# 

# EXPERIMENT-1

## COMPUTER HARDWARE

**Mother Board:-**

A motherboard (also called mainboard, main circuit board, mb, mboard, backplane board, base board, system board, logic board (only in Apple PCs) or mobo) is the main [printed circuit board](https://en.wikipedia.org/wiki/Printed_circuit_board) (PCB) in general-purpose computers and other expandable systems. It holds and allows communication between many of the crucial electronic components of a system, such as the [central processing unit](https://en.wikipedia.org/wiki/Central_processing_unit) (CPU) and [memory](https://en.wikipedia.org/wiki/Computer_memory), and provides connectors for other [peripherals.](https://en.wikipedia.org/wiki/Peripherals) Unlike a [backplane,](https://en.wikipedia.org/wiki/Backplane) a motherboard usually contains significant sub-systems, such as the central processor,

the [chipset](https://en.wikipedia.org/wiki/Chipset)'s [input/output](https://en.wikipedia.org/wiki/Input/output) and memory controllers, [interface](https://en.wikipedia.org/wiki/Interface_(computing)) connectors, and other components integrated for general use.

The motherboard is mounted inside the case and is securely attached via small screws through pre-drilled holes. Motherboard contains ports to connect all of the internal components. It provides a single socket for CPU, whereas for memory, normally one or more slots are available. Motherboards provide ports to attach the floppy drive, hard drive, and optical drives via ribbon cables. Motherboard carries fans and a special port designed for power supply.

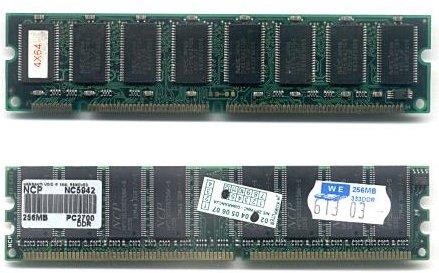
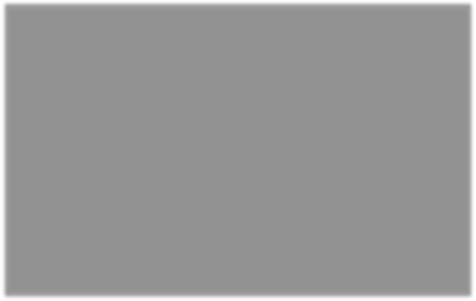
There is a peripheral card slot in front of the motherboard using which video cards, sound cards, and other expansion cards can be connected to the motherboard.

On the left side, motherboards carry a number of ports to connect the monitor, printer, mouse, keyboard, speaker, and network cables. Motherboards also provide USB ports, which allow compatible devices to be connected in plug-in/plug-out fashion. For example, pen drive, digital cameras, etc.



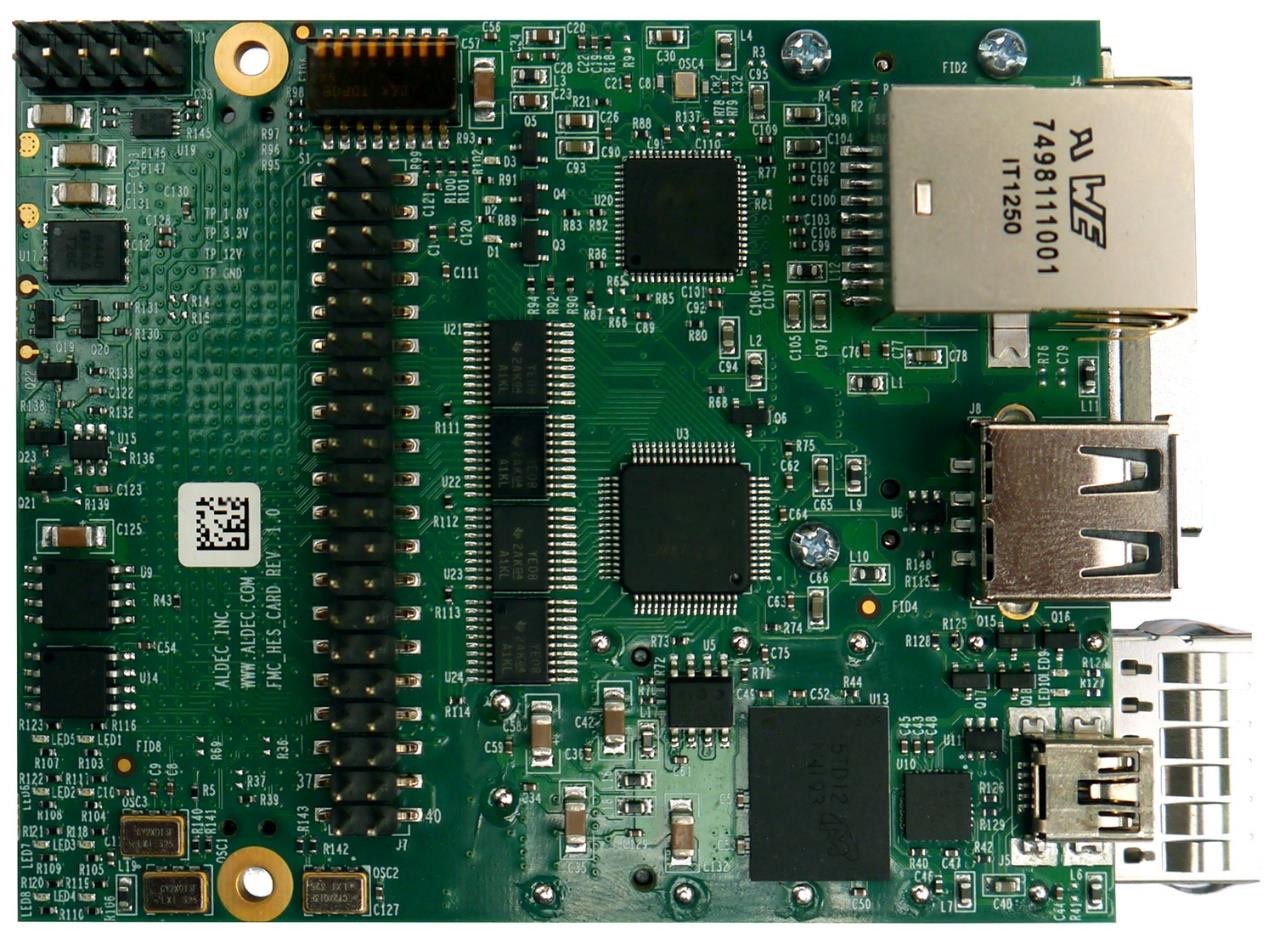
## Ram Modules:-

In [computing](https://en.wikipedia.org/wiki/Computing), a memory module or RAM ([random-access memory](https://en.wikipedia.org/wiki/Random-access_memory)) stick is a [printed](https://en.wikipedia.org/wiki/Printed_circuit_board) [circuit board](https://en.wikipedia.org/wiki/Printed_circuit_board) on which [memory](https://en.wikipedia.org/wiki/Computer_memory) [integrated circuits](https://en.wikipedia.org/wiki/Integrated_circuit) are mounted. Memory modules permit easy installation and replacement in electronic systems, especially computers such as [personal computers,](https://en.wikipedia.org/wiki/Personal_computer) [workstations](https://en.wikipedia.org/wiki/Workstation), and [servers](https://en.wikipedia.org/wiki/Server_(computing)). The first memory modules were proprietary designs that were specific to a model of computer from a specific manufacturer.



## Daughter Cards:-

A daughterboard is type of circuit board that plugs in or is attached to the motherboard or similar expansion card to extend its features and services. A daughterboard complements the existing functionality of a motherboard or an expansion card. A daughterboard is also known as daughter card, piggyback board, riser card or mezzanine board. A daughterboard is connected directly to the motherboard. Unlike expansion cards, which connect with the motherboard using bus and other serial interfaces, daughterboards are usually directly embedded through soldering. Like a motherboard, a daughterboard has sockets, pins, plugs and connectors to be attached to other boards. Typically, daughterboards are released as a post-launch update to a motherboard or expansion card. For example, a MIDI daughterboard is used to add on the functionality of the sound card.



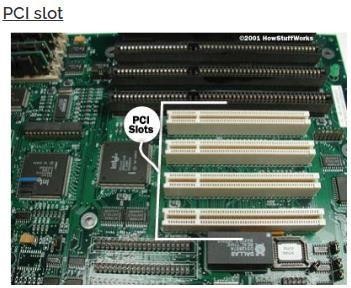
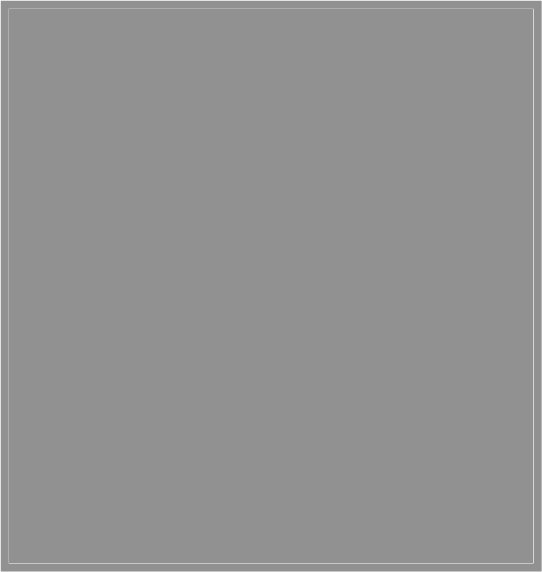
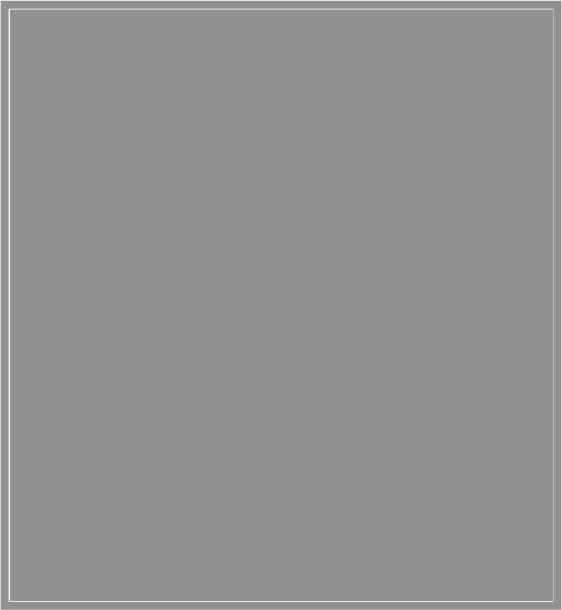
## Bus Slots:-

An expansion slot refers to any of the slots on a [motherboard](https://www.lifewire.com/motherboards-system-boards-and-mainboards-2618154) that can hold an expansion card to expand the computer's functionality, like a [video card,](https://www.lifewire.com/what-is-a-video-card-2618161) network card, or sound card. The expansion card is plugged directly into the expansion port so that the motherboard has direct access to the [hardware.](https://www.lifewire.com/computer-hardware-2625895) However, since all computers have a limited number of expansion slots, it's important to [open your computer](https://www.lifewire.com/how-to-open-a-desktop-computer-case-2624589) and check what's available before you buy one. Some older systems require the use of a riser board to add additional expansion cards; however, modern computers not only usually have enough expansion slot options, but they also have features integrated directly into the motherboard, eliminating the need for so many expansion cards. There are three different types of expansion slots: PCI Express, PCI, and AGP.

**PCI (Peripheral Component Interconnect) Slot :** The PCI slot is the most common form of internal expansion for a PC. Some PCs have a mixture of PCI and PCI Express slots.

**PCI express (PCIe) Slots :** The best type of expansion slot to have in your PC is the PCI Express. The PCI Express type of expansion slot communicates with the motherboard, and therefore with the microprocessor, both quickly and efficiently.

**AGP (Accelerated Graphics Port) Slot :** This type of expansion slot was specifically designed to deal with graphics adapters. In fact, AGP stands for Accelerated Graphics Port. Older PCs may sport this expansion slot, but the best video cards use PCI Express.



## SMPS:-

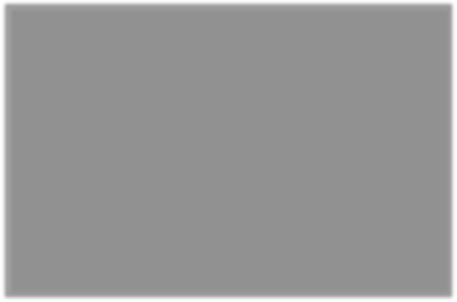
A switched-mode power supply (SMPS) is an electronic circuit that converts power using switching devices that are turned on and off at high frequencies, and storage components such as inductors or capacitors to supply power when the switching device is in its non- conduction state.

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

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

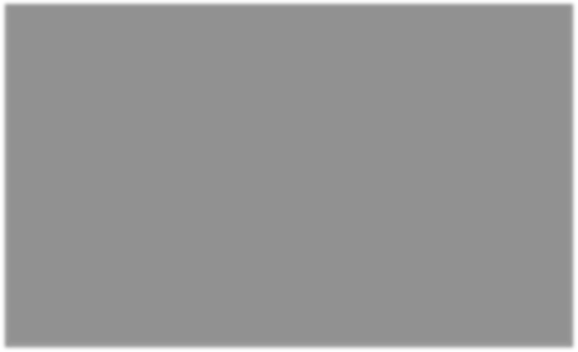
Switched-mode power supplies are classified according to the type of input and output voltages. The four major categories are:

* AC to DC
* DC to DC
* DC to AC
* AC to AC



## 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. Internal storage also means that if the computer is moved around, it will still retain its most commonly used data. The main disadvantage of internal storage is that when the hard disk fails (and it will), all the data and applications may be lost. This can be avoided to some extent by using more than one hard disk within the machine. Each hard disk has a copy of all the data, so if one fails the other can carry on. This is called a RAID array. An alternative is to use external drives for backup.



## Interfacing Ports:-

A Computer Port is an interface or a point of connection between the computer and its peripheral devices. Some of the common peripherals are mouse, keyboard, monitor or display unit, printer, speaker, flash drive etc. The main function of a computer port is to act as a point of attachment, where the cable from the peripheral can be plugged in and allows data to flow from and to the device.

## Types of ports:

**Serial Port -** used for external modems and older computer mouse.

**Parallel Port -** used for scanners and printers.

**PS/2 Port-** used for old computer keyboard and mouse.

**Universal Serial Bus (or USB) Port** - It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.

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

**Power Connector -**connects to the computer's power cable that plugs into a power bar or wall socket.

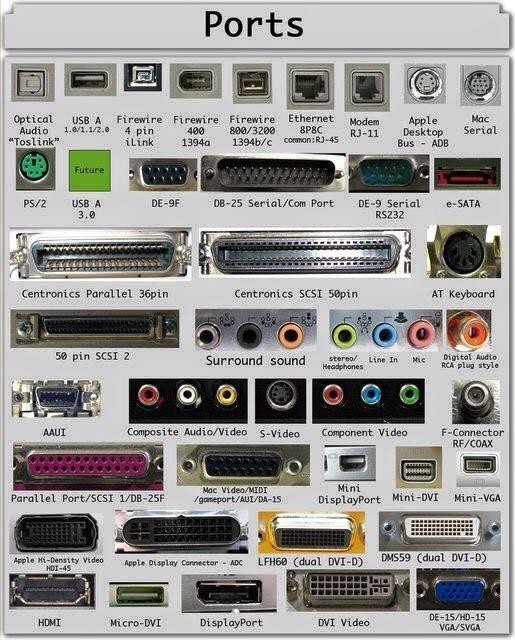
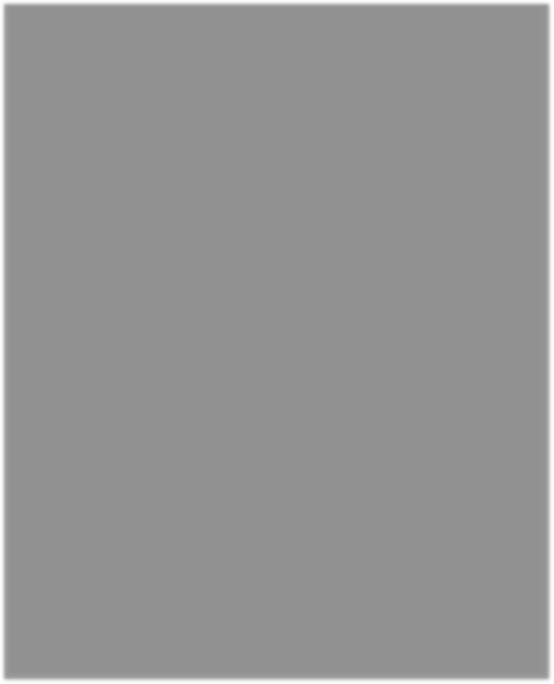
**Modem Port -** connects a PC's modem to the telephone network.

**Ethernet Port -** connects to a network and high speed Internet. Connects the network cable to a computer.

**Game Port -** connect a joystick to a PC. Now replaced by USB Digital Video Interface

**DVI port -** connects Flat panel LCD monitor to the computer's high-end video graphic cards.

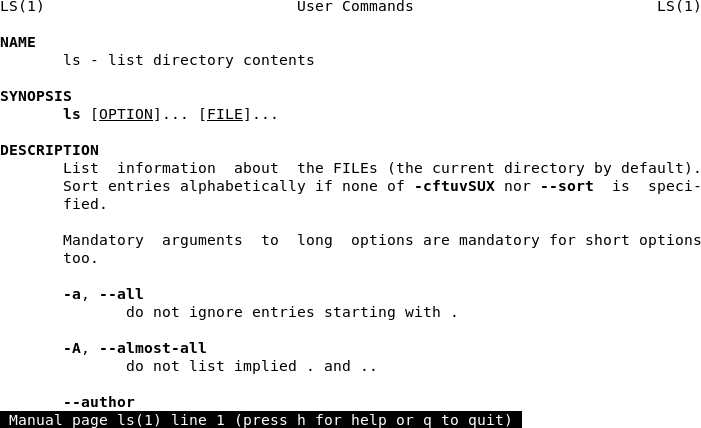
**Sockets -** sockets connect the microphone and speakers to the sound card of the computer.



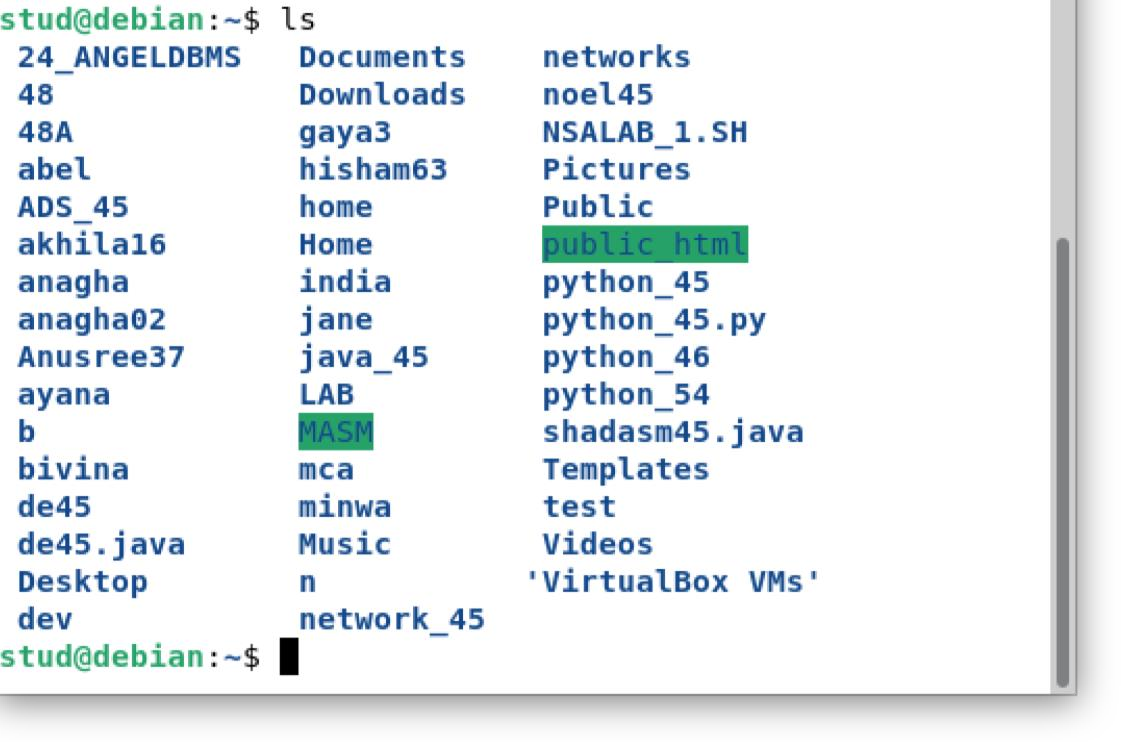
# EXPERIMENT-2

## LINUX COMMANDS

**Man**



## Ls

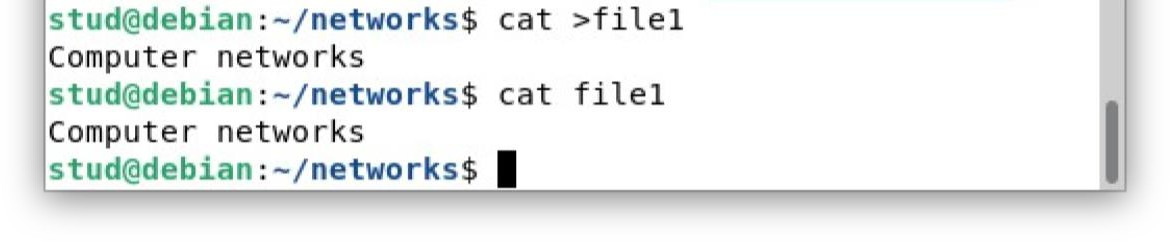


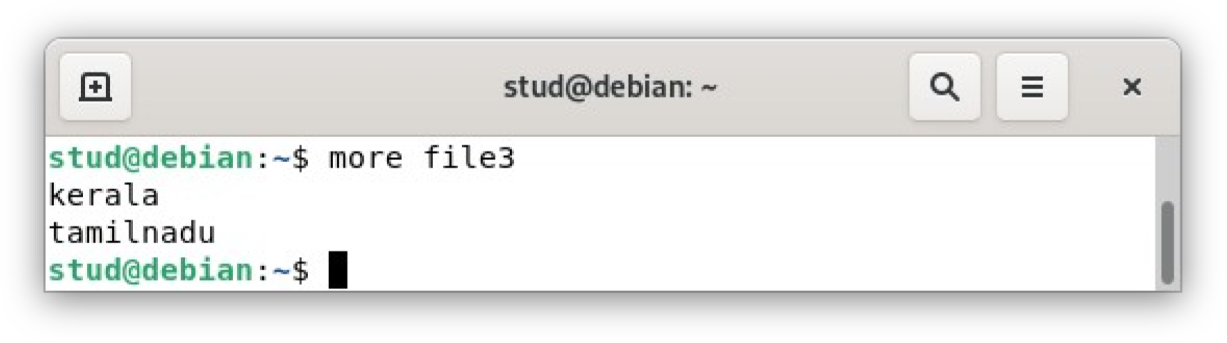
****

**Echo**

## Read

**Cat**



****

**More**

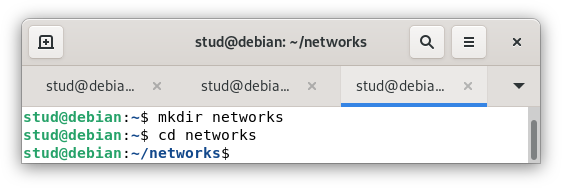
**Less**

## c Cat

**Cd**

## 

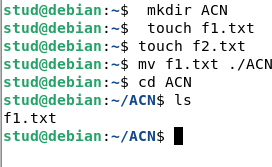
## Mkdir



## Pwd

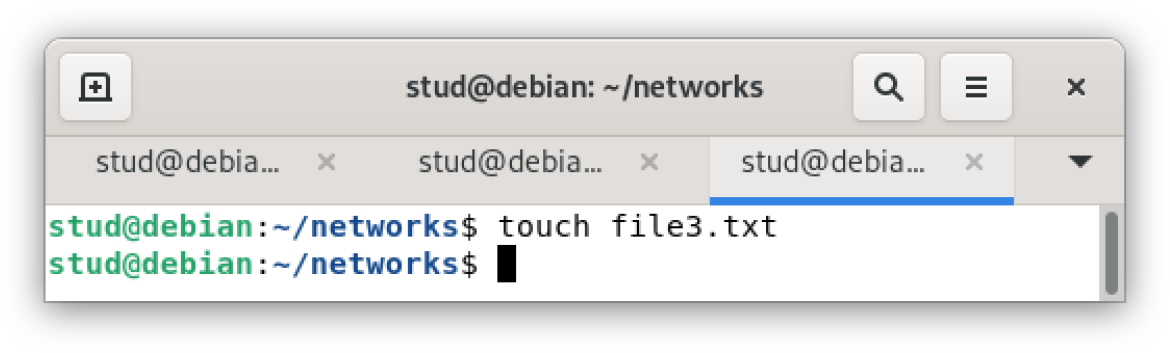
## Find

## Mv



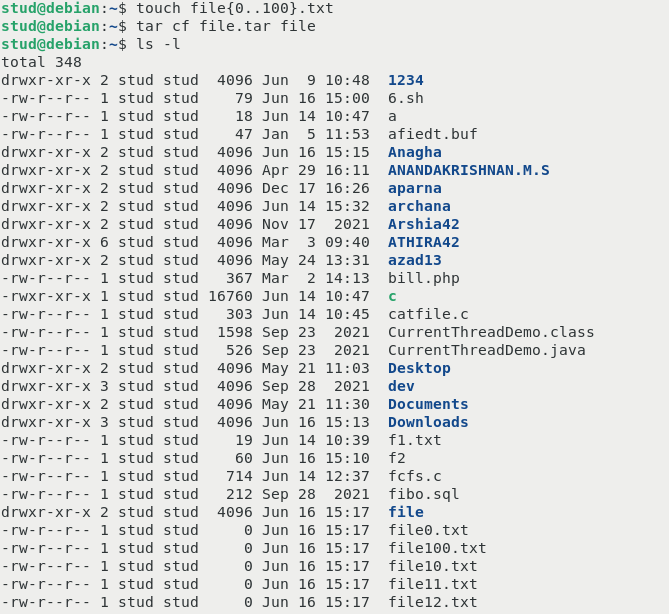
## Cp



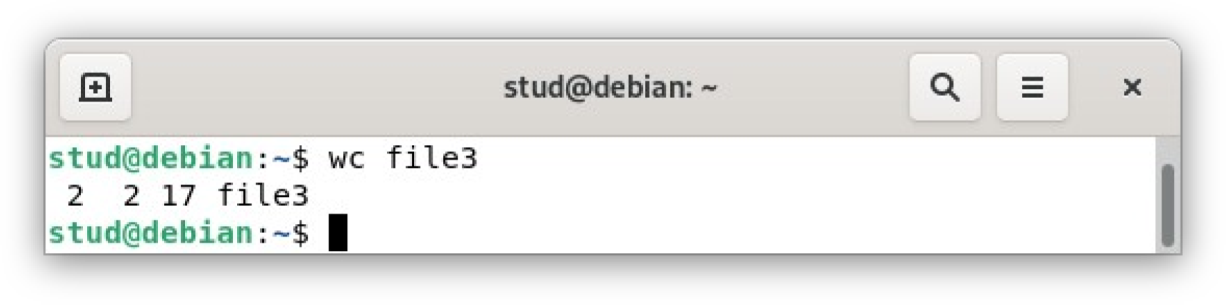


## Rm

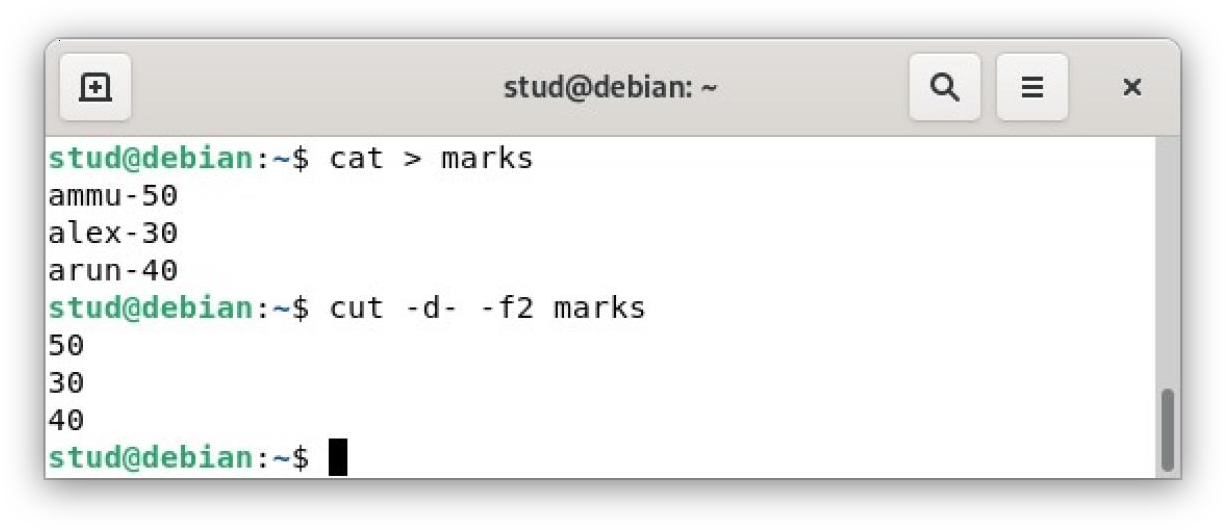
**Tar**

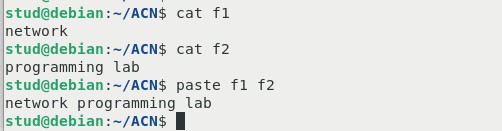


# 

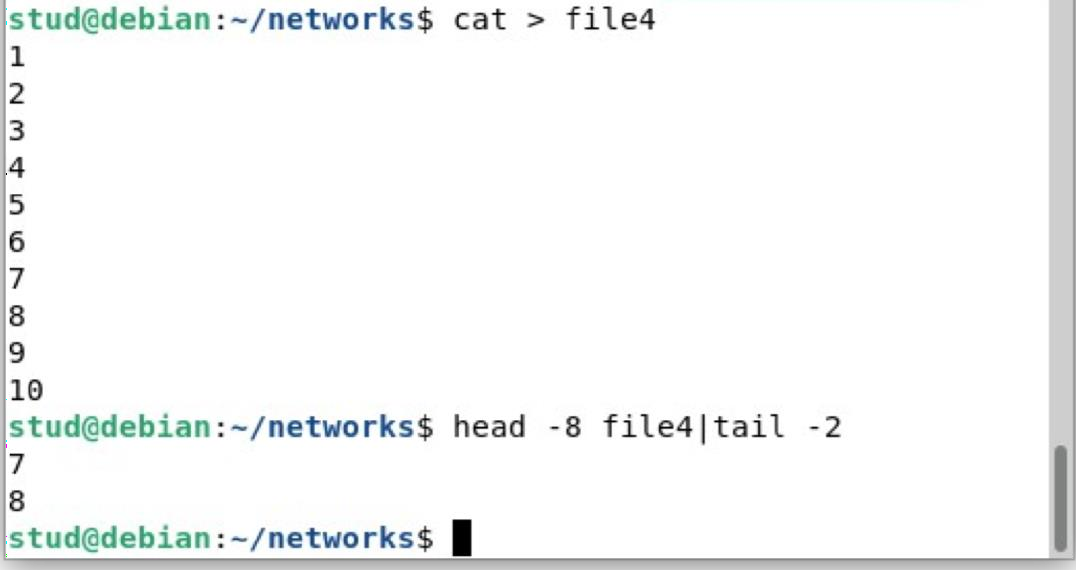
** Wc**

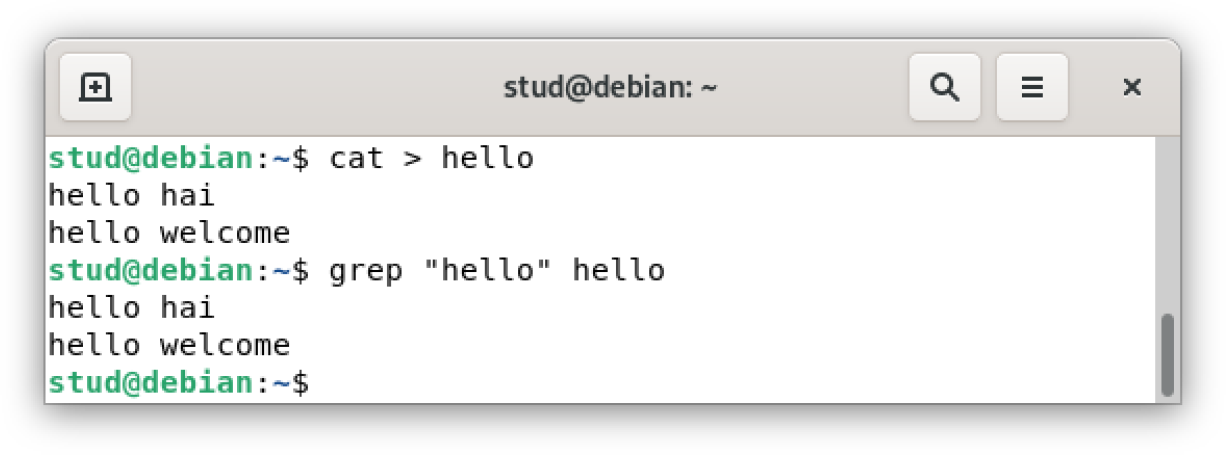
**Cut**

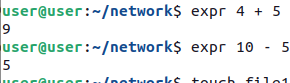
****

** Paste**

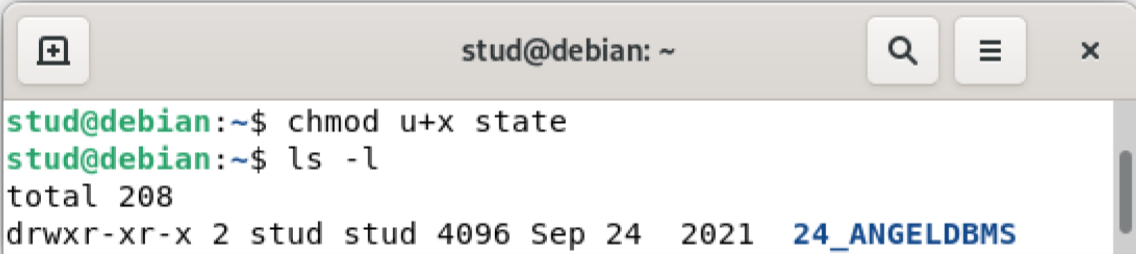
**Head and Tail**

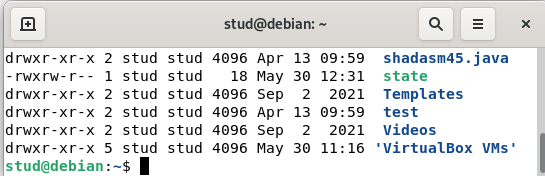
****

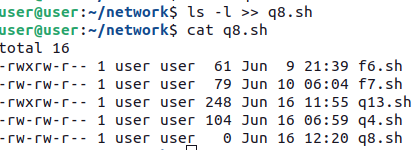
** Grep**

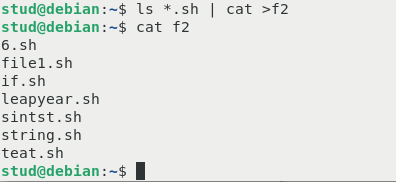
** Expr**

**Chmod**



****

** Redirection**

** Pipes**

# EXPERIMENT-3

## SHELL SCRIPT

3.1 Write a shell script to implement factorial using if else

\

**Program**

echo "Enter a number"

read num

temp=$num

fact=1

while [ $num -ge 1 ]

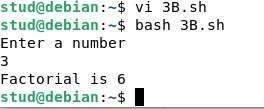
do

fact=$((fact \* $num)) num=$((num-1))

done

echo "The factorial of $temp is $fact

**Output**



3.2Write a shell script to find the Fibonacci using while loop.

**Program**

echo "Enter no. of terms"

read n

a=0

b=1

echo "Enter i"

read i

echo "Fibonacci series:"

echo $a

echo $b

while [ $i -le $n ]

do

f=$((a + b))

a=$b

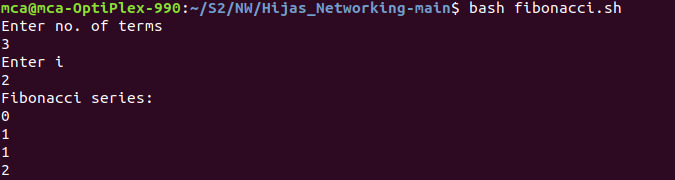
b=$f

echo $f

i=`expr $i + 1`

done

OUTPUT

****

3.3 Write a shell script for print amstrong numbers

**Program**

echo "Enter the number"

read n

function ams

{

t=$n

s=0

b=0

while [ $n -gt $b ]

do

r=$((n % 10))

i =$((r \* r \* r))

s=$((s + i))

n=$((n / 10))

done

if [ $s == $t ]

then

echo "Amstrong number"

else

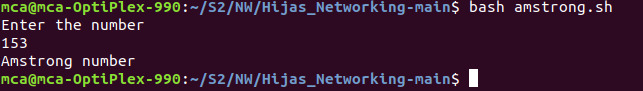
echo "Not an Armstrong number"

fi

}

result=`ams $n`

echo "$result”



3.4 Write a shell script to print prime number

**Program**

prime

i=0

until [ $i -lt 20 ]

do

r=$(( $i % 2 ))

if [ $r -ne 0 ]

then

echo $i

fi

i=$(($i+1))

done

# Output

3.5 Write a shell script for print prize

I **Program**

echo "Enter your lucky number"

read n

case $n in

101)

echo echo "You got 1st prize" ;;

510)

echo "You got 2nd prize" ;;

999)

echo "You got 3rd prize" ;;

\*)

echo "Sorry, try for the next time" ;;

esac

**Output**

****

3.6 Write a shell script for add two variables using function .

**Program**

function add()

{

sum=$(($1 + $2))

echo "Sum = $sum"

}

a=10

b=20

**Output**

**Sum=30**

3.7 Write a shell script for fnd largest of 3 numbers

**Program**

echo "Enter Ist no"

read a

echo "Enter 2nd no"

read b

echo "Enter 3rd no"

read c

if [ $a -gt $b ] && [ $a -gt $c ]

then

echo "Largest is $a"

elif [ $b -gt $a ] && [ $b -gt $c ]

then

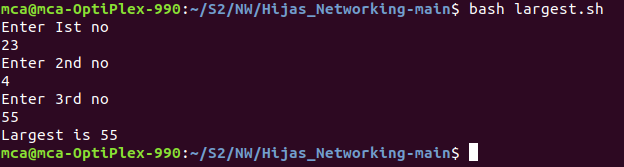
echo "Largest is $b"

else

echo "Largest is $c"

fi

**Output**



3.8Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.

**Program**

echo "Total number of arguments: $#"

# Reading argument values individually

echo "First argument value : $1"

echo "Second argument value : $2"

echo "Third argument value : $3"

# Reading argument values using loop

for argval in "$@"

do

echo -n "$argval "

done

3.9 Write a shell script to odd numbers

**Program**

for (( i = 1; i < 10; i=i+2 ))

do

echo $i

done

**Output**

# 

# EXPERIMENT-4

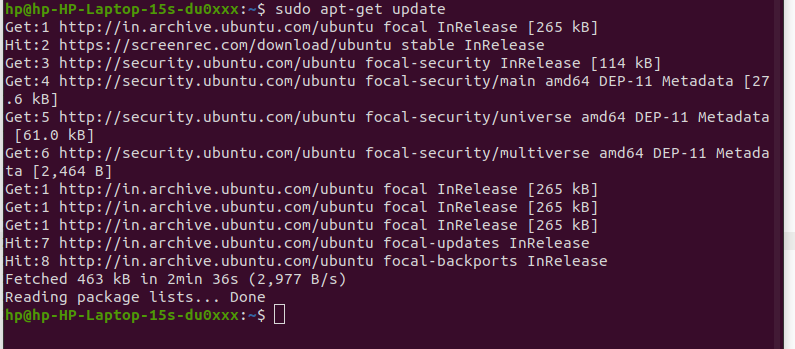
## INSTALLING LAMP ON UBUNTU

**Step 1: Update Package Repository Cache**

Before you begin:

1. Open the terminal either by using the **CTRL+ALT+T** keyboard shortcut or by searching for the word *terminal* in **Ubuntu**
2. Make sure to update the package repository cache to ensure it installs the latest versions of the software. To do so, type in the following command:

## sudo apt-get update



## Step 2: Install Apache

1. To install Apache, run the following command in the terminal:

## sudo apt-get install apache2

Press **y** (yes) and hit **ENTER** to permit the installation.

1. To ensure Apache is running, enter the Localhost of your server in the address barand press **ENTER**.

The test Apache web server page should display as below.

## 

## Step 3: Install PHP

* 1. To install PHP, run the following command:

## $ sudo apt-get install php7.4

****

Press **y** and **ENTER** to allow the installation.

## Step 4: Restart Apache

After the php installation you must restart the Apache service.

Enter the command:

## $ sudo /etc/init.d/apache2 restart

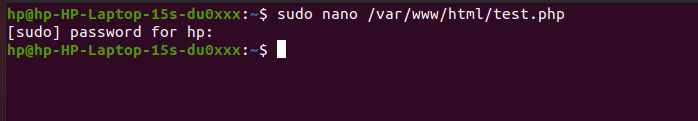
**Step 5: Test PHP Processing on Web Server**

1. Create a basic **PHP script** and save it to the “web root” directory. This is necessaryfor Apache to find and serve the file correctly. This directory is located

at **/var/www/html/**.

To create a file in that directory, type in the following command:

## sudo nano /var/www/html/test.php

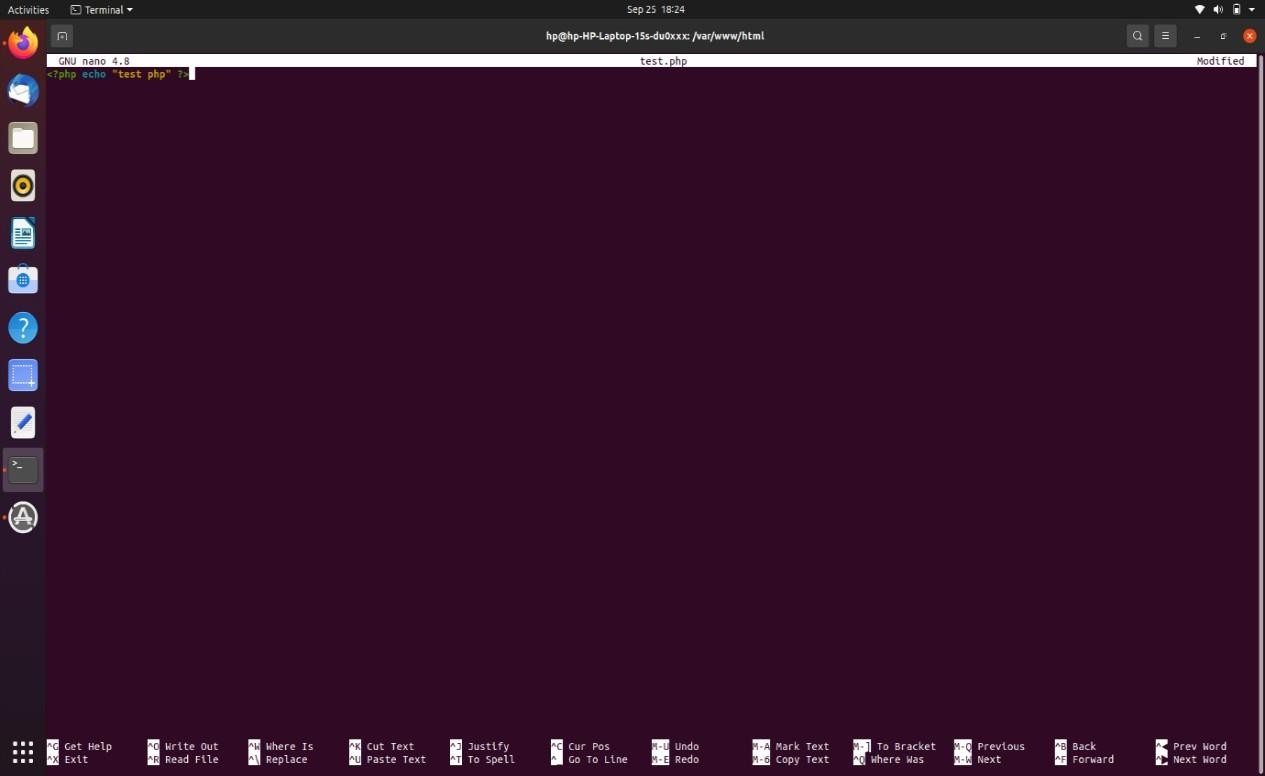


This command opens the **bank file**.

1. Inside the file, type in the valid PHP code:

## <?php

**Echo “ test php ”;**?>

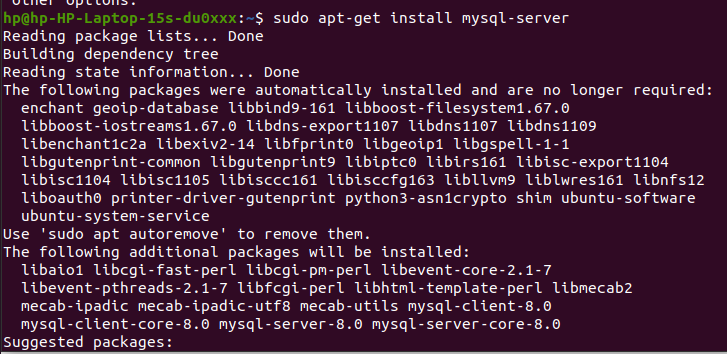


1. Press **CTRL + X** to save and close the file. Press **y** and **ENTER** to confirm.
2. Then check the code are run currently in php. Open the browser and enter the IP address (localhost/test.php).

## Step 6: Install Mysql server

* 1. To install Mysql server, run the following command:

## $ sudo apt-get install mysql-server



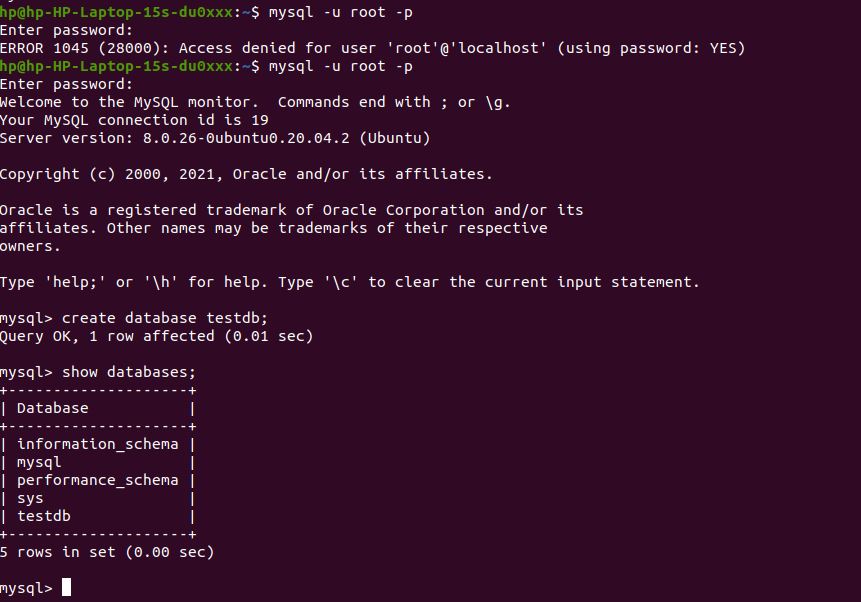
* 1. Then it’s asking us for a root password. Enter the password. Again we get to repeat it

## Step 7: Check the Mysql server

1. To check Mysql server, run the following command

## $ mysql -u root -p

* + Enter the root password and press enter



1. Create a database testdb and show it
   * Enter the command

Create database testdb;

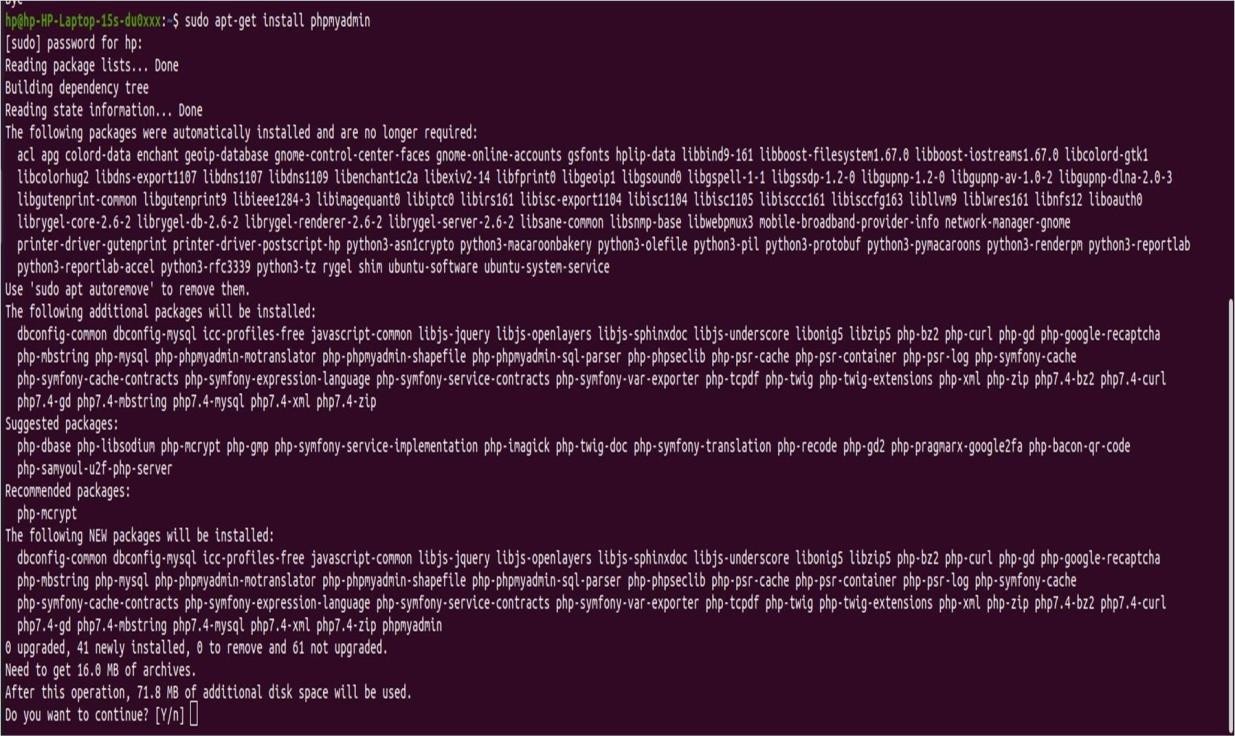
Show databases;

* + So mysql is working then exit the mysql prompt just enter **exit;**

## Step 8: Install PHP Myadmin

1. To install PHP Myadmin, run the following command:

## $ sudo apt-get install phpmyadmin



Press **y** and **ENTER** to allow the installation

1. Then its ask what type of server, we have Apache2 is set by default that’s what we want then press ok
2. Then a configuration prompt are open . here we’re going to just choose yes and then it ask the input password for phpmyadmin
3. Then check it currect . go to the localhost/phpmyadmin. Here we can not found it so

We have to actually edit the file php is located in Apache2 folder.

1. Enter the following command to edit the file

## $ sudo nano/etc/php7.4/apache2.php.ini

1. Then we need to uncomment an **extension=mysql.so.** find it the file just remove the Semicolon.
2. Then enter ctl+x to save

## Step 9: Restart Apache

After the php installation you must restart the Apache service. Enter the command:

## $ sudo /etc/init.d/apache2 restart

**Step 9.1: Include phpmyadmin in apache configuration**

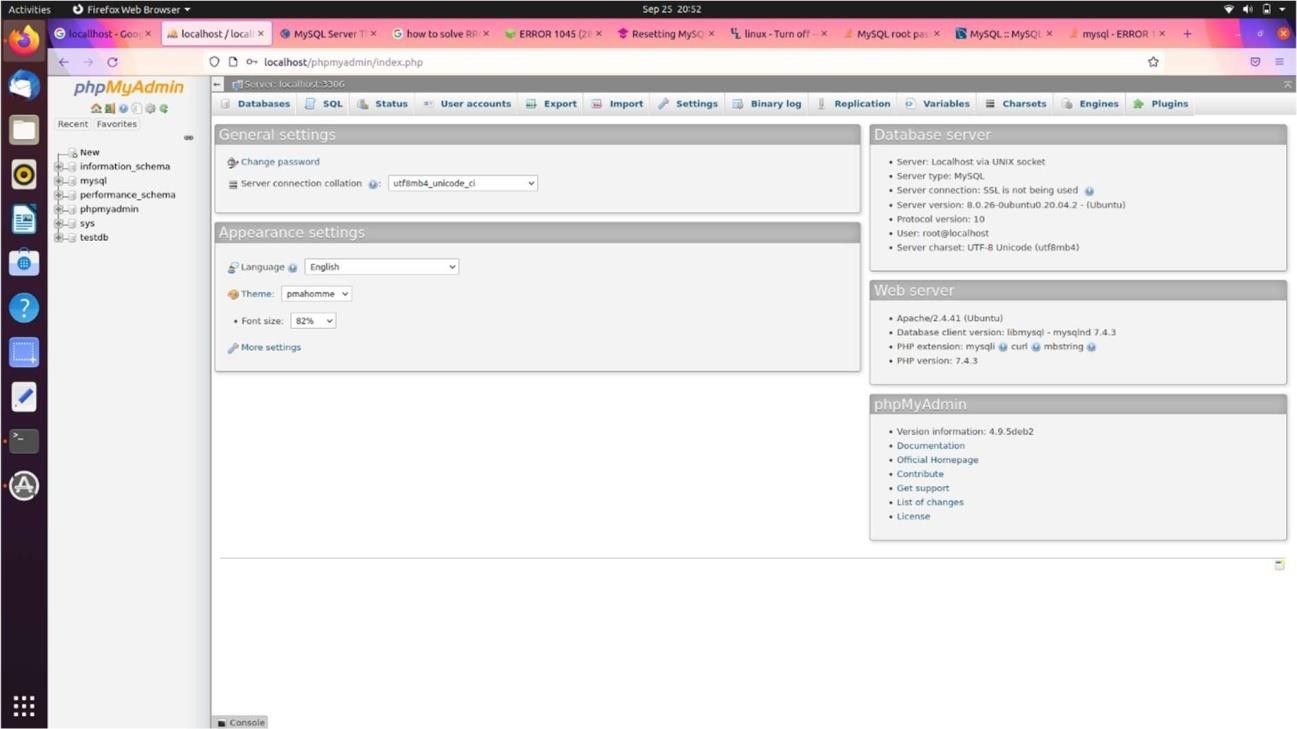
* 1. Enter the command:

## $ sudo nano/etc/apache2/apache2.conf

* 1. Type the following command to the nano editor

## Include /etc/phpmyadmin/apache.conf

* 1. Then enter ctl+x to save
  2. Then again restart the apache



# EXPERIMENT-5

## WIRESHARK

Wireshark is an open-source packet analyzer, which is used for education, analysis, software development, communication protocol development, and network troubleshooting.It is used to track the packets so that each one is filtered to meet our specific needs. It is commonly called as a sniffer, network protocol analyzer, and network analyzer.

It is also used by network security engineers to examine security problems.

Wireshark is a data capturing program that "understands" the structure (encapsulation) of different networking protocols. It can parse and display the fields, along with their meaningsas specified by different networking protocols. Wireshark usespcap to capture packets, so it can only capture packets on the types of networks that pcap supports.

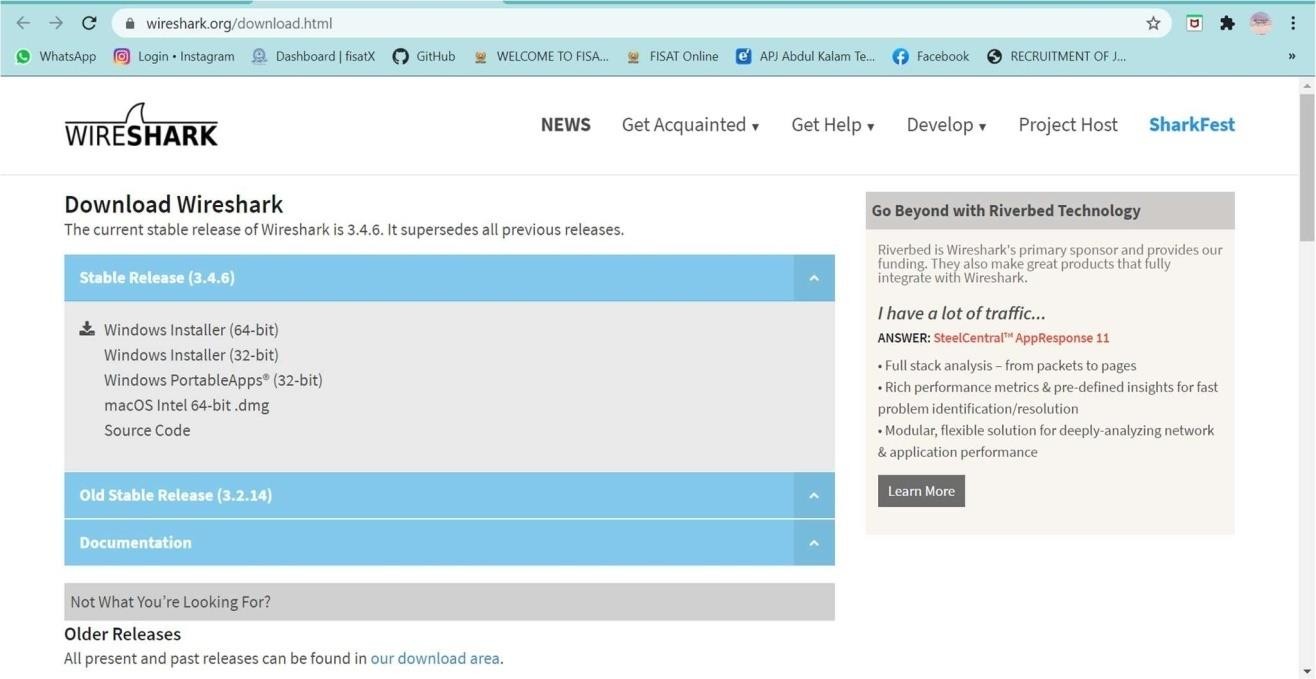
## Installation of Wireshark Software

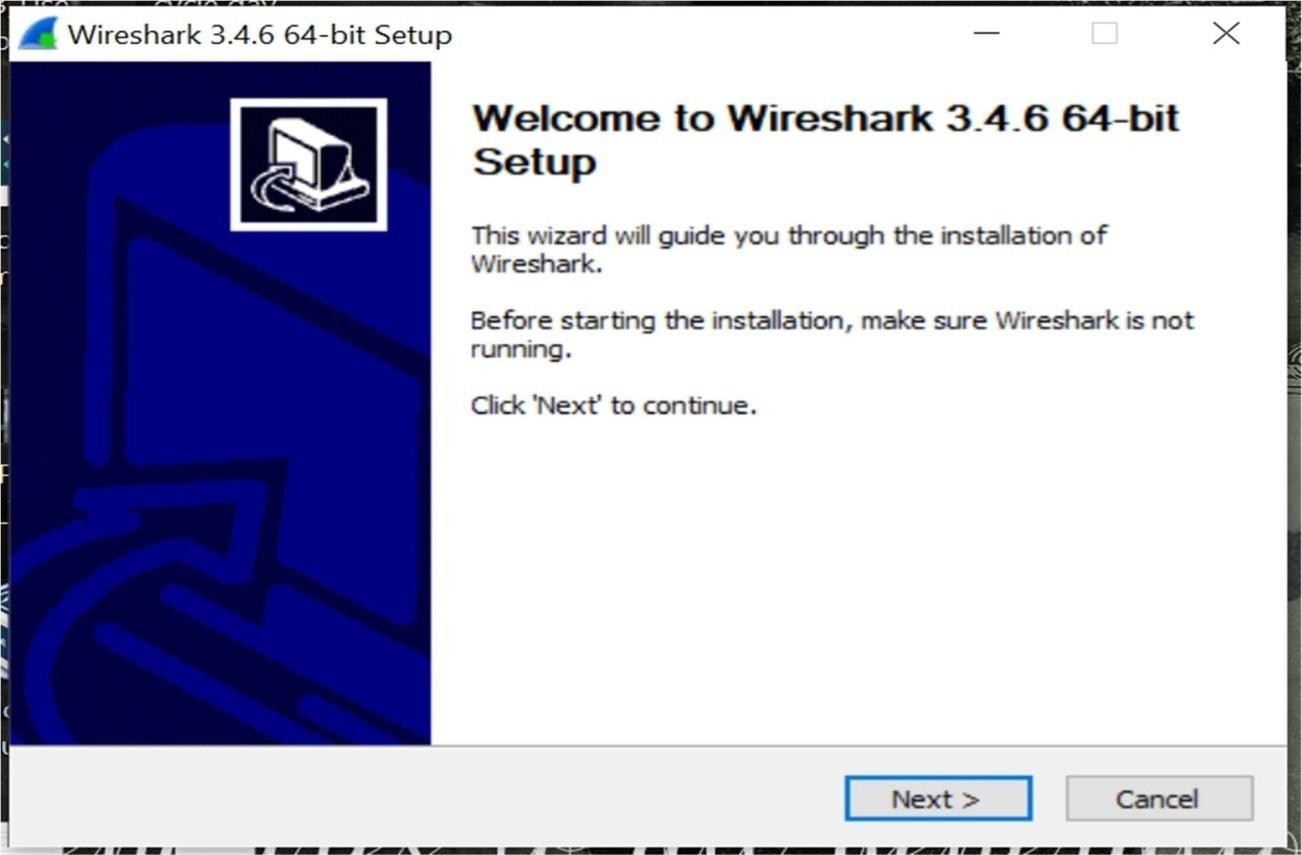
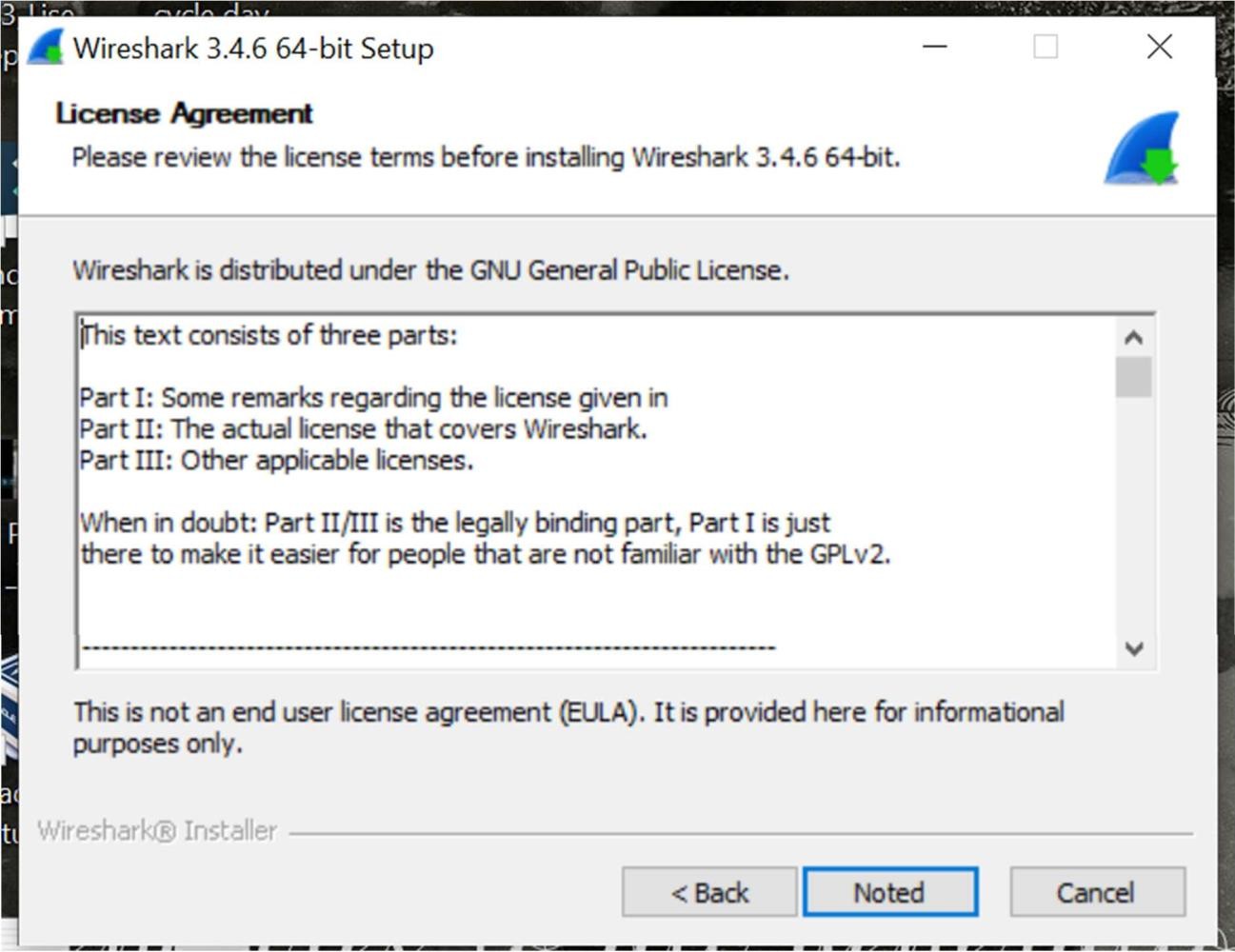
Downloading steps:-

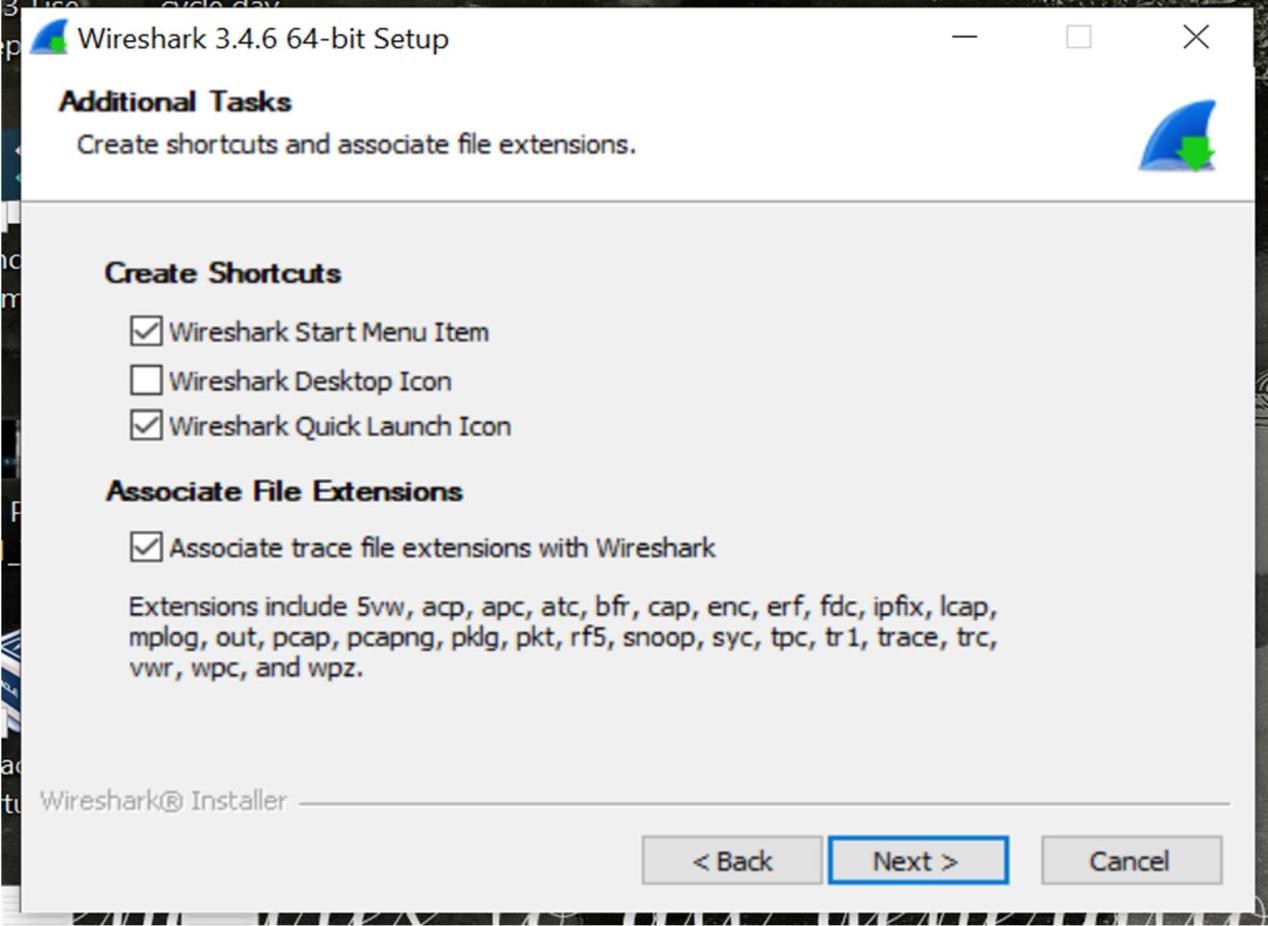
1. Open a web browser.
2. Navigate to [http://www.wireshark.org.](http://www.wireshark.org/)
3. Select Download Wireshark.
4. Select the Wireshark Windows Installer matching your system type. Save the program inthe Downloads folder.
5. Close the web browser.

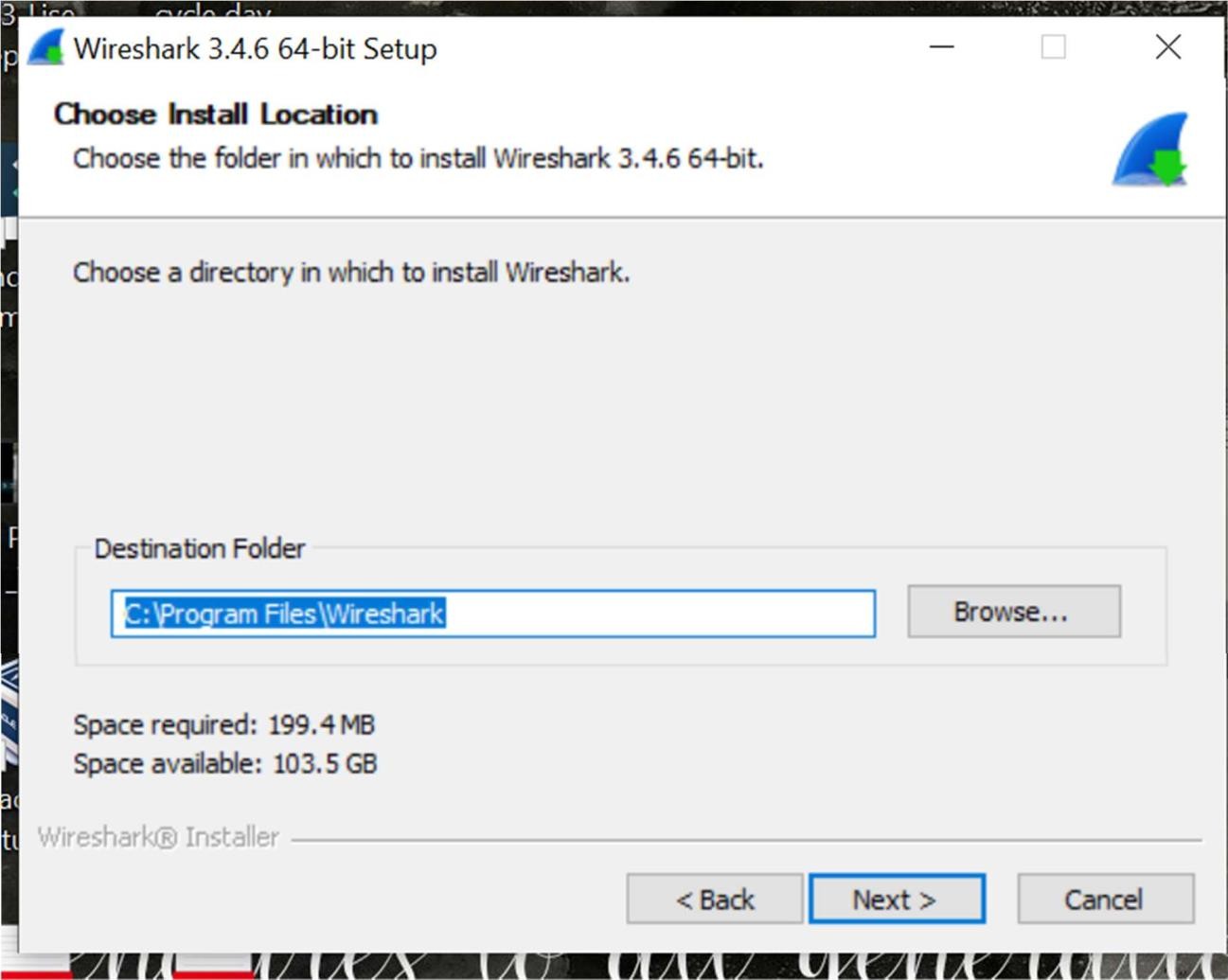
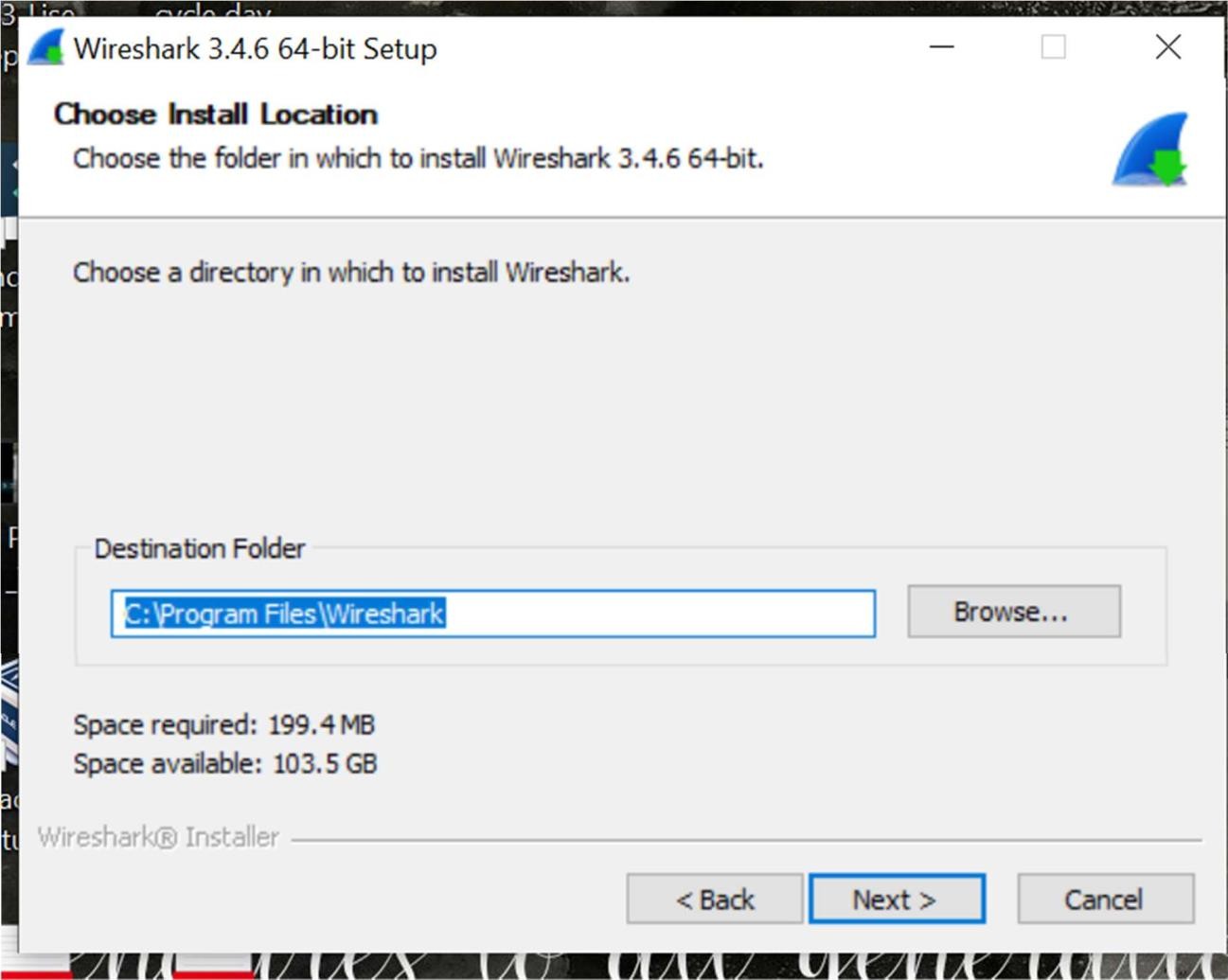
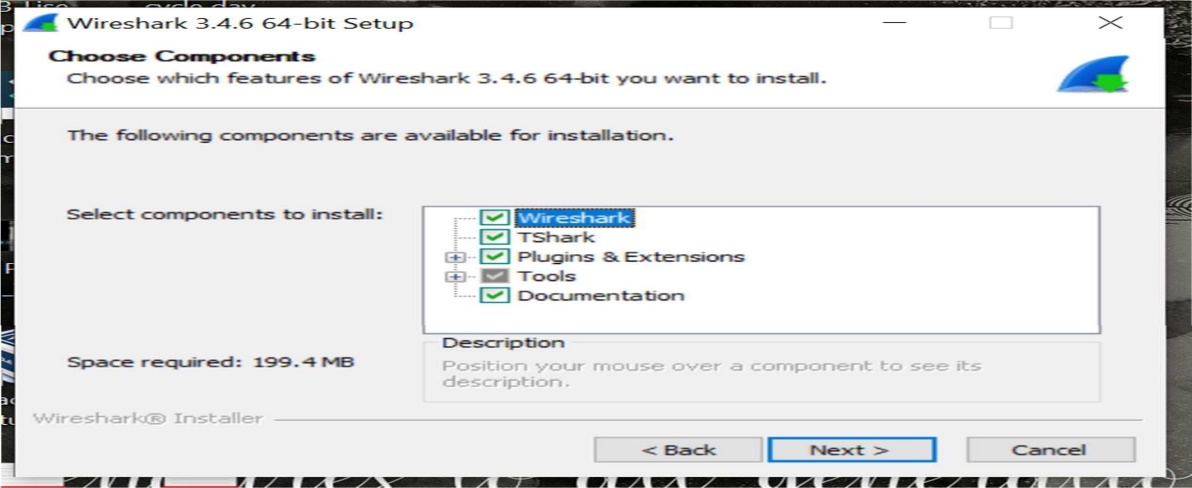
Installation process:-

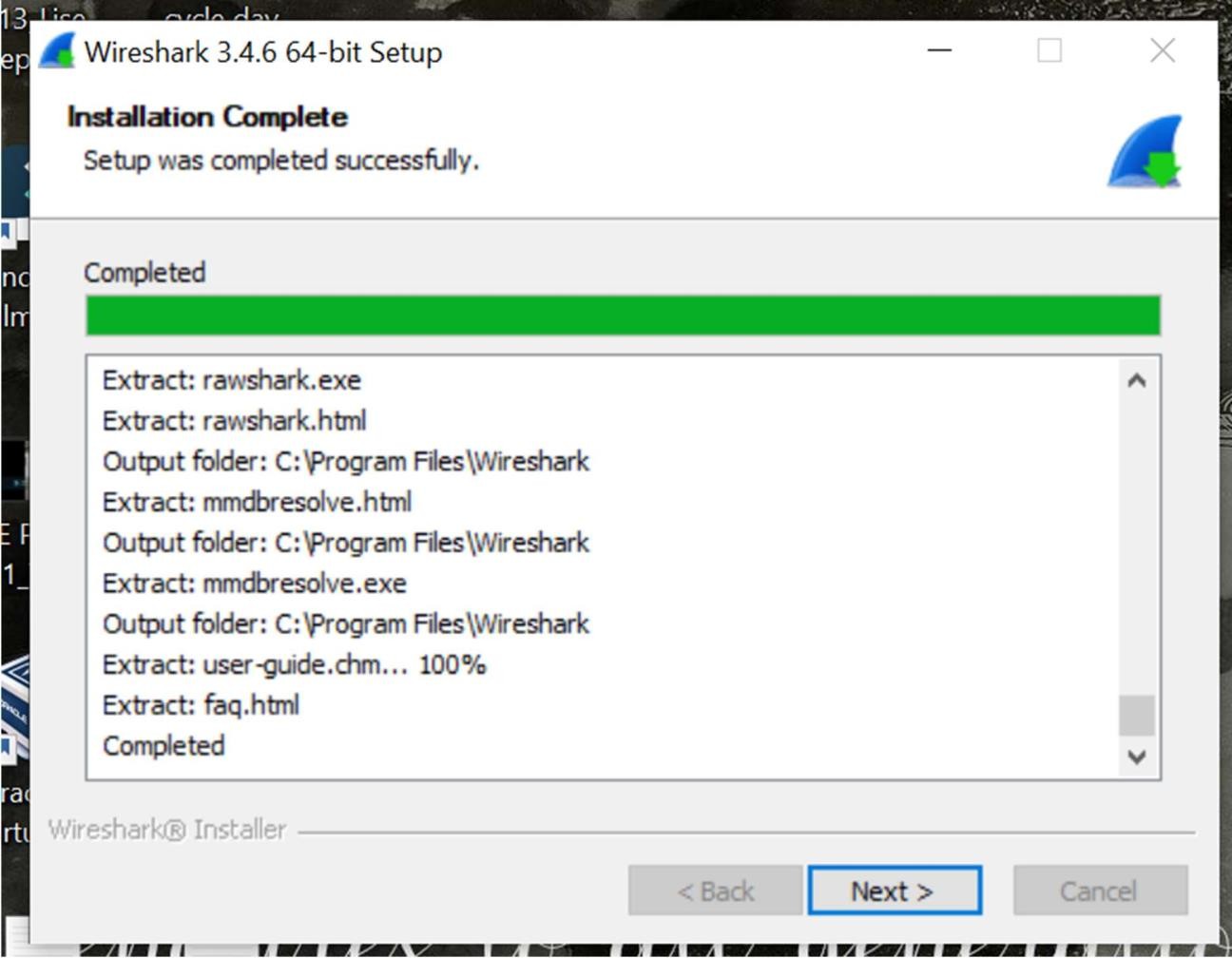
1. Double-click on the file to open it.
2. If you see a User Account Control dialog box, select Yes to allow the program to makechanges to this computer.
3. Select Next to start the Setup Wizard.
4. Review the license agreement. If you agree, select I Agree to continue.
5. Select Next to accept the default components.
6. Select the shortcuts you would like to have created. Leave the file extensionsselected. Select Next to continue.
7. Select Next to accept the default install location.
8. Select Install to begin installation.
9. Select Next to install WinPcap.
10. Select Next to start the Setup Wizard.
11. Review the license agreement. If you agree, select I Agree to continue.
12. Select Install to begin installation.
13. Select Finish to complete the installation of WinPcap.
14. Select Next to continue with the installation of Wireshark.
15. Select Finish to complete the installation of Wireshark.

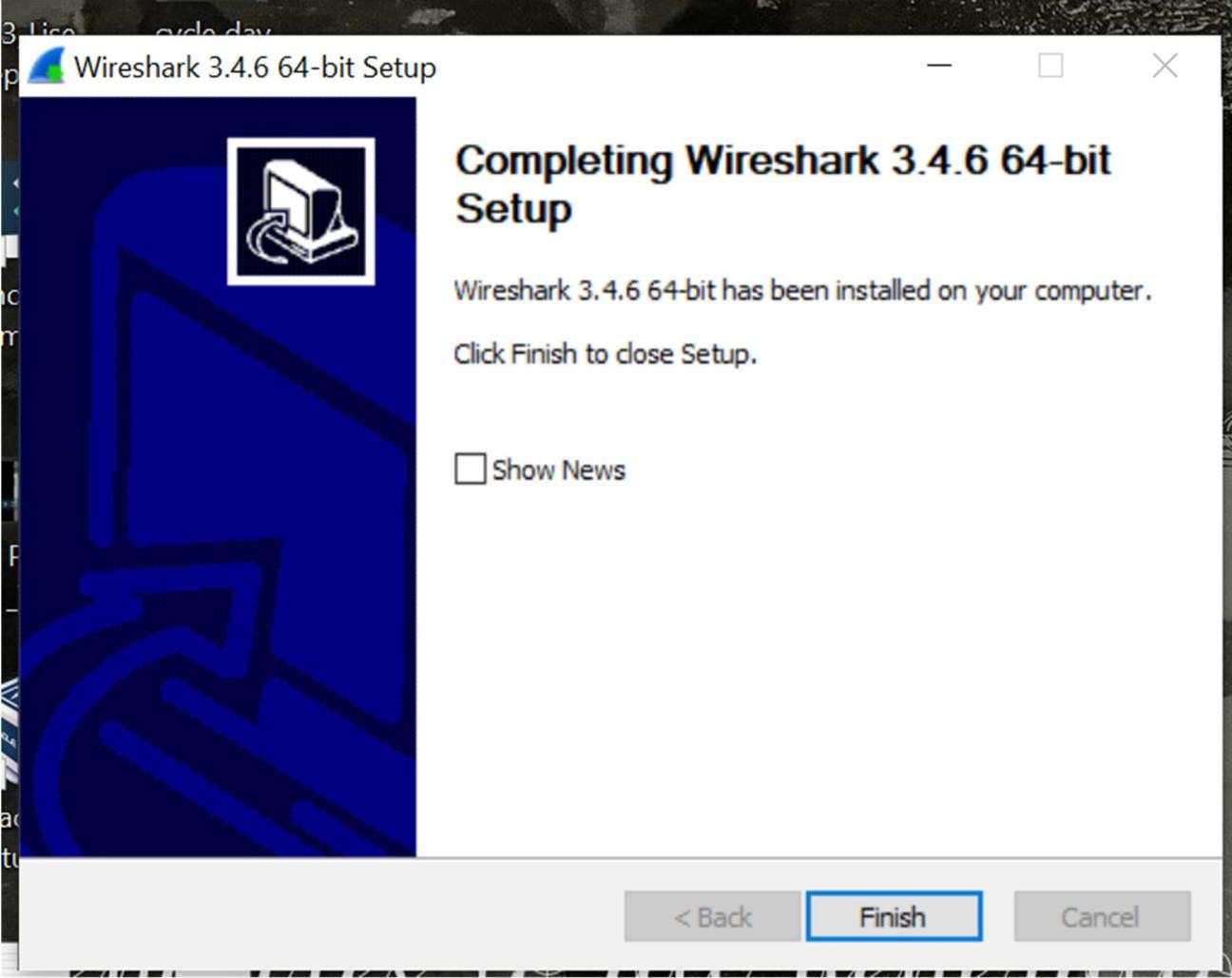
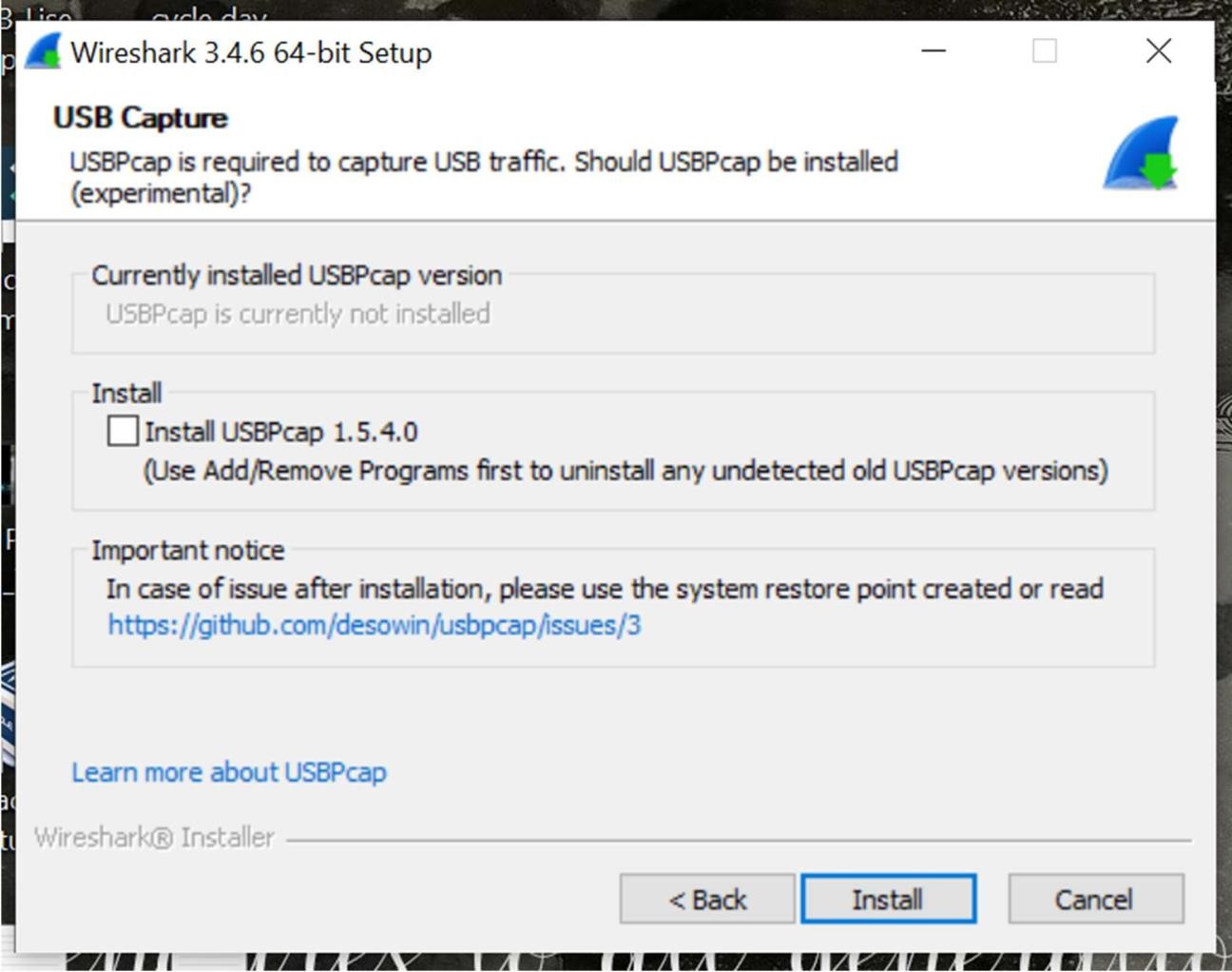




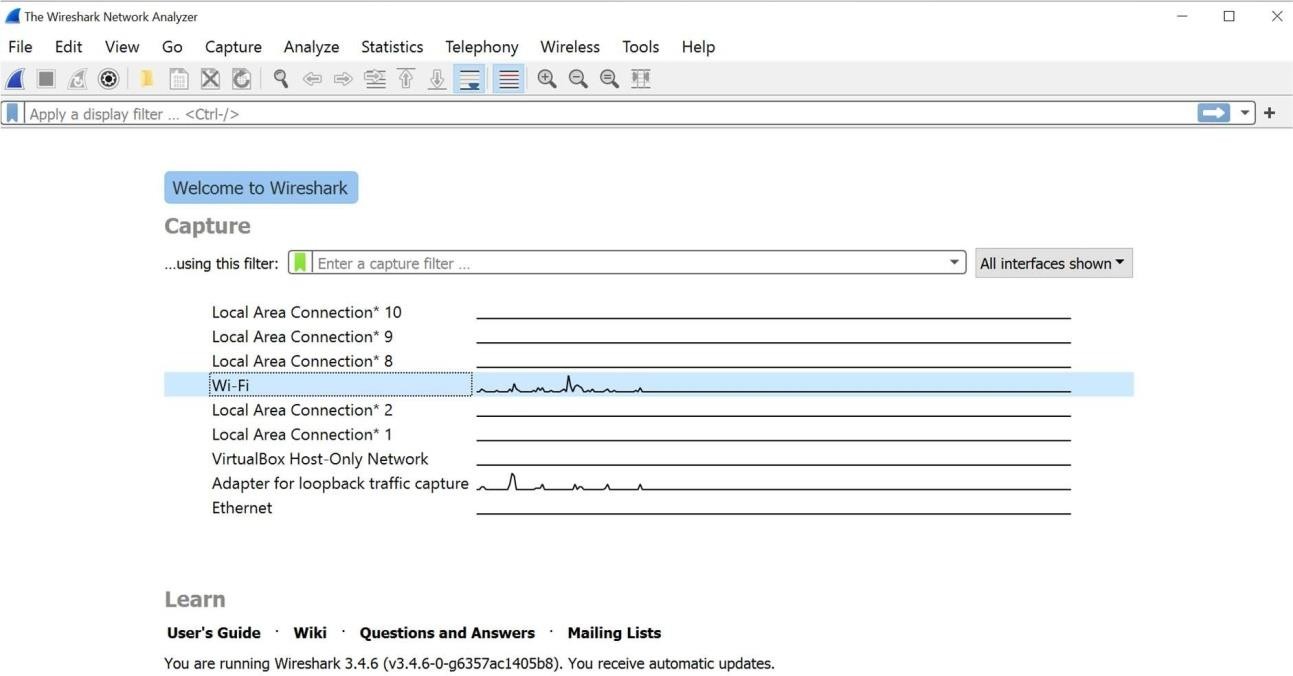


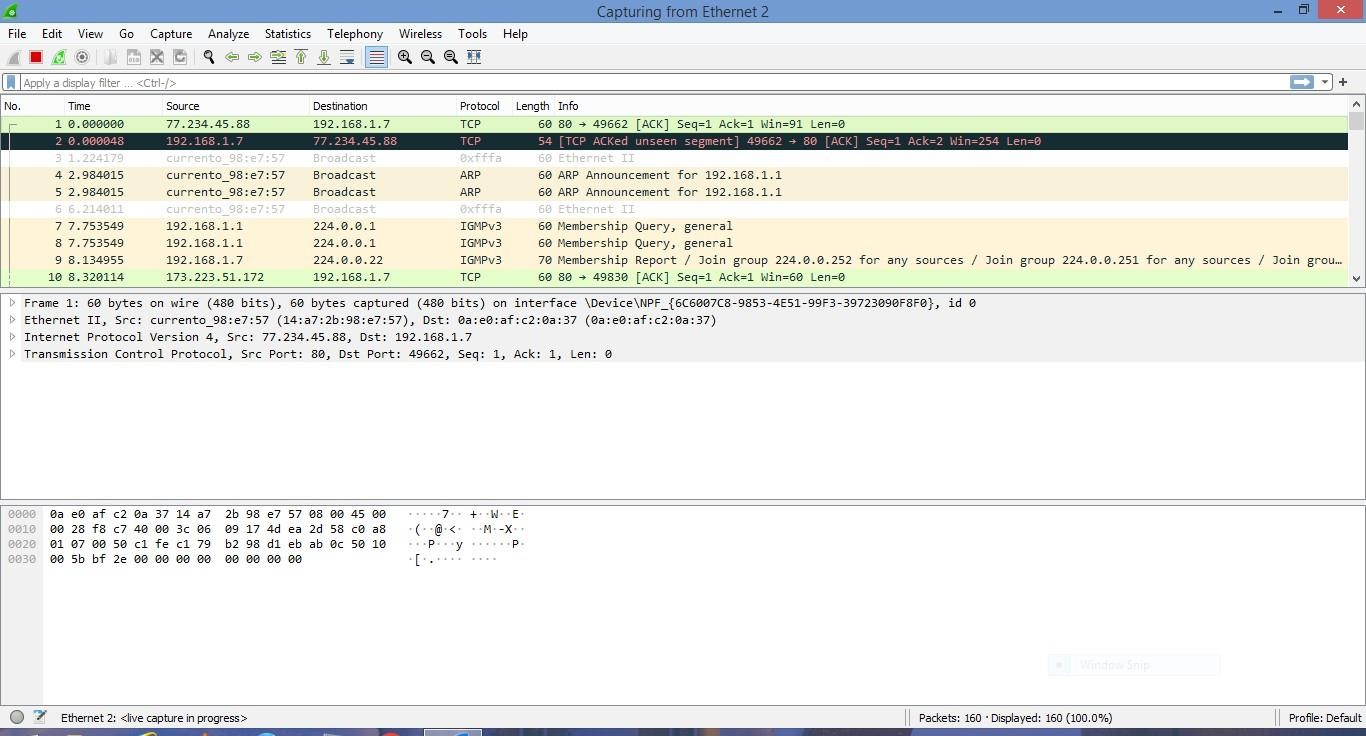
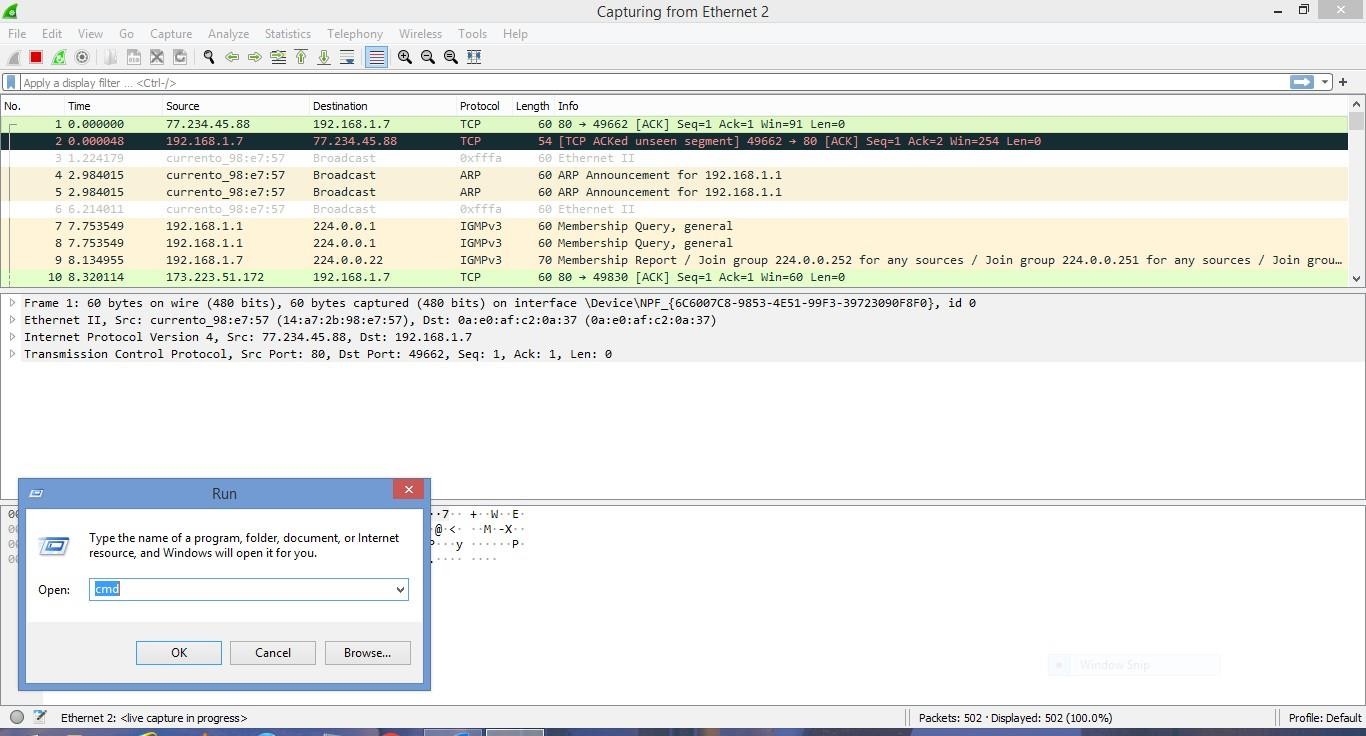


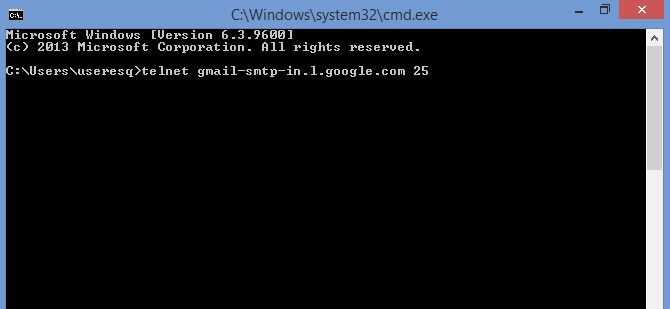
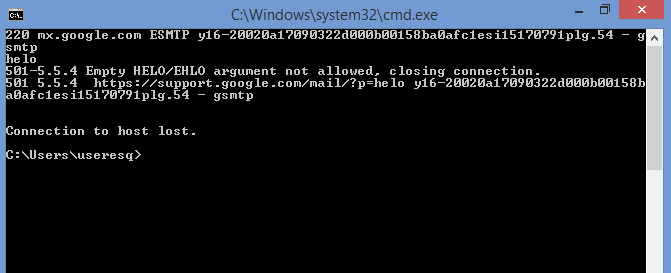


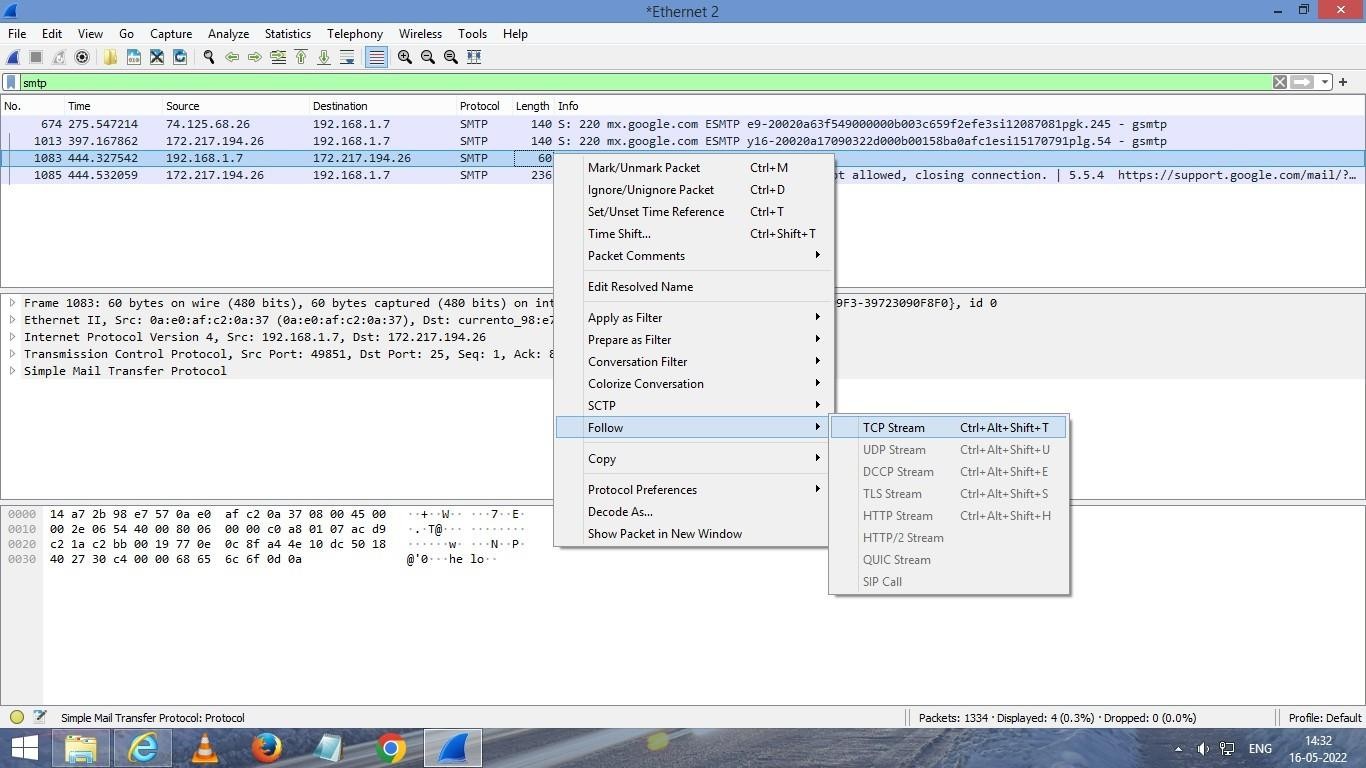


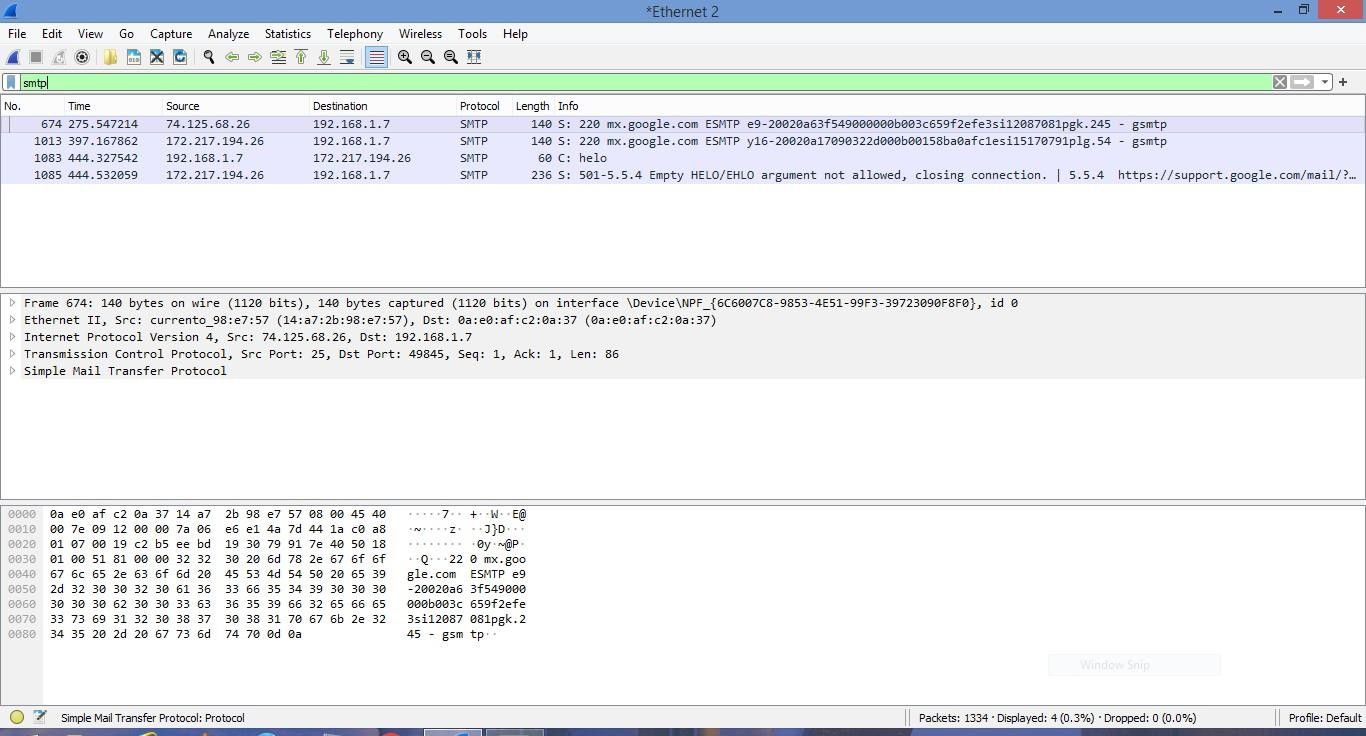
## Filtering SMTP Packets













# EXPERIMENT-6

# Install KVM on Ubuntu

## 1) Update Ubuntu

$ sudo apt update

## 2)Install KVM on Ubuntu

$ sudo apt install -y qemu-kvm virt-manager libvirt-daemon-system virtinst libvirt-clients bridge-utils

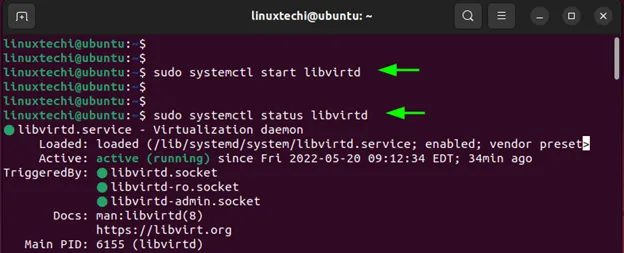
## 3)Enable the virtualization daemon (libvirtd)

$ sudo systemctl enable --now libvirtd

$ sudo systemctl start libvirtd

Confirm that the virtualization daemon is running as shown.

$ sudo systemctl status libvirtd



4) Add the currently logged-in user to the kvm and libvirt groups so that they can create and manage virtual machines.

$ sudo usermod -aG kvm $USER

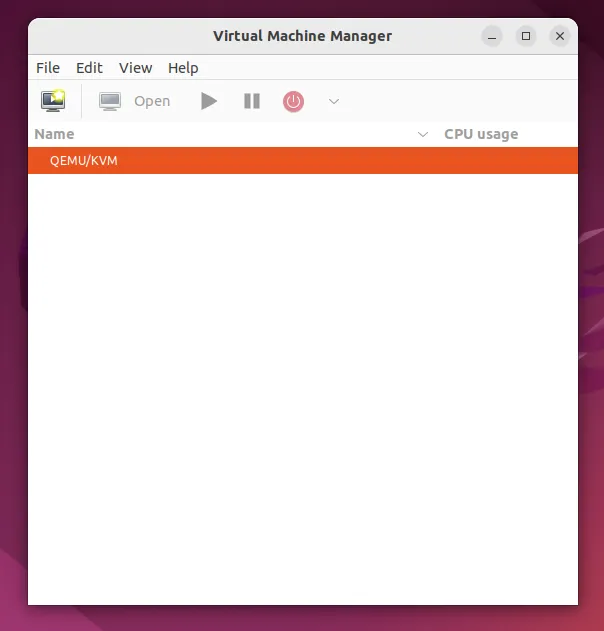
$ sudo usermod -aG libvirt $USER

5) Launch KVM Virtual Machines Manager

Search for ‘Virtual machine Manager’.

Click on the icon that pops up.

( If QEMU/KVM is not connected error appears then install all packages that are needed.

 sudo apt-get install qemu virt-manager

sudo reboot)

6)Create new Virtual Machine

Click on “File” then select “New Virtual Machine”.

This pops open the virtual machine installation wizard which presents you with the following four options:

Local install Media ( ISO image or CDROM

* Network Install ( HTTP, HTTPS, and FTP )
* Import existing disk image
* Manual Install

7) Select: Local install Media ( ISO image or CDROM )

Browse Local and select Linux OS iso file

8)Choose Memory and CPU settings and Disk Space and click Finish

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