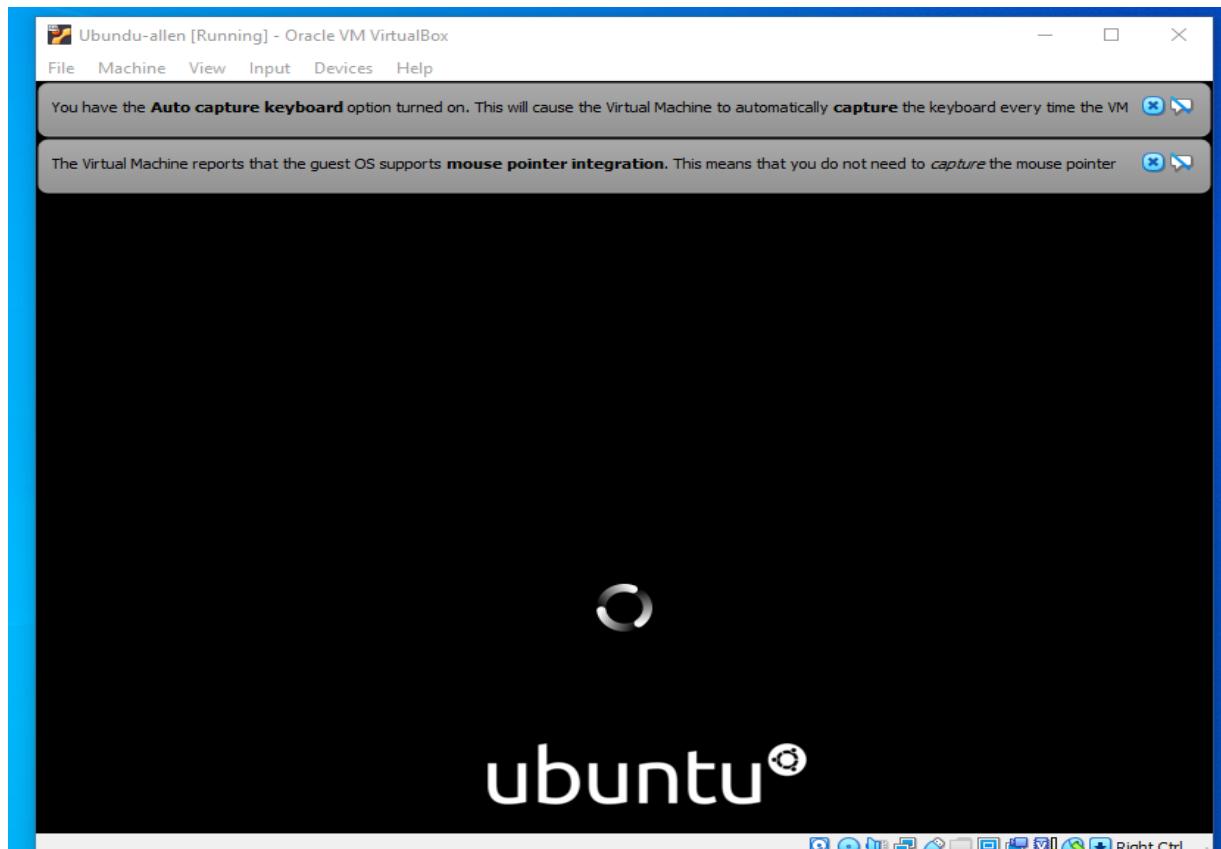


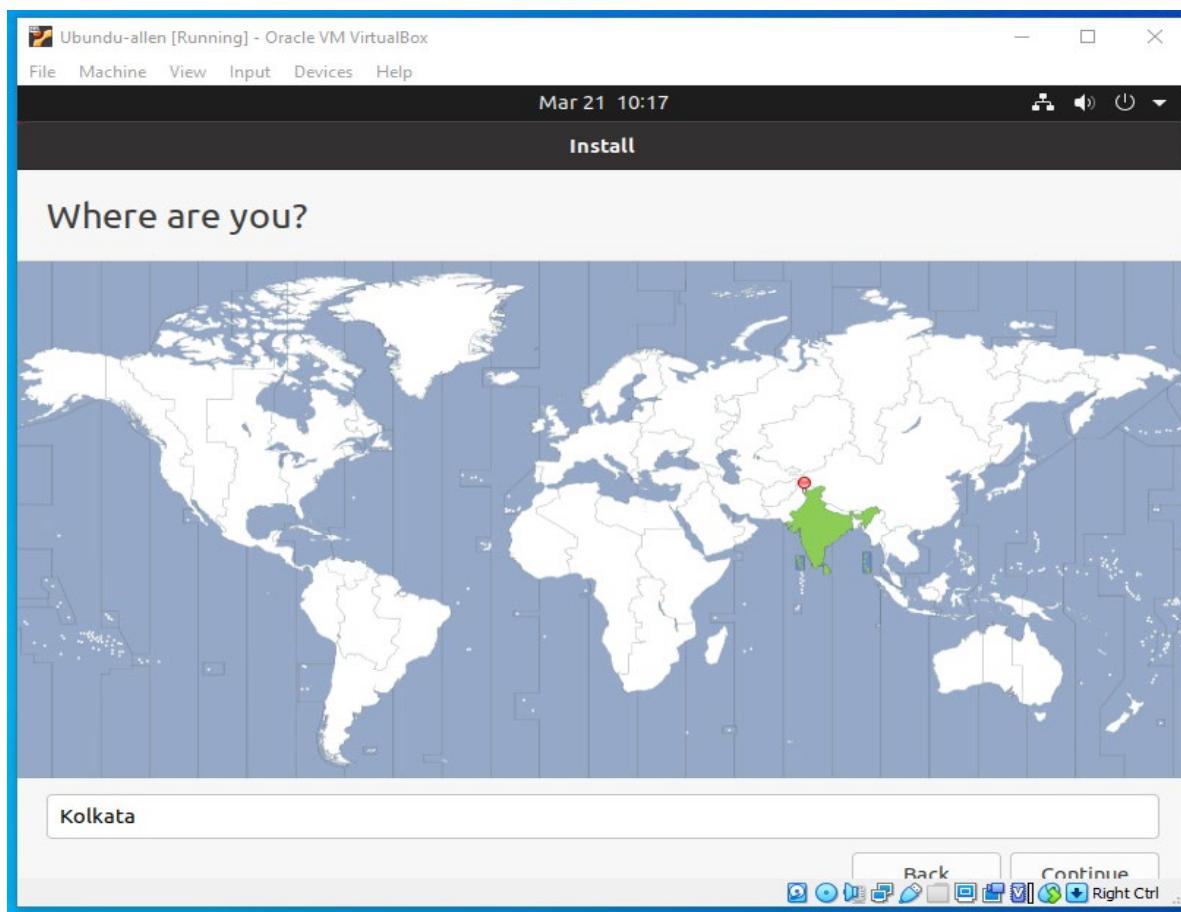
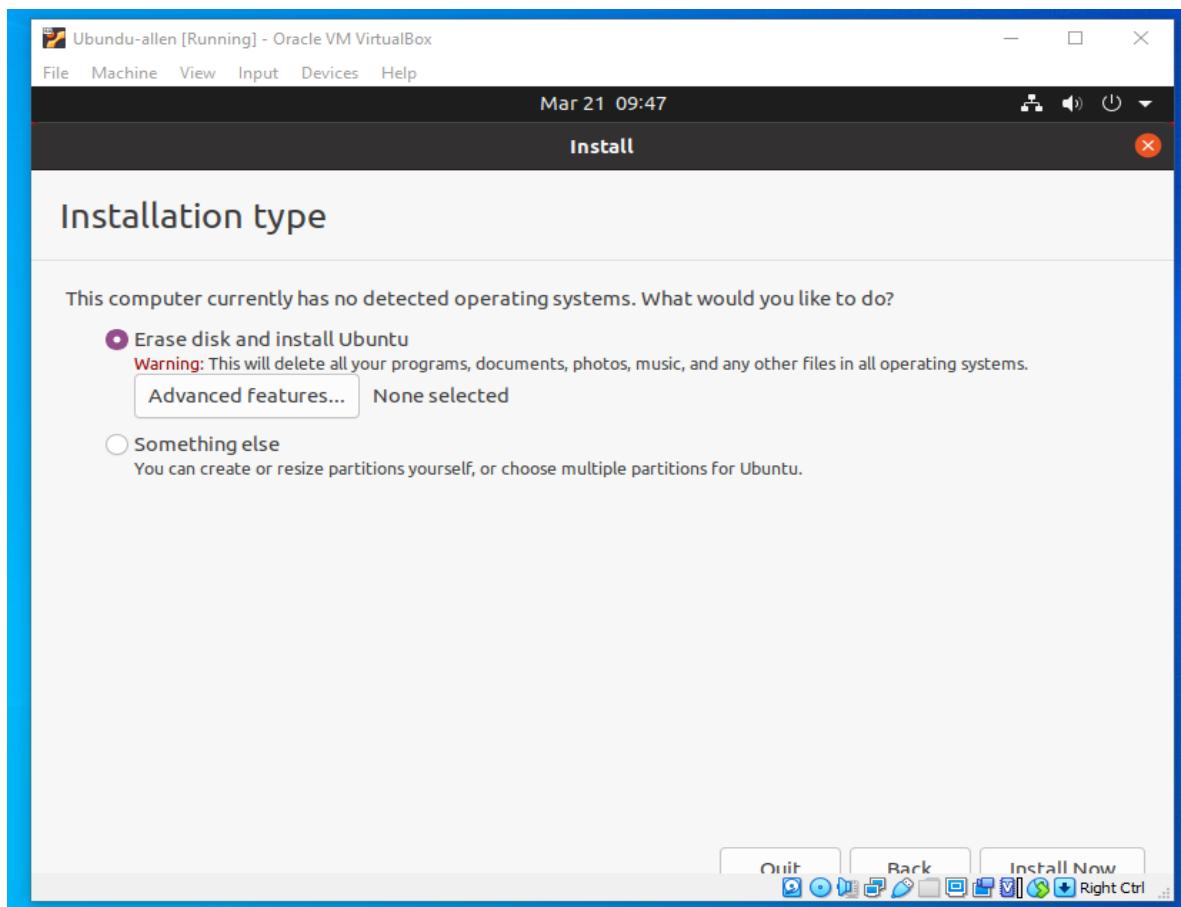


## Step 5

Click the start arrow to run the os.

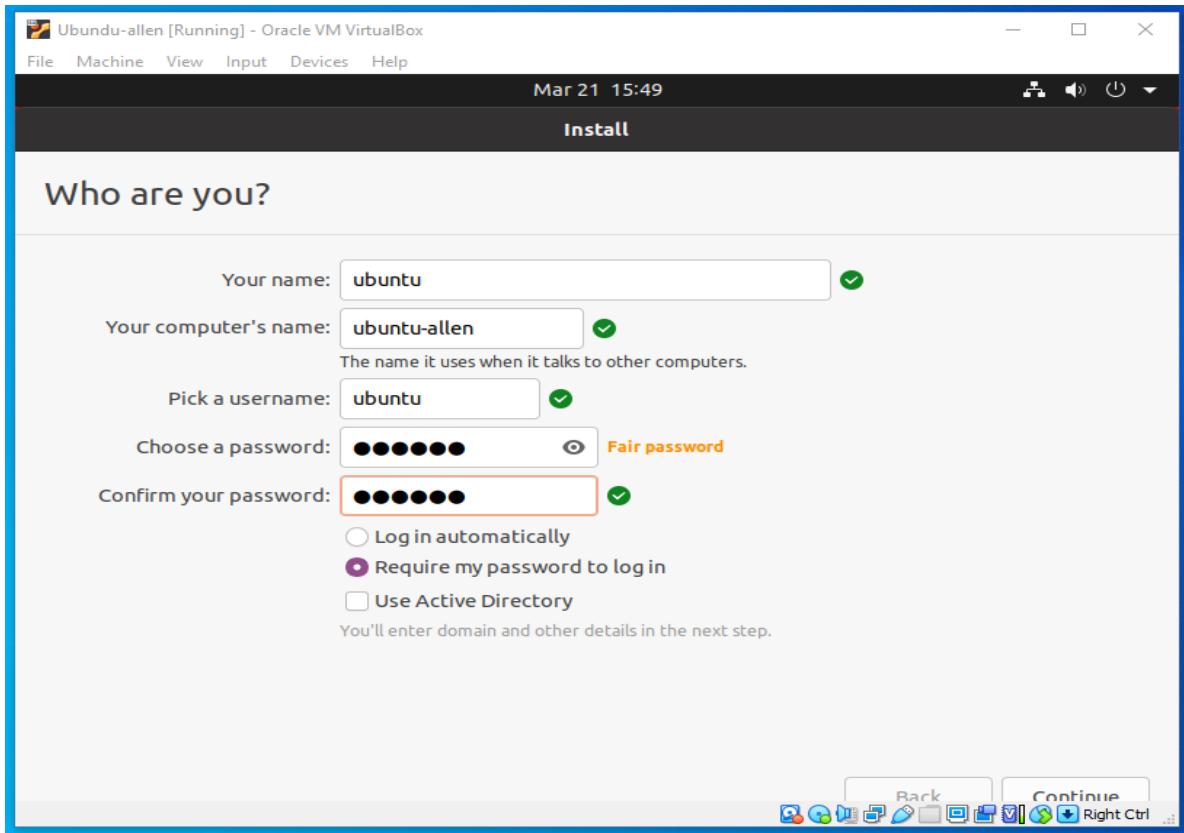






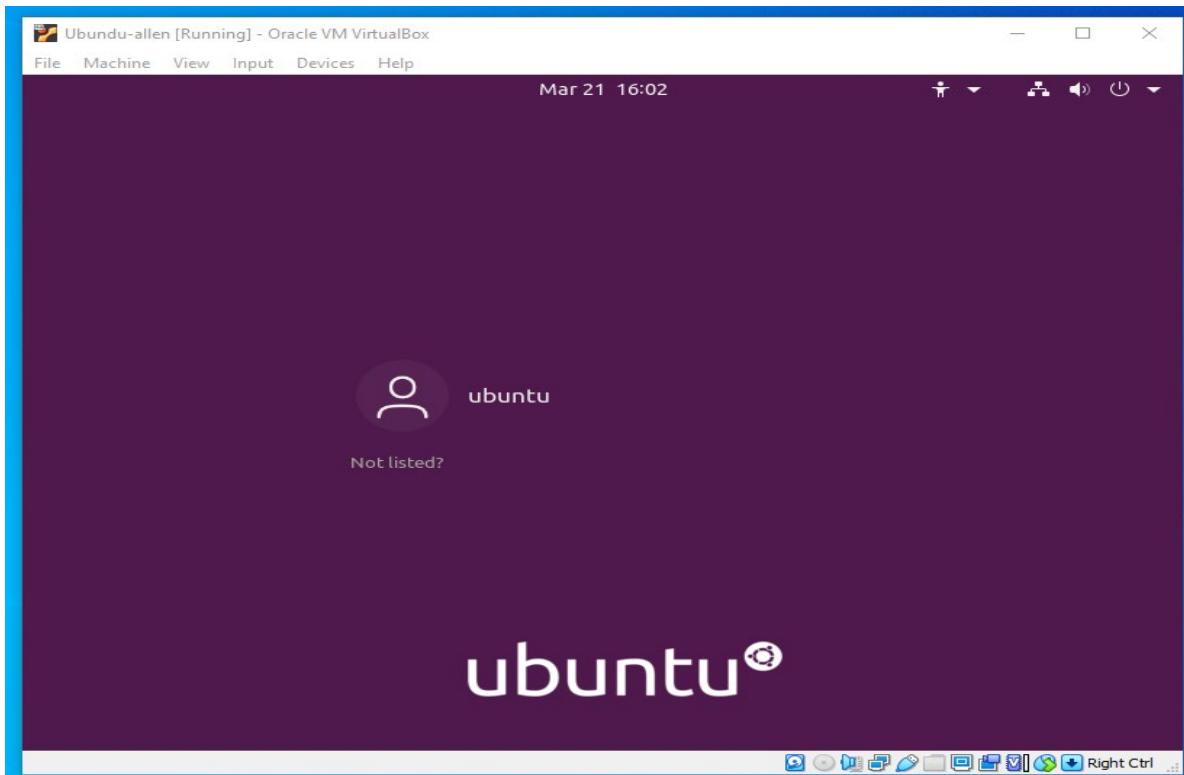
## **Step 6**

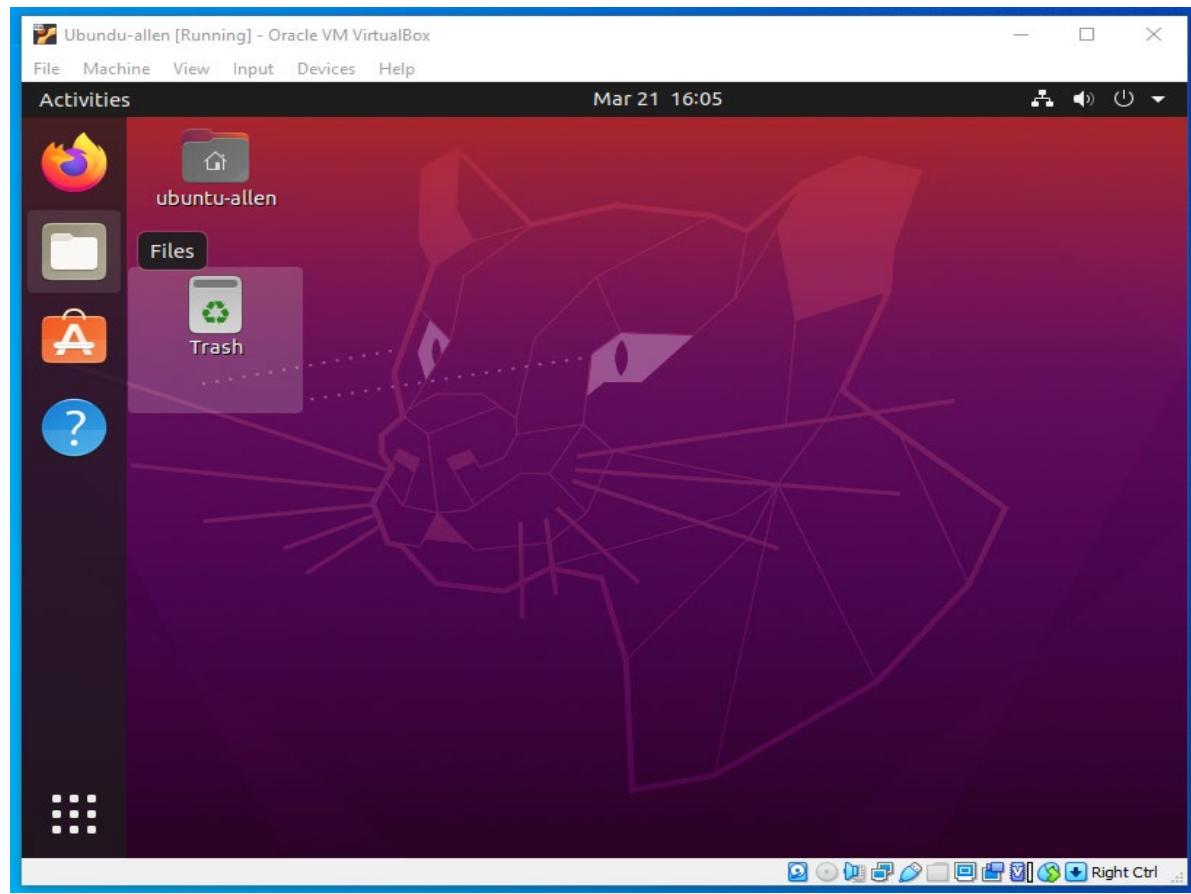
Set your username and password



## **Step 7**

Login to the user using your password.





## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No.: 4**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: A**

**Date: 25/03/2022**

### **Aim**

Learn basic Linux commands.

### **Procedure**

#### **1. pwd (Print Working Directory)**

To find out the path of the current working directory (folder) you're in.

#### **2. history**

To review the commands you have entered before. command number to run a command from history.

#### **3. man**

This will show the manual instruction of the command.

Eg: man pwd

#### **4. cd**

To navigate through the Linux files and directories.

- cd .. (with two dots) to move one directory up
- cd to go straight to the home folder
- cd- (with a hyphen) to move to your previous directory

#### **5. ls**

The ls command is used to view the contents of a directory. By default, this command will display the contents of your current working directory.

- ls -R will list all the files in the sub-directories as well
- ls -l – long listing
- ls -a will show the hidden files
- ls -al will list the files and directories with detailed information like the permissions, size, owner, etc.
- ls -t lists files sorted in the order of “last modified”

- ls -r option will reverse the natural sorting order. Usually used in combination with other switches such as ls -tr. This will reverse the time-wise listing.

## 6. mkdir

Use mkdir command to make a new directory. Use the p (parents) option to create a directory in between two existing directories.

## 7. rmdir

If you need to delete a directory, use the rmdir command. However, rmdir only allows you to delete empty directories.

## 8. touch

The touch command allows you to create a blank new file through the Linux command line.

## 9. rm

The rm command is used to delete directories and the contents within them. If you only want to delete the directory — as an alternative to rmdir — use rm -r.

## Output Screenshot

```

student@U20:~/Documents/ALLEN$ pwd
/home/student/Documents/ALLEN
student@U20:~/Documents/ALLEN$ history
 1  clear
 2  java -version
 3  sudo apt install openjdk-8-jre-headless
 4  java -version
 5  nano alien.java
 6  ls
 7  cd Desktop/
 8  javac alien.java
 9  sudo apt install openjdk-11-jdk-headless
10  javac alien.java
11  java HelloWorld
12  TOUCH 1.TXT
13  touch 1.txt
14  touch 2.txt
15  CWD
16  pwd
17  history
18  16
19  17
20  clear
21  pwd
22  history
23  pwd
24  man ls
25  ls -l
26  ls -l
27  pwd
28  history
student@U20:~/Documents/ALLEN$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Mar 29 2022 1.txt
-rw-rw-r-- 1 student student 0 Mar 29 2022 2.txt
student@U20:~/Documents/ALLEN$ ls -t
2.txt 1.txt
student@U20:~/Documents/ALLEN$ ls -r
2.txt 1.txt
student@U20:~/Documents/ALLEN$ mkdir newFolder
student@U20:~/Documents/ALLEN$ cd newFolder
student@U20:~/Documents/ALLEN$ touch abc.txt
student@U20:~/Documents/ALLEN$ touch newFolder/abc.txt
student@U20:~/Documents/ALLEN$ cd newFolder/

```

```

student@U20: ~/Documents/ALLEN
Mar 29 23:37
LS(1) User Commands LS(1)

NAME
    ls - list directory contents

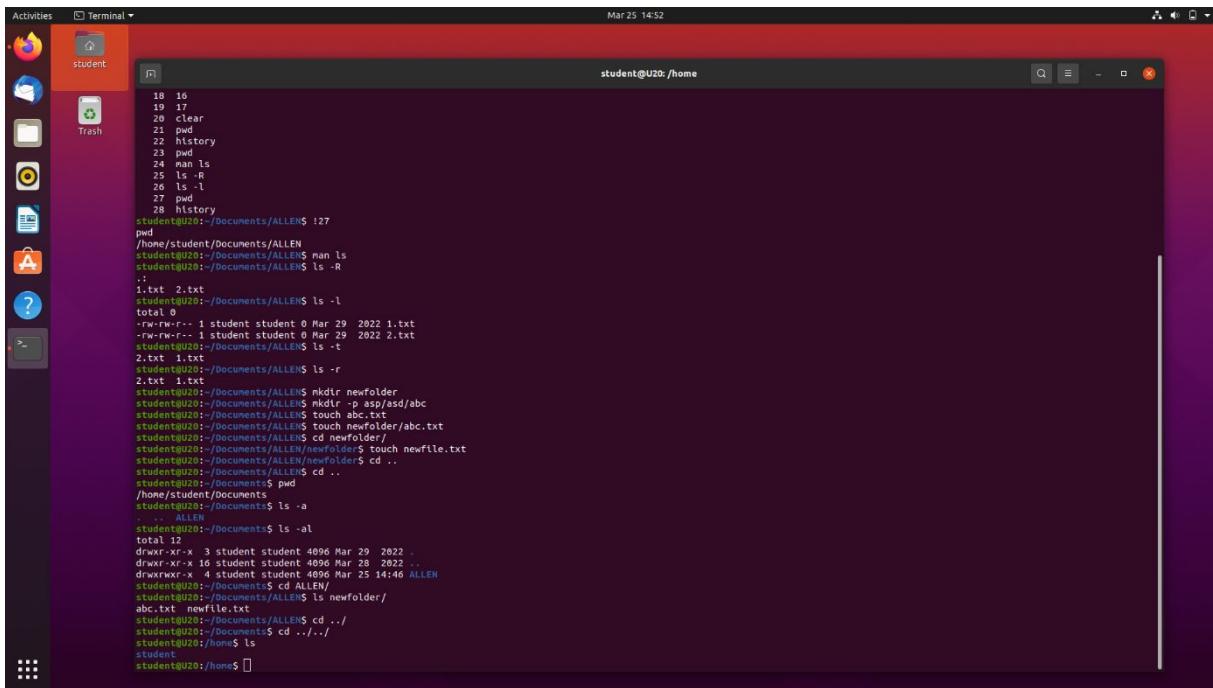
SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILEs (the current directory by default).
    Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

    Mandatory arguments to long options are mandatory for short options too.

    -a, --all
        do not ignore entries starting with .
    -A, --almost-all
        do not list implied . and ..
    --author
        with -l, print the author of each file
    -b, --escape
        print C-style escapes for nongraphic characters
    --block-size=SIZE
        with -l, scale sizes by SIZE when printing them; e.g.,
        '--block-size=M'; see SIZE format below
    -B, --ignore-backups
        do not list implied entries ending with ~
    -c      with -lt: sort by, and show, ctime (time of last modification of file status information); with -t: show ctime and sort by name; otherwise: sort by ctime, newest first
    -C      list entries by columns
    --color=[WHEN]
        colorize the output; WHEN can be 'always' (default if omitted),
        'auto', or 'never'; more info below
    -d, --directory
        list directories themselves, not their contents
    -D, --dired
        generate output designed for Emacs' dired mode
    -f      do not sort, enable -aU, disable -ls --color
    -F, --classify
        Manual page ls(1) lne 1 (press h for help or q to quit)

```



A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window titled "Terminal". The terminal window is open to a session on a local host named "student@U20: /home". The session shows a series of commands being run in a terminal window, starting with clearing the screen and listing files in a directory. The user then creates a new folder, adds files to it, and changes directory to that folder to view its contents. The terminal window has a dark purple background and a light purple header bar. The desktop interface includes a dock with various icons like a browser, file manager, and system tools.

```
18 16
19 17
20 clear
21 18
22 history
23 pwd
24 man ls
25 ls -R
26 19 1
27 pwd
28 history
student@U20:~/Documents/ALLEN$ !27
pwd
/home/student/Documents/ALLEN
student@U20:~/Documents/ALLEN man ls
student@U20:~/Documents/ALLEN$ ls -R
.:
1.txt 2.txt
student@U20:~/Documents/ALLEN$ ls -l
total 0
-rw-r--r-- 1 student student 0 Mar 29 2022 1.txt
-rw-r--r-- 1 student student 0 Mar 29 2022 2.txt
student@U20:~/Documents/ALLEN$ ls -t
2.txt 1.txt
student@U20:~/Documents/ALLEN$ ls -r
2.txt 1.txt
student@U20:~/Documents/ALLEN$ mkdir newfolder
student@U20:~/Documents/ALLEN$ mkdr -p asd/asd/abc
student@U20:~/Documents/ALLEN$ touch abc.txt
student@U20:~/Documents/ALLEN$ touch newfolder/abc.txt
student@U20:~/Documents/ALLEN$ cd ..
student@U20:~/Documents/ALLEN$ touch newfile.txt
student@U20:~/Documents/ALLEN$ cd ..
student@U20:~/Documents$ cd ..
student@U20:~/Documents$ pwd
/home/student/Documents
student@U20:~/Documents$ ls -a
.
.. ALLEN
student@U20:~/Documents$ ls -al
total 12
drwxr-xr-x  3 student student 4096 Mar 29 2022 .
drwxr-xr-x 16 student student 4096 Mar 28 2022 ..
drwxrwxr-x  4 student student 4096 Mar 23 14:46 ALLEN
student@U20:~/Documents$ cd ALLEN/
student@U20:~/Documents/ALLEN$ ls newfolder/
abc.txt  newfile.txt
student@U20:~/Documents/ALLEN$ cd ../..
student@U20:~/Documents$ cd ../../..
student@U20:~/home$ ls
student
student@U20:~/home$
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No.:5**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA- A**

**Date :25-03-2022**

**Aim:** Basic Linux commands and permission settings.

### **Procedure:**

#### **1. cp**

cp stands for copy. This command is used to copy files or group of files or directory. It creates an exact image of a file

[options]- -r, -f, -rf.

**cp -r**

**cp -f**

**cp -rf**

#### **2. Mv**

mv stands for move. This command is used to move files or group of files or directory.

**mv -r**

**mv -f**

**mv -rf**

#### **3. vi**

**Vi** also called **vim**. The vi editor is a command-line, interactive editor that you can use to create and modify text files.

**Syntax**

**vi filename**

It will open the editor in read only mode

Press **i** to insert

---

If you done the insert operation . then you can leave the page

Press **esc** to escape and type the below command.

This command is used write the edited or inserted file and quit from it , and back to terminal.

then you can use “:**wq!**” To save and exit from that vim.

#### 4. **more**

‘more’ command is used to display the whole content in your selected file

Syntax

more <filename>

#### 5. **cat**

cat command is also to display content in a file.

#### 6. **head**

This head command is used to display the first 10 lines on your selected file.

And you can also view the head part of the file with specified number of lines based on user choice.

Syntax

head -n <no of lines> <filename>

#### 7. **tail**

This command is used to print or display the last few lines in your document.

You can also use

---

Tail -n 3 ubuntu.txt

To print last 3 lines in the ubuntu.txt file.

## 8. chmod

This command is used to set permission to a file for user/admin ,group and others.

Here **user/admin** represent as **u**

**Group** represent as **g**

And **others** represent as **o**

You can see the permission details of a file using **ls -l**

syntax for giving permission

chmod u/g/o rwx

### Another method

**chmod 777<filename>**

Here 777 is represented as

First 7 represents the user permission

i.e, user has permission to read, write and execute

Read = 4

Write = 2

Execute = 1

Total of these are 7

And the second 7 represents as group and 3<sup>rd</sup> 7 represents the others

Here user , group and others have all permission

### Example

chmod 333 demotxt.txt

---

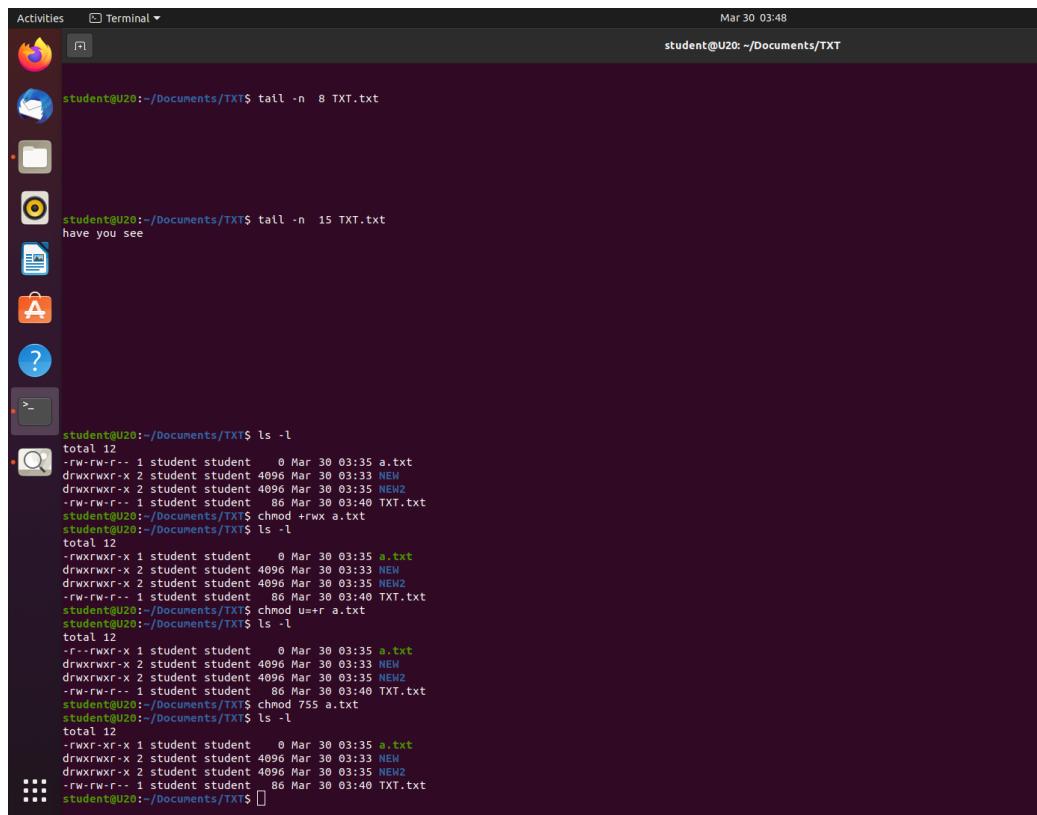
## Output

```
Activities Terminal Mar 30 03:41
student@U20:~/Documents$ touch TXT.txt
student@U20:~/Documents$ mkdir TXT
student@U20:~/Documents$ ls
TXT  TXT.txt
student@U20:~/Documents$ cp TXT.txt TXT
student@U20:~/Documents$ ls
TXT  TXT.txt
student@U20:~/Documents$ cd TXT/
student@U20:~/Documents/TXT$ ls
TXT.txt
student@U20:~/Documents/TXT$ cd ..
student@U20:~/Documents$ mkdir NEW
student@U20:~/Documents$ cd NEW
student@U20:~/Documents/NEW$ file1.txt
file1.txt: command not found
student@U20:~/Documents/NEW$ touch file1.txt
student@U20:~/Documents/NEW$ touch file2.txt
student@U20:~/Documents/NEW$ ls
file1.txt  file2.txt
student@U20:~/Documents/NEW$ cd ..
student@U20:~/Documents$ ls
NEW  TXT.txt
student@U20:~/Documents$ cd TXT
student@U20:~/Documents/TXT$ ls
NEW  TXT.txt
student@U20:~/Documents/TXT$ cd NE
student@U20:~/Documents/TXT$ cd NEW
student@U20:~/Documents/TXT/NEW$ ls
file1.txt  file2.txt
student@U20:~/Documents/TXT/NEW$ cd ..
student@U20:~/Documents/TXT$ ls
NEW  TXT.txt
student@U20:~/Documents/TXT$ cp -f NEW NEW2
cp: -r not specified; omitting directory 'NEW'
student@U20:~/Documents/TXT$ cp -f TXT.txt a.txt
student@U20:~/Documents/TXT$ ls
a.txt  NEW  NEW2  TXT.txt
student@U20:~/Documents/TXT$ cd NEW2
student@U20:~/Documents/TXT/NEW2$ ls
file1.txt  file2.txt
student@U20:~/Documents/TXT/NEW2$ cd ..
student@U20:~/Documents/TXT$ ls
a.txt  NEW2  TXT.txt
student@U20:~/Documents/TXT$ vi TXT.txt
student@U20:~/Documents/TXT$ 
```

```
Activities Terminal Mar 30 03:40
student@U20:~/Documents/TXT$ hello
hello
Its
me
allen
you
are
b
s
B
F
H
B
D
here
b
k
l
have you see
?
student@U20:~/Documents/TXT$ 
```

```
Activities Terminal Mar 30 03:42
student@U20:~/Documents/TXT$ more TXT.txt
hello
hi
its
me
allen
you
are
b
s
b
B
F
H
B
D
here
b
k
l
have you see
?
~-
student@U20:~/Documents/TXT$ cat TXT.txt
hello
hi
Its
me
allen
you
are
b
s
b
B
F
H
B
D
here
b
k
l
have you see
```

```
Activities Terminal Mar 30 03:44
student@U20:~/Documents/TXT$ head TXT.txt
hello
hi
Its
me
allen
you
are
b
s
b
student@U20:~/Documents/TXT$ head -n 4 TXT.txt
hello
hi
Its
me
student@U20:~/Documents/TXT$ tail TXT.txt
?
~-
student@U20:~/Documents/TXT$ tail -n 8 TXT.txt
student@U20:~/Documents/TXT$ tail -n 15 TXT.txt
have you see
student@U20:~/Documents/TXT$
```



A screenshot of a Linux desktop environment. On the left is a dock with icons for various applications. The main area shows a terminal window titled "Terminal". The terminal output is as follows:

```
student@U20:~/Documents/TXT$ tail -n 8 TXT.txt
have you see

student@U20:~/Documents/TXT$ tail -n 15 TXT.txt
have you see

student@U20:~/Documents/TXT$ ls -l
total 12
-rw-rw-r-- 1 student student 0 Mar 30 03:35 a.txt
drwxrwxr-x 2 student student 4096 Mar 30 03:33 NEW
drwxrwxr-x 2 student student 4096 Mar 30 03:35 NEW2
-rw-rw-r-- 1 student student 86 Mar 30 03:40 TXT.txt
student@U20:~/Documents/TXT$ chmod +rwx a.txt
student@U20:~/Documents/TXT$ ls -l
total 12
-rwxrwxr-x 1 student student 0 Mar 30 03:35 a.txt
drwxrwxr-x 2 student student 4096 Mar 30 03:33 NEW
drwxrwxr-x 2 student student 4096 Mar 30 03:35 NEW2
-rw-rw-r-- 1 student student 86 Mar 30 03:40 TXT.txt
student@U20:~/Documents/TXT$ chmod u+r a.txt
student@U20:~/Documents/TXT$ ls -l
total 12
-r--rwxr-x 1 student student 0 Mar 30 03:35 a.txt
drwxrwxr-x 2 student student 4096 Mar 30 03:33 NEW
drwxrwxr-x 2 student student 4096 Mar 30 03:35 NEW2
-rw-rw-r-- 1 student student 86 Mar 30 03:40 TXT.txt
student@U20:~/Documents/TXT$ chmod 755 a.txt
student@U20:~/Documents/TXT$ ls -l
total 12
-rwxr-xr-x 1 student student 0 Mar 30 03:35 a.txt
drwxrwxr-x 2 student student 4096 Mar 30 03:33 NEW
drwxrwxr-x 2 student student 4096 Mar 30 03:35 NEW2
-rw-rw-r-- 1 student student 86 Mar 30 03:40 TXT.txt
student@U20:~/Documents/TXT$
```

## NETWORKING & SYSTEM ADMINISTRATION LAB

### Experiment No.: 6

#### Aim

Learn Basic Linux commands

#### Procedure

##### **1. read**

Read command is used to read a value from user to store to a variable.

Syntax:~\$ read <variable\_name>

##### **2. echo**

Used to print or display value of a variable

Syntax:~\$ echo [option] “ ” or echo [option] \$<variable\_name>

Options- -n, -E, -e,

##### **3. du**

Used to display the disk usage of a file or directory.

Syntax:~\$ du [option] <file\_name>/<folder\_name>

Options- -a, -c,

##### **4. find**

Used to search files

Syntax:~\$ find <file\_name>

##### **5. sudo**

It stands for Super User. It provides commands administrator power

Syntax:~\$ sudo <command> [option]

##### **6. useradd**

Used to add a new user.

Syntax:~\$ sudo useradd <user\_name>

##### **7. usermod**

Used to modify the user id.

Syntax:~\$ sudo usermod [option] <new\_id> <user\_name>

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA- A**

**Date: 01-04-2022**

**8. userdel**

Used to delete a user

Syntax:~\$ del [option]

**9. passwd**

Used to set a password to newly created user or modify the password of an existing user

Syntax:~\$ sudo passwd <user\_name>

**10. id**

Used to print the current user details.

Syntax:~\$ id

**11. su**

Used to access root. Su user\_name to switch user

Syntax:~\$ su <user\_name>

**12. tar**

Used to create archive, unpack and display content in an archive

Syntax:~\$ tar [option] <archive\_name>

<name\_of\_files\_to\_be\_added\_or\_\*\_to\_add\_all>

Options- -cvf, -xvf, -tvf

**13. grep**

Used to search a certain pattern in a file.

Syntax:~\$ grep [option] <pattern> <file\_name>

Options- -v, -i

**14. Expr**

Used to evaluate an expression.

Syntax:~\$ expr <operand\_1> <operator> <operand\_2>

Operator- +, -, \\*, /

## Output

```

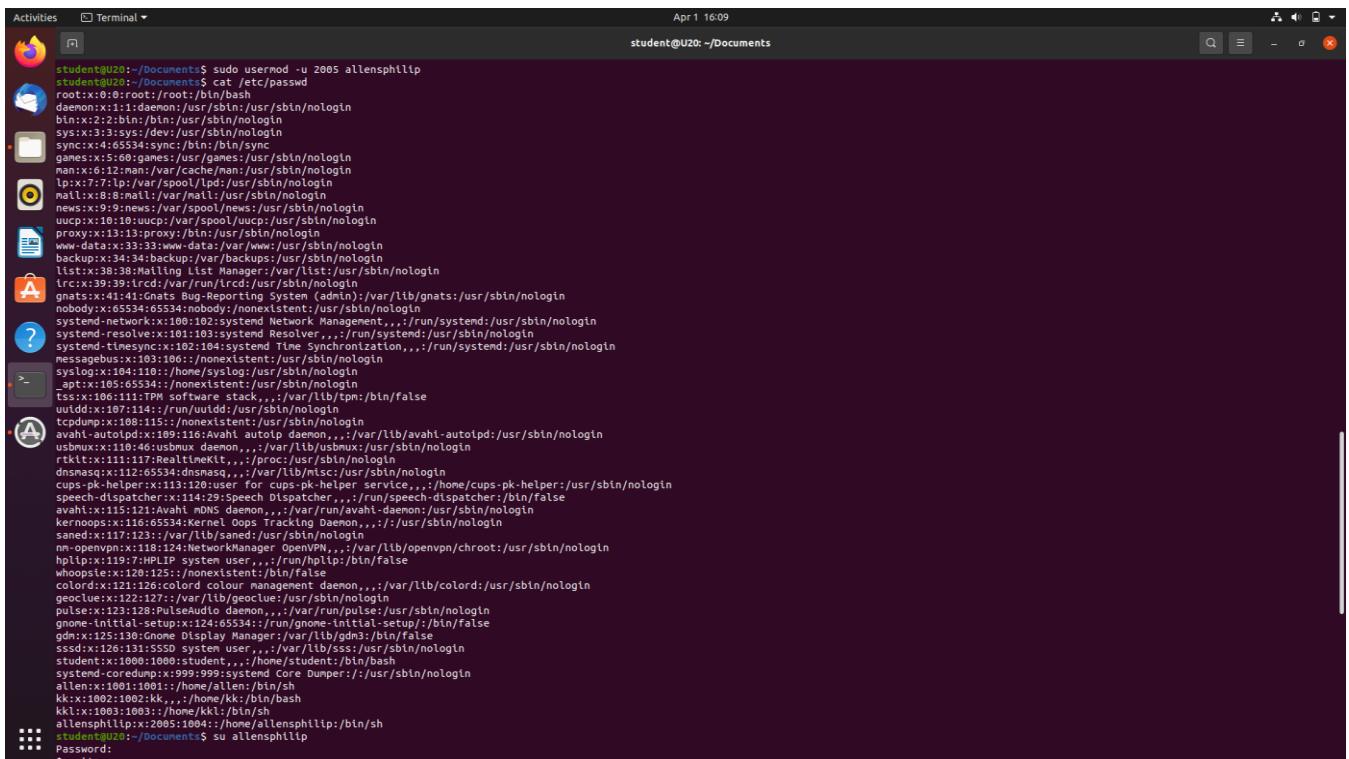
Activities Terminal student@U20: ~/Documents
student@U20:~/Documents$ read a
12
student@U20:~/Documents$ echo $a
12
student@U20:~/Documents$ du
4
4 ./TXT/NEW2
4 ./TXT/NEW
16 ./TXT/
4 ./NEW
24 .
student@U20:~/Documents$ Find TXT.txt
TXT.txt
student@U20:~/Documents$ sudo useradd allensphilip
[sudo] password for student:
student@U20:~/Documents$ sudo passwd allensphilip
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Authentication token manipulation error
passwd: password unchanged
student@U20:~/Documents$ sudo passwd allensphilip
New password:
Retype new password:
passwd: password updated successfully
student@U20:~/Documents$ cat /etc/passwd
root:x:0:root:/root:/bin/bash
daemon:x:1:daemon:/usr/sbin/nologin
bin:x:2:bin:/bin:/usr/sbin/nologin
sys:x:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:0:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:news:/var/spool/news:/usr/sbin/nologin
ucp:x:10:10:ucp:/var/spool/ucp:/usr/sbin/nologin
proxy:x:11:proxy:/var/spool/proxy:/usr/sbin/nologin
www-data:x:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:99:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
system-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
system-timesyncd:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106:/nonexistent:/usr/sbin/nologin
syslog:x:104:110:/home/syslog:/usr/sbin/nologin
apt:x:105:65534:/nonexistent:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,,:/var/lib/tpm:/bin/false
uuid:x:107:114:/run/uuid:/usr/sbin/nologin
tcpdump:x:108:115:/nonexistent:/usr/sbin/nologin
avahi-autopid:x:109:116:Avahi autopid daemon,,,:/var/lib/avahi-autopid:/usr/sbin/nologin
usbmux:x:110:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:117:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin

```

```

Activities Terminal student@U20: ~/Documents
student@U20:~/Documents$ New password:
Retype new password:
passwd: password updated successfully
student@U20:~/Documents$ cat /etc/passwd
root:x:0:root:/root:/bin/bash
daemon:x:1:daemon:/usr/sbin/nologin
bin:x:2:bin:/bin:/usr/sbin/nologin
sys:x:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:0:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:news:/var/spool/news:/usr/sbin/nologin
ucp:x:10:10:ucp:/var/spool/ucp:/usr/sbin/nologin
proxy:x:11:proxy:/var/spool/proxy:/usr/sbin/nologin
www-data:x:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:99:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
system-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
system-timesyncd:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106:/nonexistent:/usr/sbin/nologin
syslog:x:104:110:/home/syslog:/usr/sbin/nologin
apt:x:105:65534:/nonexistent:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,,:/var/lib/tpm:/bin/false
uuid:x:107:114:/run/uuid:/usr/sbin/nologin
tcpdump:x:108:115:/nonexistent:/usr/sbin/nologin
avahi-autopid:x:109:116:Avahi autopid daemon,,,:/var/lib/avahi-autopid:/usr/sbin/nologin
usbmux:x:110:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:117:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
cups:x:113:121:cups-bus-helper:/var/run/cups-bus-helper:/home/cups-pk-helper:/usr/sbin/nologin
speech-dispatcher:x:114:20:speech-dispatcher,,,:/var/lib/speech-dispatcher:/bin/false
avahi:x:115:121:avahi_mdns daemon,,,:/var/lib/avahi-daemon:/usr/sbin/nologin
kerneloops:x:116:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
saned:x:117:123:/var/lib/saned:/usr/sbin/nologin
nm-openvpn:x:118:124:NetworkManager_OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
hplip:x:119:7:HPLIP system user,,,:/run/hplip:/bin/false
whoopsie:x:120:125:/nonexistent:/bin/false
colord:x:121:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:127:/var/lib/geoclue:/usr/sbin/nologin
polkit-x11:x:123:128:polkit-x11,,,:/var/lib/polkit-x11:/usr/sbin/nologin
gnome-initial-setup:x:124:65534:/run/gnome-initial-setup:/bin/false
gdm:x:125:130:Gnome Display Manager:/var/lib/gdm:/bin/false
sssd:x:126:131:SSSD System user,,,:/var/lib/sssd:/usr/sbin/nologin
student:x:1000:1000:student,,,:/home/student:/bin/bash
systemd-coredump:x:999:999:systemd Core Dumper::/usr/sbin/nologin
allen:x:1001:1001:/home/allen:/bin/sh
kk:x:1002:1002:kk,,,:/home/kk:/bin/bash
kktlx:1003:1003:/home/kktl:/bin/sh
allensphilip:x:1004:1004:/home/allensphilip:/bin/sh

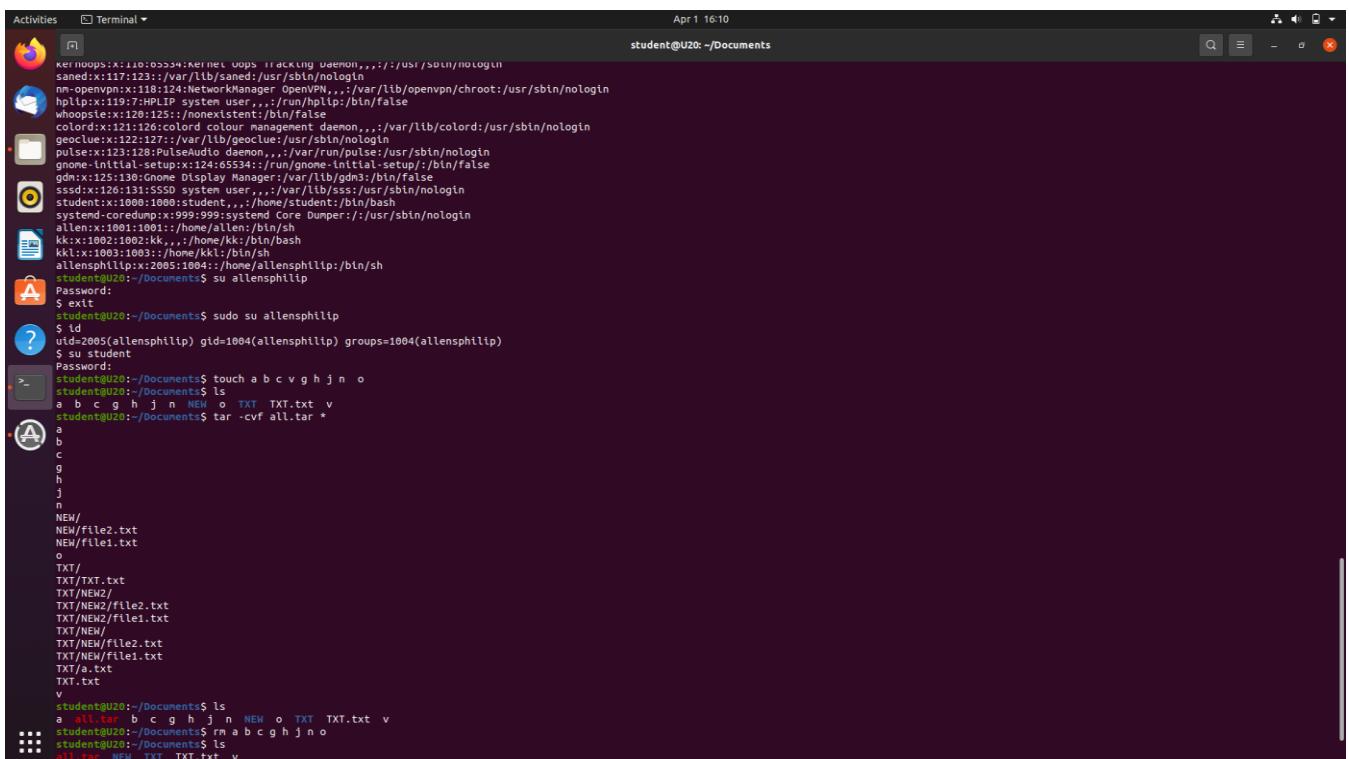
```



```

Activities Terminal Apr 1 16:09
student@U20: ~/Documents$ sudo usermod -u 2005 allensphilip
student@U20: ~/Documents$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/bin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin/sync
games:x:5:60:games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/bin/false
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:MailList Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:99:99:nobody:/var/run/nobody:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesync:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106:/:/nonexistent:/usr/sbin/nologin
syslog:x:104:110:/:/home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/:/nonexistent:/usr/sbin/nologin
tss:x:108:111:TPM software stack,,,:/var/lib/tpm:/bin/false
uuid:x:107:114:/:/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:115:tcpdump,,,:/var/lib/tcpdump:/usr/sbin/nologin
avahi:_autolpdx:109:116:Avahi autolp daemon,,,:/var/lib/avahi-autolpd:/usr/sbin/nologin
usbmuxd:x:110:117:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:117:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/nsc:/usr/sbin/nologin
cups-pk-helper:x:113:120:used for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
speech-dispatcher:x:114:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
avahi-x:115:121:avahi_mdNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin
kerberos:x:116:65534:Kerberos Ooops Tracking Daemon,,,:/usr/sbin/nologin
sanded:x:117:122:sanded:/var/lib/sanded:/usr/sbin/nologin
nnp:x:118:123:nnp:Network News Transfer Protocol,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
hplip:x:119:7:HPLIP system user,,,:/run/hplip:/bin/false
whoopsie:x:120:125:/:/bin/false
coloridx:x:121:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:127:geoclue:/usr/sbin/nologin
pulse:x:123:128:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:124:65534:/:/run/gnome-initial-setup:/bin/false
gdm:x:125:130:Gnome Display Manager:/var/lib/gdm3:/bin/false
sssd:x:126:131:SSSD System User,,,:/var/lib/sssd:/usr/sbin/nologin
student:x:1000:1000:student,,,:/home/student:/bin/bash
systemd-coredump:x:99:99:systemd Core Dumper://:/usr/sbin/nologin
allen:x:1001:1001:/:/home/allen:/bin/sh
kk:x:1002:1002:kk,,,:/home/kk:/bin/bash
kklx:x:1003:1003:/:/home/kklx:/bin/sh
allensphilip:x:2005:1004:/:/home/allensphilip:/bin/sh
student@U20: ~/Documents$ su allensphilip
Password:
student@U20:

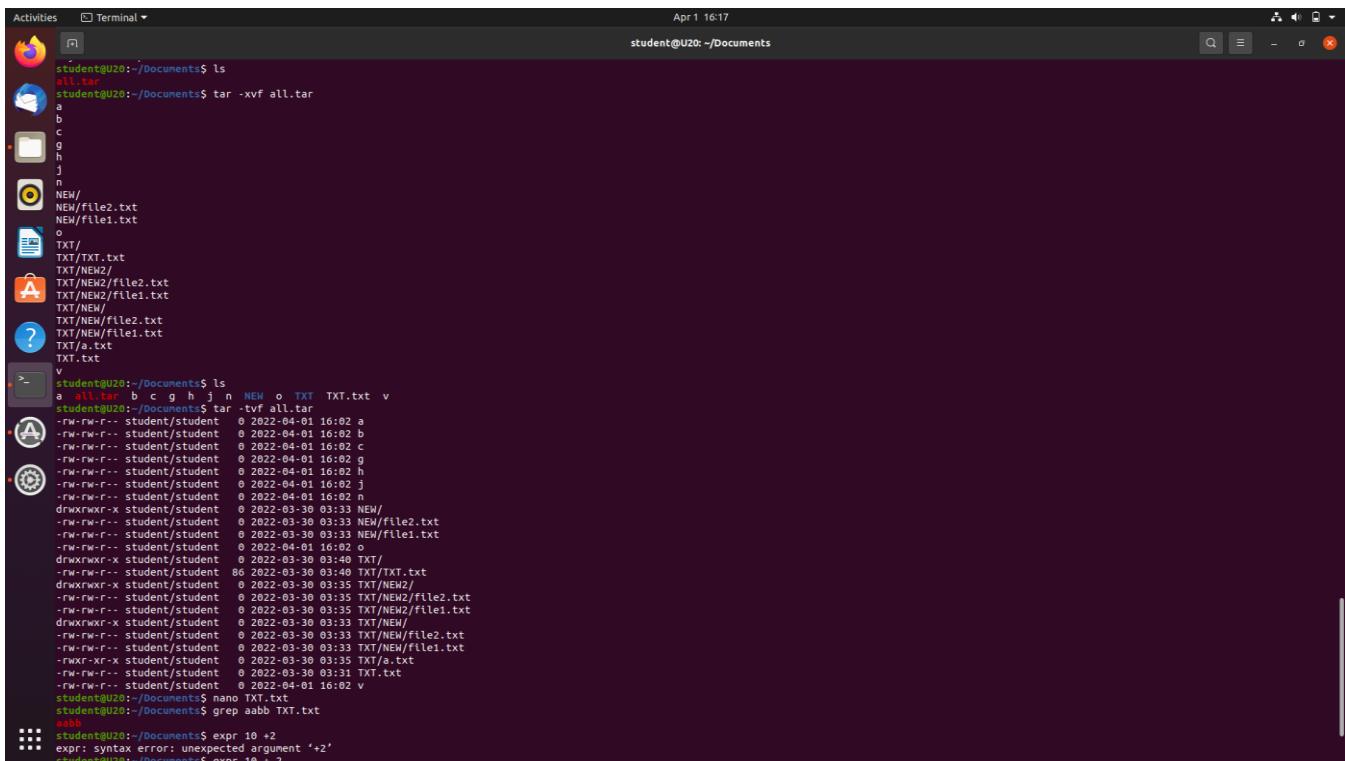
```



```

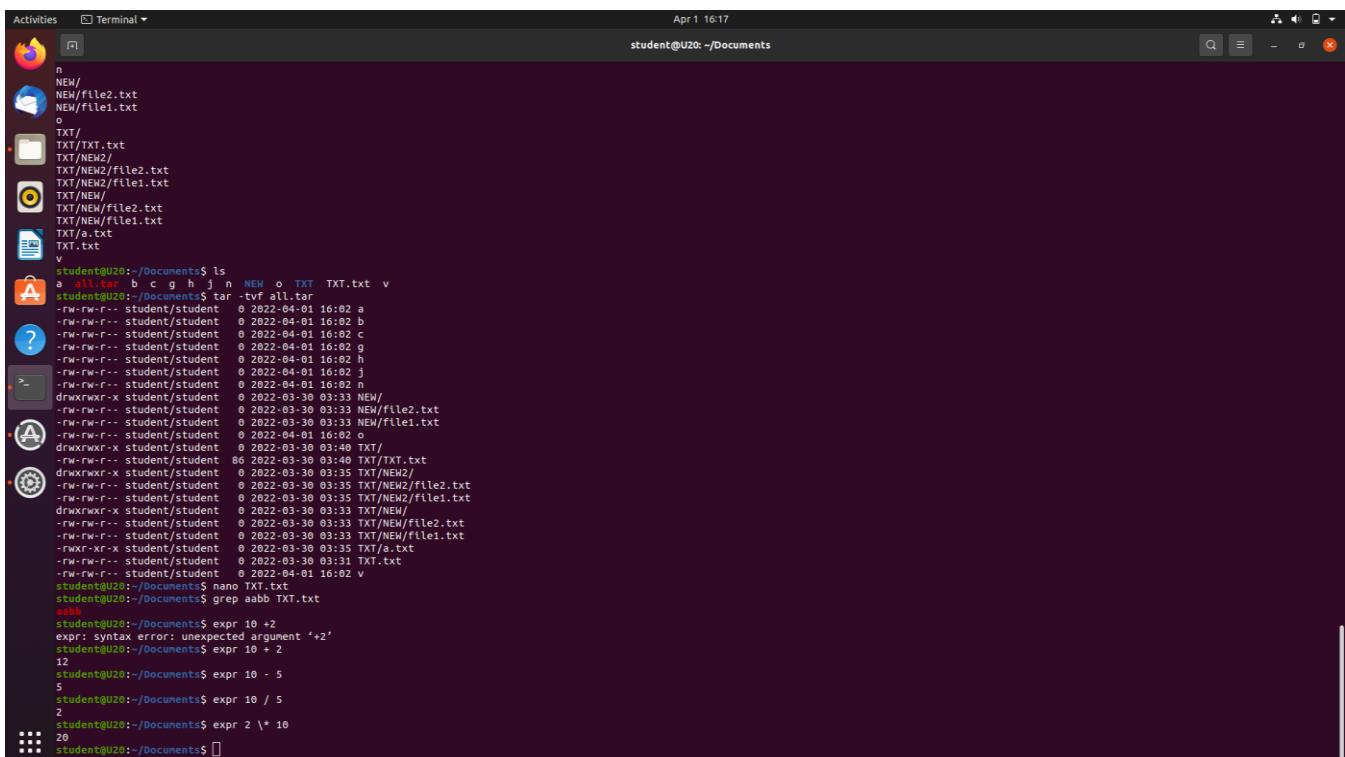
Activities Terminal Apr 1 16:10
student@U20: ~/Documents$ 
Kerneloops:x:116:65534:Kernel oops Tracking Daemon,,,:/usr/sbin/nologin
sanded:x:117:123:/:/var/lib/sanded:/usr/sbin/nologin
nn-openvpn:x:118:124:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
hplip:x:119:7:HPLIP system user,,,:/run/hplip:/bin/false
whoopsie:x:120:125:/:/bin/false
coloridx:x:121:126:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:127:geoclue:/usr/sbin/nologin
pulse:x:123:128:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:124:65534:/:/run/gnome-initial-setup:/bin/false
gdm:x:125:130:Gnome Display Manager:/var/lib/gdm3:/bin/false
sssd:x:126:131:SSSD System User,,,:/var/lib/sssd:/usr/sbin/nologin
student:x:1000:1000:student,,,:/home/student:/bin/bash
systemd-coredump:x:99:99:systemd Core Dumper://:/usr/sbin/nologin
allen:x:1001:1001:/:/home/allen:/bin/sh
kk:x:1002:1002:kk,,,:/home/kk:/bin/bash
kklx:x:1003:1003:/:/home/kklx:/bin/sh
allensphilip:x:2005:1004:/:/home/allensphilip:/bin/sh
student@U20: ~/Documents$ 
student@U20: ~/Documents$ su allensphilip
Password:
S exit
student@U20: ~/Documents$ 
S id
uid=2005(allensphilip) gid=1004(allensphilip) groups=1004(allensphilip)
$ su student
student@U20: ~/Documents$ 
student@U20: ~/Documents$ touch a b c v g h j n o
student@U20: ~/Documents$ ls
a b c g h j n NEW o TXT TXT.txt v
student@U20: ~/Documents$ tar -cvf all.tar *
a
b
c
g
h
j
n
NEW/
NEW/file2.txt
NEW/file1.txt
o
TXT/
TXT/TXT.txt
TXT/NEW/
TXT/NEW/file2.txt
TXT/NEW/file1.txt
TXT/NEW/
TXT/NEW/
TXT/NEW/file2.txt
TXT/NEW/file1.txt
TXT/a.txt
TXT/txt
v
student@U20: ~/Documents$ ls
a all.tar b c g h j n NEW o TXT TXT.txt v
student@U20: ~/Documents$ rm a b c g h j n o
student@U20: ~/Documents$ ls
all.tar NEW TXT TXT.txt v

```



```

Activities Terminal Apr 1 16:17
student@U20:~/Documents$ ls
all.tar
student@U20:~/Documents$ tar -xvf all.tar
a
b
c
g
h
j
NEW/
NEW/file2.txt
NEW/file1.txt
o
TXT/
TXT/TXT.txt
TXT/NEW2/
TXT/NEW2/file2.txt
TXT/NEW2/file1.txt
TXT/NEW/
TXT/NEW/file2.txt
TXT/NEW/file1.txt
TXT/a.txt
TXT.txt
v
student@U20:~/Documents$ ls
a all.tar b c g h j n NEW o TXT TXT.txt v
student@U20:~/Documents$ tar -tvf all.tar
-rw-rw-r-- student/student 0 2022-04-01 16:02 a
-rw-rw-r-- student/student 0 2022-04-01 16:02 b
-rw-rw-r-- student/student 0 2022-04-01 16:02 c
-rw-rw-r-- student/student 0 2022-04-01 16:02 g
-rw-rw-r-- student/student 0 2022-04-01 16:02 h
-rw-rw-r-- student/student 0 2022-04-01 16:02 j
-rw-rw-r-- student/student 0 2022-04-01 16:02 n
drwxrwxr-x student/student 0 2022-03-30 03:33 NEW/
-rw-rw-r-- student/student 0 2022-03-30 03:33 NEW/file2.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 NEW/file1.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/
drwxrwxr-x student/student 0 2022-03-30 03:40 TXT/
-rw-rw-r-- student/student 86 2022-03-30 03:40 TXT/TXT.txt
drwxrwxr-x student/student 0 2022-03-30 03:35 TXT/NEW2/
-rw-rw-r-- student/student 0 2022-03-30 03:35 TXT/NEW2/file2.txt
-rw-rw-r-- student/student 0 2022-03-30 03:35 TXT/NEW2/file1.txt
drwxrwxr-x student/student 0 2022-03-30 03:33 TXT/NEW/
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/NEW/file2.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/NEW/file1.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/a.txt
-rw-rw-r-- student/student 0 2022-03-30 03:31 TXT.txt
-rw-rw-r-- student/student 0 2022-04-01 16:02 v
student@U20:~/Documents$ nano TXT.txt
student@U20:~/Documents$ grep aabb TXT.txt
aabb
student@U20:~/Documents$ expr 10 +
expr: syntax error: unexpected argument '+'
student@U20:~/Documents$ expr 10 + 2
12
student@U20:~/Documents$ expr 10 - 5
5
student@U20:~/Documents$ expr 2 \* 10
20
student@U20:~/Documents$ 
```



```

Activities Terminal Apr 1 16:17
student@U20:~/Documents$ ls
all.tar
student@U20:~/Documents$ tar -xvf all.tar
a
b
c
g
h
j
NEW/
NEW/file2.txt
NEW/file1.txt
o
TXT/
TXT/TXT.txt
TXT/NEW2/
TXT/NEW2/file2.txt
TXT/NEW2/file1.txt
TXT/NEW/
TXT/NEW/file2.txt
TXT/NEW/file1.txt
TXT/a.txt
TXT.txt
v
student@U20:~/Documents$ ls
a all.tar b c g h j n NEW o TXT TXT.txt v
student@U20:~/Documents$ tar -tvf all.tar
-rw-rw-r-- student/student 0 2022-04-01 16:02 a
-rw-rw-r-- student/student 0 2022-04-01 16:02 b
-rw-rw-r-- student/student 0 2022-04-01 16:02 c
-rw-rw-r-- student/student 0 2022-04-01 16:02 g
-rw-rw-r-- student/student 0 2022-04-01 16:02 h
-rw-rw-r-- student/student 0 2022-04-01 16:02 j
-rw-rw-r-- student/student 0 2022-04-01 16:02 n
drwxrwxr-x student/student 0 2022-03-30 03:33 NEW/
-rw-rw-r-- student/student 0 2022-03-30 03:33 NEW/file2.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 NEW/file1.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/
drwxrwxr-x student/student 0 2022-03-30 03:40 TXT/
-rw-rw-r-- student/student 86 2022-03-30 03:40 TXT/TXT.txt
drwxrwxr-x student/student 0 2022-03-30 03:35 TXT/NEW2/
-rw-rw-r-- student/student 0 2022-03-30 03:35 TXT/NEW2/file2.txt
-rw-rw-r-- student/student 0 2022-03-30 03:35 TXT/NEW2/file1.txt
drwxrwxr-x student/student 0 2022-03-30 03:33 TXT/NEW/
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/NEW/file2.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/NEW/file1.txt
-rw-rw-r-- student/student 0 2022-03-30 03:33 TXT/a.txt
-rw-rw-r-- student/student 0 2022-03-30 03:31 TXT.txt
-rw-rw-r-- student/student 0 2022-04-01 16:02 v
student@U20:~/Documents$ nano TXT.txt
student@U20:~/Documents$ grep aabb TXT.txt
aabb
student@U20:~/Documents$ expr 10 +
expr: syntax error: unexpected argument '+'
student@U20:~/Documents$ expr 10 + 2
12
student@U20:~/Documents$ expr 10 - 5
5
student@U20:~/Documents$ expr 2 \* 10
20
student@U20:~/Documents$ 
```

**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.: 7****Name: ALLEN S PHILIP****Roll No: 20****Batch: RMCA- A****Date: 04-04-2022****Aim**

Understand ssh command, login into a remote system using ssh.

**Procedure****1. Remotely connecting a device**

The ssh command provides a secure encrypted connection between two hosts over an insecure network. This connection can also be used for terminal access, file transfers, and for tunneling other applications

**Syntax:**

```
:~$ ssh <user_name>@<machine_ip_number>
```

Eg: :~\$ ssh student@192.168.6.189

Then enter the user password to login in

**2. Creates a key pair for public key authentication****Syntax:**

```
:~$ ssh-keygen
```

-it will create a public and private key

**Copying key to the remote machine**

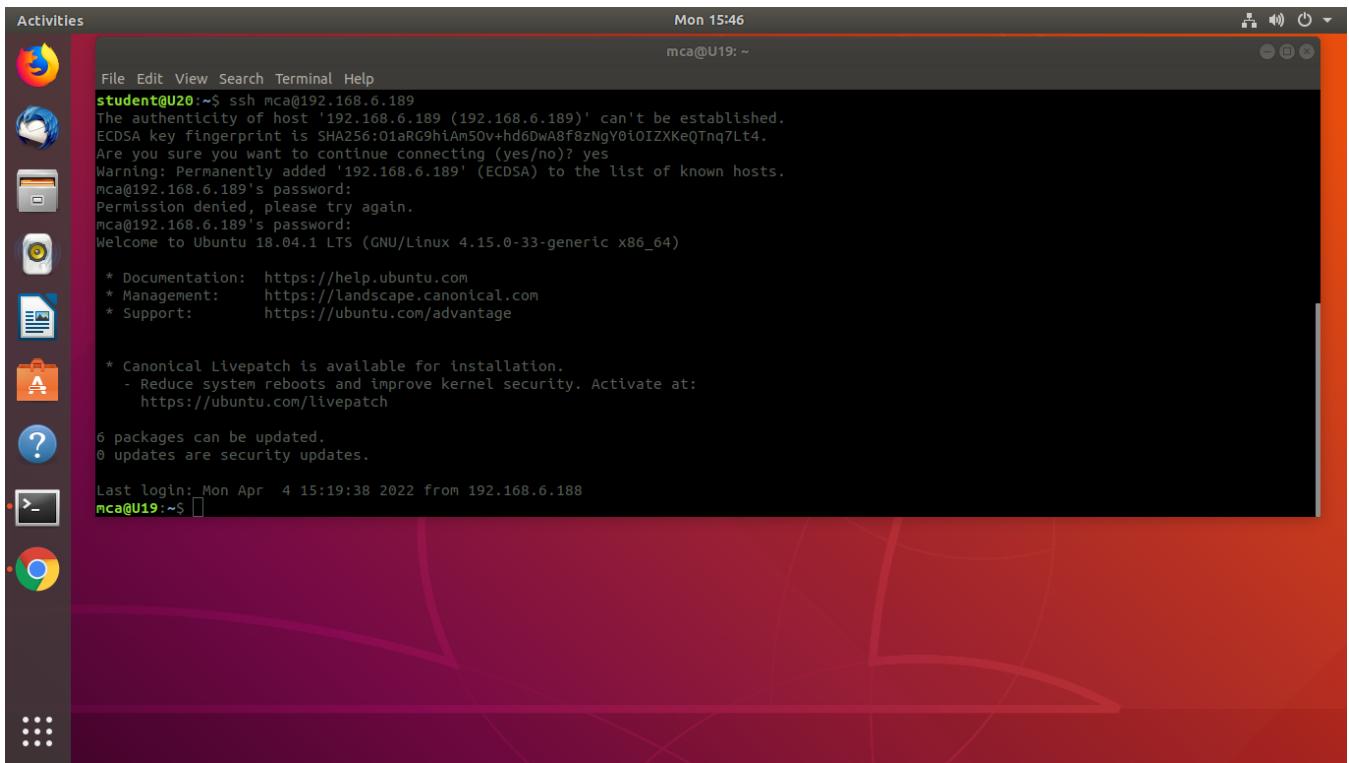
```
:~$ ssh-copy-id [option] <location of the public_key>
```

```
<remote_username>@<remote_ip_address>
```

Eg: ssh-copy-id -i .ssh/id\_rsa.pub mca@192.168.6189

-Then you need to enter password for the first time and after that the key is used to authenticate login.

## Output



A screenshot of an Ubuntu desktop environment. On the left is a dock with icons for various applications like the Dash, Home, and Dash to Dock. The main area shows a terminal window titled 'Terminal' with the command 'ssh mca@192.168.6.189' being run. The terminal output shows the authenticity of the host being checked, a warning about adding it to the list of known hosts, and a password prompt. It also displays system updates information and a last login timestamp.

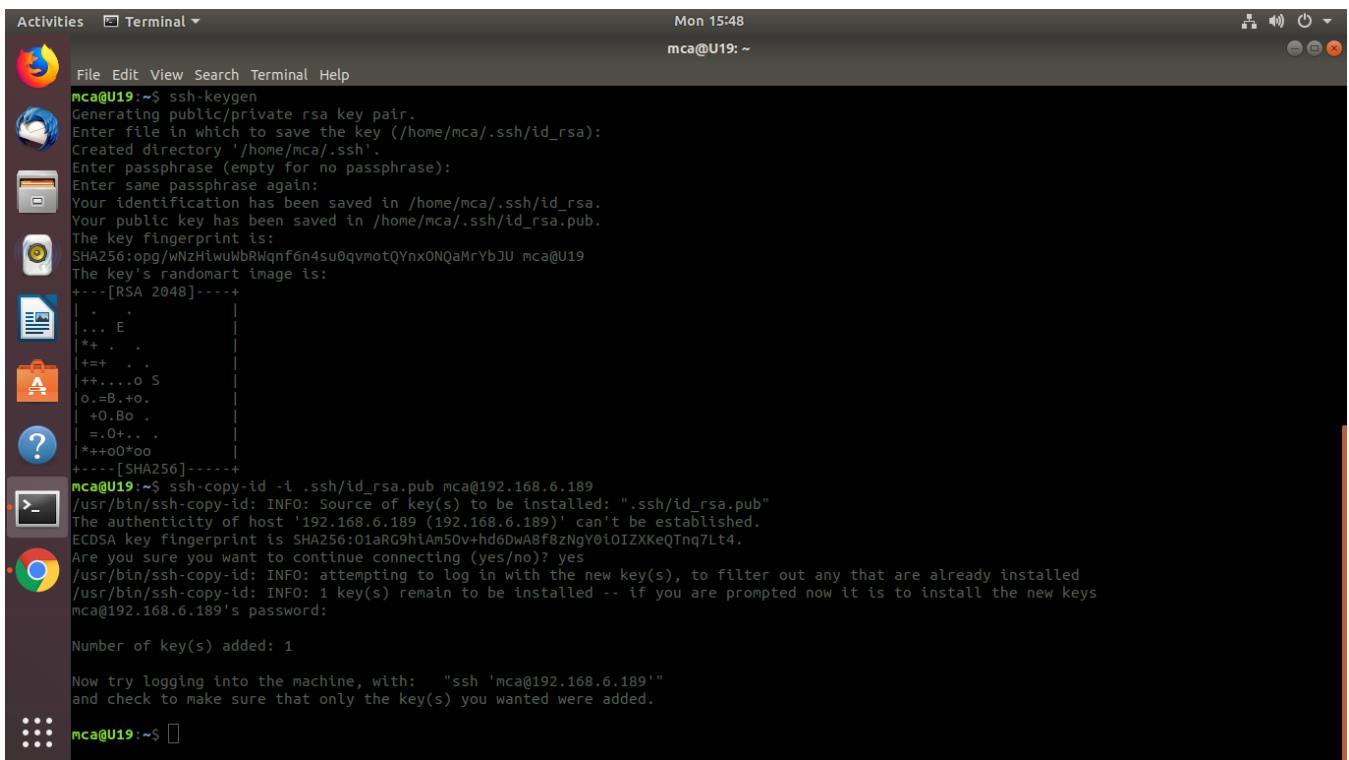
```
student@U20:~$ ssh mca@192.168.6.189
The authenticity of host '192.168.6.189' (192.168.6.189) can't be established.
ECDSA key fingerprint is SHA256:01aRG9hiAm50v+hd6DwA8f8zNgY0l0IZXKeQTnq7Lt4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.6.189' (ECDSA) to the list of known hosts.
mca@192.168.6.189's password:
Permission denied, please try again.
mca@192.168.6.189's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-33-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

 * Canonical Livepatch is available for installation.
 - Reduce system reboots and improve kernel security. Activate at:
   https://ubuntu.com/livepatch

6 packages can be updated.
0 updates are security updates.

Last login: Mon Apr  4 15:19:38 2022 from 192.168.6.188
mca@U19:~$
```



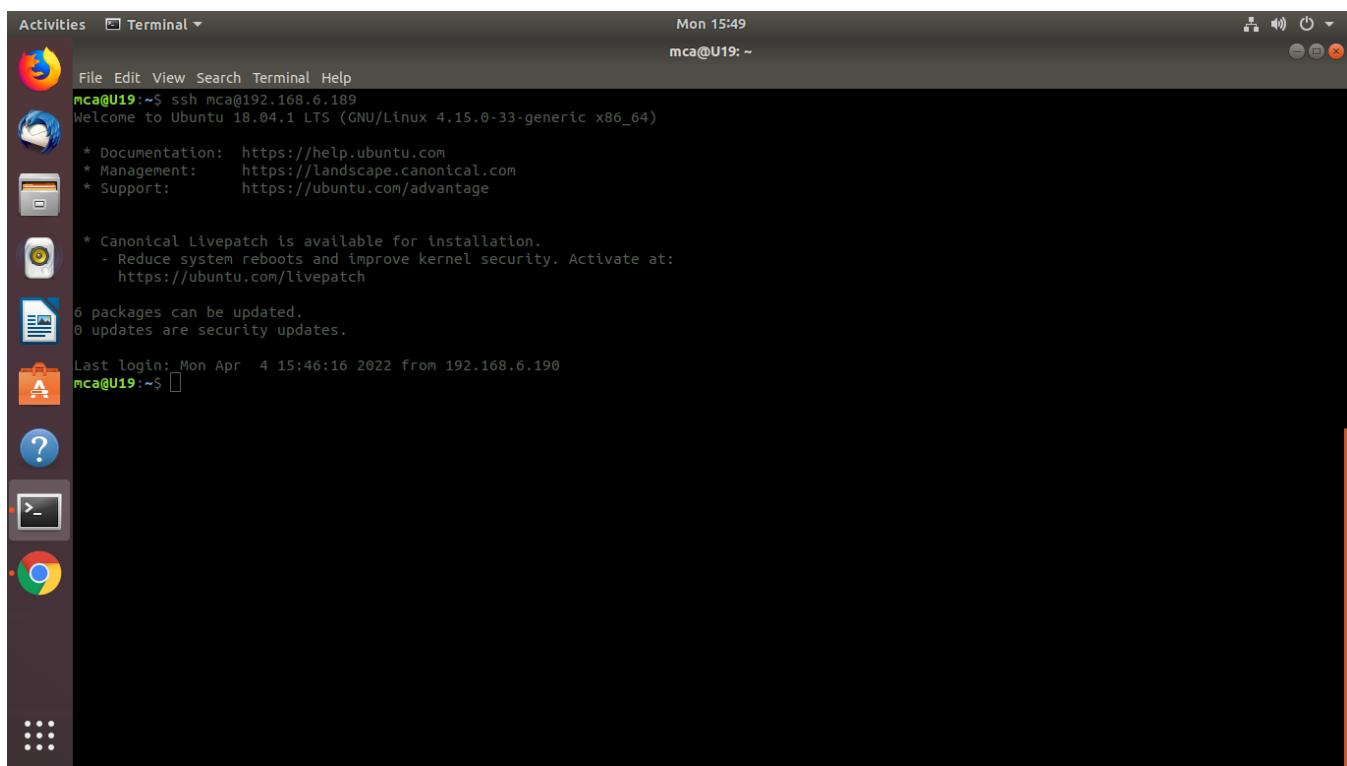
A screenshot of an Ubuntu desktop environment. On the left is a dock with icons for various applications like the Dash, Home, and Dash to Dock. The main area shows a terminal window titled 'Terminal' with the command 'ssh-keygen' being run. The terminal output shows the generation of an RSA key pair, the creation of an SSH directory, and the saving of the public key. It then uses 'ssh-copy-id' to copy the public key to another machine. Finally, it attempts to log in via SSH and adds the new key to the list of known hosts.

```
mca@U19:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/mca/.ssh/id_rsa):
Created directory '/home/mca/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/mca/.ssh/id_rsa.
Your public key has been saved in /home/mca/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:0pg/wNzHlwuWbRWqnf6n4su0qvmtQYnxONQaMrYbJU mca@U19
The key's randomart image is:
+---[RSA 2048]----+
| . .
| ... E
| *+ . .
| +=+ . .
| ++...o S
| o.=B.+o.
| +O.Bo .
| =.O+.. .
| *++o*oo
+---[SHA256]----+
mca@U19:~$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.189
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_rsa.pub"
The authenticity of host '192.168.6.189' (192.168.6.189) can't be established.
ECDSA key fingerprint is SHA256:01aRG9hiAm50v+hd6DwA8f8zNgY0l0IZXKeQTnq7Lt4.
Are you sure you want to continue connecting (yes/no)? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
mca@192.168.6.189's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'mca@192.168.6.189'"
and check to make sure that only the key(s) you wanted were added.

mca@U19:~$
```



A screenshot of a Ubuntu desktop environment. On the left is a vertical dock with icons for Activities, Terminal, Dash, Help, Dash Home, Dash Help, and Dash Search. The main window is a terminal window titled "Terminal". The terminal shows the following text:

```
Activities Terminal Mon 15:49
mca@U19:~$ ssh mca@192.168.6.189
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-33-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

 * Canonical Livepatch is available for installation.
 - Reduce system reboots and improve kernel security. Activate at:
   https://ubuntu.com/livepatch

6 packages can be updated.
0 updates are security updates.

Last login: Mon Apr  4 15:46:16 2022 from 192.168.6.190
mca@U19:~$
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Combined Experiments**

#### **Procedure**

**Name: ALEN S PHILIP**

**Roll No: 20**

**Batch: RMCA- A**

**Date: 08/04/2022**

#### **Experiment 1**

1. Login to your home directory
2. List contents of your current working directory
3. List all contents of your current working directory, including hidden files
4. Make a directory called April2022 inside your current working directory
5. Change to the directory April2022
6. Create an empty file name file1
7. Make a copy of file1 to file2
8. Copy file1 from the current working directory and save it as the name file2 in one directory up from the current directory
9. Clear the terminal window

## Output

```
ACN LAB- allensphilip
File Edit View Search Terminal Help
[allensphilip@SEC-ROG ~]
$ cd ~
[allensphilip@SEC-ROG ~]
$ ls
Desktop Downloads Music Public Videos
Documents MCA Pictures Templates website
[allensphilip@SEC-ROG ~]
$ ls -a
. Desktop .kde Pictures .vimrc
.. .dmrc .lessht .pki .vscode-oss
.bash_history Documents .local .profile website
.BurpSuite Downloads MCA Public .Xauthority
.cache .emacs .mozilla Templates .xsession-errors
.config .gtkrc-2.0 .msf4 .themes .xsession-errors.old
.dbeaver4 .icons Music Videos .zshrc
[allensphilip@SEC-ROG ~]
$ mkdir April2022
[allensphilip@SEC-ROG ~]
$ cd April2022/
[allensphilip@SEC-ROG ~/April2022]
$ touch file1
[allensphilip@SEC-ROG ~/April2022]
$ ls
file1
[allensphilip@SEC-ROG ~/April2022]
$ scp file1 file2
[allensphilip@SEC-ROG ~/April2022]
$ ls
file1 file2
[allensphilip@SEC-ROG ~/April2022]
$ scp file1 ..//file2
[allensphilip@SEC-ROG ~/April2022]
$ ls
file1 file2
[allensphilip@SEC-ROG ~/April2022]
$ cd ..
[allensphilip@SEC-ROG ~]
$ ls
April2022 Documents file2 Music Public Videos
Desktop Downloads MCA Pictures Templates website
[allensphilip@SEC-ROG ~]
$ clear
```

## Experiment 2

1. Login to your home directory
2. Writes the contents of syslog (located in the /var/log/ directory) onto the screen a page at a time.
3. Read documentation on a command: less

## Output

```
mca@U20: ~
File Edit View Search Terminal Help
mca@U20:~/Desktop$ cd ~
mca@U20:~$ more /var/log/syslog > logfile
mca@U20:~$ less logfile
```

```
mca@U20: ~
File Edit View Search Terminal Help
Apr 8 14:06:25 U20 rsyslogd: [origin software="rsyslogd" swVersion="8.32.0" x-pid="887" x-info="http://www.rsyslog.com"] rsyslogd was HUPed
Apr 8 14:06:33 U20 dbus-daemon[891]: [system] Activating via systemd: service name='org.freedesktop.timedate1' unit='dbus-org.freedesktop.timedate1.service' requested by ':1.18' (uid=0 pid=934 comm="/usr/lib/snapd/snapd" label="unconfined")
Apr 8 14:06:33 U20 systemd[1]: Starting Time & Date Service...
Apr 8 14:06:33 U20 dbus-daemon[891]: [system] Successfully activated service 'org.freedesktop.timedate1'
Apr 8 14:06:33 U20 systemd[1]: Started Time & Date Service.
Apr 8 14:06:35 U20 snapd[934]: storehelpers.go:721: cannot refresh: snap has no updates available: "atom", "bare", "core18", "core20", "gnome-3-26-1604", "gnome-3-28-1804", "gnome-3-34-1804", "gnome-calculator", "gnome-characters", "gnome-logs", "gnome-system-monitor", "gtk-common-themes", "notepad-plus-plus", "pycharm-community", "vlc", "wine-platform-3-stable", "wine-platform-6-stable", "wine-platform-runtime"
Apr 8 14:06:42 U20 systemd-timesyncd[775]: Synchronized to time server 91.189.91.157:123 (ntp.ubuntu.com).
Apr 8 14:06:51 U20 systemd[1]: Reloading.
Apr 8 14:06:51 U20 systemd[1]: /etc/systemd/system/rc-local.service:22: Support for option SysVStartPriority= has been removed and it is ignored
Apr 8 14:06:51 U20 systemd[1]: Reloading.
Apr 8 14:06:51 U20 systemd[1]: /etc/systemd/system/rc-local.service:22: Support for option SysVStartPriority= has been removed and it is ignored
Apr 8 14:06:51 U20 systemd[1]: Mounting Mount unit for core, revision 12834...
Apr 8 14:06:51 U20 systemd[1]: Mounted Mount unit for core, revision 12834.
Apr 8 14:06:56 U20 kernel: [ 351.013737] audit: type=1400 audit(1649407016.596:63): apparmor="STATUS" operation="profile_load" profile="unconfined" name="/snap/core/12834/usr/lib/snapd/snap-confine" pid=3519 comm="apparmor_parser"
Apr 8 14:06:56 U20 kernel: [ 351.013852] audit: type=1400 audit(1649407016.596:63): apparmor="STATUS" operation="profile_load" profile="unconfined" name="/snap/core/12834/usr/lib/snapd/snap-confine//mount-namespace-capture-helper" pid=3519 comm="apparmor_parser"
Apr 8 14:06:57 U20 kernel: [ 351.849810] audit: type=1400 audit(1649407017.432:64): apparmor="STATUS" operation="profile_replace" profile="unconfined" name="snap.core.hook.configure" pid=3521 comm="apparmor_parser"
Apr 8 14:06:58 U20 kernel: [ 352.581981] audit: type=1400 audit(1649407018.164:65): apparmor="STATUS" operation="profile_replace" info="same as current profile, skipping" profile="unconfined" name="snap-update-ns.gnome-logs" pid=3524 comm="apparmor_parser"
Apr 8 14:06:58 U20 kernel: [ 352.671308] audit: type=1400 audit(1649407018.256:66): apparmor="STATUS" operation="profile_replace" info="same as current profile, skipping" profile="unconfined" name="snap-update-ns.gnome-characters" pid=3523 comm="apparmor_parser"
Apr 8 14:06:58 U20 kernel: [ 352.672067] audit: type=1400 audit(1649407018.256:67): apparmor="STATUS" operation="profile_replace" info="same as current profile, skipping" profile="unconfined" name="snap-update-ns.gnome-calculator" pid=3522 comm="apparmor_parser"
Apr 8 14:06:58 U20 kernel: [ 352.718749] audit: type=1400 audit(1649407018.300:68): apparmor="STATUS" operation="profile_replace" info="same as current profile, skipping" profile="unconfined" name="snap-update-ns.gnome-system-monitor" pid=3525 comm="apparmor_parser"
Apr 8 14:06:58 U20 kernel: [ 352.748179] audit: type=1400 audit(1649407018.332:69): apparmor="STATUS" operation="profile_replace" info="same as current profile, skipping" profile="unconfined" name="snap-update-ns.notepad-plus-plus" pid=3526 comm="apparmor_parser"
Apr 8 14:06:58 U20 kernel: [ 352.751530] audit: type=1400 audit(1649407018.336:70): apparmor="STATUS" operation="profile_replace" info="same as current profile, skipping" profile="unconfined" name="snap-update-ns.core" pid=3528 comm="apparmor_parser"
logfile
```

### Experiment 3

1. Create an untitled document myfile.txt using anyone editor

2. Place the following text in myfile.txt and save it

Neo: What are you trying to tell me? That I can dodge bullets?

Morpheus: No, Neo. I'm trying to tell you that when you're ready, you won't have to.

3. Count the number of characters, words, and lines in the file

4. Find the occurrence of the word “tell” in the file

5. Make two copies of myfile.txt with names myfile1.txt and myfile2.txt

6. List all the filenames with the word file in the present working directory.

## Output

```
student@U20:~$ nano myfile.txt
```

```
student@U20:~$
```

File Edit View Search Terminal Help

GNU nano 2.9.3 myfile.txt Modified

Neo: What are you trying to tell me? That I can dodge bullets?  
Morpheus: No, Neo. I'm trying to tell you that when you're ready, you won't have to.

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-J To Bracket  
^X Exit ^R Read File ^V Replace ^U Uncut Text ^T To Spell ^L Go To Line M-E Redo M-G Copy Text M-W WhereIs Next

```
student@U20:~$ nano myfile.txt
student@U20:~$ wc myfile.txt
 3 29 148 myfile.txt
student@U20:~$ grep -o 'tell' myfile.txt | wc -l
2
student@U20:~$ cp myfile.txt myfile1.txt
student@U20:~$ cp myfile.txt myfile2.txt
student@U20:~$ ls
abin Desktop Downloads Music myfile2.txt Pictures Templates
April2022 Documents examples.desktop myfile1.txt myfile.txt Public Videos
student@U20:~$
```

### Experiment 4

1. Add a user named “roger
2. Create a password for the roger
3. Login using the new account.
4. Repeat step 1) to 2) to create 3 other users.
5. Examine the home directory of each user under /home/.
6. Examine the following files and see what’s added for the users/groups you created.

Try to understand the new additions

- i) /etc/passwd
- ii) /etc/shadow
- iii) /etc/group
7. Create two groups: managers, staff
8. Add roger to the “managers” group; add other users you have created to the “staff” group.
9. Add Roger to a new group called “committee”.
10. Check users and groups information and see if they are in the right groups
11. Create a new user: BBrown, Primary group: Faculty, Other groups: web-author, coordinator, Temporary password: bob (the user needs to change it when login for the first time)

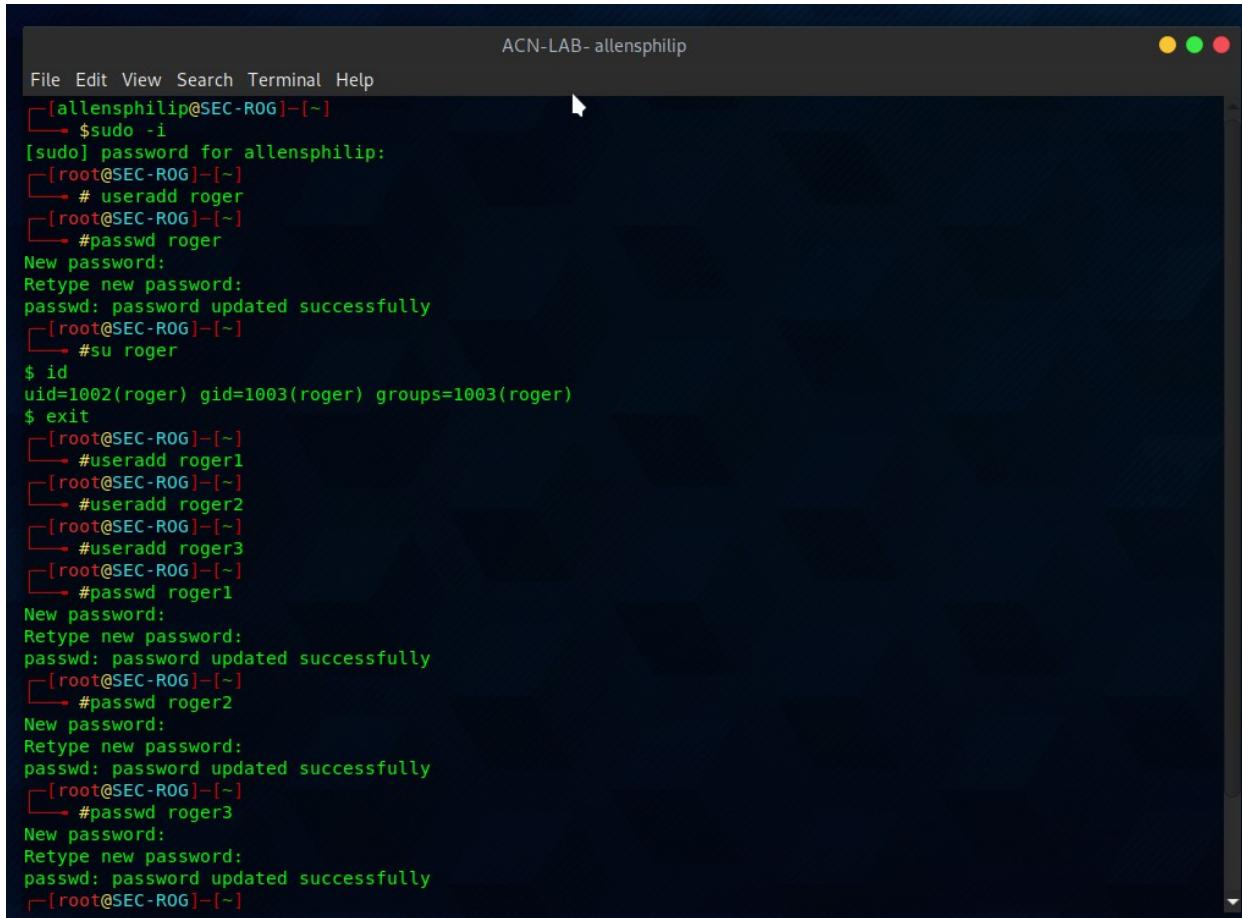
### Experiment 5

1. Enable access to the remote system (IP: 192.168.6.94) without entering a password.
2. Create a file in your name in a remote system (IP: 192.168.6.94) using the terminal.
3. Learn scp command using the appropriate command. And download a file named 204Lab.txt from the remote system (IP: 192.168.6.94) to your own

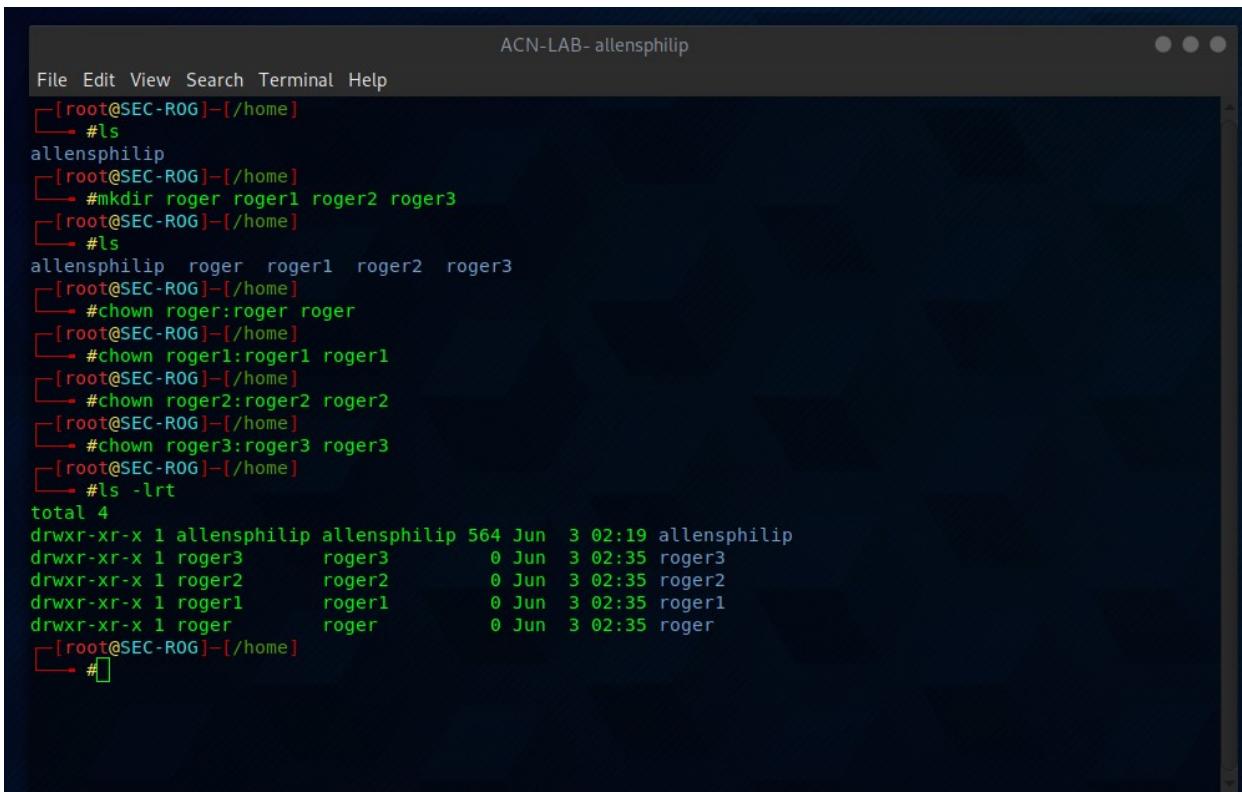
system.

## Output

[ 1-5 ]



```
ACN-LAB- allensphilip
File Edit View Search Terminal Help
[allensphilip@SEC-ROG]~
└─$ sudo -i
[sudo] password for allensphilip:
[root@SEC-ROG]~
└─# useradd roger
[root@SEC-ROG]~
└─# passwd roger
New password:
Retype new password:
passwd: password updated successfully
[root@SEC-ROG]~
└─# su roger
$ id
uid=1002(roger) gid=1003(roger) groups=1003(roger)
$ exit
[root@SEC-ROG]~
└─# useradd roger1
[root@SEC-ROG]~
└─# useradd roger2
[root@SEC-ROG]~
└─# useradd roger3
[root@SEC-ROG]~
└─# passwd roger1
New password:
Retype new password:
passwd: password updated successfully
[root@SEC-ROG]~
└─# passwd roger2
New password:
Retype new password:
passwd: password updated successfully
[root@SEC-ROG]~
└─# passwd roger3
New password:
Retype new password:
passwd: password updated successfully
[root@SEC-ROG]~
```



```
ACN-LAB- allensphilip
File Edit View Search Terminal Help
[root@SEC-ROG]~/home]
└─# ls
allensphilip
[root@SEC-ROG]~/home]
└─# mkdir roger roger1 roger2 roger3
[root@SEC-ROG]~/home]
└─# ls
allensphilip roger roger1 roger2 roger3
[root@SEC-ROG]~/home]
└─# chown roger:roger roger
[root@SEC-ROG]~/home]
└─# chown roger1:roger1 roger1
[root@SEC-ROG]~/home]
└─# chown roger2:roger2 roger2
[root@SEC-ROG]~/home]
└─# chown roger3:roger3 roger3
[root@SEC-ROG]~/home]
└─# ls -lrt
total 4
drwxr-xr-x 1 allensphilip allensphilip 564 Jun 3 02:19 allensphilip
drwxr-xr-x 1 roger3 roger3 0 Jun 3 02:35 roger3
drwxr-xr-x 1 roger2 roger2 0 Jun 3 02:35 roger2
drwxr-xr-x 1 roger1 roger1 0 Jun 3 02:35 roger1
drwxr-xr-x 1 roger roger 0 Jun 3 02:35 roger
[root@SEC-ROG]~/home]
└─#
```

[ 6 ]

```
[root@SEC-ROG ~]# cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin/nologin
bin:x:2:2:bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
_apt:x:100:65534:/nonexistent:/usr/sbin/nologin
systemd-network:x:101:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:102:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
tss:x:103:109:TPM software stack,,,:/var/lib/tpm:/bin/false
strongswan:x:104:65534:/var/lib/strongswan:/usr/sbin/nologin
messagebus:x:105:111:/nonexistent:/usr/sbin/nologin
systemd-timesync:x:106:112:system Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
Debian-exim:x:107:113:/var/spool/exim:/usr/sbin/nologin
uuid:x:108:114:/run/uuid:/usr/sbin/nologin
debian-tor:x:109:115:/var/lib/tor:/bin/false
usbmux:x:110:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:118:RealtimeKit,,,:/proc:/usr/sbin/nologin
xrdp:x:112:119:/run/xrdp:/usr/sbin/nologin
dnsmasq:x:113:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
avahi:x:114:121:Avahi-Daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
nm-openvpn:x:115:122:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
nm-openconnect:x:116:123:NetworkManager OpenConnect plugin,,,:/var/lib/NetworkManager:/usr/sbin/nologin
speech-dispatcher:x:117:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
pulse:x:118:125:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
saned:x:119:128:/var/lib/saned:/usr/sbin/nologin
colord:x:120:129:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:121:130:/var/lib/geoclue:/usr/sbin/nologin
lightdm:x:122:131:Light Display Manager:/var/lib/lightdm:/bin/false
allensphilip:x:123:65534:/run/sshd:/usr/sbin/nologin
sshd:x:123:65534:/run/sshd:/usr/sbin/nologin
roger:x:1002:1003::/home/roger:/bin/sh
roger1:x:1003:1004::/home/roger1:/bin/sh
roger2:x:1004:1005::/home/roger2:/bin/sh
roger3:x:1005:1006::/home/roger3:/bin/sh
```

```
[root@SEC-ROG ~]# cat /etc/shadow
root::19115:0:99999:7:::
daemon::19115:0:99999:7:::
bin::19115:0:99999:7:::
sync::19115:0:99999:7:::
games::19115:0:99999:7:::
man::19115:0:99999:7:::
lp::19115:0:99999:7:::
mail::19115:0:99999:7:::
news::19115:0:99999:7:::
uucp::19115:0:99999:7:::
proxy::19115:0:99999:7:::
www-data::19115:0:99999:7:::
backup::19115:0:99999:7:::
list::19115:0:99999:7:::
irc::19115:0:99999:7:::
gnats::19115:0:99999:7:::
nobody::19115:0:99999:7:::
_apt::19115:0:99999:7:::
systemd-network::19115:0:99999:7:::
systemd-resolve::19115:0:99999:7:::
tss::19115:0:99999:7:::
strongswan::19115:0:99999:7:::
messagebus::19115:0:99999:7:::
systemd-timesync::19115:0:99999:7:::
Debian-exim::19115:0:99999:7:::
uuid::19115:0:99999:7:::
debian-tor::19115:0:99999:7:::
usbmux::19115:0:99999:7:::
rtkit::19115:0:99999:7:::
xrdp::19115:0:99999:7:::
dnsmasq::19115:0:99999:7:::
avahi::19115:0:99999:7:::
nm-openvpn::19115:0:99999:7:::
nm-openconnect::19115:0:99999:7:::
speech-dispatcher::19115:0:99999:7:::
pulse::19115:0:99999:7:::
saned::19115:0:99999:7:::
colord::19115:0:99999:7:::
geoclue::19115:0:99999:7:::
lightdm::19115:0:99999:7:::
allensphilip::sys$9TbHAAkU89PDNToe9BgvyBs1KdPQ2r81R6cyawP0EoD1MKPkdVVJW.nf0BGc/AE6:19134:0:99999:7:::
sshd::19135:0:99999:7:::
roger:$y$9Tg$BXQBFGNa.HzXE0gVOY/$0d.HVYkRzJNlPK6tmICuTVqElirwBz08ex0SRo.x1oB:19145:0:99999:7:::
roger1:$y$9T0hCgfylxL10y053a9A05008bzAPzfHydbE/tHcm8eAzkwR/d76cpdwCe1fF9knQk/3:19145:0:99999:7:::
roger2:$y$9T1l04iyWUv.TjMthnglw3K0$8TBibeoPuZ9k.euUfZRUaQ/rAvxF0t4XfrTCGlnvgPB:19145:0:99999:7:::
roger3:$y$9Tgyc8bvDy3vcgBoCGIhtF3$cqacbymey3zKavlwed7K50NtzngVCUP08NnjUFEVrD:19145:0:99999:7:::
```

The screenshot shows a terminal window titled "ACN-LAB- allensphilip". The window has a dark theme with red, green, and yellow window control buttons at the top right. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal itself displays the output of the command "cat /etc/group". The output lists numerous group entries, each consisting of a name followed by a colon, a numerical ID, and a list of users separated by commas. Some groups have a leading "x" character, indicating they are not part of the main system. The user "allensphilip" appears in many of the groups. The terminal prompt at the bottom is "[root@SEC-ROG ~]#".

```
[root@SEC-ROG ~]# cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:allensphilip
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:allensphilip
fax:x:21:allensphilip
voice:x:22:
cdrom:x:24:allensphilip
floppy:x:25:allensphilip
tape:x:26:allensphilip
sudo:x:27:allensphilip
audio:x:29:pulse,allensphilip
dip:x:30:allensphilip
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
src:x:40:
gnats:x:41:
shadow:x:42:
utmp:x:43:
video:x:44:allensphilip
sasl:x:45:
plugdev:x:46:allensphilip
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
systemd-journal:x:101:
systemd-network:x:102:
systemd-resolve:x:103:
input:x:104:
kvm:x:105:
render:x:106:
crontab:x:107:
netdev:x:108:allensphilip
tss:x:109:
ssl-cert:x:110:
messagebus:x:111:
systemd-timesync:x:112:
Debian-exim:x:113:
uuidd:x:114:
debian-tor:x:115:
ssh:x:116:
bluetooth:x:117:
rtkit:x:118:
xrdp:x:119:
vboxsf:x:120:
avahi:x:121:
nm-openvpn:x:122:
nm-openconnect:x:123:
lpadmin:x:124:allensphilip
pulse:x:125:
pulse-access:x:126:
scanner:x:127:saned,allensphilip
saned:x:128:
colord:x:129:
geoclue:x:130:
lightdm:x:131:
sgx:x:132:
docker:x:1000:allensphilip
allensphilip:x:1002:
roger:x:1003:
roger1:x:1004:
roger2:x:1005:
roger3:x:1006:
[root@SEC-ROG ~]#
```

[ 7 ]

```
ACN-LAB- allensphilip
File Edit View Search Terminal Help
[root@SEC-ROG ~]
→ #groupadd managers
[root@SEC-ROG ~]
→ #groupadd staff
[root@SEC-ROG ~]
→ #cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:allensphilip
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:allensphilip
fax:x:21:allensphilip
voice:x:22:
cdrom:x:24:allensphilip
floppy:x:25:allensphilip
tape:x:26:allensphilip
sudo:x:27:allensphilip
audio:x:29:pulse,allensphilip
dip:x:30:allensphilip
www-data:x:33:
backup:x:34:
operator:x:37:
list:x:38:
irc:x:39:
src:x:40:
gnats:x:41:
shadow:x:42:
utmp:x:43:
video:x:44:allensphilip
sasl:x:45:
```

```
ACN-LAB- allensphilip
File Edit View Search Terminal Help
systemd-resolve:x:103:
input:x:104:
kvm:x:105:
render:x:106:
crontab:x:107:
netdev:x:108:allensphilip
tss:x:109:
ssl-cert:x:110:
messagebus:x:111:
systemd-timesync:x:112:
Debian-exim:x:113:
uuid:x:114:
debian-tor:x:115:
ssh:x:116:
bluetooth:x:117:
rtkit:x:118:
xrdp:x:119:
vboxsf:x:120:
avahi:x:121:
nm-openvpn:x:122:
nm-opencconnect:x:123:
ipadmin:x:124:allensphilip
pulse:x:125:
pulse-access:x:126:
scanner:x:127:saned,allensphilip
saned:x:128:
colord:x:129:
geoclue:x:130:
lightdm:x:131:
sgx:x:132:
docker:x:1000:allensphilip
allensphilip:x:1002:
roger:x:1003:
roger1:x:1004:
roger2:x:1005:
roger3:x:1006:
managers:x:1007:
staff:x:1008:
[root@SEC-ROG ~]
→ #
```

[ 8-10 ]

```
ACN-LAB- allensphilip
File Edit View Search Terminal Help
[root@SEC-ROG -]# usermod -aG managers roger
[root@SEC-ROG -]# cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:allensphilip
tty:x:5:
disk:x:6:
lxd:x:7:

render:x:100:
crontab:x:107:
netdev:x:108:allensphilip
tss:x:109:
ssl-cert:x:110:
messagebus:x:111:
systemd-timesync:x:112:
Debian-exim:x:113:
uuid:x:114:
debian-tor:x:115:
ssh:x:116:
bluetooth:x:117:
rtkit:x:118:
xrdp:x:119:
vboxsf:x:120:
avahi:x:121:
nm-openvpn:x:122:
nm-openconnect:x:123:
lpadmin:x:124:allensphilip
pulse:x:125:
pulse-access:x:126:
scanner:x:127:saned,allensphilip
saned:x:128:
colord:x:129:
geoclue:x:130:
lightdm:x:131:
sgx:x:132:
docker:x:1000:allensphilip
allensphilip:x:1002:
roger:x:1003:
roger1:x:1004:
roger2:x:1005:
roger3:x:1006:
managers:x:1007:roger
staff:x:1008:
[root@SEC-ROG -]#
[root@SEC-ROG -]# id roger
uid=1002(roger) gid=1003(roger) groups=1003(roger),1007(managers)
[root@SEC-ROG -]#
#
```

```
ACN-LAB- allensphilip
File Edit View Search Terminal Help
[root@SEC-ROG -]# usermod -aG staff roger1
[root@SEC-ROG -]# usermod -aG staff roger2
[root@SEC-ROG -]# usermod -aG staff roger3
[root@SEC-ROG -]# id roger1
uid=1003(roger1) gid=1004(roger1) groups=1004(roger1),1008(staff)
[root@SEC-ROG -]# id roger2
uid=1004(roger2) gid=1005(roger2) groups=1005(roger2),1008(staff)
[root@SEC-ROG -]# id roger3
uid=1005(roger3) gid=1006(roger3) groups=1006(roger3),1008(staff)
[root@SEC-ROG -]# groupadd committee
[root@SEC-ROG -]# usermod -aG committee roger
[root@SEC-ROG -]# id roger
uid=1002(roger) gid=1003(roger) groups=1003(roger),1007(managers),1009(committee)
```

[11]

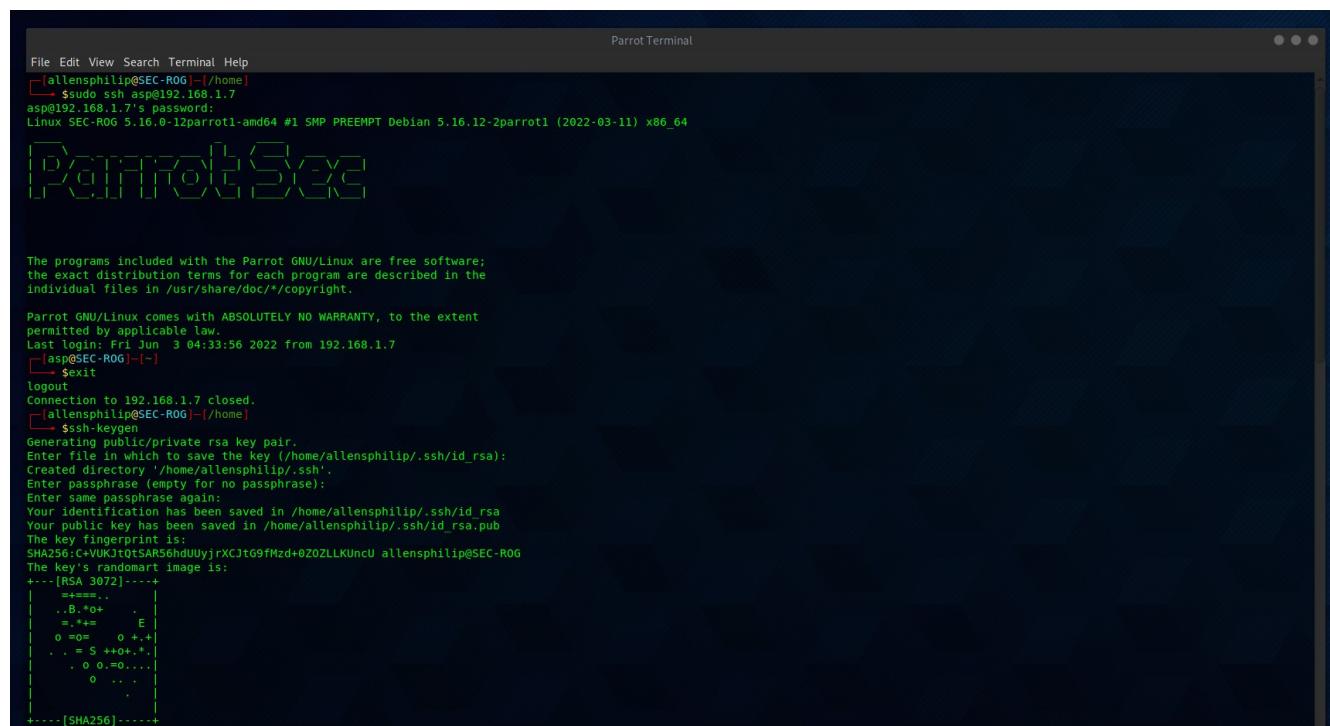
```
ACN- LAB- allensphilip
File Edit View Search Terminal Help
[root@SEC-ROG]~
└─#useradd BBrown
[root@SEC-ROG]~
└─#groupadd Faculty
[root@SEC-ROG]~
└─#groupadd web-author
[root@SEC-ROG]~
└─#groupadd coordinator
[root@SEC-ROG]~
└─#usermod -g Faculty BBrown
[root@SEC-ROG]~
└─#usermod -aG web-author BBrown
[root@SEC-ROG]~
└─#usermod -aG coordinator BBrown
[root@SEC-ROG]~
└─#id BBrown
uid=1006(BBrown) gid=1011(Faculty) groups=1011(Faculty),1012(web-author),1013(coordinator)
[root@SEC-ROG]~
└─#passwd BBrown
New password:
Retype new password:
passwd: password updated successfully
[root@SEC-ROG]~
└─#chage -d 0 BBrown
[root@SEC-ROG]~
└─#su BBrown
You are required to change your password immediately (administrator enforced).
Changing password for BBrown.
Current password:
New password:
Retype new password:
You must choose a longer password.
New password:
Retype new password:
$ id
uid=1006(BBrown) gid=1011(Faculty) groups=1011(Faculty),1012(web-author),1013(coordinator)
$ exit
[root@SEC-ROG]~
└─#
```

## Experiment 5

1. Enable access to the remote system (IP: 192.168.1.7) without entering a password.
2. Create a file in your name in a remote system (IP: 192.168.1.7) using the terminal.
3. Learn scp command using the appropriate command. And download a file named 204Lab.txt from the remote system (IP: 192.168.6.94) to your own system.

## Output

[ 1 ]



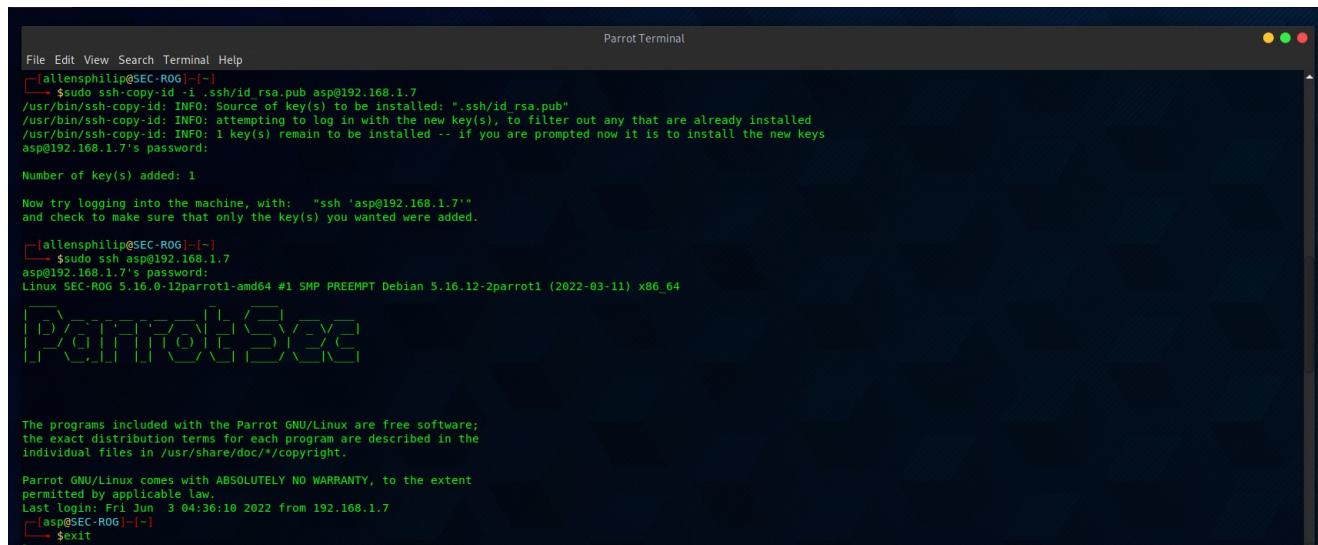
```

File Edit View Search Terminal Help
[allensphilip@SEC-ROG ~] /home
└─$ sudo ssh asp@192.168.1.7
asp@192.168.1.7's password:
Linux SEC-ROG 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64

The programs included with the Parrot GNU/Linux are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Parrot GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Fri Jun 3 04:33:56 2022 from 192.168.1.7
[asp@SEC-ROG] ~
└─$ exit
logout
Connection to 192.168.1.7 closed.
[allensphilip@SEC-ROG ~] /home
└─$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/allensphilip/.ssh/id_rsa):
Created directory '/home/allensphilip/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/allensphilip/.ssh/id_rsa
Your public key has been saved in /home/allensphilip/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:+VUKJtQCSR56hdUyjrxCJtG9fMzd+0Z0ZLLKUncU allensphilip@SEC-ROG
The key's randomart image is:
+---[RSA 3072]---+
=++...+
..B.+*
.=+* E
0 =+* 0 +*.
.= S ++*.*.
. o .=0.....
o ... .
.
+---[SHA256]---+

```



```

File Edit View Search Terminal Help
[allensphilip@SEC-ROG ~] ~
└─$ sudo ssh-copy-id -i .ssh/id_rsa.pub asp@192.168.1.7
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
asp@192.168.1.7's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'asp@192.168.1.7'"
and check to make sure that only the key(s) you wanted were added.

[allensphilip@SEC-ROG ~] ~
└─$ sudo ssh asp@192.168.1.7
asp@192.168.1.7's password:
Linux SEC-ROG 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64

The programs included with the Parrot GNU/Linux are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Parrot GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Fri Jun 3 04:36:10 2022 from 192.168.1.7
[asp@SEC-ROG] ~
└─$ exit
logout

```

```
Parrot Terminal
File Edit View Search Terminal Help
[allensphilip@SEC-ROG] ~
└─ $ ssh asp@192.168.1.7
The authenticity of host '192.168.1.7 (192.168.1.7)' can't be established.
ECDSA key fingerprint is SHA256:knTFKL7KyLsazYDyFJpdWDrbygZPeB/jrgbtF6uMPjY.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.7' (ECDSA) to the list of known hosts.
Linux SEC-ROG 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64
[allensphilip@SEC-ROG] ~
└─ $
```

## [ 2 ]

```
Parrot Terminal
File Edit View Search Terminal Help
[allensphilip@SEC-ROG] ~
└─ $ ssh asp@192.168.1.7
Linux SEC-ROG 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64
[allensphilip@SEC-ROG] ~
└─ $ ls
204Lab.txt Desktop Templates
[allensphilip@SEC-ROG] ~
└─ $ touch allensphilip
[allensphilip@SEC-ROG] ~
└─ $ ls
204Lab.txt allensphilip Desktop Templates
[allensphilip@SEC-ROG] ~
└─ $ exit
logout
Connection to 192.168.1.7 closed.
[allensphilip@SEC-ROG] ~
└─ $
```

**[3]**

The screenshot shows a terminal window titled "Parrot Terminal". The terminal output is as follows:

```
File Edit View Search Terminal Help
[allensphilip@SEC-ROG]~]
└─$ ssh asp@192.168.1.7
Linux SEC-ROG 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64

The programs included with the Parrot GNU/Linux are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Parrot GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Fri Jun  3 04:39:50 2022 from 192.168.1.7
[asp@SEC-ROG]~]
└─$ ls
204Lab.txt  Desktop  Templates
[asp@SEC-ROG]~]
└─$ exit
logout
Connection to 192.168.1.7 closed.
[allensphilip@SEC-ROG]~]
└─$ scp asp@192.168.1.7:204Lab.txt /home/allensphilip
204Lab.txt
          100%   0     0.0KB/s  00:00
[allensphilip@SEC-ROG]~]
└─$ ls
204Lab.txt  April2022  Desktop  Documents  Downloads  file2  logfile  MCA  Music  Pictures  Public  Templates
  Videos  website
[allensphilip@SEC-ROG]~]
└─$
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No: 9**

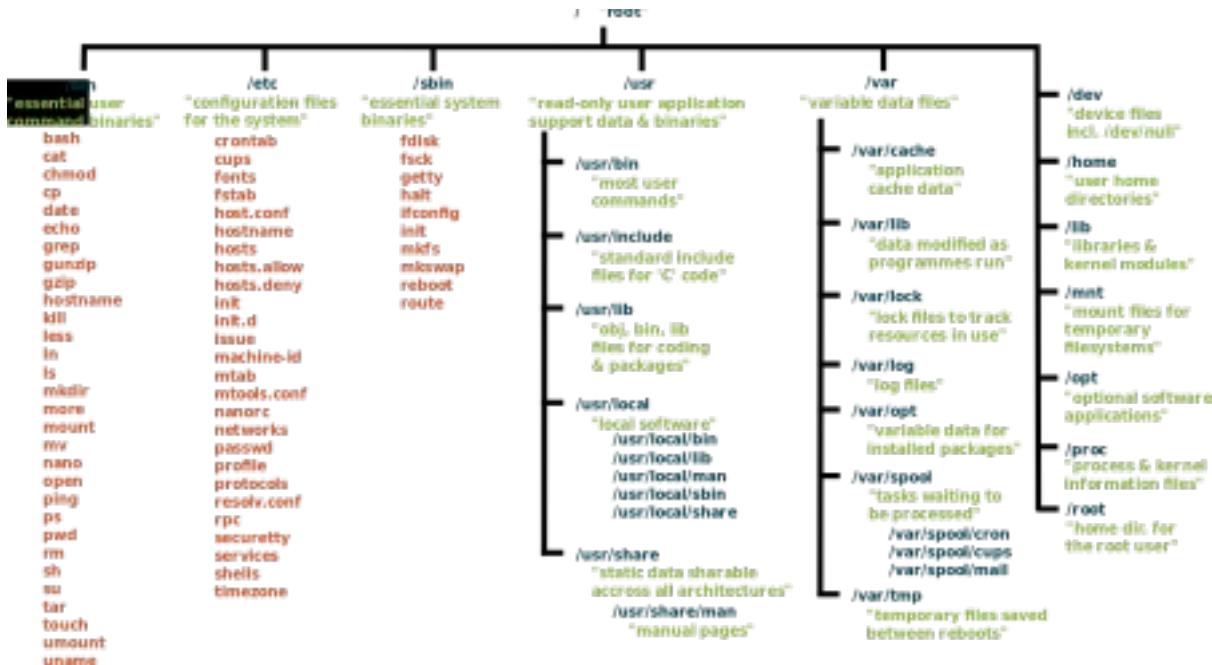
**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA- A**

**Date: 22-04-2022**

### **Aim**



- Acquire knowledge about locations of various system and configuration files listed above
- Study of system configuration files in **/etc**, familiarizing log files for system events, user activity, network events.

### **Procedure**

#### **Installing Tree utility**

```

mca@U20:~$ sudo apt-get install tree
[sudo] password for mca:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  debhelper dh-autoreconf dh-strip-nondeterminism libarchive-cpio-perl
  libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3
  libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
  libsys-hostname-long-perl php-common php-pear php-xml php7.2-cli
  php7.2-common php7.2-json php7.2-opcache php7.2-readline php7.2-xml
  php7.2-common php7.2-xsl po-debconf shtool
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  tree
0 upgraded, 1 newly installed, 0 to remove and 5 not upgraded.
Need to get 40.7 kB of archives.
After this operation, 105 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 tree amd64 1.7.0-5 [40.7 kB]
Fetched 40.7 kB in (67.4 kB/s)
Selecting previously unselected package tree.
(Reading database ... 181441 files and directories currently installed.)
Preparing to unpack .../tree_1.7.0-5_amd64.deb ...
Unpacking tree (1.7.0-5) ...
Setting up tree (1.7.0-5) ...
Processing triggers for man-db (2.8.3-2) ...
mca@U20:~$ 
  
```

## Listing root with tree

```
mca@U20:~$ tree -L 1 /
/
bin
boot
cdrom
dev
etc
home
initrd.img -> boot/initrd.img-4.15.0-33-generic
initrd.img.old -> boot/initrd.img-4.15.0-23-generic
lib
lib32
lib64
lost+found
media
mnt
opt
proc
root
run
sbin
snap
srv
sys
tmp
usr
var
vmlinuz -> boot/vmlinuz-4.15.0-33-generic
vmlinuz.old -> boot/vmlinuz-4.15.0-23-generic

23 directories, 4 files
mca@U20:~$
```

## /bin

```
mca@U20:~$ tree -L 1 /bin
/bin
-- bash
-- brlty
-- bunzip2
-- busybox
-- bzip
-- bzcmp -> bzdiff
-- bzdiff
-- bzgrep -> bzgrep
-- bzexe
-- bzfgrep -> bzgrep
-- bzgrep
-- bzip
-- bzip2recover
-- bzless -> bzmore
-- bzmore
-- cat
-- chacl
-- chgrp
-- chmod
-- chown
-- chvt
-- cp
-- cpio
-- dash
-- date
-- dd
-- df
-- dir
-- dmesg
-- dnsdomainname -> hostname
-- domainname -> hostname
-- dumpkeys
-- echo
-- ed
-- efibootdump
-- efibootmgr
```

## /boot

```
mca@U20:~$ tree -L 1 /boot
/boot
-- abi-4.15.0-23-generic
-- abi-4.15.0-33-generic
-- config-4.15.0-23-generic
-- config-4.15.0-33-generic
-- grub
-- initrd.img-4.15.0-23-generic
-- initrd.img-4.15.0-33-generic
-- memtest86+.bin
-- memtest86+.elf
-- memtest86+_multiboot.bin
-- retpoline-4.15.0-23-generic
-- retpoline-4.15.0-33-generic
-- System.map-4.15.0-23-generic
-- System.map-4.15.0-33-generic
-- vmlinuz-4.15.0-23-generic
-- vmlinuz-4.15.0-33-generic

1 directory, 15 files
mca@U20:~$
```

## /dev

```
mca@U20:~$ tree -L 1 /dev
mca@U20:~$ tree -L 1 /dev
/dev
├── autofs
├── block
├── bsg
├── btrfs-control
├── bus
├── char
├── console
│   core -> /proc/kcore
├── cpu
│   cpu_dma_latency
├── cuse
├── disk
├── dri
│   drm_dp_aux0
├── encryptfs
├── fb0
├── fd -> /proc/self/fd
├── full
├── fuse
├── hidraw0
├── hidraw1
├── hidraw2
├── hpet
├── hugepages
├── hwrng
├── i2c-0
├── i2c-1
├── i2c-2
├── i2c-3
├── i2c-4
├── initctl -> /run/systemd/initctl/fifo
├── input
├── kmsg
├── kvm
├── lightningvm
└── log -> /run/systemd/journal/dev-log
```

## /etc

```
mca@U20:~$ tree -L 1 /etc
mca@U20:~$ tree -L 1 /etc
/etc
├── acpi
├── adduser.conf
├── alternatives
├── anacrontab
├── apg.conf
├── aptm
├── apparmor
├── apparmor.d
├── apport
├── appstream.conf
├── apt
├── avahi
├── bash.bashrc
├── bash_completion
├── bash_completion.d
├── bindresvport.blacklist
├── binfmt.d
├── bluetooth
├── brlapi.key
├── brltty
├── brltty.conf
├── ca-certificates
├── ca-certificates.conf
├── calendar
├── chatscripts
├── console-setup
├── cracklib
├── cron.d
├── cron.daily
├── cron.hourly
├── cron.monthly
├── crontab
├── cron.weekly
├── cups
├── cupshelpers
└── dbus-1
```

20MCA136 – NETWORKING & SYSTEM ADMINISTRATION LAB  
Dept. of Computer Applications

/lib

```
mca@U20:~$ tree -L 1 /lib
/lib
├── apparmor
├── brlity
├── console-setup
├── cpp -> /etc/alternatives/cpp
├── crda
├── firmware
├── hdparm
├── ifupdown
├── init
├── klibc-wBFLvVtxy4xJqEadIBJMa78iJz8.so
├── ld-linux.so.2 -> /lib32/ld-linux.so.2
├── linux-sound-base
└── lsb
    ├── modprobe.d
    ├── modules
    ├── netplan
    ├── recovery-mode
    ├── systemd
    └── terminfo
    └── udev
    └── ufw
└── x86_64-linux-gnu

19 directories, 3 files
mca@U20:~$
```

/media, /mnt, /opt, /root

```
mca@U20:~$ tree -L 1 /media
/media [error opening dir]

0 directories, 0 files
mca@U20:~$ tree -L 1 /mnt
/mnt

0 directories, 0 files
mca@U20:~$ tree -L 1 /opt
/opt
├── android-studio
├── google
└── lampp

3 directories, 0 files
mca@U20:~$ tree -L 1 /root
/root [error opening dir]

0 directories, 0 files
mca@U20:~$ sudo tree -L 1 /root
[sudo] password for mca:
/root
└── Desktop
    └── snap

2 directories, 0 files
mca@U20:~$
```

20MCA136 – NETWORKING & SYSTEM ADMINISTRATION LAB  
Dept. of Computer Applications

/sbin

```
mca@U20:~$ sudo tree -L 1 /sbin
/sbin
├── acpi_available
├── agetty
├── alsa
├── apm_available
├── apparmor_parser
├── badblocks
├── blkdeactivate
├── blkdiscard
├── blkid
├── blockdev
├── bridge
├── brltty -> /bin/brltty
├── brltty-setup
├── caps
├── cfdisk
├── cgdisk
├── chcpu
├── crda
├── ctrlaltdel
├── debugfs
├── depmod -> /bin/kmod
├── devlink
├── dhclient
├── dhclient-script
├── dmsetup
├── dmstats -> dmsetup
├── dosfsck -> fsck.fat
├── dosfslabel -> fatlabel
├── dumpe2fs
├── e2fsck
├── e2image
├── e2label -> tune2fs
├── e2undo
├── fatlabel
├── fdisk
└── findfs
```

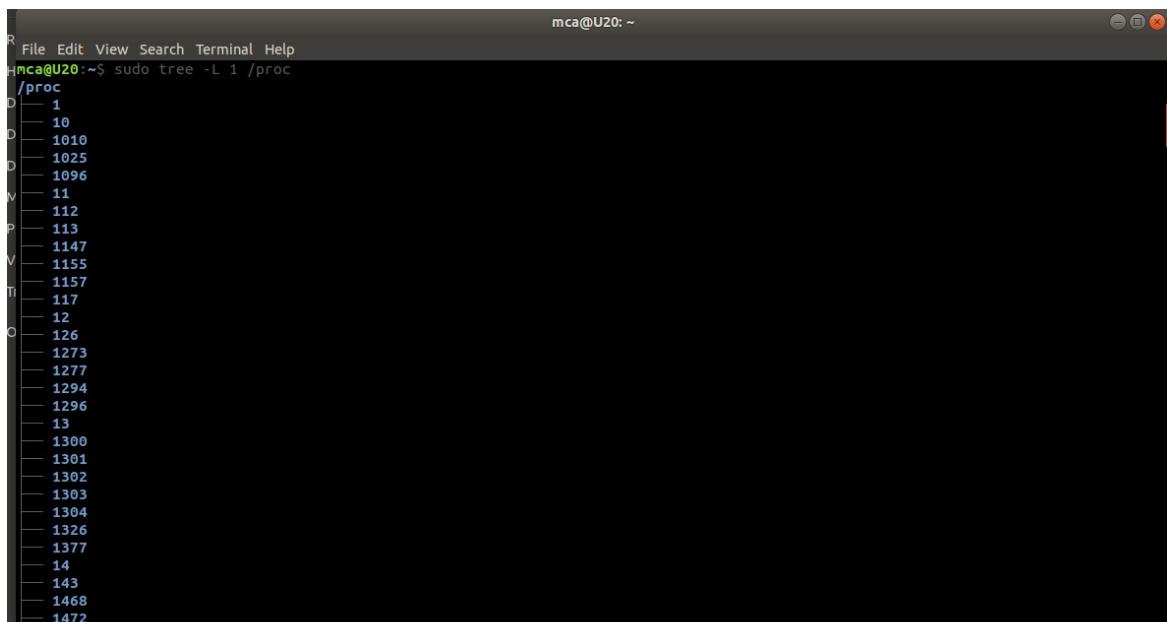
/sys

```
mca@U20:~$ sudo tree -L 1 /sys
File Edit View Search Terminal Help
mca@U20:~$ sudo tree -L 1 /sys
/srv
:
0 directories, 0 files
mca@U20:~$ sudo tree -L 1 /sys
/sys
├── block
├── bus
├── class
├── dev
├── devices
├── firmware
├── fs
├── hypervisor
├── kernel
└── module
└── power
11 directories, 0 files
```

/var, /usr

```
mca@U20:~$ sudo tree -L 1 /var
File Edit View Search Terminal Help
mca@U20:~$ sudo tree -L 1 /var
/var
├── backups
├── cache
├── crash
├── lib
├── local
├── lock -> /run/lock
├── log
├── mail
├── metrics
├── opt
├── run -> /run
├── snap
└── spool
└── tmp
14 directories, 0 files
mca@U20:~$ sudo tree -L 1 /usr
/usr
├── bin
├── games
├── include
├── lib
├── lib32
├── local
├── sbin
└── share
└── src
9 directories, 0 files
mca@U20:~$
```

/proc



```
mca@U20:~$ sudo tree -L 1 /proc
R  File  Edit  View  Search  Terminal  Help
mca@U20:~$ sudo tree -L 1 /proc
/proc
D   1
D   10
D   1010
D   1025
D   1096
N   11
N   112
P   113
N   1147
V   1155
V   1157
Ti  117
O   12
O   126
O   1273
O   1277
O   1294
O   1296
O   13
O   1300
O   1301
O   1302
O   1303
O   1304
O   1326
O   1377
O   14
O   143
O   1468
O   1472
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No: 10**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA A**

**Date: 06/05/2022**

#### **Aim**

1. Create a directory /RMCA2023A/20MCA136 and create 100 files inside this directory with name Movie1.mp4, Movie2.mp4 .... Movie100.mp4
2. Create a group AJCE\_MCA and a user AJCE\_Students with Password Ajce@2022
3. Enable password-less ssh login to the user AJCE\_Students.
4. The Group ownership of /RMCA2023A/20MCA136 should go to AJCE\_MCA and User ownership to AJCE\_Students
5. Give read, write and access permission for all the members except other users.
6. Remove all files containing ‘7’ with single-line command. (Movie7.mp4, Movie17.mp4, etc.)
7. Create a tar file named FiveVals.tar with the only files contains the word ‘5’.
8. Copy FiveVals.tar to the home path of AJCE\_Students

## Output Screenshot

[1, 2]

The screenshot shows a terminal window titled "Parrot Terminal". The session starts with creating a directory structure and files:

```
[allensphilip@SEC-ROG] ~
└─$ mkdir -p /home/allensphilip/MCA/ACN/RMCA2023A/20MCA136
[allensphilip@SEC-ROG] ~
└─$ tree MCA/ACN/
MCA/ACN/
└─ RMCA2023A
  └─ 20MCA136

2 directories, 0 files
```

Then, it lists files from the 20MCA136 directory:

```
[allensphilip@SEC-ROG] ~
└─$ cd MCA/ACN/RMCA2023A/20MCA136
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$ pwd
/home/allensphilip/MCA/ACN/RMCA2023A/20MCA136
└─$ for i in {1..100}; do touch Movie$i.mp4; done
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$ ls
Movie100.mp4  Movie21.mp4  Movie33.mp4  Movie45.mp4  Movie57.mp4  Movie69.mp4  Movie80.mp4  Movie92.mp4
Movie10.mp4   Movie22.mp4  Movie34.mp4  Movie46.mp4  Movie58.mp4  Movie81.mp4  Movie93.mp4
Movie11.mp4   Movie23.mp4  Movie35.mp4  Movie47.mp4  Movie59.mp4  Movie82.mp4  Movie94.mp4
Movie12.mp4   Movie24.mp4  Movie36.mp4  Movie48.mp4  Movie5.mp4   Movie70.mp4  Movie83.mp4  Movie95.mp4
Movie13.mp4   Movie25.mp4  Movie37.mp4  Movie49.mp4  Movie60.mp4  Movie71.mp4  Movie84.mp4  Movie96.mp4
Movie14.mp4   Movie26.mp4  Movie38.mp4  Movie40.mp4  Movie61.mp4  Movie72.mp4  Movie85.mp4  Movie97.mp4
Movie15.mp4   Movie27.mp4  Movie39.mp4  Movie50.mp4  Movie62.mp4  Movie73.mp4  Movie86.mp4  Movie98.mp4
Movie16.mp4   Movie28.mp4  Movie30.mp4  Movie51.mp4  Movie63.mp4  Movie74.mp4  Movie87.mp4  Movie99.mp4
Movie17.mp4   Movie29.mp4  Movie40.mp4  Movie52.mp4  Movie64.mp4  Movie75.mp4  Movie88.mp4  Movie09.mp4
Movie18.mp4   Movie30.mp4  Movie41.mp4  Movie53.mp4  Movie65.mp4  Movie76.mp4  Movie89.mp4
Movie19.mp4   Movie31.mp4  Movie42.mp4  Movie54.mp4  Movie66.mp4  Movie77.mp4  Movie80.mp4
Movie20.mp4   Movie32.mp4  Movie43.mp4  Movie55.mp4  Movie67.mp4  Movie78.mp4  Movie90.mp4
Movie21.mp4   Movie33.mp4  Movie44.mp4  Movie56.mp4  Movie68.mp4  Movie79.mp4  Movie91.mp4
```

It then adds a group and user:

```
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$ sudo groupadd AJCE_MCA
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$ tail -n 1 /etc/group
AJCE_MCA:x:1014:
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$ sudo useradd -m AJCE_Students
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$ sudo passwd AJCE_Students
New password:
Retype new password:
passwd: password updated successfully
[allensphilip@SEC-ROG] ~/MCA/ACN/RMCA2023A/20MCA136
└─$
```

[3]

The screenshot shows a terminal window titled "Parrot Terminal". It generates an SSH key pair:

```
[allensphilip@SEC-ROG] ~
└─$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/allensphilip/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/allensphilip/.ssh/id_rsa
Your public key has been saved in /home/allensphilip/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:gSDrlS5e5VMIKo9SbGM8i+iODG044WW4FFWpmYVz9H4 allensphilip@SEC-ROG
The key's randomart image is:
+---[RSA 3072]---+
| ..=o. o |
| .= 0 .. o . |
| .. X %.+ |
| .oB B.0 . |
| .o+o= =SE |
| o+o . . |
| +o= |
| o= |
| ... |
+---[SHA256]---+
```

It then copies the public key to a remote host:

```
[allensphilip@SEC-ROG] ~
└─$ sudo ssh-copy-id -i .ssh/id_rsa.pub AJCE_Students@192.168.1.7
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
AJCE_Students@192.168.1.7's password:
```

It confirms the key was added:

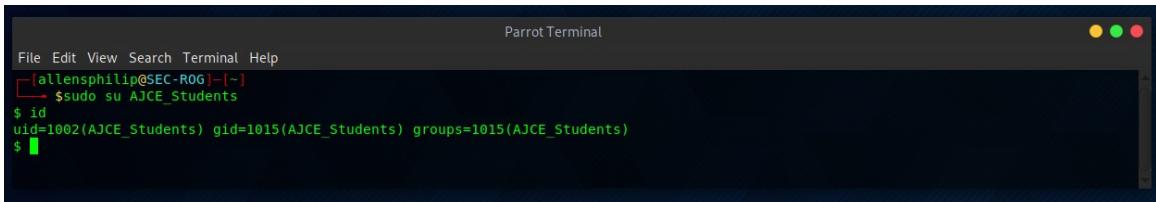
```
Number of key(s) added: 1
```

It ends with a note to check the connection:

```
Now try logging into the machine, with: "ssh 'AJCE_Students@192.168.1.7'" and check to make sure that only the key(s) you wanted were added.
```

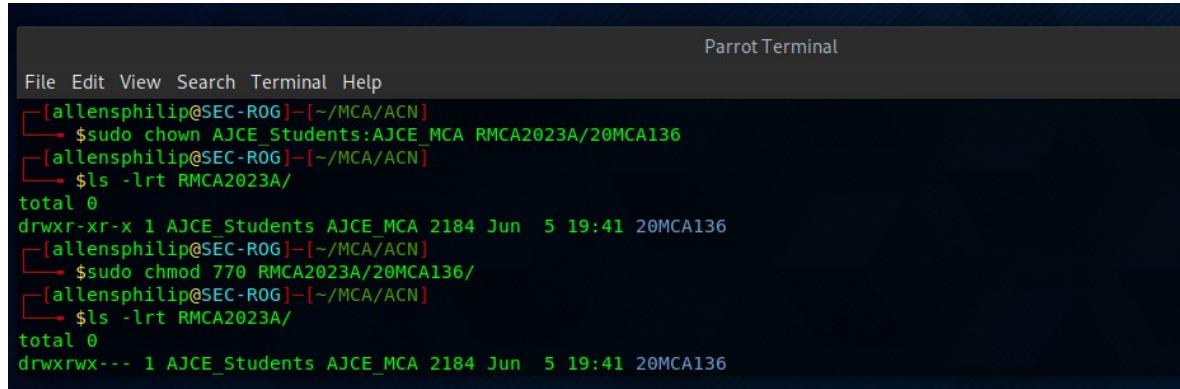
# 20MCA136 – NETWORKING & SYSTEM ADMINISTRATION LAB

## Dept. of Computer Applications



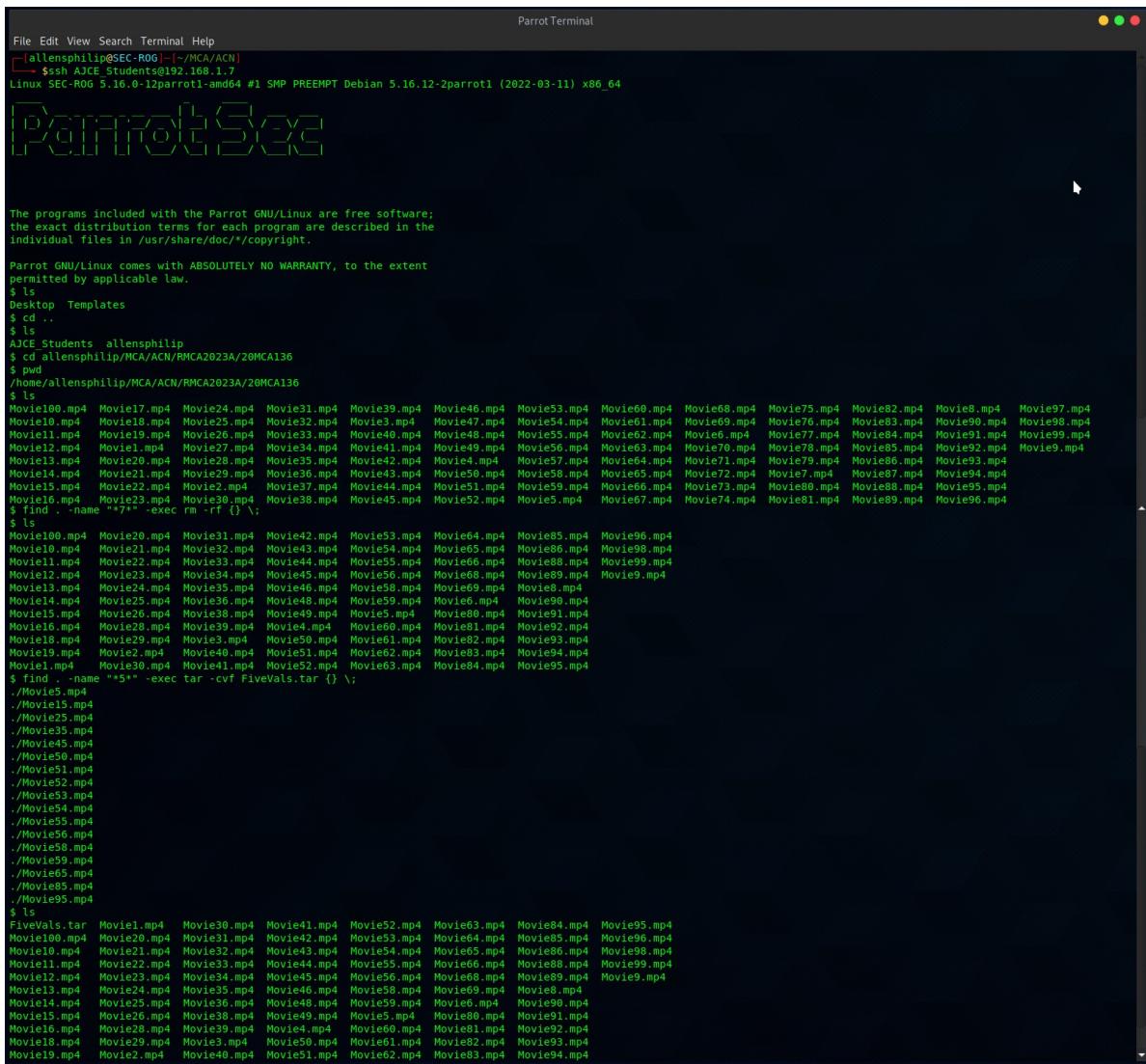
```
File Edit View Search Terminal Help
[allensphilip@SEC-ROG] ~
$ sudo su AJCE_Students
$ id
uid=1002(AJCE_Students) gid=1015(AJCE_Students) groups=1015(AJCE_Students)
$
```

[4, 5]



```
File Edit View Search Terminal Help
[allensphilip@SEC-ROG] ~
$ sudo chown AJCE_Students:AJCE_MCA RMCA2023A/20MCA136
[allensphilip@SEC-ROG] ~
$ ls -lrt RMCA2023A/
total 0
drwxr-xr-x 1 AJCE_Students AJCE_MCA 2184 Jun  5 19:41 20MCA136
[allensphilip@SEC-ROG] ~
$ sudo chmod 770 RMCA2023A/20MCA136/
[allensphilip@SEC-ROG] ~
$ ls -lrt RMCA2023A/
total 0
drwxrwx--- 1 AJCE_Students AJCE_MCA 2184 Jun  5 19:41 20MCA136
```

[6, 7]



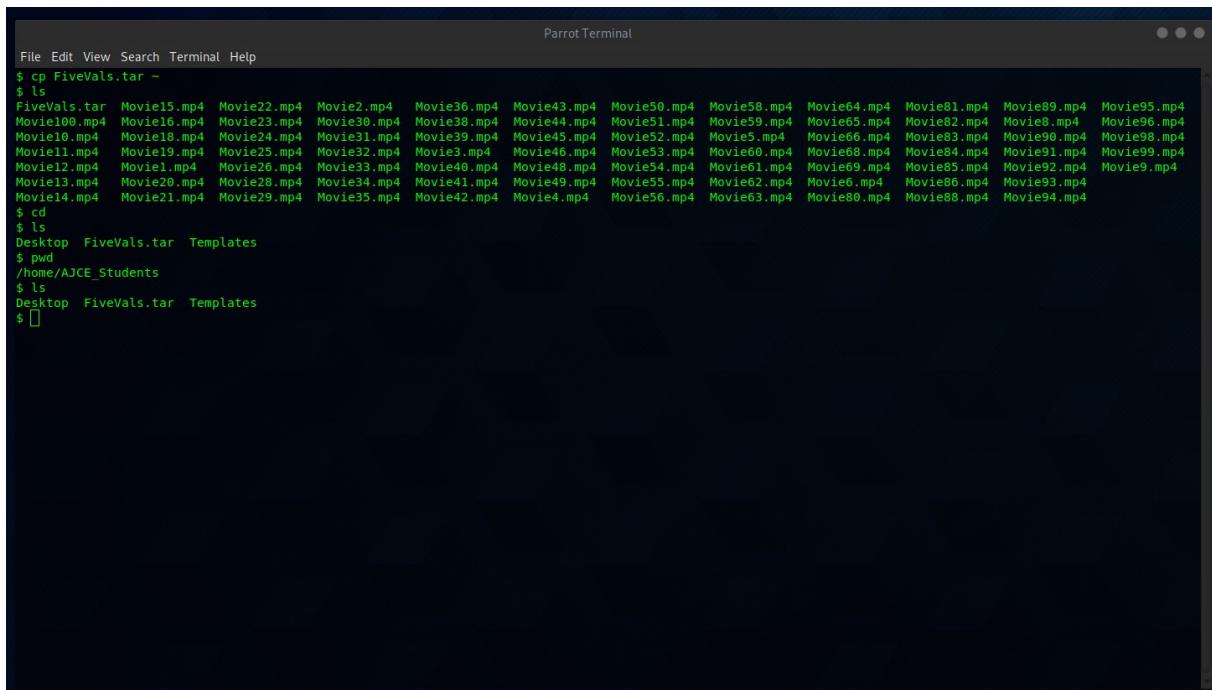
```
File Edit View Search Terminal Help
[allensphilip@SEC-ROG] ~
$ ssh AJCE_Students@192.168.1.7
Linux SEC-ROG 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64
Parrot OS 5.16

The programs included with the Parrot GNU/Linux are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Parrot GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
$ ls
Desktop Templates
$ cd ..
$ ls
AJCE_Students allensphilip
$ cd allensphilip/MCA/ACN/RMCA2023A/20MCA136
$ pwd
/home/allensphilip/MCA/ACN/RMCA2023A/20MCA136
$ ls
Movie100.mp4 Movie17.mp4 Movie24.mp4 Movie31.mp4 Movie39.mp4 Movie46.mp4 Movie53.mp4 Movie60.mp4 Movie68.mp4 Movie75.mp4 Movie82.mp4 Movie89.mp4 Movie97.mp4
Movie10.mp4 Movie18.mp4 Movie25.mp4 Movie32.mp4 Movie39.mp4 Movie47.mp4 Movie56.mp4 Movie63.mp4 Movie70.mp4 Movie77.mp4 Movie83.mp4 Movie90.mp4 Movie98.mp4
Movie11.mp4 Movie19.mp4 Movie26.mp4 Movie33.mp4 Movie40.mp4 Movie48.mp4 Movie57.mp4 Movie64.mp4 Movie71.mp4 Movie78.mp4 Movie84.mp4 Movie91.mp4 Movie99.mp4
Movie12.mp4 Movie20.mp4 Movie27.mp4 Movie34.mp4 Movie41.mp4 Movie49.mp4 Movie58.mp4 Movie65.mp4 Movie72.mp4 Movie79.mp4 Movie85.mp4 Movie92.mp4 Movie100.mp4
Movie13.mp4 Movie21.mp4 Movie28.mp4 Movie35.mp4 Movie42.mp4 Movie50.mp4 Movie59.mp4 Movie66.mp4 Movie73.mp4 Movie80.mp4 Movie87.mp4 Movie93.mp4 Movie101.mp4
Movie14.mp4 Movie22.mp4 Movie29.mp4 Movie36.mp4 Movie43.mp4 Movie51.mp4 Movie60.mp4 Movie67.mp4 Movie74.mp4 Movie81.mp4 Movie88.mp4 Movie94.mp4 Movie102.mp4
Movie15.mp4 Movie23.mp4 Movie37.mp4 Movie44.mp4 Movie52.mp4 Movie59.mp4 Movie61.mp4 Movie68.mp4 Movie75.mp4 Movie82.mp4 Movie89.mp4 Movie95.mp4 Movie103.mp4
Movie16.mp4 Movie24.mp4 Movie38.mp4 Movie45.mp4 Movie53.mp4 Movie62.mp4 Movie69.mp4 Movie76.mp4 Movie83.mp4 Movie90.mp4 Movie96.mp4 Movie104.mp4
Movie17.mp4 Movie25.mp4 Movie39.mp4 Movie46.mp4 Movie54.mp4 Movie63.mp4 Movie70.mp4 Movie77.mp4 Movie84.mp4 Movie91.mp4 Movie98.mp4 Movie105.mp4
Movie18.mp4 Movie26.mp4 Movie40.mp4 Movie50.mp4 Movie55.mp4 Movie64.mp4 Movie71.mp4 Movie78.mp4 Movie85.mp4 Movie92.mp4 Movie101.mp4 Movie106.mp4
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Movie20.mp4 Movie28.mp4 Movie42.mp4 Movie52.mp4 Movie61.mp4 Movie68.mp4 Movie74.mp4 Movie81.mp4 Movie88.mp4 Movie95.mp4 Movie103.mp4 Movie108.mp4
Movie21.mp4 Movie29.mp4 Movie43.mp4 Movie53.mp4 Movie62.mp4 Movie70.mp4 Movie77.mp4 Movie84.mp4 Movie91.mp4 Movie98.mp4 Movie104.mp4 Movie109.mp4
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Movie23.mp4 Movie31.mp4 Movie45.mp4 Movie55.mp4 Movie64.mp4 Movie72.mp4 Movie80.mp4 Movie87.mp4 Movie93.mp4 Movie101.mp4 Movie106.mp4 Movie111.mp4
Movie24.mp4 Movie32.mp4 Movie46.mp4 Movie56.mp4 Movie65.mp4 Movie73.mp4 Movie81.mp4 Movie88.mp4 Movie94.mp4 Movie102.mp4 Movie107.mp4 Movie112.mp4
Movie25.mp4 Movie33.mp4 Movie47.mp4 Movie57.mp4 Movie66.mp4 Movie74.mp4 Movie82.mp4 Movie89.mp4 Movie95.mp4 Movie103.mp4 Movie108.mp4 Movie113.mp4
Movie26.mp4 Movie34.mp4 Movie48.mp4 Movie58.mp4 Movie67.mp4 Movie75.mp4 Movie83.mp4 Movie90.mp4 Movie100.mp4 Movie105.mp4 Movie114.mp4
Movie27.mp4 Movie35.mp4 Movie49.mp4 Movie59.mp4 Movie68.mp4 Movie76.mp4 Movie84.mp4 Movie91.mp4 Movie101.mp4 Movie106.mp4 Movie115.mp4
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Movie29.mp4 Movie37.mp4 Movie51.mp4 Movie61.mp4 Movie70.mp4 Movie78.mp4 Movie86.mp4 Movie93.mp4 Movie103.mp4 Movie108.mp4 Movie117.mp4
Movie30.mp4 Movie38.mp4 Movie52.mp4 Movie62.mp4 Movie71.mp4 Movie79.mp4 Movie87.mp4 Movie94.mp4 Movie104.mp4 Movie109.mp4 Movie118.mp4
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Movie39.mp4 Movie47.mp4 Movie61.mp4 Movie71.mp4 Movie80.mp4 Movie88.mp4 Movie96.mp4 Movie103.mp4 Movie108.mp4 Movie118.mp4 Movie127.mp4
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Movie42.mp4 Movie50.mp4 Movie64.mp4 Movie74.mp4 Movie83.mp4 Movie91.mp4 Movie99.mp4 Movie106.mp4 Movie111.mp4 Movie121.mp4 Movie130.mp4
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Movie56.mp4 Movie64.mp4 Movie78.mp4 Movie88.mp4 Movie98.mp4 Movie106.mp4 Movie111.mp4 Movie121.mp4 Movie133.mp4 Movie144.mp4 Movie144.mp4
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Movie61.mp4 Movie69.mp4 Movie83.mp4 Movie93.mp4 Movie103.mp4 Movie108.mp4 Movie118.mp4 Movie125.mp4 Movie138.mp4 Movie149.mp4 Movie149.mp4
Movie62.mp4 Movie70.mp4 Movie84.mp4 Movie94.mp4 Movie104.mp4 Movie109.mp4 Movie119.mp4 Movie126.mp4 Movie139.mp4 Movie150.mp4 Movie150.mp4
Movie63.mp4 Movie71.mp4 Movie85.mp4 Movie95.mp4 Movie105.mp4 Movie110.mp4 Movie120.mp4 Movie132.mp4 Movie141.mp4 Movie151.mp4 Movie151.mp4
Movie64.mp4 Movie72.mp4 Movie86.mp4 Movie96.mp4 Movie106.mp4 Movie111.mp4 Movie121.mp4 Movie133.mp4 Movie142.mp4 Movie152.mp4 Movie152.mp4
Movie65.mp4 Movie73.mp4 Movie87.mp4 Movie97.mp4 Movie107.mp4 Movie112.mp4 Movie122.mp4 Movie134.mp4 Movie143.mp4 Movie153.mp4 Movie153.mp4
Movie66.mp4 Movie74.mp4 Movie88.mp4 Movie98.mp4 Movie108.mp4 Movie113.mp4 Movie123.mp4 Movie135.mp4 Movie144.mp4 Movie154.mp4 Movie154.mp4
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Movie68.mp4 Movie76.mp4 Movie90.mp4 Movie100.mp4 Movie105.mp4 Movie115.mp4 Movie125.mp4 Movie137.mp4 Movie146.mp4 Movie156.mp4 Movie156.mp4
Movie69.mp4 Movie77.mp4 Movie91.mp4 Movie101.mp4 Movie106.mp4 Movie116.mp4 Movie126.mp4 Movie138.mp4 Movie147.mp4 Movie157.mp4 Movie157.mp4
Movie70.mp4 Movie78.mp4 Movie92.mp4 Movie102.mp4 Movie107.mp4 Movie117.mp4 Movie127.mp4 Movie139.mp4 Movie148.mp4 Movie158.mp4 Movie158.mp4
Movie71.mp4 Movie79.mp4 Movie93.mp4 Movie103.mp4 Movie108.mp4 Movie118.mp4 Movie128.mp4 Movie140.mp4 Movie150.mp4 Movie159.mp4 Movie159.mp4
Movie72.mp4 Movie80.mp4 Movie94.mp4 Movie104.mp4 Movie109.mp4 Movie119.mp4 Movie129.mp4 Movie141.mp4 Movie151.mp4 Movie160.mp4 Movie160.mp4
Movie73.mp4 Movie81.mp4 Movie95.mp4 Movie105.mp4 Movie110.mp4 Movie120.mp4 Movie130.mp4 Movie142.mp4 Movie152.mp4 Movie161.mp4 Movie161.mp4
Movie74.mp4 Movie82.mp4 Movie96.mp4 Movie106.mp4 Movie111.mp4 Movie121.mp4 Movie131.mp4 Movie143.mp4 Movie153.mp4 Movie162.mp4 Movie162.mp4
Movie75.mp4 Movie83.mp4 Movie97.mp4 Movie107.mp4 Movie112.mp4 Movie122.mp4 Movie132.mp4 Movie144.mp4 Movie154.mp4 Movie163.mp4 Movie163.mp4
Movie76.mp4 Movie84.mp4 Movie98.mp4 Movie108.mp4 Movie113.mp4 Movie123.mp4 Movie133.mp4 Movie145.mp4 Movie155.mp4 Movie164.mp4 Movie164.mp4
Movie77.mp4 Movie85.mp4 Movie99.mp4 Movie109.mp4 Movie114.mp4 Movie124.mp4 Movie134.mp4 Movie146.mp4 Movie156.mp4 Movie165.mp4 Movie165.mp4
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Movie79.mp4 Movie87.mp4 Movie101.mp4 Movie111.mp4 Movie116.mp4 Movie126.mp4 Movie136.mp4 Movie148.mp4 Movie158.mp4 Movie167.mp4 Movie167.mp4
Movie80.mp4 Movie88.mp4 Movie102.mp4 Movie112.mp4 Movie117.mp4 Movie127.mp4 Movie137.mp4 Movie149.mp4 Movie159.mp4 Movie168.mp4 Movie168.mp4
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Movie86.mp4 Movie94.mp4 Movie108.mp4 Movie118.mp4 Movie123.mp4 Movie133.mp4 Movie143.mp4 Movie155.mp4 Movie165.mp4 Movie175.mp4 Movie175.mp4
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Movie98.mp4 Movie106.mp4 Movie120.mp4 Movie130.mp4 Movie135.mp4 Movie145.mp4 Movie155.mp4 Movie167.mp4 Movie177.mp4 Movie187.mp4 Movie187.mp4
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Movie171.mp4 Movie179.mp4 Movie193.mp4 Movie203.mp4 Movie208.mp4 Movie260.mp4 Movie260.mp4
Movie172.mp4 Movie180.mp4 Movie194.mp4 Movie204.mp4 Movie209.mp4 Movie261.mp4 Movie261.mp4
Movie173.mp4 Movie181.mp4 Movie195.mp4 Movie205.mp4 Movie210.mp4 Movie262.mp4 Movie262.mp4
Movie174.mp4 Movie182.mp4 Movie196.mp4 Movie206.mp4 Movie211.mp4 Movie263.mp4 Movie263.mp4
Movie175.mp4 Movie183.mp4 Movie197.mp4 Movie207.mp4 Movie212.mp4 Movie264.mp4 Movie264.mp4
Movie176.mp4 Movie184.mp4 Movie198.mp4 Movie208.mp4 Movie213.mp4 Movie265.mp4 Movie265.mp4
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Movie178.mp4 Movie186.mp4 Movie200.mp4 Movie210.mp4 Movie215.mp4 Movie267.mp4 Movie267.mp4
Movie179.mp4 Movie187.mp4 Movie201.mp4 Movie211.mp4 Movie216.mp4 Movie268.mp4 Movie268.mp4
Movie180.mp4 Movie188.mp4 Movie202.mp4 Movie212.mp4 Movie217.mp4 Movie269.mp4 Movie269.mp4
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Movie183.mp4 Movie191.mp4 Movie205.mp4 Movie215.mp4 Movie220.mp4 Movie272.mp4 Movie272.mp4
Movie184.mp4 Movie192.mp4 Movie206.mp4 Movie216.mp4 Movie221.mp4 Movie273.mp4 Movie273.mp4
Movie185.mp4 Movie193.mp4 Movie207.mp4 Movie217.mp4 Movie222.mp4 Movie274.mp4 Movie274.mp4
Movie186.mp4 Movie194.mp4 Movie208.mp4 Movie218.mp4 Movie223.mp4 Movie275.mp4 Movie275.mp4
Movie187.mp4 Movie195.mp4 Movie209.mp4 Movie219.mp4 Movie224.mp4 Movie276.mp4 Movie276.mp4
Movie188.mp4 Movie196.mp4 Movie210.mp4 Movie220.mp4 Movie225.mp4 Movie277.mp4 Movie277.mp4
Movie189.mp4 Movie197.mp4 Movie211.mp4 Movie221.mp4 Movie226.mp4 Movie278.mp4 Movie278.mp4
Movie190.mp4 Movie198.mp4 Movie212.mp4 Movie222.mp4 Movie227.mp4 Movie279.mp4 Movie279.mp4
Movie191.mp4 Movie199.mp4 Movie213.mp4 Movie223.mp4 Movie228.mp4 Movie280.mp4 Movie280.mp4
Movie192.mp4 Movie200.mp4 Movie214.mp4 Movie224.mp4 Movie229.mp4 Movie281.mp4 Movie281.mp4
Movie193.mp4 Movie201.mp4 Movie215.mp4 Movie225.mp4 Movie230.mp4 Movie282
```

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Dept. of Computer Applications

[8]



The screenshot shows a terminal window titled "Parrot Terminal". The terminal displays a command-line session. The user has copied a file named "FiveVals.tar" to the current directory (indicated by the command \$ cp FiveVals.tar ~). They then listed all files in the directory (ls) and showed the current working directory (pwd). Finally, they listed the contents of the "Desktop" folder (ls Desktop). The terminal window has a dark background with white text and a standard OS X style interface.

```
File Edit View Search Terminal Help
$ cp FiveVals.tar ~
$ ls
FiveVals.tar Movie15.mp4 Movie22.mp4 Movie2.mp4 Movie36.mp4 Movie43.mp4 Movie50.mp4 Movie58.mp4 Movie64.mp4 Movie81.mp4 Movie89.mp4 Movie95.mp4
Movie100.mp4 Movie16.mp4 Movie23.mp4 Movie30.mp4 Movie38.mp4 Movie44.mp4 Movie51.mp4 Movie59.mp4 Movie65.mp4 Movie82.mp4 Movie88.mp4
Movie10.mp4 Movie18.mp4 Movie24.mp4 Movie31.mp4 Movie39.mp4 Movie45.mp4 Movie52.mp4 Movie5.mp4 Movie66.mp4 Movie83.mp4 Movie90.mp4 Movie98.mp4
Movie11.mp4 Movie19.mp4 Movie25.mp4 Movie32.mp4 Movie3.mp4 Movie46.mp4 Movie53.mp4 Movie60.mp4 Movie68.mp4 Movie84.mp4 Movie91.mp4 Movie99.mp4
Movie12.mp4 Movie1.mp4 Movie26.mp4 Movie33.mp4 Movie40.mp4 Movie48.mp4 Movie54.mp4 Movie61.mp4 Movie69.mp4 Movie85.mp4 Movie92.mp4 Movie9.mp4
Movie13.mp4 Movie20.mp4 Movie28.mp4 Movie34.mp4 Movie41.mp4 Movie49.mp4 Movie55.mp4 Movie62.mp4 Movie68.mp4 Movie86.mp4 Movie93.mp4 Movie94.mp4
Movie14.mp4 Movie21.mp4 Movie29.mp4 Movie35.mp4 Movie42.mp4 Movie4.mp4 Movie56.mp4 Movie63.mp4 Movie80.mp4 Movie88.mp4 Movie94.mp4
$ cd
$ ls
Desktop FiveVals.tar Templates
$ pwd
/home/AJCE_Students
$ ls
Desktop FiveVals.tar Templates
$
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No: 11**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA A**

**Date: 09/05/2022**

### **Aim**

1. Write a script to convert the contents of a given file from uppercase to lowercase and also count the number of lines, words and characters of the resultant file. Also display the resultant file in descending order

2. Write script to perform following basic math operation as

addition

subtraction

multiplication

division

Note: i)take input from keyboard

ii)take input as command line parameter

3. Write shell script to show various system configuration like

Currently logged user and his long name

Current shell

Your home directory

Your operating system type

Your current path setting

Your current working directory

Show all available shells

4. Write a shell script to print the pattern

1

2 2

3 3 3

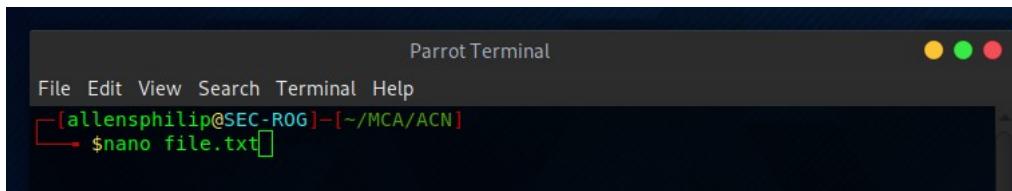
4 4 4 4

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5. Write a script to check whether the given string is palindrome or not.
6. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
7. Write a shell script to find factorial of a given integer.
8. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
9. Write a script to count the number of lines in a file that do not contain vowels
10. Write a script to determine whether given command line argument (\$1) contains “\*” symbol or not, if \$1 does not contains “\*” symbol add it to \$1, otherwise show message “Symbol is not required”.

## Output Screenshot

[1]

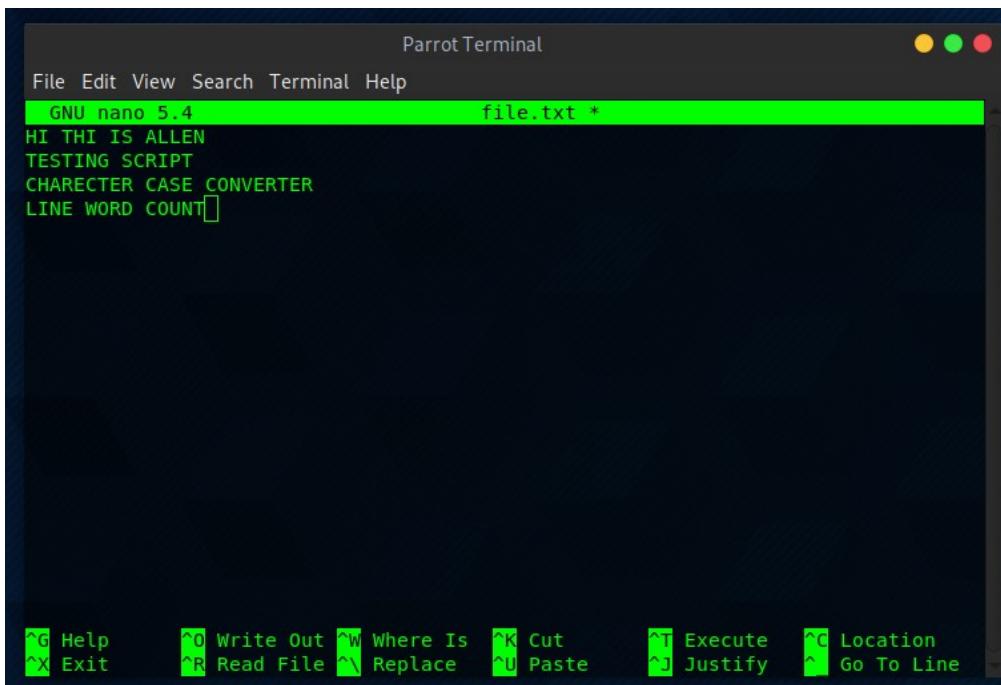


Parrot Terminal

File Edit View Search Terminal Help

[allensphilip@SEC-ROG]~[/MCA/ACN]

\$ nano file.txt



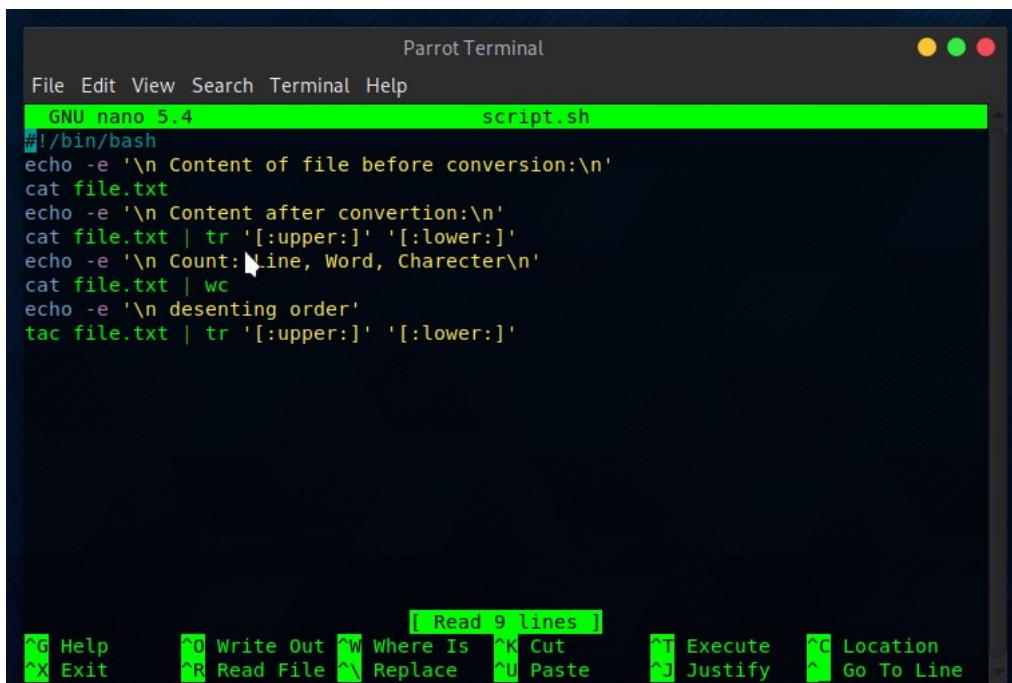
Parrot Terminal

File Edit View Search Terminal Help

GNU nano 5.4 file.txt \*

HI THI IS ALLEN  
TESTING SCRIPT  
CHARACTER CASE CONVERTER  
LINE WORD COUNT

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location  
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^ ^ Go To Line



Parrot Terminal

File Edit View Search Terminal Help

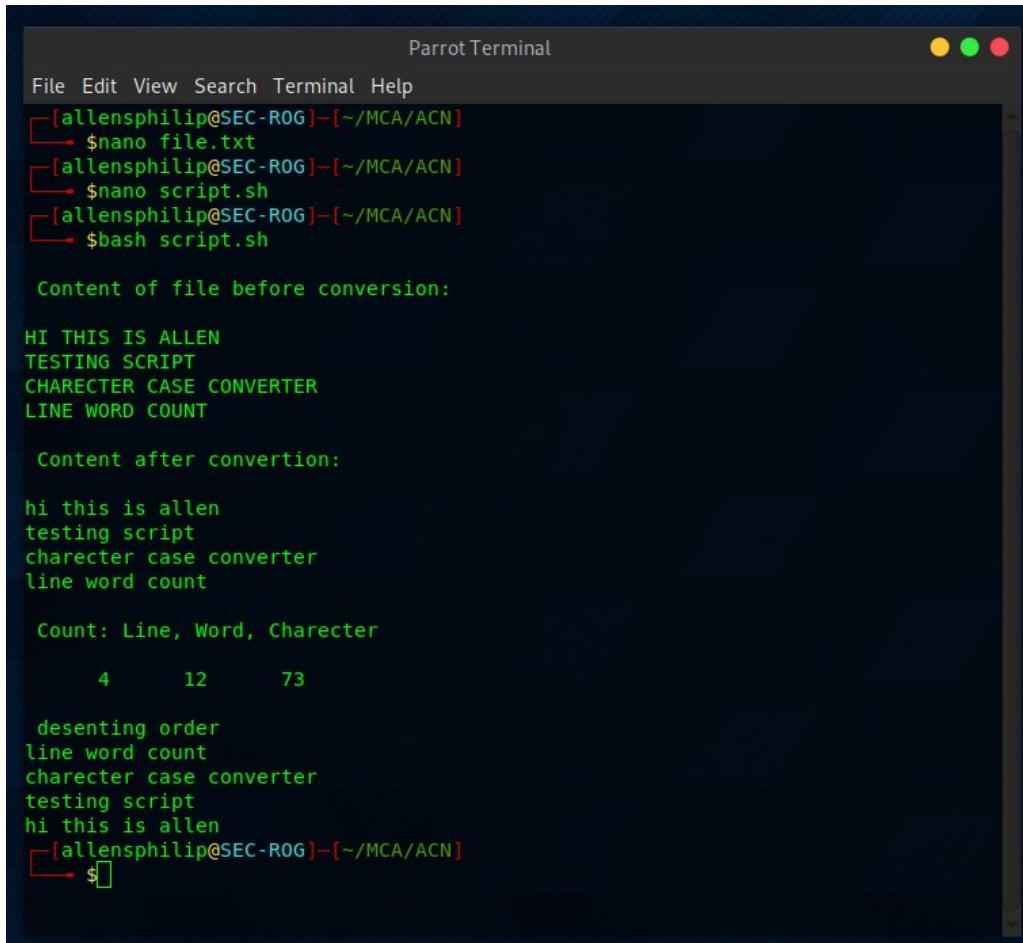
GNU nano 5.4 script.sh

```
#!/bin/bash
echo -e '\n Content of file before conversion:\n'
cat file.txt
echo -e '\n Content after conversion:\n'
cat file.txt | tr '[:upper:]' '[:lower:]'
echo -e '\n Count: Nine, Word, Character\n'
cat file.txt | wc
echo -e '\n desenting order'
tac file.txt | tr '[:upper:]' '[:lower:]'
```

[ Read 9 lines ]

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location  
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^ ^ Go To Line

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Dept. of Computer Applications



The screenshot shows a terminal window titled "Parrot Terminal". The terminal window has three colored window control buttons (yellow, green, red) at the top right. The terminal's menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The command line shows the user's session:

```
[allensphilip@SEC-ROG] - [/MCA/ACN]
└ $ nano file.txt
[allensphilip@SEC-ROG] - [/MCA/ACN]
└ $ nano script.sh
[allensphilip@SEC-ROG] - [/MCA/ACN]
└ $ bash script.sh
```

Below the command line, the terminal displays the content of the file before conversion:

```
Content of file before conversion:
HI THIS IS ALLEN
TESTING SCRIPT
CHARECTER CASE CONVERTER
LINE WORD COUNT
```

Then it shows the content after conversion:

```
Content after conversion:
hi this is allen
testing script
charecter case converter
line word count
```

Next, it displays the count of lines, words, and characters:

```
Count: Line, Word, Charecter
      4      12      73
```

Finally, it shows the output of the script, which includes the converted text and some additional information:

```
desenting order
line word count
charecter case converter
testing script
hi this is allen
[allensphilip@SEC-ROG] - [/MCA/ACN]
└ $
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No: 12**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA A**

**Date: 09/05/2022**

#### **Aim**

Learn about Systemd and init

#### **Procedure**

Create a script

```
$ sudo nano /usr/bin/script.sh
```

Write content

```
#!/bin/bash
```

```
while true
```

```
do
```

```
    sleep 10
```

```
done
```

Give the file execute permission

```
$ sudo chmod +x /usr/bin/script.sh
```

Create a systemd file to run the above file as a service

```
$ sudo nano /lib/systemd/system/shellscript.service
```

Write the content:

[Unit]

Description= My shell Script

[Service]

ExecStart=/usr/bin/script.sh

[Install]

WantedBy=multi-user.target

Reload the systemctl daemon

\$ sudo systemctl daemon-reload

Enable and start, stop, restart and disable the service

\$ sudo systemctl enable shellscript.service

\$sudo systemctl start shellscript.service

\$sudo systemctl status shellscript.service

\$sudo systemctl stop shellscript.service

\$sudo systemctl disable shellscript.service

## Output Screenshot

Parrot Terminal

```
File Edit View Search Terminal Help
GNU nano 5.4          /usr/bin/script.sh *
#!/bin/bash
while true
do
    sleep 10
done
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^N Replace ^U Paste ^J Justify ^\_ Go To Line

Parrot Terminal

```
File Edit View Search Terminal Help
GNU nano 5.4          /lib/systemd/system/shellscript.service *
[Unit]
Description= My shell Script

[Service]

ExecStart=/usr/bin/script.sh

[Install]

WantedBy=multi-user.target
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^N Replace ^U Paste ^J Justify ^\_ Go To Line

20MCA136 – NETWORKING & SYSTEM ADMINISTRATION LAB  
Dept. of Computer Applications

The screenshot shows a terminal window titled "Parrot Terminal". The user, "allensphilip", is performing the following steps:

- Creates a shell script at `/usr/bin/script.sh`.
- Changes the file mode to executable with `sudo chmod +x /usr/bin/script.sh`.
- Creates a service file at `/lib/systemd/system/shellscript.service`.
- Creates a system-wide alias for the service at `/lib/systemd/system/multi-user.target.wants/shellscript.service`.
- Enables the service with `sudo systemctl enable shellscript.service`.
- Starts the service with `sudo systemctl start shellscript.service`.
- Checks the status of the service with `sudo systemctl status shellscript.service`, which shows it is active (running) since the current date and time.
- Shows detailed information about the service using the `● shellscript.service - My shell Script` command.
- Logs the start of the service with the message "Jun 12 04:02:03 SEC-ROG systemd[1]: Started My shell Script."
- Stops the service with `sudo systemctl stop shellscript.service`.
- Restarts the service with `sudo systemctl restart shellscript.service`.
- Disables the service with `sudo systemctl disable shellscript.service`.
- Removes the system-wide alias with the message "Removed /etc/systemd/system/multi-user.target.wants/shellscript.service."

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No: 12**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA A**

**Date: 14/05/2022**

### **Aim**

Learn about Cmake[ make and Cmake]

### **Procedure**

Create a folder and add all the project files into it

create a text file named as CmakeLists.txt and write all the list of project files to it

keep the format as follow:

```
cmake_minimum_required(VERSION 3.10)
project(MyProject VERSION 0.0.1)
add_executable(hello hello_world.cpp)
```

here hello\_word is my project file

Create a build folder and change directory to it

Now build the project:

```
$ cmake ..
```

```
$ cmake --build .
```

and execute the project:

```
./hello //my executable name mentioned in CMakeLists
```

## Output Screenshot

Parrot Terminal

File Edit View Search Terminal Help

GNU nano 5.4 hello\_world.cpp

```
#include <iostream>
int main(){
    std::cout<<"Hello World";
    return 0;
}
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location  
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^ Go To Line

Parrot Terminal

File Edit View Search Terminal Help

GNU nano 5.4 CMakeLists.txt

```
cmake_minimum_required(VERSION 3.10)
project(MyProject VERSION 0.0.1)
add_executable(hello hello_world.cpp)
```

Parrot Terminal

File Edit View Search Terminal Help

```
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13]
└ $ nano hello_world.cpp
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13]
└ $ nano CMakeLists.txt
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13]
└ $ mkdir build
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13]
└ $ cd build/
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13/build]
└ $ cmake ..
-- The C compiler identification is GNU 10.2.1
-- The CXX compiler identification is GNU 10.2.1
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/bin/cc - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: /usr/bin/c++ - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: /home/allensphilip/MCA/ACN/Exp13/build
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13/build]
└ $ cmake --build .
Scanning dependencies of target hello
[ 50%] Building CXX object CMakeFiles/hello.dir/hello_world.cpp.o
[100%] Linking CXX executable hello
[100%] Built target hello
[allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13/build]
└ $ ./hello
Hello World [allensphilip@SEC-ROG] - [~/MCA/ACN/Exp13/build]
└ $
```

# **NETWORKING & SYSTEM ADMINISTRATION LAB**

## **Experiment No: 14**

**Name: ALLEN S PHILIP**

**Roll No: 20**

**Batch: RMCA A**

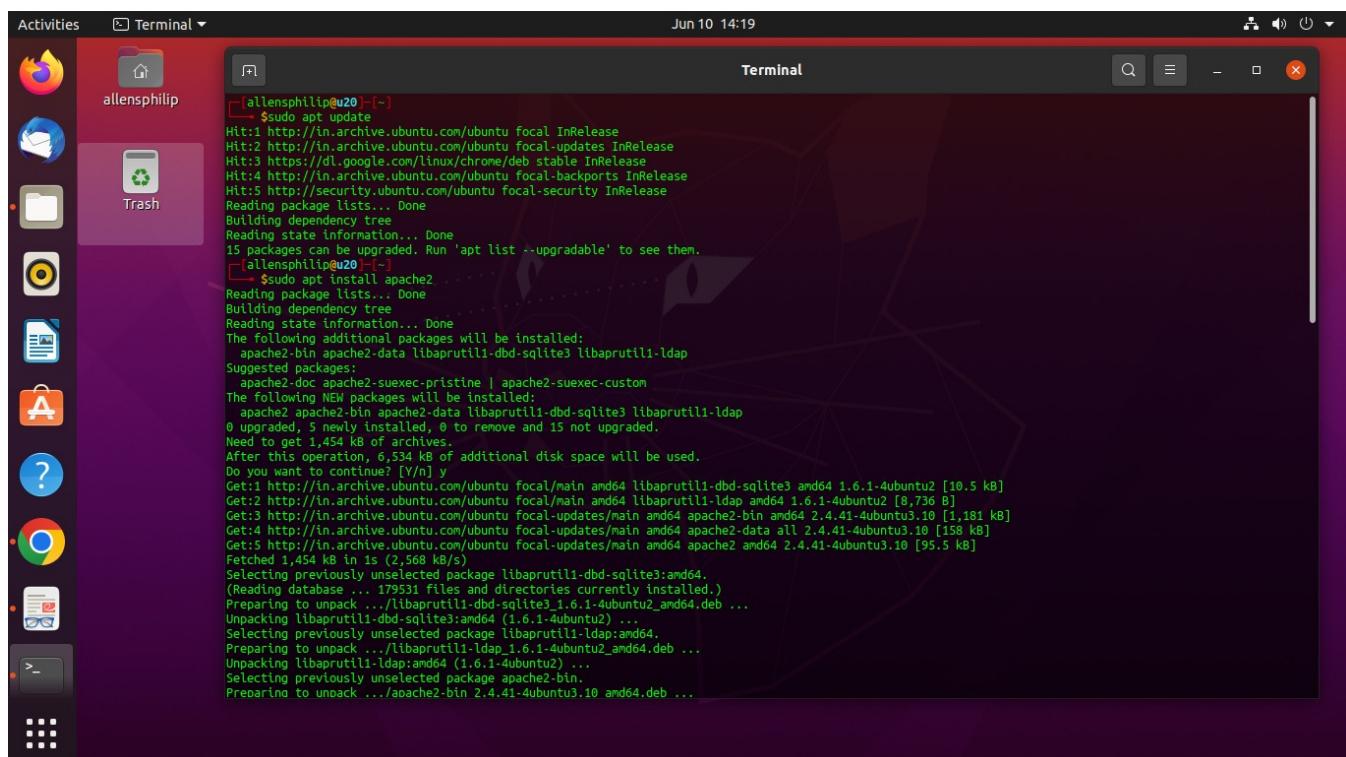
**Date: 23/05/2022**

### **Aim**

Instalation LAMPP and wordpress

### **Output Screenshot**

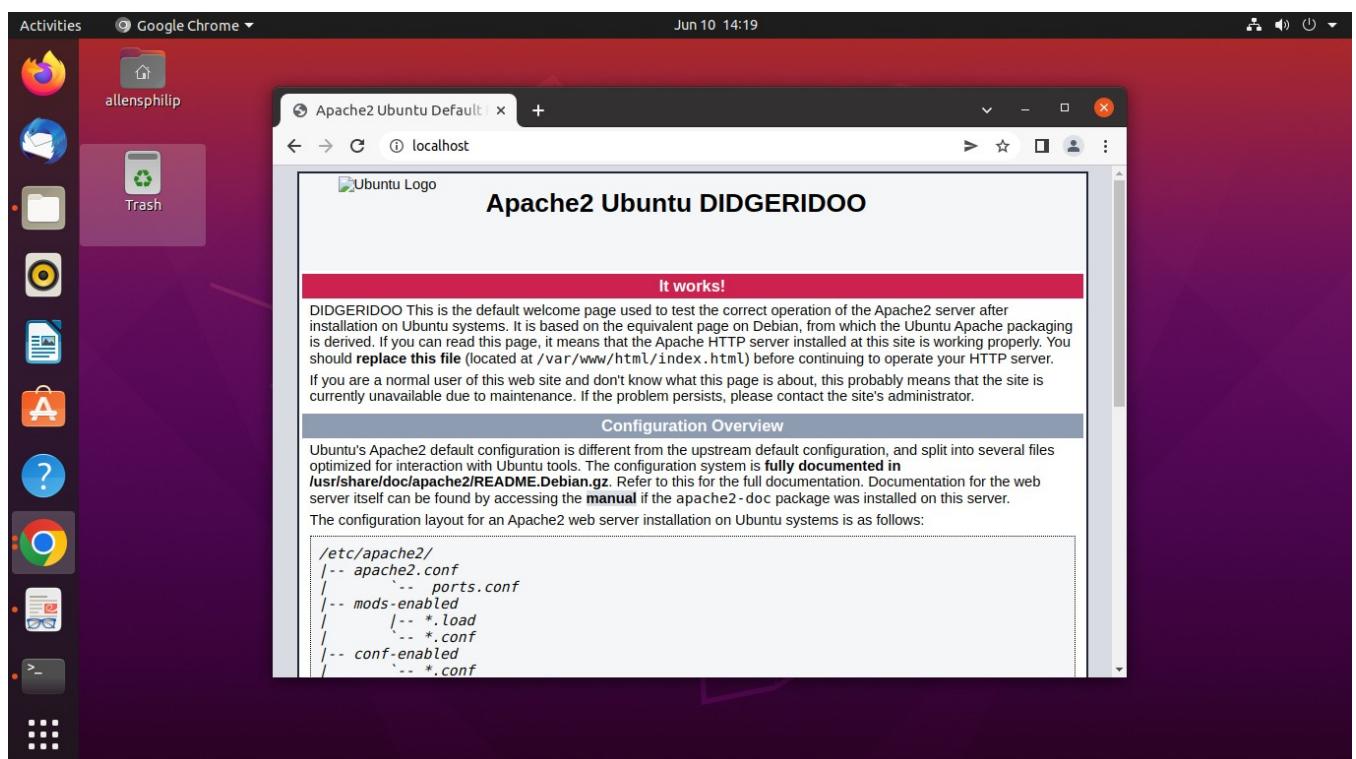
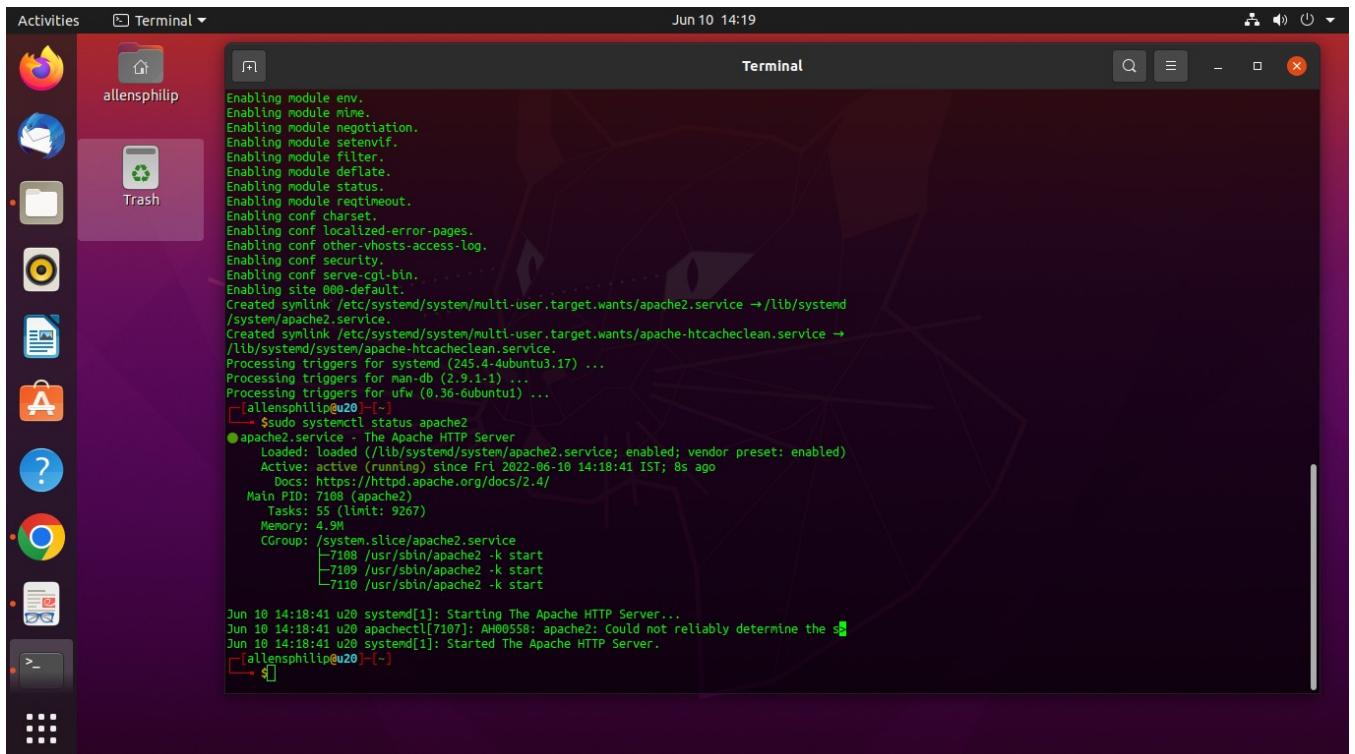
#### **Installation: Apache2, Mysql, Php, Phpmyadmin**



```
Activities Terminal Jun 10 14:19
[allensphilip@u20 ~] $ sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:5 http://security.ubuntu.com/ubuntu focal-security InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
15 packages can be upgraded. Run 'apt list --upgradable' to see them.
[allensphilip@u20 ~] $ sudo apt install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data libaprutil1-dbd-sqlite3 libaprutil1-ldap
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data libaprutil1-dbd-sqlite3 libaprutil1-ldap
0 upgraded, 5 newly installed, 0 to remove and 15 not upgraded.
Need to get 1,454 kB of archives.
After this operation, 6,534 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu/focal/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2 [10.5 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu/focal/main amd64 libaprutil1-ldap amd64 1.6.1-4ubuntu2 [8,736 B]
Get:3 http://in.archive.ubuntu.com/ubuntu/focal-updates/main amd64 apache2-bin amd64 2.4.41-4ubuntu3.10 [15.181 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu/focal-updates/main amd64 apache2 amd64 2.4.41-4ubuntu3.10 [158 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu/focal-updates/main amd64 apache2-bin 2.4.41-4ubuntu3.10 [95.5 kB]
Fetched 1,454 kB in 1s (2,568 kB/s)
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
(Reading database ... 179531 files and directories currently installed.)
Preparing to unpack .../libaprutil1-dbd-sqlite3_1.6.1-4ubuntu2_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.1-4ubuntu2) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../libaprutil1-ldap_1.6.1-4ubuntu2_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.1-4ubuntu2) ...
Selecting previously unselected package apache2-bin.
Preparing to unpack .../apache2-bin_2.4.41-4ubuntu3.10_amd64.deb ...
```

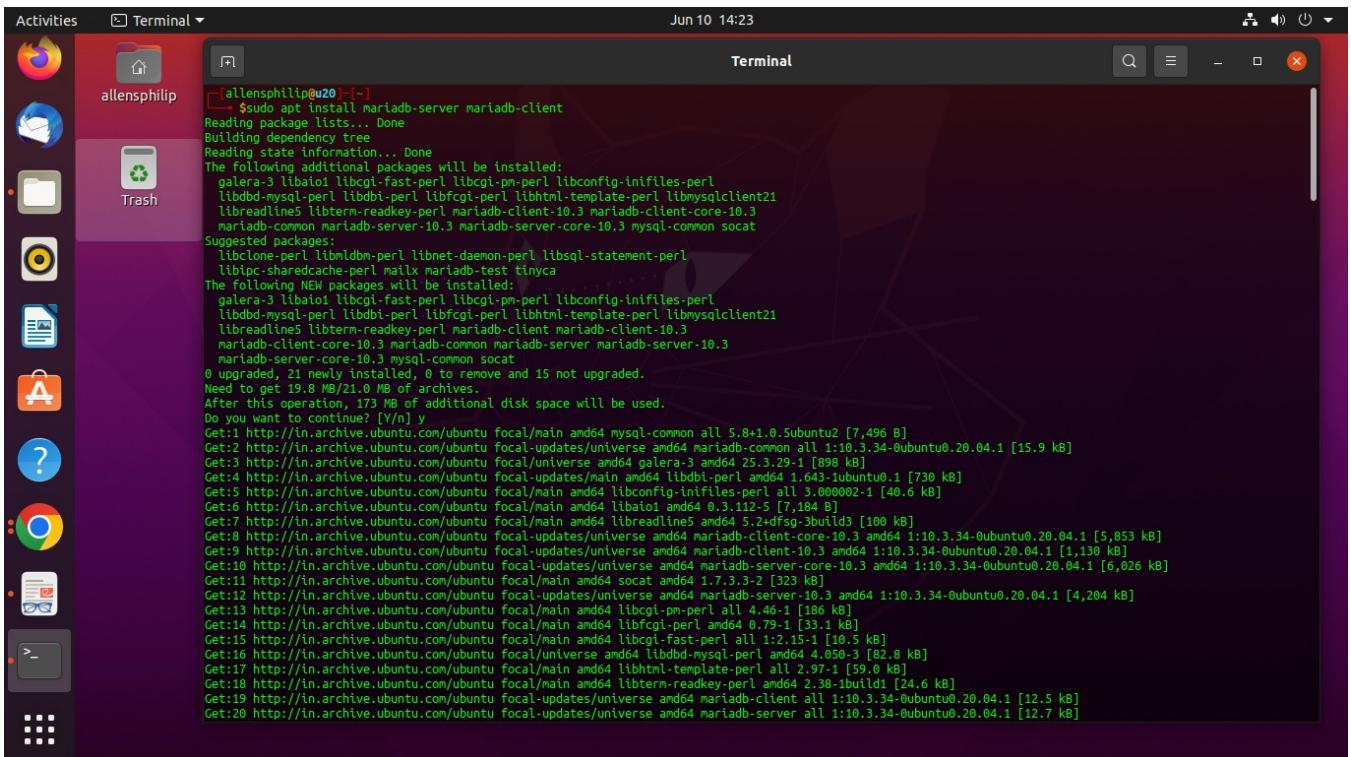
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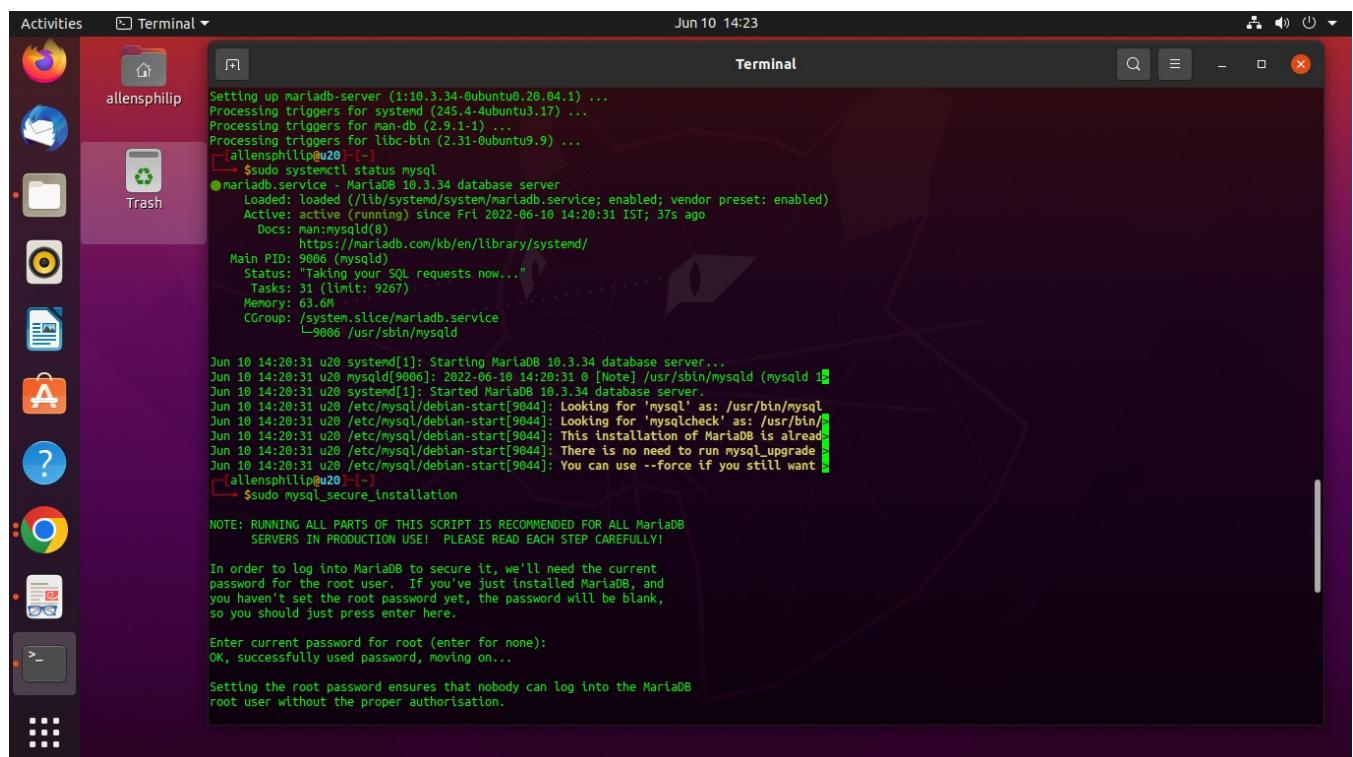


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```
allensphilip@u20:~$ sudo apt install mariadb-server mariadb-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
galera-3 libaio1 libcgifast-perl libcgipm-perl libconfig-inifiles-perl
libdbd-mysql-perl libdbi-perl libfcgi-perl libhtml-template-perl libmysqlclient21
libreadline5 libterm-readkey-perl mariadb-client-10.3 mariadb-client-core-10.3
mariadb-common mariadb-server-10.3 mariadb-server-core-10.3 mysql-common socat
Suggested packages:
libclone-perl libldbm-perl libnet-daemon-perl libsql-statement-perl
libipc-sharedcache-perl mailx mariadb-test tinyca
The following NEW packages will be installed:
galera-3 libaio1 libcgifast-perl libcgipm-perl libconfig-inifiles-perl
libdbd-mysql-perl libdbi-perl libfcgi-perl libhtml-template-perl libmysqlclient21
libreadline5 libterm-readkey-perl mariadb-client mariadb-client-10.3
mariadb-client-core-10.3 mariadb-common mariadb-server mariadb-server-10.3
mariadb-server-core-10.3 mysql-common socat
0 upgraded, 21 newly installed, 0 to remove and 15 not upgraded.
Need to get 19.8 MB/21.0 MB of archives.
After this operation, 173 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/main amd64 mysql-common all 5.8+1.0.Subuntu2 [7,496 B]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 mariadb-common all 1:10.3.34-0ubuntu0.20.04.1 [15.9 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 galera-3 amd64 25.3.29-1 [896 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libdbi-perl amd64 1.643-subuntu0.1 [730 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libconfig-inifiles-perl all 3.000002-1 [40.6 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libaio1 amd64 0.3.112-5 [7,184 B]
Get:7 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libreadline5 amd64 5.2+dfsg-3ubuntu3 [100 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 mariadb-client-core-10.3 amd64 1:10.3.34-0ubuntu0.20.04.1 [5,853 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 mariadb-client-10.3 amd64 1:10.3.34-0ubuntu0.20.04.1 [1,130 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 libdbd-mysql-perl amd64 4.050-3 [82.8 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu focal/main amd64 socat amd64 1.7.3.3-2 [323 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 mariadb-server-10.3 amd64 1:10.3.34-0ubuntu0.20.04.1 [4,204 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libcgipm-perl amd64 4.46-1 [186 kB]
Get:14 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libfcgi-perl amd64 0.79-1 [33.1 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libcgifast-perl all 1:2.15-1 [10.5 kB]
Get:16 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libdbd-mysql-perl amd64 4.050-3 [82.8 kB]
Get:17 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libhtml-template-perl all 2.97-1 [59.0 kB]
Get:18 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libterm-readkey-perl amd64 2.38-1build1 [24.6 kB]
Get:19 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 mariadb-client all 1:10.3.34-0ubuntu0.20.04.1 [12.5 kB]
Get:20 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 mariadb-server all 1:10.3.34-0ubuntu0.20.04.1 [12.7 kB]
```



```
Setting up mariadb-server (1:10.3.34-0ubuntu0.20.04.1) ...
Processing triggers for systemd (245.4-4ubuntu3.17) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
allensphilip@u20:~$ sudo systemctl status mysql
● mariadb.service - Mariadb 10.3.34 database server
  Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor preset: enabled)
  Active: active (running) since Fri 2022-06-10 14:20:31 IST; 37s ago
    Docs: man:mysqld(8)
          https://mariadb.com/kb/en/library/systemd/
 Main PID: 9006 (mysqld)
   Status: "Taking your SQL requests now..."
     Tasks: 31 (limit: 9267)
    Memory: 63.6M
      CGroup: /system.slice/mariadb.service
             └─ 9006 /usr/sbin/mysqld

Jun 10 14:20:31 u20 systemd[1]: Starting MariaDB 10.3.34 database server...
Jun 10 14:20:31 u20 mysqld[9006]: 2022-06-10 14:20:31 0 [Note] /usr/sbin/mysqld (mysqld 10.3.34-0ubuntu0.20.04.1) starting as process 9006 ...
Jun 10 14:20:31 u20 /etc/mysql/debian-start[9044]: Looking for 'mysql' as: /usr/bin/mysql
Jun 10 14:20:31 u20 /etc/mysql/debian-start[9044]: Looking for 'mysqlcheck' as: /usr/bin/mysqlcheck
Jun 10 14:20:31 u20 /etc/mysql/debian-start[9044]: This installation of MariaDB is already running as process 9006.
Jun 10 14:20:31 u20 /etc/mysql/debian-start[9044]: There is no need to run mysql_upgrade.
Jun 10 14:20:31 u20 /etc/mysql/debian-start[9044]: You can use --force if you still want to run mysql_upgrade.
allensphilip@u20:~$ sudo mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

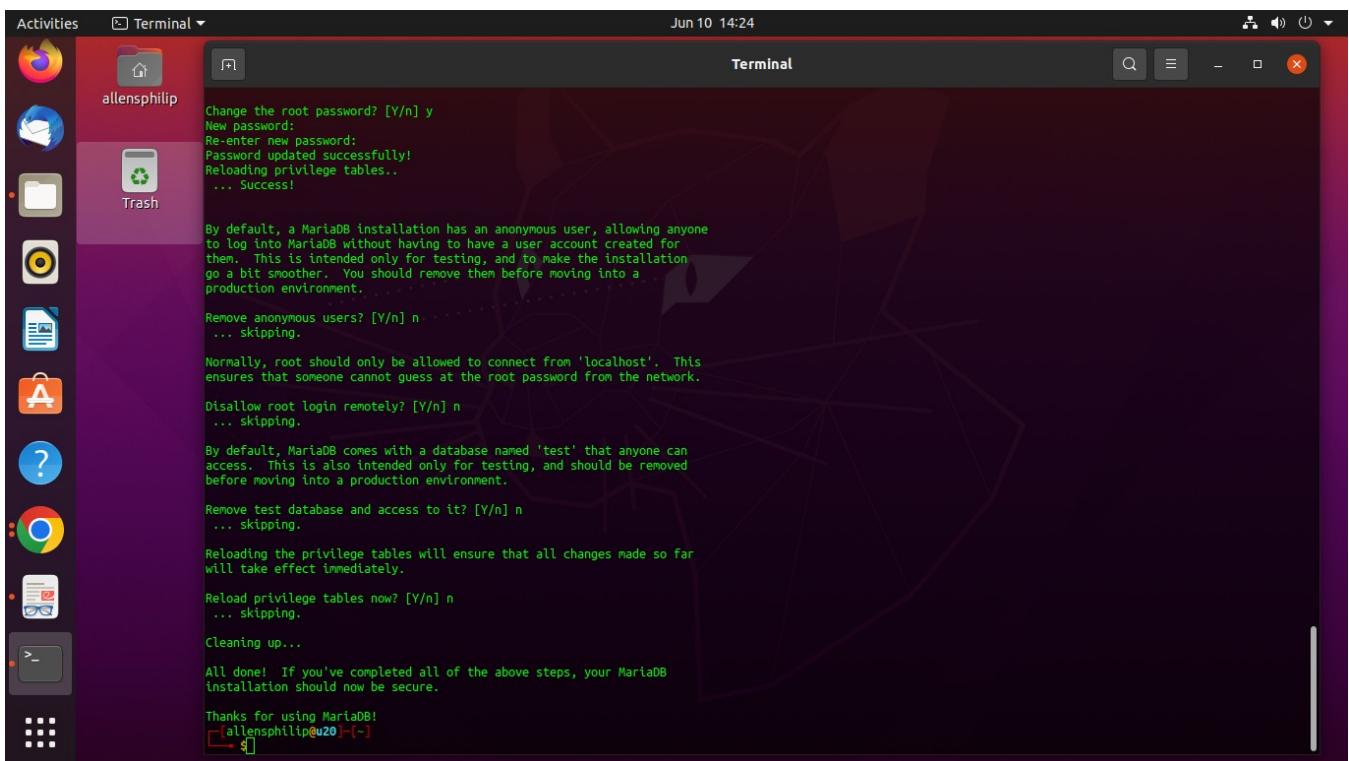
In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...
Setting the root password ensures that nobody can log into the MariaDB
root user without the proper authorisation.
```

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A screenshot of an Ubuntu desktop environment. The terminal window shows the MySQL setup process:

```
Change the root password? [Y/n] y
New password:
Re-enter new password:
Password updated successfully!
Reloading privilege tables..
... Success!

By default, a MariaDB installation has an anonymous user, allowing anyone
to log into MariaDB without having to have a user account created for
them. This is intended only for testing, and to make the installation
go a bit smoother. You should remove them before moving into a
production environment.

Remove anonymous users? [Y/n] n
... skipping.

Normally, root should only be allowed to connect from 'localhost'. This
ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] n
... skipping.

By default, MariaDB comes with a database named 'test' that anyone can
access. This is also intended only for testing, and should be removed
before moving into a production environment.

Remove test database and access to it? [Y/n] n
... skipping.

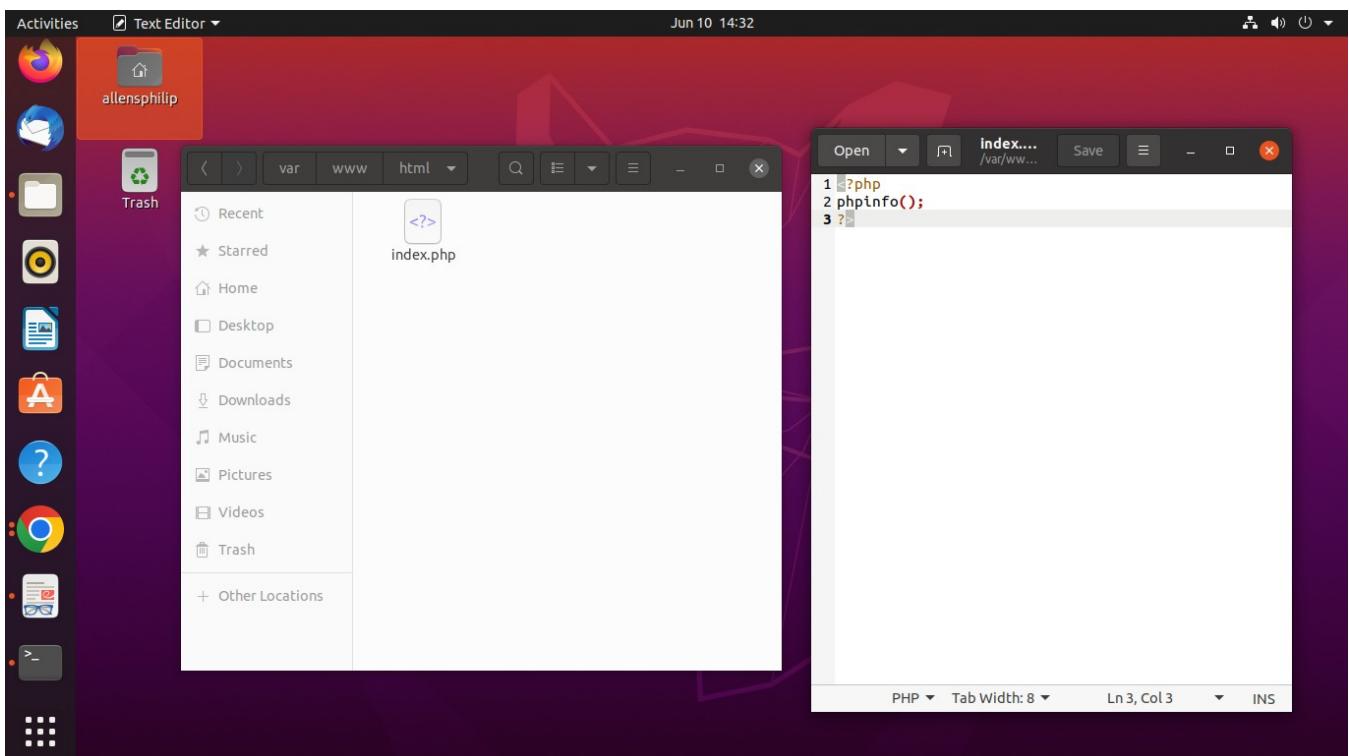
Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] n
... skipping.

Cleaning up...

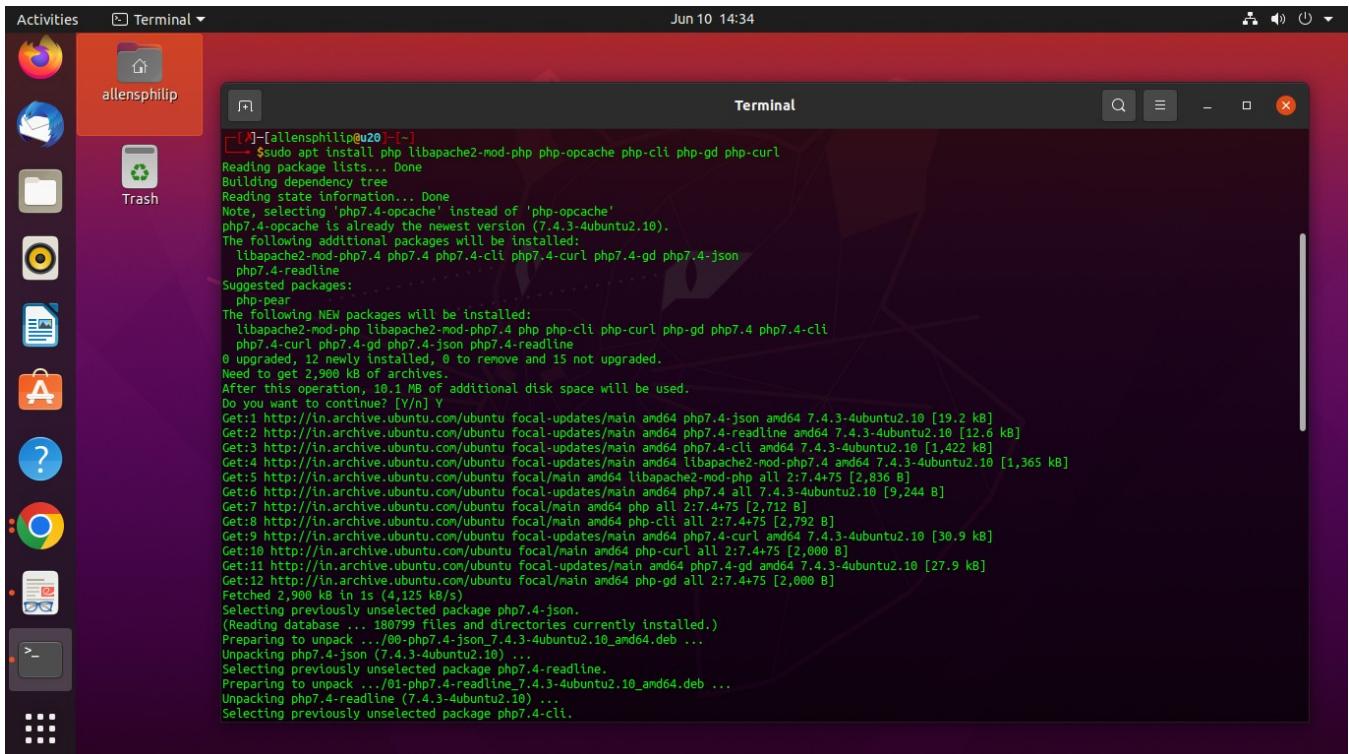
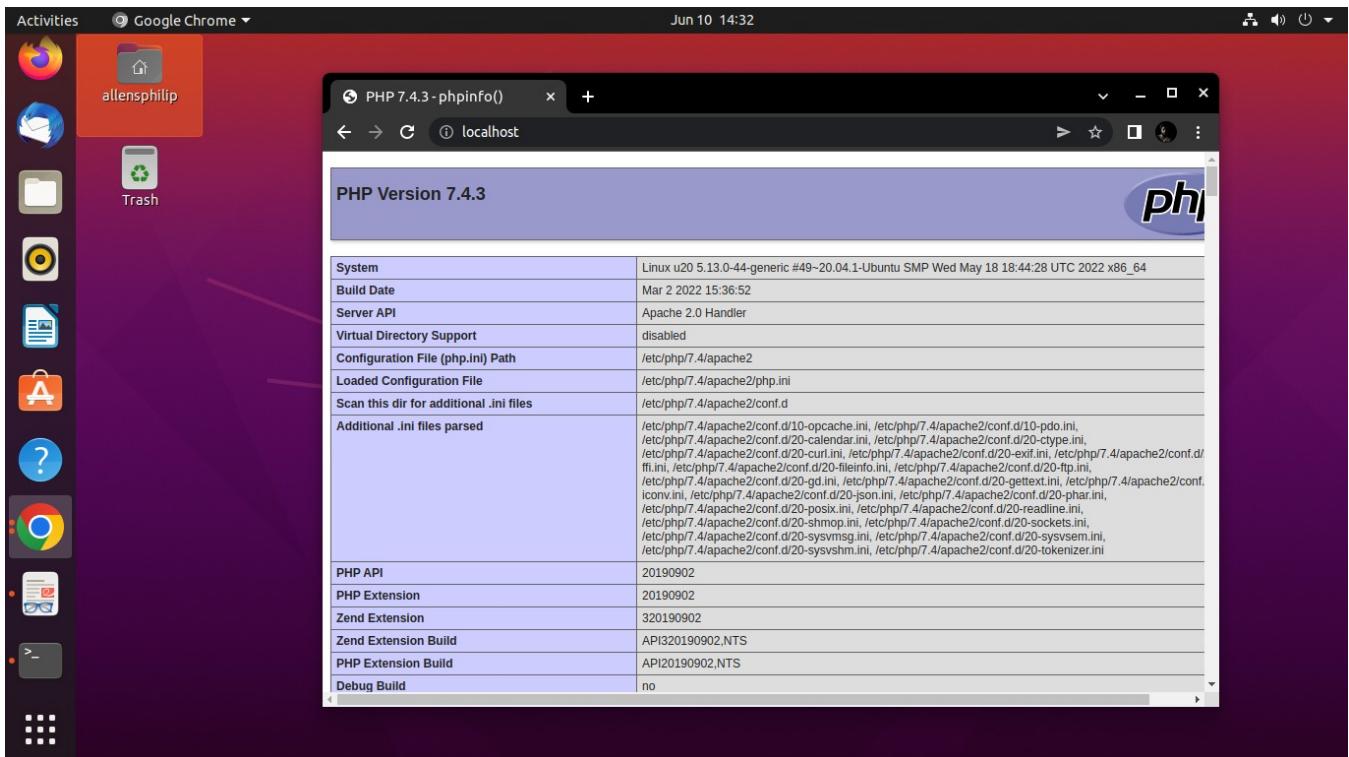
All done! If you've completed all of the above steps, your MariaDB
installation should now be secure.

Thanks for using MariaDB!
[allensphilip@u20:~]$
```



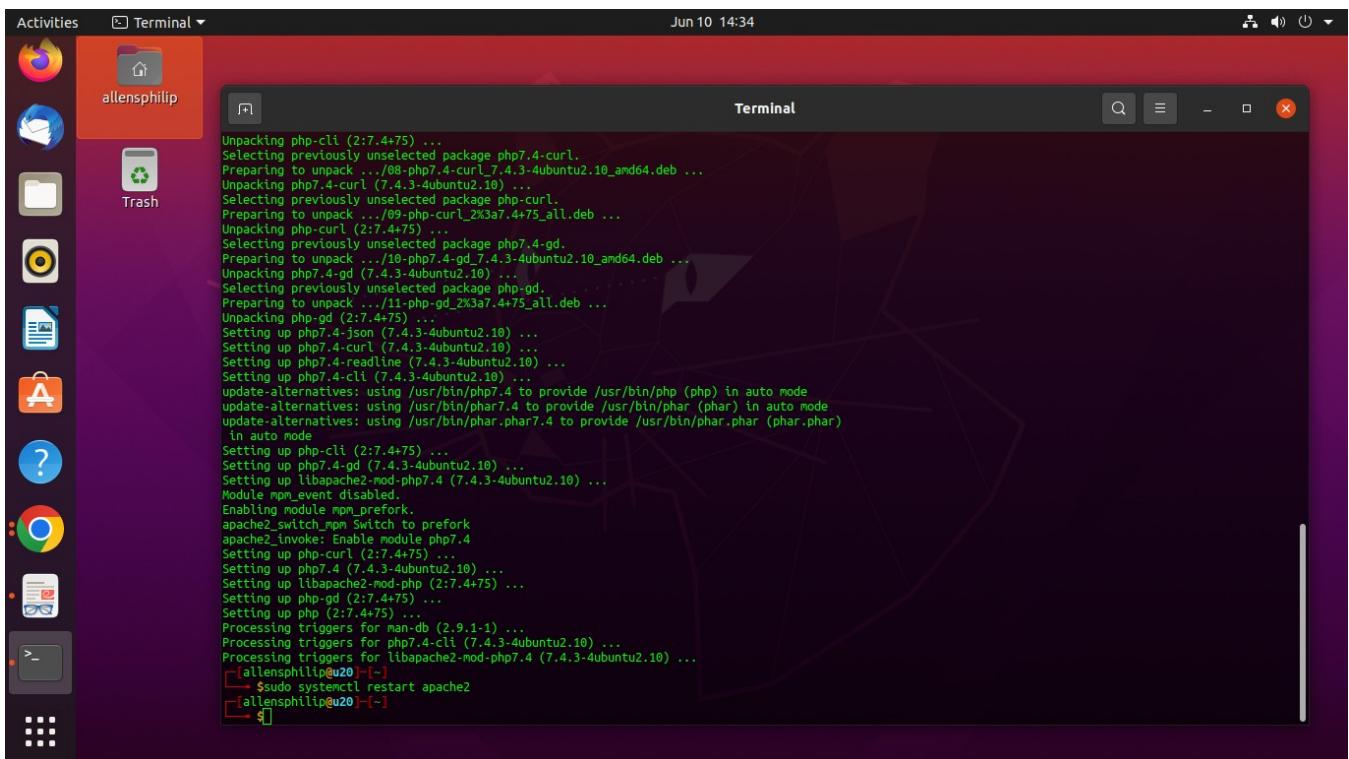
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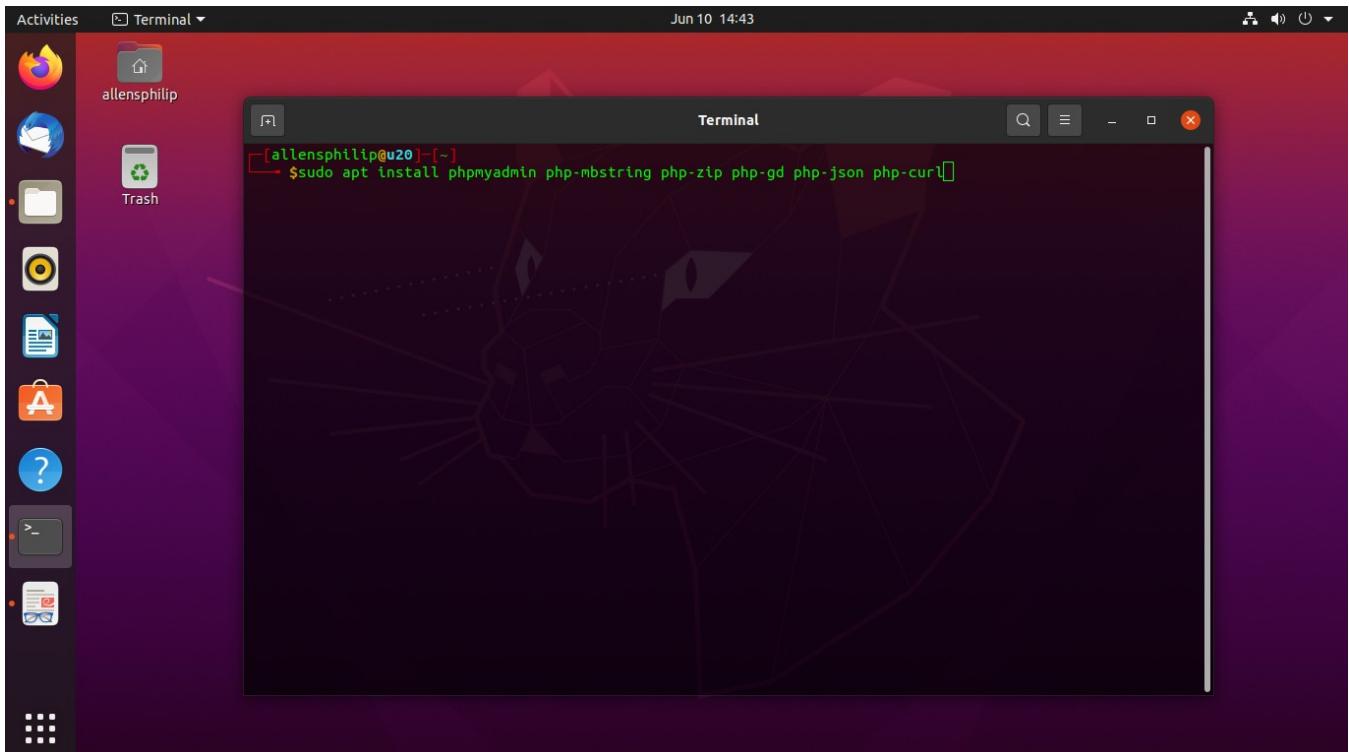
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A screenshot of an Ubuntu desktop environment. On the left is a dock with various icons: Home, Dash, Activities, Terminal, Home, Trash, and others. A terminal window titled 'Terminal' is open in the foreground, showing command-line output. The output details the installation of several PHP packages via apt-get:

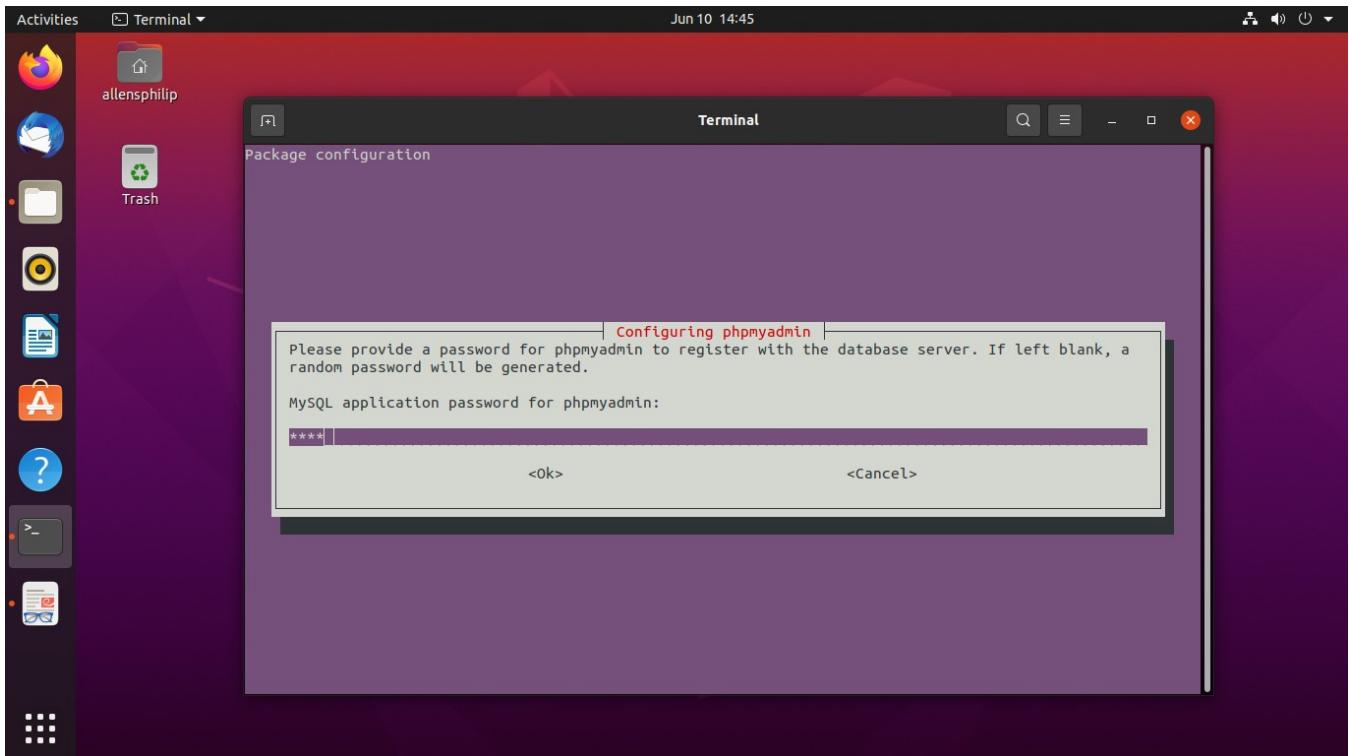
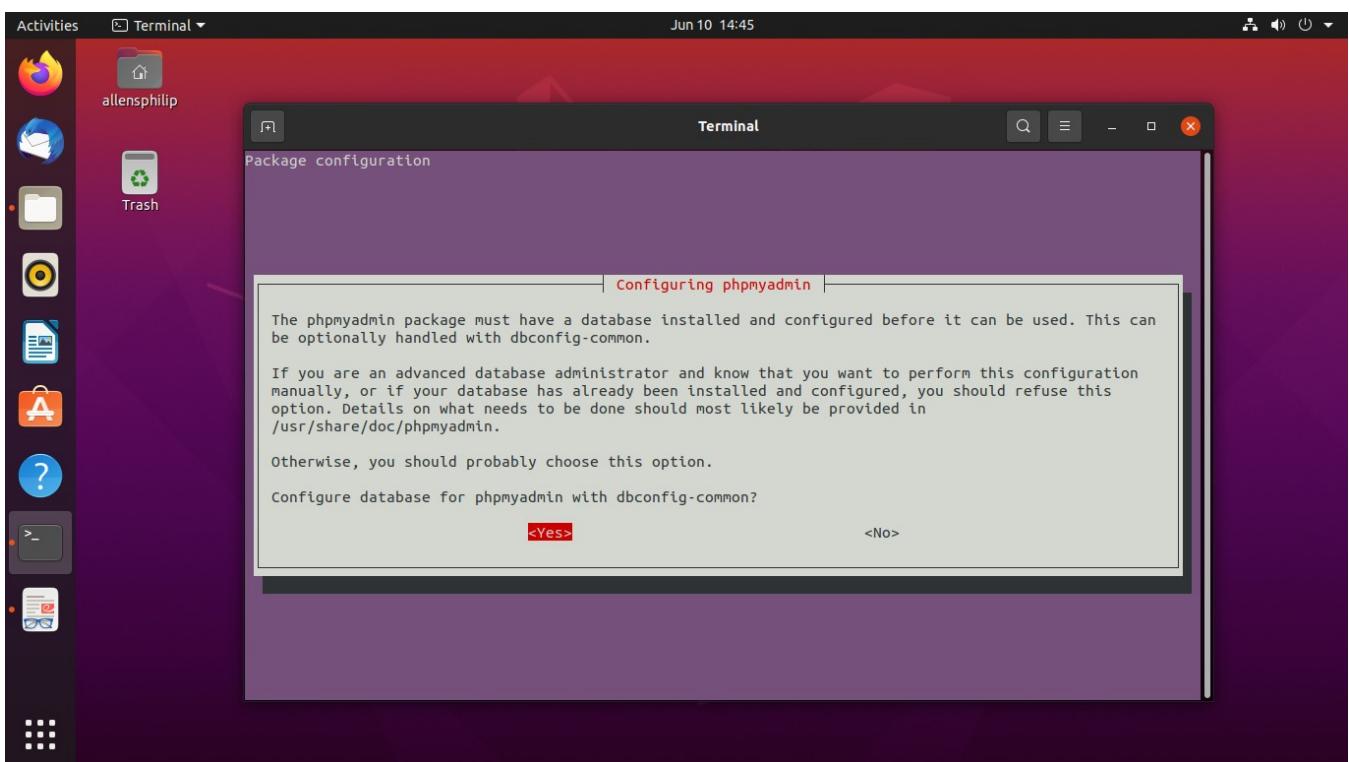
```
Unpacking php-cli (2:7.4+75) ...
Selecting previously unselected package php7.4-curl.
Preparing to unpack .../08-php7.4-curl_7.4.3-4ubuntu2.10_amd64.deb ...
Unpacking php7.4-curl (7.4.3-4ubuntu2.10) ...
Selecting previously unselected package php-curl.
Preparing to unpack .../09-php-curl_233a7.4475_all.deb ...
Unpacking php-curl (2:7.4+75) ...
Selecting previously unselected package php7.4-gd.
Preparing to unpack .../10-php7.4-gd_7.4.3-4ubuntu2.10_amd64.deb ...
Unpacking php7.4-gd (7.4.3-4ubuntu2.10) ...
Selecting previously unselected package php-gd.
Preparing to unpack .../11-php-gd_233a7.4475_all.deb ...
Unpacking php-gd (2:7.4+75)
Setting up php7.4-json (7.4.3-4ubuntu2.10) ...
Setting up php7.4-curl (7.4.3-4ubuntu2.10) ...
Setting up php7.4-readline (7.4.3-4ubuntu2.10) ...
Setting up php7.4-cgi (7.4.3-4ubuntu2.10) ...
update-alternatives: using /usr/bin/php7.4 to provide /usr/bin/php (php) in auto mode
update-alternatives: using /usr/bin/phar7.4 to provide /usr/bin/phar (phar) in auto mode
update-alternatives: using /usr/bin/phar.phar7.4 to provide /usr/bin/phar.phar (phar.phar) in auto mode
Setting up libapache2-mod-php7.4 (7.4.3-4ubuntu2.10) ...
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
apache2_invoke: Enable module php7.4
Setting up php-curl (2:7.4+75) ...
Setting up php7.4 (7.4.3-4ubuntu2.10) ...
Setting up libapache2-mod-php (2:7.4+75) ...
Setting up php-gd (2:7.4+75) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for php7.4-cgi (7.4.3-4ubuntu2.10) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.10) ...
[allensphilip@u20:~]
└─$ sudo systemctl restart apache2
[allensphilip@u20:~]
└─$
```



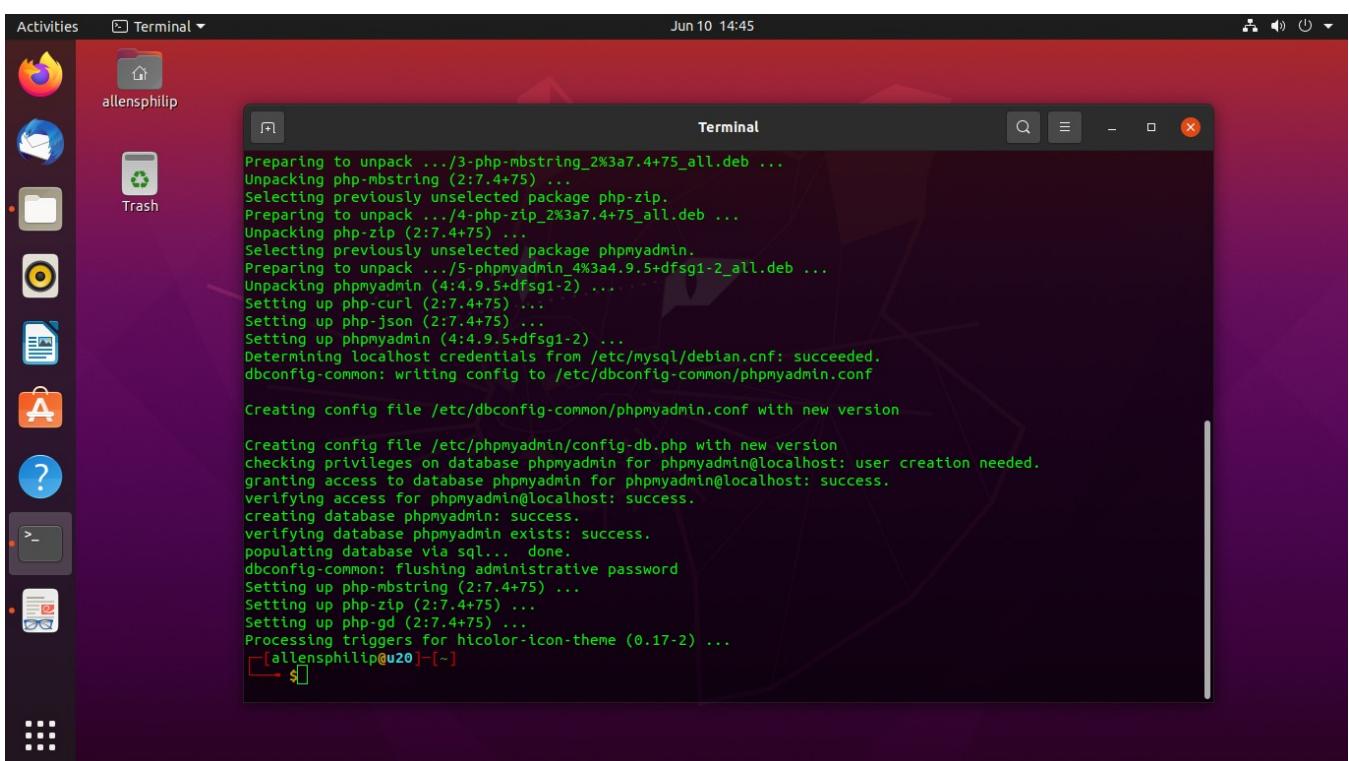
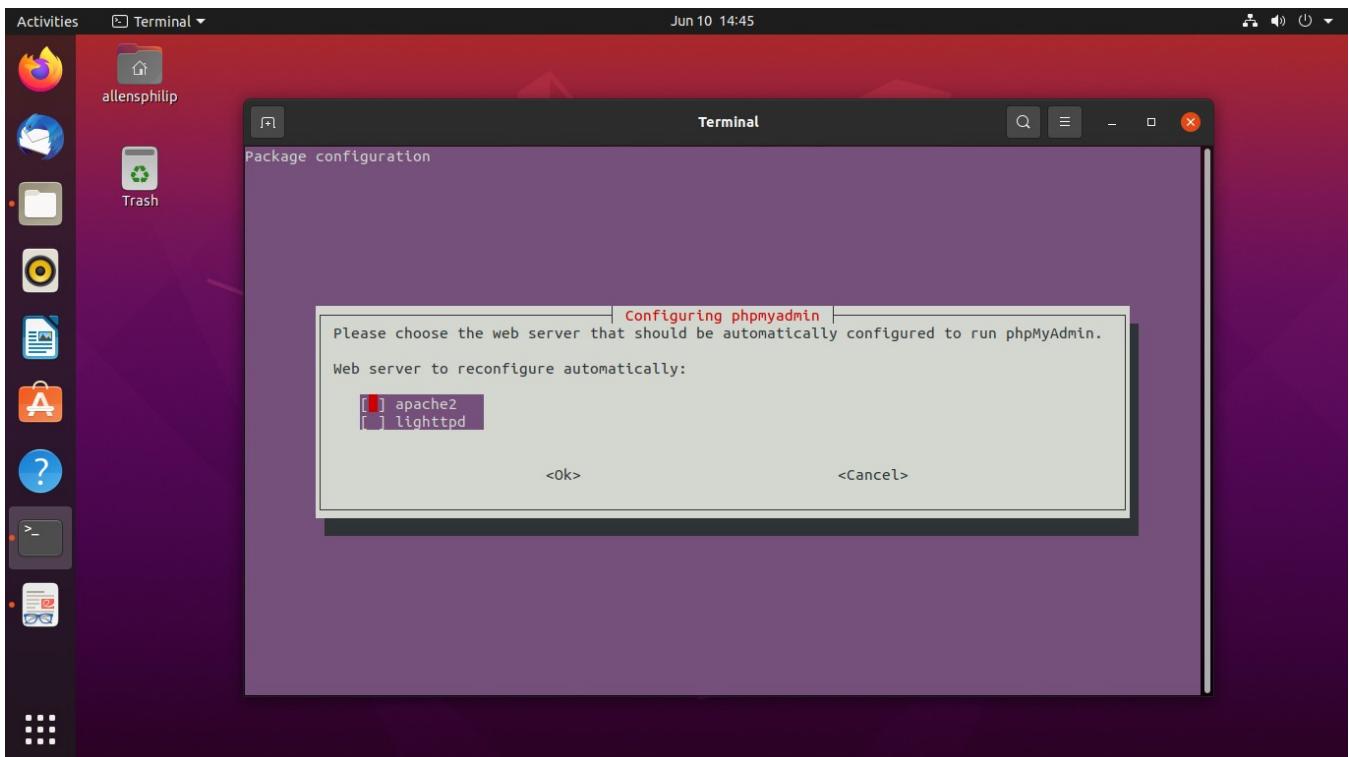
A screenshot of an Ubuntu desktop environment. The interface is identical to the one above, with the dock and terminal window visible. The terminal window shows a single command being typed:

```
[allensphilip@u20:~]
└─$ sudo apt install phpmyadmin php-mbstring php-zip php-gd php-json php-curl
```

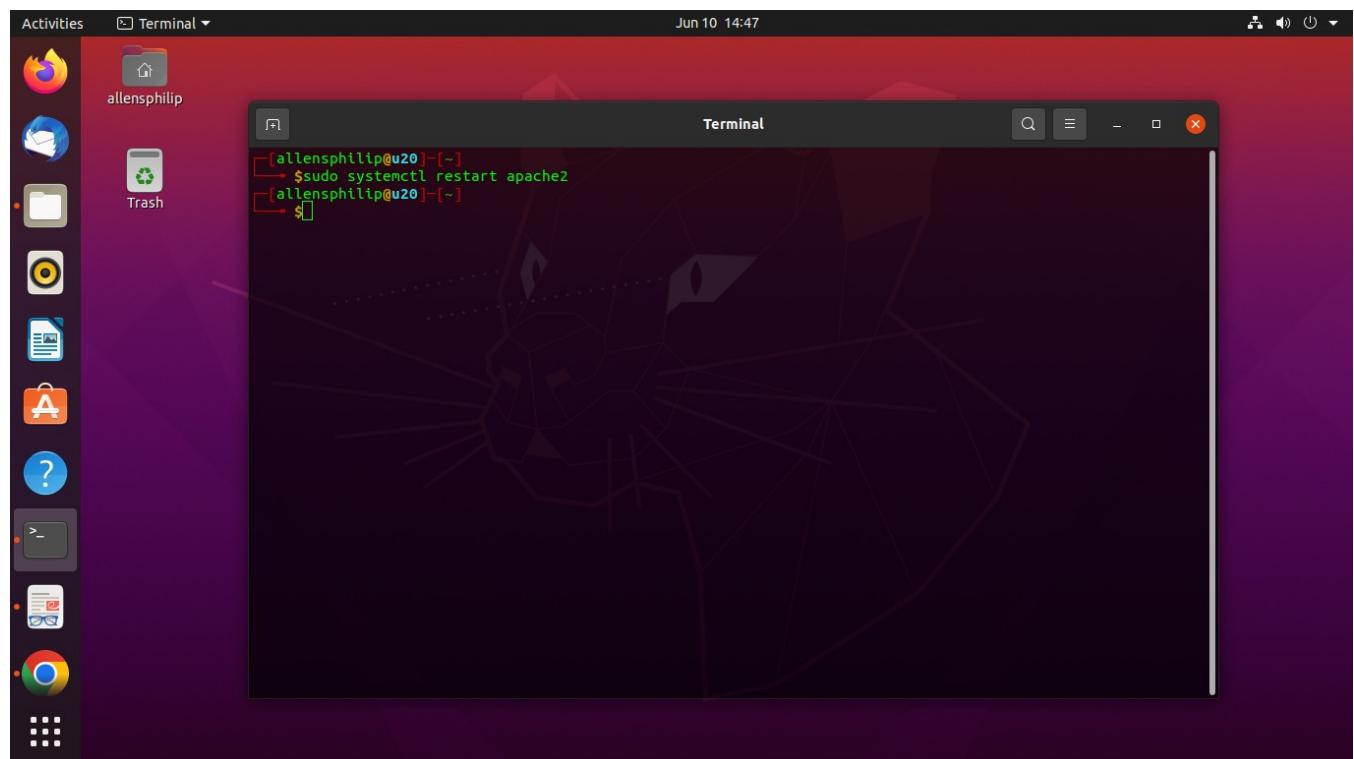
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## Wordpress Installation

The screenshot shows a terminal window titled "Parrot Terminal". The terminal output is as follows:

```
[allensphilip@SEC-ROG] -[~]
└─$ service apache2 status
● apache2.service - The Apache HTTP Server
  Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor pres
  Active: active (running) since Sun 2022-06-12 00:55:05 IST; 3h 58min ago
    Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 13664 (apache2)
     Tasks: 7 (limit: 8720)
    Memory: 14.0M
      CPU: 852ms
     CGroup: /system.slice/apache2.service
             └─13664 /usr/sbin/apache2 -k start
               ├─13666 /usr/sbin/apache2 -k start
               ├─13667 /usr/sbin/apache2 -k start
               ├─13668 /usr/sbin/apache2 -k start
               ├─13669 /usr/sbin/apache2 -k start
               ├─13670 /usr/sbin/apache2 -k start
               └─17763 /usr/sbin/apache2 -k start

Jun 12 00:55:05 SEC-ROG systemd[1]: Starting The Apache HTTP Server...
Jun 12 00:55:05 SEC-ROG apachectl[13663]: AH00558: apache2: Could not reliably
Jun 12 00:55:05 SEC-ROG systemd[1]: Started The Apache HTTP Server.
[allensphilip@SEC-ROG] -[~]
└─$ service mysql status
● mariadb.service - MariaDB 10.5.15 database server
  Loaded: loaded (/lib/systemd/system/mariadb.service; disabled; vendor pres
  Active: active (running) since Sun 2022-06-12 00:53:18 IST; 4h 0min ago
    Docs: man:mariadb(8)
          https://mariadb.com/kb/en/library/systemd/
   Main PID: 6126 (mariadb)
     Status: "Taking your SQL requests now..."
     Tasks: 8 (limit: 8720)
    Memory: 84.1M
      CPU: 4.020s
     CGroup: /system.slice/mariadb.service
             └─6126 /usr/sbin/mariadb

Jun 12 00:53:18 SEC-ROG mariadb[6126]: 2022-06-12 0:53:18 0 [Note] /usr/sbin/>
Jun 12 00:53:18 SEC-ROG mariadb[6126]: Version: '10.5.15-MariaDB-0+deb11u1' s>
Jun 12 00:53:18 SEC-ROG systemd[1]: Started MariaDB 10.5.15 database server.
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: Looking for 'mysql' as: >
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: Looking for 'mysqlcheck'>
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: This installation of Mar>
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: There is no need to run >
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: You can use --force if y>
Jun 12 00:56:33 SEC-ROG mariadb[6126]: 2022-06-12 0:56:33 37 [Warning] Access>
Jun 12 00:56:33 SEC-ROG mariadb[6126]: 2022-06-12 0:56:33 39 [Warning] Access>
[allensphilip@SEC-ROG] -[~]
└─$ wget -c http://wordpress.org/latest.tar.gz
--2022-06-12 04:54:11--  http://wordpress.org/latest.tar.gz
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
```

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The screenshot shows a terminal window titled "Parrot Terminal" with a dark theme. The terminal displays the following command-line session:

```
Memory: 84.1M
CPU: 4.020s
CGroup: /system.slice/mariadb.service
└─6126 /usr/sbin/mariadb

Jun 12 00:53:18 SEC-ROG mariadb[6126]: 2022-06-12 0:53:18 0 [Note] /usr/sbin/...
Jun 12 00:53:18 SEC-ROG mariadb[6126]: Version: '10.5.15-MariaDB-0+deb11u1' s...
Jun 12 00:53:18 SEC-ROG systemd[1]: Started MariaDB 10.5.15 database server.
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: Looking for 'mysql' as: ...
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: Looking for 'mysqlcheck'>
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: This installation of Mar...
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: There is no need to run >
Jun 12 00:53:18 SEC-ROG /etc/mysql/debian-start[6168]: You can use --force if y...
Jun 12 00:56:33 SEC-ROG mariadb[6126]: 2022-06-12 0:56:33 37 [Warning] Access...
Jun 12 00:56:33 SEC-ROG mariadb[6126]: 2022-06-12 0:56:33 39 [Warning] Access...
[allensphilip@SEC-ROG:~]$

[allensphilip@SEC-ROG:~]$ wget -c http://wordpress.org/latest.tar.gz
--2022-06-12 04:54:11--  http://wordpress.org/latest.tar.gz
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://wordpress.org/latest.tar.gz [following]
--2022-06-12 04:54:12--  https://wordpress.org/latest.tar.gz
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21166276 (20M) [application/octet-stream]
Saving to: 'latest.tar.gz'

latest.tar.gz      100%[=====] 20.19M  2.58MB/s    in 9.8s

2022-06-12 04:54:23 (2.06 MB/s) - 'latest.tar.gz' saved [21166276/21166276]

[allensphilip@SEC-ROG:~]$

[allensphilip@SEC-ROG:~]$ tar -xvzf latest.tar.gz
wordpress/
wordpress/xmlrpc.php
wordpress/wp-blog-header.php
wordpress/readme.html
wordpress/wp-signup.php
wordpress/index.php
wordpress/wp-cron.php
wordpress/wp-config-sample.php
wordpress/wp-login.php
wordpress/wp-settings.php
wordpress/license.txt
wordpress/wp-content/
wordpress/wp-content/themes/
wordpress/wp-content/themes/twentytwentyone/
wordpress/wp-content/themes/twentytwentyone/footer.php
wordpress/wp-content/themes/twentytwentyone/template-parts/
wordpress/wp-content/themes/twentytwentyone/template-parts/content/
wordpress/wp-content/themes/twentytwentyone/template-parts/content/content-excerpt.php
wordpress/wp-content/themes/twentytwentyone/template-parts/content/page.php
```

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The screenshot shows a terminal window titled "Parrot Terminal" with a dark theme. The terminal displays a series of commands and their outputs, illustrating a penetration testing or exploit development session. The session starts with navigating through a WordPress directory structure, changing ownership and permissions, and then connecting to a MariaDB database as root. It attempts to use the 'CREATE USER' command twice, first successfully creating a user 'wp'@'%' with password 'wppass', and then failing due to syntax errors. The terminal interface includes a menu bar at the top and a scroll bar on the right side.

```
File Edit View Search Terminal Help
wordpress/wp-admin/options-reading.php
wordpress/wp-trackback.php
wordpress/wp-comments-post.php
[allensphilip@SEC-ROG] [~]
└─$ sudo mv wordpress/* /var/www/html/
[sudo] password for allensphilip:
[allensphilip@SEC-ROG] [~]
└─$ sudo chown -R www-data:www-data /var/www/html/
[allensphilip@SEC-ROG] [~]
└─$ sudo chmod -R 755 /var/www/html/
[allensphilip@SEC-ROG] [~]
└─$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 48
Server version: 10.5.15-MariaDB-0+deb11u1 Debian 11

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> use mysql
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
MariaDB [mysql]> CREATE DATABASE wp;
Query OK, 1 row affected (0.001 sec)

MariaDB [mysql]> CREATE USER 'wp'@'%' IDENTIFIED WITH mysql_native_password BY 'wppass'
    -> Ctrl-C -- exit!
Aborted
[✗] [allensphilip@SEC-ROG] [~]
└─$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 49
Server version: 10.5.15-MariaDB-0+deb11u1 Debian 11

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> use mysql
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
MariaDB [mysql]> CREATE USER 'wp'@'%' IDENTIFIED WITH mysql_native_password BY 'wppass';
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near 'BY 'wppass'' at line 1
```

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```
Parrot Terminal
File Edit View Search Terminal Help
permitted if an account is locked (existing connections are
not affected). For example:

CREATE USER 'marijn'@'localhost' ACCOUNT LOCK;

See Account Locking for more details.

URL: https://mariadb.com/kb/en/library/create-user/
MariaDB [mysql]> CREATE USER foo2@test IDENTIFIED BY PASSWORD
-> '*54958E764CE10E50764C2EECB71D01F08549980';
Query OK, 0 rows affected (0.010 sec)

MariaDB [mysql]> CREATE USER 'wp'@'%' IDENTIFIED BY PASSWORD 'wppass';
ERROR 1372 (HY000): Password hash should be a 41-digit hexadecimal number
MariaDB [mysql]> CREATE USER wp@localhost IDENTIFIED BY 'password';
Query OK, 0 rows affected (0.010 sec)

MariaDB [mysql]> CREATE USER 'wp'@'localhost' IDENTIFIED BY 'password';
ERROR 1396 (HY000): Operation CREATE USER failed for 'wp'@'localhost'
MariaDB [mysql]> 
```

```
Parrot Terminal
File Edit View Search Terminal Help
Password Expiry

Besides automatic password expiry, as determined by
default_password_lifetime, password expiry times can be set
on an individual user basis, overriding the global setting,
for example:

CREATE USER 'monty'@'localhost' PASSWORD EXPIRE INTERVAL
120 DAY;

See User Password Expiry for more details.

Account Locking

Account locking permits privileged administrators to
lock/unlock user accounts. No new client connections will be
permitted if an account is locked (existing connections are
not affected). For example:

CREATE USER 'marijn'@'localhost' ACCOUNT LOCK;

See Account Locking for more details.

URL: https://mariadb.com/kb/en/library/create-user/
MariaDB [mysql]> CREATE USER foo2@test IDENTIFIED BY PASSWORD
-> '*54958E764CE10E50764C2EECB71D01F08549980';
Query OK, 0 rows affected (0.010 sec)

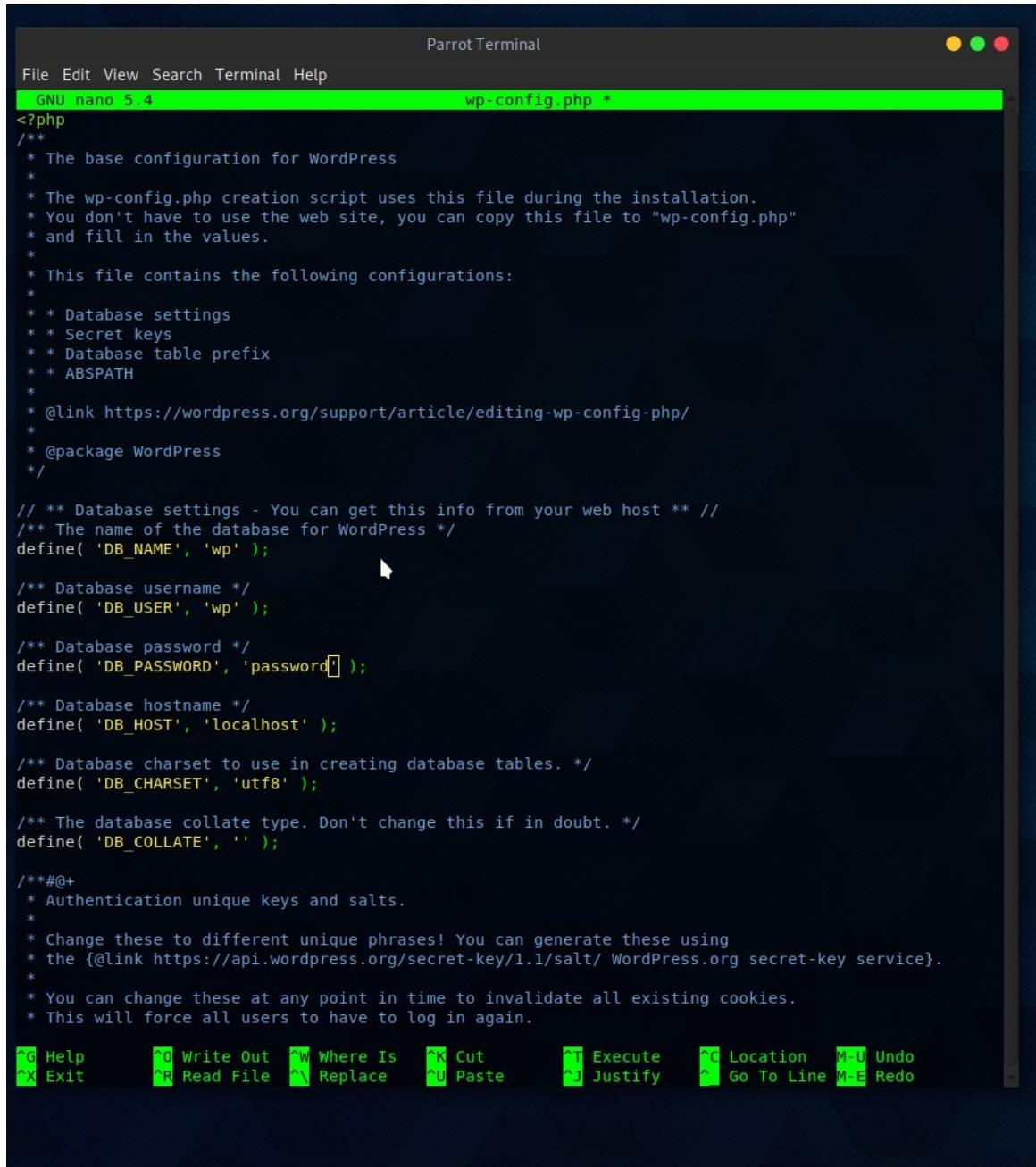
MariaDB [mysql]> CREATE USER 'wp'@'%' IDENTIFIED BY PASSWORD 'wppass';
ERROR 1372 (HY000): Password hash should be a 41-digit hexadecimal number
MariaDB [mysql]> CREATE USER wp@localhost IDENTIFIED BY 'password';
Query OK, 0 rows affected (0.010 sec)

MariaDB [mysql]> CREATE USER 'wp'@'localhost' IDENTIFIED BY 'password';
ERROR 1396 (HY000): Operation CREATE USER failed for 'wp'@'localhost'
MariaDB [mysql]> GRANT ALL ON wp.* TO 'wp'@'%';
ERROR 1133 (28000): Can't find any matching row in the user table
MariaDB [mysql]> GRANT ALL ON wp.* TO 'wp'@'localhost';
Query OK, 0 rows affected (0.015 sec)

MariaDB [mysql]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.001 sec)

MariaDB [mysql]> EXIT;
Bye
[allensphilip@SEC-ROG]--
```

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The screenshot shows a terminal window titled "Parrot Terminal". The title bar includes the menu "File Edit View Search Terminal Help" and the file name "wp-config.php \*". The main area of the terminal displays the content of the "wp-config.php" file, which is a configuration script for WordPress. The file contains various PHP defines for database settings, user authentication, and other system parameters. The code is color-coded, with comments in green and code in white on a black background. A cursor is visible near the top of the code. At the bottom of the terminal, there is a menu bar with standard options like Help, Exit, Write Out, Read File, etc., followed by keyboard shortcuts for various functions.

```
<?php
/*
 * The base configuration for WordPress
 *
 * The wp-config.php creation script uses this file during the installation.
 * You don't have to use the web site, you can copy this file to "wp-config.php"
 * and fill in the values.
 *
 * This file contains the following configurations:
 *
 * * Database settings
 * * Secret keys
 * * Database table prefix
 * * ABSPATH
 *
 * @link https://wordpress.org/support/article/editing-wp-config-php/
 *
 * @package WordPress
 */

// ** Database settings - You can get this info from your web host ** //
/** The name of the database for WordPress */
define( 'DB_NAME', 'wp' );

/** Database username */
define( 'DB_USER', 'wp' );

/** Database password */
define( 'DB_PASSWORD', 'password' );

/** Database hostname */
define( 'DB_HOST', 'localhost' );

/** Database charset to use in creating database tables. */
define( 'DB_CHARSET', 'utf8' );

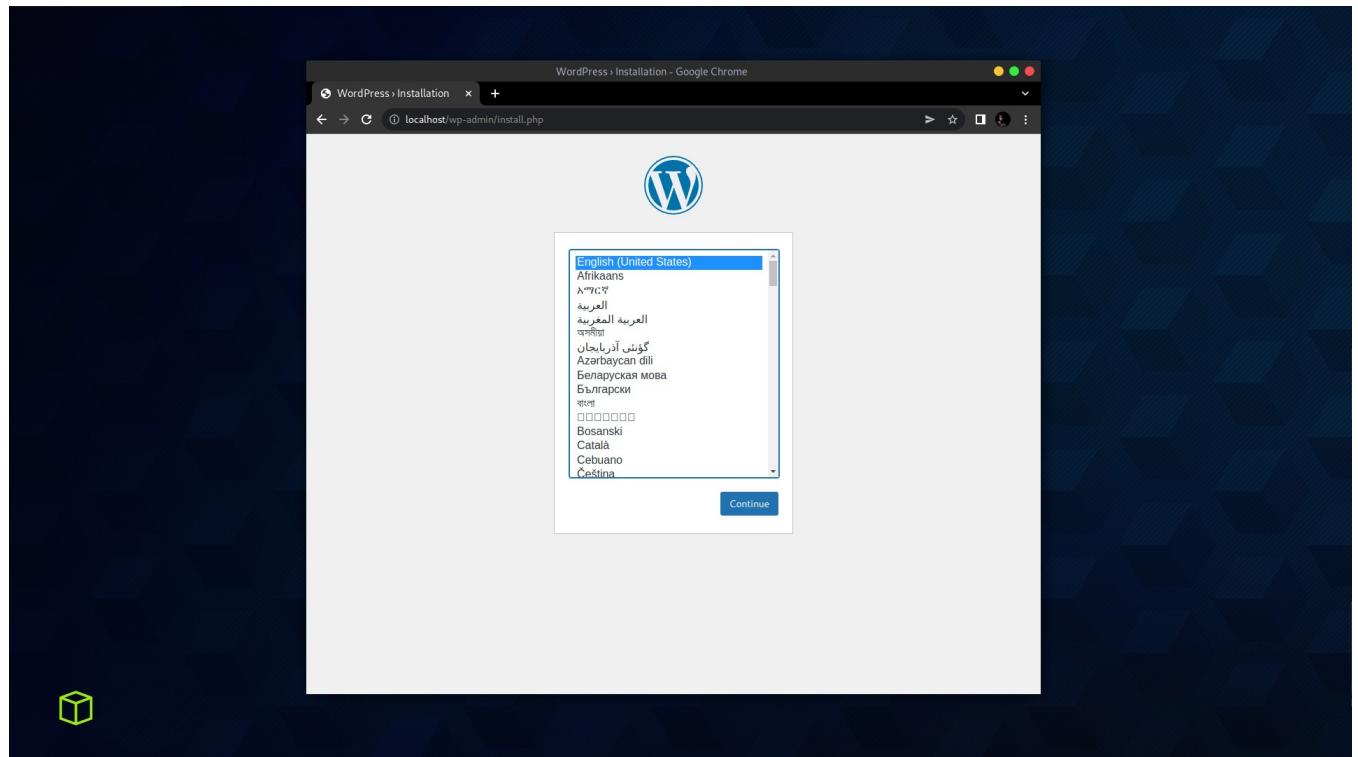
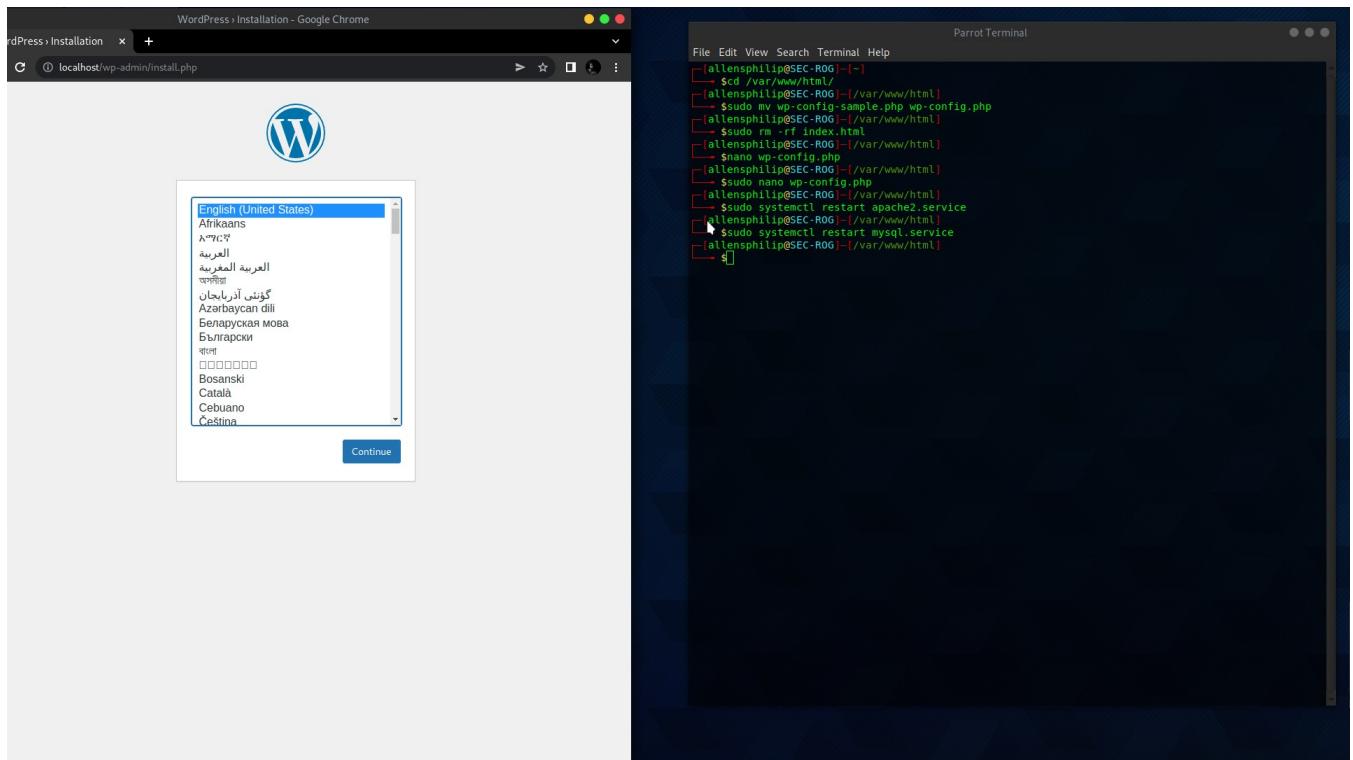
/** The database collate type. Don't change this if in doubt. */
define( 'DB_COLLATE', '' );

/**#@+
 * Authentication unique keys and salts.
 *
 * Change these to different unique phrases! You can generate these using
 * the {@link https://api.wordpress.org/secret-key/1.1/salt/ WordPress.org secret-key service}.
 *
 * You can change these at any point in time to invalidate all existing cookies.
 * This will force all users to have to log in again.
 */

```

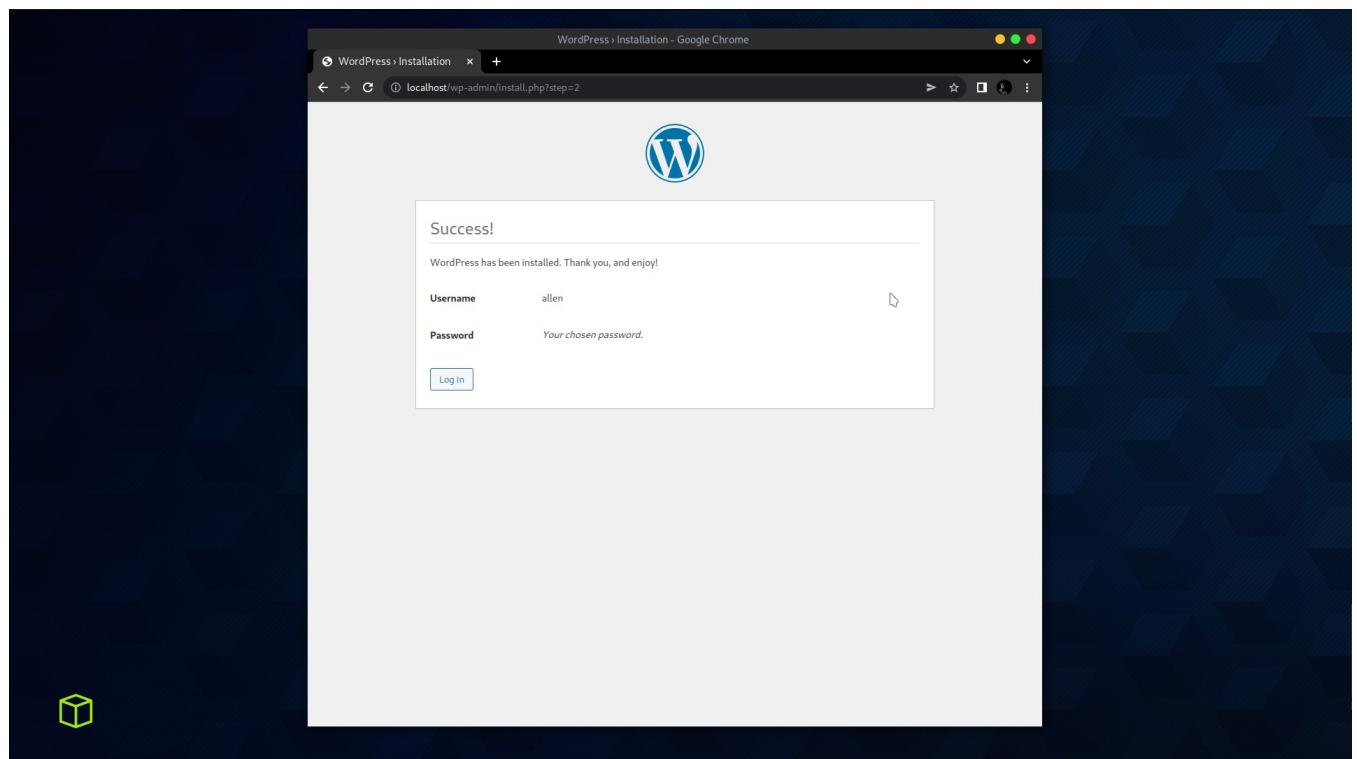
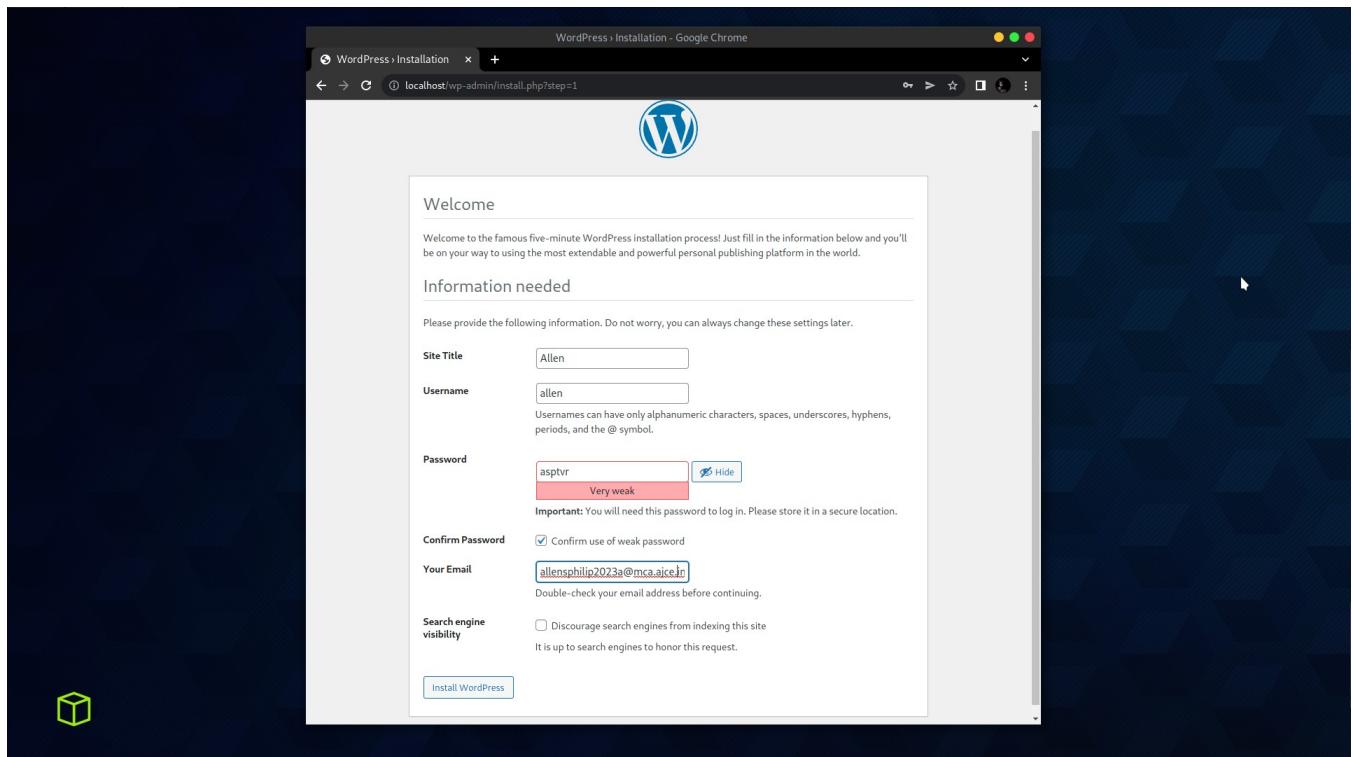
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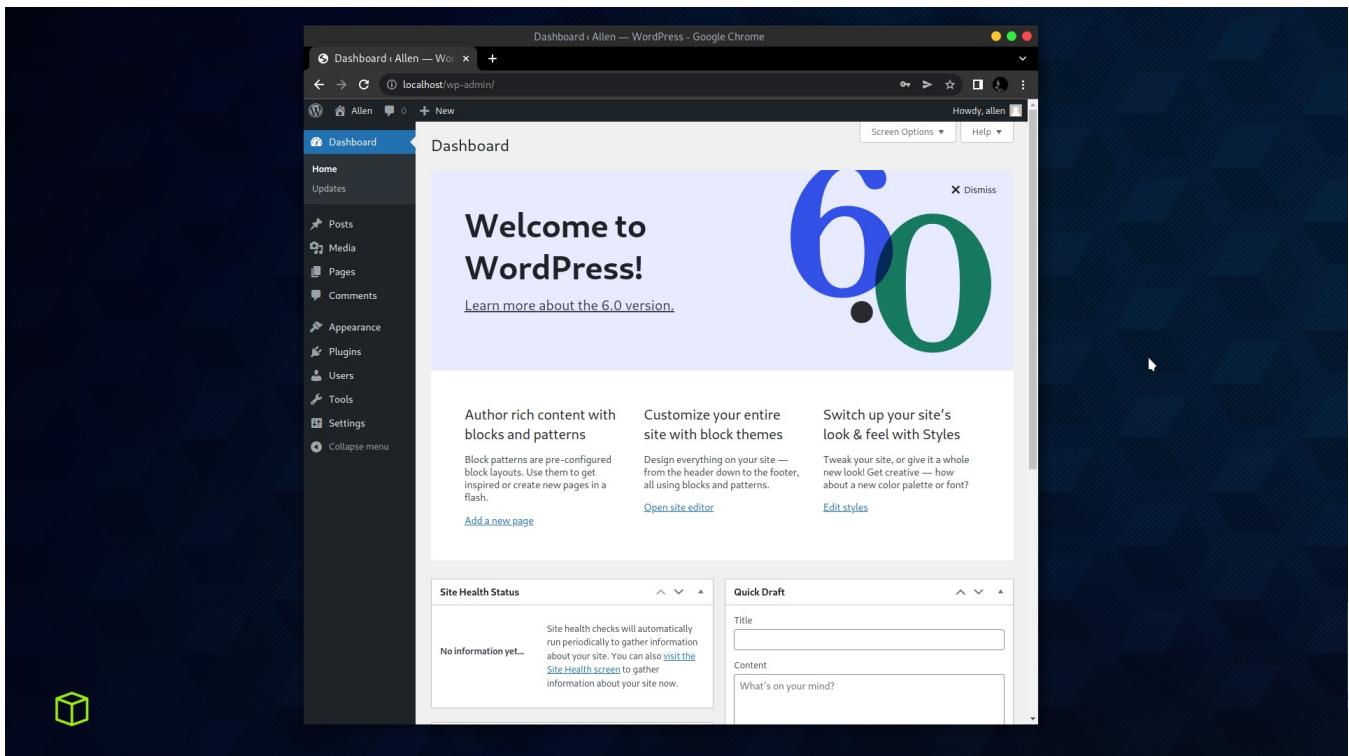
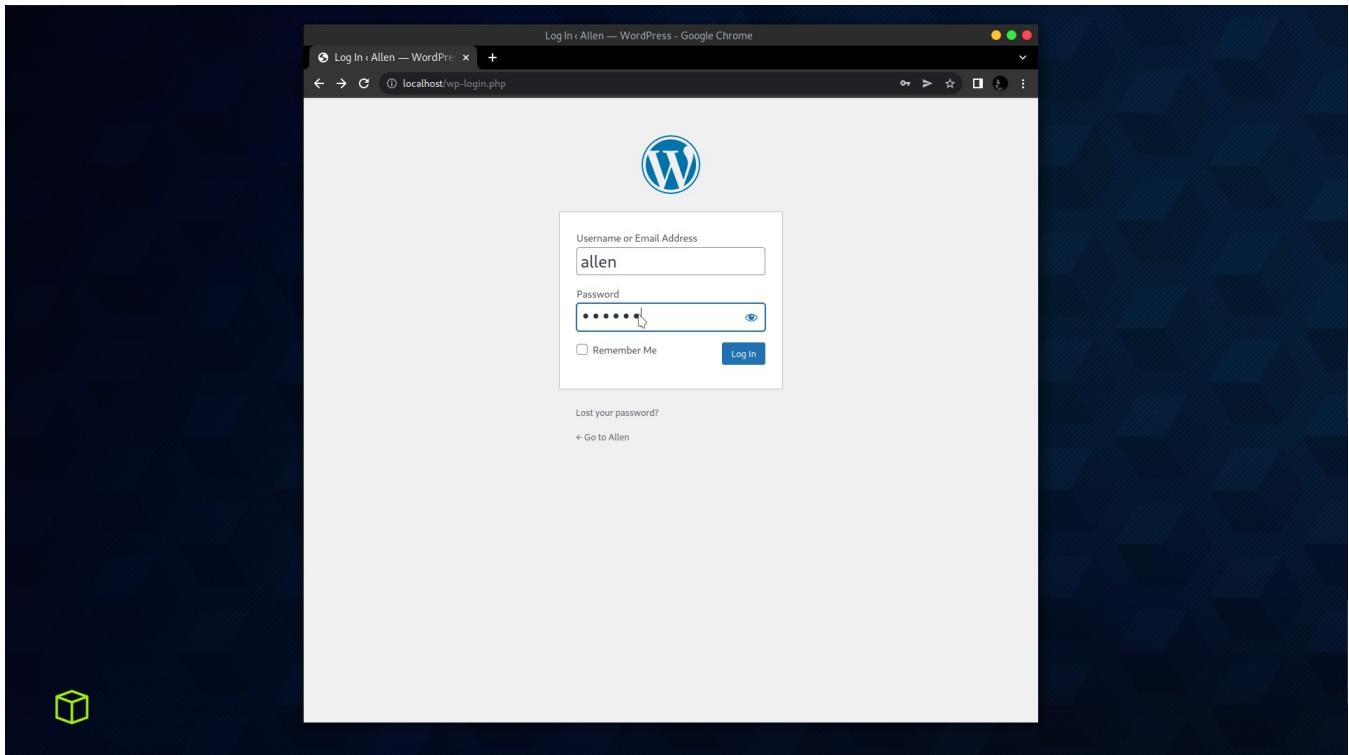


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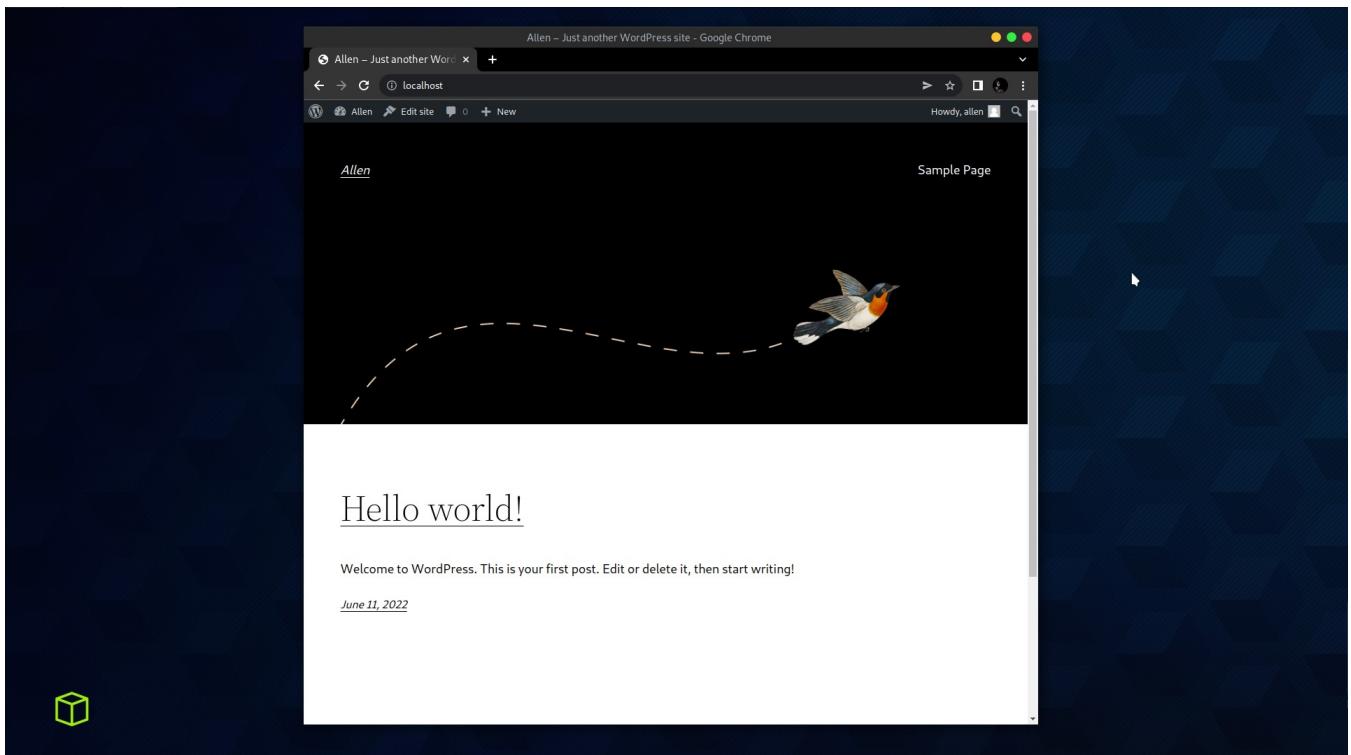
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**NETWORKING & SYSTEM  
ADMINISTRATION LAB****Experiment No.: 1****Name:** ALLEN S PHILIP**Roll No:** 20**Batch:** RMCA- A**Date:** 03/06/2022**Aim**

Analyzing network packets stream using tcpdump, wireshark and netcat.

**Procedure****1. Tcpdump**

\$sudo apt install tcpdump :Installation

**Packet-Listing**

\$sudo tcpdump :To list all packets

\$sudo tcpdump -D : To list network cards(devies)

\$sudo tcpdump -i <device\_name> : To list packets from specific device

\$sudo tcpdump -c 5 -i <device\_name> : To list first five packets from specified device

**Filtering-Options**

\$sudo tcpdump -c 5 -i <device\_name> port <port\_no> : List packets from port 80

\$sudo tcpdump -i <device\_name> not <protocol> : To avoid packets from specified protocol.

\$sudo tcpdump -i <device\_name> -c 10 -w <file\_name>.pcap : Write captured details to file

\$sudo tcpdump -r <file\_name>.pcap : Display Captured Details

## 2. Wireshark

`$sudo apt install wireshark :Installation`

`$sudo usermod -aG wireshark allensphilip : Giving user access permission of wireshark`

`$sudo wireshark : To open wireshark`

## 3. NetCat

- Known as the swiss knife of network administrators
- In ubuntu nc or netcat both valid

Syntax:

`nc [option] host port`

`$sudo apt-get install netcat : Installation`

`$nc -l -p <port_no> : Opening listener,`  
`-l : listening, -p :port`

`$nc <host> <port> : Opening listener`

`$nc -i <interval_count> <host> : send with an interval`

## Output Screenshot

### Tcpdump- Packet-Listing

```
[A]-[allensphilip@u20]-[~]
└─$ sudo tcpdump
[sudo] password for allensphilip:
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp5s0, link-type EN10MB (Ethernet), capture size 262144 bytes
14:12:51.627729 IP 192.168.6.236.64295 > 192.168.6.255.6866: UDP, length 395
14:12:51.629305 IP u20.55828 > dns.google.domain: 46960+ [iau] PTR? 255.6.168.192.in-addr.arpa. (55)
14:12:51.646157 IP dns.google.domain > u20.55828: 46960 NXDomain 0/0/1 (55)
14:12:51.646335 IP u20.55828 > dns.google.domain: 46960+ PTR? 255.6.168.192.in-addr.arpa. (44)
14:12:51.656784 IP 192.168.6.22.49934 > 239.255.255.250.1900: UDP, length 175
14:12:51.663123 IP dns.google.domain > u20.55828: 46960 NXDomain 0/0/0 (44)
14:12:51.664176 IP u20.33384 > dns.google.domain: 49307+ [iau] PTR? 236.6.168.192.in-addr.arpa. (55)
14:12:51.679692 IP dns.google.domain > u20.33384: 49307 NXDomain 0/0/1 (55)
14:12:51.679861 IP u20.33384 > dns.google.domain: 49307+ PTR? 236.6.168.192.in-addr.arpa. (44)
14:12:51.695428 IP dns.google.domain > u20.33384: 49307 NXDomain 0/0/0 (44)
14:12:51.696480 IP u20.56721 > dns.google.domain: 61139+ [iau] PTR? 8.8.8.8.in-addr.arpa. (49)
14:12:51.713461 IP dns.google.domain > u20.56721: 61139 1/0/1 PTR dns.google. (73)
14:12:51.714358 IP u20.40187 > dns.google.domain: 11488+ [iau] PTR? 190.6.168.192.in-addr.arpa. (55)
14:12:51.729665 IP dns.google.domain > u20.40187: 11488 NXDomain 0/0/1 (55)
14:12:51.729857 IP u20.40187 > dns.google.domain: 11488+ PTR? 190.6.168.192.in-addr.arpa. (44)
14:12:51.744813 IP dns.google.domain > u20.40187: 11488 NXDomain 0/0/0 (44)
14:12:51.745986 IP u20.50807 > dns.google.domain: 43278+ [iau] PTR? 250.255.255.239.in-addr.arpa. (57)
14:12:51.763321 IP dns.google.domain > u20.50807: 43278 NXDomain 0/1/1 (114)
14:12:51.763517 IP u20.50807 > dns.google.domain: 43278+ PTR? 250.255.255.239.in-addr.arpa. (46)
14:12:51.780632 IP dns.google.domain > u20.50807: 43278 NXDomain 0/1/0 (103)
14:12:51.781674 IP u20.49253 > dns.google.domain: 45678+ [iau] PTR? 22.6.168.192.in-addr.arpa. (54)
14:12:51.798930 IP dns.google.domain > u20.49253: 45678 NXDomain 0/0/1 (54)
14:12:51.799111 IP u20.49253 > dns.google.domain: 45678+ PTR? 22.6.168.192.in-addr.arpa. (43)
14:12:51.802259 IP 192.168.6.16.61440 > 239.255.255.250.1900: UDP, length 175
14:12:51.816489 IP dns.google.domain > u20.49253: 45678 NXDomain 0/0/0 (43)
14:12:51.817796 IP u20.52639 > dns.google.domain: 34779+ [iau] PTR? 16.6.168.192.in-addr.arpa. (54)
```

```
[A]-[allensphilip@u20]-[~]
└─$ sudo tcpdump -D
1.enp5s0 [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]
[allensphilip@u20]-[~]
└─$ sudo tcpdump -i enp5s0
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp5s0, link-type EN10MB (Ethernet), capture size 262144 bytes
14:18:56.377980 IP 192.168.6.30.53091 > 239.255.255.250.1900: UDP, length 175
14:18:56.379483 IP u20.56999 > dns.google.domain: 51164+ [iau] PTR? 250.255.255.239.in-addr.arpa. (57)
14:18:56.402636 IP 169.254.80.208.bootpc > 255.255.255.255.bootps: BOOTP/DHCP, Request from 78:48:59:b4:50:d1 (oui Unknown), length 334
14:18:56.425496 IP dns.google.domain > u20.56999: 51164 NXDomain 0/1/1 (114)
14:18:56.425702 IP u20.56999 > dns.google.domain: 51164+ PTR? 250.255.255.239.in-addr.arpa. (46)
14:18:56.442369 IP dns.google.domain > u20.56999: 51164 NXDomain 0/1/0 (103)
14:18:56.443436 IP u20.48956 > dns.google.domain: 25054+ [iau] PTR? 30.6.168.192.in-addr.arpa. (54)
14:18:56.458156 IP dns.google.domain > u20.48956: 25054 NXDomain 0/0/1 (54)
14:18:56.458334 IP u20.48956 > dns.google.domain: 25054+ PTR? 30.6.168.192.in-addr.arpa. (43)
14:18:56.473106 IP dns.google.domain > u20.48956: 25054 NXDomain 0/0/0 (43)
14:18:56.473788 IP fe80::e173:11c5:5cf9:f910 > ff02::1:ff04:dc74: ICMP6, neighbor solicitation, who has f80::2cd9:e8c8:d204:dc74, length 32
14:18:56.474745 IP u20.42267 > dns.google.domain: 6564+ [iau] PTR? 190.6.168.192.in-addr.arpa. (55)
14:18:56.484641 ARP, Request who-has 192.168.90.1 tell 192.168.90.60, length 46
14:18:56.490575 IP dns.google.domain > u20.42267: 6564 NXDomain 0/0/1 (55)
14:18:56.490750 IP u20.42267 > dns.google.domain: 6564+ PTR? 190.6.168.192.in-addr.arpa. (44)
14:18:56.505705 IP6 fe80::dc0a:f03:af9b:4b95.mdns > ff02::fb.mdns: 0 PTR (QM)? 208.80.254.169.in-addr.arpa
```

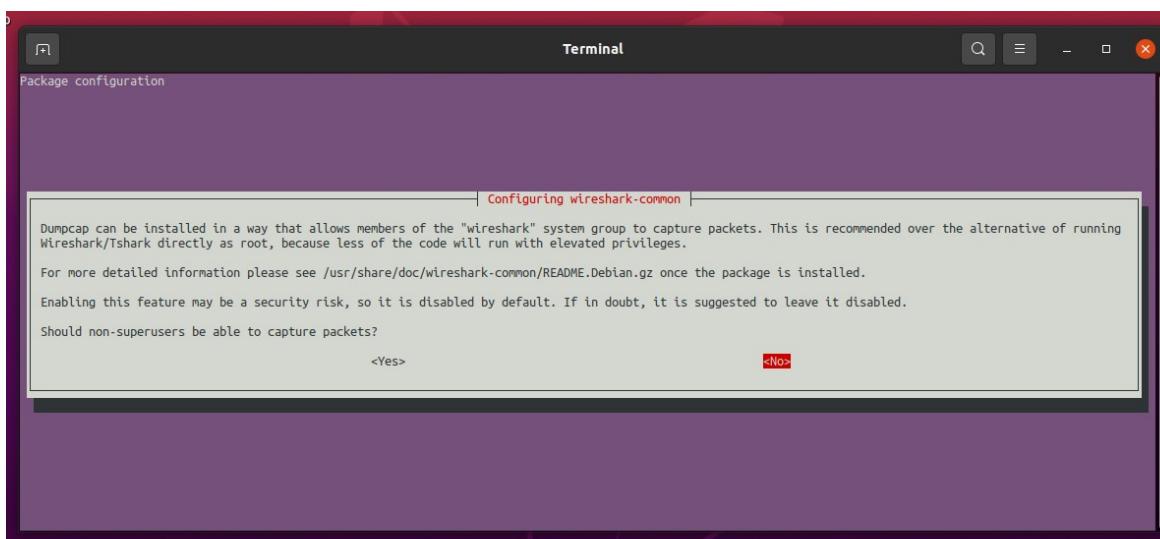
## Tcpdump- Filtering-Options

```
[~] [allensphilip@u20] [-]
$ sudo tcpdump -c 5 -i enp5s0 port 80
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp5s0, link-type EN10MB (Ethernet), capture size 262144 bytes
14:32:50.991769 IP u20.33730 > 123.35.104.34.bc.googleusercontent.com.http: Flags [.], ack 2425886322, win 20715, options [nop,nop,TS val 2891893819 ecr 1352542831], length 0
14:33:36.047698 IP u20.33730 > 123.35.104.34.bc.googleusercontent.com.http: Flags [R.], seq 1, ack 1, win 20715, options [nop,nop,TS val 2891938875 ecr 1352542831], length 0
14:34:02.856849 IP u20.40402 > 84.170.224.35.bc.googleusercontent.com.http: Flags [S.], seq 1375417419, win 64240, options [mss 1460,sackOK,TS val 2113141148 ecr 0,no
p,wscale 7], length 0
14:34:03.099727 IP 84.170.224.35.bc.googleusercontent.com.http > u20.40402: Flags [S.], seq 490299192, ack 1375417420, win 64768, options [mss 1420,sackOK,TS val 108
938164 ecr 2113141148,nop,wscale 7], length 0
14:34:03.099778 IP u20.40402 > 84.170.224.35.bc.googleusercontent.com.http: Flags [.], ack 1, win 502, options [nop,nop,TS val 2113141391 ecr 1089381164], length 0
5 packets captured
6 packets received by filter
0 packets dropped by kernel
1 packet dropped by interface
[allensphilip@u20] [-]
```

```
[allensphilip@u20:~] -> $ sudo tcpdump -i enp5s0 -c 10 -w icmp.pcap
tcpdump: listening on enp5s0, link-type EN10MB (Ethernet), capture size 262144 bytes
10 packets captured
21 packets received by filter
0 packets dropped by kernel
[allensphilip@u20:~] -> $ sudo tcpdump -r icmp.pcap
reading from file icmp.pcap, link-type EN10MB (Ethernet)
14:43:05.137755 IP u20.54283 > maa03s46-in-f10.1e100.net.443: UDP, length 33
14:43:05.157552 IP maa03s46-in-f10.1e100.net.443 > u20.54283: UDP, length 25
14:43:05.182979 IP 169.254.88.208.bootpc > 255.255.255.255.bootps: BOOTP/DHCP, Request from 78:48:59:b4:50:d1 (oui Unknown), length 334
14:43:05.200601 IP 192.168.6.6.57680 > 239.255.255.250.1900: UDP, length 174
14:43:05.239999 IP 192.168.6.54.49816 > 239.255.255.250.1900: UDP, length 174
14:43:05.325570 IP 192.168.6.88.netbios-ns > 192.168.6.255.netbios-ns: UDP, length 50
14:43:05.330955 ARP, Request who has 192.168.1.1 tell 192.168.1.1, length 46
14:43:05.333044 ARP, Reply 192.168.1.1 is-at d8:94:03:83:40 (oui Unknown), length 46
14:43:05.352289 IP 192.168.6.92.netbios-ns > 192.168.6.255.netbios-ns: UDP, length 58
14:43:05.373844 IP 192.168.6.3.61848 > 239.255.255.250.1900: UDP, length 174
[allensphilip@u20:~] ->
```

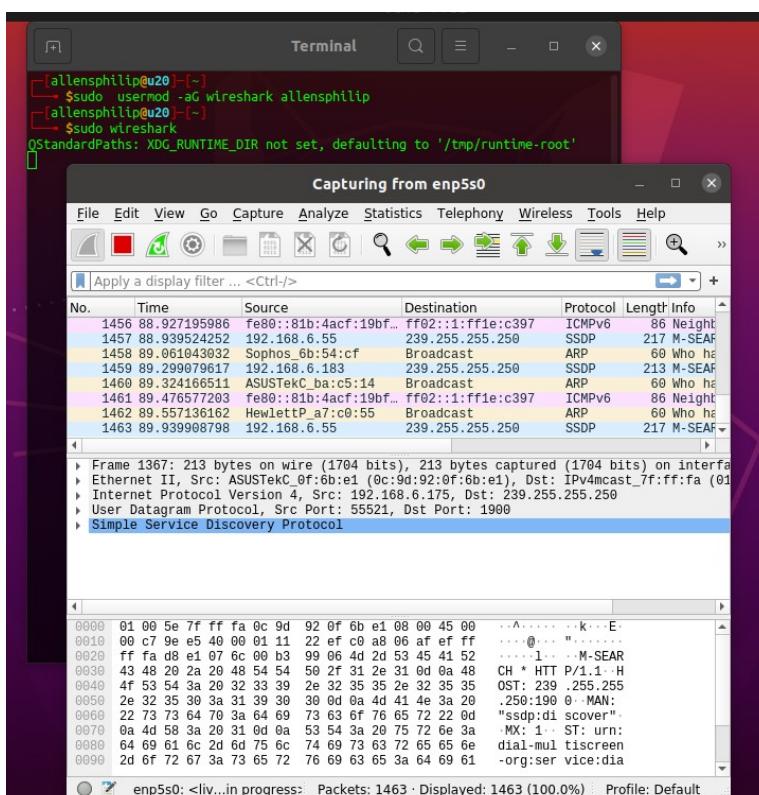
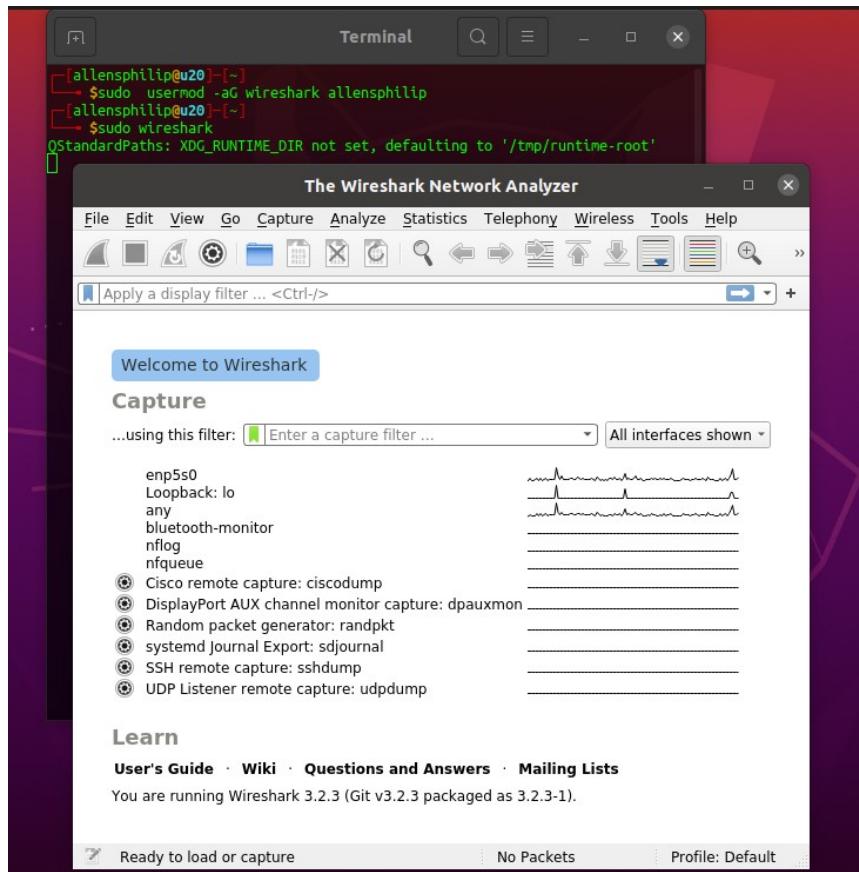
## Wireshark

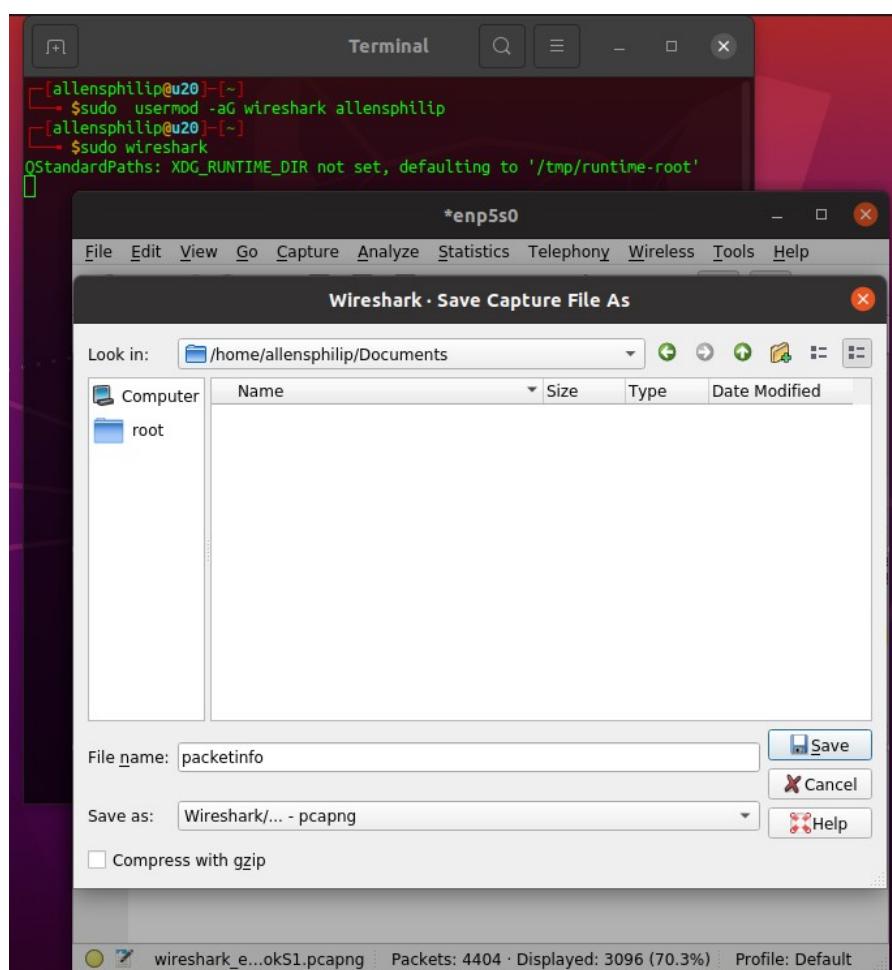
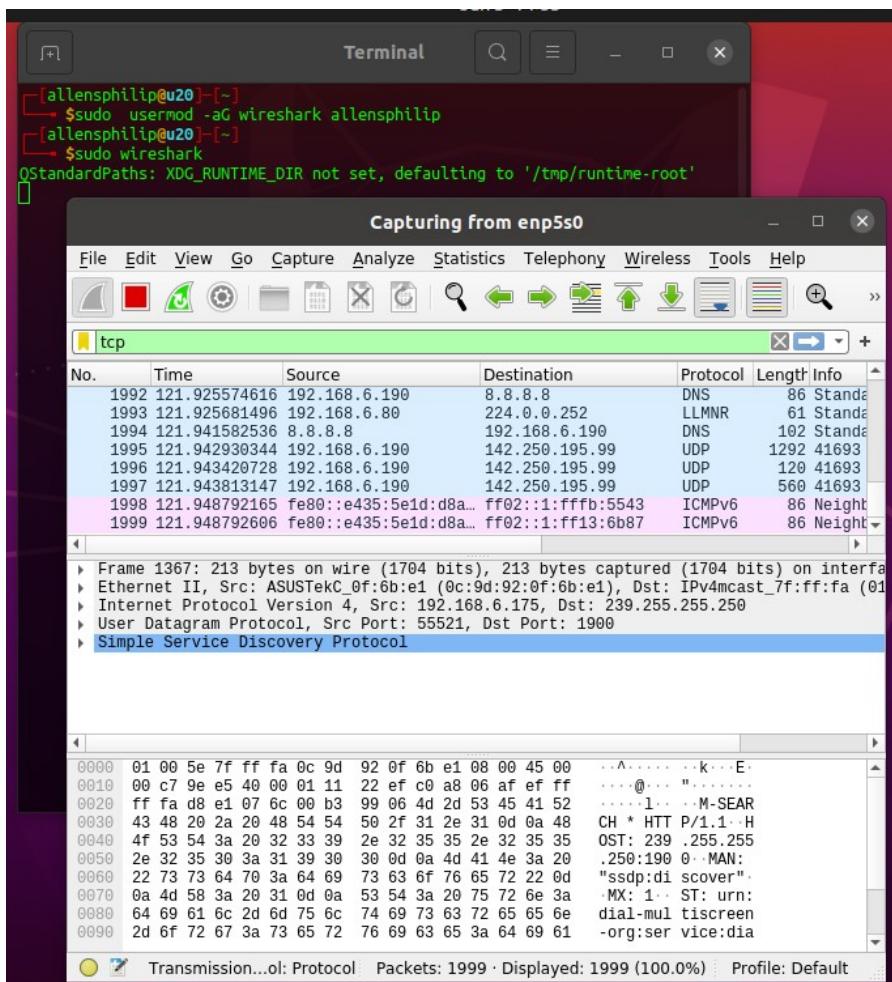
```
[+]\_ alensphillip@u20:~[-]$ sudo apt install wireshark  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
liblbc-ares2 libdouble-conversion3 libpcre2-16-0 libqt5core5a libqt5dbus5 libqt5gui5 libqt5multimedia5 libqt5multimedia5-plugins libqt5multimediasstools5  
libqt5multimediawidgets5 libqt5network5 libqt5opengl5 libqt5printsupport5 libqt5svg5 libqt5widgetset5 libsmi2l0 libsnappy1v5 libspandsp2 libssh-gcrypt-4  
libwireshark-data libwireshark13 libwireshark10 libwsutil111 libxcb-xinerama0 libxcb-xinput0 qt5-gtk-platformtheme qttranslations5-l10n wireshark-common  
wireshark-qt  
Suggested packages:  
qt5-image-formats-plugins qtwayland5 snmp-mibs-downloader geoipupdate geoip-database geoip-database-extra libqjs-leaflet libqjs-leaflet.markercluster wireshark-doc  
The following NEW packages will be installed:  
liblbc-ares2 libdouble-conversion3 libpcre2-16-0 libqt5core5a libqt5dbus5 libqt5gui5 libqt5multimedia5 libqt5multimedia5-plugins libqt5multimediasstools5  
libqt5multimediawidgets5 libqt5network5 libqt5opengl5 libqt5printsupport5 libqt5svg5 libqt5widgetset5 libsmi2l0 libsnappy1v5 libspandsp2 libssh-gcrypt-4  
libwireshark-data libwireshark13 libwireshark10 libwsutil111 libxcb-xinerama0 libxcb-xinput0 qt5-gtk-platformtheme qttranslations5-l10n wireshark wireshark-common  
wireshark-qt  
0 upgraded, 30 newly installed, 0 to remove and 0 not upgraded.  
Need to get 32.8 MB of archives.  
After this operation, 163 MB of additional disk space will be used.  
Do you want to continue? [Y/n] [
```



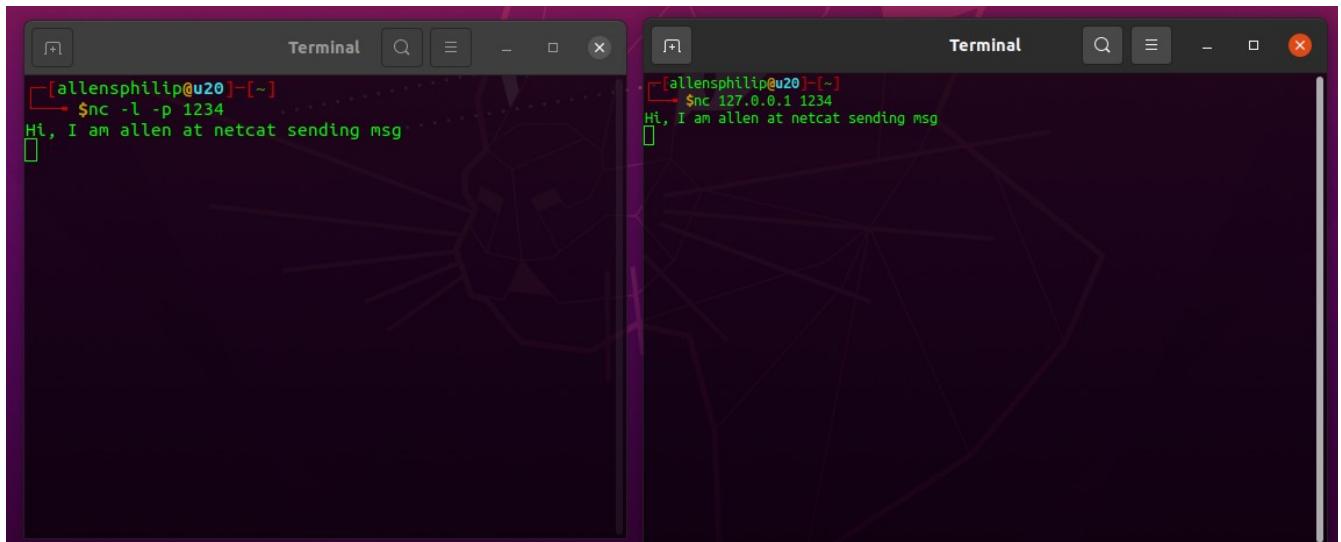
```
Setting up libwiredtap10:amd64 (3.2.3-1) ...
Setting up libxcb-xinerama0:amd64 (1.14-2) ...
Setting up qttranslations5-l10n (5.12.8-0ubuntu1) ...
Setting up libqt5core5a:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up libwireshark-data (3.2.3-1) ...
Setting up libqt5dbus5:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up libwireshark13:amd64 (3.2.3-1) ...
Setting up libqt5networks5:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up wireshark-common (3.2.3-1) ...
Setting up libqt5guis5:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up libqt5widgets5:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up qt5-gtk-platformtheme:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up libqt5multimedia5:amd64 (5.12.8-0ubuntu1) ...
Setting up libqt5printsupport5:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up wireshark-qts (3.2.3-1) ...
Setting up libqt5opengl5:amd64 (5.12.8+dfsg-0ubuntu2.1) ...
Setting up wireshark (3.2.3-1) ...
Setting up libqt5sayv5:amd64 (5.12.8-0ubuntu1) ...
Setting up libqt5multimedialidgets5:amd64 (5.12.8-0ubuntu1) ...
Setting up libqt5multimedadiagstools5:amd64 (5.12.8-0ubuntu1) ...
Setting up libqt5multimedias-plugins:amd64 (5.12.8-0ubuntu1) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menu (3.36.0-1ubuntu1) ...
Processing triggers for libgbm (2.31-0ubuntu9.9) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for shared-mime-info (1.15-1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
[allensphilip@u20:~]
```

```
[allensphilip@u20:~]
$ sudo usermod -aG wireshark allensphilip
[allensphilip@u20:~]
$
```





## NetCat



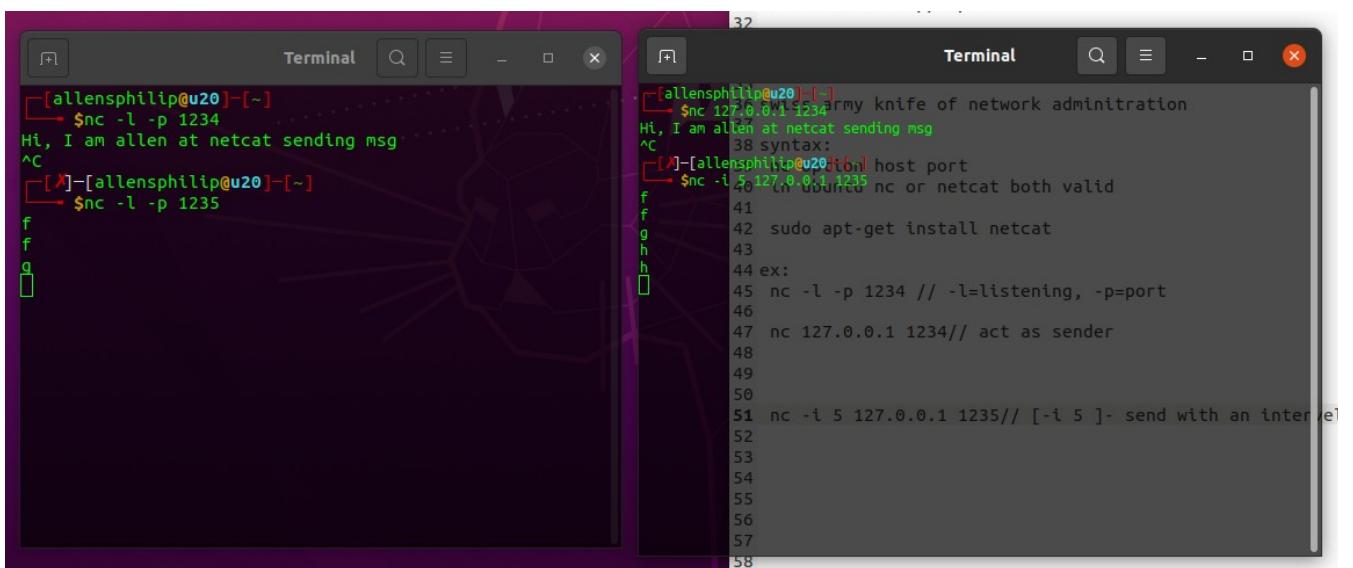
The image shows two terminal windows side-by-side. Both windows have a dark background with a faint network diagram watermark.

**Terminal 1 (Left):**

```
[allensphilip@u20] ~
$ nc -l -p 1234
Hi, I am allen at netcat sending msg
```

**Terminal 2 (Right):**

```
[allensphilip@u20] ~
$ nc 127.0.0.1 1234
Hi, I am allen at netcat sending msg
```



The image shows two terminal windows side-by-side. Both windows have a dark background with a faint network diagram watermark.

**Terminal 1 (Left):**

```
[allensphilip@u20] ~
$ nc -l -p 1234
Hi, I am allen at netcat sending msg
^C
[~]-[allensphilip@u20] ~
$ nc -l -p 1235
f
f
q
```

**Terminal 2 (Right):**

```
32
[allensphilip@u20] ~
$ nc 127.0.0.1 1234
Army knife of network administration
Hi, I am allen at netcat sending msg
^C
38 syntax:
[~]-[allensphilip@u20] ~
$ nc -i 5 127.0.0.1 1235
host port
f
f
g
h
h
O
41
42 sudo apt-get install netcat
43
44 ex:
45 nc -l -p 1234 // -l=listening, -p=port
46
47 nc 127.0.0.1 1234// act as sender
48
49
50
51 nc -i 5 127.0.0.1 1235// [-i 5 ]- send with an interval
52
53
54
55
56
57
58
```



## NETWORKING & SYSTEM ADMINISTRATION LAB

### Experiment No: 16

Name: ALLEN S PHILIP  
Roll No: 20  
Batch: RMCA-A  
Date: 09/06/2022

#### Aim

Networking commands and utilities

#### Procedure

**\$ifconfig -** To list the network interfaces and its ip, net mask and other details  
[options]

-s – To list interface with mtu ,flag,etc

**\$ip addr show-** To list network devices ip with numbered list

**\$ping <ip>** - To test connection

[option]

-D - with timestamp

-i - wait optional seconds between sending each packet

-I - to check the connection through an interface

#### Traceroute

**\$sudo apt install traceroute** - Installation

**\$traceroute <ip>** - To trace route.

[option]

-T – list route packets using tcp protocol

-I - list packet route using icmp protocol

-i – route packets through specified interface

syn: traceroute -i <interface\_name>

-r - Bypass normal routing tables

ex: traceroute 8.8.8.8

**\$netstat -tnlp** - network statistics

**\$ss (socket statistics)** - info about sockets

**\$nslookup <domain>** - show information from name servers

## Output Screenshot

The screenshot shows a terminal window titled "Terminal" with a dark background. The terminal displays the following command-line session:

```
[allenphilip@u20:~] $ ifconfig  
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.6.190 netmask 255.255.255.0 broadcast 192.168.6.255  
inet6 fe80::6ac4:a812:ba02:977 prefixlen 64 scopeid 0x20<link>  
ether 0c:9d:92:0f:6c:44 txqueuelen 1000 (Ethernet)  
RX packets 94768 bytes 72006328 (72.0 MB)  
RX errors 0 dropped 115 overruns 0 frame 0  
TX packets 38024 bytes 12027259 (12.0 MB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
inet 127.0.0.1 netmask 255.0.0.0  
inet6 ::1 prefixlen 128 scopeid 0x10<host>  
loop txqueuelen 1000 (Local Loopback)  
RX packets 2741 bytes 253811 (253.8 KB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 2741 bytes 253811 (253.8 KB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
[allenphilip@u20:~] $ sudo ifconfig enp5s0 192.168.6.255 netmask 255.255.255.0  
[allenphilip@u20:~] $ ifconfig  
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.6.255 netmask 255.255.255.0 broadcast 192.168.6.255  
inet6 fe80::6ac4:a812:ba02:977 prefixlen 64 scopeid 0x20<link>  
ether 0c:9d:92:0f:6c:44 txqueuelen 1000 (Ethernet)  
RX packets 94883 bytes 72018877 (72.0 MB)  
RX errors 0 dropped 116 overruns 0 frame 0  
TX packets 38035 bytes 12029690 (12.0 MB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
inet 127.0.0.1 netmask 255.0.0.0  
inet6 ::1 prefixlen 128 scopeid 0x10<host>  
loop txqueuelen 1000 (Local Loopback)  
RX packets 2783 bytes 256926 (256.9 KB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 2783 bytes 256926 (256.9 KB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
[allensphilip@u20] ~
$ ifconfig -a
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.6.255 netmask 255.255.255.0 broadcast 192.168.6.255
        inet6 fe80::6ac4:a812:ba02:977 prefixlen 64 scopeid 0x20<link>
            ether 0c:9d:92:0f:6c:44 txqueuelen 1000 (Ethernet)
                RX packets 95341 bytes 72064373 (72.0 MB)
                RX errors 0 dropped 117 overruns 0 frame 0
                TX packets 38047 bytes 12031442 (12.0 MB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
        inet6 ::1 prefixlen 128 scopeid 0x10<host>
            loop txqueuelen 1000 (Local Loopback)
                RX packets 2876 bytes 263949 (263.9 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 2876 bytes 263949 (263.9 KB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[allensphilip@u20] ~
$ ifconfig -s
Iface      MTU     RX-OK RX-ERR RX-DRP RX-OVR   TX-OK TX-ERR TX-DRP TX-OVR Flg
enp5s0    1500    95403     0 117 0    38047     0     0     0 BMRU
lo       65536     2898     0  0 0    2898     0     0     0 LRU
[allensphilip@u20] ~
$ ifconfig -v
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.6.255 netmask 255.255.255.0 broadcast 192.168.6.255
        inet6 fe80::6ac4:a812:ba02:977 prefixlen 64 scopeid 0x20<link>
            ether 0c:9d:92:0f:6c:44 txqueuelen 1000 (Ethernet)
                RX packets 95466 bytes 72077302 (72.0 MB)
                RX errors 0 dropped 117 overruns 0 frame 0
                TX packets 38047 bytes 12031442 (12.0 MB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
        inet6 ::1 prefixlen 128 scopeid 0x10<host>
            loop txqueuelen 1000 (Local Loopback)
                RX packets 2911 bytes 266625 (266.6 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 2911 bytes 266625 (266.6 KB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
[allensphilip@u20] ~
$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host lo
        valid_lft forever preferred_lft forever
2: enp5s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 0c:9d:92:0f:6c:44 brd ff:ff:ff:ff:ff:ff
    inet 192.168.6.198/24 brd 192.168.6.255 scope global noprefixroute enp5s0
        valid_lft forever preferred_lft forever
        inet6 fe80::6ac4:a812:ba02:977/64 scope link noprefixroute
            valid_lft forever preferred_lft forever
[allensphilip@u20] ~
$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=119 time=16.2 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=119 time=16.1 ms
^C
... 8.8.8.8 ping statistics ...
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 16.073/16.108/16.172/0.034 ms
[allensphilip@u20] ~
$ ping -c 5 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=119 time=16.1 ms
... 8.8.8.8 ping statistics ...
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 16.050/16.075/16.137/0.031 ms
```

```
[allensphilip@u20:~]
$ ping -D 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
[1654509321.917537] 64 bytes from 8.8.8.8: icmp_seq=1 ttl=119 time=16.2 ms
[1654509322.918769] 64 bytes from 8.8.8.8: icmp_seq=2 ttl=119 time=16.1 ms
[1654509323.919998] 64 bytes from 8.8.8.8: icmp_seq=3 ttl=119 time=16.0 ms
[1654509324.921238] 64 bytes from 8.8.8.8: icmp_seq=4 ttl=119 time=16.1 ms
[1654509325.922681] 64 bytes from 8.8.8.8: icmp_seq=5 ttl=119 time=16.3 ms
^C
--- 8.8.8.8 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 16.049/16.115/16.251/0.079 ms
[allensphilip@u20:~]
$ ping -I 3 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=119 time=16.1 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 9010ms
rtt min/avg/max/mdev = 16.093/16.113/16.125/0.012 ms
[allensphilip@u20:~]
$ ping -I 3 -D 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
[1654509368.797503] 64 bytes from 8.8.8.8: icmp_seq=1 ttl=119 time=16.2 ms
[1654509371.800731] 64 bytes from 8.8.8.8: icmp_seq=2 ttl=119 time=16.1 ms
[1654509374.803935] 64 bytes from 8.8.8.8: icmp_seq=3 ttl=119 time=16.0 ms
[1654509377.807151] 64 bytes from 8.8.8.8: icmp_seq=4 ttl=119 time=16.1 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 9010ms
rtt min/avg/max/mdev = 16.044/16.088/16.181/0.054 ms
[allensphilip@u20:~]
```

```
[allensphilip@u20:~]
$ ping -I enps50 8.8.8.8
ping: SO_BROADCASTDEVICE enps50: No such device
[allensphilip@u20:~]
$ ping -I enps50 8.8.8.8
PING 8.8.8.8 (8.8.8.8) from 192.168.6.190 enps50: 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=119 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=119 time=18.4 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=119 time=16.2 ms
^C
--- 8.8.8.8 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 16.074/16.572/18.363/0.895 ms
[allensphilip@u20:~]
$ sudo apt-get install traceroute
[sudo] password for allensphilip:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
traceroute
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 45.4 kB of archives.
After this operation, 152 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 traceroute amd64 1:2.1.0-2 [45.4 kB]
Fetched 45.4 kB in 0s (163 kB/s)
Selecting previously unselected package traceroute.
(Reading database ... 178904 files and directories currently installed.)
Preparing to unpack .../traceroute_1%3a2.1.0-2_amd64.deb ...
Unpacking traceroute (1:2.1.0-2) ...
Setting up traceroute (1:2.1.0-2) ...
update-alternatives: using /usr/bin/traceroute.db to provide /usr/bin/traceroute (traceroute) in auto mode
update-alternatives: using /usr/bin/lft.db to provide /usr/bin/lft (lft) in auto mode
update-alternatives: using /usr/bin/traceproto.db to provide /usr/bin/traceproto (traceproto) in auto mode
update-alternatives: using /usr/sbin/tcptraceroute.db to provide /usr/sbin/tcptraceroute (tcptraceroute) in auto mode
Processing triggers for man-db (2.9.1-1) ...
[allensphilip@u20:~]
$
```

```
[allenphilip@u20] ~
└→ $traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
1 _gateway (192.168.6.100) 0.523 ms 0.493 ms 0.472 ms
2 136.232.57.109.static.jio.com (136.232.57.109) 2.547 ms 2.039 ms 2.765 ms
3 172.20.97.57 (172.20.97.57) 14.609 ms 15.281 ms 15.026 ms
4 172.27.9.126 (172.27.9.126) 15.580 ms 15.382 ms 15.350 ms
5 172.27.9.125 (172.27.9.125) 19.848 ms 19.563 ms 19.193 ms
6 172.27.109.51 (172.27.109.51) 15.497 ms 15.437 ms 15.392 ms
7 172.16.5.90 (172.16.5.90) 15.225 ms 15.163 ms 15.233 ms
8 216.239.56.71 (216.239.56.71) 16.612 ms 142.251.55.207 (142.251.55.207) 16.568 ms dns.google (8.8.8.8) 16.253 ms

[allenphilip@u20] ~
└→ $traceroute -T 8.8.8.8
You do not have enough privileges to use this traceroute method.
socket: Operation not permitted

[allenphilip@u20] ~
└→ $sudo traceroute -T 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
1 _gateway (192.168.6.100) 0.187 ms 0.177 ms 0.173 ms
2 136.232.57.109.static.jio.com (136.232.57.109) 1.811 ms 1.622 ms 2.025 ms
3 172.20.97.57 (172.20.97.57) 15.210 ms 14.952 ms 14.507 ms
4 172.27.9.126 (172.27.9.126) 16.052 ms 16.048 ms 16.178 ms
5 172.27.9.125 (172.27.9.125) 15.769 ms 16.562 ms 16.163 ms
6 172.27.109.51 (172.27.109.51) 15.753 ms 15.613 ms 16.037 ms
7 172.16.5.90 (172.16.5.90) 15.398 ms 15.170 ms 15.233 ms
8 * *
9 * *
10 * *
11 * *
12 * *
13 * *
14 * *
15 * *
16 * *
17 * *
18 * *
19 * *
20 * *
21 * *
22 * *

[allenphilip@u20] ~
```

```
17 * *
18 * *
19 * *
20 * *
21 * *
22 * *
23 * * *^C

[allenphilip@u20] ~
└→ $sudo traceroute -I 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
1 _gateway (192.168.6.100) 0.180 ms 0.173 ms 0.187 ms
2 136.232.57.109.static.jio.com (136.232.57.109) 1.272 ms *
3 172.20.97.57 (172.20.97.57) 14.377 ms 14.514 ms 14.511 ms
4 172.27.9.126 (172.27.9.126) 15.552 ms 15.757 ms 16.108 ms
5 172.27.9.125 (172.27.9.125) 15.545 ms 16.011 ms 16.262 ms
6 172.17.97.221 (172.17.97.221) 14.679 ms 14.544 ms 14.522 ms
7 172.16.5.90 (172.16.5.90) 15.133 ms 15.410 ms 15.386 ms
8 142.251.55.241 (142.251.55.241) 16.651 ms 16.742 ms 16.834 ms
9 dns.google (8.8.8.8) 16.118 ms 16.109 ms 16.098 ms

[allenphilip@u20] ~
└→ $sudo traceroute -i enp5s0 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
1 _gateway (192.168.6.100) 0.149 ms 0.140 ms 0.135 ms
2 136.232.57.109.static.jio.com (136.232.57.109) 1.743 ms 1.735 ms 1.757 ms
3 172.20.97.57 (172.20.97.57) 14.310 ms 14.496 ms 14.590 ms
4 172.27.9.126 (172.27.9.126) 16.427 ms 15.671 ms 16.194 ms
5 172.27.9.125 (172.27.9.125) 16.406 ms 17.060 ms 17.424 ms
6 172.27.109.51 (172.27.109.51) 15.578 ms 15.390 ms 15.477 ms
7 172.16.5.90 (172.16.5.90) 15.354 ms 15.347 ms 15.340 ms
8 dns.google (8.8.8.8) 16.871 ms 17.067 ms 16.804 ms

[allenphilip@u20] ~
└→ $sudo traceroute -r 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
connect: Network is unreachable

[allenphilip@u20] ~
└→ $sudo traceroute -r 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
connect: Network is unreachable

[allenphilip@u20] ~
└→ $
```

```
[allenphilip@u20] [-]
$ netstat -nlp
(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State      PID/Program name
tcp        0      0 127.0.0.53:53          0.0.0.0:*              LISTEN
tcp        0      0 127.0.0.1:631         0.0.0.0:*              LISTEN
tcp6       0      0 ::1:80                 ::*                  LISTEN
tcp6       0      0 ::1:631                ::*                  LISTEN
[allenphilip@u20] [-]
$ ss
Netid State     Recv-Q Send-Q Local Address:Port          Peer Address:Port      Process
u_seq ESTAB    0      0      00000d 57060               * 57061
u_seq ESTAB    0      0      00000e 57061               * 57060
u_seq ESTAB    0      0      00000f 55795               * 55794
u_seq ESTAB    0      0      00000c 55794               * 55795
u_seq ESTAB    0      0      000011 55802               * 55803
u_seq ESTAB    0      0      000010 55800               * 55801
u_str ESTAB    0      0      /run/dbus/system_bus_socket 60553          * 57122
u_str ESTAB    0      0      /run/user/1001/bus 55940            * 60552
u_str ESTAB    0      0      * 61452                * 61453
u_str ESTAB    0      0      * 55955                * 55954
u_str ESTAB    0      0      * 59158                * 59159
u_str ESTAB    0      0      /run/user/1001/pulse/native 44845          * 48287
u_str ESTAB    0      0      * 43401                * 44551
```

```
[allenphilip@u20] [-]
$ nslookup www.google.com
Server:  127.0.0.53
Address: 127.0.0.53#53

Non-authoritative answer:
Name: www.google.com
Address: 142.250.195.164
Name: www.google.com
Address: 2404:6800:4007:826::2004

[allenphilip@u20] [-]
$ nslookup www.aesajce.in
Server:  127.0.0.53
Address: 127.0.0.53#53

Non-authoritative answer:
www.aesajce.in canonical name = aesajce.in.
Name: aesajce.in
Address: 103.148.156.198

[allenphilip@u20] [-]
$
```

## Experiment: Docker

## Docker and Container : Installation & Deployment

### Aim:

**Name: ALLEN S PHILIP**

Roll No: 20

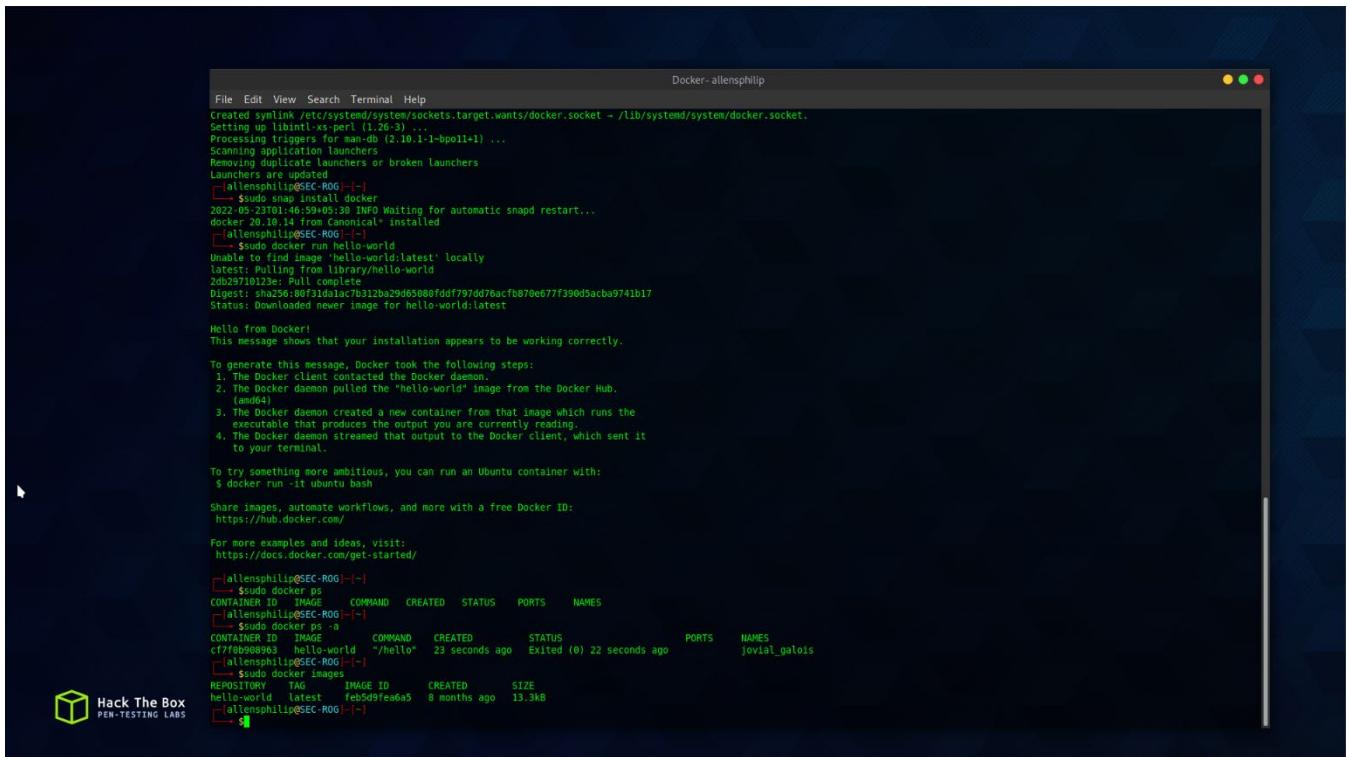
Batch: RMCA-A

Date: 24/05/2022

1. Installation of Docker and Container
  2. Deployment of Apache and MySQL in the container.
  3. Research & find out how can host your own simple website with it.

## **PROCEDURE:**

- ## 1. Installation of Docker and Container



The screenshot shows a terminal window titled "Docker - allensphilip". The session starts with the user creating a symlink for Docker's socket:

```
Created symlink /etc/systemd/system/.target.wants/docker.socket → /lib/systemd/system/docker.socket.
```

It then processes triggers for man-db and removes duplicate launchers:

```
Setting up liblibt1-x86-perl (1.26-3) ...
Processing triggers for man-db (2.10.1-1-bpo11+1) ...
Removing duplicate launchers
Launchers are updated
```

The user runs the Docker daemon and then tries to run a "hello-world" container:

```
[allensphilip@SEC-ROG ~] $ sudo snap install docker
2022-05-23T01:16:59+00:00 INFO Waiting for automatic snapd restart...
dockerd (20.11.1+dfsg-0+deb11u1) installed
[allensphilip@SEC-ROG ~] $ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:80f91d1a1c70312ba29dd5000ffdf797dd78acfbb870e677f390d5acb9741b17
Status: Downloaded newer image for hello-world:latest
```

A message from Docker confirming it's working correctly:

```
Hello from Docker!
This message shows that your installation appears to be working correctly.
```

The user then generates a step-by-step message for Docker's workflow:

```
To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.
```

The user tries to run an Ubuntu container:

```
To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash
```

Share images, automate workflows, and more with a free Docker ID:

```
https://hub.docker.com/
```

For more examples and ideas, visit:

```
https://docs.docker.com/get-started/
```

The user lists Docker containers and images:

```
[allensphilip@SEC-ROG ~] $ sudo docker ps
CONTAINER ID        IMAGE               COMMAND      CREATED     STATUS      PORTS     NAMES
[allensphilip@SEC-ROG ~] $ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND      CREATED     STATUS      PORTS     NAMES
c1770b908963        "hello"
23 seconds ago      Exited (0) 22 seconds ago
[allensphilip@SEC-ROG ~] $ sudo docker images
REPOSITORY          IMAGE ID      CREATED      SIZE
hello-world         feb59ffea6a5    8 months ago  13.3kB
[allensphilip@SEC-ROG ~]
```

The terminal ends with a "S" prompt.



## 2. Deployment of Apache and MySQL in the container

```

File Edit View Search Terminal Help
[allensphilip@SEC-ROG ~]
$ sudo docker pull mysql
Using default tag: latest
latest: Pulling from library/mysql
c32ce6d54453: Pull complete
41500ee0318: Pull complete
7a38fecc2542f: Pull complete
352081ee0fe9: Pull complete
b6e20da291b6: Pull complete
66c2a6acc1999: Pull complete
d1a3a6e49878: Pull complete
e33a48832bec: Pull complete
410b942b0b28: Pull complete
d53239d2d05: Pull complete
0fb8320c65f1: Pull complete
bd2a54f30bfc: Pull complete
Digest: sha256:844132a773021fc62303ba1de52f15758fbdd1201bf7b1c3e09cf6293a4ff53
Status: Downloaded newer image for mysql:latest
docker.io/library/mysql:latest
[allensphilip@SEC-ROG ~]
$ docker images
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://<host>/v1.24/images/json": dial unix /var/run/docker.sock: connect: permission denied
[allensphilip@SEC-ROG ~]
$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
mysql latest 0f0e720743f6 2 days ago 524MB
hello-world latest feb5d9fea6a5 8 months ago 13.3kB
[allensphilip@SEC-ROG ~]
$ sudo docker run --name=mysql -d -p 80:80 mysql
8182c7db5fa952f05fe69599abb05353b03fa0265014be1259579ac1bc18116
[allensphilip@SEC-ROG ~]

```

```

File Edit View Search Terminal Help
[allensphilip@SEC-ROG ~]
$ sudo docker run -it --name s1 mysql /bin/bash
root@1bcc205cc98:/# exit
exit
[allensphilip@SEC-ROG ~]
$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
mysql latest 0f0e720743f6 2 days ago 524MB
hello-world latest feb5d9fea6a5 8 months ago 13.3kB
[allensphilip@SEC-ROG ~]
$ sudo docker start s1
s1
[allensphilip@SEC-ROG ~]
$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
[allensphilip@SEC-ROG ~]
$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
1bcc205cc98 mysql "docker-entrypoint.s..." 55 seconds ago Exited (0) 50 seconds ago
a7724c97fc14 mysql "docker-entrypoint.s..." 2 minutes ago Exited (1) 20 seconds ago
8182c7db5fa9 mysql "docker-entrypoint.s..." 3 minutes ago Exited (1) 3 minutes ago
cf7f09989863 hello-world "/hello" 15 minutes ago Exited (0) 15 minutes ago jovial_galois
[allensphilip@SEC-ROG ~]
$ sudo docker stop s1
s1
[allensphilip@SEC-ROG ~]
$ sudo docker stop s1 sql jovial_galois
s1
sql
jovial_galois
[allensphilip@SEC-ROG ~]

```

```

File Edit View Search Terminal Help
[allensphilip@SEC-ROG ~]
$ sudo docker container rm s1 sl sql jovial_galois
s1
sl
sql
jovial_galois
[allensphilip@SEC-ROG ~]
$ sudo docker container ls -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
[allensphilip@SEC-ROG ~]
$ sudo docker image ls -a
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://<host>/v1.24/images/json?all=1": dial unix /var/run/docker.sock: connect: permission denied
[allensphilip@SEC-ROG ~]
$ sudo docker image ls -a
REPOSITORY TAG IMAGE ID CREATED SIZE
mysql latest 0f0e720743f6 2 days ago 524MB
hello-world latest feb5d9fea6a5 8 months ago 13.3kB
[allensphilip@SEC-ROG ~]
$ sudo docker rmi hello-world:latest mysql:latest
Untagged: hello-world:latest
Untagged: hello-world@sha256:80f31da1c7b1312ba29d65880fdff797dd76acf8b70e677f390d5acba9741b17
Deleted: sha256:feb5d9fea6a5e9606aa995e8794862b825965ba49de054cab5ef356dcb63412
Deleted: sha256:e07ee1baac5fae6a26f30cabfe54a3d03402f96afda318fe0a96cec4ca393359
Untagged: mysql:latest
Untagged: mysql@sha256:844132a773021fc62303ba1de52f15758fbdd1201bf7b1c3e09cf6293a4ff53
Deleted: sha256:0f0e720743f68888787a2bf2838db95880e672e59b46078e918f123754ed45bea
Deleted: sha256:205702b4044fb0b9a9a7619cd4a06ff0767f19ff0708fe2597a93c2a67b1
Deleted: sha256:448640a154e6525ebf791a57e322af1172412cabb68710e0307f09f29b75804
Deleted: sha256:823d0ab824627eb50c7c69964c16914ff1061422ec9abc494be166a96
Deleted: sha256:ac856325eacbchafecefef589df92498eeef1f7741a283faend9603ed01cc27e1
Deleted: sha256:f9774446a196c2284a829612h48526ff64027257258cb536ce891afda4c5239
Deleted: sha256:dcf540992968909743867501a12d96118389e9d3caaa29825d9e6d563f73e62
Deleted: sha256:60be3170bc434f17a27650732eaeed244caca00a1c26061f34b2cha2f929
Deleted: sha256:8dfeaacada966ced14045a88d9c35ad50f55707c2514443c8259b84f7b0
Deleted: sha256:b2bef0948a7a9e226ac5e5b353969b59ac69e1bbf193c49a3b20bc494d
Deleted: sha256:b4bab32bc9a5248316c93f5e503d052b99:202fa8743399fc6343cd6bb12fe
Deleted: sha256:9bd0f848c2881cd90012b2b033086dc94d7683bd55bc4ea9a7beb9a96efafab
Deleted: sha256:b6e90f1x2d3fie115203b6adab2ce1014fb9a9f16fb2af3a3143397063603d
[allensphilip@SEC-ROG ~]
$ sudo docker image ls -a
REPOSITORY TAG IMAGE ID CREATED SIZE
[allensphilip@SEC-ROG ~]
$ 

```

```

File Edit View Search Terminal Help
[allensphilip@SEC-ROG:~] $ sudo docker pull httpd
Using default tag: latest
latest: Pulling from library/httpd
214ca5fb9032: Pull complete
7cf31a2eeecb: Pull complete
bf666e57b9f2: Pull complete
c15a4e94ae0b: Pull complete
dc25474c7f97: Pull complete
Digest: sha256:2d1f8839d6127e400ac5f65481d8a0f17ac46a3b91de40b01e649c9a0324dea0
Status: Downloaded newer image for httpd:latest
docker.io/library/httpd:latest
[allensphilip@SEC-ROG:~] $ docker images
allensphilip@SEC-ROG:~] $ docker run -d -name apache-server -p 80:80 httpd
docker: Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http://<IPv4>:2375/v1.24/images/create?name=apache-server": dial unix /var/run/docker.sock: connect: permission denied
See 'docker run --help'.
[allensphilip@SEC-ROG:~] $ sudo docker run -d -name apache-server -p 80:80 httpd
Se5198b4b0875aca38377a595b136a8a46cb98ea768369109f1d158591296b0
[allensphilip@SEC-ROG:~] $ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
httpd latest c58ef9bfbb57 11 days ago 144MB
[allensphilip@SEC-ROG:~] $ sudo docker container ls
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
Se5198b4b087 httpd "httpd-foreground" 28 seconds ago Up 27 seconds 0.0.0.0:80->80/tcp, :::80->80/tcp apache-server
[allensphilip@SEC-ROG:~] $ 

```

```

File Edit View Search Terminal Help
[x]-[allensphilip@SEC-ROG:~] $ sudo docker stop apache-server
apache-server
[allensphilip@SEC-ROG:~] $ sudo docker container rm apache-server
[allensphilip@SEC-ROG:~] $ sudo docker container ls -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
[allensphilip@SEC-ROG:~] $ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
httpd latest c58ef9bfbb57 11 days ago 144MB
[allensphilip@SEC-ROG:~] $ sudo docker rm httpd
Error: No such container: apache-server
[x]-[allensphilip@SEC-ROG:~] $ sudo docker rmi httpd:latest
Untagged: httpd:latest
Deleted: httpd@sha256:2d1f8839d6127e400ac5f65481d8a0f17ac46a3b91de40b01e649c9a0324dea0
Deleted: sha256:58ef9bfbb5789a9882cee610ba778b1368d21b513d6caf32e3075542e13fe81
Deleted: sha256:312672a18b7ce4fbbaa36a0e87a4a1cef47e334b150cb3a0c5a805457347c10
Deleted: sha256:067e07af5fbad035b2603029110722ed2af07c5ae52e7410663c2d09cfbcc90e2c
Deleted: sha256:e38082c45692bc0a2e14adecce601e2673d35f9ee5d047f496d0077d17a3bf68
Deleted: sha256:c21e2c36645f68249254b6d72c2ae0af51ba110a92d7b7b05c67ee4705cea49
Deleted: sha256:fdf95118ade99a75b949f634a0994e0f07327ff18c2573fabdfc8d4f95b092f0e
[allensphilip@SEC-ROG:~] $ 

```

### 3. host your own simple website

```
Parrot Terminal
File Edit View Search Terminal Help
[allensphilip@SEC-ROG -~/website]
└─$ mkdir web
[allensphilip@SEC-ROG -~/website]
└─$ scp -r /home/allensphilip/Desktop/web/* web/
[allensphilip@SEC-ROG -~/website]
└─$ cd web
[allensphilip@SEC-ROG -~/website/web]
└─$ ls
css.css index.html w3.css w3images
[allensphilip@SEC-ROG -~/website/web]
└─$ cd ..
[allensphilip@SEC-ROG -~/website]
└─$ nano docker-compose.yml
[allensphilip@SEC-ROG -~/website]
└─$
```

```
Parrot Terminal
File Edit View Search Terminal Help
GNU nano 5.4
version: '3.3'
services:
  web:
    image: php:8.1-apache
    container_name: website
    volumes:
      - ./web:/var/www/html/
    ports:
      - 8000:80
```

[ Wrote 9 lines ]

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo  
^X Exit ^R Read File ^N Replace ^U Paste ^J Justify ^L Go To Line M-E Redo

```

File Edit View Search Terminal Help
[+] alenphillip@SEC-ROG:~/website]
ls -a
ls: docker images
REPOSITORY          TAG      IMAGE ID   CREATED      SIZE
allenphillip@SEC-ROG   -/website]
ls -a
CONTAINER ID        IMAGE       COMMAND    CREATED      STATUS      PORTS      NAMES
allenphillip@SEC-ROG   -/website]
slimghost@SEC-ROG   -/website]
Creating network "website default" with the default driver
Pulling web (php:8.1-apache)...
8.1-apache: Pulling from library/php
2:23:46 PM
cd813a1b2c08: Pull complete
63cf7f74573d: Pull complete
54c27146d1e6: Pull complete
0797a2a0333a: Pull complete
5f1a5e355bc4: Pull complete
fdc797c7cbea: Pull complete
bde015a34dfe: Pull complete
4e05f510d80f: Pull complete
7ec2a2a0333a: Pull complete
2d7b621c5979: Pull complete
3bd5d8a0dcde: Pull complete
76dfe76d1c15: Pull complete
Digest: sha256:ef274cc0349650dd312a0f6ab85ad0ef413fb9dc0d2027819f2
Status: Downloaded newer image for php:8.1-apache
Creating website ... done
Attaching to website
website  | [Tue May 24 05:41:11.409668 2022] [core:notice] [pid 1] AH0004: Command line: 'apache2 -D FOREGROUND'
website  | Could not reliably determine the server's fully qualified domain name, using 172.19.0.2. Set the 'ServerName' directive globally to suppress this message
website  | AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.19.0.2. Set the 'ServerName' directive globally to suppress this message
website  | [Tue May 24 05:41:11.409634 2022] [mpm_prefork:notice] [pid 1] AH00103: Apache/2.4.53 (Debian) PHP/8.1.6 configured -- resuming normal operations
website  | [Tue May 24 05:41:11.409668 2022] [core:notice] [pid 1] AH0004: Command line: 'apache2 -D FOREGROUND'
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET / HTTP/1.1" 200 22084 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET /w/images/wands.jpg HTTP/1.1" 200 10540 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET /w/images/gondol.jpg HTTP/1.1" 200 10540 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET /w/images/avatar_g.jpg HTTP/1.1" 200 11172 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET /w/images/rock.jpg HTTP/1.1" 200 30975 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET /w/images/skies.jpg HTTP/1.1" 200 6355 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"
website  | 172.19.0.1 - - [24/May/2022:05:43:09 +0000] "GET /favicon.ico HTTP/1.1" 404 490 "Apache/2.4.53 (Debian) PHP/8.1.6 (internal dummy connection)"
website  | 172.19.0.1 - - [24/May/2022:05:43:17 +0000] "GET /favicon.ico HTTP/1.1" 404 490 "Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/101.0.4951.64 Safari/537.36"

```

**Hack The Box**  
PEN-TESTING LABS