

## NETWORKING & SYSTEM ADMINISTRATION LAB

### Experiment No.: 1

**Name: Devis Varghese**

**Roll No:47**

**Batch: RMCA -A**

**Date:20-3-2022**

### **Aim**

Identify the major components of computer system such as : mother board , RAM modules ,Daughter cards , bus slots ,SMPS ,Internal storage devices ,Interfacing ports

### **Procedure**

#### **1.Motherboard:**

A mother board (also called mainboard) is the main circuit board in a computer . It helps for the communication between different electronic devices inside the computer. It includes the central processing unit , the peripherals etc. It contains subsystems like central processor ,input/output memory controllers and other components for general use. Like the name , the all other components are connected to it .

Phones ,tablets and other small devices also have motherboards , but they are often called logic boards instead. Their components are usually soldered directly onto the board to save space , which means there aren't any expansion for upgrades like in desktops

#### **2.Ram Modules:**

A narrow printed circuit board that holds memory chips. The common architecture for computers is the dual in-line memory module,which transfer 64 bit at a time . Because of the space limitation, laptops use small outlineDIMMs. The modules are keyed with notches in different places so they cannot be inserted into the wrong slots.

Most desktop and laptop computers use RAM chips that hold eight bits per byte. While high-end servers and workstations typically have nine bits. The ninth bit is a parity bit for detecting errors

#### **3.Daughters cards:**

A daughterboard (or daughter board, daughter card , or daughtercard ) is a circuit board that plugs into and extends the circuitry of another circuit board. The other circuit board may be the computer's main board (its motherboard) or it may be another board or card that is already in the computer, often a sound card. The term is commonly used by manufacturers of wavetable daughterboards that attach to existing sound cards.

#### **4.Bus slots:**

Alternatively known as a bus slot or expansion port, an expansion slot is a connection or port inside a computer on the motherboard or riser card. It provides an installation point for a hardware expansion card to be connected. For example, if you wanted to install a new video card in the computer, you'd purchase a video expansion card and install that card into the compatible expansion slot.

#### **5.SMPs:**

The full form of SMPs is Switched Mode Power Supply also known as Switching Mode Power Supply. SMPs is an electronic power supply system that makes use of a switching regulator to transfer electrical power effectively. It is a PSU (power supply unit) and is usually used in computers to change the voltage to the appropriate range for the computer.

#### **6.Internal storage devices:**

Some storage devices are classed as 'internal' which means they are inside the computer case. 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. It will also be used to store the applications software that you use and more than likely, the original copies of your data files.

Internal storage allows the data and applications to be loaded very rapidly into memory, ready for use. The data can be accessed much faster than data which is stored on an external storage device. This is because internal storage devices are connected directly to the motherboard and its data bus whereas external devices are connected through a hardware interface such as USB, which means they are considerably slower to access.

#### **7.Interfacimg ports:**

A computer is a device that transforms data into meaningful information. It processes the input according to the set of instructions provided to it by the user and gives the desired output. As we know that we can connect multiple external devices with the computer system. Now, these devices are connected with the computer using Ports. The ports are the physical docking points present in the computer through which the external devices are connected using cables. Or in other words, a port is an interface between the motherboard and an external device of the computer.

**Experiment No.: 2****Aim**

Prepare a comparative study of specification of desktop and server class computer

**Procedure**

<b>Desktop</b>	<b>Server</b>
Supports only single user	Supports multiple users
Cannot run large number of different services and application	Can run large number of different services and application
Files are saved in individual computer storage. And it can become disjointed	Files are saved in one secure location
Software updates and changes must be implemented one machine at a time	Easily rollout new software or make changes across the network
Single hard drive-data is lost if the drive falls	Incorporates mirrored hard drives- data can be recovered if one drive fails
Uses a single processor in most cases	Multiple processors and more cache for fast file access
Only has one power supply	More than one power supply
Individual machines may be vulnerable to virus and malware	Block viruses and access to suspect websites by routing internet access via the server

## NETWORKING & SYSTEM ADMINISTRATION LAB

### Experiment No.: 3

**Name: Devis Varghese**

**Roll No:47**

**Batch:A**

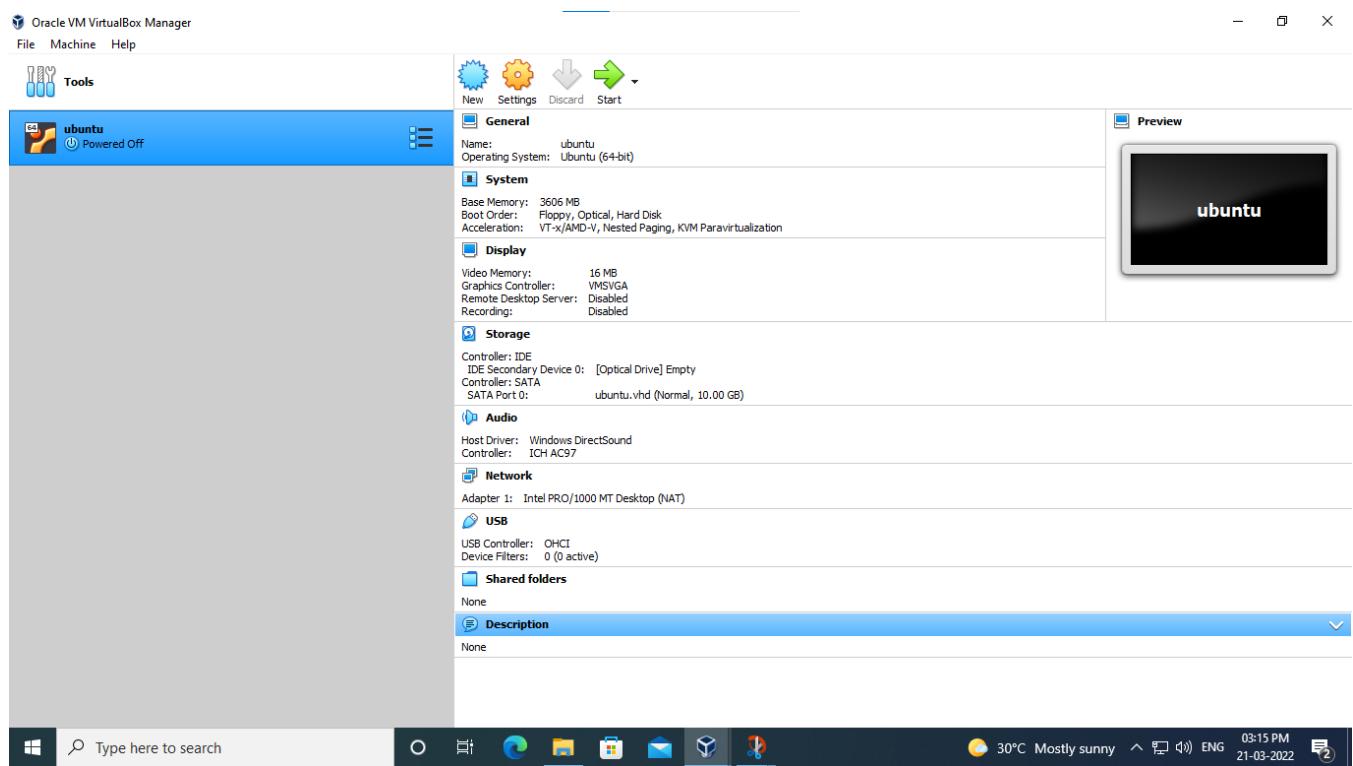
**Date:21-03-2022**

### Aim

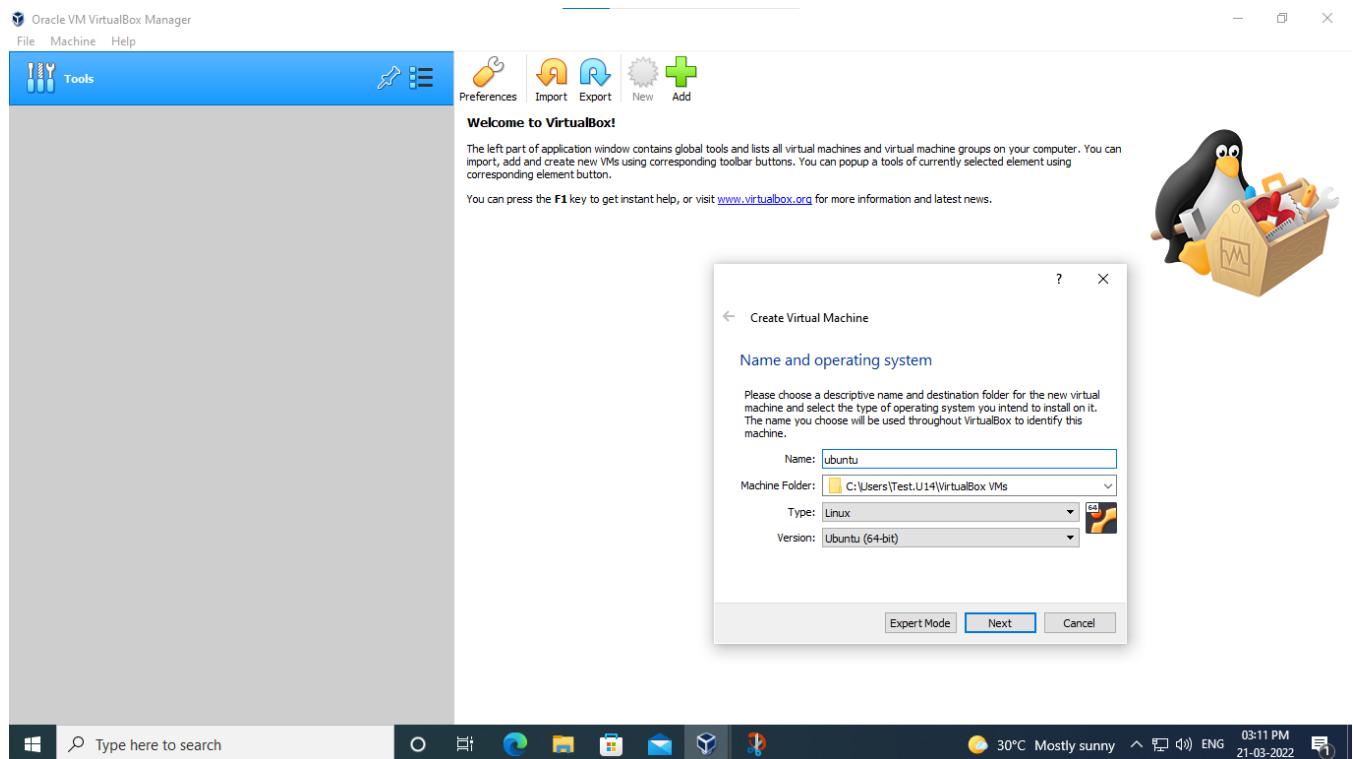
You are given a computer with very low hardware resources it is to be used as kiosk identify and install a suitable Linux distribution .you can stimulate it in a virtual environment

### Procedure

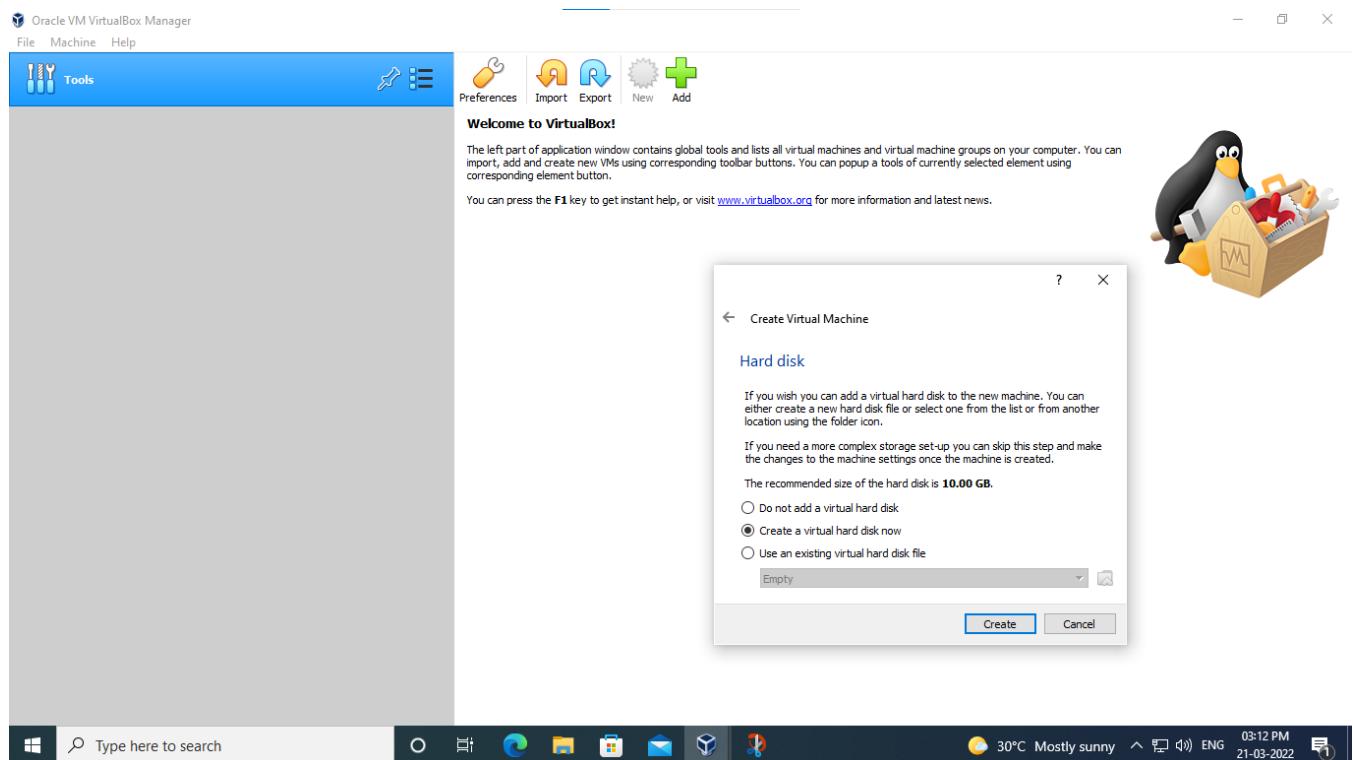
**Step 1:** Download the latest version of Virtual Box from <https://www.virtualbox.org/>. Install and run it. Except that if this is your first time running it, there won't be any other guest operating systems already installed.



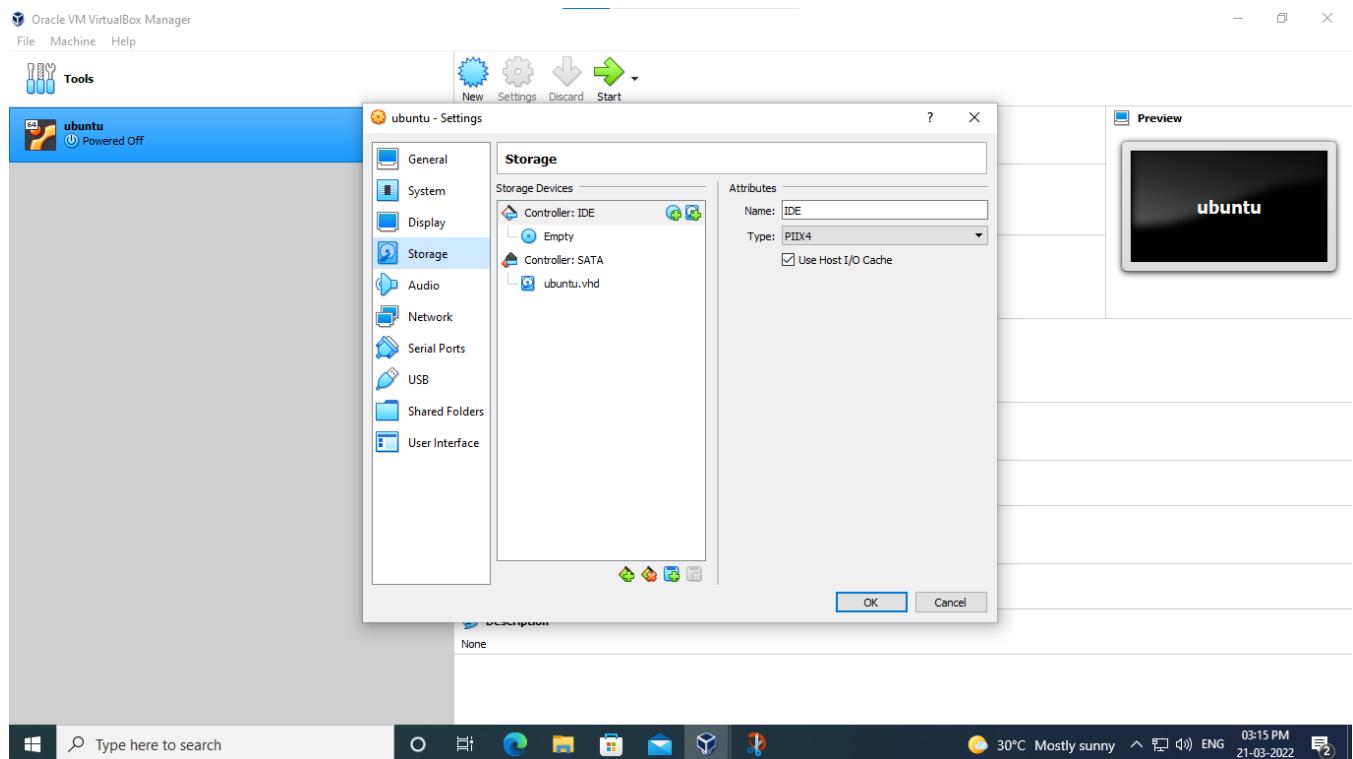
**Step 2:** Click the New button and fill in the Create Virtual Machine .Pick an appropriate name. Choose a machine folder on your laptop that will contain the virtual machine image. The type should be Linux, and the version should be Ubuntu



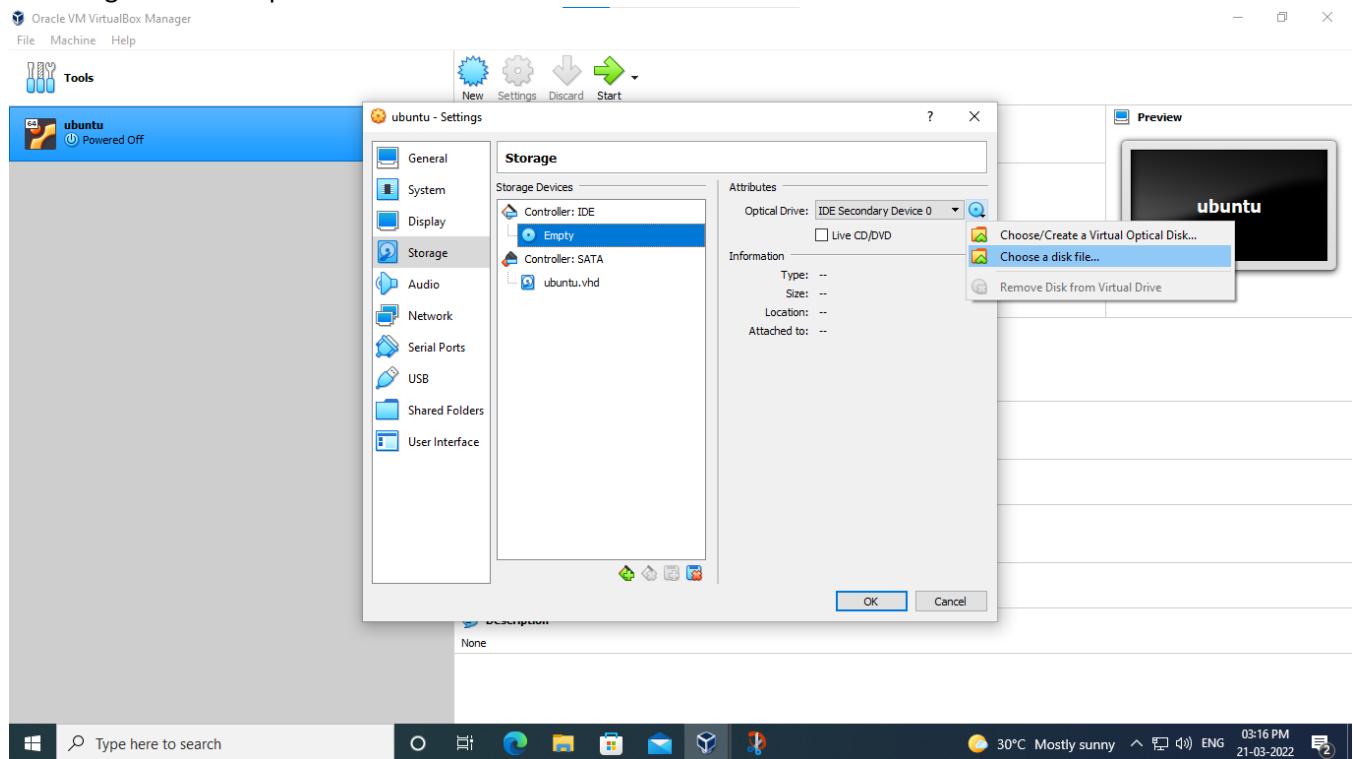
**Step 3:** Set a memory size for the virtual machine, but don't give it more than half of the memory of your host laptop. Select a virtual hard disk now radio button. Click the Create button.



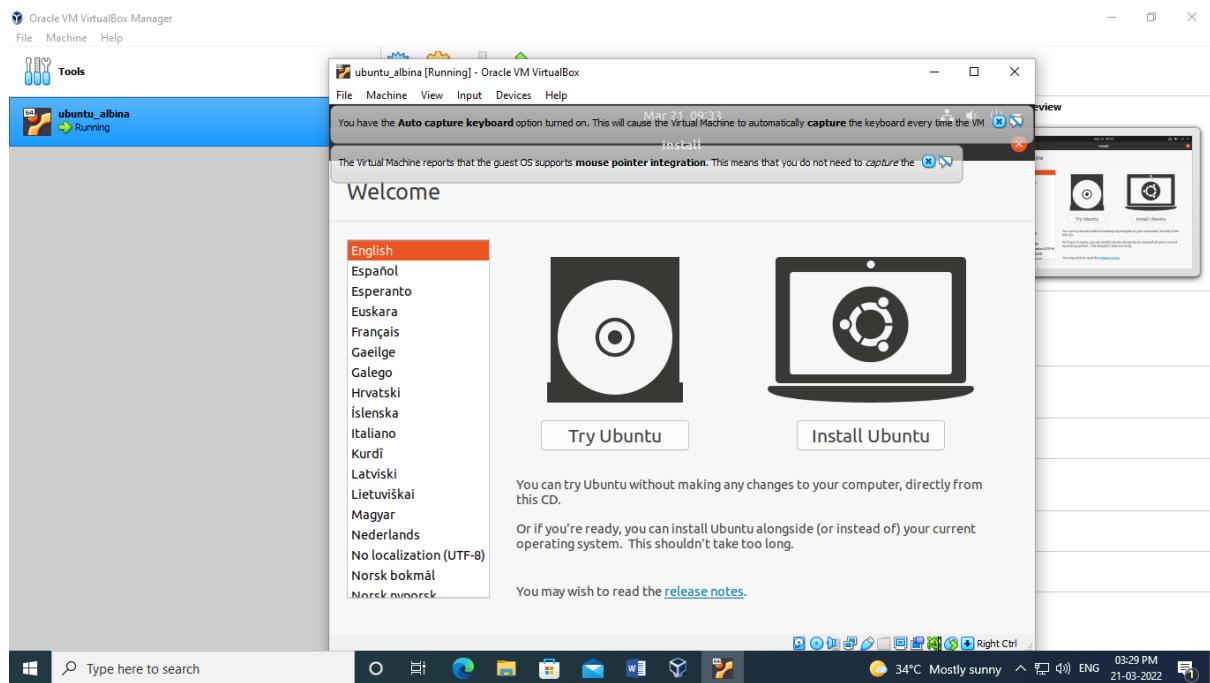
**Step 4:** Click Storage in the left panel. The Storage Settings shows the virtual C drive, which is initially empty, and the virtual hard drive, which is the .vdi virtual disk image that VirtualBox created. Select Empty under Controller: IDE.



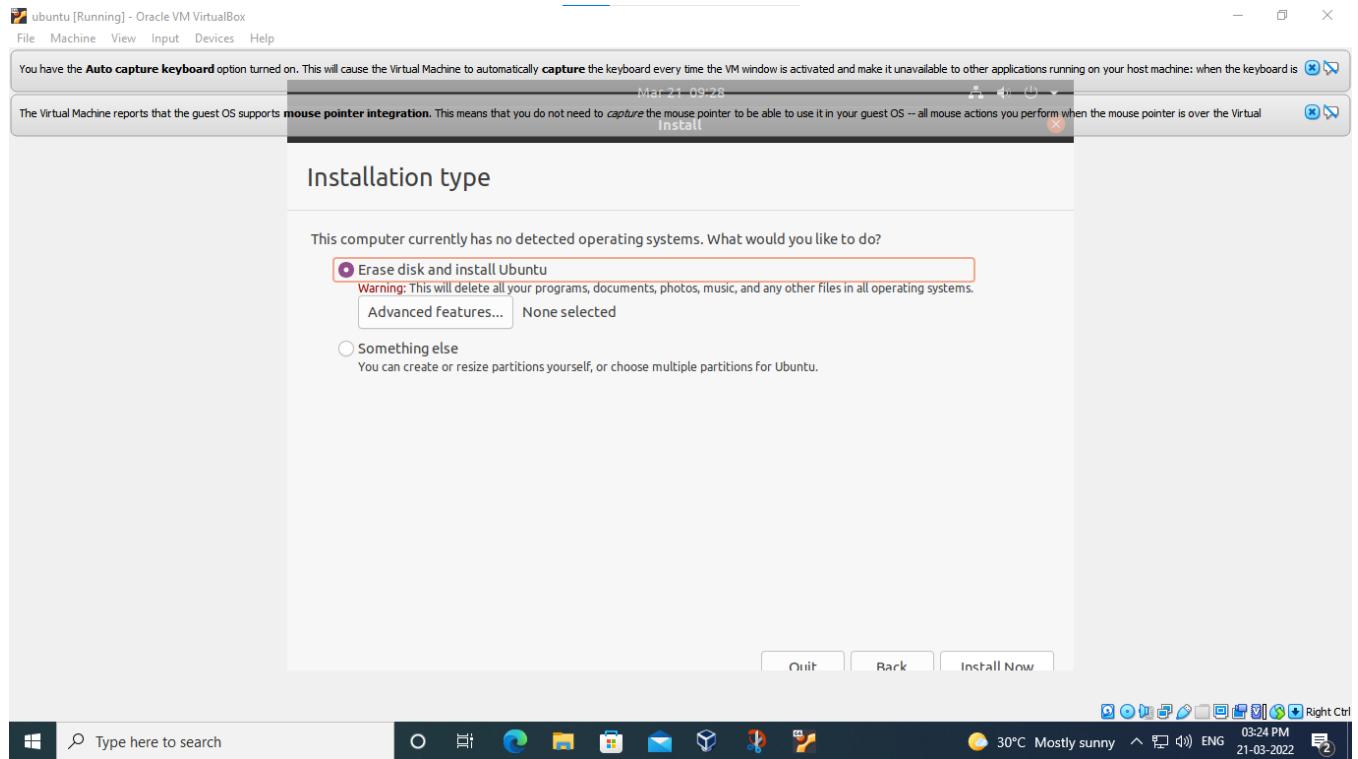
**Step 5:** You want to install Ubuntu on the virtual machine, so you must “insert” the .iso installation disk image file that you downloaded earlier into the virtual C drive. Look under Attributes and click on the image of the disk to the right of the dropdown menu. Select the .iso file to insert into the drive.



**Step 6:** Now you are ready to start the virtual machine in order to install Ubuntu. To start the Ubuntu virtual machine, highlight it and click the Start button at the top.

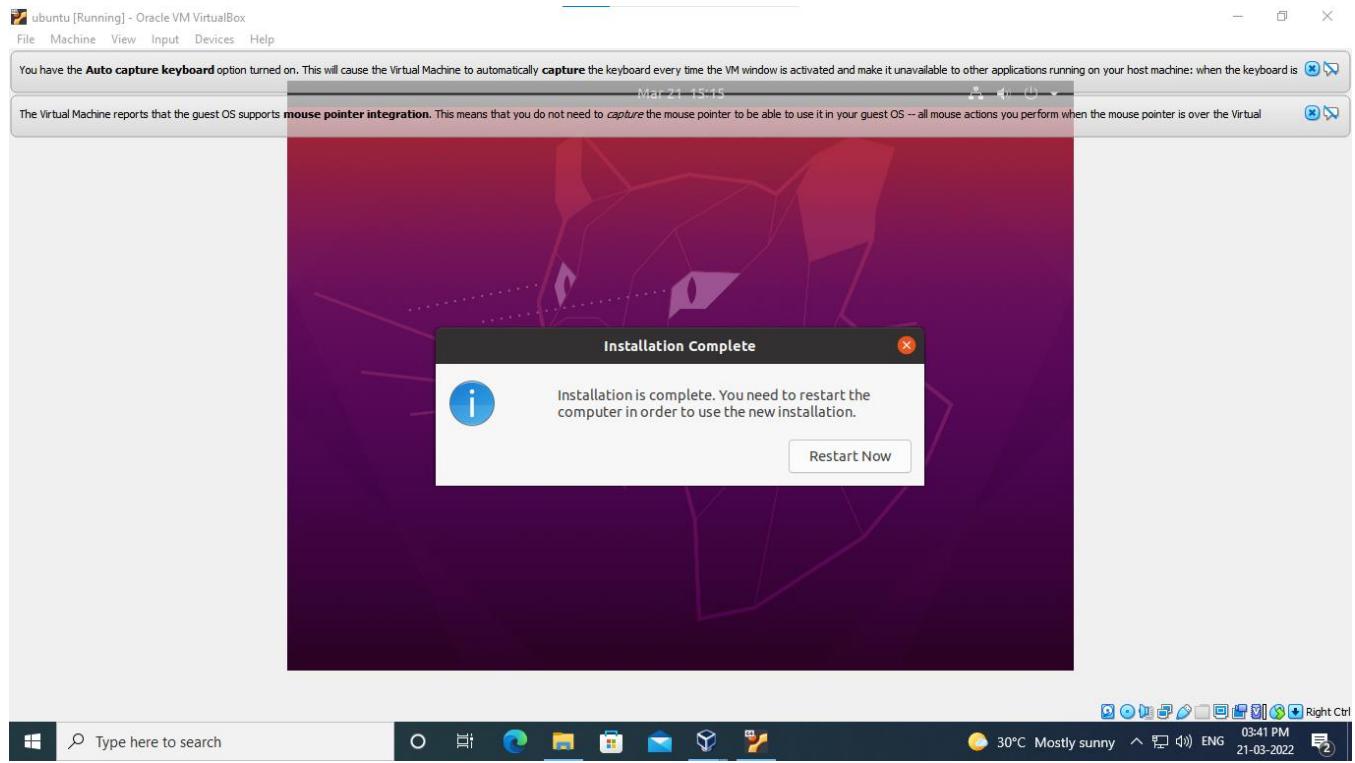


**Step 7:** On the Installation type form, accept the choice Erase disk and install Ubuntu . The disk that it will erase is the virtual disk, not your host laptop's physical disk! Click the Install Now button and the subsequent Continue button.



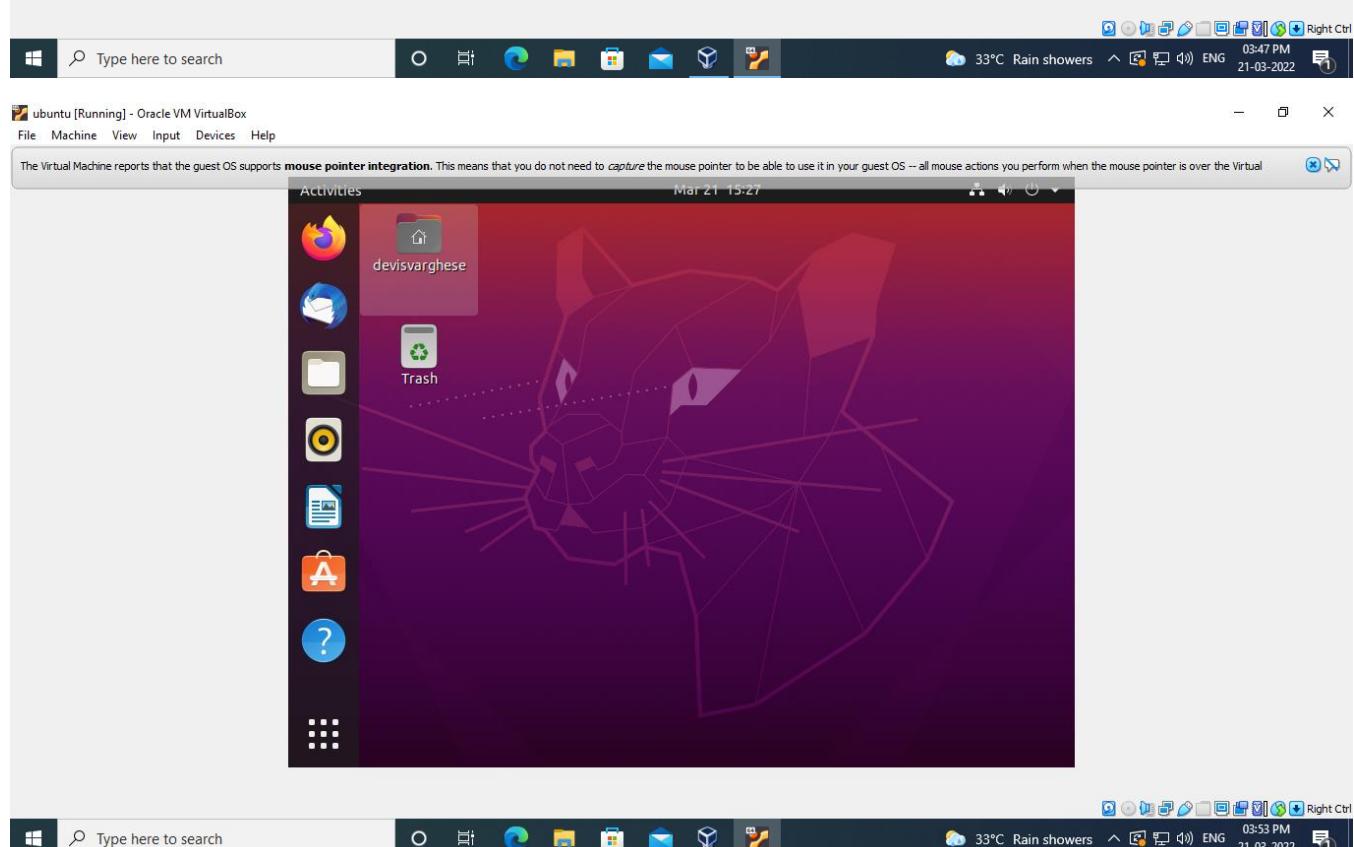
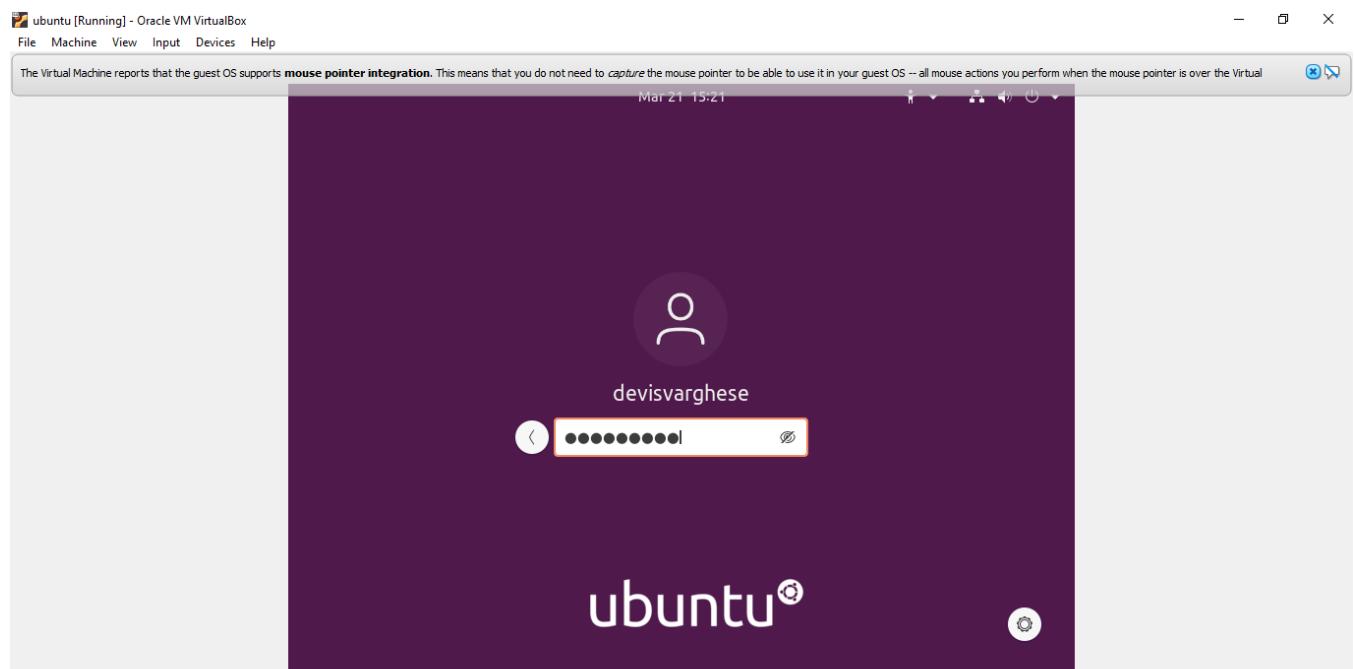
**Step 8:** On the Who are you? form enter appropriate names. The username will also become the name of your home directory in /home. The passwords will

**Step 9:** The installation process will take a while, You can watch files download and install, When it's finally done, it will ask you to restart . Press the Restart Now button.



**Step 10:** After the VirtualBox splash screen and some system startup messages, you will be asked to log in. Click on your name and enter your password.

**Step 11:** You have successfully installed Ubuntu as a virtual machine



**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.: 4****Aim**

Basic linux commands?

**Procedure**

1.# ls

List files and directories in linux

2.# ls -l

Long listing of files in linux

3.# ls -a

View hidden files in linux starting with “ . ”

4.# ls -al

Long listing of all hidden files in linux starting with “ . ”

5.# ls -lh

List files with human readable format

6.# ls -F

List files and directories with ‘/’ character at the end

7.# ls -r

List files in reverse order in linux

8.#ls -R

Recursively list sub-directories in linux

**Name: Devis Varghese**

**Roll No:47**

**Batch:A**

**Date:25-03-2022**

9.# ls -ltr

List files and directories in reverse order in linux

10.# ls -lS

Sort files by file size in linux

11.# ls -i

Display inode number of file or directory

12.# ls –version

Shows version of ls command

13.# ls --help

Show ls command help page

14.# ls -l /tmp

List directory information in linux

15.# ls -n

Display UID and GID of files

16.# cd

Change directory

17.# pwd

Shows the path of current directory

18.# history

Shows the history of commands used previously

19.# mkdir <foldername>

To make new directory

20.# touch <filename>

To create a file in a directory

21.# rm <filename>

To delete a file from the directory

22.# clear

To clear all commands from terminal

Activities Terminal Mar 30 20:50 \*dz.txt Save student@R47:~

```

572
573
574 # Course Condonation Actual Hrs Att. by Me
      ST1 ST2 A1 A2 A3 Int mark Uni
      Mark Att %
575 1 20MCA102 - Advanced Database Management Systems - Shelly
      Shiju George 8
      7
      88
576 2 20MCA104 - Advanced Computer Networks - Navyamol K
      T
      10
      100
577 3 20MCA192 - IPR and Cyber Laws - Dr. Juby Mathew
      Mathew 6
      6
      100
578 4 20MCA132 - Object Oriented Programming Lab - Lisha Varghese
      Varghese 4
      4
      100
579 5 20MCA134 - Advanced DBMS Lab - Shelly Shiju
      George 4
      4
      100
580 6 20MCA136 - Networking & System Administration Lab -
      Navyamol K T
      6
      6
      100
581 7 20MCANC2 - Industrial Readiness Training - Fr. Dr. Rubin
      Thottupurathu Jose, Navyamol K T
      1
      1
      100
582 8 20MCA168 - Virtualisation and Containers - Fr. Dr. Rubin
      Thottupurathu Jose
      9
      9
      100
583
584
585 DIYAMOLEEEEEEEEEEEEEEEEEE
586 DIYAMOLEEEEEEEEEEEEEEEEEE
587 DIYAMOLEEEEEEEEEEEEEEEEEE
588 DIYAMOLEEEEEEEEEEEEEEEEEE
589 vv
590 DIYAMOLEEEEEEEEEEEEEEEEEE
591
```

Plain Text Tab Width: 8 Ln 591, Col 1 INS

Activities Terminal Mar 30 20:28 student@R47:~

```

!
!
^Z
[1]+ Stopped cat
student@R47:~$ cat dz.txt
welcome to anal jyothi college of engineering ,kaanjirapally , kottayam
it is one of the best colleges in the world.
student@R47:~$ cat dz.txt
welcome to anal jyothi college of engineering ,kaanjirapally , kottayam
it is one of the best colleges in the world.

Dues
0 Mess Fee
() Library

Leave Status 2022
97.92 Attendance(%)
0.5 Leaves Taken

Resources for self-learning
Login Moodle
1705 NPTEL Video Courses
LIVE Course Quiz
VIEW AJCE Course Materials

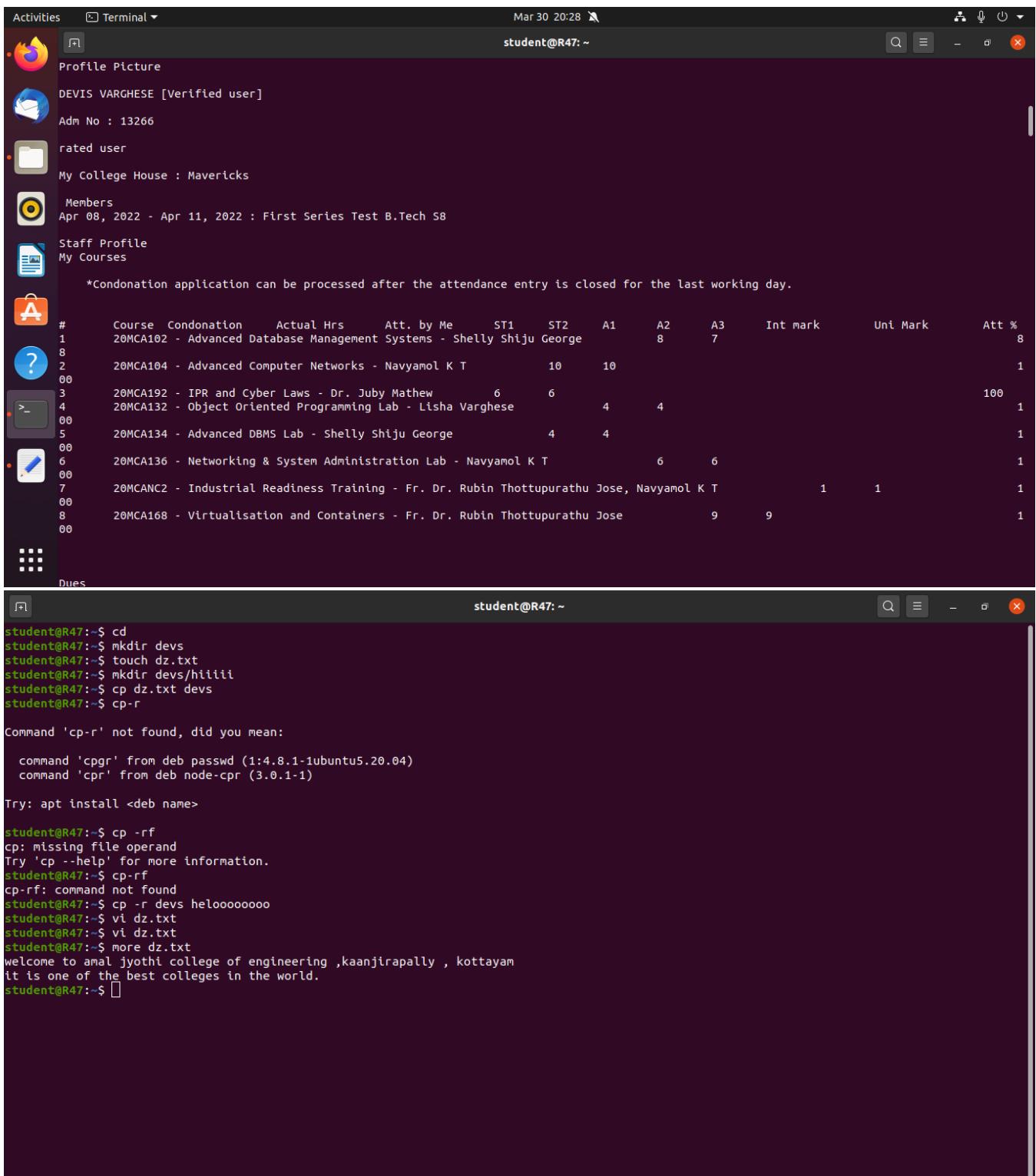
Rules, Policies & Procedures
VIEW Procedures / Guidelines
My Profile
Profile Picture

DEVIS VARGHESE [Verified user]

Adm No : 13266

rated user

My College House : Mavericks
```



The screenshot shows a Linux desktop environment with a dark theme. A terminal window is open at the bottom, showing a command-line session. The session starts with the user navigating to their home directory and creating a directory named 'devs'. It then creates a file named 'dz.txt' and copies it into the 'devs' directory. The user attempts to use the 'cp-r' command but receives an error message indicating it is not found. Instead, they use 'cp -rf' which also fails, prompting them to try 'cp --help'. They then use 'vi' to edit 'dz.txt' and type a welcome message. Finally, they use 'more dz.txt' to view the contents of the file.

```
student@R47:~$ cd
student@R47:~$ mkdir devs
student@R47:~$ touch dz.txt
student@R47:~$ mkdir devs/hiiiii
student@R47:~$ cp dz.txt devs
student@R47:~$ cp-r
Command 'cp-r' not found, did you mean:

  command 'cpgr' from deb passwd (1:4.8.1-1ubuntu5.20.04)
  command 'cpr' from deb node-cpr (3.0.1-1)

Try: apt install <deb name>
student@R47:~$ cp -rf
cp: missing file operand
Try 'cp --help' for more information.
student@R47:~$ cp-rf
cp-rf: command not found
student@R47:~$ cp -r devs heloooooooo
student@R47:~$ vi dz.txt
student@R47:~$ vi dz.txt
student@R47:~$ more dz.txt
welcome to amal jyothi college of engineering ,kaanjirappally , kottayam
it is one of the best colleges in the world.
student@R47:~$ 
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

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

**Name: Devis Varghese**

**Roll No:47**

**Batch:A**

**Date:30-03-2022**

### **Aim**

Basic linux commands? (Part 2)

### **Procedure**

#### **1.CP**

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

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

#### **2.MV**

The primary use of the mv command is to move files, it can also be used to rename files. The

arguments in mv are similar to the cp command. You need to type mv, the file's name, and the destination's directory.

- mv file.txt /home/username/Documents.
- To rename files, the Linux is mv oldname.ext newname.ext.

#### **3.VI**

The VI editor is the most popular and classic text editor in the Linux family. Below, are some

reasons which make it a widely used editor –

- It is available in almost all Linux Distributions
- It works the same across different platforms and Distributions

- It is user-friendly. Hence, millions of Linux users love it and use it for their editing needs

```
alan@alan-VirtualBox:~$ mkdir d1  
alan@alan-VirtualBox:~$ cd d1  
alan@alan-VirtualBox:~/d1$ touch a.txt  
alan@alan-VirtualBox:~/d1$ cp a.txt b.txt  
alan@alan-VirtualBox:~/d1$ mv a.txt c.txt  
alan@alan-VirtualBox:~/d1$ vi c.txt
```

#### 4. MORE

Like cat command, more command displays the content of a file. Only difference is that, in case

of larger files, 'cat' command output will scroll off your screen while 'more' command displays

output one screenful at a time.

- Enter key: To scroll down page line by line.
  - Space bar: To go to next page.
  - b key: To go to the backward page.
  - / key: Lets you search the string.
  - Syntax: more

ents. Amal Jyothi is approved by the All India Council for Technical Education (AICTE), New Delhi. It is affiliated to APJ Abdul Kalam Technological University, Thiruvananthapuram since 2015. During the years 2001-2014, the College was affiliated to Mahatma Gandhi University, Kottayam. The main features of the College comprises world-class infrastructure, top-flight faculty, high pass percentage, excellent placement record, unique student projects and first rate innovation & entrepreneurship ventures on campus. Amal Jyothi College of Engineering, Kanjirapally, is the first engineering college in Kerala to obtain NAAC accreditation with 'A' grade, and the first new generation engineering college in the State to secure the prestigious NBA accreditation for prime departments. Amal Jyothi is approved by the All India Council for Technical Education (AICTE), New Delhi. It is affiliated to APJ Abdul Kalam Technological University, Thiruvananthapuram since 2015. During the years 2001-2014, the College was affiliated to Mahatma Gandhi University, Kottayam. The main features of the College comprises world-class infrastructure, top-flight faculty, high pass percentage, excellent placement record, unique student projects and first rate innovation & entrepreneurship ventures on campus.

alangalan-VirtualBox:~/d\$ more c.txt

Amal Jyothi College of Engineering, Kanjirapally, is the first engineering college in Kerala to obtain NAAC accreditation with 'A' grade, and the first new generation engineering college in the State to secure t he prestigious NBA accreditation for prime departments. Amal Jyothi is approved by the All India Council for Technical Education (AICTE), New Delhi. It is affiliated to APJ Abdul Kalam Technological University, Thiruvananthapuram since 2015. During the years 2001-2014, the College was affiliated to Mahatma Gandhi University, Kottayam. The main features of the College comprises world-class infrastructure, top-flight faculty, high pass percentage, excellent placement record, unique student projects and first rate innovation & entrepreneurship ventures on campus. Amal Jyothi College of Engineering, Kanjirapally, is the first engineering college in Kerala to obtain NAAC accreditation with 'A' grade, and the first new generation engineering college in the State to secure the prestigious NBA accreditation for prime departments. Amal Jyothi is approved by the All India Council for Technical Education (AICTE), New Delhi. It is affiliated to APJ Abdul Kalam Technological University, Thiruvananthapuram since 2015. During the years 2001-2014, the College was affiliated to Mahatma Gandhi University, Kottayam. The main features of the College comprises world-class infrastructure, top-flight faculty, high pass percentage, excellent placement record, unique student projects and first rate innovation & entrepreneurship ventures on campus. Amal Jyothi College of Engineering, Kanjirapally, is the first engineering college in Kerala to obtain NAAC accreditation with 'A' grade, and the first new generation engineering college in the State to secure the prestigious NBA accreditation for prime departments. Amal Jyothi is approved by the All India Council for Technical Education (AICTE), New Delhi. It is affiliated to APJ Abdul Kalam Technological University, Thiruvananthapuram since 2015. During the years 2001-2014, the College was affiliated to Mahatma Gandhi University, Kottayam. The main features of the College comprises world-class infrastructure, top-flight faculty, high pass percentage, excellent placement record, unique student projects and first rate innovation & entrepreneurship ventures on campus. Amal Jyothi College of Engineering, Kanjirapally, is the first engineering college in Kerala to obtain NAAC accreditation with 'A' grade, and the first new generation engineering college in the State to secure the prestigious NBA accreditation for prime departments. Amal Jyothi is approved by the All India Council for Technical Education (AICTE), New Delhi. It is affiliated to APJ Abdul Kalam Technological University, Thiruvananthapuram since 2015. During the years ...

5 HEAD

The head command is used to view the first lines of any text file.

- By default, it will show the first ten lines, but you can change this number to your liking.
  - If you only want to show the first five lines, type `head -n 5 filename.txt`

## 6.TAIL

This one has a similar function to the head command, but instead of showing the first lines, the

`tail` command will display the last ten lines of a text file.

- tail -n filename.txt

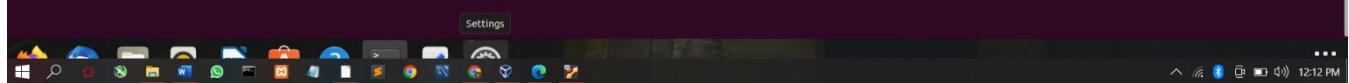
## 7. CHMOD

To change directory permissions of file/directory in linux.

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

- chmod +rwx filename to add permissions.
  - chmod -rwx directoryname to remove permissions.
  - chmod +x filename to allow executable permissions.
  - chmod -wx filename to take out write and executable permissions.

```
alan@alan-VirtualBox:~/d1$ ls -l
total 4
-rw-rw-r-- 1 alan alan 0 Apr 3 11:40 b.txt
-rw-rw-r-- 1 alan alan 802 Apr 3 12:04 c.txt
alan@alan-VirtualBox:~/d1$ chmod +x c.txt
alan@alan-VirtualBox:~/d1$ ls -l
total 4
-rw-rw-r-- 1 alan alan 0 Apr 3 11:40 b.txt
-rwxrwxr-x 1 alan alan 802 Apr 3 12:04 c.txt
alan@alan-VirtualBox:~/d1$ chmod +rwx c.txt
alan@alan-VirtualBox:~/d1$ ls -l
total 4
-rw-rw-r-- 1 alan alan 0 Apr 3 11:40 b.txt
----- 1 alan alan 802 Apr 3 12:04 c.txt
alan@alan-VirtualBox:~/d1$
```



## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No.: 6**

Name: Devis Varghese  
Roll No:47  
Batch: MCA A  
Date: 01/04/22

#### **Aim**

Linux Basic Commands

#### **Procedure**

##### **1.du**

**du** command is used find the amount of space a file or directory use in the disk and will be showed as disk block numbers instead of the usual size format. Other formats of the command are:

- 1) **du -s:** - This don't include size of subdirectories.
- 2) **du -h:** - Used to see size in bytes, megabytes or kilobytes.

Syntax: du option <directoryname>

##### **2.grep**

**grep** searches for patterns in each file. Patterns is one or more patterns separated by newline characters, and grep prints each line that matches a pattern. Typically patterns should be quoted when grep is used in a shell command.

Syntax: grep option <filename>

##### **3.find**

**find** command is used to search for files in a directory hierarchy.

Syntax: find option <filename/directory>

##### **4.tar**

**tar** command is used to convert, retrieve or read a tar file in a directory. Other options of tar command are:

- 1) **tar -cvf:** - Used to convert a file into tar file.
- 2) **tar -xvf:** - Used to convert a tar file into normal file.
- 3) **tar -tvf:** - Used to read a tar file.

Syntax: tar option <filename >

### **5.useradd**

**useradd** command is used to create a new user and is only available for the system admins.

Syntax: useradd <username>

### **6.usermod**

**usermod** command is used to modify an existing user and is only available for the system admins.

Syntax: usermod option <username>

### **7.userdel**

**userdel** command is used to delete an existing user and is only available for the system admins.

Syntax: userdel option <username>

### **8.passwd**

**passwd** command is used to change password for an existing user and is only available for the system admins.

Syntax: passwd option <username>

### **9.expr (expression)**

**expr** command is used for doing/evaluating the mathematical operations/expressions in linux.

Syntax: expr <values/symbols>

### **10.read**

**read** command is used to read the contents of a line into a variable. The **read** command can be used with and without arguments.

Syntax: read <values >

Activities Terminal Fri 21:07 mca@U47: ~

```

File Edit View Search Terminal Help
gnome-initial-setup:x:119:65534::/run/gnome-initial-setup/:/bin/false
gdm:x:120:125:Gnome Display Manager:/var/lib/gdm3:/bin/false
mca:x:1000:1000:mca,,,:/home/mca:/bin/bash
mysql:x:999:1001::/home/mysql:/bin/sh
android:x:1002:1003:Andorid_RS308,,,:/home/android:/bin/bash
mongodb:x:121:65534::/home/mongodb:/usr/sbin/nologin
cups-pk-helper:x:122:116:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
hadoop:x:1003:1004:hadoop,,,:/home/hadoop:/bin/bash
sshd:x:123:65534::/run/sshd:/usr/sbin/nologin
student:x:1001:1002:student,,,:/home/student:/bin/bash
amil:x:3243:1005::/home/amil:/bin/sh
mca@U47:~$ man sudo
mca@U47:~$ sudo passwd
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
mca@U47:~$ user del
Command 'user' not found, did you mean:
  command 'userserv' from deb userserv
  command 'iuser' from deb ipmiutil
  command 'fuser' from deb psmisc
  command 'users' from deb coreutils
Try: sudo apt install <deb name>
mca@U47:~$ sudo userdel amil
mca@U47:~$ man grep
mca@U47:~$ mkdir diya
mca@U47:~$ vi dd.txt
mca@U47:~$ cat dd.txt
C
Chello how are u?
h
hjgvvhfg
mca@U47:~$ 
```

Activities Terminal Mon 14:43 mca@U47: ~/Desktop

```

File Edit View Search Terminal Help
4 ./local/share/codeblocks/plugins
4 ./local/share/codeblocks/scripts
12 ./local/share/codeblocks
60 ./local/share/grilo-plugins
2756 ./local/share
9912 ./local
44 ./Documents/OPEN GL/sa/obj/Debug
48 ./Documents/OPEN GL/sa/obj
36 ./Documents/OPEN GL/sa/bin/Debug
40 ./Documents/OPEN GL/sa/bin
112 ./Documents/OPEN GL/sa
116 ./Documents/OPEN GL
20 ./Documents/java
140 ./Documents
8 ./idlerc
4 ./Videos
3342644 .
mca@U47:~$ du -s
du: cannot read directory './.cache/dconf': Permission denied
du: cannot read directory './.dbus': Permission denied
du: cannot read directory './.config/enchant': Permission denied
3342644 .
mca@U47:~$ clear

mca@U47:~$ cd Desktop
mca@U47:~/Desktop$ mkdir deviss
mca@U47:~/Desktop$ read z
1234
mca@U47:~/Desktop$ echo $z
1234
mca@U47:~/Desktop$ du
4 ./deviss
8 .
mca@U47:~/Desktop$ du -s deviss
4 deviss
mca@U47:~/Desktop$ find deviss
deviss
mca@U47:~/Desktop$ useradd kuruvi

```

```

Activities Terminal Mon 14:44
mca@U47: ~/Desktop

File Edit View Search Terminal Help
diya:x:4455:1005:::/home/diya:/bin/sh
kuruvi:x:4456:4456:::/home/kuruvi:/bin/sh
mca@U47:~/Desktop$ td
Command 'td' not found, but can be installed with:
sudo apt install texdraw

mca@U47:~/Desktop$ id
uid=1000(mca) gid=1000(mca) groups=1000(mca),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),116(lpadmin),126(sambashare)
mca@U47:~/Desktop$ sudo usermod -u 1345 kuruvi
mca@U47:~/Desktop$ 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:/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:/var/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
systemd-networkd:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin
syslog:x:102:106:/home/syslog:/usr/sbin/nologin
messagebus:x:103:107:/nonexistent:/usr/sbin/nologin
_apt:x:104:65534:/nonexistent:/usr/sbin/nologin
uidd:x:105:111:/run/uidd:/usr/sbin/nologin
avahi-autoipd:x:106:112:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:107:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin

Activities Terminal Mon 14:43
mca@U47: ~/Desktop

File Edit View Search Terminal Help
length STRING
length of STRING

+ TOKEN
    interpret TOKEN as a string, even if it is a
    keyword like 'match' or an operator like '/'

( EXPRESSION )
    value of EXPRESSION

Beware that many operators need to be escaped or quoted for shells.
Comparisons are arithmetic if both ARGs are numbers, else lexicographical. Pattern matches return the string matched between `(` and `)` or
null; if `(` and `)` are not used, they return the number of characters
matched or 0.

Exit status is 0 if EXPRESSION is neither null nor 0, 1 if EXPRESSION
is null or 0, 2 if EXPRESSION is syntactically invalid, and 3 if an
error occurred.

AUTHOR
Written by Mike Parker, James Youngman, and Paul Eggert.

REPORTING BUGS
GNU coreutils online help: <http://www.gnu.org/software/coreutils/>
Report expr translation bugs to <http://translationproject.org/team/>

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GPL version 3 or later <http://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
Full documentation at: <http://www.gnu.org/software/coreutils/expr>
or available locally via: info '(coreutils) expr invocation'
Manual page expr(1) line 70 (press h for help or q to quit)

```

```

Activities Terminal Mon 14:44
mca@U47: ~/Desktop
File Edit View Search Terminal Help
kuruvix:1345:4456:~/home/kuruvi:/bin/sh
mca@U47:~/Desktop$ sudo passwd kuruvi
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
mca@U47:~/Desktop$ user del kuruvi

Command 'user' not found, did you mean:

  command 'users' from deb coreutils
  command 'iuser' from deb ipmiutil
  command 'fuser' from deb psmisc
  command 'userv' from deb userv

Try: sudo apt install <deb name>

mca@U47:~/Desktop$ sudo userdel kuruvi
mca@U47:~/Desktop$ 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/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/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
ircx: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:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd/netif:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd/resolve:/usr/sbin/nologin

Activities Terminal Mon 14:44
mca@U47: ~/Desktop
File Edit View Search Terminal Help
student:x:1001:1002:student,,,:/home/student:/bin/bash
diya:x:4455:1005:/home/diya:/bin/sh
mca@U47:~/Desktop$ id
uid=1000(mca) gid=1000(mca) groups=1000(mca),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),116(lpadmin),126(sambashare)
mca@U47:~/Desktop$ cd Desktop
bash: cd: Desktop: No such file or directory
mca@U47:~/Desktop$ mkdir as
mca@U47:~/Desktop$ touch file1
mca@U47:~/Desktop$ touch a b c d e f g
mca@U47:~/Desktop$ ls
a as b c d deviss e f file1 g
mca@U47:~/Desktop$ tar -cvf abcd.tar *
a
as/
b
c
d
deviss/
e
f
file1
g
mca@U47:~/Desktop$ tar -xvf abcd.tar
a
as/
b
c
d
deviss/
e
f
file1
g
mca@U47:~/Desktop$ tar -tvf abcd.tar
-rw-r--r-- mca/mca      0 2022-04-04 14:41 a
drwxr-xr-x mca/mca      0 2022-04-04 14:41 as/
-rw-r--r-- mca/mca      0 2022-04-04 14:41 b
-rw-r--r-- mca/mca      0 2022-04-04 14:41 c

```

```
Activities Terminal ▾ Mon 14:44
mca@U47: ~/Desktop
```

File Edit View Search Terminal Help

```
mca@U47:~/Desktop$ tar -cvf abcd.tar *
```

```
a
as/
b
c
d
deviss/
e
f
file1
g
```

```
mca@U47:~/Desktop$ tar -xvf abcd.tar
```

```
a
as/
b
c
d
deviss/
e
f
file1
g
```

```
mca@U47:~/Desktop$ tar -tvf abcd.tar
```

```
-rw-r--r-- mca/mca 0 2022-04-04 14:41 a
drwxr-xr-x mca/mca 0 2022-04-04 14:41 as/
-rw-r--r-- mca/mca 0 2022-04-04 14:41 b
-rw-r--r-- mca/mca 0 2022-04-04 14:41 c
-rw-r--r-- mca/mca 0 2022-04-04 14:41 d
drwxr-xr-x mca/mca 0 2022-04-04 14:33 deviss/
-rw-r--r-- mca/mca 0 2022-04-04 14:41 e
-rw-r--r-- mca/mca 0 2022-04-04 14:41 f
-rw-r--r-- mca/mca 0 2022-04-04 14:41 file1
-rw-r--r-- mca/mca 0 2022-04-04 14:41 g
```

```
mca@U47:~/Desktop$ expr 10 + 1
11
mca@U47:~/Desktop$ man expr
mca@U47:~/Desktop$
```

## NETWORKING & SYSTEM ADMINISTRATION LAB

### Experiment No.: 7

Name: Devis Varghese  
Roll No:47  
Batch: MCA A  
Date: 04/04/22

### Aim

Linux Basic Commands

### Procedure

#### 1.ifconfig

**ifconfig** command is used for displaying current network configuration information, setting up an IP address, netmask, or broadcast address to a network interface, creating an alias for the network interface, setting up hardware address, and enable or disable network interfaces.

#### 2.ssh (Secure Shell)

**ssh** is a command used to securely connect to a remote server/system and is secure in the sense that it transfers the data in encrypted form between the host and the client.

#### 3.ssh -copy

**ssh -copy** is to be used as the key pair for SSH authentication and needs to copy the public key to a server. The key is the file ***id\_rsa.pub*** previously created with SSH keygen utility. To copy the key to a server we use this command.

Syntax: ssh -copy -id hostname/IP

#### 4.ssh -keygen

**ssh -keygen** command is used for generating public key or private keys.

Syntax: ssh -keygen

#### 5.rm -rf

**rm -rf** is a command used to remove the already created .ssh file.

```
Activities Terminal Mon 15:45
mca@U47:~/Desktop$ ifconfig
br-2fa8f3583c99: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.18.0.1 netmask 255.255.0.0 broadcast 172.18.255.255
        inet6 fe80::42:9eff:fe5b:5868 prefixlen 64 scopeid 0x20<link>
            ether 02:42:9e:5b:58:68 txqueuelen 0 (Ethernet)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 86 bytes 10851 (10.8 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

br-b58bc6c10b2d: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.19.0.1 netmask 255.255.0.0 broadcast 172.19.255.255
        inet6 fe80::42:8fff:fe7d:c2b1 prefixlen 64 scopeid 0x20<link>
            ether 02:42:8e:7d:c2:b1 txqueuelen 0 (Ethernet)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 82 bytes 10321 (10.3 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
        ether 02:42:08:29:68:27 txqueuelen 0 (Ethernet)
        RX packets 0 bytes 0 (0.0 B)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 0 bytes 0 (0.0 B)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.6.217 netmask 255.255.255.0 broadcast 192.168.6.255
        inet6 fe80::7db9:d636:ca55:99b prefixlen 64 scopeid 0x20<link>
            ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
            RX packets 46521 bytes 25126509 (25.1 MB)
            RX errors 0 dropped 14 overruns 0 frame 0
            TX packets 18495 bytes 8770160 (8.7 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

Activities Terminal Mon 15:45
mca@U47:~/Desktop$ ssh mca@192.168.6.218
mca@192.168.6.218'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

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

Last login: Mon Apr  4 12:54:48 2022 from 192.168.6.217
mca@U48:~$ touch devzzz
mca@U48:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/mca/.ssh/id_rsa):
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:eSznbrXT7Ucp/CSVClqqDpazxF61Q0ATK+beowsXvE mca@U48
The key's randomart image is:
+--[RSA 2048]--+
| . . =
| o += |
| o.+
| .+ . o +
| .+oSo.= + . |
| +*= =o= . |
| ..+=Eo.=o+ |
| .o=+ .. o.o |
```

```

Activities Terminal ▾ Mon 15:45
mca@U48:~$ more .ssh/
*** .ssh/: directory ***
mca@U48:~$ more .ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQDEq/3ILBYeYmbY5q1gI0K37LSYH+WnAhurFi1mxz0luJHBgFdkAYv3iQ56nEJrWRPpKeW/MOSFBuYmCDtqGkjV6F22zKG2Hlv+c5TxZswNdikRd
DMUY128UPbn0x1SEWZNz4hvXk1468fvG9/qMD0YVVL2XfUKgkTfxVoqP/lqnHrDXM+yh0e7in+GAE9vly3dVLR+hA4sGzi/9icxvS3+BmBitis6Zwr7bIIg9qC5n9yqTER3rzMvjw4fuAYJClvz8A
3/S8T/Olsz07+a9wxVK56NNasMFP8AYVCnWcQhfHuJ2k+g05fwLqj0e7301oSuzsmEYua9pGj4falRjt mca@U48
mca@U48:~$ exit
logout
Connection to 192.168.6.218 closed.
mca@U47:~/Desktop$ more .ssh/id_rsa.pub
more: stat of .ssh/id_rsa.pub failed: No such file or directory
mca@U47:~/Desktop$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/mca/.ssh/id_rsa):
/home/mca/.ssh/id_rsa already exists.
Overwrite (y/n)? 
mca@U47:~/Desktop$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/mca/.ssh/id_rsa):
/home/mca/.ssh/id_rsa already exists.
Overwrite (y/n)? y
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:eySlxgwCjizD1mA6KHe1Sbgvxhfja8gumKPe5wysYk mca@U47
The key's randomart image is:
+---[RSA 2048]---+
|..o.+oooo+o |
| o.o+...o* |
| + o .o + |
| . o o.o+ |
| .. o oSo. |
| .. o .o.. |
| = o+.o . |

Activities Terminal ▾ Mon 15:45
mca@U47:~$ rm -rf .ssh^C
mca@U47:~/devz$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.2117
/usr/bin/ssh-copy-id: ERROR: failed to open ID file '.ssh/id_rsa.pub': No such file
mca@U47:~/devz$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.2117
/usr/bin/ssh-copy-id: ERROR: failed to open ID file '.ssh/id_rsa.pub': No such file
mca@U47:~/devz$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.2117
/usr/bin/ssh-copy-id: ERROR: failed to open ID file '.ssh/id_rsa.pub': No such file
mca@U47:~/devz$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.2117
/usr/bin/ssh-copy-id: ERROR: failed to open ID file '.ssh/id_rsa.pub': No such file
mca@U47:~/devz$ rm -rf .ssh
mca@U47:~/devz$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/mca/.ssh/id_rsa):
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:Jzo8X30riBkD+H0fdQ6AOh7wN5UUfe7QaGjjIU0QhFQ mca@U47
The key's randomart image is:
+---[RSA 2048]---+
| ..+E=o+ |
| . . . = . |
| . o . + o = |
| . . . = + * * + |
| . +5+= = * |
| ...=o...o |
| = * .o... |
| +o.. o.. |
| . . . |
+---[SHA256]---+

```

```

Activities Terminal ▾ Mon 15:45
mca@U47:~$ more .ssh/id_rsa.pub
more: stat of .ssh/id_rsa.pub failed: No such file or directory
mca@U47:~$ more .ssh/id_rsa.pub
more: stat of .ssh/id_rsa.pub failed: No such file or directory
mca@U47:~$ rm -rf .ssh
mca@U47:~$ cd dev
bash: cd: dev: No such file or directory
mca@U47:~$ cd deviss
bash: cd: deviss: No such file or directory
mca@U47:~$ pwd
/home/mca/Desktop
mca@U47:~$ cd ..
mca@U47:~$ pwd
/home/mca
mca@U47:~$ more .ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQDeuIyYNJW... mca@U47
XaHk4Xua71Fx4ZekJv7NRw7TsMOjtgk+IFRbzqZnRtgh+3UTci9zIjdVaBy+XXT1HaW1PKQdAu8NfJ8986ugBjTLMXNuJlsq7nM2Zgcdzip5g1xeI2bsr6+RkZRCKuumakshy+sqq3lNeIPC7RB
0UEvrGT0174aswWuZcrCM/Hz0h/nZ5KPAGJTpd0gjV7FnvKixIkB56lNpWSGUfZmp+L27QHc7a0wUH mca@U47
mca@U47:~$ rm -rf .ssh
mca@U47:~$ cd king
bash: cd: king: No such file or directory
mca@U47:~$ pwd
/home/mca
mca@U47:~$ cd deviss
bash: cd: deviss: No such file or directory
mca@U47:~$ cd deviss
bash: cd: deviss: No such file or directory
mca@U47:~$ cd .
mca@U47:~$ cd devz
mca@U47:~$ devz$ pwd
/home/mca/devz
mca@U47:~$ devz$ rm -rf .ssh^C
mca@U47:~$ devz$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.2117
/usr/bin/ssh-copy-id: ERROR: failed to open ID file '.ssh/id_rsa.pub': No such file
mca@U47:~$ devz$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.2117

Activities Terminal ▾ Mon 15:46
mca@U47:~$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.218
/usr/bin/ssh-copy-id: ERROR: failed to open ID file '.ssh/id_rsa.pub': No such file
mca@U47:~$ cd ..
mca@U47:~$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.218
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: ".ssh/id_rsa.pub"
The authenticity of host '192.168.6.218' can't be established.
ECDSA key fingerprint is SHA256:fbjpkFz2rmm17fb0F9bv1YAZAF549wa46gULyBjvIIO.
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@192.168.6.218's password:
Permission denied, please try again.
mca@192.168.6.218's password:
Permission denied, please try again.
mca@192.168.6.218's password:
mca@192.168.6.218: Permission denied (publickey,password).
mca@U47:~$ ssh-copy-id -i .ssh/id_rsa.pub mca@192.168.6.218
/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
mca@192.168.6.218's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'mca@192.168.6.218'"
and check to make sure that only the key(s) you wanted were added.

mca@U47:~$ ssh mca@192.168.6.217
The authenticity of host '192.168.6.217' can't be established.
ECDSA key fingerprint is SHA256:/s+Vj0kVDVqch8uzpLfkiLR/NpUsCan7o4d4QcweLU0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.6.217' (ECDSA) to the list of known hosts.
mca@192.168.6.217's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-33-generic x86_64)

```

The screenshot shows a terminal window with the following session:

```
Activities Terminal Mon 15:46 mca@T70: ~
File Edit View Search Terminal Help

/usr/bin/ssh-copy-id: ERROR: ssh: Could not resolve hostname .ssh/id_rsa.pub: Name or service not known
mca@U47:~$ ssh-copy-id -i .ssh/id_rsa.pub user@19^C
/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: ERROR: ssh: Could not resolve hostname 19^C: Name or service not known
mca@U47:~$ ^C
ssh-copy-id -i .ssh/id_rsa.pub user@19^C
/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: ERROR: ssh: Could not resolve hostname 19^C: Name or service not known
mca@U47:~$ ssh mca@192.168.6.230
The authenticity of host '192.168.6.230 (192.168.6.230)' can't be established.
ECDSA key fingerprint is SHA256:/0hgsfZP5HdX0VVPMHksA4lF8z+B+ea4IQCb9CNA8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.6.230' (ECDSA) to the list of known hosts.
mca@192.168.6.230'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

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

Last login: Fri Feb 25 10:30:25 2022 from 192.168.6.217
mca@T70:~$ 
```

## **NETWORKING & SYSTEM ADMINISTRATION LAB**

### **Experiment No.:**

**Name: Devis Varghese**

**Roll No:47**

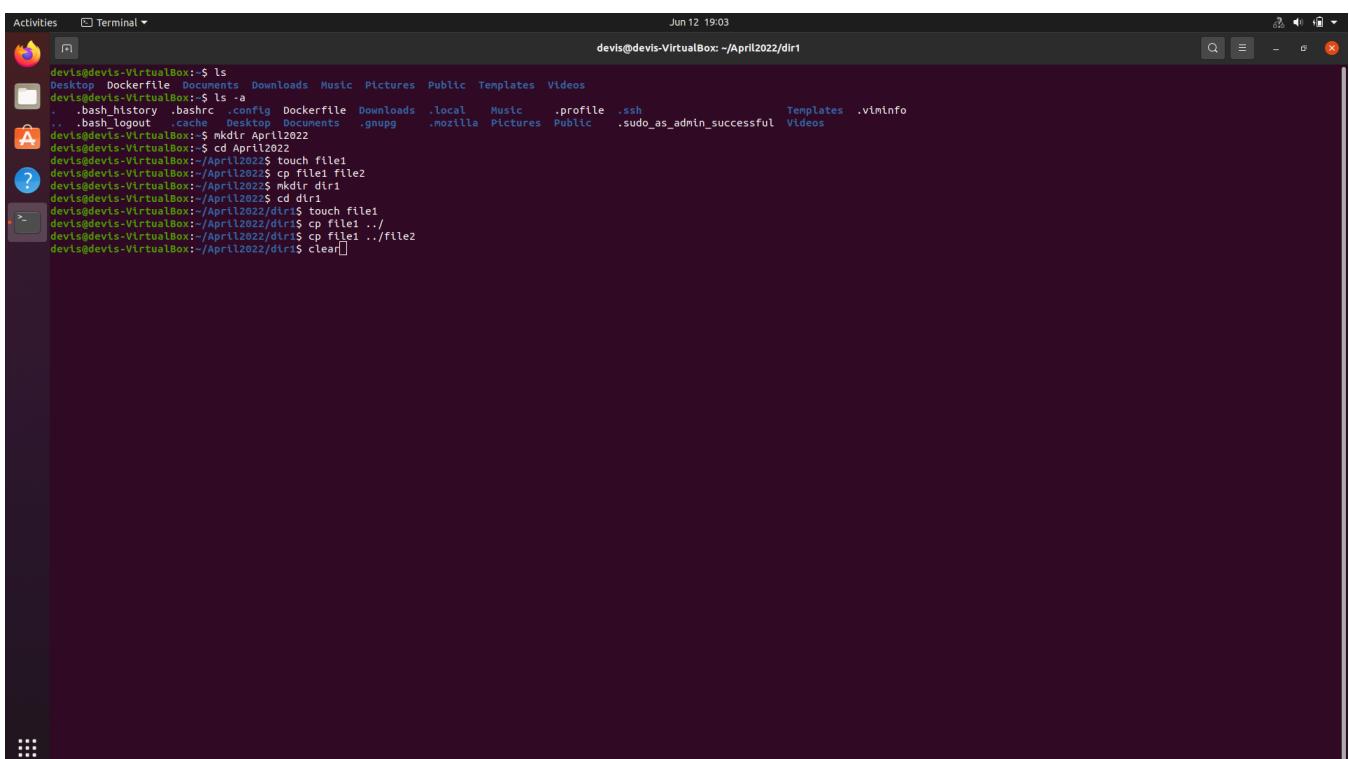
**Batch: MCA A**

**Date: 8/04/22**

### **Aim**

#### **Experiment 1**

1. Login to your home directory dueg
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



```
Activities Terminal Jun 12 19:03
devis@devis-VirtualBox:~$ ls
Desktop Dockerfile Documents Downloads Music Pictures Public Templates Videos
devis@devis-VirtualBox:~$ ls -a
. .bash_history .bashrc .config Dockerfile Downloads .local Music .profile .ssh
.. .bash_logout .cache Desktop Documents .gnupg .mozilla Pictures Public .sudo_as_admin_successful Templates .vmlininfo
devis@devis-VirtualBox:~$ mkdir April2022
devis@devis-VirtualBox:~/April2022$ touch file1
devis@devis-VirtualBox:~/April2022$ cp file1 file2
devis@devis-VirtualBox:~/April2022$ mkdir dir1
devis@devis-VirtualBox:~/April2022$ cd dir1
devis@devis-VirtualBox:~/April2022$ touch file1
devis@devis-VirtualBox:~/April2022$ cp file1 ..
devis@devis-VirtualBox:~/April2022$ cp file1 ./file2
devis@devis-VirtualBox:~/April2022$ 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

```

Activities Terminal Jun 12 19:05
devis@devis-VirtualBox: ~/April2022/dir1
May 18 21:36:02 devis-VirtualBox systemd-modules-load[233]: Inserted module 'lp'
May 18 21:36:02 devis-VirtualBox systemd-modules-load[233]: Inserted module 'ppdev'
May 18 21:36:02 devis-VirtualBox systemd-modules-load[233]: Inserted module 'parport_pc'
May 18 21:36:02 devis-VirtualBox systemd-modules-load[233]: Inserted module 'msr'
May 18 21:36:02 devis-VirtualBox systemd-modules-load[233]: Inserted module 'vgaarb-1'
May 18 21:36:02 devis-VirtualBox systemd-logind[242]: Creating group systemd-coredump with uid 999 and gid 999.
May 18 21:36:02 devis-VirtualBox systemd[1]: Creating user Core Dumper with uid 999 and gid 999.
May 18 21:36:02 devis-VirtualBox systemd[1]: Inserted module 'vmwgfx'.
May 18 21:36:02 devis-VirtualBox systemd[1]: Finished Load Kernel Modules.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting FUSE Control File System...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Kernel Configuration File System...
May 18 21:36:02 devis-VirtualBox systemd[1]: Starting Apply Kernel Variables...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted FUSE Control File System.
May 18 21:36:02 devis-VirtualBox systemd[1]: Condition check resulted in VMware vmblock fuse mount being skipped.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted Kernel Configuration File System.
May 18 21:36:02 devis-VirtualBox systemd[1]: Starting Flush Journal to Persistent Storage.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted Kernel Configuration File System.
May 18 21:36:02 devis-VirtualBox systemd-sysctl[260]: Not setting net/pv4/conf/all/promote_secondaries (explicit setting exists).
May 18 21:36:02 devis-VirtualBox systemd-sysctl[260]: Not setting net/pv4/conf/default/promote_secondaries (explicit setting exists).
May 18 21:36:02 devis-VirtualBox systemd[1]: Finished udev Coldplug all Devices.
May 18 21:36:02 devis-VirtualBox systemd[1]: Finished Apply Kernel Variables.
May 18 21:36:02 devis-VirtualBox systemd[1]: Started udev Kernel Device Manager.
May 18 21:36:02 devis-VirtualBox systemd[1]: Finished Set the console keyboard layout.
May 18 21:36:02 devis-VirtualBox systemd[1]: Reached target Local File Systems (Pre).
May 18 21:36:02 devis-VirtualBox systemd[1]: Reached target Encrypted Volumes.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Mount unit for core20, revision 1328...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Mount unit for gnome-3-38-2004, revision 99...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Mount unit for gtk-common-themes, revision 1519...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Mount unit for snap-store, revision 558...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Mount unit for snapd, revision 14978...
May 18 21:36:02 devis-VirtualBox systemd[1]: Starting Show Plymouth Boot Screen...
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted Mount unit for bare, revision 5.
May 18 21:36:02 devis-VirtualBox systemd[1]: Received SIGHRTMIN+20 from PID 285 (plymouthd).
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounting Mount unit for snapd, revision 1328.
May 18 21:36:02 devis-VirtualBox systemd[1]: Started Show Plymouth Boot Screen.
May 18 21:36:02 devis-VirtualBox systemd[1]: Condition check resulted in Dispatch Password Requests to Console Directory Watch being skipped.
May 18 21:36:02 devis-VirtualBox systemd[1]: Started Forward Password Requests to Plymouth Directory Watch.
May 18 21:36:02 devis-VirtualBox systemd[1]: Reached target Local Encrypted Volumes.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted Mount unit for gtk-common-themes, revision 1519.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted Mount unit for snap-store, revision 558.
May 18 21:36:02 devis-VirtualBox systemd[1]: Mounted Mount unit for gnome-3-38-2004, revision 99.
May 18 21:36:02 devis-VirtualBox systemd-udevd[271]: Using default interface naming scheme 'v245'.
May 18 21:36:02 devis-VirtualBox systemd-udevd[271]: ethtool: autonegotiation is set or enabled, the speed and duplex are not writable.
May 18 21:36:02 devis-VirtualBox mtp-probe: checking bus 1 device 2 /sys/devices/pci0000:00/0000:00:00:00/usb1/1-1
May 18 21:36:02 devis-VirtualBox mtp-probe: bus: 1, device: 2 was not an MTP device
May 18 21:36:02 devis-VirtualBox systemd[1]: Listening on Load/Save RF Kill Switch Status /dev/rfkill Watch.
May 18 21:36:02 devis-VirtualBox systemd-udevd[288]: ethtool: autonegotiation is unset or enabled, the speed and duplex are not writable.
May 18 21:36:02 devis-VirtualBox systemd[1]: Found device VBOX HARDDISK 1.
May 18 21:36:02 devis-VirtualBox systemd[1]: Starting File System Check on /dev/disk/by-uuid/47CB-DS1E...
May 18 21:36:02 devis-VirtualBox systemd[1]: Started File System Check Daemon to report status.
May 18 21:36:02 devis-VirtualBox systemd-fsck[450]: fsck.fat 4.1 (2017-01-24)
May 18 21:36:02 devis-VirtualBox systemd-fsck[450]: /dev/sda1: 0 files, 1/130812 clusters
May 18 21:36:02 devis-VirtualBox systemd[1]: Finished File System Check on /dev/disk/by-uuid/47CB-DS1E.
[logfile]

```

```

Activities Terminal Jun 12 19:05
devis@devis-VirtualBox: ~/April2022/dir1$ pwd
/home/devis/April2022/dir1
devis@devis-VirtualBox: ~/April2022/dir1$ more /var/log/syslog >logfile
devis@devis-VirtualBox: ~/April2022/dir1$ less logfile
devis@devis-VirtualBox: ~/April2022/dir1$ ls

```

## 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.

The image shows a Linux desktop environment with a dark theme. At the top, there is a horizontal menu bar with icons for Activities, Terminal, and other system functions. Below the menu bar, there are two open windows:

- Terminal Window:** The title bar says "Activities Terminal". It shows a command-line session where the user is navigating through directories and creating files. The session includes the following commands:

```
devis@devis-VirtualBox:~/April2022$ cd ..
devis@devis-VirtualBox:~/April2022$ touch myfile.txt
devis@devis-VirtualBox:~/April2022$ wc myfile.txt
 2 28 145 myfile.txt
A devis@devis-VirtualBox:~/April2022$ grep tell myfile.txt
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 wont have to.
devis@devis-VirtualBox:~/April2022$ cp myfile.txt myfile1.txt
devis@devis-VirtualBox:~/April2022$ cp myfile.txt myfile2.txt
devis@devis-VirtualBox:~/April2022$ ls *.txt
myfile1.txt  myfile2.txt  myfile.txt
devis@devis-VirtualBox:~/April2022$
```
- Text Editor Window:** The title bar says "Activities Text Editor". It shows a file named "myfile.txt" containing the text:

```
1 Neo:what are you trying to tell me? that i can dodge bullets?
2 Morpheus: No, Neo. I'm trying to tell you that when you're ready you wont have to.
```

At the bottom of the screen, there is a dock with several icons, including a text editor icon which is currently selected. The status bar at the bottom right shows "Plain Text", "Tab Width: 8", "Ln 2, Col 83", and "INS".

## 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)

```
Activities Terminal Jun 12 19:32
devis@devis-VirtualBox: ~

nobody:x:65534:65534: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
messages:x:103:103:/none/none:/usr/sbin/nologin
systemd-timesync:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
ntp:x:105:65534:/none/none:/usr/sbin/nologin
tss:x:106:111:TPM software stack,:/var/lib/tpm:/bin/false
uuidd:x:107:114:/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:115:/none/none:/usr/sbin/nologin
avahi-autolpd:x:109:116:Avahi autolp daemon,,,:/var/lib/avahi-autolpd:/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-pk-helper:x:120:120:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
speech-dispatcher:x:121:121:speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
avahi:x:115:121:Avahi mDNS daemon,:/var/run/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:/none/none:/bin/false
colord:x:121:120:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:122:127:/var/lib/geoclue:/usr/sbin/nologin
pulseaudio:x:123:128:User,,,:/var/lib/pulseaudio:/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
devs:x:1000:1000:devs,,,:/home/devs:/bin/bash
systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/sbin/nologin
roger:x:1001:1001:/home/roger:/bin/sh
user1:x:1002:1002:/home/user1:/bin/sh
user2:x:1003:1003:/home/user2:/bin/sh
user3:x:1004:1004:/home/user3:/bin/sh
devs@devs-VirtualBox:~$ groupadd managers
devs@devs-VirtualBox:~$ sudo groupadd staff
groupadd: group 'staff' already exists
devs@devs-VirtualBox:~$ sudo usermod -a -G managers roger
devs@devs-VirtualBox:~$ grep staff /etc/group
staff:x:50:
devs@devs-VirtualBox:~$ grep managers /etc/group
managers:x:1005:roger
devs@devs-VirtualBox:~$ sudo usermod -a -G staff user1
devs@devs-VirtualBox:~$ sudo usermod -a -G staff user2
devs@devs-VirtualBox:~$ sudo usermod -a -G staff user3
devs@devs-VirtualBox:~$ grep staff /etc/group
staff:x:50:user1,user2,user3
devs@devs-VirtualBox:~$ grep managers /etc/group
managers:x:1005:roger
devs@devs-VirtualBox:~$ grep committee /etc/group
devs@devs-VirtualBox:~$ sudo groupadd committee
devs@devs-VirtualBox:~$ sudo usermod -a -G committee roger
devs@devs-VirtualBox:~$ grep committee /etc/group
committee:x:1006:roger
devs@devs-VirtualBox:~$
```

## 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.

### **Procedure**

### **Output**

**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment :9****Name: DEVIS VARGHESE****Roll No:47****Batch: MCA -A****Date: 09/05/2022**

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.

**Program:**

```
#!/bin/bash
printf '\noriginal content:\n';
cat d1.sh;
printf '\n';
printf 'after converting to lower case:\n';
cat d1.sh | tr '[upper:]' '[lower:]';
printf '\nline word and character count\n';
cat d1.sh | wc;
```

The screenshot shows a terminal window titled "d1.sh" with the following content:

```
1 THIS IS LINE 1
2 THIS IS LINE 2
3 THIS IS LINE 3
```

The terminal window is part of a desktop environment with a dark theme. The title bar includes the file name "d1.sh" and the path "~/Desktop/devis47". The bottom status bar shows "sh" and "Tab Width: 8".

The screenshot shows a Linux desktop environment with a dark theme. On the left, there's a vertical dock with icons for a file manager, terminal, and other applications. The main area has two terminal windows and one text editor window.

**Terminal 1:**

```
Activities Terminal Jun 11 12:54
devis@devis-VirtualBox:~/Desktop/devis47$ gedit d1.sh
devis@devis-VirtualBox:~/Desktop/devis47$ gedit upper.sh
devis@devis-VirtualBox:~/Desktop/devis47$ bash upper.sh
original content:
THIS IS LINE 1
THIS IS LINE 2
THIS IS LINE 3

after converting to lower case:
this is line 1
thls is line 2
this is line 3

line word and character count
      3      12      45
devis@devis-VirtualBox:~/Desktop/devis47$ gedit upper.sh
devis@devis-VirtualBox:~/Desktop/devis47$ gedit d1.sh
devis@devis-VirtualBox:~/Desktop/devis47$
```

**Terminal 2:**

```
Activities Terminal Jun 11 12:54
devis@devis-VirtualBox: ~/Desktop/devis47
```

**Text Editor:**

```
Activities TextEditor Jun 11 12:54
upper.sh
~/Desktop/devis47
Save
1 #!/bin/bash
2 printf '\noriginal content:\n';
3 cat d1.sh;
4 printf '\n';
5 printf 'after converting to lower case:\n';
6 cat d1.sh | tr [:upper:] [:lower:];
7 printf '\nline word and character count\n';
8 cat d1.sh | wc;
```

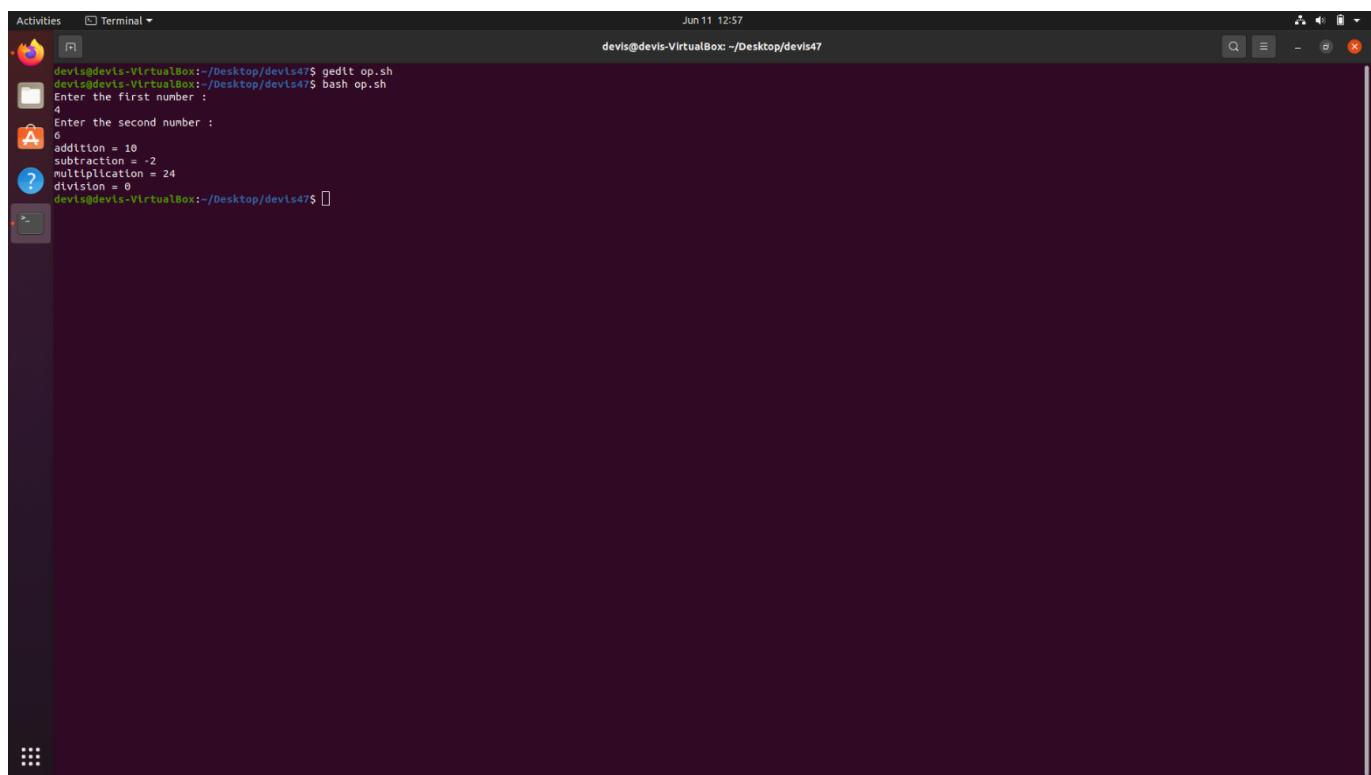
2. Write script to perform following basic math operation as;

- addition
- subtraction
- multiplication
- division

Note: i) take input from keyboard  
ii)take input as command line parameter

## Program

```
#!/bin/bash
echo "Enter the first number : "
read first_num
echo "Enter the second number : "
read second_num
echo "addition = $((first_num + second_num))"
echo "subtraction = $((first_num - second_num))"
echo "multiplication = $((first_num * second_num))"
echo "division = $((first_num / second_num))"
```



```
Activities Terminal Jun 11 12:57
dev1@dev1-VirtualBox:~/Desktop/dev1$ gedit op.sh
dev1@dev1-VirtualBox:~/Desktop/dev1$ bash op.sh
Enter the first number :
4
Enter the second number :
6
addition = 10
subtraction = -2
multiplication = 24
division = 0
dev1@dev1-VirtualBox:~/Desktop/dev1$
```

A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window titled "Text Editor". The terminal window displays a bash script named "op.sh" located at "/Desktop/devis47". The script performs basic arithmetic operations on two numbers entered by the user. The terminal interface includes a top bar with "Activities", "Open", "Save", and system status indicators. A vertical dock on the left contains icons for various applications like a browser, file manager, and terminal. The bottom of the screen shows a dock with icons for "sh", "Tab Width: 8", "Ln 9, Col 46", and "INS".

```
1#!/bin/bash
2echo "Enter the first number : "
3read first_num
4echo "Enter the second number : "
5read second_num
6echo "addition = $((first_num + second_num))"
7echo "subtraction = $((first_num - second_num))"
8echo "multiplication = $((first_num * second_num))"
9echo "division = $((first_num / second_num))"
```

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

## Program

```
#!/bin/bash
echo "Logged in users:"
who
echo "Loggin Names:"
users
echo "Current Shell:"
echo $SHELL
echo "Home Directory:"
echo $HOME
echo "Operating System type:" uname -o
#echo $OSTYPE
echo "Path Settings:"
echo $PATH
echo "Current working directory:"
pwd
echo "No.of logged in users:"
users | wc -w;
```

The screenshot shows a Linux desktop environment with a dark theme. At the top, there is a header bar with icons for Activities, Terminal, and other system controls. Below the header is a terminal window titled 'Terminal' with the command 'gedit user.sh' running. The terminal output shows a script named 'user.sh' being run, displaying system information like users logged in, current shell, home directory, operating system type, path settings, and the number of users. Below the terminal is a text editor window titled 'Text Editor' with the file 'user.sh' open. The code in 'user.sh' is a shell script that prints various system details using echo commands. The desktop background is a solid dark color.

```
devis@devis-VirtualBox:~/Desktop/devis4$ gedit user.sh
devis@devis-VirtualBox:~/Desktop/devis4$ bash user.sh
Logged in users:
devis :0          2022-06-11 12:17 (:0)
Login Names:
devis
Current Shell:
/bin/bash
Home Directory:
/home/devis
Operating System type: uname -o
Path Settings:
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin
Current working directory:
/home/devis/Desktop/devis47
No.of logged in users:
1
devis@devis-VirtualBox:~/Desktop/devis4$
```

```
#!/bin/bash
# echo "Logged in users:"
# who
# echo "Login Names:"
# users
# echo "Current Shell:"
# echo $SHELL
# echo "Home Directory:"
# echo $HOME
# echo "Operating System type:" uname -o
# echo $OSTYPE
# echo "Path Settings:"
# echo $PATH
# echo "Current working directory:"
# pwd
# echo "No.of logged in users:"
# users | wc -w;
```

4. Write a shell script to print the pattern

```
1  
2 2  
3 3 3  
4 4 4 4
```

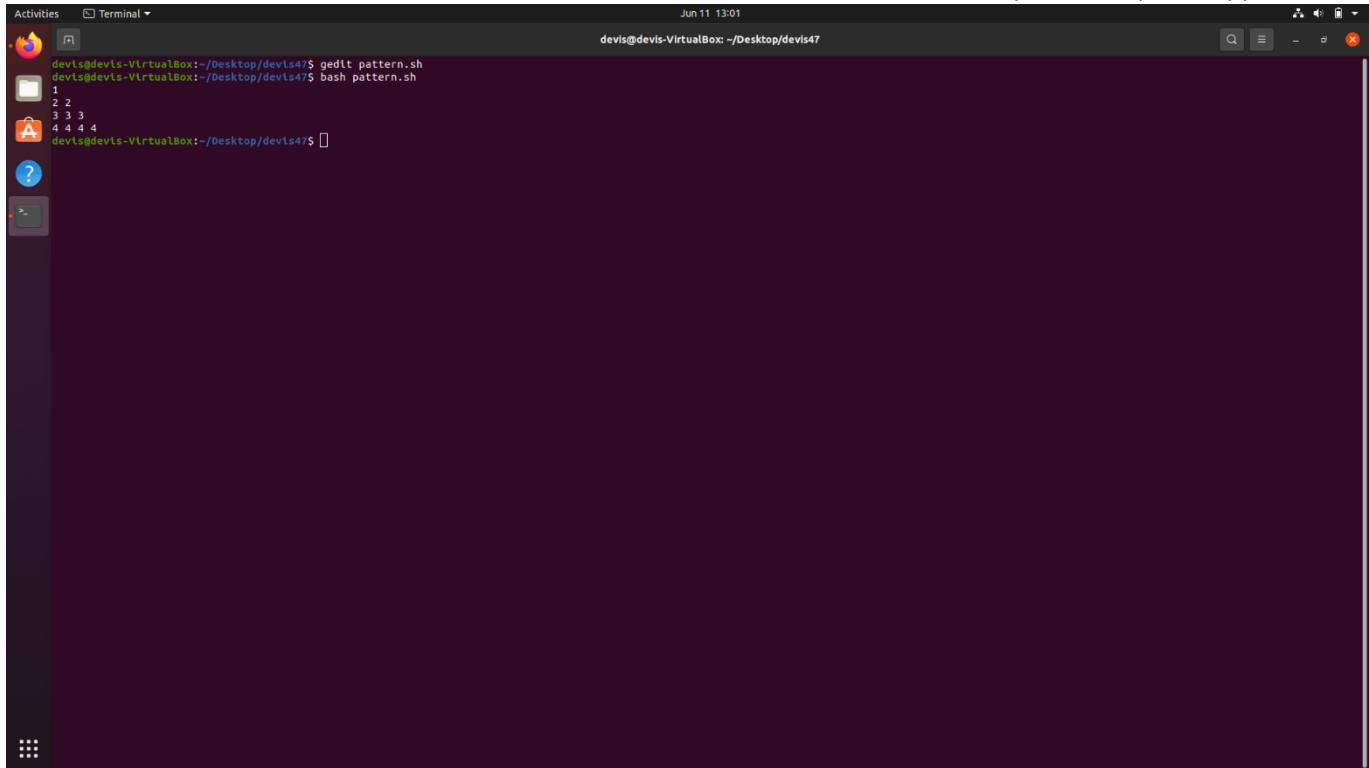
## Program

```
#!/bin/sh  
rows=4  
for((i=1; i<=rows; i++))  
do  
    for((j=1; j<=i; j++))  
    do  
        echo -n "$i "  
    done  
    echo  
done
```

A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window titled "pattern.sh". The window displays a shell script with the following code:

```
1 #!/bin/sh  
2 rows=4  
3 for((i=1; i<=rows; i++))  
4 do  
5     for((j=1; j<=i; j++))  
6     do  
7         echo -n "$i "  
8     done  
9     echo  
10 done
```

The terminal window has a dark theme and includes standard Linux desktop icons in the dock on the left. The status bar at the bottom shows "sh" as the current terminal type, "Tab Width: 8", "Ln 10, Col 5", and "INS".



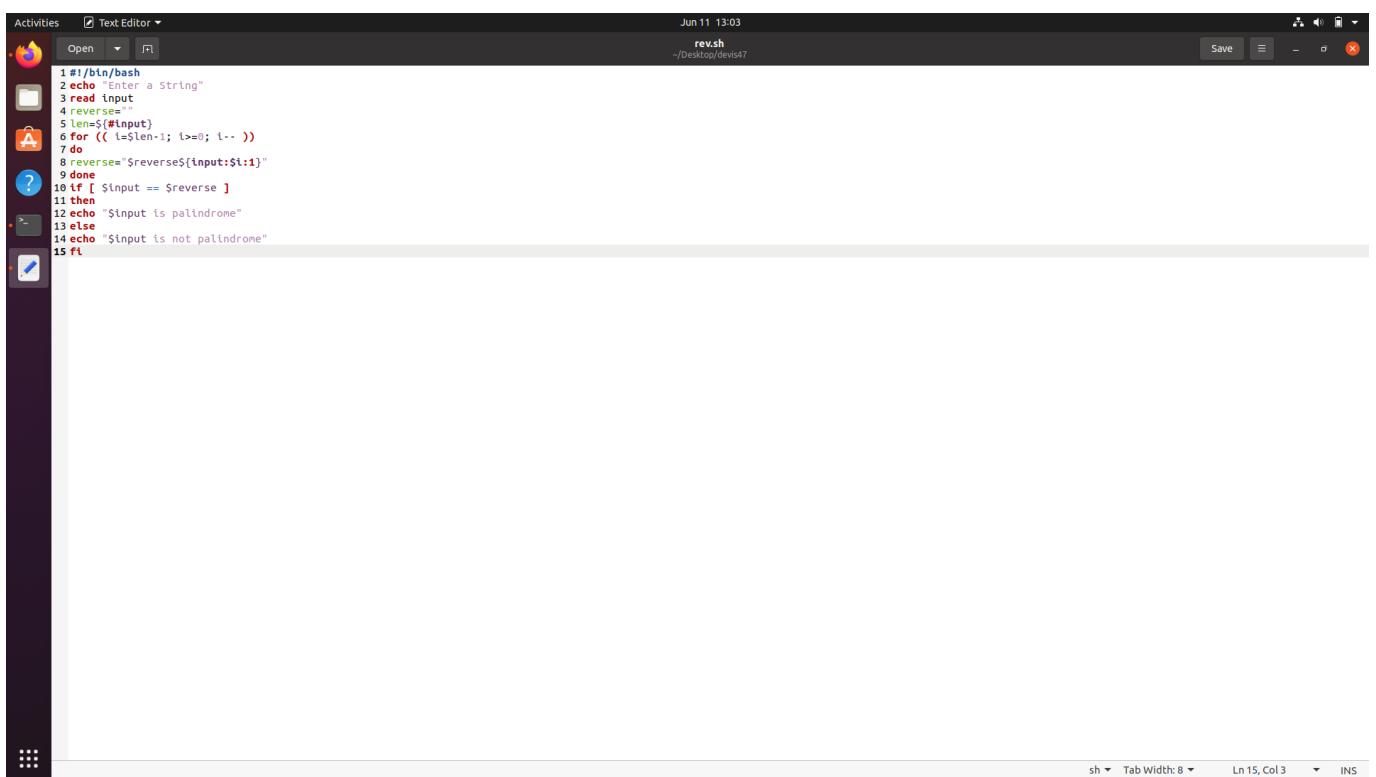
A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window. The terminal window has a dark background and contains the following text:

```
Activities Terminal Jun 11 13:01
devis@devis-VirtualBox:~/Desktop/devis47$ gedit pattern.sh
devis@devis-VirtualBox:~/Desktop/devis47$ bash pattern.sh
1
2 2
3 3 3
4 4 4 4
devis@devis-VirtualBox:~/Desktop/devis47$
```

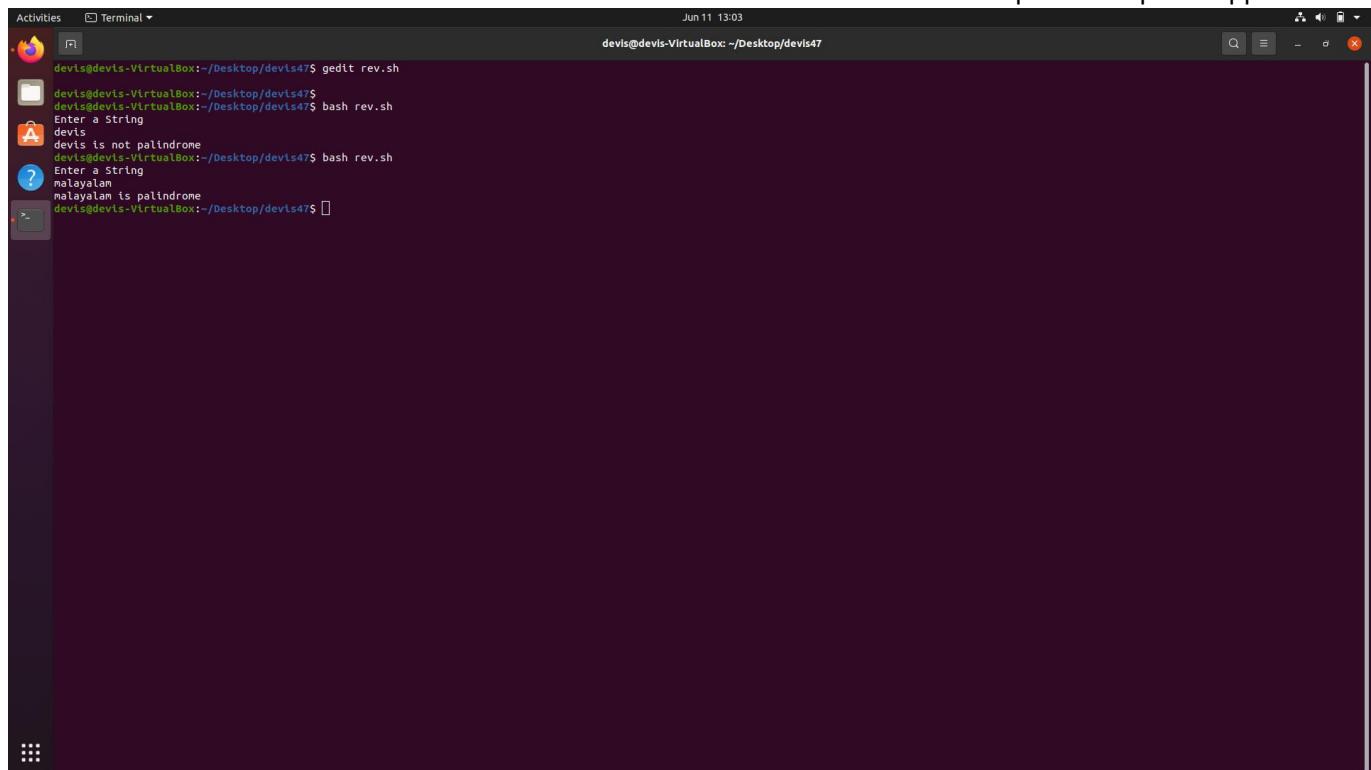
5. Write a script to check whether the given string is palindrome or not.

## Program

```
#!/bin/bash
echo "Enter a String"
read input
reverse=""
len=${#input}
for (( i=$len-1; i>=0; i-- ))
do
reverse="$reverse${input:$i:1}"
done
if [ $input == $reverse ]
then
echo "$input is palindrome"
else
echo "$input is not palindrome"
fi
```



```
Activities Text Editor Jun 11 13:03
Open rev.sh ~/Desktop/devis47 Save
1 #!/bin/bash
2 echo "Enter a String"
3 read input
4 reverse=""
5 len=${#input}
6 for (( i=$len-1; i>=0; i-- ))
7 do
8 reverse="$reverse${input:$i:1}"
9 done
10 if [ $input == $reverse ]
11 then
12 echo "$input is palindrome"
13 else
14 echo "$input is not palindrome"
15 fi
```



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

```
devis@devis-VirtualBox:~/Desktop/devis47$ gedit rev.sh
devis@devis-VirtualBox:~/Desktop/devis47$ bash rev.sh
Enter a String
devis
devis is not palindrome
devis@devis-VirtualBox:~/Desktop/devis47$ bash rev.sh
Enter a String
natiyalan
natiyalan is palindrome
devis@devis-VirtualBox:~/Desktop/devis47$
```

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.

## Program

```
#!/bin/bash
if [ $# -eq 0 ]
then
echo "no arguments"
else
tr " " "
“< $1 > temp
shift for i in $*
do
tr " " "
“< $i > temp1
y=wc -l < temp
j=1
while [ $j -le $y ]
do
x=head -n $j temp | tail -1
c=grep -c "$x" temp1
echo $x $c
j=expr $j 1
done
done
fi
```

The screenshot shows a Linux desktop environment with a dark theme. At the top, there is a header bar with the title "Activities Text Editor". Below the header, a terminal window is open with the command "gedit a.sh" and its output:

```
1#!/bin/bash
2if [ $# -eq 0 ]
3then
4    echo "no arguments"
5else
6    tr " " "
7    S1 > temp
8    shift for l in $*
9    do
10       tr " " "
11       * $l > temp1
12       y=wc -l < temp1
13       j=expr $j 1
14    done
15
16 x=head -n $j temp | tail -1
17 <=grep -c "$x" temp1
18 echo $x $c
19 j=expr $j 1
20 done
21
22 fi
```

Below the terminal, another terminal window is open with the command "bash a.sh" and its output:

```
devis@devis-VirtualBox:~/Desktop/devis47$ gedit a.sh
devis@devis-VirtualBox:~/Desktop/devis47$ bash a.sh
no arguments
devis@devis-VirtualBox:~/Desktop/devis47$
```

7. Write a shell script to find factorial of a given integer.

**Program**

```
#!/bin/bash
factorial()
{
    product=$1

    if((product <= 2)); then
        echo $product
    else
        f=$((product -1))
        f=$(factorial $f)
        f=$((f*product))
        echo $f
    fi
}
echo "Enter the number:"
read num
if((num == 0)); then
    echo 1
else
    factorial $num
fi
```

The screenshot shows a Linux desktop environment with a dark theme. In the top-left corner, there is a dock with icons for a browser, file manager, terminal, and other applications. Two windows are open:

- Text Editor:** This window is titled "Text Editor" and has an "Open" dropdown menu. It displays a bash script named "f1.sh" located at "/Desktop/devis47". The script content is as follows:

```
1 #!/bin/bash
2 factorial()
3 {
4     product=$1
5     if ((product <= 2)); then
6         echo $product
7     else
8         f=$((product - 1))
9         f=$(factorial $f)
10        f=$((f * product))
11        echo $f
12    fi
13 }
14 echo "Enter the number:"
15 read num
16 if ((num == 0)); then
17     echo 1
18 else
19     factorial $num
20 fi
```

- Terminal:** This window is titled "Terminal" and has a "Activities" tab selected. It shows a command-line session on a "VirtualBox" machine. The user is in their home directory (~). The session starts with:

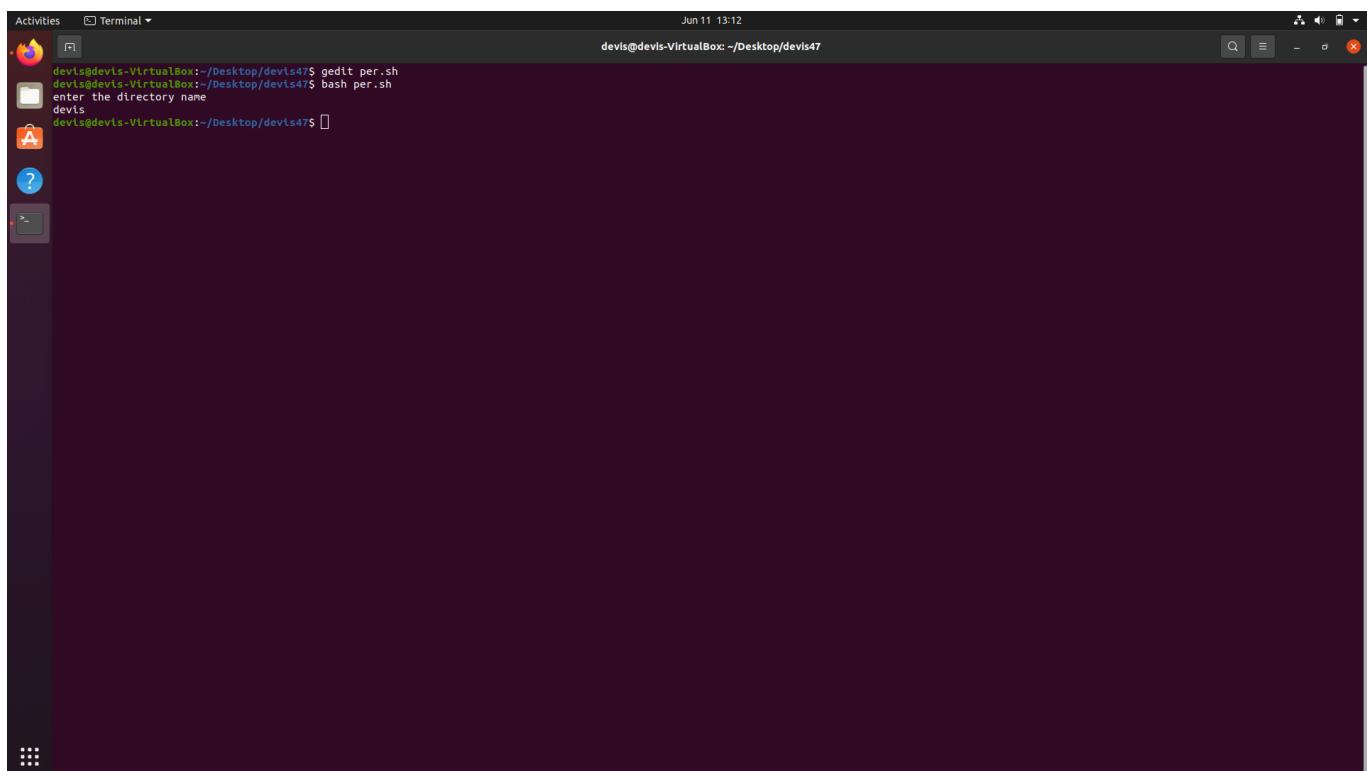
```
devils@devils-VirtualBox:~/Desktop/devils47$ gedit f1.sh
devils@devils-VirtualBox:~/Desktop/devils47$ bash f1.sh
```

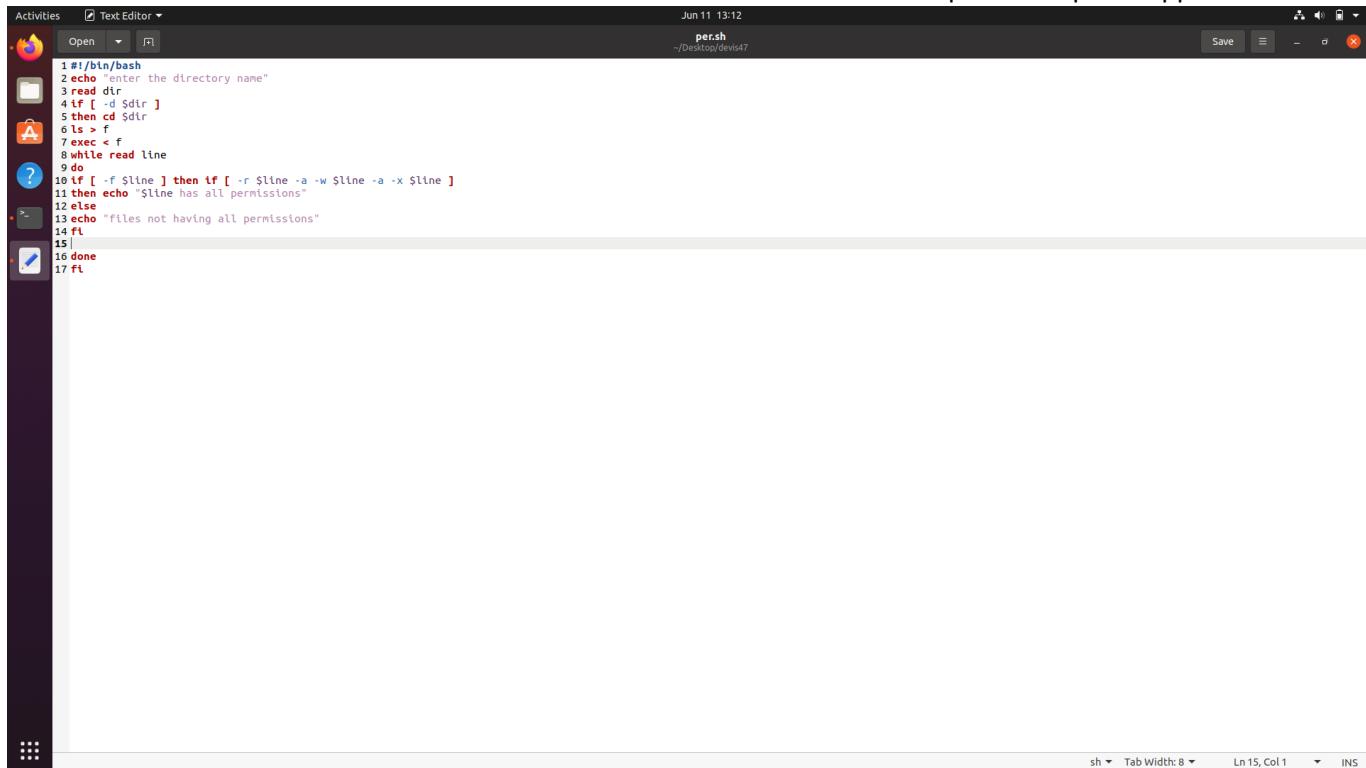
Then the user enters "Enter the number:" followed by "4", and the terminal returns "24".

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.

## Program

```
#!/bin/bash
echo "enter the directory name"
read dir
if [ -d $dir ]
then cd $dir
ls > f
exec < f
while read line
do
if [ -f $line ] then if [ -r $line -a -w $line -a -x $line ]
then echo "$line has all permissions"
else
echo "files not having all permissions"
fi
fi
done
fi
```





A screenshot of a Linux desktop environment. In the top right corner, there is a system tray icon. On the left, a vertical dock contains icons for a file manager, terminal, and other applications. A terminal window titled "Text Editor" is open, showing a bash script named "persh". The script reads a directory name, lists its contents, and then checks each file's permissions. It prints "files not having all permissions" if any are found. The terminal interface includes tabs at the bottom labeled "sh", "Tab Width: 8", "Ln 15, Col 1", and "INS".

```
1 #!/bin/bash
2 echo "enter the directory name"
3 read dir
4 if [ -d $dir ]
5 then cd $dir
6 ls > f
7 exec < f
8 while read line
9 do
10 if [ -f $line ] then if [ -r $line -a -w $line -a -x $line ]
11 then echo "$line has all permissions"
12 else
13 echo "files not having all permissions"
14 fi
15
16 done
17 fi
```



**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.:10****Name: DevisVarghese****Roll No:47****Batch: MCA A****Date: 09/05/22****Aim**

To familiarise Systemd and System5 init scripts.

**Procedure**

Step 1: Create a shell script

First of all, create a sample shell script to run always until the system is running. We will use bash while loop to run infinitely.

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

#!/bin/bash

while true

do

    sleep 10

done

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

Instead of the above script you can use shell script to run to run as systemd service.

Step 2: Create a SystemD file

Update script file name and location. We may also change description.

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

[Unit]

Decsription=My Shell Script

[Service]

ExecStart=/usr/bin/script.sh
```

[Install]

WantedBy=multi-user.target

Step 3: Enable new service

Reload systemctl daemon to read new file.

```
$ sudo systemctl daemon-reload
```

Enable and start the service.

```
$ sudo systemctl enable shellscript.service
```

```
$ sudo systemctl start shellscript.service
```

To verify the script is up and running as a systemd service.

```
$ sudo systemctl status shellscript.service
```

To stop, restart and disable.

```
$ sudo systemctl stop shellscript.service
```

```
$ sudo systemctl restart shellscript.service
```

```
$ sudo systemctl disable shellscript.service
```

## **Output**

```

devs@devs-VirtualBox:~$ sudo nano /usr/bin/script.sh
[sudo] password for devs:
devs@devs-VirtualBox:~$ sudo chmod +x /usr/bin/script.sh
devs@devs-VirtualBox:~$ sudo nano /lib/systemd/system/shellscript.service
devs@devs-VirtualBox:~$ sudo systemctl daemon-reload
devs@devs-VirtualBox:~$ sudo systemctl enable shellscript.service
The unit file does no installation config (WantedBy=, RequiredBy=, Also=,
Alias= settings in the [Install] section, and DefaultInstance= for template
units). This means they are not meant to be enabled using systemctl.

Possible reasons for having this kind of units are:
• A unit may be statically enabled by being symlinked from another unit's
.wants/ or .requires/ directory.
• A unit's purpose may be to act as a helper for some other unit which has
a requirement dependency on it.
• A unit may be needed when needed via activation (socket, path, timer,
D-Bus, udev, scripted systemctl call, ...).
• In case of template units, the unit is meant to be enabled with some
instance name specified.
devs@devs-VirtualBox:~$ sudo nano /lib/systemd/system/shellscript.service
devs@devs-VirtualBox:~$ sudo nano /lib/systemd/system/shellscript.service
devs@devs-VirtualBox:~$ sudo systemctl enable shellscript.service
Created symlink /etc/systemd/system/multi-user.target.wants/shellscript.service → /lib/systemd/system/shellscript.service.
devs@devs-VirtualBox:~$ sudo systemctl start shellscript.service
devs@devs-VirtualBox:~$ sudo systemctl status shellscript.service
● shellscript.service - My Shell Script
   Loaded: loaded (/lib/systemd/system/shellscript.service; enabled; vendor preset: enabled)
     Active: active (running) since Sun 2022-06-12 20:23:10 IST; 19s ago
       Main PID: 2253 (script.sh)
          Tasks: 2 (limit: 5584)
         Memory: 552.0K
            CGroup: /system.slice/shellscript.service
                    └─2253 /bin/bash /usr/bin/script.sh
                      ├─2253 sleep 10

Jun 12 20:23:10 devs-VirtualBox systemd[1]: Started My Shell Script.
Jun 12 20:23:10 devs-VirtualBox script.sh[2253]: hello world
Jun 12 20:23:20 devs-VirtualBox script.sh[2253]: hello world
devs@devs-VirtualBox:~$ sudo systemctl stop shellscript.service
devs@devs-VirtualBox:~$ sudo systemctl status shellscript.service
● shellscript.service - My Shell Script
   Loaded: loaded (/lib/systemd/system/shellscript.service; enabled; vendor preset: enabled)
     Active: active (dead) since Sun 2022-06-12 20:23:40 IST; 3s ago
       Process: 2253 ExecStart=/usr/bin/script.sh (code=killed, signal=TERM)
      Main PID: 2253 (code=killed, signal=TERM)

Jun 12 20:23:10 devs-VirtualBox systemd[1]: Started My Shell Script.
Jun 12 20:23:10 devs-VirtualBox script.sh[2253]: hello world
Jun 12 20:23:20 devs-VirtualBox script.sh[2253]: hello world
Jun 12 20:23:30 devs-VirtualBox script.sh[2253]: hello world
Jun 12 20:23:40 devs-VirtualBox script.sh[2253]: hello world
Jun 12 20:23:40 devs-VirtualBox systemd[1]: Stopped My Shell Script...
Jun 12 20:23:40 devs-VirtualBox systemd[1]: shellscript.service: Succeeded.
Jun 12 20:23:40 devs-VirtualBox systemd[1]: Stopped My Shell Script.
devs@devs-VirtualBox:~$ sudo systemctl restart shellscript.service
devs@devs-VirtualBox:~$ sudo systemctl status shellscript.service

```





**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.:****Aim**

Install LAMP in Ubuntu

**Procedure****Update your system**

```
sudo apt update
```

**Install Apache using apt:**

```
sudo apt install apache2
```

Confirm that Apache is now running with the following command:

```
sudo systemctl status apache2
```

if it is not working

```
sudo systemctl start apache2
```

Once installed, test by accessing your server's IP in your browser:

<http://youripaddress>

( find out your ip address using ifconfig)

**Install mariadb**

(MariaDB is a fork of MySQL from some of the original MySQL team and is a drop-in replacement.)

```
sudo apt install mariadb-server mariadb-client
```

Check mariadb Installation

```
sudo systemctl status mysql
```

( if it is not working sudo systemctl start mysql )

Secure your newly installed MariaDB service:

```
sudo mysql_secure_installation
```

( This will set password for mariadb, and strengthen the security by asking

**Name: Devis Varghese**

**Roll No:47**

**Batch:A**

**Date:23-05-2022**

some questions like disallow root login remotely? Remove test database? Etc)

### **Install PHP and commonly used modules**

```
sudo apt install php libapache2-mod-php php-opcache php-cli php-gd php-curl
```

```
php-mysql
```

Restart apache2

```
sudo systemctl restart apache2
```

Now you can check php installation

```
sudo echo "<?php phpinfo(); ?>" | sudo tee -a /var/www/html/phpinfo.php >  
/dev/null
```

Open a browser

<http://127.0.0.1/phpinfo.php>

### **Install phpmyadmin**

```
sudo apt install phpmyadmin php-mbstring php-zip php-gd php-json php-curl
```

( It ask for webserver select apache2, select db-configuration and set

password )

Restart apache2

```
sudo systemctl restart apache2
```

Check phpmyadmin

Open a browser

<http://localhost/phpmyadmin>

username : root

password : yourpassword

If any problem for login run the following command

```
sudo mysql
```

```
ALTER USER root@localhost IDENTIFIED BY "yourpassword";
```

## Screenshots

The screenshot shows a terminal window titled "Terminal" with the following content:

```
Activities Terminal Mon 15:58
mca@pu47: /var/www/html

File Edit View Search Terminal Help
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
MariaDB [(none)]> Ctrl-C -- exit
Aborted
mca@pu47:/var/www/html$ sudo -H gedit /etc/apache2/apache2.conf

** (gedit:29851): WARNING **: 15:49:00.000: Set document metadata failed: Setting attribute metadata::gedit-spell-language not supported
** (gedit:29851): WARNING **: 15:49:00.000: Set document metadata failed: Setting attribute metadata::gedit-encoding not supported
** (gedit:29851): WARNING **: 15:49:00.000: Set document metadata failed: Setting attribute metadata::gedit-position not supported
mca@pu47:/var/www/html$ sudo -H gedit /etc/apache2/apache2.conf

** (gedit:29886): WARNING **: 15:51:03.251: Set document metadata failed: Setting attribute metadata::gedit-position not supported
mca@pu47:/var/www/html$ sudo systemctl restart apache2
mca@pu47:/var/www/html$ mysql
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 69
Server version: 10.1.29-MariaDB-0 Ubuntu 18.04

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> ALTER USER root@localhost IDENTIFIED BY " ";
ERROR 1664 (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 'USER root@localhost IDENTIFIED BY " "' at line 1
MariaDB [(none)]> ALTER USER root@localhost IDENTIFIED BY "root";
ERROR 1664 (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 'USER root@localhost IDENTIFIED BY "root"' at line 1
MariaDB [(none)]> ALTER USER root@localhost IDENTIFIED BY "123";
ERROR 1664 (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 'USER root@localhost IDENTIFIED BY "123"' at line 1
MariaDB [(none)]> ALTER USER root@localhost IDENTIFIED BY "embedded";
ERROR 1664 (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 'USER root@localhost IDENTIFIED BY "embedded"' at line 1
MariaDB [(none)]> ALTER USER root@localhost IDENTIFIED BY "123";
```

```

Activities Terminal Mon 15:51
mca@U47: /var/www/html

File Edit View Search Terminal Help
Creating config file /etc/dbconfig-common/phpmyadmin.conf with new version

Creating config file /etc/phpmyadmin/config-db.php with new version
checking privileges on database phpmyadmin for phpmyadmin@localhost: user creation needed.
granting access to database phpmyadmin for phpmyadmin@localhost: success.
verifying access for phpmyadmin@localhost: success.
creating database phpmyadmin: success.
verifying database phpmyadmin exists: success.
populating database via sql... done.
dbconfig-common: flushing administrative password
Processing triggers for libapache2-mod-php7.2 (7.2.3-1ubuntu1) ...
mca@U47:/var/www/html$ sudo systemctl restart apache2
mca@U47:/var/www/html$ sudo systemctl status phpmyadmin
Unit phpmyadmin.service could not be found.

mca@U47:/var/www/html$ sudo mysql
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 60
Server version: 10.1.29-MariaDB-6 Ubuntu 18.04

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

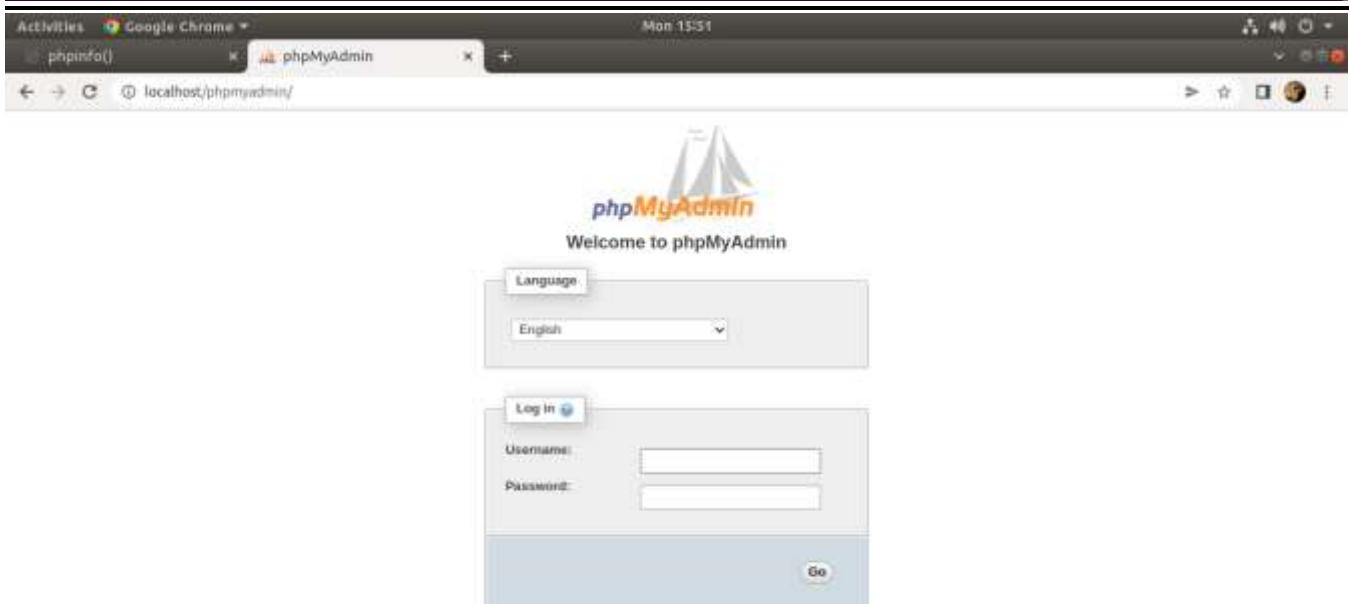
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
MariaDB [(none)]> Ctrl-C -- exit!
Aborted
mca@U47:/var/www/html$ sudo -H gedit /etc/apache2/apache2.conf

** (gedit:29851): WARNING **: 11:49:00.000: set document metadata failed: Setting attribute metadata::gedit-spell-language not supported
** (gedit:29851): WARNING **: 11:49:00.000: Set document metadata failed: Setting attribute metadata::gedit-encoding not supported
** (gedit:29851): WARNING **: 11:49:01.000: Set document metadata failed: Setting attribute metadata::gedit-position not supported
mca@U47:/var/www/html$ sudo -H gedit /etc/apache2/apache2.conf

** (gedit:29886): WARNING **: 11:51:01.000: Set document metadata failed: Setting attribute metadata::gedit-position not supported
mca@U47:/var/www/html$ sudo systemctl restart apache2
mca@U47:/var/www/html$ 

```



localhost/phpmyadmin?url.php?url=https%3A%2F%2Fwww.p...

```

Activities Terminal + Mon 15:30
mca@U47: /var/www/html

File Edit View Search Terminal Help
update-alternatives: using /usr/bin/phar.phar7.2 to provide /usr/bin/phar.phar (phar.phar) in auto mode
Creating config file /etc/php/7.2/cli/php.ini with new version
Setting up libapache2-mod-php7.2 (7.2.3-1ubuntu1) ...

Creating config file /etc/php/7.2/apache2/php.ini with new version
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
apache2_invoke: Enable module php7.2
Setting up php-mysql (1:7.2+0ubuntu1) ...
Setting up libapache2-mod-php (1:7.2+0ubuntu1) ...
Setting up php-cli (1:7.2+0ubuntu1) ...
Setting up php7.2 (7.2.3-1ubuntu1) ...
Setting up php (1:7.2+0ubuntu1) ...
mca@U47:~$ gedit sample.sh
mca@U47:~$ bash sample.sh
sample.sh: line 1: syntax error near unexpected token `(
sample.sh: line 1: "<?php phinfo(); ?>"
mca@U47:~$ sudo echo "<?php phinfo(); ?>" | sudo tee -a /var/www/html/phpinfo.php>
bash: syntax error near unexpected token `(
mca@U47:~$ gedit phpinfo.php
mca@U47:~$ bash phpinfo.php
phpinfo.php: line 1: ?php: No such file or directory
phpinfo.php: line 2: syntax error near unexpected token `(
phpinfo.php: line 2: 'echo phinfo();'
mca@U47:~$ cd var
bash: cd: var: No such file or directory
mca@U47:~$ gedit phpinfo.php
mca@U47:~$ sudo gedit phpinfo.php

** (gedit:2444): WARNING **: 13:23:48,950: Set document metadata failed: Setting attribute metadata::gedit-spell-language not supported
** (gedit:2444): WARNING **: 13:23:48,950: Set document metadata failed: Setting attribute metadata::gedit-encoding not supported
** (gedit:2444): WARNING **: 13:23:50,724: Set document metadata failed: Setting attribute metadata::gedit-spell-language not supported
** (gedit:2444): WARNING **: 13:23:50,724: Set document metadata failed: Setting attribute metadata::gedit-encoding not supported

Activities Terminal + Mon 15:30
mca@U47: /var/www/html

File Edit View Search Terminal Help
Processing triggers for man-db (2.8.3-2) ...
(Reading database ... 182771 files and directories currently installed.)
Purging configuration files for php7.2-common (7.2.7-0ubuntu0.18.04.2) ...
Purging configuration files for php7.2-common (7.2.7-0ubuntu0.18.04.2) ...
dpkg: warning: while removing php7.2-common, directory '/usr/lib/php/20170718' not empty so not removed
dpkg: warning: while removing php7.2-common, directory '/etc/php/7.2/nobs-available' not empty so not removed
Purging configuration files for php7.2-readline (7.2.7-0ubuntu0.18.04.2) ...
Purging configuration files for php7.2-cli (7.2.7-0ubuntu0.18.04.2) ...
dpkg: warning: while removing php7.2-cli, directory '/etc/php/7.2/cli/conf.d' not empty so not removed
Purging configuration files for php-common (1:68ubuntu1) ...
dpkg: warning: while removing php-common, directory '/var/lib/php/modules' not empty so not removed
Purging configuration files for php-peach (1:1.10.5+submodules-notgz-1ubuntu1) ...
dpkg: warning: while removing php-peach, directory '/usr/share/php/registry' not empty so not removed
Purging configuration files for php7.2-json (7.2.7-0ubuntu0.18.04.2) ...
Purging configuration files for php7.2-opcache (7.2.7-0ubuntu0.18.04.2) ...
mca@U47:~$ php -v

Command 'php' not found, but can be installed with:

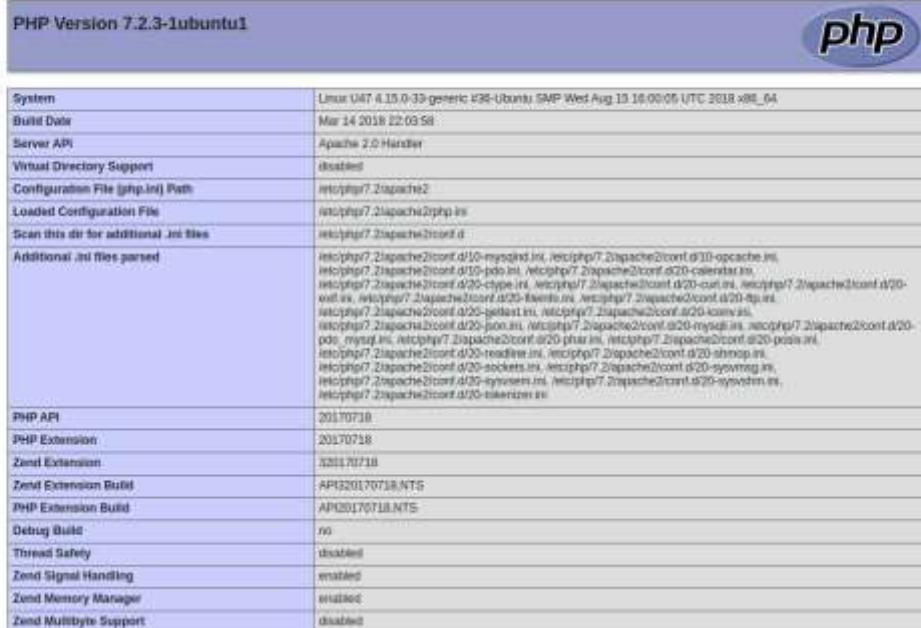
sudo apt install php7.2-cli
sudo apt install hhvm

mca@U47:~$ sudo apt install php libapache2-mod-php php-opcache php-cli php-curl php-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'php7.2-opcache' instead of 'php-opcache'
The following packages were automatically installed and are no longer required:
  bridge-utils cgroups-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
  libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
  libsys-hostname-long-perl libz-dev libzmq3-dev po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libapache2-mod-php7.2 php-common php7.2 php7.2-curl php7.2-curl php7.2-curl php7.2-curl php7.2-curl php7.2-curl php7.2-curl
Suggested packages:
  php-peach
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.2 php php-cgi php-common php-curl php-mysql php7.2 php7.2-cgi php7.2-common php7.2-curl php7.2-curl php7.2-curl

```

Activities Google Chrome - lamp\_installation.pdf x phpinfo() Mon 15:28

localhost/phpinfo.php ↗ +



PHP Version 7.2.3-1ubuntu1	
System	Linux U47 4.15.0-39-generic #38-Ubuntu SMP Wed Aug 19 18:00:05 UTC 2018 x86_64
Built Date	Mar 14 2018 22:03:58
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.2/apache2/php.ini
Loaded Configuration File	/etc/php/7.2/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.2/apache2/conf.d/
Additional .ini files parsed	/etc/php/7.2/apache2/conf.d/00-mysqlnd.ini, /etc/php/7.2/apache2/conf.d/00-opcache.ini, /etc/php/7.2/apache2/conf.d/05-pdo.ini, /etc/php/7.2/apache2/conf.d/20-crypt.ini, /etc/php/7.2/apache2/conf.d/20-curl.ini, /etc/php/7.2/apache2/conf.d/20-dba.ini, /etc/php/7.2/apache2/conf.d/20-fann.ini, /etc/php/7.2/apache2/conf.d/20-ftp.ini, /etc/php/7.2/apache2/conf.d/20-gd.ini, /etc/php/7.2/apache2/conf.d/20-gettext.ini, /etc/php/7.2/apache2/conf.d/20-iconv.ini, /etc/php/7.2/apache2/conf.d/20-mysqli.ini, /etc/php/7.2/apache2/conf.d/20-pdo_mysql.ini, /etc/php/7.2/apache2/conf.d/20-phar.ini, /etc/php/7.2/apache2/conf.d/20-posix.ini, /etc/php/7.2/apache2/conf.d/20-readline.ini, /etc/php/7.2/apache2/conf.d/20-shmop.ini, /etc/php/7.2/apache2/conf.d/20-sockets.ini, /etc/php/7.2/apache2/conf.d/20-swoole.ini, /etc/php/7.2/apache2/conf.d/20-sybase.ini, /etc/php/7.2/apache2/conf.d/20-sybaseodbc.ini, /etc/php/7.2/apache2/conf.d/20-tokenizer.ini
PHP API	20170718
PHP Extension	20170718
Zend Extension	321170718
Zend Extension Build	API20170718NTS
PHP Extension Build	APR20170718NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled

Activities Terminal - Mon 15:12 mca@U47: ~

```
File Edit View Search Terminal Help

Creating config file /etc/php/7.2/mods-available/curl.ini with new version
Setting up php-curl (1:7.2+60ubuntu1) ...
Setting up php7.2-readline (7.2.3-1ubuntu1) ...

Creating config file /etc/php/7.2/mods-available/readline.ini with new version
Setting up php7.2-json (7.2.3-1ubuntu1) ...

Creating config file /etc/php/7.2/mods-available/json.ini with new version
Setting up php7.2-opcache (7.2.3-1ubuntu1) ...

Creating config file /etc/php/7.2/mods-available/opcache.ini with new version
Setting up php7.2-mysql (7.2.3-1ubuntu1) ...

Creating config file /etc/php/7.2/mods-available/mysqlnd.ini with new version
Creating config file /etc/php/7.2/mods-available/mysqli.ini with new version

Creating config file /etc/php/7.2/mods-available/pdo_mysql.ini with new version
Setting up php7.2-cli (7.2.3-1ubuntu1) ...
update-alternatives: using /usr/bin/php7.2 to provide /usr/bin/php (php) in auto mode
update-alternatives: using /usr/bin/phar7.2 to provide /usr/bin/phar (phar) in auto mode
update-alternatives: using /usr/bin/phar.phar7.2 to provide /usr/bin/phar.phar (phar.phar) in auto mode

Creating config file /etc/php/7.2/cli/php.ini with new version
Setting up libapache2-mod-php7.2 (7.2.3-1ubuntu1) ...

Creating config file /etc/php/7.2/apache2/php.ini with new version
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
apache2_invoke: enable module php7.2
Setting up php-mysql (1:7.2+60ubuntu1) ...
Setting up libapache2-mod-php (1:7.2+60ubuntu1) ...
Setting up php-cli (1:7.2+60ubuntu1) ...
Setting up php7.2 (7.2.3-1ubuntu1) ...
Setting up php (1:7.2+60ubuntu1) ...
mca@U47:~$
```

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should [replace this file](#) (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

**Configuration Overview**

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is [fully documented](#) in `usr/share/doc/apache2/README.Debian.gz`. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the [manual](#) if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   '-- ports.conf
|-- mods-enabled
|   '-- *.load
|   '-- *.conf
|-- conf-enabled
|   '-- *.conf
|-- sites-enabled
|   '-- *.conf
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.

```
mca@U47:~$ php -v
Command 'php' not found, but can be installed with:
sudo apt install php7.2-cli
sudo apt install hhvm

mca@U47:~$ sudo apt install php libapache2-mod-php php-ocache php-cli php-curl php-mysql
Reading package lists... Done
Building dependency tree...
Reading state information... Done
Note, selecting 'php7.2-ocache' instead of 'php-ocache'
The following packages were automatically installed and are no longer required:
  bridge-utils cgroupfs-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
  libfile-stripndeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
  libsys-hostname-long-perl libxml-pm-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libapache2-mod-php7.2 php-common php7.2-cli php7.2-common php7.2-curl php7.2-json php7.2-mysql php7.2-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.2 php php-common php-curl php-mysql php7.2 php7.2-cli php7.2-common php7.2-curl php7.2-json
  php7.2-mysql php7.2-ocache php7.2-readline
0 upgraded, 15 newly installed, 0 to remove and 16 not upgraded.
Need to get 4,007 kB of archives.
After this operation, 17.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://archive.ubuntu.com/ubuntu bionic/main amd64 php-common all 1:6.0ubuntu1 [12.1 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic/main amd64 php7.2-common amd64 7.2.3-1ubuntu1 [879 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic/main amd64 php7.2-json amd64 7.2.3-1ubuntu1 [18.8 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic/main amd64 php7.2-ocache amd64 7.2.3-1ubuntu1 [165 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic/main amd64 php7.2-readline amd64 7.2.3-1ubuntu1 [12.1 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/main amd64 php7.2-curl amd64 7.2.3-1ubuntu1 [1,484 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/main amd64 libapache2-mod-php7.2 amd64 7.2.3-1ubuntu1 [1,348 kB]
Get:8 http://archive.ubuntu.com/ubuntu bionic/main amd64 libapache2-mod-php all 1:7.2+6ubuntu1 [3,212 kB]
Get:9 http://archive.ubuntu.com/ubuntu bionic/main amd64 php7.2 all 7.2.3-1ubuntu1 [9,236 kB]
Get:10 http://archive.ubuntu.com/ubuntu bionic/main amd64 php all 1:7.2+6ubuntu1 [3,684 kB]
```

```
Activities Terminal Mon 14:46 * mca@U47: ~
File Edit View Search Terminal Help
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
mca@U47:~$ sudo apt install mariadb-server mariadb-client
[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:
bridge-utils cgroupsfs-mount debhelper dh-autoreconf
dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin
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-cgi php7.2-common php7.2-json
php7.2-opcache php7.2-readline php7.2-xml pigz pkg-php-tools
po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
galera-3 gawk libconfig-inifiles-perl libdbd-mysql-perl libdbi-perl
libhtml-template-perl libjemalloc1 libmysqlclient20 libreadline5
libterm-readkey-perl mariadb-client-10.1 MariaDB-client-core-10.1
mariadb-common mariadb-server-10.1 mariadb-server-core-10.1
mysql-common socat
Suggested packages:
gawk-doc libltdbm-perl libnet-daemon-perl libsql-statement-perl
libipc-sharedcache-perl Mailx tinyca
The following NEW packages will be installed:
galera-3 gawk libconfig-inifiles-perl libdbd-mysql-perl libdbi-perl
libhtml-template-perl libjemalloc1 libmysqlclient20 libreadline5
libterm-readkey-perl mariadb-client mariadb-client-10.1
mariadb-client-core-10.1 mariadb-common mariadb-server
mariadb-server-10.1 mariadb-server-core-10.1 mysql-common socat
0 upgraded, 19 newly installed, 0 to remove and 16 not upgraded.
Need to get 24.8 MB of archives.
After this operation, 184 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://archive.ubuntu.com/ubuntu bionic/main amd64 gawk amd64 1:4.1.4+dfsg-1build1 [401 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic/main amd64 mysql-common all 5.8+1.0.4 [7,308 kB]
Activities Terminal Mon 14:46 * mca@U47: ~
File Edit View Search Terminal Help
Preparing to unpack .../4-libterm-readkey-perl_2.37-1build1_amd64.deb ...
Unpacking libterm-readkey-perl (2.37-1build1) ...
Selecting previously unselected package mariadb-client.
Preparing to unpack .../5-mariadb-client_103a10.1.29-6_all.deb ...
Unpacking mariadb-client (1:10.1.29-6) ...
Selecting previously unselected package mariadb-server.
Preparing to unpack .../6-mariadb-server_103a10.1.29-6_all.deb ...
Unpacking Mariadb-server (1:10.1.29-6) ...
Setting up libconfig-inifiles-perl (2.94-1) ...
Setting up libhtml-template-perl (2.07-1) ...
Processing triggers for ureadahead (0.100.0-20) ...
Setting up libjemalloc1 (3.6.0-11) ...
Setting up socat (1.7.3.2-2ubuntu2) ...
Setting up gawk (1:4.1.4+dfsg-1build1) ...
Setting up libterm-readkey-perl (2.37-1build1) ...
Processing triggers for libc-bin (2.27-3ubuntu1) ...
Setting up galera-3 (25.3.20-1) ...
Processing triggers for systemd (237-3ubuntu10.3) ...
Processing triggers for man-db (2.8.3-2) ...
Setting up libmysqlclient20:amd64 (5.7.21-1ubuntu1) ...
Setting up libreadline5:amd64 (5.2+dfsg-3build1) ...
Setting up libdbi-perl (1.040-1) ...
Setting up mariadb-server-core-10.1 (1:10.1.29-6) ...
Setting up mariadb-client-core-10.1 (1:10.1.29-6) ...
Setting up libdbd-mysql-perl (4.040-1) ...
Setting up mariadb-client-10.1 (1:10.1.29-6) ...
Setting up mariadb-client (1:10.1.29-6) ...
Setting up mariadb-server-10.1 (1:10.1.29-6) ...
Created symlink /etc/systemd/system/mysql.service → /lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/mysqld.service → /lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /lib/systemd/system/mariadb.service.
Setting up Mariadb-server (1:10.1.29-6) ...
Processing triggers for libc-bin (2.27-3ubuntu1) ...
Processing triggers for systemd (237-3ubuntu10.3) ...
Processing triggers for ureadahead (0.100.0-20) ...
mca@U47:~$ 
```

```
Activities Terminal Mon 14:41 * mca@U47: ~
File Edit View Search Terminal Help
Processing triggers for ureadahead (0.100.0-20) ...
Processing triggers for ufw (0.35-5) ...
mca@U47: ~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pr
   Drop-In: /lib/systemd/system/apache2.service.d
             └─apache2-systemd.conf
     Active: active (running) since Mon 2022-05-23 14:25:52 IST; 1min 5s ago
       Main PID: 8883 (apache2)
          Tasks: 55 (limit: 4915)
         CGroup: /system.slice/apache2.service
                   ├─8883 /usr/sbin/apache2 -k start
                   ├─8884 /usr/sbin/apache2 -k start
                   └─8885 /usr/sbin/apache2 -k start

May 23 14:25:52 U47 systemd[1]: Starting The Apache HTTP Server...
May 23 14:25:52 U47 apachectl[8854]: AH00558: apache2: Could not reliably
May 23 14:25:52 U47 systemd[1]: Started The Apache HTTP Server.
...skipping...
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pr
   Drop-In: /lib/systemd/system/apache2.service.d
             └─apache2-systemd.conf
     Active: active (running) since Mon 2022-05-23 14:25:52 IST; 1min 5s ago
       Main PID: 8883 (apache2)
          Tasks: 55 (limit: 4915)
         CGroup: /system.slice/apache2.service
                   ├─8883 /usr/sbin/apache2 -k start
                   ├─8884 /usr/sbin/apache2 -k start
                   └─8885 /usr/sbin/apache2 -k start

May 23 14:25:52 U47 systemd[1]: Starting The Apache HTTP Server...
May 23 14:25:52 U47 apachectl[8854]: AH00558: apache2: Could not reliably
May 23 14:25:52 U47 systemd[1]: Started The Apache HTTP Server.
-
-
-
-
-
mca@U47: ~$ ifconfig
Command "iffconfig" not found, did you mean:
  command 'lifconfig' from deb net-tools
Try: sudo apt install <deb name>
mca@U47: ~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
  inet 192.168.6.217 brd 192.168.6.255 broadcast 192.168.6.255
    inet6 fe80::7db9:d630:ca55:99b brd fe80::ffdb9:d630:ca55:99b/16
      prefixlen 64 scopelid 0x20<link>
    ether 0c:9d:92:0f:c0:91 txqueuelen 1000 (Ethernet)
      RX packets 231692 bytes 243538968 (243.5 MB)
      RX errors 0 dropped 1798 overruns 0 frame 0
      TX packets 67261 bytes 16969558 (16.9 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 brd 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 brd ::1/128 scope host
      link-layer brd ::1/128
      txqueuelen 1000 (Local Loopback)
      RX packets 2681 bytes 246984 (246.9 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 2681 bytes 246984 (246.9 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
mca@U47: ~$ http://localhost/192.168.6.217
```

```

Activities Terminal Mon 14:41 *
mca@U47: ~
File Edit View Search Terminal Help
mca@U47:~$ sudo /opt/lampp/uninstall
[sudo] password for mca:
mca@U47:~$ sudo apt update
Get:1 https://download.docker.com/linux/ubuntu bionic InRelease [64.4 kB]
Get:2 https://dl.google.com/linux/chrome/deb stable InRelease [1,811 B]
Get:3 https://brave-browser-apt-release.s3.brave.com stable InRelease [4,317 B]
Get:4 http://packages.microsoft.com/repos/code stable InRelease [10.4 kB]
Hit:5 http://ppa.launchpad.net/codeblocks-devs/ubuntu bionic InRelease
Get:6 https://packages.microsoft.com/repos/vscode stable InRelease [3,959 B]
Get:7 https://download.docker.com/linux/ubuntu/bionic/stable amd64 Packages [25.7 kB]
Get:8 https://dl.google.com/linux/chrome/deb/stable/main amd64 Packages [1,103 B]
Err:9 http://ppa.launchpad.net/jonathonf/python-3.6/ubuntu bionic InRelease
   403 Forbidden [IP: 185.125.196.52 80]
Get:10 https://brave-browser-apt-release.s3.brave.com/stable/main amd64 Packages [5,841 B]
Hit:11 http://ppa.launchpad.net/pasgut/ppa/ubuntu bionic InRelease
Get:12 http://packages.microsoft.com/repos/code/stable/main amd64 Packages [84.8 kB]
Hit:13 http://archive.ubuntu.com/ubuntu bionic InRelease
Get:14 http://packages.microsoft.com/repos/code/stable/main armhf Packages [85.7 kB]
Get:15 http://packages.microsoft.com/repos/code/stable/main arm64 Packages [85.9 kB]
Get:16 https://packages.microsoft.com/repos/vscode/stable/main amd64 Packages [300 kB]
Hit:17 http://ppa.launchpad.net/webupd8team/java/ubuntu bionic InRelease
Reading package lists... Done
E: Failed to fetch http://ppa.launchpad.net/jonathonf/python-3.6/ubuntu/dists/bionic/InRelease  403 Forbidden [IP: 185.125.196.52 80]
E: The repository 'http://ppa.launchpad.net/jonathonf/python-3.6/ubuntu bionic InRelease' is no longer signed.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
mca@U47:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  bridge-utils cgroups-mount debhelper dh-autoreconf dh-strip-nondeterminism
  docker-ce-rootless-extras docker-scan-plugin 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 pigz
  pkg-php-tools po-debconf shtool ubuntu-fan
Mon 14:41 *
mca@U47: ~
Activities Terminal Mon 14:41 *
mca@U47: ~
File Edit View Search Terminal Help
Processing triggers for systemd (237-3ubuntu10.3) ...
Processing triggers for man-db (2.8.3-2) ...
Setting up libblas.2-0:amd64 (5.2.4-1.1build1) ...
Setting up libaprutil1-ldap:amd64 (1.6.1-2) ...
Setting up libaprutil1-dbd-sqlite3:amd64 (1.6.1-2) ...
Setting up apache2-utils (2.4.29-1ubuntu4) ...
Setting up apache2-bin (2.4.29-1ubuntu4) ...
Setting up apache2 (2.4.29-1ubuntu4) ...
Enabling module rpn_event.
Enabling module authz_core.#####
..Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-hosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.
Processing triggers for libc-bin (2.27-3ubuntu1) ...
Processing triggers for systemd (237-3ubuntu10.3) ...
Processing triggers for ureadahead (0.100.0-20) ...
Processing triggers for ufw (0.35-5) ...

```

**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.:****Aim**

Install WordPress in Ubuntu

**Procedure**

Download the latest version of the WordPress package and extract it by issuing the commands below on the terminal:

```
$ wget -c http://wordpress.org/latest.tar.gz
```

```
$ tar -xzvf latest.tar.gz
```

Then move the WordPress files from the extracted folder to the Apache default root directory, /var/www/html/:

```
$ sudo mv wordpress/* /var/www/html/
```

Next, set the correct permissions on the website directory, that is give ownership of the WordPress files to the webserver as follows:

```
$ sudo chown -R www-data:www-data /var/www/html/
```

```
$ sudo chmod -R 755 /var/www/html/
```

**Create WordPress Database**

Execute the command below and provide the root user password, then hit Enter to move to the mysql shell:

```
$ sudo mysql -u root -p
```

At the mysql shell, type the following commands, pressing Enter after each line of a mysql

command. Remember to use your own, valid values for database\_name, database user, and also use a strong and secure password as databaseuser\_password:

```
mysql> CREATE DATABASE wp_myblog;
```

```
mysql> CREATE USER 'username'@'%' IDENTIFIED BY 'password';
```

```
mysql> GRANT ALL ON wp_myblog.* TO 'username'@'%';
```

**Name: Devis Varghese**

**Roll No:47**

**Batch:A**

**Date:30-05-2022**

```
mysql> FLUSH PRIVILEGES;
```

```
mysql> EXIT;
```

Go the /var/www/html/ directory and rename existing wp-config-sample.php to wp\_config.php. Also, make sure to remove the default Apache index page.

```
$ cd /var/www/html/
```

```
$ sudo mv wp-config-sample.php wp-config.php
```

```
$ sudo rm -rf index.html
```

Then update it with your database information under the MySQL settings section (refer to

the highlighted boxes in the image below):

Restart the web server and mysql service using the commands below:

```
$ sudo systemctl restart apache2.service
```

```
$ sudo systemctl restart mysql.service
```

Open your web browser, then enter your domain name or server address as shown.

[http://server\\_address/](http://server_address/)

## screenshots

```
Activities Terminal ▾ Mon 16:02 ●
mca@U47: /var/www/html
File Edit View Search Terminal Help
Bye
mca@U47:/var/www/html$ ls
index.html phpinfo.php
mca@U47:/var/www/html$ cp wp-config-sample.php wp-config.php
cp: cannot stat 'wp-config-sample.php': No such file or directory
mca@U47:/var/www/html$ sudo cp wp-config-sample.php wp-config.php
cp: cannot stat 'wp-config-sample.php': No such file or directory
mca@U47:/var/www/html$ ls
index.html phpinfo.php
mca@U47:/var/www/html$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 33
Server version: 10.1.29-MariaDB-6 Ubuntu 18.04

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> CREATE DATABASE wp_myblog;
ERROR 1007 (HY000): Can't create database 'wp_myblog'; database exists
MariaDB [(none)]> CREATE USER 'wp_root'@'%' IDENTIFIED by 'ajce@04';
ERROR 1396 (HY000): Operation CREATE USER failed for 'wp_root'@'%'
MariaDB [(none)]> q
-> Ctrl-C -- exit!
Aborted
mca@U47:/var/www/html$ ls
index.html phpinfo.php
mca@U47:/var/www/html$ cd
mca@U47:~$ ls
1      devis    diya    latest.tar.gz  Public      script.sh
1.c    devz    Documents  Music   PycharmProjects shell.sh
1.o    DEVZ   Downloads  phpinfo.php  RMCA2023A    snap
d    devzz1.sh  home    Pictures   .call    Templates
Desktop  devzz.sh  home.pub  PLANETS  sample.sh  Videos
mca@U47:~$ clear
mca@U47:~$ wget -c http://wordpress.org/latest.tar.gz
```

```

Activities Terminal Mon 16:02 ●
mca@U47: /var/www/html

File Edit View Search Terminal Help

MariaDB [(none)]> GRANT ALL ON wp_myblog.* TO 'wp_root'@'%'
-> ;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> EXIT;
Bye
mca@U47:/var/www/html$ ls
index.html phpinfo.php
mca@U47:/var/www/html$ sudo mv wp-config-sample.php wp-config.php
mv: cannot stat 'wp-config-sample.php': No such file or directory
mca@U47:/var/www/html$ vi sample.php
mca@U47:/var/www/html$ sudo gedit wp-config.php

** (gedit:7998): WARNING **: 15:37:52.621: Set document metadata failed: Setting attribute metadata::gedit-position not supported
mca@U47:/var/www/html$ ls
index.html phpinfo.php
mca@U47:/var/www/html$ cd
mca@U47:$ ls
1 d devz devzz.sh Downloads latest.tar.gz Pictures PycharmProjects sample.sh snap wordpress
1.c Desktop DEVZ diya home Music PLANETS RMCA2023A script.sh Templates
1.o devts devzz1.sh Documents home.pub phpinfo.php Public solar shell.sh Videos
mca@U47:$ sudo mv wordpress/* /var/www/html/
mca@U47:/var/www/html$ sudo mv wp-config-sample.php wp-config.php
mca@U47:/var/www/html$ sudo gedit wp-config.php

** (gedit:8213): WARNING **: 15:46:22.287: Set document metadata failed: Setting attribute metadata::gedit-spell-language not supported
** (gedit:8213): WARNING **: 15:46:22.287: Set document metadata failed: Setting attribute metadata::gedit-encoding not supported
** (gedit:8213): WARNING **: 15:46:23.898: Set document metadata failed: Setting attribute metadata::gedit-position not supported
mca@U47:/var/www/html$ sudo systemctl restart apache2.service
mca@U47:/var/www/html$ sudo systemctl restart mysql.service
mca@U47:/var/www/html$ 

Activities Terminal Mon 16:02 ●
mca@U47: /var/www/html

File Edit View Search Terminal Help

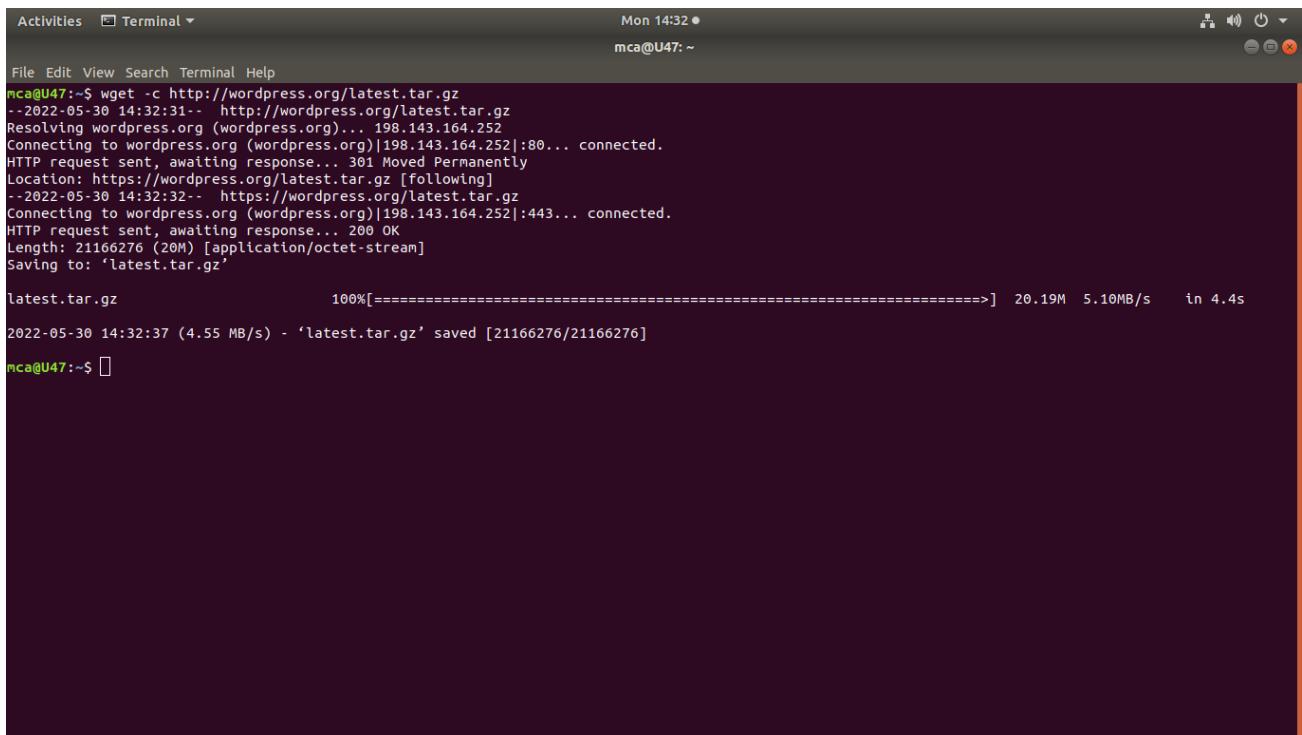
wordpress/wp-admin/js/color-picker.min.js
wordpress/wp-admin/js/auth-app.js
wordpress/wp-admin/js/code-editor.js
wordpress/wp-admin/js/common.js
wordpress/wp-admin/js/set-post-thumbnail.min.js
wordpress/wp-admin/js/postbox.min.js
wordpress/wp-admin/js/color-picker.js
wordpress/wp-admin/js/password-strength-meter.js
wordpress/wp-admin/js/customize-nav-menus.js
wordpress/wp-admin/js/editor-expand.js
wordpress/wp-admin/js/code-editor.min.js
wordpress/wp-admin/js/set-post-thumbnail.js
wordpress/wp-admin/options-permalink.php
wordpress/wp-admin/widgets.php
wordpress/wp-admin/setup-config.php
wordpress/wp-admin/install.php
wordpress/wp-admin/admin-header.php
wordpress/wp-admin/post-new.php
wordpress/wp-admin/themes.php
wordpress/wp-admin/options-reading.php
wordpress/wp-trackback.php
wordpress/wp-comments-post.php
mca@U47:$ cd /var/www/html/
mca@U47:/var/www/html$ sudo mv wordpress/* /var/www/html/
mv: cannot stat 'wordpress/*': No such file or directory
mca@U47:/var/www/html$ ls
index.html phpinfo.php
mca@U47:/var/www/html$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 34
Server version: 10.1.29-MariaDB-6 Ubuntu 18.04

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> GRANT ALL ON wp_myblog.* TO 'wp_root'@'%'

```

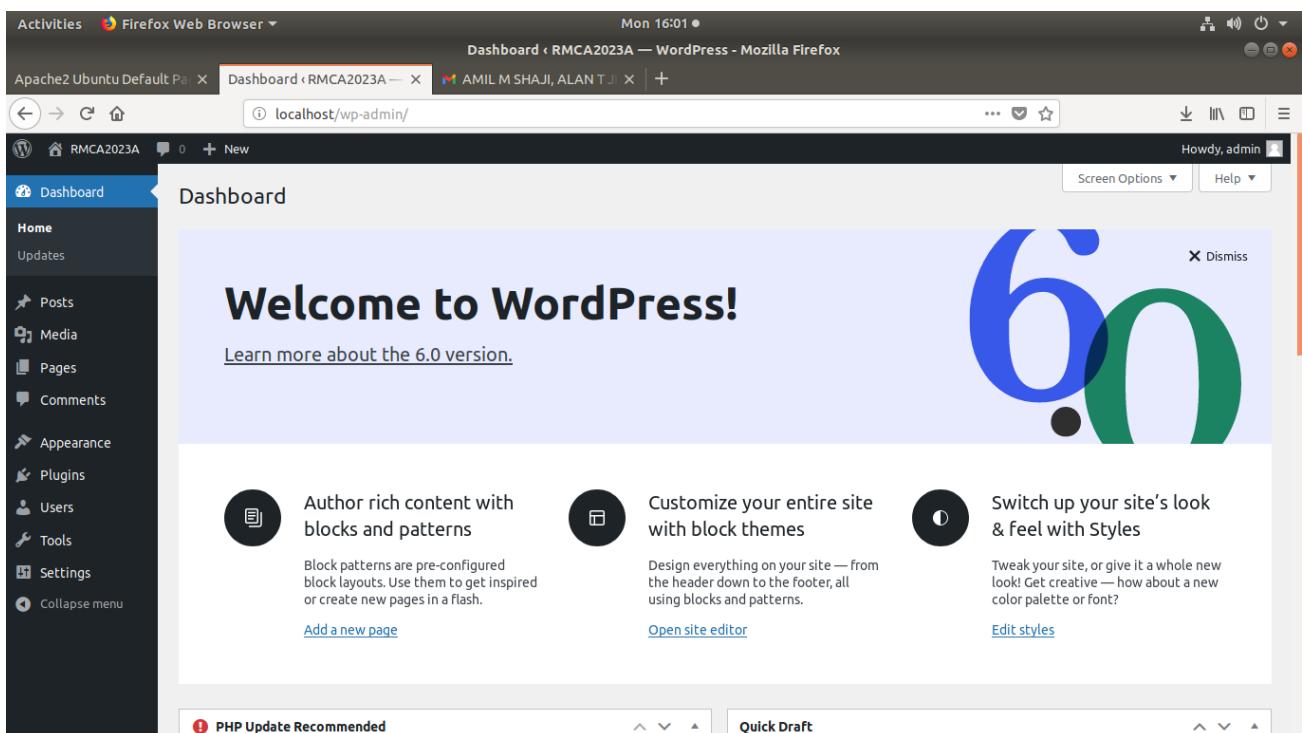


```
mca@U47:~$ wget -c http://wordpress.org/latest.tar.gz
--2022-05-30 14:32:31--  http://wordpress.org/latest.tar.gz
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://wordpress.org/latest.tar.gz [following]
--2022-05-30 14:32:32--  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  5.10MB/s   in 4.4s

2022-05-30 14:32:37 (4.55 MB/s) - 'latest.tar.gz' saved [21166276/21166276]

mca@U47:~$ 
```



The screenshot shows a Firefox browser window with the address bar set to `localhost/wp-admin/`. The page title is "Dashboard < RMCA2023A — WordPress - Mozilla Firefox". The dashboard features a large "Welcome to WordPress!" header with a "Learn more about the 6.0 version." link. On the left, a sidebar lists navigation links: Home, Updates, Posts, Media, Pages, Comments, Appearance, Plugins, Users, Tools, Settings, and a "Collapse menu" option. The main content area displays three cards: "Author rich content with blocks and patterns", "Customize your entire site with block themes", and "Switch up your site's look & feel with Styles". Each card includes a descriptive text block and a "Read more" link. At the bottom, there is a "PHP Update Recommended" notification and a "Quick Draft" button.

The screenshot shows the WordPress dashboard interface. On the left, there's a sidebar with navigation links: Home, Updates, Posts, Media, Pages, Comments, Appearance, Plugins, Users, Tools, Settings, and a Collapse menu. The main content area has several sections:

- PHP Update Recommended:** A warning message stating "Your site is running an insecure version of PHP (7.2.3-1ubuntu1), which should be updated." It includes a link to "Learn more about updating PHP".
- Site Health Status:** A section titled "No information yet..." with a note: "Site health checks will automatically run periodically to gather information about your site. You can also [visit the Site Health screen](#) to gather information about your site now."
- At a Glance:** Shows 1 Post, 1 Page, 1 Comment, and a note: "WordPress 6.0 running [Twenty Twenty-Two](#) theme." It also includes a link to "Search engines discouraged".
- Quick Draft:** A form for creating a new post, with fields for Title and Content, and a "Save Draft" button.
- WordPress Events and News:** A section showing "Attend an upcoming event near you. [Select location](#)". It lists recent events: "WordPress 6.0 'Arturo'", "WordPress 6.0 Release Candidate 3 (RC3) Now Available for Testing", "Gutenberg Times: Gutenberg Changelog #67 Gutenberg 13.2 and 13.3, WordPress 6.0 and more", "BuddyPress: BP Rewrites 1.2.0 maintenance release", and "Post Status: What's a WordPress 'Developer'?".





**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.:7**

Name: Devis Varghese  
Roll No:47  
Batch: MCA A  
Date: 14/05/22

**Aim**

Build and install software from source code, familiarity with make and cmake utilities expected.

**Procedure**

Sample cmake project using following steps:

1. \$ mkdir projectzero
2. \$ cd projectzero
3. \$ gedit hello\_world.cpp

```
<iostream>
int main() {
    std::cout << "Hello World!" << std::endl;
    return 0 ;
}
```
4. \$ gedit CMakeLists.txt
5. cmake\_minimum\_required(VERSION 3.10)  
project(MyProject VERSION 0.0.1)  
add\_executable(hello hello\_world.cpp)
6. \$ mkdir build
7. \$ cd build
8. \$ cmake ..
9. \$ cmake --build .
10. \$ ./hello

## **Output**

```

devs@devs-VirtualBox:~$ mkdir projectzero1
devs@devs-VirtualBox:~$ cd projectzero1
devs@devs-VirtualBox:~/projectzero1$ gedit hello_world.cpp
devs@devs-VirtualBox:~/projectzero1$ gedit CMakeLists.txt
devs@devs-VirtualBox:~/projectzero1$ cd build
devs@devs-VirtualBox:~/projectzero1/build$ cmake ..
-- The C compiler identification is GNU 9.4.0
-- The CXX compiler identification is GNU 9.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: /home/devs/projectzero1/build
devs@devs-VirtualBox:~/projectzero1/build$ cmake -- build .
-- Configuring done
-- Generating done
-- Build files have been written to: /home/devs/projectzero1/build
devs@devs-VirtualBox:~/projectzero1/build$ ./hello
bash: ./Hello: No such file or directory
devs@devs-VirtualBox:~/projectzero1/build$ cmake --build .
Scanning dependencies of target hello
[ 50%] Building CXX object CMakeFiles/hello.dir/hello_world.cpp.o
/home/devs/projectzero1/hello_world.cpp:1:1: error: expected unqualified-id before '<' token
 1 | <iostream>
   |
make[2]: *** [CMakeFiles/hello.dir/build.make:63: CMakeFiles/hello.dir/hello_world.cpp.o] Error 1
make[1]: *** [CMakefiles/hello.dir/all:2: CMakeFiles/hello.dir/all] Error 2
make: *** [Makefile:84: all] Error 2
devs@devs-VirtualBox:~/projectzero1/build$ ./hello
bash: ./Hello: No such file or directory
devs@devs-VirtualBox:~/projectzero1/build$ gedit hello_world.cpp
devs@devs-VirtualBox:~/projectzero1/build$ cmake --build .
[ 50%] Building CXX object CMakeFiles/hello.dir/hello_world.cpp.o
/home/devs/projectzero1/hello_world.cpp:1:1: error: expected unqualified-id before '<' token
 1 | <iostream>
   |
make[2]: *** [CMakeFiles/hello.dir/build.make:63: CMakeFiles/hello.dir/hello_world.cpp.o] Error 1
make[1]: *** [CMakefiles/hello.dir/all:2: CMakeFiles/hello.dir/all] Error 2
make: *** [Makefile:84: all] Error 2
devs@devs-VirtualBox:~/projectzero1/build$ cd ..
devs@devs-VirtualBox:~/projectzero1$ gedit hello_world.cpp
devs@devs-VirtualBox:~/projectzero1$ cd build
devs@devs-VirtualBox:~/projectzero1/build$ cmake --build .
Scanning dependencies of target hello
[ 50%] Building CXX object CMakeFiles/hello.dir/hello_world.cpp.o
/home/devs/projectzero1/hello_world.cpp:1:1: error: expected unqualified-id before '<' token
 1 | <iostream>
   |
make[2]: *** [CMakeFiles/hello.dir/build.make:63: CMakeFiles/hello.dir/hello_world.cpp.o] Error 1
make[1]: *** [CMakefiles/hello.dir/all:2: CMakeFiles/hello.dir/all] Error 2
make: *** [Makefile:84: all] Error 2
devs@devs-VirtualBox:~/projectzero1/build$ ./hello
bash: ./Hello: No such file or directory
devs@devs-VirtualBox:~/projectzero1/build$ cmake --build .
Scanning dependencies of target hello
[ 50%] Building CXX object CMakeFiles/hello.dir/hello_world.cpp.o
/home/devs/projectzero1/hello_world.cpp:1:1: error: expected unqualified-id before '<' token
 1 | <iostream>
   |
make[2]: *** [CMakeFiles/hello.dir/build.make:63: CMakeFiles/hello.dir/hello_world.cpp.o] Error 1
make[1]: *** [CMakefiles/hello.dir/all:2: CMakeFiles/hello.dir/all] Error 2
make: *** [Makefile:84: all] Error 2
devs@devs-VirtualBox:~/projectzero1/build$ ./hello
bash: ./Hello: No such file or directory
devs@devs-VirtualBox:~/projectzero1/build$ gedit hello_world.cpp
devs@devs-VirtualBox:~/projectzero1/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
devs@devs-VirtualBox:~/projectzero1/build$ ./hello
Hello World!
devs@devs-VirtualBox:~/projectzero1/build$ []

```

A screenshot of a code editor window titled "hello\_world.cpp". The code in the editor is:

```
1 #include<iostream>
2 int main()
3 {
4     std::cout<<"Hello World!"<<std::endl;
5     return 0;
6 }
```

The editor interface includes a toolbar at the top with "Open", "Save", and other icons. The status bar at the bottom shows "C++" selected, "Tab Width: 8", "Ln 6, Col 2", and "INS".



**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.:****Name:DevisVarghese****Roll No:47****Batch: MCA A****Date: 06/06/2022****Aim**

Introduction to command line tools for networking IPv4 networking, network commands: ping route traceroute, nslookup, ip. Setting up static and dynamic IP addresses. Concept of Subnets, CIDR address schemes, Subnet masks, iptables, setting up a firewall for LAN, Application layer (L7) proxies.

**Procedure****\$ ifconfig**

--ifconfig(interface configuration) command is used to configure the kernel-resident network interfaces.

**\$ ip addr show**

-- To list all network interfaces and the associated IP address

**\$Ping**

--Ping command is one of the most often used networking utilities for detecting devices on a network and for troubleshooting network problems.

**\$Traceroute**

--A traceroute provides a map of how data on the internet travels from its source to its destination. A traceroute plays a different role than other diagnostic tools, such as packet capture, which analyses data.

**\$Netstat**

--Netstat command displays active TCP connections, ports on which the computer is listening, Ethernet statistics, the IP routing table, IPv4 statistics, and IPv6 statistics.

## \$SS

--The ss (socket statistics) tool is a CLI command used to show network statistics.

The ss command is a simpler and faster version of the now obsolete netstat command

## \$Nslookup

--Nslookup is used for diagnosing DNS problems. The nslookup utility allows you to query a name server and quickly find out which name resolves to which IP address.

```

Activities Terminal ▾ Mon 21:18 •
mca@U47: ~

File Edit View Search Terminal Help          Linux System Administrator's Manual          NETSTAT(8)

NAME
    netstat - Print network connections, routing tables, interface statistics, masquerade connections, and multicast memberships

SYNOPSIS
    netstat [address_family_options] [--tcp|-t] [--udp|-u] [--udlrite|-U] [--sctp|-S] [--raw|-w] [--l2cap|-2] [--rfcomm|-f] [--listening|-l]
    [--all|-a] [--numeric|-n] [--numeric-hosts] [--numeric-ports] [--numeric-users] [--symbolic|-N] [--extend|-e[--extend|-e]] [--timers|-o]
    [--program|-p] [--verbose|-v] [--continuous|-c] [--wide|-W]

    netstat {--route|-r} [address_family_options] [--extend|-e[--extend|-e]] [--verbose|-v] [--numeric|-n] [--numeric-hosts] [--numeric-ports]
    [--numeric-users] [--continuous|-c]

    netstat {--interfaces|-i} [--all|-a] [--extend|-e[--extend|-e]] [--verbose|-v] [--program|-p] [--numeric|-n] [--numeric-hosts] [--numeric-ports]
    [--numeric-users] [--continuous|-c]

    netstat {--groups|-g} [--numeric|-n] [--numeric-hosts] [--numeric-ports] [--numeric-users] [--continuous|-c]

    netstat {--masquerade|-M} [--extend|-e] [--numeric|-n] [--numeric-hosts] [--numeric-ports] [--numeric-users] [--continuous|-c]

    netstat {--statistics|-s} [--tcp|-t] [--udp|-u] [--udlrite|-U] [--sctp|-S] [--raw|-w]

    netstat {--version|-V}

    netstat {--help|-h}

address_family_options:
    [-4|--inet] [-6|--inet6] [--protocol={inet,inet6,unix,tpx,ax25,netrom,ddp,bluetooth, ... }] [--unix|-x] [--inet|--ip|--tcpip] [--ax25]
    [--x25] [--rose] [--ash] [--bluetooth] [--tpx] [--netrom] [--ddp] [--appletalk] [--econet] [--ec]

NOTES
    This program is mostly obsolete. Replacement for netstat is ss. Replacement for netstat -r is ip route. Replacement for netstat -i is ip
    -s link. Replacement for netstat -g is ip maddr.

DESCRIPTION
    Netstat prints information about the Linux networking subsystem. The type of information printed is controlled by the first argument, as
    Manual page netstat(8) line 1 (press h for help or q to quit)

```

```
Activities Terminal Mon 15:57 ● mca@U47: ~
File Edit View Search Terminal Help
    TX packets 4357 bytes 266994 (266.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ ss
Netid      State      Recv-Q      Send-Q      Local Address:Port      Peer Address:Port
u_seq      ESTAB      0            0           @0001a 56857          * 56858
u_seq      ESTAB      0            0           @00017 55619          * 55618
u_seq      ESTAB      0            0           @00016 55618          * 55619
u_seq      ESTAB      0            0           @00015 53872          * 53873
u_seq      ESTAB      0            0           @00019 56855          * 56856
u_seq      ESTAB      0            0           @00018 53873          * 53872
u_str      ESTAB      0            0           * 33314
u_str      ESTAB      0            0           @/tmp/dbus-ZujfRzI9WT 32813          * 32752
u_str      ESTAB      0            0           * 31927
u_str      ESTAB      0            0           * 22226
u_str      ESTAB      0            0           @/tmp/dbus-FDJ60Zfybk 41919          * 42340
u_str      ESTAB      0            0           * 38045
u_str      ESTAB      0            0           /run/systemd/journal/stdout 32501          * 33164
u_str      ESTAB      0            0           @/tmp/dbus-lC0sd045 44442          * 45095
u_str      ESTAB      0            0           * 38913
u_str      ESTAB      0            0           * 45088
u_str      ESTAB      0            0           * 26491
u_str      ESTAB      0            0           * 37142
u_str      ESTAB      0            0           /run/systemd/journal/stdout 32003          * 34215
u_str      ESTAB      0            0           * 25100
u_str      ESTAB      0            0           /run/user/1000/bus 43196          * 42342
u_str      ESTAB      0            0           /run/systemd/journal/stdout 37460          * 38108
u_str      ESTAB      0            0           * 30814
u_str      ESTAB      0            0           * 38925
u_str      ESTAB      0            0           * 57655
u_str      ESTAB      0            0           @/tmp/dbus-FDJ60Zfybk 45089          * 45088
u_str      ESTAB      0            0           * 30522
u_str      ESTAB      0            0           /var/run/dbus/system_bus_socket 45370          * 45369
u_str      ESTAB      0            0           * 31100
u_str      ESTAB      0            0           * 31763
u_str      ESTAB      0            0           * 42338
u_str      ESTAB      0            0           /run/user/1000/bus 32760          * 30606
u_str      ESTAB      0            0           * 33164
u_str      ESTAB      0            0           * 32501
u_str      ESTAB      0            0           * 32076

Activities Terminal Mon 15:54 ● mca@U47: ~
File Edit View Search Terminal Help
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 1493 bytes 91673 (91.6 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 1493 bytes 91673 (91.6 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ man netstat
mca@U47:~$ nslookup google.com
Server:     127.0.0.53
Address:    127.0.0.53#53

** server can't find google.com: SERVFAIL

mca@U47:~$ nslookup google.com
Server:     127.0.0.53
Address:    127.0.0.53#53

Non-authoritative answer:
Name: google.com
Address: 142.250.77.174
Name: google.com
Address: 2404:6800:4007:81d::200e

mca@U47:~$ sudo apt-get install iptables
[sudo] password for mca:
Reading package lists... Done
Building dependency tree
Reading state information... Done
iptables is already the newest version (1.6.1-2ubuntu2).
The following packages were automatically installed and are no longer required:
  bridge-utils cgroups-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
  libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
  libsys-hostname-long-perl pigz po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 16 not upgraded.
mca@U47:~$ 
```

The screenshot shows two terminal windows side-by-side. Both windows have a dark theme with light-colored text. The top window displays the output of several commands: netstat -an, ifconfig, and netstat -an again. The bottom window shows the results of ifconfig, nslookup for google.com, and another nslookup for google.com.

```

Activities Terminal Mon 15:20 mca@U47: ~
File Edit View Search Terminal Help
unix 3 [ ] STREAM CONNECTED 35248
unix 3 [ ] STREAM CONNECTED 19092 /var/run/dbus/system_bus_socket
unix 3 [ ] STREAM CONNECTED 70157
unix 3 [ ] STREAM CONNECTED 60114
unix 3 [ ] STREAM CONNECTED 34716
unix 2 [ ] DGRAM 35734
mca@U47:~$ 192.168.6.217: command not found
mca@U47:~$ sudo ifconfig enp5s0 192.168.6.103 netmask 255.255.255.0
mca@U47:~$ if config
> ^C
mca@U47:~$ ifcinfifg
Command 'ifcinfifg' not found, did you mean:
  command 'ifconfig' from deb net-tools
Try: sudo apt install <deb name>
mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.6.103 netmask 255.255.255.0 broadcast 192.168.6.255
                ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
                RX packets 137644 bytes 86986046 (86.9 MB)
                RX errors 0 dropped 3326 overruns 0 frame 0
                TX packets 76918 bytes 31245817 (31.2 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 scopid 0x10<host>
                loop txqueuelen 1000 (Local Loopback)
                RX packets 13127 bytes 923730 (923.7 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 13127 bytes 923730 (923.7 KB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
mca@U47:~$ 
Activities Terminal Mon 15:54 mca@U47: ~
File Edit View Search Terminal Help
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet6 fe80::7db9:d636:ca55:99b prefixlen 64 scopeid 0x20<link>
                ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
                RX packets 1983 bytes 228720 (228.7 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 146 bytes 23287 (23.2 KB)
                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 scopid 0x10<host>
                loop txqueuelen 1000 (Local Loopback)
                RX packets 1493 bytes 91673 (91.6 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 1493 bytes 91673 (91.6 KB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
mca@U47:~$ man netstat
mca@U47:~$ nslookup google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

** server can't find google.com: SERVFAIL

mca@U47:~$ nslookup google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.77.174
Name:   google.com
Address: 2404:6800:4007:81d::200e
mca@U47:~$ 
```

```

Activities Terminal Mon 15:20 mca@U47: ~
File Edit View Search Terminal Help
mca@U47:~$ sudo netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type            State          I-Node Path
unix  2      [ ]        DGRAM           32592  /run/user/1000/systemd/notify
unix  2      [ ]        DGRAM           32146  /run/user/120/systemd/notify
unix  3      [ ]        DGRAM           441   /run/systemd/notify
unix  2      [ ]        DGRAM           462   /run/systemd/journal/syslog
unix  9      [ ]        DGRAM           467   /run/systemd/journal/socket
unix 22      [ ]        DGRAM           488   /run/systemd/journal/dev-log
unix  3      [ ]        SEQPACKET      CONNECTED    39240  @00015
unix  3      [ ]        SEQPACKET      CONNECTED    39238  @00014
unix  3      [ ]        SEQPACKET      CONNECTED    39215  @00013
unix  3      [ ]        SEQPACKET      CONNECTED    39227  @00012
unix  3      [ ]        SEQPACKET      CONNECTED    39226  @00011
unix  3      [ ]        SEQPACKET      CONNECTED    39214  @00010
unix  3      [ ]        STREAM          CONNECTED   39314
unix  3      [ ]        STREAM          CONNECTED   36428
unix  3      [ ]        STREAM          CONNECTED   39955  /run/systemd/journal/stdout
unix  3      [ ]        STREAM          CONNECTED   38963  /run/systemd/journal/stdout
unix  3      [ ]        STREAM          CONNECTED   36895
unix  3      [ ]        STREAM          CONNECTED   34082
unix  3      [ ]        STREAM          CONNECTED   29111
unix  3      [ ]        STREAM          CONNECTED   24172
unix  3      [ ]        STREAM          CONNECTED   30829
unix  3      [ ]        STREAM          CONNECTED   57069
unix  3      [ ]        STREAM          CONNECTED   40335
unix  3      [ ]        STREAM          CONNECTED   31051  /run/systemd/journal/stdout
unix  3      [ ]        STREAM          CONNECTED   23548
unix  3      [ ]        STREAM          CONNECTED   19091  /var/run/dbus/system_bus_socket
unix  3      [ ]        STREAM          CONNECTED   38365
unix  3      [ ]        STREAM          CONNECTED   36477  @/tmp/dbus-ddqY39SQ
unix  3      [ ]        STREAM          CONNECTED   33491
unix  3      [ ]        STREAM          CONNECTED   32446  /run/user/120/bus
unix  3      [ ]        STREAM          CONNECTED   35164
unix  3      [ ]        STREAM          CONNECTED   23471

Activities Terminal Mon 15:19 mca@U47: ~
File Edit View Search Terminal Help
Command 'next' not found, but can be installed with:
sudo apt install mailutils-mh
sudo apt install mmh
sudo apt install nmh

mca@U47:~$ traceroute 192.168.6.217
Command 'traceroute' not found, but can be installed with:
sudo apt install inetutils-traceroute
sudo apt install traceroute

mca@U47:~$ sudo apt install traceroute
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  bridge-utils cgroupfs-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
  libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
  libsys-hostname-long-perl pigz po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  traceroute
0 upgraded, 1 newly installed, 0 to remove and 16 not upgraded.
Need to get 45.4 kB of archives.
After this operation, 152 kB of additional disk space will be used.
Err:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 traceroute amd64 1:2.1.0-2
  Could not resolve 'archive.ubuntu.com'
E: Failed to fetch http://archive.ubuntu.com/ubuntu/pool/universe/t/traceroute/traceroute_2.1.0-2_amd64.deb  Could not resolve 'archive.ubuntu.com'
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-missing?
mca@U47:~$ sudo ifconfig enp5s0 192.168.6.217 netmask 255.255.255.0
mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      ether 0c:9d:92:0f:69:d1  txqueuelen 1000  (Ethernet)
      RX packets 133536  bytes 86522072 (86.5 MB)
      RX errors 0  dropped 3326  overruns 0  frame 0
      TX packets 76784  bytes 31221060 (31.2 MB)

```

```

Activities Terminal Mon 15:19 mca@U47: ~
File Edit View Search Terminal Help
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1657 bytes 143867 (143.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ ping
Usage: ping [-aAbBdDfhLn0qrRUvV64] [-c count] [-i interval] [-I interface]
           [-m mark] [-M pmtdisc_option] [-l preload] [-p pattern] [-Q tos]
           [-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
           [-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -g [-aAbBdDfhLn0qrRUvV] [-c count] [-i interval] [-I interface]
           [-l preload] [-m mark] [-M pmtdisc_option]
           [-N nodeinfo_option] [-p pattern] [-Q tclass] [-s packetsize]
           [-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
           [-W timeout] destination
mca@U47:~$ ifconfig enp5so 192.168.6.218 netmask 255.255.255.0
SIOSIFADDR: Operation not permitted
enp5so: ERROR while getting interface flags: No such device
SIOSIFNETMASK: Operation not permitted
mca@U47:~$ ifconfig enp5so 192.168.6.214 netmask 255.255.255.0
SIOSIFADDR: Operation not permitted
enp5so: ERROR while getting interface flags: No such device
SIOSIFNETMASK: Operation not permitted
mca@U47:~$ ifconfig -a
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.6.217 netmask 255.255.255.0 broadcast 192.168.6.255
                inet6 fe80::7db9:d636:ca55:99b prefixlen 64 scopeid 0x20<link>
                    ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
                    RX packets 108066 bytes 75746063 (75.7 MB)
                    RX errors 0 dropped 2919 overruns 0 frame 0
                    TX packets 61701 bytes 25614662 (25.6 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 2982 bytes 274966 (274.9 KB)
                    RX errors 0 dropped 0 overruns 0 frame 0

```

Activities Terminal Mon 15:19 mca@U47: ~

```

File Edit View Search Terminal Help
mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.6.217 netmask 255.255.255.0 broadcast 192.168.6.255
                inet6 fe80::7db9:d636:ca55:99b prefixlen 64 scopeid 0x20<link>
                    ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
                    RX packets 72453 bytes 58034249 (58.0 MB)
                    RX errors 0 dropped 1850 overruns 0 frame 0
                    TX packets 35942 bytes 15205840 (15.2 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 1606 bytes 139781 (139.7 KB)
                    RX errors 0 dropped 0 overruns 0 frame 0
                    TX packets 1606 bytes 139781 (139.7 KB)
                    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ ifconfig help
help: error fetching interface information: Device not found
mca@U47:~$ lfhelp
lfhelp: command not found
mca@U47:~$ if help
> ^C
mca@U47:~$ ifconfighelp
ifconfighelp: command not found
mca@U47:~$ clear

mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.6.217 netmask 255.255.255.0 broadcast 192.168.6.255
                inet6 fe80::7db9:d636:ca55:99b prefixlen 64 scopeid 0x20<link>
                    ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
                    RX packets 74912 bytes 58451886 (58.4 MB)
                    RX errors 0 dropped 2062 overruns 0 frame 0
                    TX packets 37561 bytes 16463932 (16.4 MB)
                    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

```

Activities Terminal Mon 15:19 mca@U47: ~
File Edit View Search Terminal Help
      TX packets 1606 bytes 139781 (139.7 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ ifconfig help
help: error fetching interface information: Device not found
mca@U47:~$ ifhelp
ifhelp: command not found
mca@U47:~$ if help
> ^C
mca@U47:~$ ifconfighelp
ifconfighelp: command not found
mca@U47:~$ clear

mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.6.217 netmask 255.255.255.0 broadcast 192.168.6.255
        inet6 fe80::7db9:d636:ca55:99b prefixlen 64 scopeid 0x20<link>
          ether 0c:9d:92:0f:69:di txqueuelen 1000 (Ethernet)
            RX packets 74912 bytes 58451886 (58.4 MB)
            RX errors 0 dropped 2062 overruns 0 frame 0
            TX packets 37561 bytes 16463932 (16.4 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 1657 bytes 143867 (143.8 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 1657 bytes 143867 (143.8 KB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ ping
Usage: ping [-aAbBdDfhLn0qrRUVv64] [-c count] [-i interval] [-I interface]
           [-m mark] [-M pmtdisc_option] [-l preload] [-p pattern] [-Q tos]
           [-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
           [-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -6 [-aAbBdDfhLn0qrRUVv] [-c count] [-i interval] [-I interface]

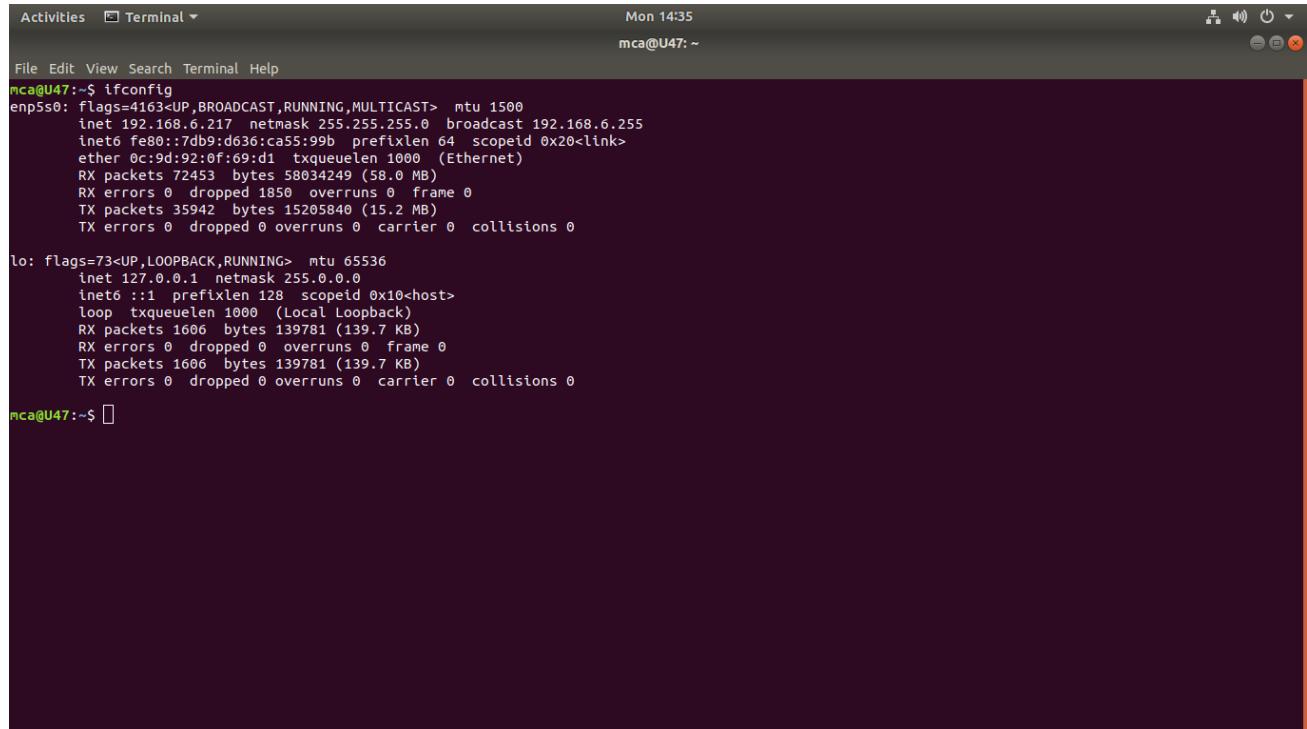
Activities Terminal Mon 15:19 mca@U47: ~
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mca@U47:~$ ifconfig -s
Iface      MTU   RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
enp5s0     1500  108213      0  2933 0       61777      0      0      0 BMRU
lo       65536   2984      0      0 0       2984      0      0      0 LRU
mca@U47:~$ sudo
usage: sudo -h | -K | -k | -V
usage: sudo -v [-AknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-AknS] [-g group] [-h host] [-p prompt] [-U user] [-u user] [command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-c num] [-g group] [-h host] [-p prompt] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-AknS] [-r role] [-t type] [-c num] [-g group] [-h host] [-p prompt] [-T timeout] [-u user] file ...
mca@U47:~$ sudo apt install traceroute
[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:
  bridge-utils cgroupfs-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
  libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
  libsys-hostname-long-perl libzg po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  traceroute
0 upgraded, 1 newly installed, 0 to remove and 16 not upgraded.
Need to get 45.4 kB of archives.
After this operation, 152 kB of additional disk space will be used.
Err:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 traceroute amd64 1:2.1.0-2
  Could not resolve 'archive.ubuntu.com'
E: Failed to fetch http://archive.ubuntu.com/ubuntu/pool/universe/t/traceroute/traceroute_2.1.0-2_amd64.deb  Could not resolve 'archive.ubuntu.com'
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-missing?
mca@U47:~$ next

Command 'next' not found, but can be installed with:

sudo apt install mailutils-mh
sudo apt install mmh
sudo apt install nmh

```



A screenshot of a Linux terminal window titled "Terminal". The window shows the output of the "ifconfig" command. The output lists two network interfaces: "enp5s0" and "lo". The "enp5s0" interface is an Ethernet connection with an IP address of 192.168.6.217, a netmask of 255.255.255.0, and a broadcast address of 192.168.6.255. The "lo" interface is the loopback interface with an IP address of 127.0.0.1 and a netmask of 255.0.0.0. Both interfaces show high traffic statistics, including many RX and TX packets, bytes, and errors.

```
mca@U47:~$ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.6.217 brd 192.168.6.255 netmask 255.255.255.0 broadcast 192.168.6.255
              inet6 fe80::7db9:dd36:ca55:99b prefixlen 64 scopeid 0x20<link>
                ether 0c:9d:92:0f:69:d1 txqueuelen 1000 (Ethernet)
                  RX packets 72453 bytes 58034249 (58.0 MB)
                  RX errors 0 dropped 1850 overruns 0 frame 0
                  TX packets 35942 bytes 15205840 (15.2 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 brd 127.0.0.1 netmask 255.0.0.0
            inet6 ::1 brd :: prefixlen 128 scopeid 0x10<host>
              loop txqueuelen 1000 (Local Loopback)
                RX packets 1606 bytes 139781 (139.7 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 1606 bytes 139781 (139.7 KB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mca@U47:~$ 
```

## Installing of TCPDUMP:

```
$sudo apt install tcpdump
```

```
$tcpdump -D  
->default network devices
```

```
*$sudo tcpdump -i enp5s0  
->packets in enp5s0
```

```
*$sudo tcpdump -c 5 -i enp5s0  
->first five packets
```

```
->filter expressions  
$sudo tcpdump -i enp5s0 -c 5 port 80
```

```
$sudo tcpdump -n -i enp5s0 src 10.0.0.1 and dst port 80
```

Saving packets header to a file:

```
$sudo tcpdump -i enp5s0 -c 10 -w file1.pcap
```

\*To read:

```
$sudo tcpdump -r file1.pcap
```

## IMAGES

```
Activities Terminal Fri 14:23 ●
mca@U47: ~

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mca@U47:~$ sudo apt install tcpdump -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
tcpdump is already the newest version (4.9.2-3).
The following packages were automatically installed and are no longer required:
bridge-utils cgroups-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
libsys-hostname-long-pkgz po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 16 not upgraded.
mca@U47:~$ tcpdump -D
1.enp5s0 [Up, Running]
2.any [Pseudo-device that captures on all interfaces] [Up, Running]
3.lo [Up, Running, Loopback]
4.nflog (Linux netfilter log (NFLOG) interface)
5.nfqueue (Linux netfilter queue (NFQUEUE) interface)
6.usbmon1 (USB bus number 1)
7.usbmon2 (USB bus number 2)
mca@U47:~$ tcpdump -list-
tcpdump: option '--list-' is ambiguous; possibilities: '--list-interfaces' '--list-time-stamp-types' '--list-data-link-types'
tcpdump version 4.9.2
libpcap version 1.8.1
OpenSSL 1.1.0g  2 Nov 2017
Usage: tcpdump [-aAbDefHjKLnNOpqStuUvxX#] [ -B size ] [ -c count ]
          [ -C file_size ] [ -E algo:secret ] [ -F file ] [ -G seconds ]
          [ -i interface ] [ -j timestamptype ] [ -M secret ] [ --number ]
          [ -Q in|out|inout ]
          [ -r file ] [ -s snaplen ] [ --time-stamp-precision precision ]
          [ --immediate-mode ] [ -T type ] [ --version ] [ -V file ]
          [ -w file ] [ -W filecount ] [ -y datalinktype ] [ -z postrotate-command ]
          [ -Z user ] [ expression ]
mca@U47:~$ tcpdump -i enp5s0
tcpdump: enp5s0: You don't have permission to capture on that device
(socket: Operation not permitted)
```

```
Activities Terminal Fri 14:23 ●
mca@U47: ~

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          [ -t type ] [ -s snaplen ] [ --time-stamp-precision precision ]
          [ --immediate-mode ] [ -T type ] [ --version ] [ -V file ]
          [ -w file ] [ -W filecount ] [ -y datalinktype ] [ -z postrotate-command ]
          [ -Z user ] [ expression ]
mca@U47:~$ tcpdump -i enp5s0
tcpdump: enp5s0: You don't have permission to capture on that device
(socket: Operation not permitted)
mca@U47:~$ sudo tcpdump -i enp5s0
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp5s0, link-type EN16MB (Ethernet), capture size 262144 bytes
14:19:36.168857 IP 192.168.6.13.60175 > 239.255.255.250.1900: UDP, length 175
14:19:36.180219 IP U47.56635 > dns.google.domain: 32383+ [1au] PTR? 250.255.255.239.in-addr.arpa. (57)
14:19:36.197040 IP dns.google.domain > U47.56635: 32383 NXDomain 0/1/1 (114)
14:19:36.197221 IP U47.56635 > dns.google.domain: 32383+ PTR? 250.255.255.239.in-addr.arpa. (46)
14:19:36.213548 IP dns.google.domain > U47.56635: 32383 NXDomain 0/1/0 (103)
14:19:36.215201 IP U47.49400 > dns.google.domain: 54711+ [1au] PTR? 13.6.168.192.in-addr.arpa. (54)
14:19:36.231966 IP dns.google.domain > U47.49400: 54711 NXDomain 0/0/1 (54)
14:19:36.249889 IP U47.38104 > dns.google.domain: 8123+ [1au] PTR? 8.8.8.8.in-addr.arpa. (49)
14:19:36.677412 IP 192.168.6.180.52436 > 239.255.255.250.1900: UDP, length 171
14:19:36.678006 IP U47.46962 > dns.google.domain: 44904+ [1au] PTR? 180.6.168.192.in-addr.arpa. (55)
14:19:36.694307 IP dns.google.domain > U47.46962: 44904 NXDomain 0/0/1 (55)
14:19:36.694484 IP U47.46962 > dns.google.domain: 44904+ PTR? 180.6.168.192.in-addr.arpa. (44)
14:19:36.718791 IP dns.google.domain > U47.46962: 44904 NXDomain 0/0/0 (44)
14:19:36.726818 IP 192.168.6.40.63693 > 239.255.255.250.1900: UDP, length 175
14:19:36.727338 IP U47.41852 > dns.google.domain: 38027+ [1au] PTR? 40.6.168.192.in-addr.arpa. (54)
14:19:36.741527 IP dns.google.domain > U47.41852: 38027 NXDomain 0/0/1 (54)
14:19:36.747140 IP U47.41852 > dns.google.domain: 38027+ PTR? 40.6.168.192.in-addr.arpa. (43)
14:19:36.758794 IP 192.168.6.84.7765 > 255.255.255.255.7765: UDP, length 100
14:19:36.756145 IP dns.google.domain > U47.41852: 38027 NXDomain 0/0/0 (43)
14:19:36.756922 IP U47.58032 > dns.google.domain: 40120+ [1au] PTR? 84.6.168.192.in-addr.arpa. (54)
14:19:36.774111 IP dns.google.domain > U47.58032: 40120 NXDomain 0/0/1 (54)
14:19:36.774241 IP U47.58032 > dns.google.domain: 40120+ PTR? 84.6.168.192.in-addr.arpa. (43)
14:19:36.791060 IP dns.google.domain > U47.58032: 40120 NXDomain 0/0/0 (43)
14:19:36.909800 IP 192.168.6.244.66999 > 239.255.255.250.1900: UDP, length 175
14:19:36.910406 IP U47.44265 > dns.google.domain: 31771+ [1au] PTR? 244.6.168.192.in-addr.arpa. (55)
14:19:36.924908 IP dns.google.domain > U47.44265: 31771 NXDomain 0/0/1 (55)
14:19:36.925101 IP U47.44265 > dns.google.domain: 31771+ PTR? 244.6.168.192.in-addr.arpa. (44)
14:19:36.939453 IP dns.google.domain > U47.44265: 31771 NXDomain 0/0/0 (44)
14:19:36.963929 IP 192.168.6.5.49775 > 239.255.255.250.1900: UDP, length 175
```

```
Activities Terminal Fri 14:23 ●
mca@U47: ~

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14:20:34.190069 IP 192.168.6.2.63036 > 239.255.255.250.1900: UDP, length 175
14:20:34.257125 ARP, Request who-has 192.168.6.14 tell 192.168.6.11, length 46
14:20:34.352994 IP 192.168.6.47.49159 > 239.255.255.250.1900: UDP, length 174
14:20:34.414893 IP 192.168.6.245.57002 > 239.255.255.250.1900: UDP, length 174
14:20:34.502719 IP 192.168.6.48.61677 > 239.255.255.250.1900: UDP, length 174
14:20:34.505687 IP 192.168.6.26.50066 > 239.255.255.250.1900: UDP, length 175
14:20:34.699204 IP 192.168.6.92.mdns > 224.0.0.251.mdns: 0 PTR (QM)? _googlecast._tcp.local. (40)
14:20:34.699214 IP 0 fe80::fe4f:fc30:ba0:e978.mdns > ff02::fb.mdns: 0 PTR (QM)? _googlecast._tcp.local. (40)
14:20:34.699339 IP 0 fe80::fe4f:fc30:ba0:e978.mdns > ff02::fb.mdns: 0 PTR (QM)? _googlecast._tcp.local. (40)
14:20:34.699351 IP 0 fe80::fe4f:fc30:ba0:e978.mdns > ff02::fb.mdns: 0 PTR (QM)? _googlecast._tcp.local. (40)
14:20:34.762625 IP 192.168.6.92.64114 > 239.255.255.250.1900: UDP, length 174
14:20:34.782066 IP 192.168.6.92.netbios-ns > 192.168.6.255.netbios-ns: NBT UDP PACKET(137): REGISTRATION; REQUEST; BROADCAST
14:20:34.782084 IP 192.168.6.92.netbios-ns > 192.168.6.255.netbios-ns: NBT UDP PACKET(137): REGISTRATION; REQUEST; BROADCAST
14:20:34.782088 IP 192.168.6.92.netbios-ns > 192.168.6.255.netbios-ns: NBT UDP PACKET(137): REGISTRATION; REQUEST; BROADCAST
14:20:34.861199 IP 192.168.6.80.netbios-ns > 192.168.6.255.netbios-ns: NBT UDP PACKET(137): QUERY; REQUEST; BROADCAST
14:20:35.182104 IP 192.168.6.60.56355 > 239.255.255.250.1900: UDP, length 175
14:20:35.186052 IP 192.168.6.236.59543 > 192.168.6.255.6866: UDP, length 395
14:20:35.205026 IP 192.168.6.2.63036 > 239.255.255.250.1900: UDP, length 175
14:20:35.333414 ARP, Request who-has 192.168.1.1 tell 192.168.1.1, length 46
14:20:35.335462 ARP, Reply 192.168.1.1 is-at d8:94:03:38:83:40 (oui Unknown), length 46
^C
1399 packets captured
1622 packets received by filter
223 packets dropped by kernel
mca@U47: ~ -c
-c: command not found
mca@U47: ~ sudo tcpdump -c 5 -l enp5s0
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp5s0, link-type EN10MB (Ethernet), capture size 262144 bytes
14:22:23.472598 ARP, Request who-has 192.168.90.1 tell 192.168.90.60, length 46
14:22:23.473923 IP U47.46373 > dns.google.domain: 26987+[1au] PTR? 1.90.168.192.in-addr.arpa. (54)
14:22:23.491037 IP dns.google.domain > U47.46373: 26987 NXDomain 0/0/1 (54)
14:22:23.491283 IP U47.46373 > dns.google.domain: 26987+ PTR? 1.90.168.192.in-addr.arpa. (43)
14:22:23.495105 IP 192.168.6.32.58575 > 239.255.255.250.1900: UDP, length 175
5 packets captured
21 packets received by filter
10 packets dropped by kernel
mca@U47: ~
```

```
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mca@U47: ~

File Edit View Search Terminal Help
38 packets dropped by kernel
mca@U47: ~ sudo tcpdump -n -i enp5s0 src 192.168.6.63.69733 and dst port 80
tcpdump: unknown host '192.168.6.63.69733'
mca@U47: ~ ipconfig

Command 'ipconfig' not found, did you mean:
  command 'iwconfig' from deb wireless-tools
  command 'lconfig' from deb ipmiutil
  command 'ifconfig' from deb net-tools

Try: sudo apt install <deb name>

mca@U47: ~ ifconfig
enp5s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.6.217  netmask 255.255.255.0  broadcast 192.168.6.255
      inet6 fe80::7db9:d636:ca55:99b  prefixlen 64  scopeid 0x20<link>
        ether 0c:9d:92:0f:69:d1  txqueuelen 1000  (Ethernet)
          RX packets 135947  bytes 157067941 (157.0 MB)
          RX errors 0  dropped 1976  overruns 0  frame 0
          TX packets 21129  bytes 4954249 (4.9 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 4131  bytes 314487 (314.4 KB)
          RX errors 0  dropped 0  overruns 0  frame 0
          TX packets 4131  bytes 314487 (314.4 KB)
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

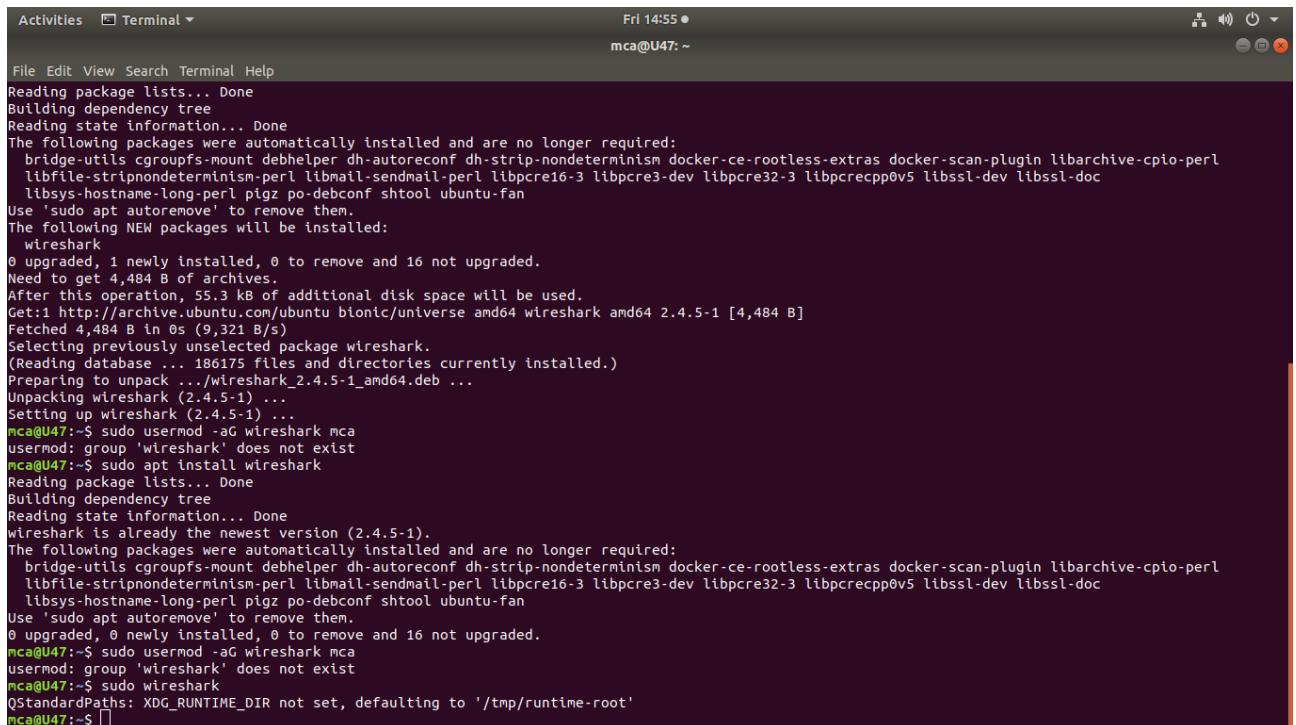
mca@U47: ~ sudo tcpdump -n -i enp5s0 src 192.168.6.217 and dst port 80
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp5s0, link-type EN10MB (Ethernet), capture size 262144 bytes
^C
0 packets captured
0 packets received by filter
```

## WIRESHARK

### INSTALLATION OF WIRESHARK:

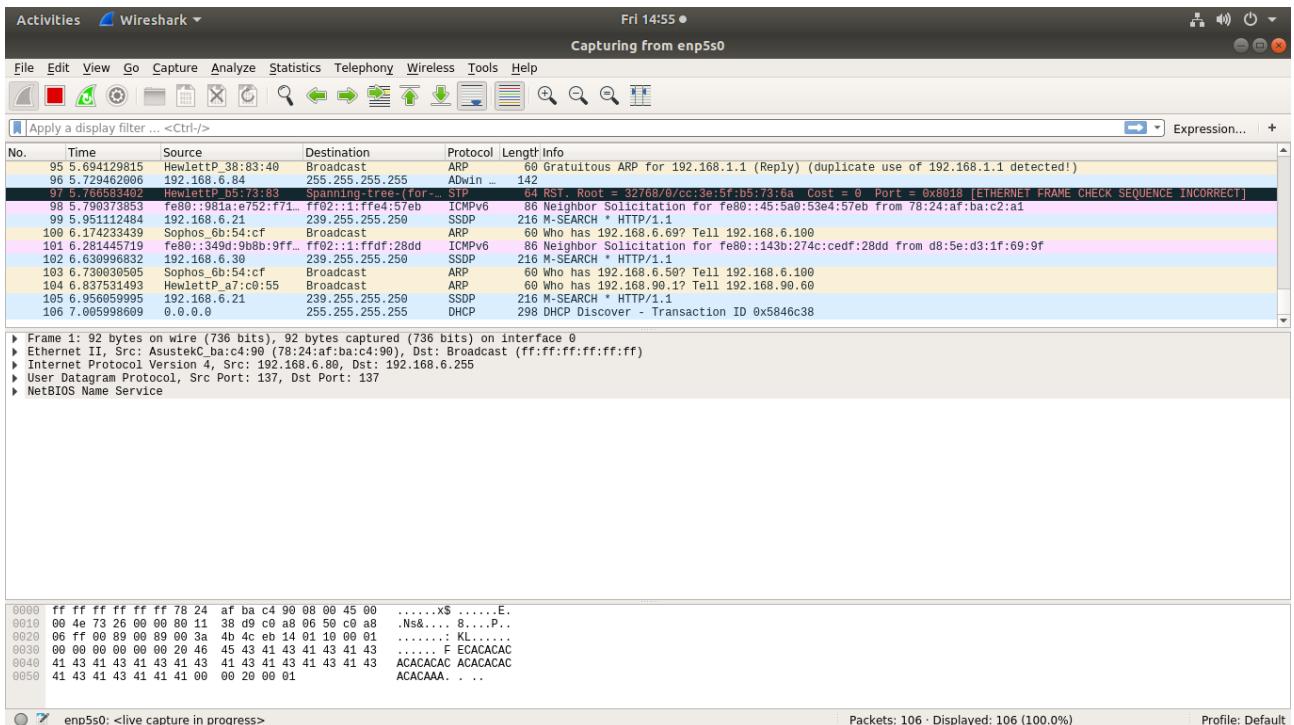
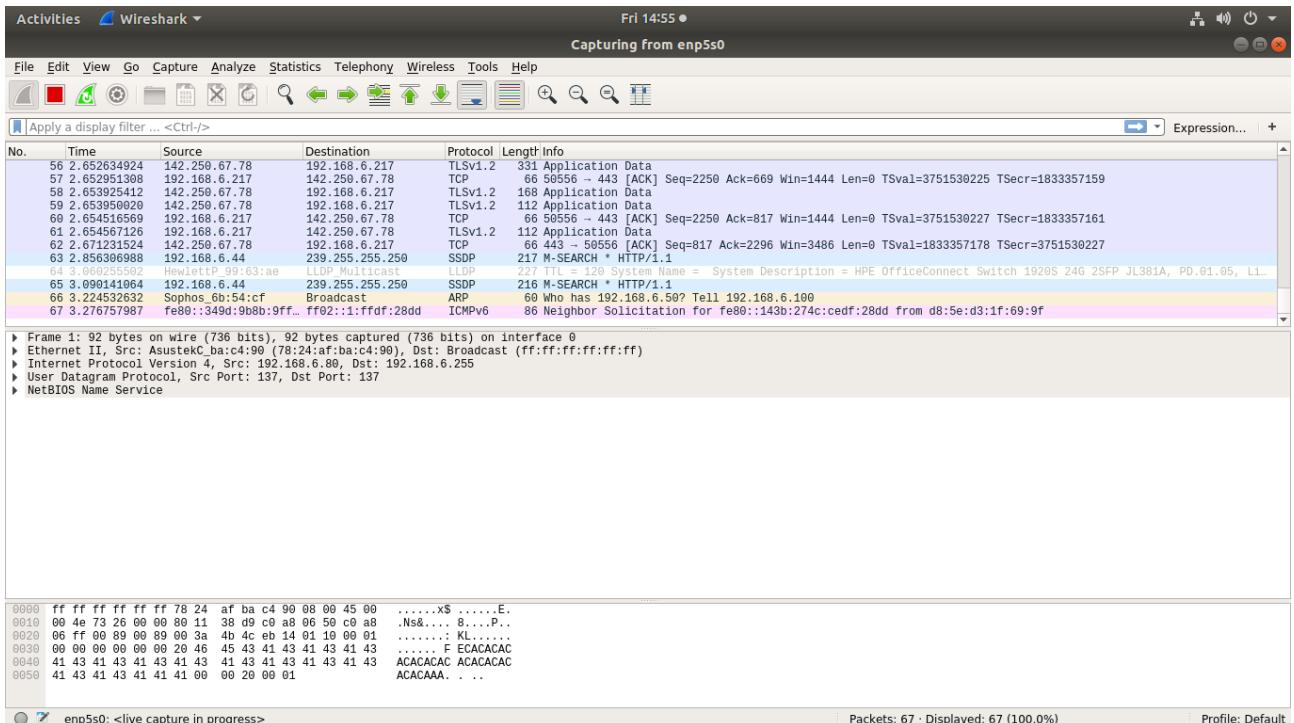
```
$sudo apt install wireshark
```

\*create a user and open wireshark



The screenshot shows a terminal window on a Linux desktop environment. The title bar says "Activities Terminal". The status bar at the top right shows "Fri 14:55" and the user "mca@U47: ~". The terminal window contains the output of a terminal session. It starts with "Reading package lists... Done", followed by "Building dependency tree" and "Reading state information... Done". Then it lists packages being removed: "The following packages were automatically installed and are no longer required:" with a long list of package names. It then lists new packages: "The following NEW packages will be installed:" followed by "wireshark". It shows the upgrade process: "0 upgraded, 1 newly installed, 0 to remove and 16 not upgraded. Need to get 4,484 B of archives." It then shows the download of the package from the archive: "Get:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 wireshark amd64 2.4.5-1 [4,484 B] Fetched 4,484 B in 6s (9,321 B/s)". It then selects the package: "Selecting previously unselected package wireshark." It shows the preparation for unpacking: "(Reading database ... 186175 files and directories currently installed.) Preparing to unpack .../wireshark\_2.4.5-1\_amd64.deb ...". It then unpacks the package: "Unpacking wireshark (2.4.5-1) ... Setting up wireshark (2.4.5-1) ...". It then runs "sudo usermod -aG wireshark mca" and "sudo apt install wireshark". It shows the usermod command failing: "usermod: group 'wireshark' does not exist". It then runs "sudo wireshark" and shows the standard path warning: "QStandardPaths: XDG\_RUNTIME\_DIR not set, defaulting to '/tmp/runtime-root'". Finally, it ends with a blank line: "mca@U47: \$".

```
File Edit View Search Terminal Help
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
bridge-utils cgroupfs-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
libsys-hostname-long-perl pigz po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
wireshark
0 upgraded, 1 newly installed, 0 to remove and 16 not upgraded.
Need to get 4,484 B of archives.
After this operation, 55.3 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 wireshark amd64 2.4.5-1 [4,484 B]
Fetched 4,484 B in 6s (9,321 B/s)
Selecting previously unselected package wireshark.
(Reading database ... 186175 files and directories currently installed.)
Preparing to unpack .../wireshark_2.4.5-1_amd64.deb ...
Unpacking wireshark (2.4.5-1) ...
Setting up wireshark (2.4.5-1) ...
mca@U47:~$ sudo usermod -aG wireshark mca
usermod: group 'wireshark' does not exist
mca@U47:~$ sudo apt install wireshark
Reading package lists... Done
Building dependency tree
Reading state information... Done
Wireshark is already the newest version (2.4.5-1).
The following packages were automatically installed and are no longer required:
bridge-utils cgroupfs-mount debhelper dh-autoreconf dh-strip-nondeterminism docker-ce-rootless-extras docker-scan-plugin libarchive-cpio-perl
libfile-stripnondeterminism-perl libmail-sendmail-perl libpcre16-3 libpcre3-dev libpcre32-3 libpcrecpp0v5 libssl-dev libssl-doc
libsys-hostname-long-perl pigz po-debconf shtool ubuntu-fan
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 16 not upgraded.
mca@U47:~$ sudo usermod -aG wireshark mca
usermod: group 'wireshark' does not exist
mca@U47:~$ sudo wireshark
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
mca@U47:~$
```



## NETCAT

\*Perform basic network service

```
$sudo apt-get install netcat
```

```
$nc -l -p 12345
```

```
$nc -i 5 127.0.0.1 12345
```

->sender with time wait of 5 seconds

The image shows two terminal windows side-by-side. The left terminal window shows the process of installing the netcat package via apt-get. It lists dependencies like docker-ce-rootless-extras, docker-scan-plugin, libarchive-cpio-perl, libfile-stripnondeterminism-perl, libmail-sendmail-perl, libpcre16-3, libpcre32-3, libpcrecpp0v5, libssl-dev, libssl1-doc, libsys-hostname-long-perl, libzg, po-debconf, shtool, and ubuntu-fan. It asks if the user wants to continue with the installation of netcat-traditional and netcat. The right terminal window shows the netcat listener command being run: \$nc -l -p 12345. In the background, another terminal window shows the receiver sending the message "hai my dear student".

```
mca@U47:~$ sudo apt-get install netcat
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
netcat-traditional
The following NEW packages will be installed:
netcat netcat-traditional
0 upgraded, 2 newly installed, 0 to remove and 16 not upgraded.
Need to get 65.1 kB of archives.
After this operation, 157 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 netcat-traditional amd64 1.10-41.1 [61.7 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic/universe amd64 netcat all 1.10-41.1 [3,436 B]
Fetched 65.1 kB in 1s (74.4 kB/s)
Selecting previously unselected package netcat-traditional.
(Reading database ... 186179 files and directories currently installed.)
Preparing to unpack .../netcat-traditional_1.10-41.1_amd64.deb ...
Unpacking netcat-traditional (1.10-41.1) ...
Selecting previously unselected package netcat.
Preparing to unpack .../netcat_1.10-41.1_all.deb ...
Unpacking netcat (1.10-41.1) ...
Setting up netcat-traditional (1.10-41.1) ...
Setting up netcat (1.10-41.1) ...
Processing triggers for man-db (2.8.3-2) ...
mca@U47:~$ nc -l -p 12345
usage: nc [-46CDDfhklnnrStUuvVzz] [-I length] [-i interval] [-M ttl]
          [-m minttl] [-o length] [-P proxy_username] [-p source_port]
          [-q seconds] [-s source] [-T keyword] [-V rtable] [-W recvlimit]
          [-w timeout]
          [-X proxy_protocol] [-x proxy_address[:port]]      [destina
tion] [port]
mca@U47:~$ nc -l -p 1234
hai my dear student
]
```

Activities Terminal Fri 15:13 ●

```
mca@U47: ~
```

File Edit View Search Terminal Help  
Do you want to continue? [Y/n] Y  
Get:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 netcat-traditional amd64 1:10-41.1 [61.7 kB]  
Get:2 http://archive.ubuntu.com/ubuntu bionic/universe amd64 netcat all 1.10-41.1 [3,436 B]  
Fetched 65.1 kB in 1s (74.4 kB/s)  
Selecting previously unselected package netcat-traditional.  
(Reading database ... 186179 files and directories currently installed.)  
Preparing to unpack .../netcat-traditional\_1.10-41.1\_amd64.deb ...  
Unpacking netcat-traditional (1:10-41.1) ...  
Selecting previously unselected package netcat.  
Preparing to unpack .../netcat\_1.10-41.1\_all.deb ...  
Unpacking netcat (1:10-41.1) ...  
Setting up netcat-traditional (1:10-41.1) ...  
Setting up netcat (1:10-41.1) ...  
Processing triggers for man-db (2.8.3-2) ...  
**mca@U47:~\$ nc**  
usage: nc [-46CDDfhklNnrStUuvzz] [-I length] [-i interval] [-M ttl]  
 [-m minttl] [-O length] [-P proxy\_username] [-p source\_port]  
 [-q seconds] [-s source] [-T keyword] [-V rtable] [-W recvlimit]  
 [-w timeout]  
 [-X proxy\_protocol] [-x proxy\_address[:port]] [destina  
tion] [port]  
**mca@U47:~\$ nc -l -p 1234**  
hal my dear student  
ayyo  
what up  
whats up dude  
u trippin  
imma be completely honest with you guys im just going with the flowww  
**mca@U47:~\$ nc -l -p 1234**  
^C  
**mca@U47:~\$ nc -i 10 127.0.0.1 1235**  
**mca@U47:~\$ nc 127.0.0.1 1235**  
[sudo] password for mca:  
**mca@U47:~\$ sudo nc -i 10 127.0.0.1 1235**  
**mca@U47:~\$ sudo nc -i 5 127.0.0.1 1237**  
hghghj  
hjhjj  
hj  
jk  
[]

**NETWORKING & SYSTEM ADMINISTRATION LAB****Experiment No.: 1**

Name: DevisVarghese  
Roll No: 47  
Batch: A  
Date: 23/05/2022

**Aim**

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 & Output Screenshot****1. Installation of docker & container**

1. sudo apt-get update - to update the local database of software to make sure you've got access to the latest revisions.
2. sudo apt install docker.io - it's recommended to uninstall any old Docker software before proceeding.
3. sudo snap install docker - To install docker, simply use the command
4. sudo docker run hello-world - To check whether you can access and download images from Docker Hub. Docker containers are built from Docker images. By default, Docker pulls these images from [Docker Hub](#), a Docker registry managed by Docker, the company behind the Docker project. Anyone can host their Docker images on Docker Hub, so most applications and Linux distributions you'll need will have images hosted there.
5. sudo docker images - After an image has been downloaded, you can then run a container using the downloaded image with the run subcommand

6. `sudo docker ps` - To view the **active ones**. After using Docker for a while, you'll have many active (running) and inactive containers on your computer.

7. `sudo docker ps -a` – To view all containers — active and inactive, run `docker ps` with the `-a` switch

8. `sudo docker pull mysql` – To pull the Docker image for MySQL.

9. `sudo docker images` - Verify the image is stored locally by [listing the downloaded Docker images](#).

10. `sudo docker run -d -p0.0.0.0:80:80 mysql:latest` - to deploy a new MySQL container.

The `-d` option instructs Docker to run the container as a service in the background.

11. `sudo docker run -it --name sl mysql /bin/bash` – we name the container as sl.

12. `sudo docker start sl` – command is used to start the docker container here sl.

13. `sudo docker stop sl` – to stop the running container.

14. `sudo docker kill sl` - to kill the running container.

15. `sudo docker image rm -f image mysql` - To delete the MySQL container, stop it first, and then use the **docker rm** command.

## 2. Deployment of mysql

We will first pull the Docker image for MySQL and verify the image is stored locally by [listing the downloaded Docker images](#).

Then deploy a new MySQL container. The `-d` option instructs Docker to run the container as a service in the background and linked to the port address 3306:3306 with name specified as jj.

Now check whether it is in running state by and then Fetch the logs of the container jj.

A password will be generated by that command copy that and paste it in some writer or editor. Now execute the mysql container jj in bash.

Then type, jj -uroot -p, and a password will be asked, paste the password saved before. We can change the password by: ALTER USER ‘root’@’localhost’ IDENTIFIED BY ‘newpassword’; Here we are going to give new name as ‘root’. Now we can view our database.

## Deployment of apache

We need to pull the Apache Docker Image. To access your web server from your host machine you can ask Docker to map a random port on your host (here port no: 8098).

Type: localhost:8098/, in firefox to check whether Apache is deployed properly in our container. If it does it displays the text ‘It works!’.

## 3. Hosting a simple website

Requests made to public IP address on port **8098** be redirected to port **80** on the container named jaisejose. Also, instead of serving content from the container itself, we will serve a simple web page from **/home/jaise/website**. Do this by mapping **/home/jaise/website/** on the **/usr/local/apache2/htdocs/** on the container.

Directory website is created containing a simple web page named docker.html, and after saving the html file, point your browser to **Server-IP:8098/docker.html** (where **Server-IP** is host’s public IP address). Find the IP address by inspect command using the container id. We can also simply paste the corresponding IP address on the browser.

The IP address is shown in the below screenshot.

## SCREENSHOTS

```
FROM httpd
COPY . /usr/local/apache2/htdocs/]

"Bridge": "",
"SandboxID": "788305ff719f2a71d8c10c81773fa48f57e8e6d14c02eb63ccff1e5cb69913f9",
"HalfpinMode": false,
"LinkLocalIPv6Address": "",
"LinkLocalIPv6PrefixLen": 0,
"Ports": [
    "80/tcp": [
        {
            "HostIp": "0.0.0.0",
            "HostPort": "80"
        },
        {
            "HostIp": "::",
            "HostPort": "80"
        }
    ]
},
"SandboxKey": "/run/snap.docker/netns/788305ff719f",
"SecondaryIPAddresses": null,
"SecondaryIPv6Addresses": null,
"EndpointID": "ac6010a71ba5a830ab94ac4a510a8587ce5cf3339e6d8314b36f170daf096cf1",
"Gateway": "172.17.0.1",
"GlobalIPv6Address": "",
"GlobalIPv6PrefixLen": 0,
"IPAddress": "172.17.0.3",
"IPPrefixLen": 16,
"IPv6Gateway": "",
"MacAddress": "02:42:ac:11:00:03",
"Networks": [
    "bridge": [
        "IPAMConfig": null,
        "Links": null,
        "Aliases": null,
        "NetworkID": "7d42fc3c9bae0874203910775fc14148a65e1a986f84908899b31d30cf593031",
        "EndpointID": "ac6010a71ba5a830ab94ac4a510a8587ce5cf3339e6d8314b36f170daf096cf1",
        "Gateway": "172.17.0.1",
        "IPAddress": "172.17.0.3",
        "IPPrefixLen": 16,
        "IPv6Gateway": "",
        "GlobalIPv6Address": "",
        "GlobalIPv6PrefixLen": 0,
        "MacAddress": "02:42:ac:11:00:03",
        "DriverOpts": null
    ]
}
]
devis@devis-VirtualBox:~$ sudo docker start website
website
devis@devis-VirtualBox:~$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
e740d3fd6927 website "httpd-foreground" 6 minutes ago Up 6 minutes 0.0.0.0:80->80/tcp website
25ddae978df5 mysql/mysql-server:latest "/entrypoint.sh mysq..." 45 minutes ago Up 45 minutes (healthy) 0.0.0.0:3306->3306/tcp, :::3306->3306/tcp, 33060-33061/tcp mysql
devis@devis-VirtualBox:~$
```

```
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/view (view) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/ex (ex) in auto mode
Processing triggers for man-db (2.9.1.1) ...
dev@devis-VirtualBox: ~ vim Dockerfile
dev@devis-VirtualBox: $ sudo docker build -t website .
Sending build context to Docker daemon 133.4MB
Step 1/2 : FROM httpd
--> c58ef0fbff57
Step 2/2 : COPY . /usr/local/apache2/htdocs/
--> d3c653e37212
Successfully built d3c653e37212
Successfully tagged website:latest
dev@devis-VirtualBox: $ sudo docker run -itd -p 80:80 --name website website
e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154
dev@devis-VirtualBox: $ sudo docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS               NAMES
e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154   "httpd-foreground"   41 seconds ago    Up 39 seconds      0.0.0.0:80->80/tcp, :::80->80/tcp
25ddaa978df5   mysql/mysql-server:latest  "/entrypoint.sh mysq..."  39 minutes ago     Up 39 minutes (healthy)  0.0.0.0:3306->3306/tcp, :::3306->3306/tcp, 33060-33061/tcp
mysql@devis-VirtualBox: $ sudo docker inspect e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154
[{"id": "e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154", "created": "2022-05-20T16:21:55.860857912Z", "path": "httpd-foreground", "args": [], "state": {"status": "running", "running": true, "paused": false, "restarting": false, "oomKilled": false, "dead": false, "pid": 10936, "exitCode": 0, "error": "", "startdat": "2022-05-20T16:21:56.644321244Z", "finshedAt": "2001-01-01T00:00:00Z"}, "image": "sha256:d3c653e37212e2fa1a67e6055e439285009322541fe65811e075c860907ee837", "resolvconfPath": "/var/snap/docker/common/var-lib-docker/containers/e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154/resolv.conf", "hostnamePath": "/var/snap/docker/common/var-lib-docker/containers/e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154/hostname", "hostsPath": "/var/snap/docker/common/var-lib-docker/containers/e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154/hosts", "logPath": "/var/snap/docker/common/var-lib-docker/containers/e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154.json"}, "name": "website", "restartCount": 0, "driver": "overlay2", "platform": "linux", "mountLabel": "", "processLabel": "", "appArmorProfile": "docker-default", "execIDs": null, "hostConfig": {"blinds": null, "containerIDFile": "", "logConfig": "f"}, "logConfig": ""}, "mysql: ~C
mysql> ^C
mysql> ^C
mysql> exit
Bye
hash-4.4# ~C
hash-4.4# exit
exit
dev@devis-VirtualBox: $ sudo apt install vim
[sudo] password for devis:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  vim-runtime
Suggested packages:
  ctags vim-doc vim-scripts
The following NEW packages will be installed:
  vim-runtime
0 upgraded, 0 newly installed, 0 to remove and 137 not upgraded.
Need to get 7,110 kB of archives.
After this operation, 34.6 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-updates/main amd64 vim-runtime all 2:8.1.2269-1ubuntu5.7 [5,872 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim amd64 2:8.1.2269-1ubuntu5.7 [1,238 kB]
Fetched 7,110 kB in 20s (351 kB/s)
Selecting previously unselected package vim-runtime.
Preparing database ... 156916 files and directories currently installed.)
Preparing to unpack .../vim-runtime_2:8.1.2269-1ubuntu5.7_all.deb ...
Adding 'division' of /usr/share/vim/vim81/doc/help.txt.vim-tiny by vim-runtime'
Adding 'division' of /usr/share/vim/vim81/doc/tags to /usr/share/vim/vim81/doc/tags.vim-tiny by vim-runtime'
Unpacking vim-runtime (2:8.1.2269-1ubuntu5.7) ...
Selecting previously unselected package vim.
Preparing to unpack .../vim_2:8.1.2269-1ubuntu5.7_amd64.deb ...
Unpacking vim (2:8.1.2269-1ubuntu5.7) ...
Setting up vim (2:8.1.2269-1ubuntu5.7) ...
  update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vim (vim) in auto mode
  update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vimdiff (vimdiff) in auto mode
  update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vimt(1vith) in auto mode
  update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/view (view) in auto mode
  update-alternatives: using /usr/bin/vi(1) to provide /usr/bin/vi (vi) in auto mode
  update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/view (view) in auto mode
  update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/ex (ex) in auto mode
Processing triggers for man-db (2.9.1.1) ...
dev@devis-VirtualBox: ~ vim Dockerfile
dev@devis-VirtualBox: $ sudo docker build -t website .
Sending build context to Docker daemon 133.4MB
Step 1/2 : FROM httpd
--> c58ef0fbff57
Step 2/2 : COPY . /usr/local/apache2/htdocs/
--> d3c653e37212
Successfully built d3c653e37212
Successfully tagged website:latest
dev@devis-VirtualBox: $ sudo docker run -itd -p 80:80 --name website website
e740d3fd69277fffffdbf05d6bc97260552fe2b54f4b2747c28d2e86e95154
```

```

dev@devi-VirtualBox: ~
port      List port mappings or a specific mapping for the container
ps        List containers
pull      Pull an image or a repository from a registry
push      Push an image or a repository to a registry
rename   Rename a container
rm       Remove one or more containers
rmi     Remove one or more images
run      Run a command in a new container
save     Save one or more images to a tar archive (streamed to STDOUT by default)
search   Search the Docker Hub for images
start    Start one or more stopped containers
stats    Display a live stream of container(s) resource usage statistics
stop     Stop one or more running containers
tag      Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE
top      Display the running processes of a container
unpause  Unpause all processes within one or more containers
update   Update configuration of one or more containers
version  Show the Docker version information
walt    Block until one or more containers stop, then print their exit codes

Run 'docker COMMAND --help' for more information on a command.

To get more help with docker, check out our guides at https://docs.docker.com/go/guides/

devi@devi-VirtualBox: ~$ sudo docker exec -it mysql bash
bash:4.4# mysql -uroot -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.29

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owners.

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

mysql> ALTER USER 'root'@'localhost' IDENTIFIED BY '123';
Query OK, 0 rows affected (0.02 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.01 sec)

mysql>

```

```

dev@devi-VirtualBox: ~
fade20aaf17d: Pull complete
Digest: sha256:1ab8d2a5584e53a42a43cbd430ae340a36942afee9e14a86624a2cb2d90ce655b
Status: Downloaded newer image for mysql/mysql-server:latest
docker.io/mysql/mysql-server:latest
devi@devi-VirtualBox: ~$ sudo docker run -p 3306:3306 -d --name mysql
flag needs an argument '-'
See 'docker run -h'.
devi@devi-VirtualBox: ~$ sudo docker run -p 3306:3306 -d --name=mysql mysql/mysql-server:latest
25ddaa0978df565edac3d9ddd2dd82c2a7e43b3a000ac1f21f143777fb49c2cd
devi@devi-VirtualBox: ~$ sudo docker images
REPOSITORY          TAG        IMAGE ID        CREATED         SIZE
httpd              latest     c58ef9bbfb57   9 days ago    144MB
mysql/mysql-server latest     5a9594052ae2   3 weeks ago   438MB
hello-world        latest     febd5dfeada5   7 months ago   13.3kB
devi@devi-VirtualBox: ~$ sudo docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS               NAMES
25ddaa0978df5       mysql/mysql-server:latest   "/entrypoint.sh mysq..."   31 seconds ago   Up 29 seconds (health: starting)   0.0.0.0:3306->3306/tcp, 33060-33061/tcp   mysql
devi@devi-VirtualBox: ~$ sudo docker logs mysql
[Entrypoint] MySQL Docker Image 8.0.29-1.2.8-server
[Entrypoint] No password option specified for new database.
[Entrypoint] A random onetime password will be generated.
[Entrypoint] Initializing database
2022-05-20T15:43:22.056130Z 0 [System] [MY-013169] [Server] /usr/sbin/mysqld (mysqld 8.0.29) initializing of server in progress as process 19
2022-05-20T15:43:22.072926Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
2022-05-20T15:43:24.352089Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2022-05-20T15:43:24.649430Z 0 [Warning] [MY-010453] [Server] root@localhost is created with an empty password ! Please consider switching off the --initialize-insecure option.
[Entrypoint] Database initialization
2022-05-20T15:43:35.869212Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.0.29) starting as process 62
2022-05-20T15:43:35.970582Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
2022-05-20T15:43:36.469430Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2022-05-20T15:43:36.900443Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
2022-05-20T15:43:36.904815Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS. Encrypted connections are now supported for this channel.
2022-05-20T15:43:36.938835Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Socket: /var/run/mysqld/mysqld.sock
2022-05-20T15:43:36.939375Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.29' socket: '/var/lib/mysql/mysql.sock' port: 0 MySQL Community Server - GPL.
Warning: Unable to load '/usr/share/zoneinfo/zone.tab' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/leapseconds' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/tzdata.zl' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/zone.tab' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/zone1970.tab' as time zone. Skipping it.
[Entrypoint] GENERATED ROOT PASSWORD: Cu5GQ_&nZqkF5J#M//7jhR8qT1?Q1
[Entrypoint] ignoring /docker-entrypoint-initdb.d/
2022-05-20T15:43:40.336716Z 11 [System] [MY-013172] [Server] Received SHUTDOWN from user root. Shutting down mysqld (Version: 8.0.29).
2022-05-20T15:43:43.792876Z 0 [System] [MY-010910] [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.29) MySQL Community Server - GPL.
[Entrypoint] Server shut down
[Entrypoint] Setting root user as expired. Password will need to be changed before database can be used.
[Entrypoint] MySQL init process done. Ready for start up.

[Entrypoint] Starting MySQL 8.0.29-1.2.8-server
2022-05-20T15:43:44.632314Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.0.29) starting as process 1
2022-05-20T15:43:44.636404Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
2022-05-20T15:43:44.981478Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2022-05-20T15:43:45.131176Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
2022-05-20T15:43:45.13114027Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS. Encrypted connections are now supported for this channel.

```

```
[Entrypoint] MySQL init process done. Ready for start up.

[Entrypoint] Starting MySQL 8.0.29-1.2.8-server
2022-05-20T15:43:44.623Z 0 [System] [MY-010110] [Server] /usr/sbin/mysqld (mysqld 8.0.29) starting as process 1
2022-05-20T15:43:44.623Z 0 [System] [MY-010111] [InnoDB] InnoDB initialization has started.
2022-05-20T15:43:45.131Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
2022-05-20T15:43:45.131Z 0 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
2022-05-20T15:43:45.131Z 0 [Warning] [MY-010068] [Server] X Plugin ready for connections. Bind-address: '::' port: 33060, socket: /var/run/mysqld/mysqld.sock
2022-05-20T15:43:45.165Z 0 [System] [MY-011233] [Server] X Plugin ready for connections. Bind-address: '::' port: 33060, socket: '/var/lib/mysql/mysql.sock'
2022-05-20T15:43:45.166Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.29' socket: '/var/lib/mysql/mysql.sock' port: 3306 MySQL Community Server - GPL.

/devic@devi-VirtualBox:~$ sudo docker exec -it mysql bash
See 'docker --help'.

Usage: docker [OPTIONS] COMMAND
A self-sufficient runtime for containers

Options:
  --config string      Location of client config files (default "/root/.docker")
  -c, --context string Name of the context to use to connect to the daemon (overrides DOCKER_HOST env var and default context set with "docker context use")
  -D, --debug          Enable debug mode
  -H, --host list      Daemon socket(s) to connect to
  -l, --log-level string Set the logging level ("debug"|"info"|"warn"|"error"|"fatal") (default "info")
  --tls                Use TLS. Implied by --tlsverify
  --tlscacert string   TLS certificate authority file for this CA (default "/root/.docker/ca.pem")
  --tlscert string     Path to TLS certificate file (default '/root/.docker/cert.pem')
  --tlskey string      Path to TLS key file (default '/root/.docker/key.pem')
  --tlsverify string   Use TLS and verify the remote
  -v, --version         Print version information and quit

Management Commands:
builder    Manage builds
config     Manage Docker configs
container  Manage containers
context    Manage contexts
image      Manage images
manifest   Manage Docker image manifests and manifest lists
network   Manage networks
node       Manage Swarm nodes
plugin    Manage plugins
secret    Manage Docker secrets
service   Manage services
stack     Manage Docker stacks
swarm     Manage Swarm
system    Manage Docker
trust     Manage trust on Docker images
volume    Manage volumes

Commands:
attach      Attach local standard input, output, and error streams to a running container
build      Build an image from a Dockerfile
commit     Create a new image from a container's changes
cp        Copy files/folders between a container and the local filesystem
create     Create a new container
diff      Inspect changes to files or directories on a container's filesystem
```

```
devic@devi-VirtualBox:~$ docker 20.10.14 from Canonical* installed
devic@devi-VirtualBox:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:80f31da1ac7b312ba29d65080ffdf797dd76acf870e677f390d5acba9741b7
Status: Downloaded newer image for hello-world:latest

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

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.

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/
```

```
devic@devi-VirtualBox:~$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
hello-world latest feb5d9feaa65 7 months ago 13.3kB
devic@devi-VirtualBox:~$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
90edd39e8991 hello-world "hello" 27 seconds ago Exited (0) 26 seconds ago gifted_jollot
devic@devi-VirtualBox:~$ sudo docker pull httpd
Using default tag: latest
latest: Pulling from library/httpd
214ca5fb9032: Pull complete
7cf31a2eeec0: Pull complete
bf066e57b9f2: Pull complete
c15a4e94ae0b: Pull complete
dc25474c7f97: Pull complete
Digest: sha256:2df1f839d6127e400ac5f05481d8a0f17ac46a3b91de40b01e649c9a0324dea0
Status: Downloaded newer image for httpd:latest
docker.io/library/httpd:latest
devic@devi-VirtualBox:~$ sudo docker run -p 8080:80 httpd localhost:8080
docker: Error response from daemon: failed to create shim: OCI runtime create failed: container_linux.go:380: starting container process caused: exec: "localhost:8080": executable file not found in $PATH:
unbound
devic@devi-VirtualBox:~$ sudo docker run -p 8080:80 httpd
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
[Fri May 20 15:30:47.916650 2022] [mpm_event:notice] [pid 1:tid 139966363082048] AH00489: Apache/2.4.53 (Unix) configured -- resuming normal operations
[Fri May 20 15:30:47.916954 2022] [core:notice] [pid 1:tid 139966363082048] AH00094: Command line: 'httpd -D FOREGROUND'
```

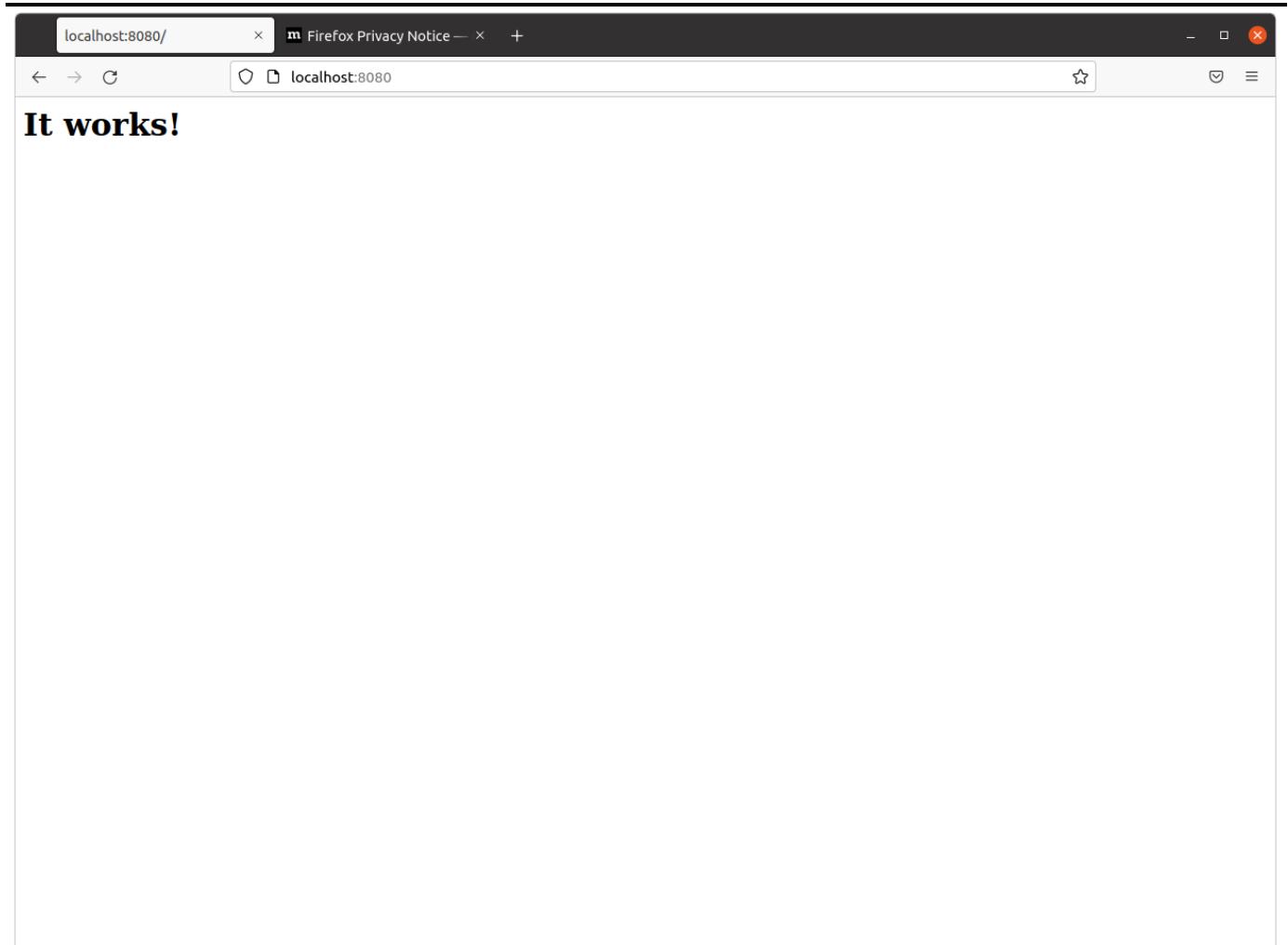
```

devis@devis-VirtualBox: ~
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/

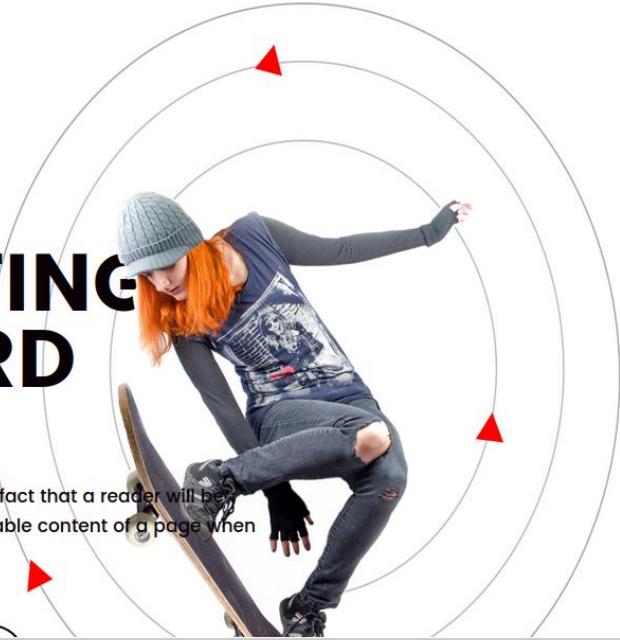
For more examples and ideas, visit:
https://docs.docker.com/get-started/
devis@devis-VirtualBox: $ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
hello-world latest febb5d9fe6a5 7 months ago 13.3kB
devis@devis-VirtualBox: $ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
90edd39e8991 hello-world "/hello" 27 seconds ago Exited (0) 26 seconds ago gifted_joliot
Using default tag: latest
latest: Pulling from library/httpd
214ca5fb9032: Pull complete
7cf31a2eeec6: Pull complete
bf6066e57b9f2: Pull complete
c154a094ae0b: Pull complete
dc25474c7f97: Pull complete
Digest: sha256:2df1f839d6127e400ac5f65481d8aef17ac46a3b91de40b01e649c9a0324dea0
Status: Downloaded newer image for httpd:latest
docker.io/library/httpd:latest
devis@devis-VirtualBox: $ sudo docker run -p 8080:80 httpd localhost:8080
docker: Error response from daemon: failed to create shim: OCI runtime create failed: container_linux.go:380: starting container process caused: exec: "localhost:8080": executable file not found in $PATH: unknown.
devis@devis-VirtualBox: $ sudo docker run -p 8080:80 httpd
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
[Fri May 20 15:30:47.916658 2022] [mpm_event:notice] [pid 1:tid 139966363082048] AH00489: Apache/2.4.53 (Unix) configured -- resuming normal operations
[Fri May 20 15:30:47.916954 2022] [core:notice] [pid 1:tid 139966363082048] AH00094: Command line: 'httpd -D FOREGROUND'
172.17.0.1 - [28/May/2022:15:32:17 +0000] "GET / HTTP/1.1" 200 45
172.17.0.1 - [28/May/2022:15:32:17 +0000] "GET /favicon.ico HTTP/1.1" 404 196
^C[Fri May 20 15:33:10.403401 2022] [mpm_event:notice] [pid 1:tid 139966363082048] AH00491: caught SIGTERM, shutting down
devis@devis-VirtualBox: $ sudo docker pull mysql/mysql-server:latest
Error from daemon: pull access denied for mysql/mysql-server, repository does not exist or may require 'docker login': denied: requested access to the resource is denied
devis@devis-VirtualBox: $ sudo docker pull mysql/mysql-server:latest
latest: Pulling from mysql/mysql-server
1860ca3a02f77: Pull complete
7208ad90232c: Pull complete
b2d9c817f662: Pull complete
3292176f57b6: Pull complete
d04a2a5345f1: Pull complete
47bc31a509ca: Pull complete
fade2a0af17d: Pull complete
Digest: sha256:1ab1da5a584e53a42a43cbd430ae340a36942afee9e14a86624a2cb2d90ce655b
Status: Downloaded newer image for mysql/mysql-server:latest
docker.io/mysql/mysql-server:latest
devis@devis-VirtualBox: $ sudo docker run -p 3306:3306 -d --name=mysql mysql/mysql-server:latest
flag needs an argument: --name
See 'docker run --help'.
devis@devis-VirtualBox: $ sudo docker run -p 3306:3306 -d --name=mysql mysql/mysql-server:latest

```



Brandon Template Demo Close

**BRANDON** LOGIN 

01 

# SKATING BOARD

It is a long established fact that a reader will be distracted by the readable content of a page when looking at its

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<https://www.free-css.com/free-css-templates>

