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 (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 (CPU) and memory, and provides connectors for other peripherals. Unlike a backplane, a motherboard usually contains significant sub-systems, such as the central processor,
the chipset's input/output and memory controllers, interface connectors, and other components integrated for general use.

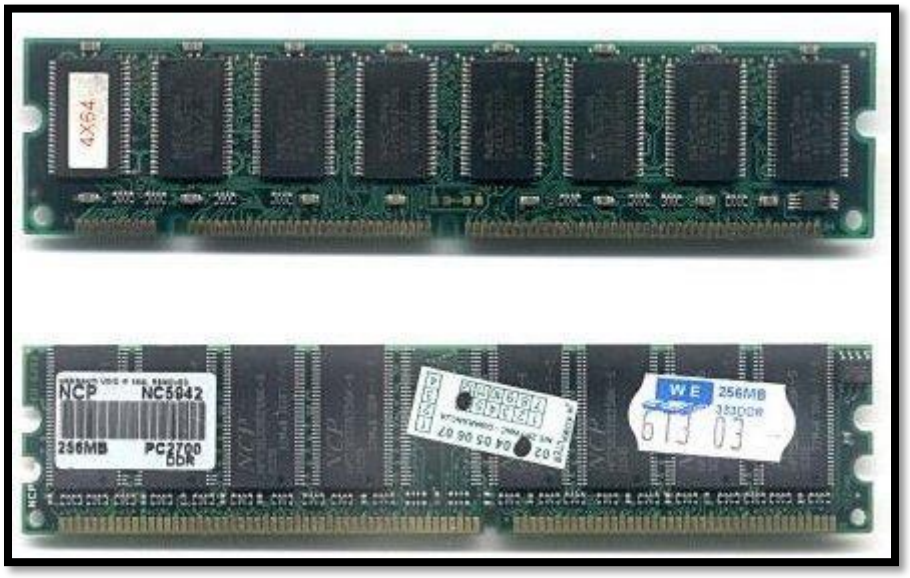
The motherboard is mounted inside the case and is securely attached via small screws through pre-drilled holes. Motherboard contains ports to connect all of the internal components. It provides a single socket for CPU, whereas for memory, normally one or more slots are available. Motherboards provide 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.

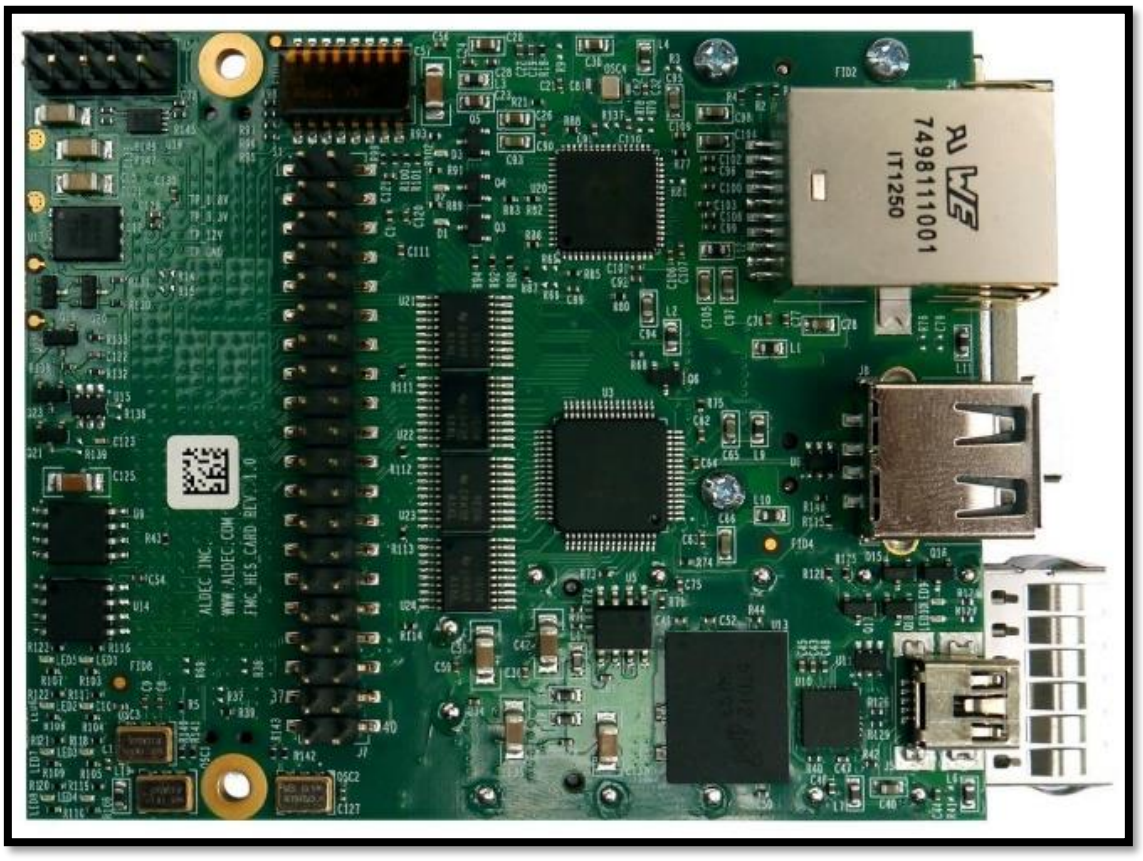
Ram Modules:-

In computing, a memory module or RAM (random-access memory) stick is a printed circuit board on which memory integrated circuits are mounted. Memory modules permit easy installation and replacement in electronic systems, especially computers suchas personal computers, workstations, and servers. The first memory modules wereproprietary 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 that can hold an expansion card to expand the computer's functionality, like a video card, 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. However, since all computers have a limited number of expansion slots, it's important to open your computer 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.

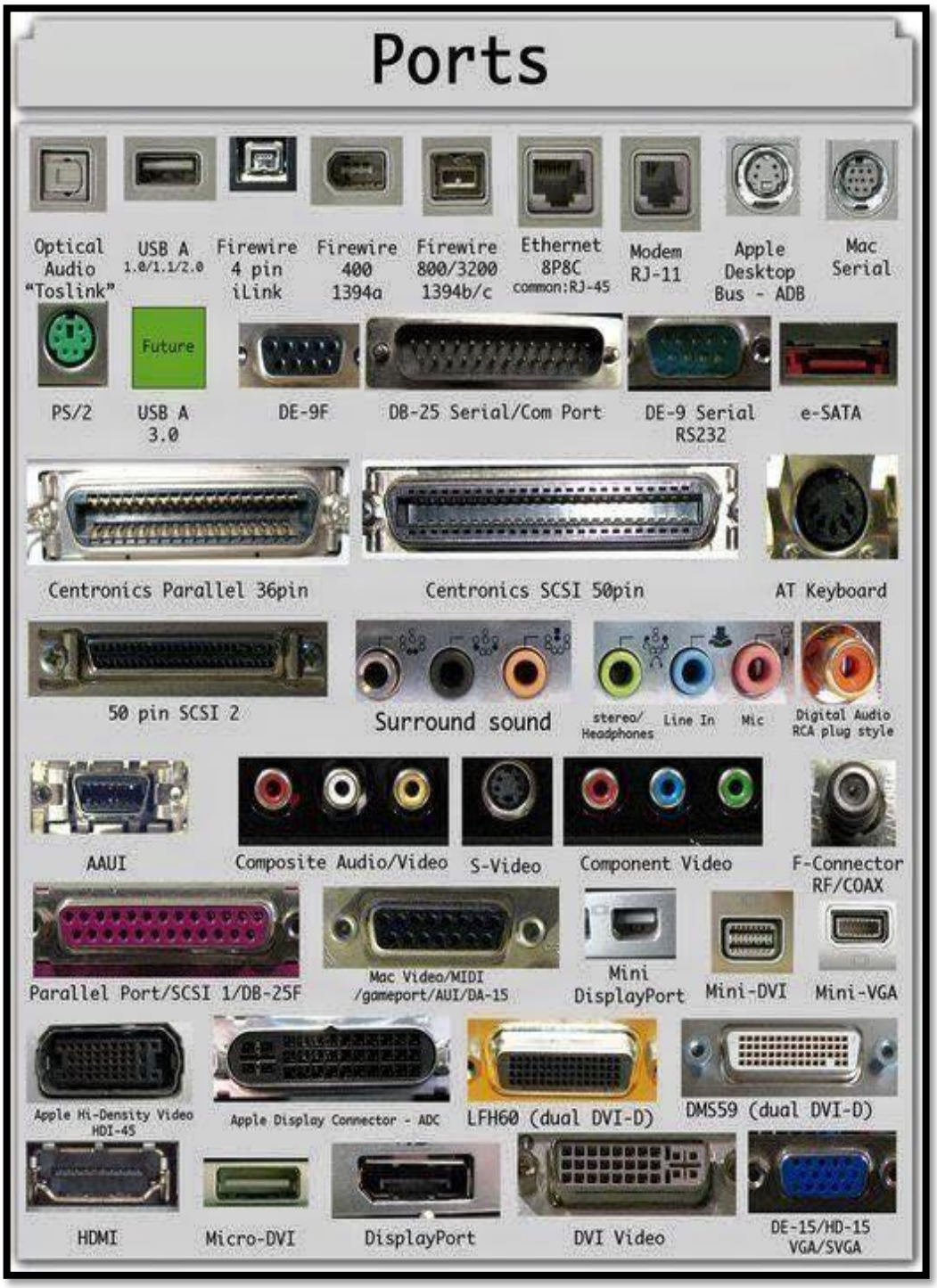
Modem Port - connects a PC's modem to the telephone network.

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.


Ports
Optical Audio "Toslink"
USB A 1.0/1.1/2.0
Firewire 4 pin iLink
Firewire 400 1394a
Firewire 800/3200 1394b/c
Ethernet 8P8C common:RJ-45
Modem RJ-11
Apple Desktop Bus - ADB
Mac Serial
PS/2
Future
USB A 3.0
DE-9F
DB-25 Serial/Com Port
DE-9 Serial RS232
e-SATA
Centronics Parallel 36pin
Centronics SCSI 50pin
AT Keyboard
50 pin SCSI 2
Surround sound
stereo/ Headphones
Line In
Mic
Digital Audio RCA plug style
AAUI
Composite Audio/Video
S-Video
Component Video
F-Connector RF/COAX
Parallel Port/SCSI 1/DB-25F
Mac Video/MIDI /gameport/AUI/DA-15
Mini DisplayPort
Mini-DVI
Mini-VGA
Apple Hi-Density Video HDI-45
Apple Display Connector - ADC
LFH60 (dual DVI-D)
DMS59 (dual DVI-D)
HDMI
Micro-DVI
DisplayPort
DVI Video
DE-15/HD-15 VGA/SVGA

EXPERIMENT-2

LINUX COMMANDS

Man

```
LS(1)                          User Commands                          LS(1)

NAME
       ls - list directory contents

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

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

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

       -a, --all
              do not ignore entries starting with .

       -A, --almost-all
              do not list implied . and ..

       --author
 Manual page ls(1) line 1 (press h for help or q to quit)
```

Ls

```
stud@debian:~$ ls
 24_ANGELDBMS   Documents    networks
 48             Downloads    noel45
 48A            gaya3        NSALAB_1.SH
 abel           hisham63     Pictures
 ADS_45         home         Public
 akhila16       Home         public_html
 anagha         india        python_45
 anagha02       jane         python_45.py
 Anusree37      java_45      python_46
 ayana          LAB          python_54
 b              MASM         shadasm45.java
 bivina         mca          Templates
 de45           minwa        test
 de45.java      Music        Videos
 Desktop        n           'VirtualBox VMs'
 dev            network_45
stud@debian:~$
```

Echo

```
user@user:~/network$ echo 'network'
network
user@user:~/network$
```

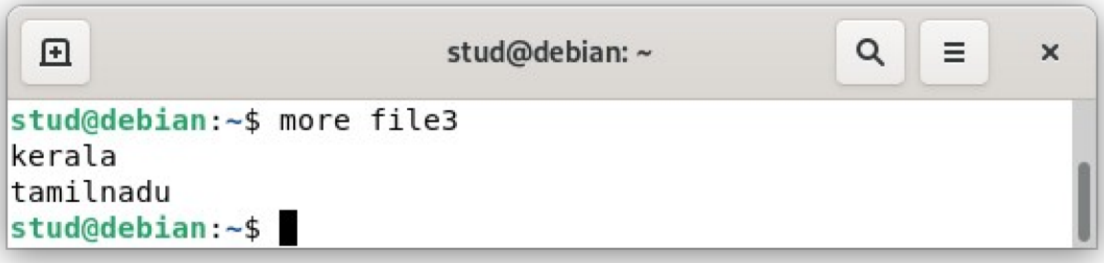
Read

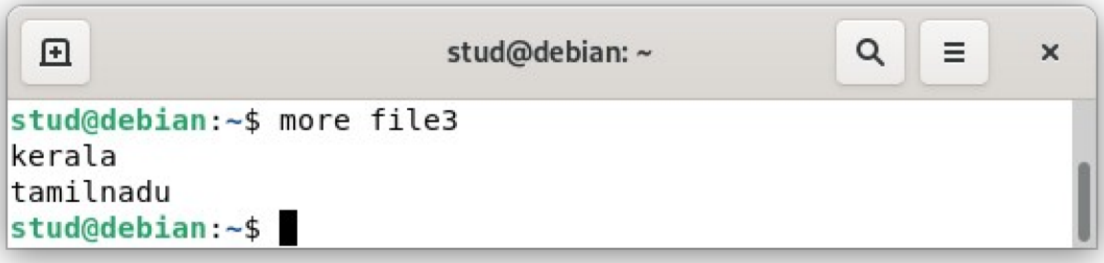
```
user@user:~/network$ echo 'enter your name'
enter your name
user@user:~/network$ read name
user
user@user:~/network$ echo $name
user
```

Cat

```
stud@debian:~/networks$ cat >file1
Computer networks
stud@debian:~/networks$ cat file1
Computer networks
stud@debian:~/networks$
```

More



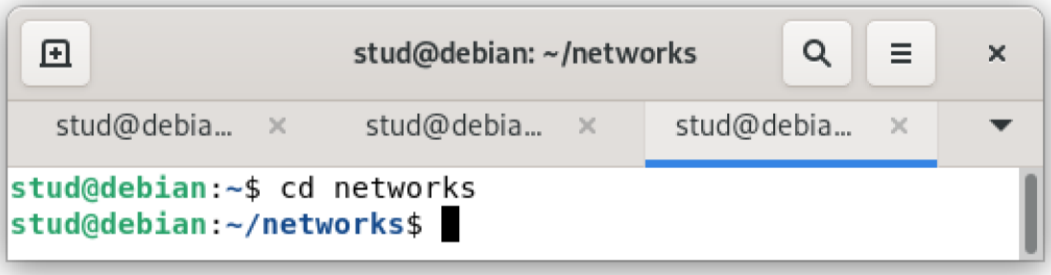


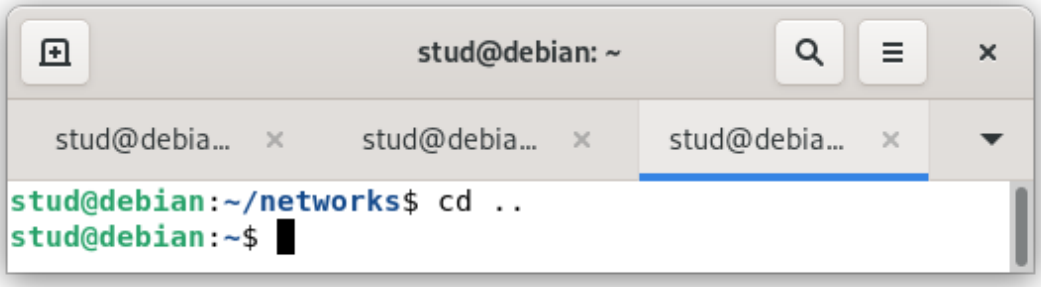
Less

Cat

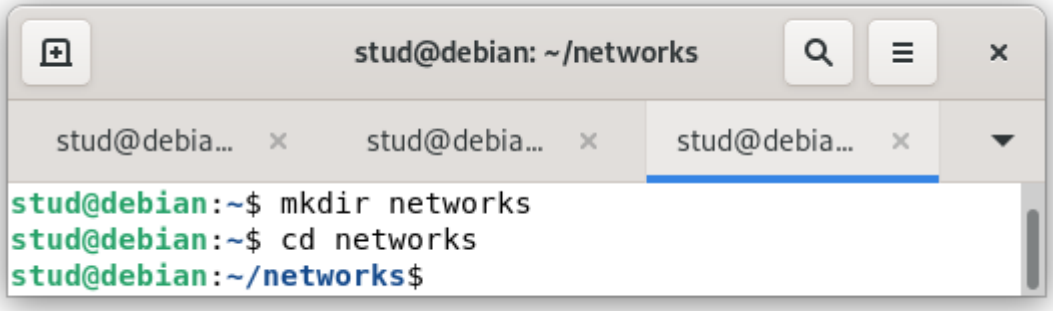
```
stud@debian:~/networks$ cat >file1
Computer networks
stud@debian:~/networks$ cat file1
Computer networks
stud@debian:~/networks$
```

Cd

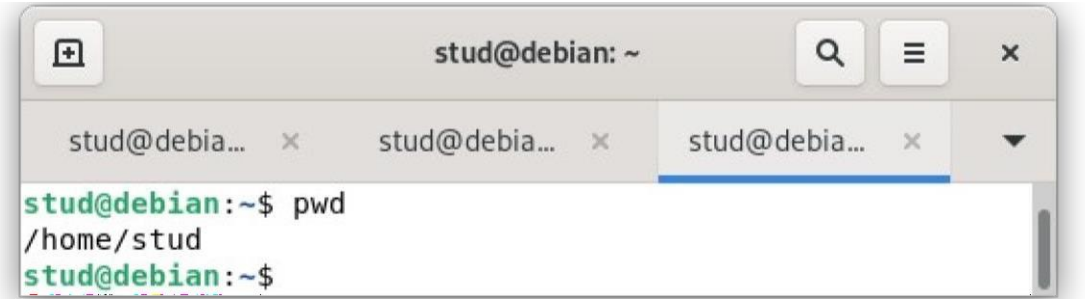




Mkdir



Pwd



Find

```
stud@debian:~$ cd ACN
stud@debian:~/ACN$ touch f1 f2
stud@debian:~/ACN$ cd ..
stud@debian:~$
stud@debian:~$ find ./ACN -name f1
./ACN/f1
```

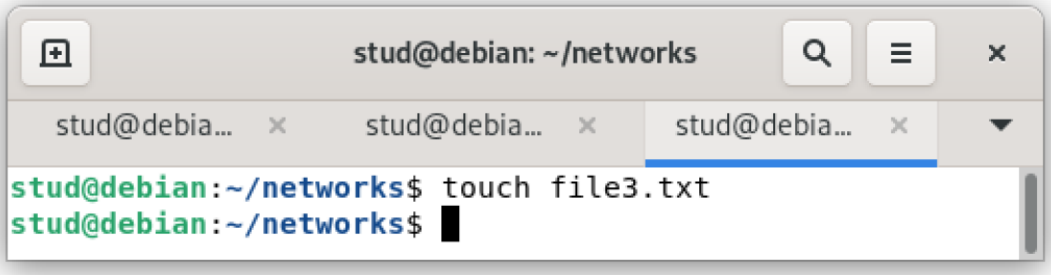
Mv

```
stud@debian:~$  mkdir ACN
stud@debian:~$  touch f1.txt
stud@debian:~$ touch f2.txt
stud@debian:~$ mv f1.txt ./ACN
stud@debian:~$ cd ACN
stud@debian:~/ACN$ ls
f1.txt
stud@debian:~/ACN$
```

Cp

```
stud@debian:~/networks$ cp file4 file3
stud@debian:~/networks$ cat file3
1
2
3
4
5
6
7
8
9
10
stud@debian:~/networks$
```

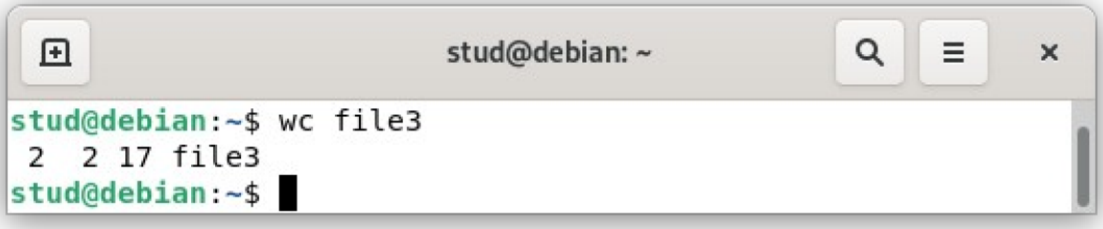
Rm



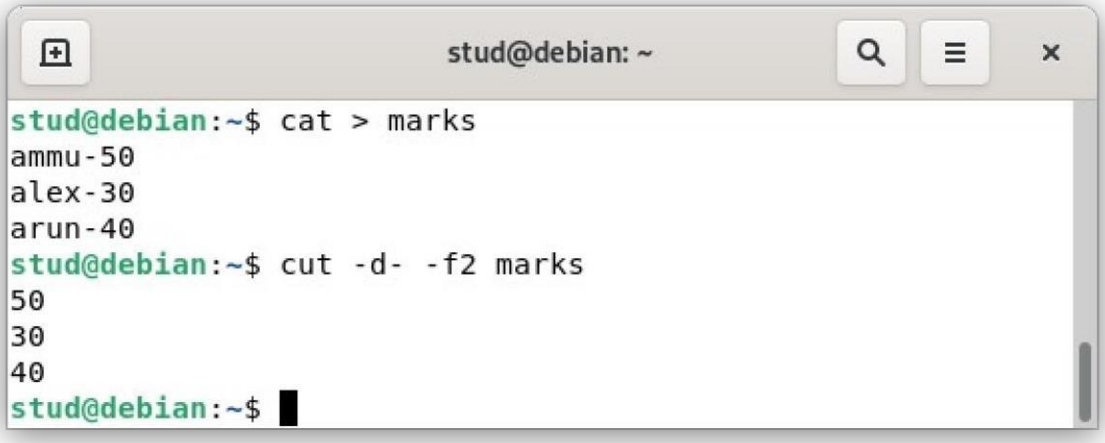
Tar

```
stud@debian:~$ touch file{0..100}.txt
stud@debian:~$ tar cf file.tar file
stud@debian:~$ ls -l
total 348
drwxr-xr-x 2 stud stud  4096 Jun  9 10:48  1234
-rw-r--r-- 1 stud stud    79 Jun 16 15:00  6.sh
-rw-r--r-- 1 stud stud    18 Jun 14 10:47  a
-rw-r--r-- 1 stud stud    47 Jan  5 11:53  afiedt.buf
drwxr-xr-x 2 stud stud  4096 Jun 16 15:15  Anagha
drwxr-xr-x 2 stud stud  4096 Apr 29 16:11  ANANDAKRISHNAN.M.S
drwxr-xr-x 2 stud stud  4096 Dec 17 16:26  aparna
drwxr-xr-x 2 stud stud  4096 Jun 14 15:32  archana
drwxr-xr-x 2 stud stud  4096 Nov 17  2021  Arshia42
drwxr-xr-x 6 stud stud  4096 Mar  3 09:40  ATHIRA42
drwxr-xr-x 2 stud stud  4096 May 24 13:31  azad13
-rw-r--r-- 1 stud stud   367 Mar  2 14:13  bill.php
-rwxr-xr-x 1 stud stud 16760 Jun 14 10:47  c
-rw-r--r-- 1 stud stud   303 Jun 14 10:45  catfile.c
-rw-r--r-- 1 stud stud  1598 Sep 23  2021  CurrentThreadDemo.class
-rw-r--r-- 1 stud stud   526 Sep 23  2021  CurrentThreadDemo.java
drwxr-xr-x 2 stud stud  4096 May 21 11:03  Desktop
drwxr-xr-x 3 stud stud  4096 Sep 28  2021  dev
drwxr-xr-x 2 stud stud  4096 May 21 11:30  Documents
drwxr-xr-x 3 stud stud  4096 Jun 16 15:13  Downloads
-rw-r--r-- 1 stud stud    19 Jun 14 10:39  f1.txt
-rw-r--r-- 1 stud stud    60 Jun 16 15:10  f2
-rw-r--r-- 1 stud stud   714 Jun 14 12:37  fcfs.c
-rw-r--r-- 1 stud stud   212 Sep 28  2021  fibo.sql
drwxr-xr-x 2 stud stud  4096 Jun 16 15:17  file
-rw-r--r-- 1 stud stud     0 Jun 16 15:17  file0.txt
-rw-r--r-- 1 stud stud     0 Jun 16 15:17  file100.txt
-rw-r--r-- 1 stud stud     0 Jun 16 15:17  file10.txt
-rw-r--r-- 1 stud stud     0 Jun 16 15:17  file11.txt
-rw-r--r-- 1 stud stud     0 Jun 16 15:17  file12.txt
```

Wc



Cut



Paste

```
stud@debian:~/ACN$ cat f1
network
stud@debian:~/ACN$ cat f2
programming lab
stud@debian:~/ACN$ paste f1 f2
network programming lab
stud@debian:~/ACN$
```

Head and Tail

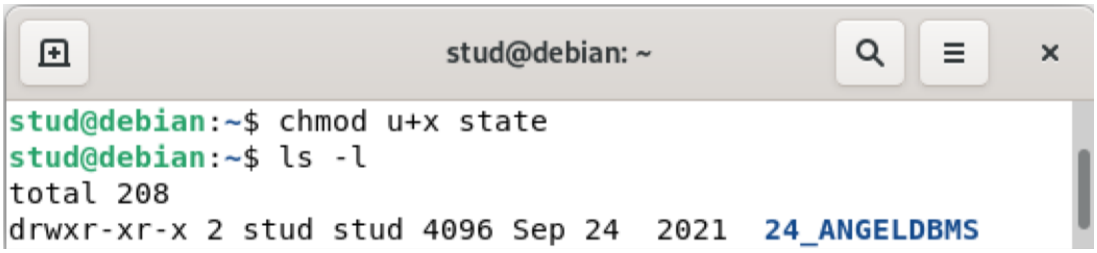
```
stud@debian:~/networks$ cat > file4
1
2
3
4
5
6
7
8
9
10
stud@debian:~/networks$ head -8 file4|tail -2
7
8
stud@debian:~/networks$
```

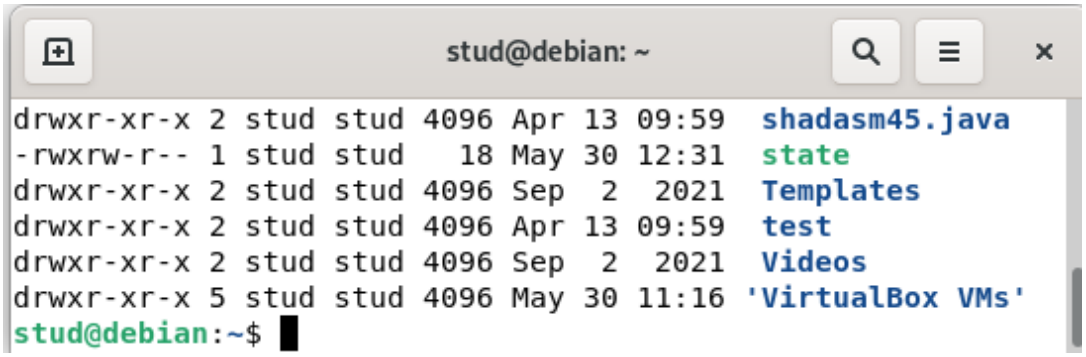
Grep

Expr

```
user@user:~/network$ expr 4 + 5
9
user@user:~/network$ expr 10 - 5
5
```

Chmod





Redirection

```
user@user:~/network$ ls -l >> q8.sh
user@user:~/network$ cat q8.sh
total 16
-rwxrw-r-- 1 user user  61 Jun  9 21:39 f6.sh
-rw-rw-r-- 1 user user  79 Jun 10 06:04 f7.sh
-rwxrw-r-- 1 user user 248 Jun 16 11:55 q13.sh
-rw-rw-r-- 1 user user 104 Jun 16 06:59 q4.sh
-rw-rw-r-- 1 user user   0 Jun 16 12:20 q8.sh
```

Pipes

```
stud@debian:~$ ls *.sh | cat >f2
stud@debian:~$ cat f2
6.sh
file1.sh
if.sh
leapyear.sh
sintst.sh
string.sh
teat.sh
stud@debian:~$
```

EXPERIMENT-3

SHELL SCRIPT

3.1 Write a shell script to implement factorial

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

```
stud@debian:~$ vi 3B.sh
stud@debian:~$ bash 3B.sh
Enter a number
3
Factorial is 6
stud@debian:~$
```

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

```
mca@mca-OptiPlex-990:~/S2/NW/Hijas_Networking-main$ bash fibonacci.sh
Enter no. of terms
3
Enter i
2
Fibonacci series:
0
1
1
2
```

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”
```

```
mca@mca-OptiPlex-990:~/S2/NW/Hijas_Networking-main$ bash amstrong.sh
Enter the number
153
Amstrong number
mca@mca-OptiPlex-990:~/S2/NW/Hijas_Networking-main$
```

3.4 Write a shell script to print prime number

Program

```
  if [ `expr $num % $i` -eq 0 ]
then
f=1
fi
i=`expr $i + 1`
done
if [ $f -eq 1 ]
then
echo "The number is not prime"
else
echo "The number is Prime"
fi
```

Output

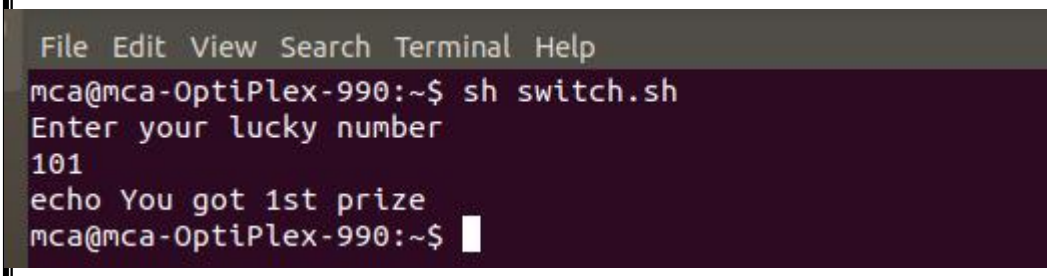
```
mca@mca-OptiPlex-990:~/Documents$ bash prime.sh
Enter Number : 6
6 is not a prime number.
```

3.5 Write a shell script for print prize

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

```
mca@mca-OptiPlex-990:~/S2/NW/Hijas_Networking-main$ bash largest.sh
Enter Ist no
23
Enter 2nd no
4
Enter 3rd no
55
Largest is 55
mca@mca-OptiPlex-990:~/S2/NW/Hijas_Networking-main$
```

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
```

output

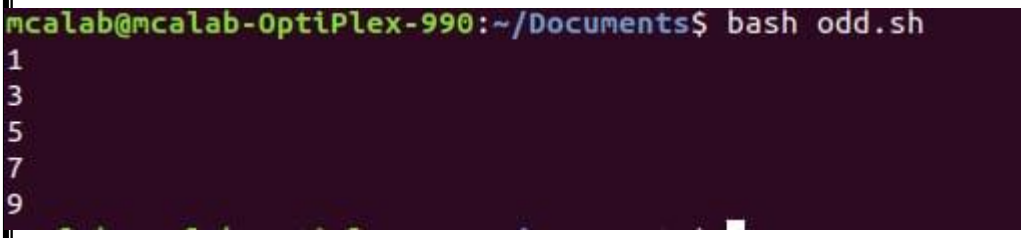
```
yesmin@fahmida-VirtualBox:~/code$ bash cmdline1.sh 50 35 15
Total number of arguments : 3
First argument value : 50
Second argument value : 35
Third argument value : 15
50  35  15
Result of sum = 100
yesmin@fahmida-VirtualBox:~/code$
```

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

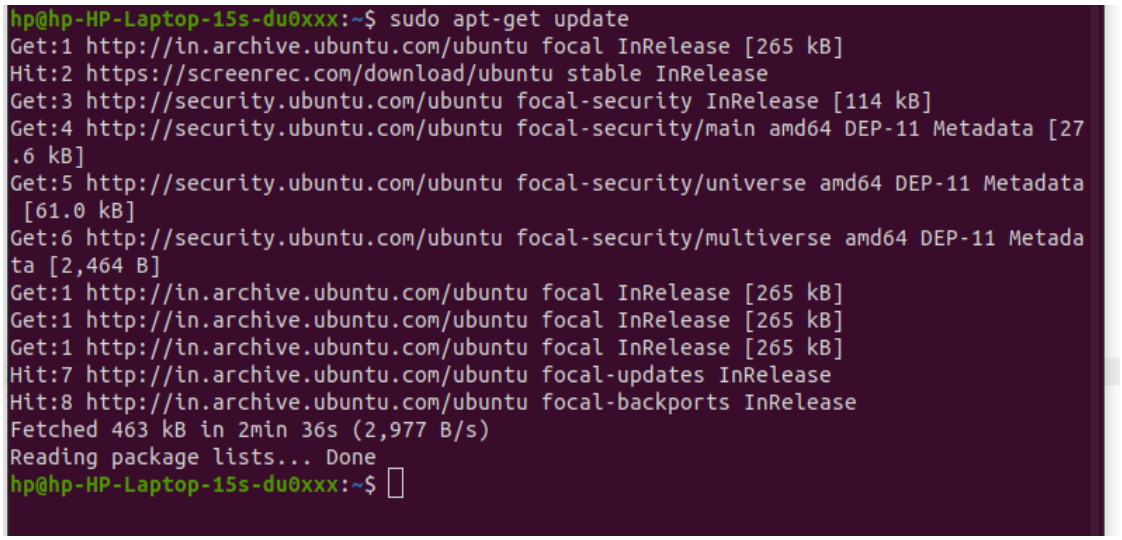
Step 1: Update Package Repository Cache

Before you begin:

1. Open the terminal either by using the **CTRL+ALT+T** keyboard shortcut or bysearching for the word *terminal* in **Ubuntu**

2. Make sure to update the package repository cache to ensure it installs the latestversions of the software. To do so, type in the following command:

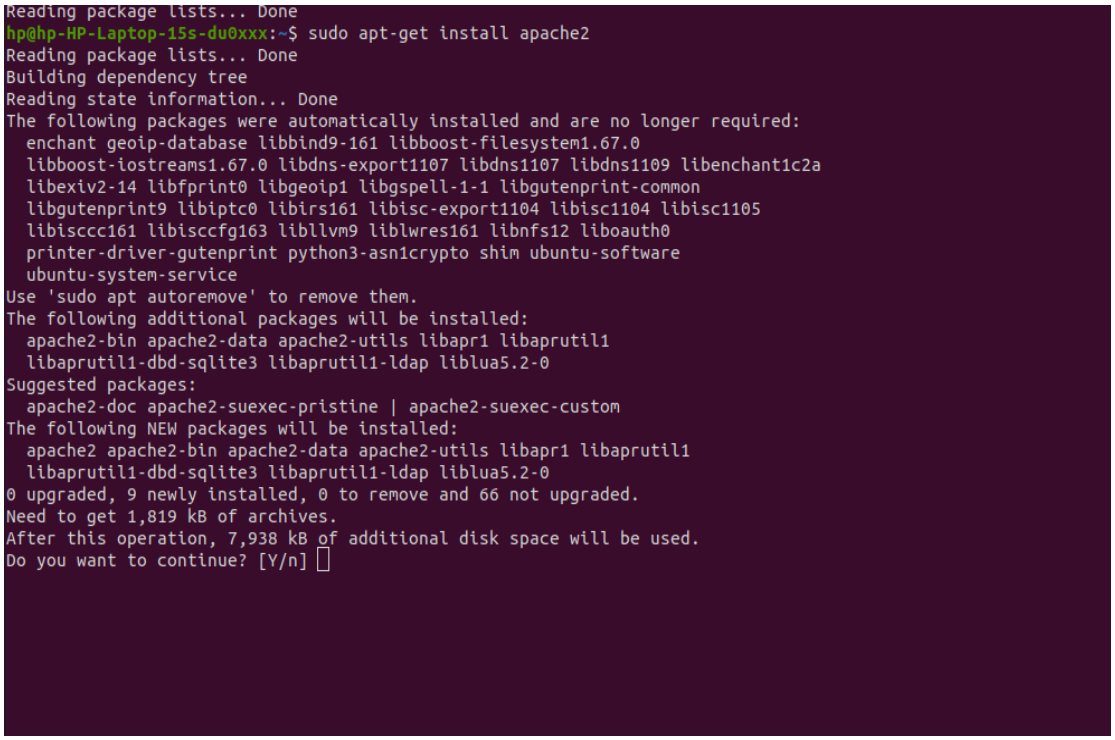
```
sudo apt-get update
```



Step 2: Install Apache

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

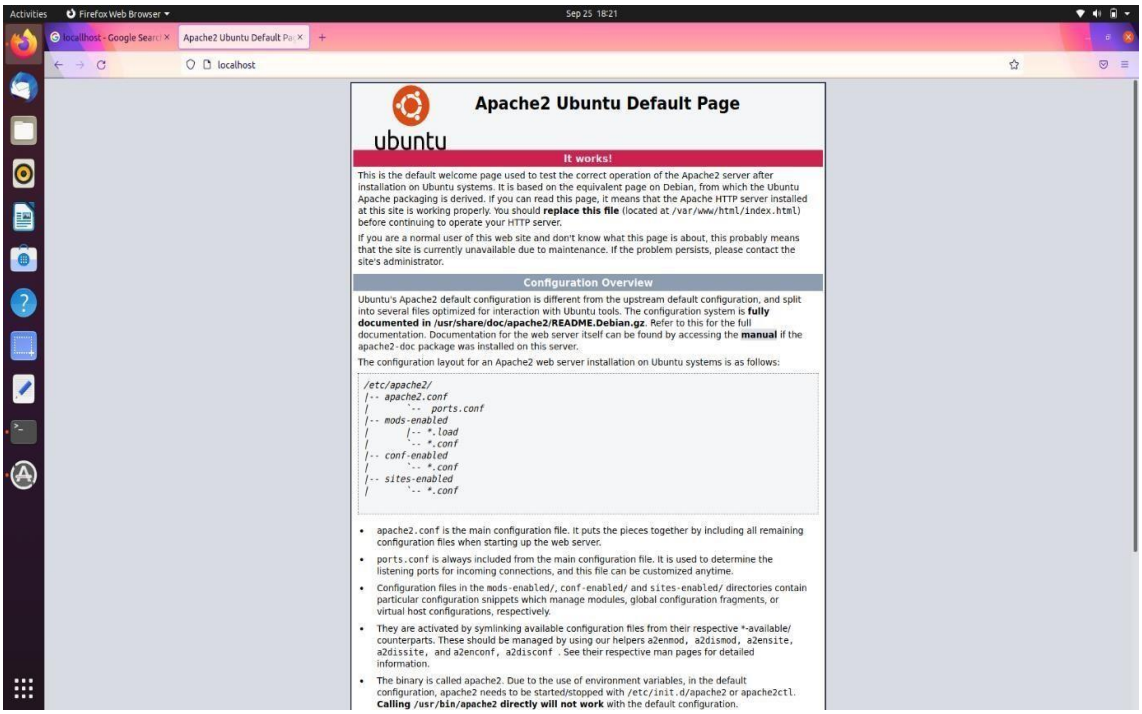
sudo apt-get install apache2



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

2. To ensure Apache is running, enter the Localhost of your server in the address barandpress **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

```
hp@hp-HP-Laptop-15s-du0xxx:~$ sudo apt-get install php7.4
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  enchant geoip-database libbind9-161 libboost-filesystem1.67.0 libboost-iostreams1.67.0 libdns-export1107 libdns1107 libdns1109 libenchant1c2a libexiv2-14 libfprint0 libgeoip1 libgspell-1-1
  libgutenprint-common libgutenprint9 libiptc0 libirs161 libisc-export1104 libisc1104 libisc1105 libisccc161 libisccfg163 liblvm9 liblwres161 libnfs12 liboauth0 printer-driver-gutenprint
  python3-asn1crypto shim ubuntu-software ubuntu-system-service
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libapache2-mod-php7.4 php-common php7.4-cli php7.4-common php7.4-json php7.4-opcache php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-cli php7.4-common php7.4-json php7.4-opcache php7.4-readline
0 upgraded, 8 newly installed, 0 to remove and 66 not upgraded.
Need to get 4,015 kB of archives.
After this operation, 18.0 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

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:

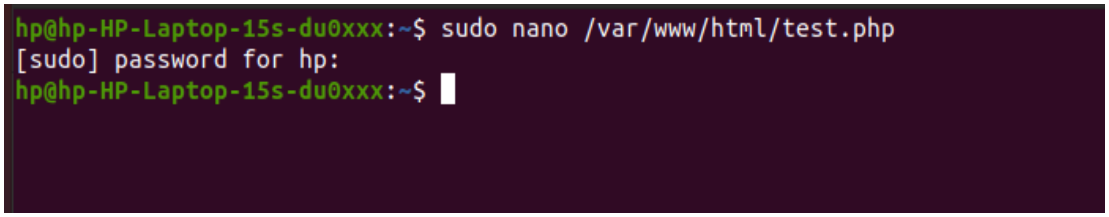
```
$ sudo /etc/init.d/apache2 restart
```

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:

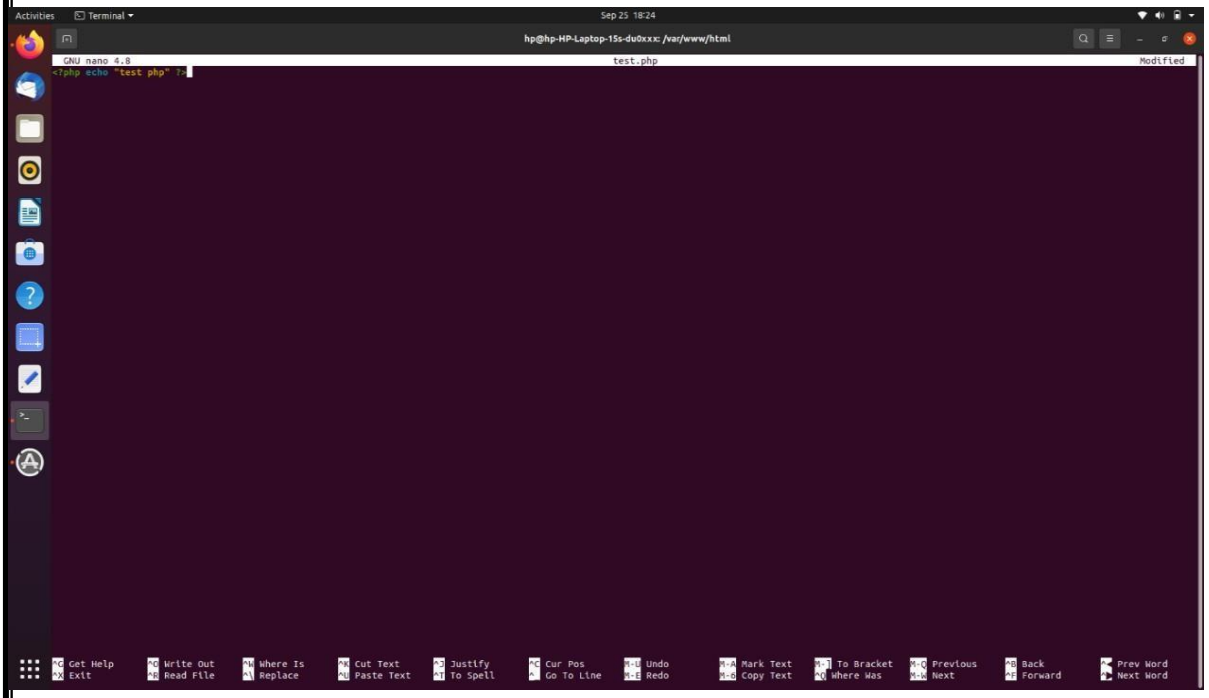
```
sudo nano /var/www/html/test.php
```



This command opens the **bank file**.

2. 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 enterthe 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

```
Other options:
hp@hp-HP-Laptop-15s-du0xxx:~$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  enchant geoip-database libbind9-161 libboost-filesystem1.67.0
  libboost-iostreams1.67.0 libdns-export1107 libdns1107 libdns1109
  libenchant1c2a libexiv2-14 libfprint0 libgeoip1 libgspell-1-1
  libgutenprint-common libgutenprint9 libiptc0 libirs161 libisc-export1104
  libisc1104 libisc1105 libisccc161 libisccfg163 libllvm9 liblwres161 libnfs12
  liboauth0 printer-driver-gutenprint python3-asn1crypto shim ubuntu-software
  ubuntu-system-service
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libaio1 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-server-8.0 mysql-server-core-8.0
Suggested packages:
```

1. Then it's asking us for a root password. Enter the password. Again we getto 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

```
hp@hp-HP-Laptop-15s-du0xxx:~$ mysql -u root -p
Enter password:
ERROR 1045 (28000): Access denied for user 'root'@'localhost' (using password: YES)
hp@hp-HP-Laptop-15s-du0xxx:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 19
Server version: 8.0.26-0ubuntu0.20.04.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> create database testdb;
Query OK, 1 row affected (0.01 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
| testdb             |
+--------------------+
5 rows in set (0.00 sec)

mysql>
```

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

```
hp@hp-HP-Laptop-15s-du0xxx:~$ sudo apt-get install phpmyadmin
[sudo] password for hp:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  acl apg colord-data enchant geoip-database gnome-control-center-faces gnome-online-accounts gsfonts hplip-data libbind9-161 libboost-filesystem1.67.0 libboost-iostreams1.67.0 libcolord-gtk1
  libcolorhug2 libdns-export1107 libdns1107 libdns1109 libenchant1c2a libexiv2-14 libfprint0 libgeoip1 libgsound0 libgspell-1-1 libgssdp-1.2-0 libgupnp-1.2-0 libgupnp-av-1.0-2 libgupnp-dlna-2.0-3
  libgutenprint-common libgutenprint9 libieee1284-3 libimagequant0 libiptc0 libirs161 libisc-export1104 libisc1104 libisc1105 libisccc161 libisccfg163 liblldb9 liblwres161 libnfs12 liboauth0
  librygel-core-2.6-2 librygel-db-2.6-2 librygel-renderer-2.6-2 librygel-server-2.6-2 libsane-common libsnmp-base libwebpmux3 mobile-broadband-provider-info network-manager-gnome
  printer-driver-gutenprint printer-driver-postscript-hp python3-asn1crypto python3-macaroonbakery python3-olefile python3-pil python3-protobuf python3-pymacaroons python3-renderpm python3-reportlab
  python3-reportlab-accel python3-rfc3339 python3-tz rygel shim ubuntu-software ubuntu-systen-service
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  dbconfig-common dbconfig-mysql icc-profiles-free javascript-common libjs-jquery libjs-openlayers libjs-sphinxdoc libjs-underscore libonig5 libzip5 php-bz2 php-curl php-gd php-google-recaptcha
  php-mbstring php-mysql php-phpmyadmin-motranslator php-phpmyadmin-shapefile php-phpmyadmin-sql-parser php-phpseclib php-psr-cache php-psr-container php-psr-log php-symfony-cache
  php-symfony-cache-contracts php-symfony-expression-language php-symfony-service-contracts php-symfony-var-exporter php-tcpdf php-twig php-twig-extensions php-xml php-zip php7.4-bz2 php7.4-curl
  php7.4-gd php7.4-mbstring php7.4-mysql php7.4-xml php7.4-zip
Suggested packages:
  php-dbase php-libsodium php-mcrypt php-gmp php-symfony-service-implementation php-imagick php-twig-doc php-symfony-translation php-recode php-gd2 php-pragmarx-google2fa php-bacon-qr-code
  php-samyoul-u2f-php-server
Recommended packages:
  php-mcrypt
The following NEW packages will be installed:
  dbconfig-common dbconfig-mysql icc-profiles-free javascript-common libjs-jquery libjs-openlayers libjs-sphinxdoc libjs-underscore libonig5 libzip5 php-bz2 php-curl php-gd php-google-recaptcha
  php-mbstring php-mysql php-phpmyadmin-motranslator php-phpmyadmin-shapefile php-phpmyadmin-sql-parser php-phpseclib php-psr-cache php-psr-container php-psr-log php-symfony-cache
  php-symfony-cache-contracts php-symfony-expression-language php-symfony-service-contracts php-symfony-var-exporter php-tcpdf php-twig php-twig-extensions php-xml php-zip php7.4-bz2 php7.4-curl
  php7.4-gd php7.4-mbstring php7.4-mysql php7.4-xml php7.4-zip phpmyadmin
0 upgraded, 41 newly installed, 0 to remove and 61 not upgraded.
Need to get 16.0 MB of archives.
After this operation, 71.8 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

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 yesand 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.
4. Enter the following command to edit the file

   $ sudo nano/etc/php7.4/apache2.php.ini
5. Then we need to uncomment an **extension=mysql.so.** find it the file justremove the Semicolon.

1. 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:

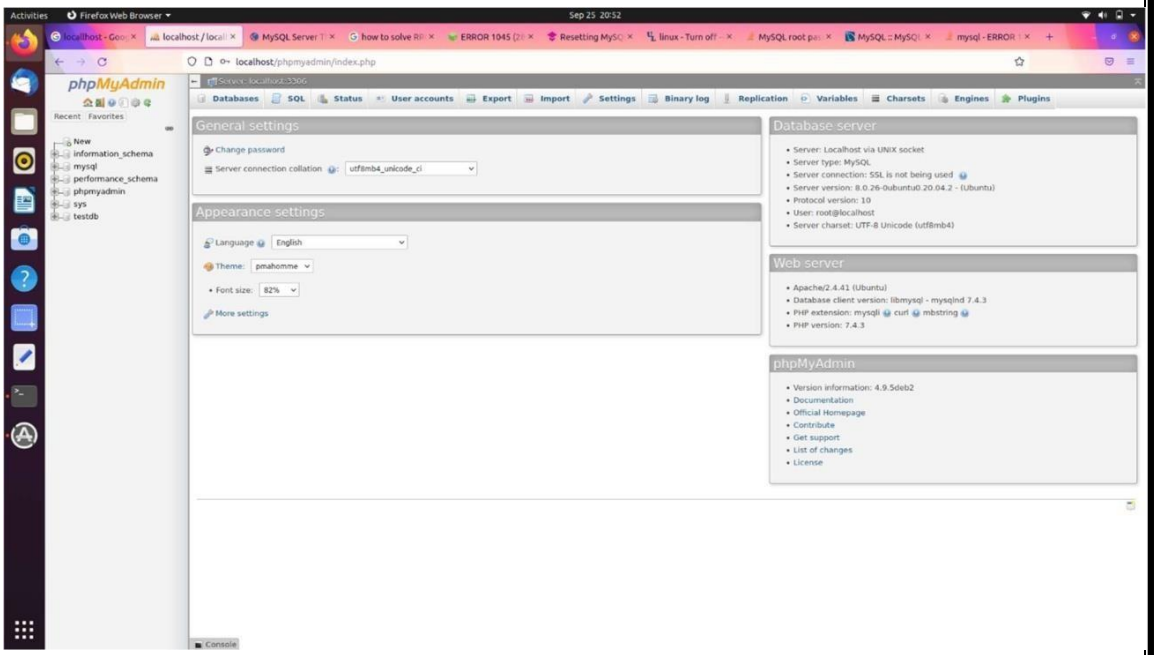
   ```
   $ sudo nano/etc/apache2/apache2.conf
   ```

2. Type the following command to the nano editor

   ```
   Include /etc/phpmyadmin/apache.conf
   ```

3. Then enter ctl+x to save

4. 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

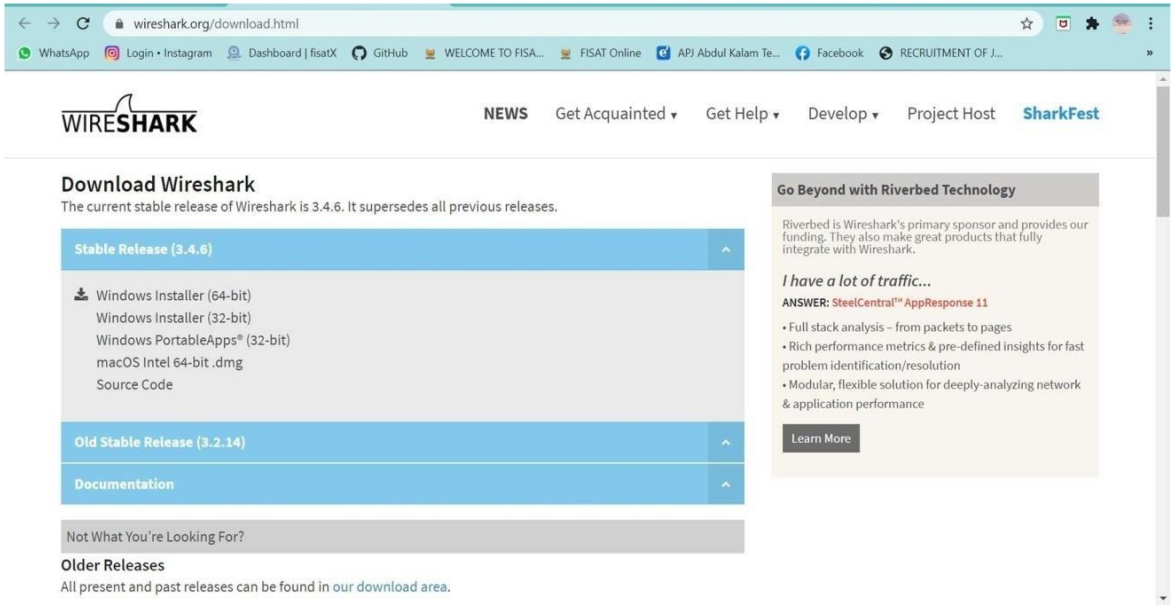
Downloading steps:-

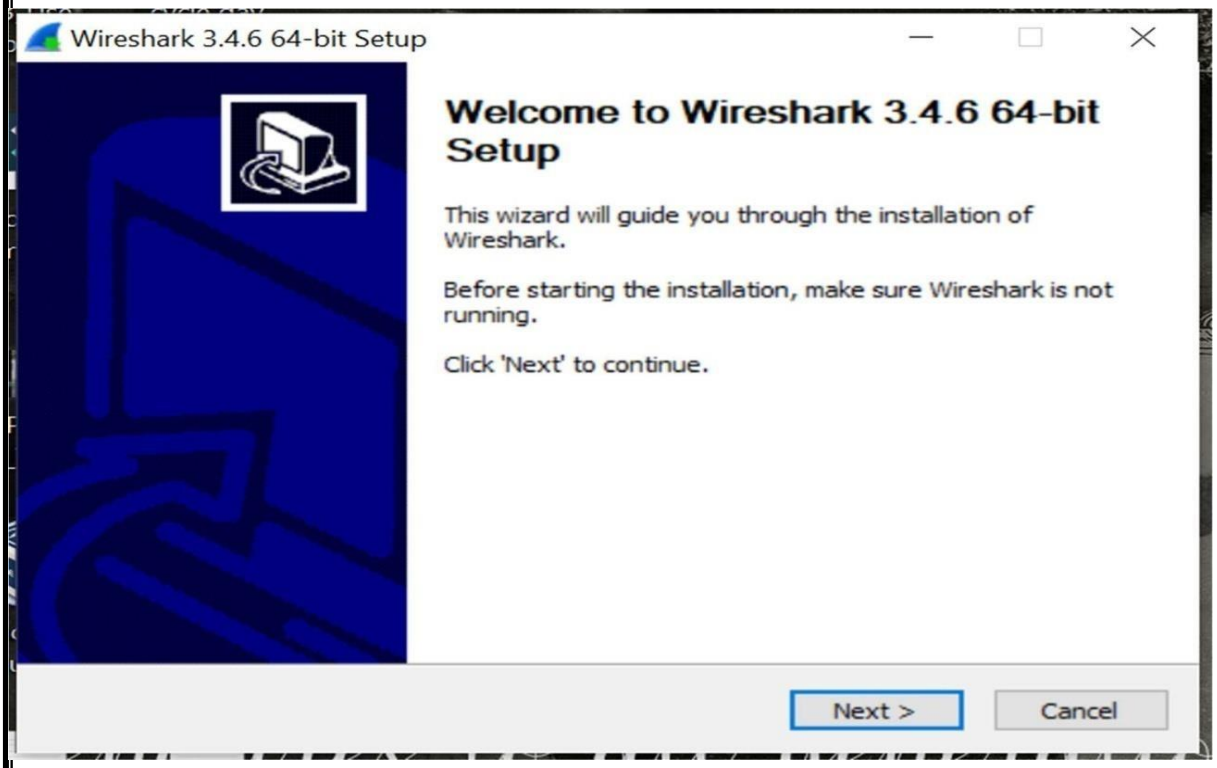
1. Open a web browser.
2. Navigate to http://www.wireshark.org.
3. Select Download Wireshark.
4. Select the Wireshark Windows Installer matching your system type. Save theprogram inthe Downloads folder.
5. Close the web browser.

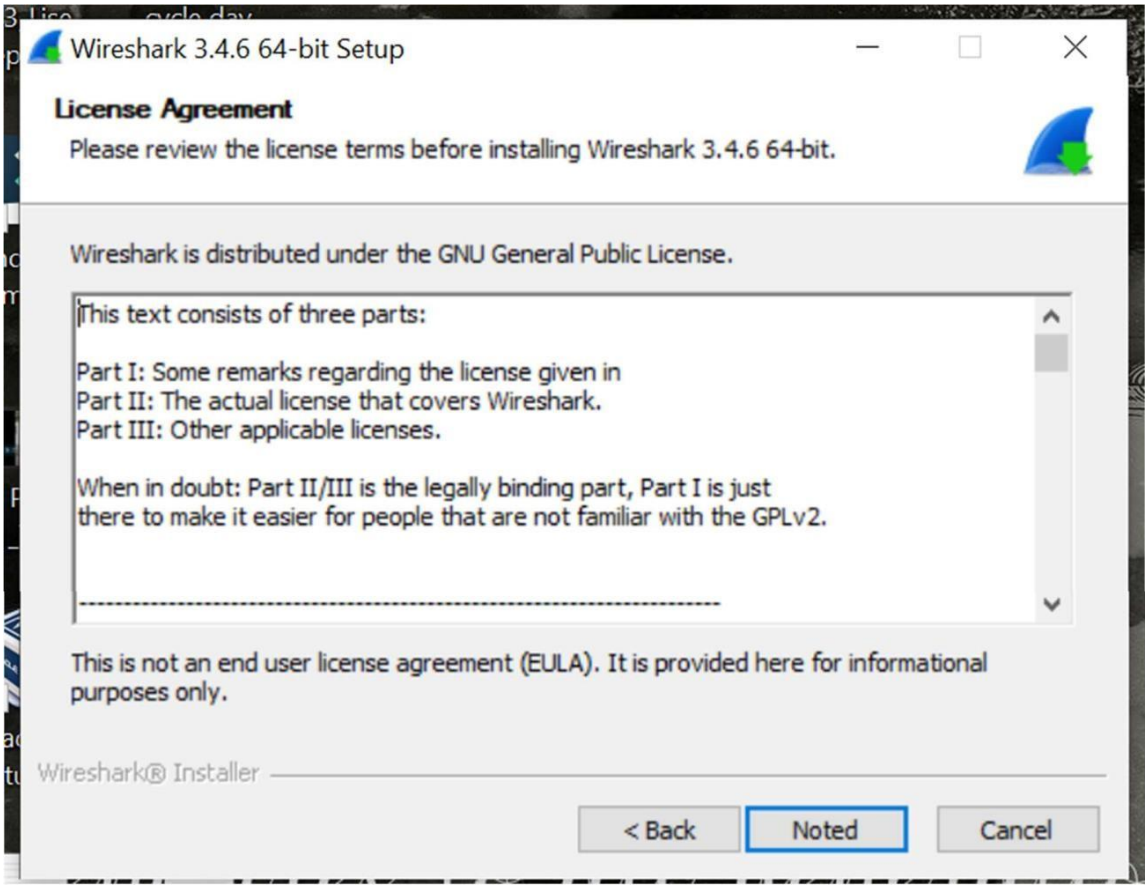
Installation process:-

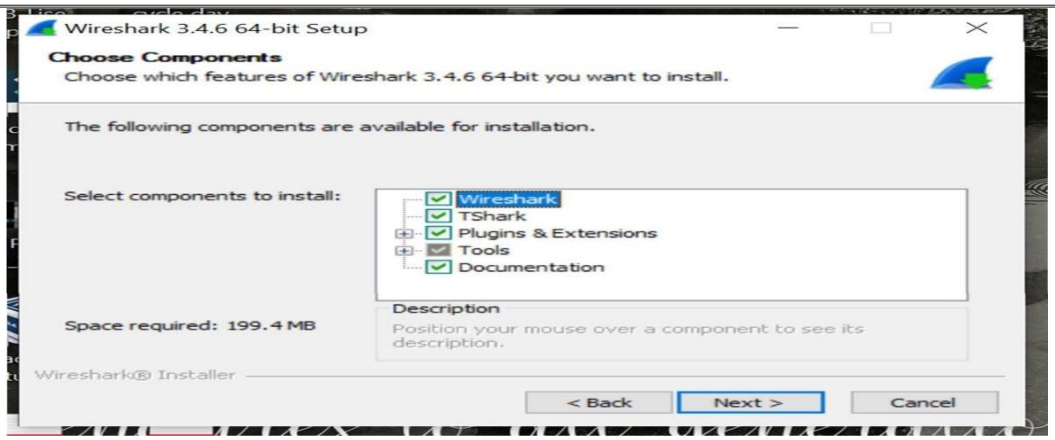
1. Double-click on the file to open it.
2. If you see a User Account Control dialog box, select Yes to allow theprogram to makechanges to this computer.
3. Select Next to start the Setup Wizard.
4. Review the license agreement. If you agree, select I Agree to continue.

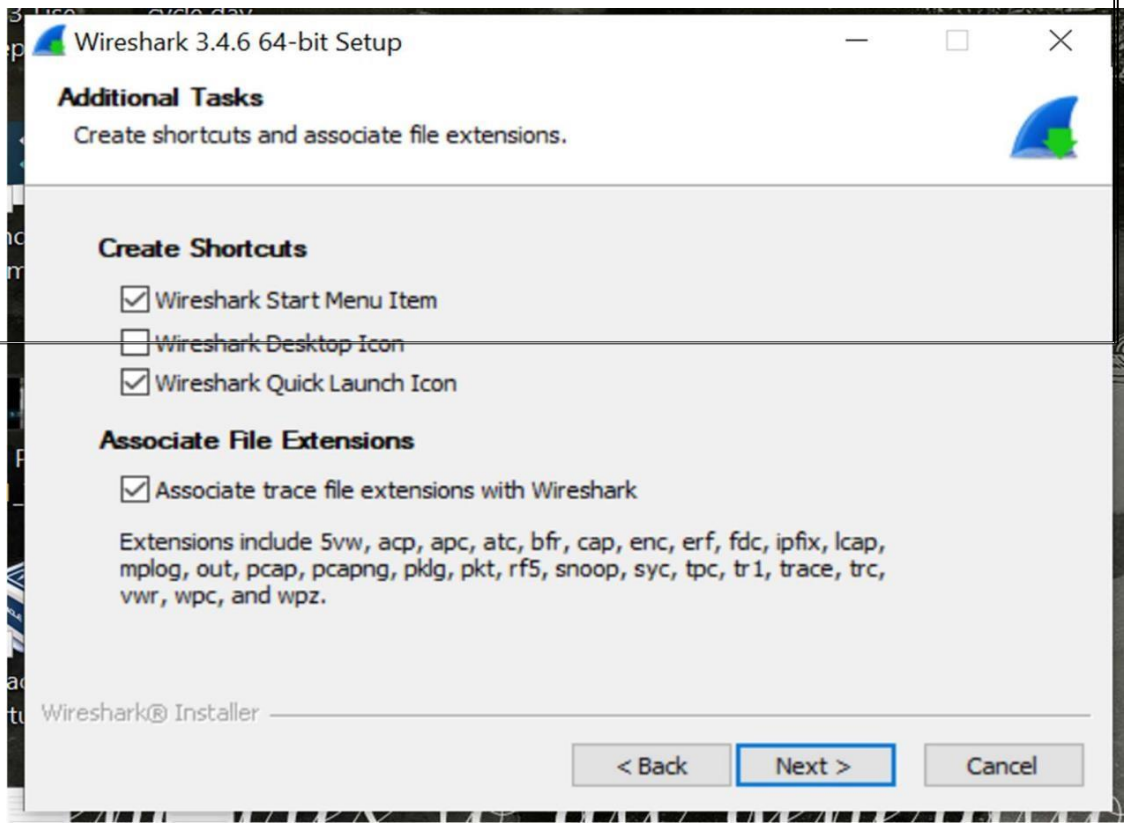
1. Select Next to accept the default components.
2. Select the shortcuts you would like to have created. Leave thefile extensionsselected. Select Next to continue.
3. Select Next to accept the default install location.
4. Select Install to begin installation.
5. Select Next to install WinPcap.
6. Select Next to start the Setup Wizard.
7. Review the license agreement. If you agree, select I Agree to continue.
8. Select Install to begin installation.
9. Select Finish to complete the installation of WinPcap.
10. Select Next to continue with the installation of Wireshark.
11. Select Finish to complete the installation of Wireshark.

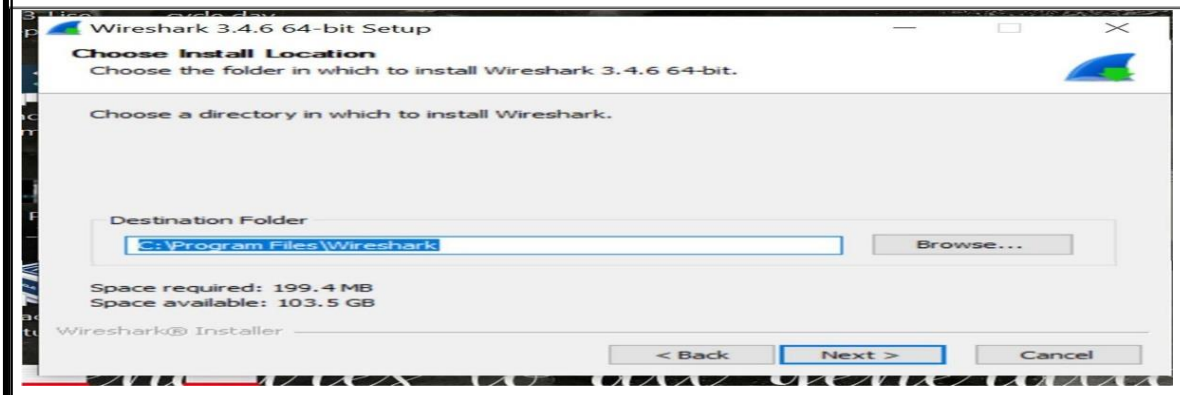


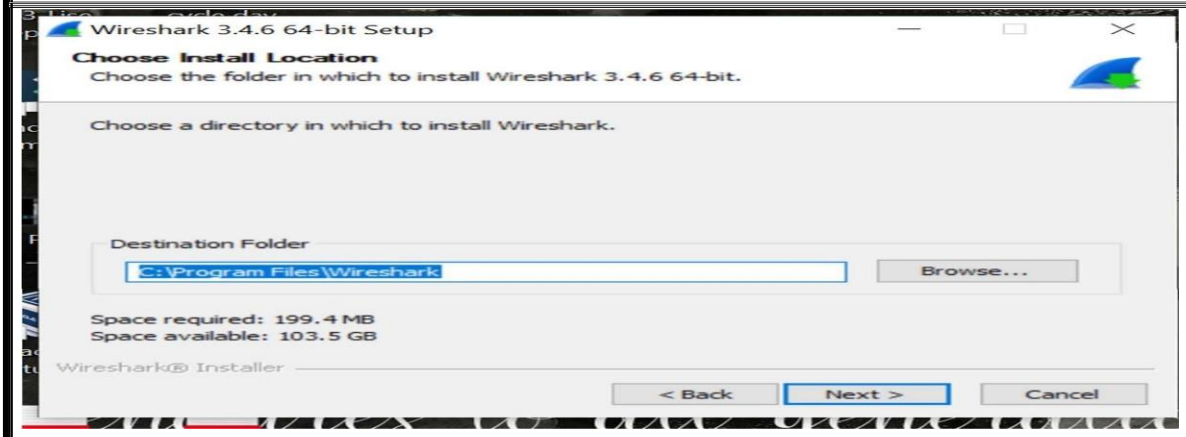

Wireshark 3.4.6 64-bit Setup
Welcome to Wireshark 3.4.6 64-bit Setup
This wizard will guide you through the installation of Wireshark.
Before starting the installation, make sure Wireshark is not running.
Click 'Next' to continue.
Next >
Cancel

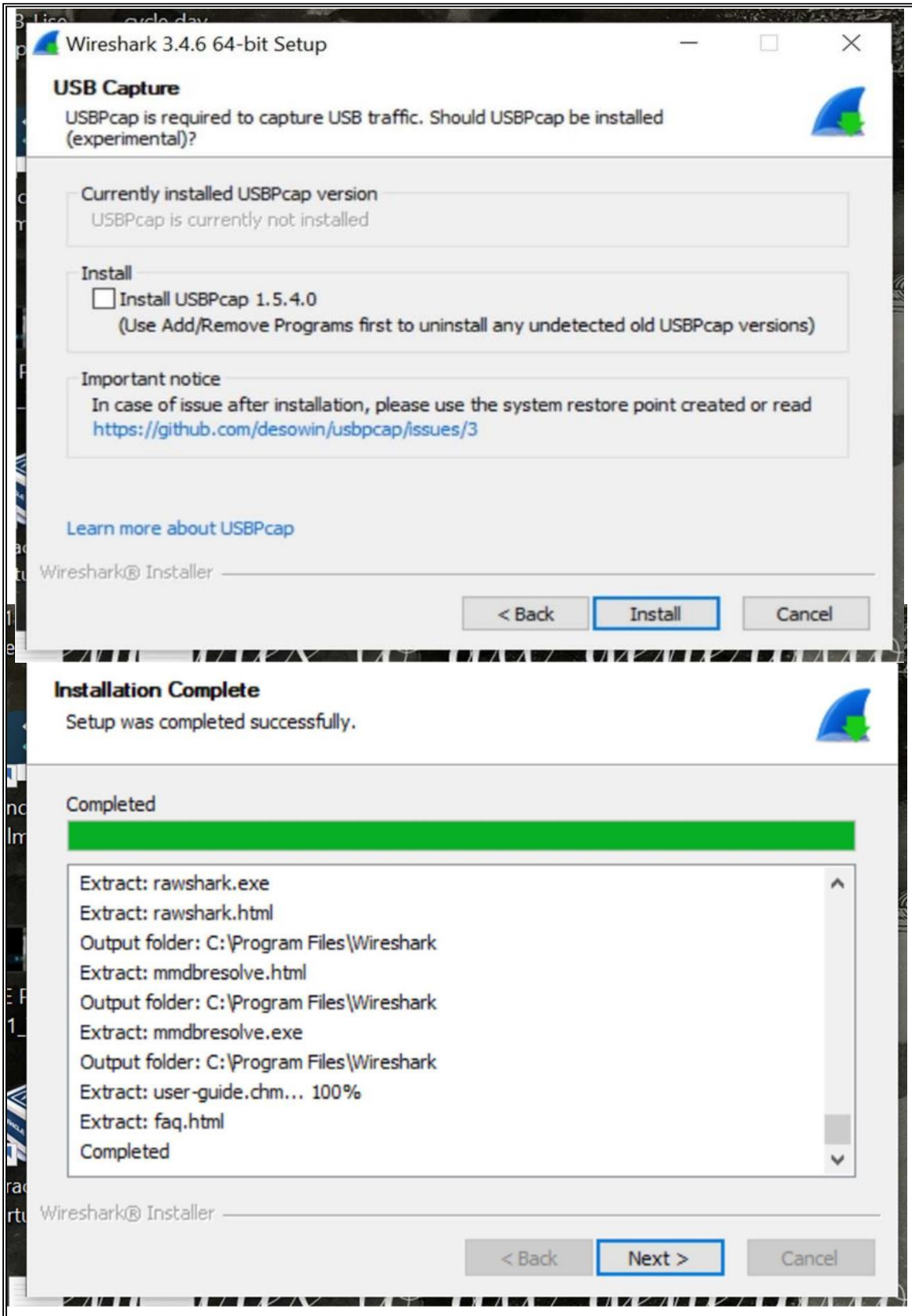

Wireshark 3.4.6 64-bit Setup
License Agreement
Please review the license terms before installing Wireshark 3.4.6 64-bit.
Wireshark is distributed under the GNU General Public License.
This text consists of three parts:
Part I: Some remarks regarding the license given in
Part II: The actual license that covers Wireshark.
Part III: Other applicable licenses.
When in doubt: Part II/III is the legally binding part, Part I is just
there to make it easier for people that are not familiar with the GPLv2.
This is not an end user license agreement (EULA). It is provided here for informational purposes only.
Wireshark® Installer
< Back
Noted
Cancel

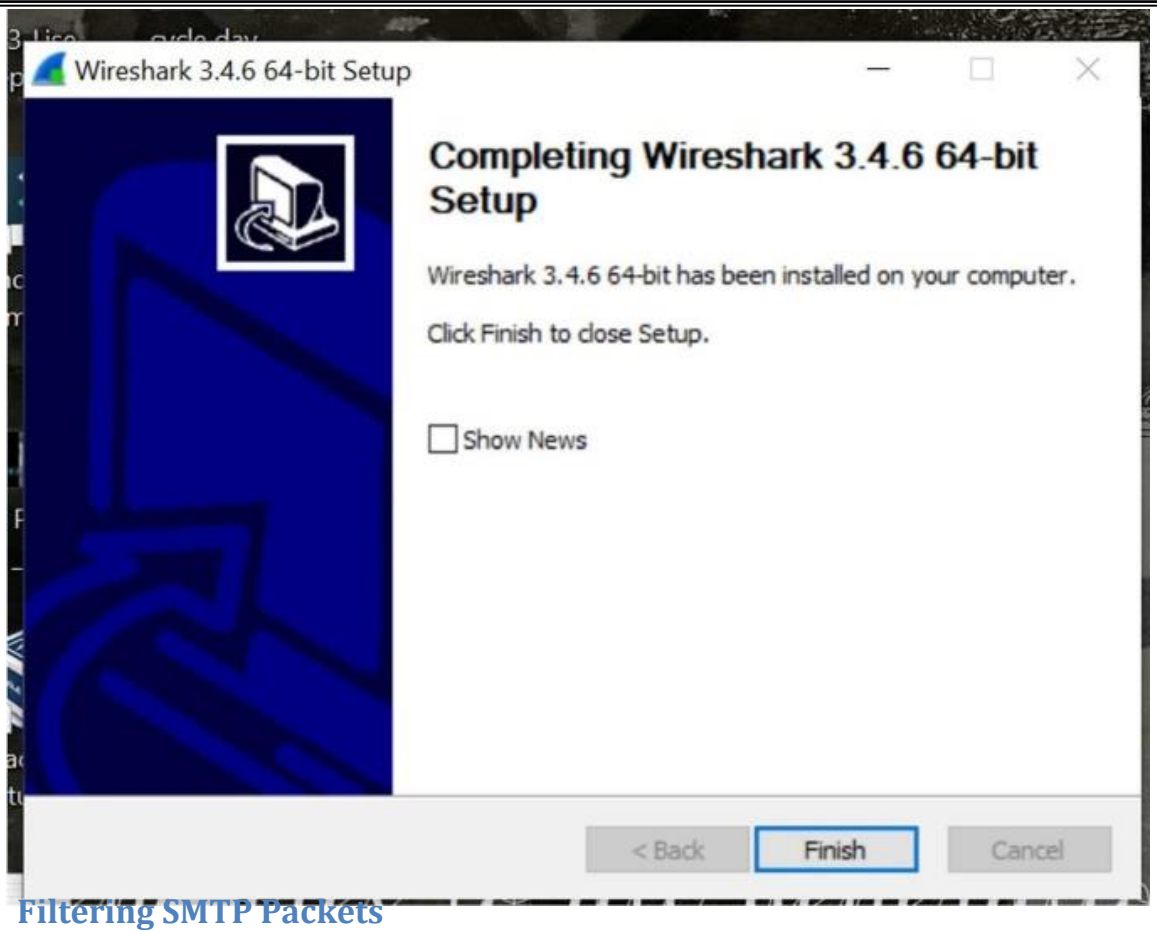

Wireshark 3.4.6 64-bit Setup
Choose Components
Choose which features of Wireshark 3.4.6 64-bit you want to install.
The following components are available for installation.
Select components to install:
Wireshark
TShark
Plugins & Extensions
Tools
Documentation
Description
Position your mouse over a component to see its description.
Space required: 199.4 MB
Wireshark® Installer
< Back
Next >
Cancel


Wireshark 3.4.6 64-bit Setup
Additional Tasks
Create shortcuts and associate file extensions.
Create Shortcuts
Wireshark Start Menu Item
Wireshark Desktop Icon
Wireshark Quick Launch Icon
Associate File Extensions
Associate trace file extensions with Wireshark
Extensions include 5vw, acp, apc, atc, bfr, cap, enc, erf, fdc, ipfix, lcap, mplog, out, pcap, pcapng, pklg, pkt, rf5, snoop, syc, tpc, tr1, trace, trc, vwr, wpc, and wpz.
Wireshark® Installer
< Back
Next >
Cancel

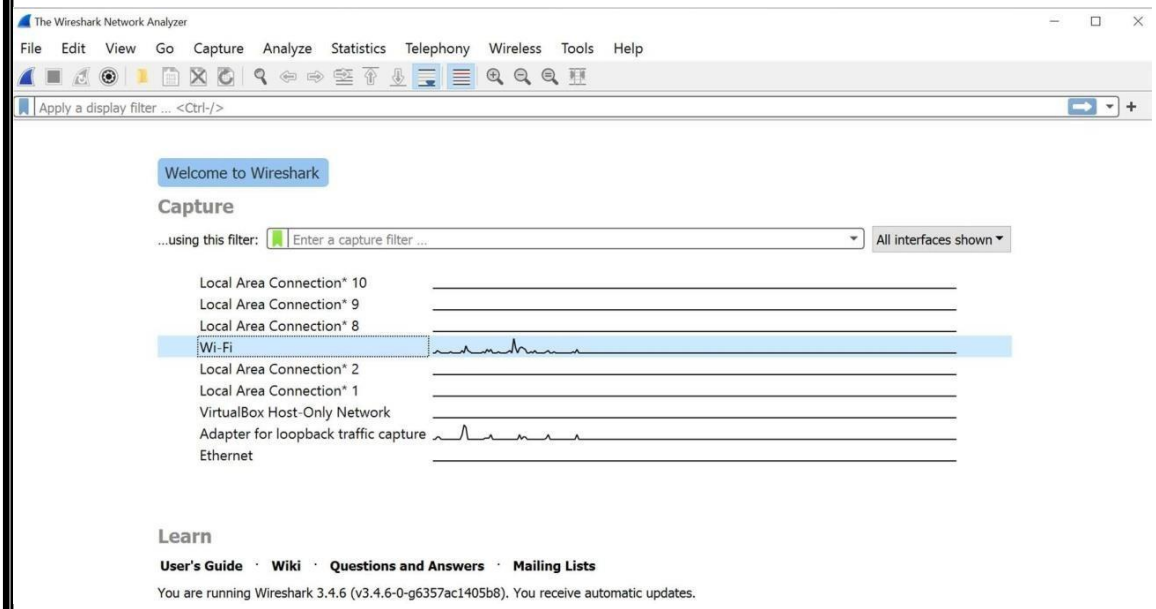

Wireshark 3.4.6 64-bit Setup
Choose Install Location
Choose the folder in which to install Wireshark 3.4.6 64-bit.
Choose a directory in which to install Wireshark.
Destination Folder
C:\Program Files\Wireshark
Browse...
Space required: 199.4 MB
Space available: 103.5 GB
Wireshark® Installer
< Back
Next >
Cancel

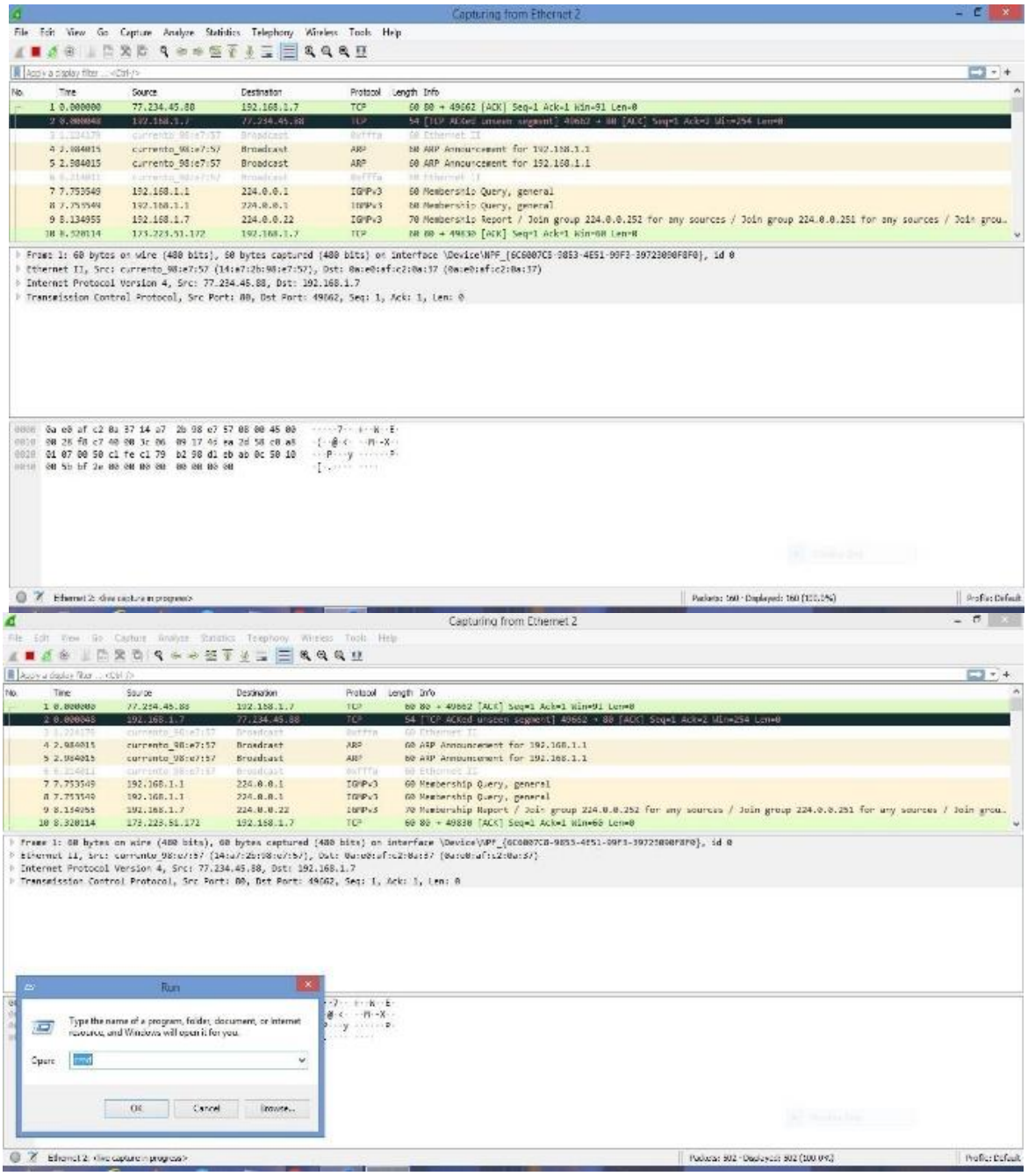

Wireshark 3.4.6 64-bit Setup
Choose Install Location
Choose the folder in which to install Wireshark 3.4.6 64-bit.
Choose a directory in which to install Wireshark.
Destination Folder
C:\Program Files\Wireshark
Browse...
Space required: 199.4 MB
Space available: 103.5 GB
Wireshark® Installer
< Back
Next >
Cancel

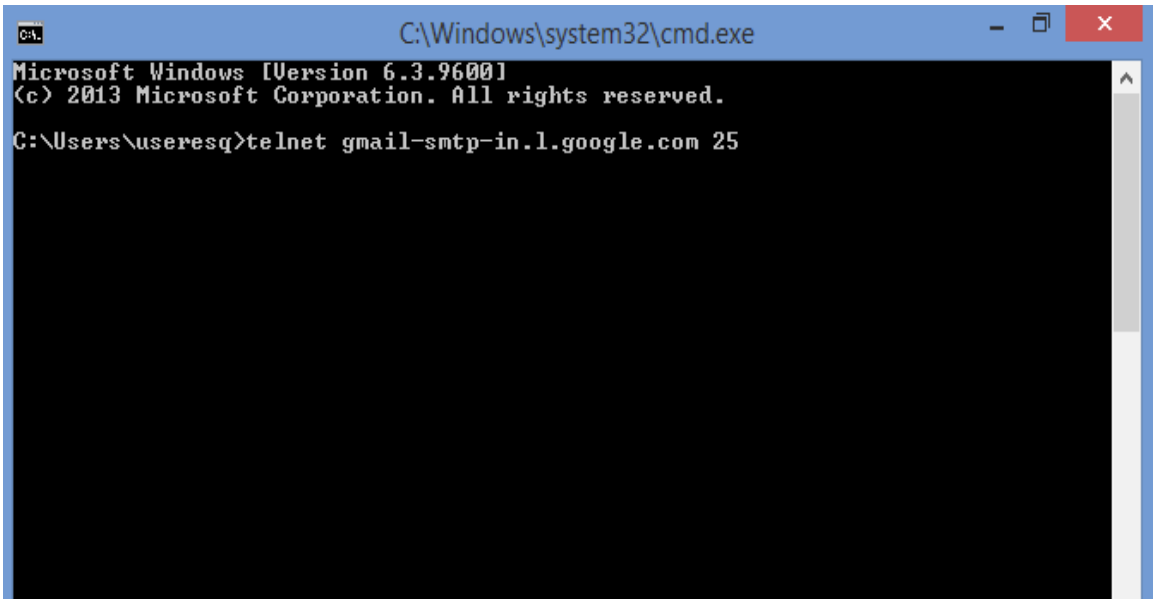

Wireshark 3.4.6 64-bit Setup
USB Capture
USBPcap is required to capture USB traffic. Should USBPcap be installed (experimental)?
Currently installed USBPcap version
USBPcap is currently not installed
Install
Install USBPcap 1.5.4.0
(Use Add/Remove Programs first to uninstall any undetected old USBPcap versions)
Important notice
In case of issue after installation, please use the system restore point created or read
https://github.com/desowin/usbpcap/issues/3
Learn more about USBPcap
Wireshark® Installer
< Back
Install
Cancel
Installation Complete
Setup was completed successfully.
Completed
Extract: rawshark.exe
Extract: rawshark.html
Output folder: C:\Program Files\Wireshark
Extract: mmdbresolve.html
Output folder: C:\Program Files\Wireshark
Extract: mmdbresolve.exe
Output folder: C:\Program Files\Wireshark
Extract: user-guide.chm... 100%
Extract: faq.html
Completed
Wireshark® Installer
< Back
Next >
Cancel

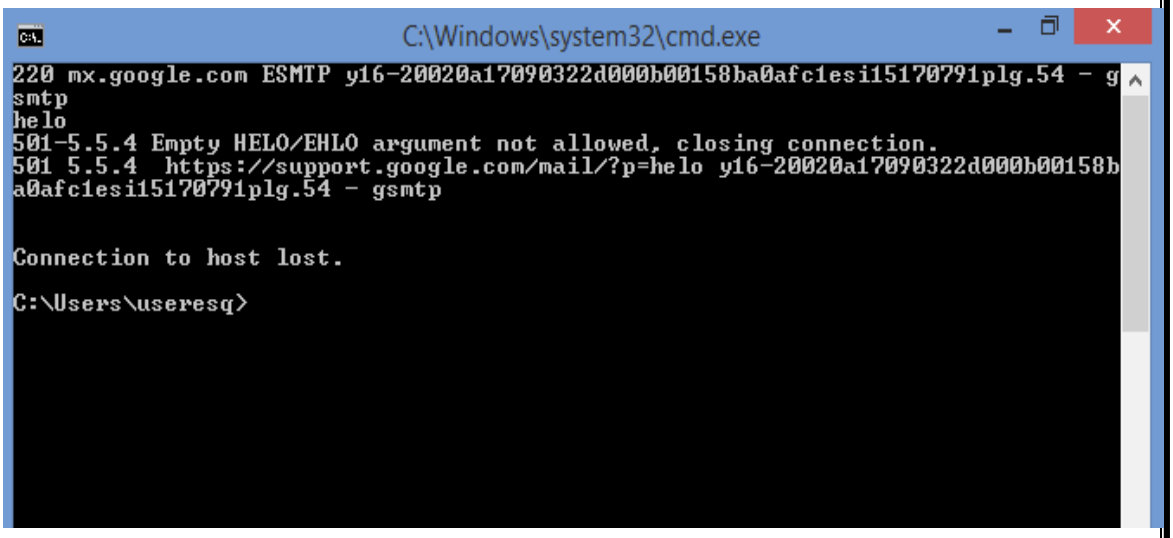


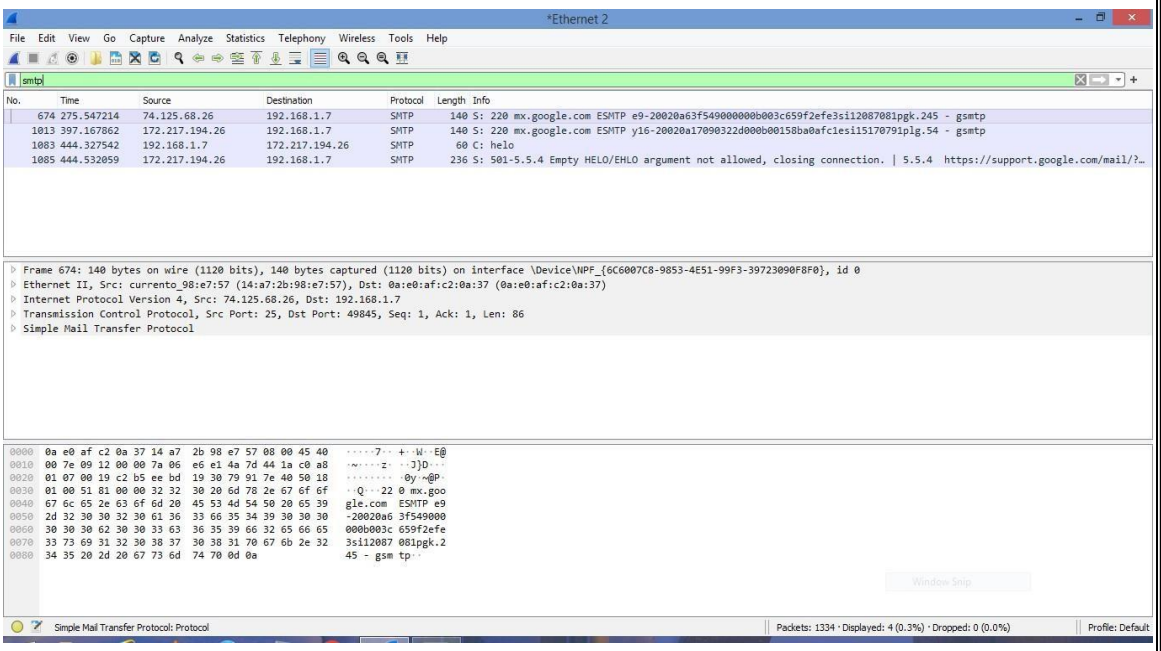
Filtering SMTP Packets

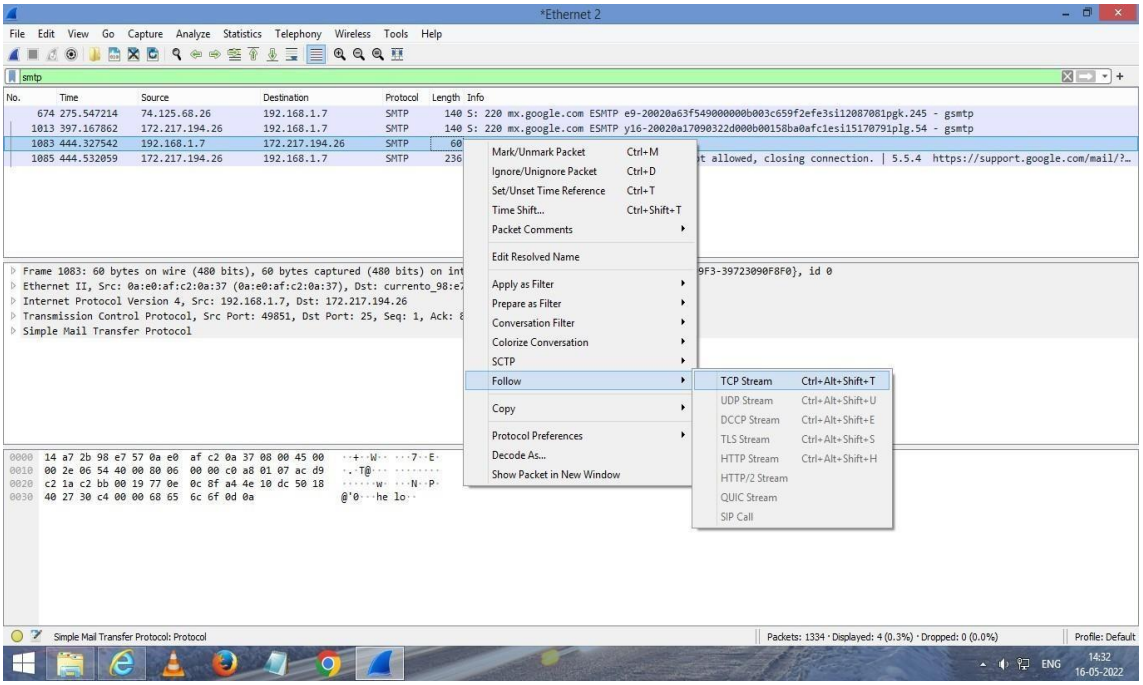


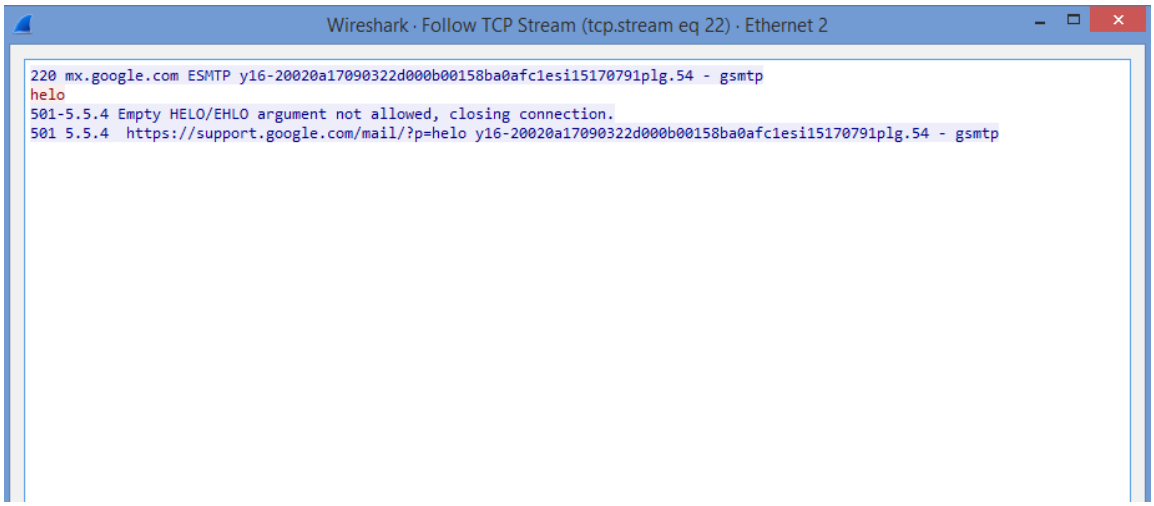

Capturing from Ethernet 2
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
No. Time Source Destination Protocol Length Info
1 0.000000 77.234.45.88 192.168.1.7 TCP 60 80 → 49662 [ACK] Seq=1 Ack=1 Win=91 Len=0
2 0.000048 192.168.1.7 77.234.45.88 TCP 54 [TCP ACKed unseen segment] 49662 → 80 [ACK] Seq=1 Ack=2 Win=254 Len=0
4 2.984015 currento_98:e7:57 Broadcast ARP 60 ARP Announcement for 192.168.1.1
5 2.984015 currento_98:e7:57 Broadcast ARP 60 ARP Announcement for 192.168.1.1
7 7.753549 192.168.1.1 224.0.0.1 IGMPv3 60 Membership Query, general
8 7.753549 192.168.1.1 224.0.0.1 IGMPv3 60 Membership Query, general
9 8.134955 192.168.1.7 224.0.0.22 IGMPv3 70 Membership Report / Join group 224.0.0.252 for any sources / Join group 224.0.0.251 for any sources / Join grou..
10 8.320114 173.223.51.172 192.168.1.7 TCP 60 80 → 49838 [ACK] Seq=1 Ack=1 Win=60 Len=0
Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface \Device\NPF_{6C6007C8-9853-4E51-99F3-39723080F8F0}, id 0
Ethernet II, Src: currento_98:e7:57 (14:a7:2b:98:e7:57), Dst: 0a:e0:af:c2:8a:37 (0a:e0:af:c2:8a:37)
Internet Protocol Version 4, Src: 77.234.45.88, Dst: 192.168.1.7
Transmission Control Protocol, Src Port: 80, Dst Port: 49662, Seq: 1, Ack: 1, Len: 0
Run
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open: cmd
OK
Cancel
Browse...


C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Users\useresq>telnet gmail-smtp-in.l.google.com 25


C:\Windows\system32\cmd.exe
220 mx.google.com ESMTP y16-20020a17090322d000b00158ba0afc1esi15170791plg.54 - g
smtp
helo
501-5.5.4 Empty HELO/EHLO argument not allowed, closing connection.
501 5.5.4 https://support.google.com/mail/?p=helo y16-20020a17090322d000b00158b
a0afc1esi15170791plg.54 - gsmtp
Connection to host lost.
C:\Users\useresq>


*Ethernet 2
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
smtp
No. Time Source Destination Protocol Length Info
674 275.547214 74.125.68.26 192.168.1.7 SMTP 140 S: 220 mx.google.com ESMTP e9-20020a63f54900000b003c659f2efe3si12087081pgk.245 - gsmtp
1013 397.167862 172.217.194.26 192.168.1.7 SMTP 140 S: 220 mx.google.com ESMTP y16-20020a17090322d000b00158ba0afc1esi15170791plg.54 - gsmtp
1083 444.327542 192.168.1.7 172.217.194.26 SMTP 60 C: helo
1085 444.532059 172.217.194.26 192.168.1.7 SMTP 236 S: 501-5.5.4 Empty HELO/EHLO argument not allowed, closing connection. | 5.5.4 https://support.google.com/mail/?…
Frame 674: 140 bytes on wire (1120 bits), 140 bytes captured (1120 bits) on interface \Device\NPF_{6C6007C8-9853-4E51-99F3-39723090F8F0}, id 0
Ethernet II, Src: currento_98:e7:57 (14:a7:2b:98:e7:57), Dst: 0a:e0:af:c2:0a:37 (0a:e0:af:c2:0a:37)
Internet Protocol Version 4, Src: 74.125.68.26, Dst: 192.168.1.7
Transmission Control Protocol, Src Port: 25, Dst Port: 49845, Seq: 1, Ack: 1, Len: 86
Simple Mail Transfer Protocol
0000 0a e0 af c2 0a 37 14 a7 2b 98 e7 57 08 00 45 40
0010 00 7e 09 12 00 00 7a 06 e6 e1 4a 7d 44 1a c0 a8
0020 01 07 00 19 c2 b5 ee bd 19 30 79 91 7e 40 50 18
0030 01 00 51 81 00 00 32 32 30 20 6d 78 2e 67 6f 6f
0040 67 6c 65 2e 63 6f 6d 20 45 53 4d 54 50 20 65 39
0050 2d 32 30 30 32 30 61 36 33 66 35 34 39 30 30 30
0060 30 30 30 62 30 30 33 63 36 35 39 66 32 65 66 65
0070 33 73 69 31 32 30 38 37 30 38 31 70 67 6b 2e 32
0080 34 35 20 2d 20 67 73 6d 74 70 0d 0a
Simple Mail Transfer Protocol: Protocol
Packets: 1334 · Displayed: 4 (0.3%) · Dropped: 0 (0.0%)
Profile: Default


*Ethernet 2
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
smtp
No. Time Source Destination Protocol Length Info
674 275.547214 74.125.68.26 192.168.1.7 SMTP 140 S: 220 mx.google.com ESMTP e9-20020a63f54900000b003c659f2efe3si12087081pgk.245 - gsmtp
1013 397.167862 172.217.194.26 192.168.1.7 SMTP 140 S: 220 mx.google.com ESMTP y16-20020a17090322d000b00158ba0afc1esi15170791plg.54 - gsmtp
1083 444.327542 192.168.1.7 172.217.194.26 SMTP 60
1085 444.532059 172.217.194.26 192.168.1.7 SMTP 236
Mark/Unmark Packet Ctrl+M
Ignore/Unignore Packet Ctrl+D
Set/Unset Time Reference Ctrl+T
Time Shift... Ctrl+Shift+T
Packet Comments
Edit Resolved Name
Apply as Filter
Prepare as Filter
Conversation Filter
Colorize Conversation
SCTP
Follow
Copy
Protocol Preferences
Decode As...
Show Packet in New Window
TCP Stream Ctrl+Alt+Shift+T
UDP Stream Ctrl+Alt+Shift+U
DCCP Stream Ctrl+Alt+Shift+E
TLS Stream Ctrl+Alt+Shift+S
HTTP Stream Ctrl+Alt+Shift+H
HTTP/2 Stream
QUIC Stream
SIP Call
Frame 1083: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on int
Ethernet II, Src: 0a:e0:af:c2:0a:37 (0a:e0:af:c2:0a:37), Dst: currento_98:e7
Internet Protocol Version 4, Src: 192.168.1.7, Dst: 172.217.194.26
Transmission Control Protocol, Src Port: 49851, Dst Port: 25, Seq: 1, Ack: 8
Simple Mail Transfer Protocol
0000 14 a7 2b 98 e7 57 0a e0 af c2 0a 37 08 00 45 00
0010 00 2e 06 54 40 00 80 06 00 00 c0 a8 01 07 ac d9
0020 c2 1a c2 bb 00 19 77 0e 0c 8f a4 4e 10 dc 50 18
0030 40 27 30 c4 00 00 68 65 6c 6f 0d 0a
Simple Mail Transfer Protocol: Protocol
Packets: 1334 · Displayed: 4 (0.3%) · Dropped: 0 (0.0%)
Profile: Default
ENG
14:32
16-05-2022


Wireshark · Follow TCP Stream (tcp.stream eq 22) · Ethernet 2
220 mx.google.com ESMTP y16-20020a17090322d000b00158ba0afc1esi15170791plg.54 - gsmtp
helo
501-5.5.4 Empty HELO/EHLO argument not allowed, closing connection.
501 5.5.4 https://support.google.com/mail/?p=helo y16-20020a17090322d000b00158ba0afc1esi15170791plg.54 - gsmtp

EXPERIMENT-6

Install KVM on Ubuntu

1) Update Ubuntu

$ sudo apt update

2)Install KVM on Ubuntu

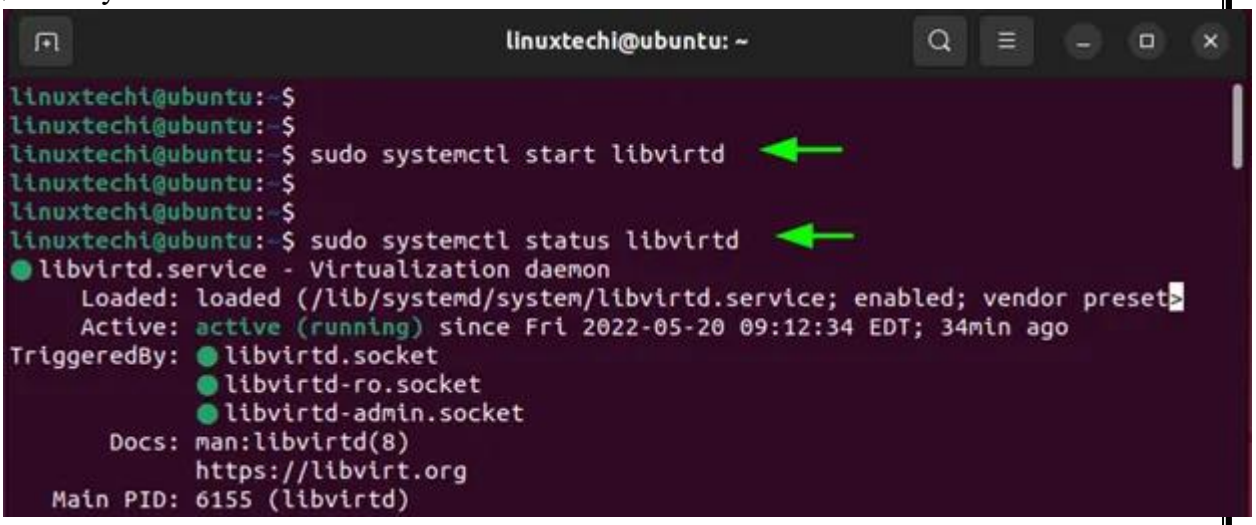
$ sudo apt install -y qemu-kvm virt-manager libvirt-daemon-system virtinst libvirt-clients bridge-utils

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.

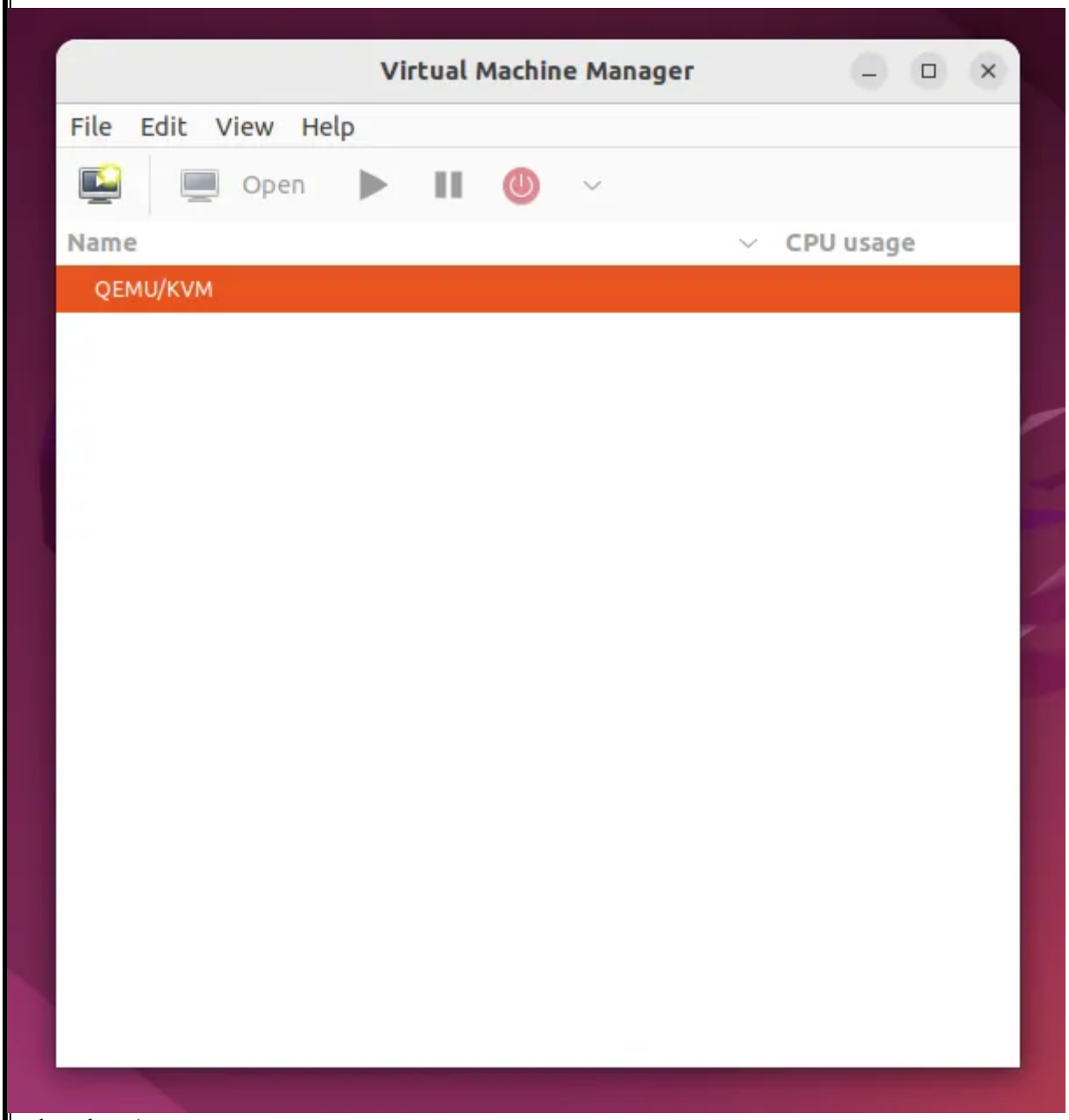
$ sudo usermod -aG kvm $USER
$ sudo usermod -aG libvirt $USER

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