

Name ... Chirag Chawla
Subject ... Computer Network
Std.

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RTIOTM
10/5/22

Experiment No: 1

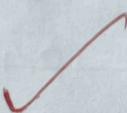
Aim: How to find IP address of your computer.

Student@Chicago:~\$ ifconfig

```
enp2s0    Link encap: Ethernet HWaddr e0:69:95:bc:de:22
          inet addr: 10.100.12.217 Brdcast: 10.100.15.255
          Mask: 255.255.252.0
          inet6 addr: fe80::dbb0:455a:2c78:312f/64 Scope: Link
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets: 48970 errors:0 dropped:0 overruns:0 frame:0
          TX packets: 4971 errors:0 dropped:0 overruns:0 carrier:0
          collisions: 0 txqueuelen: 1000
          RX bytes: 8244127 (8.2 MB) TX bytes: 777193 (777.1 kB)
```

lo

```
Link encap: Local Loopback
inet addr: 127.0.0.1 Mask: 255.0.0.0
inet6 addr: ::1/128 Scope: Host
          UP LOOPBACK RUNNING MTU: 65536 Metric: 1
          RX packets: 1492 errors: 0 dropped: 0 overruns: 0 frame: 0
          TX packets: 1492 errors: 0 dropped: 0 overruns: 0 carrier: 0
          collisions: 0 txqueuelen: 1000
          RX bytes: 146800 (146.8 kB) TX bytes: 146800 (146.8 kB)
```



Experiment - 1

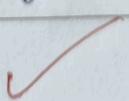
Aim - How to find IP address of your computer.

Theory :-

An Internet Protocol (IP address) is a numerical label such as 192.0.2.1 that is connected to a computer network that uses the Internet Protocol for communication. An IP address serves two main functions: network interface identification and location addressing.

ipconfig :- Stands for "Internet Protocol Configuration". It is a console application program of some computer operating system that displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain name System (DNS) setting.

ifconfig :- Stands for "Interface Configuration". It is a system administrator utility in Unix-like operating system for network interface configuration. The utility is a command-line interface tool and is also used in the system startup scripts of many operating systems. It has features for configuring, controlling and querying TCP/IP network interface parameters. Ifconfig originally appeared in 4.2 BSD as part of the BSD TCP/IP suite.



Teacher's Signature

~~Experiment no: 1(b)~~

Sharing a file or folder over LAN.

- 1) Open File Explorer on Windows 10.
- 2) Navigate to the folder you want to share.
- 3) Right click the item, and select the Properties option.
- 4) Click on the Sharing tab.
- 5) Click on the Share button.
- 6) Use the drop-down menu to select the user or group to share a file or folder.
- 7) Click on add button.
- 8) Under the "Permission Level" section, select the sharing permission you want the folder to have. For instance, you can choose Read, if you only want users to view and open files.
- 9) Click on the Share button.
- 10) Confirm the folder's network path that others users need to access the network content and click done button.
- 11) Click the Close button.



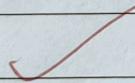
Experiment : 1(b).

Aim : Sharing a file or folder over LAN.

Theory :

An local area Network (LAN) is a collection of devices connected together in one physical location, such as a building, office or home.

File sharing is the practice of distributing or providing access to digital media, such as computer programs, multimedia audio, images and video, documents or electronic books. Common methods of storage, transmission and dispersion include removable media, centralized servers on computer networks, internet-based hyperlinked documents and the use of distributed peer-to-peer networking.



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Experiment 2(a)

(d) Linux command

ping www.google.com

PING google.com [142.250.67.132] with 32 bytes of data.

Reply from 142.250.67.132 bytes=32 time=51ms TTL=119

Reply from 142.250.67.132 bytes=32 time=54ms TTL=119

Reply from 142.250.67.132 bytes=32 time=53ms TTL=119

^C

-- www.google.com ping statistics

3 packets transmitted, 3 received, 0% packet loss, time 158ms

rtt min/avg/max/mdev = 51/52.666/54/102.982 ms

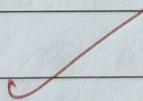
Experiment - 2(a)

Aim: Understanding the ping command.

Theory:

Ping stands for Packet Internet Groper. Ping is a software application, utility or a tool that is used to test and diagnose connectivity-related issues on a network. It is based on the ICMP protocol. ICMP protocol is part of IP standards and is available in all IP networks. Since the ping command is based on the ICMP protocol, it is also available and supported in all IP networks.

Ping command is used for testing connectivity between hosts and debugging connectivity-related issues on an internetwork. It allows network administrators to test whether a remote device is reachable or whether the network connection for a local device is properly configured and installed.



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Experiment 2(b)

-i option for interface

[root@rhel ~]# netstat -i
Kernel interface table

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR
em0	1500	293240	0	0	0	263064	0
em0:0	1500	293240	0	0	0	263064	0
lo	165536	0	0	0	0	0	0
lo:0	165536	0	0	0	0	0	0
verbo	1500	0	0	0	0	0	0

o o BMU

assutot p'vitoos (0) printet yd bys i bimmoos p'm
nu ne zdei, bimmoel-p'vitoos p'rippedah bim etead
teek et zateetimba. t'ebutu wallu FI, d'ezentu estri
zit yutu, yd idchimai. S'ebut stowre o efttuk
bimfus, yd yd i s'ivitlak) o etf m'itoos. d'ezentu
.. bimleti bim!

Experiment-2(b).

Aim: Understanding the netstat command

Theory:

The network statistics (netstat) command is a networking tool used for troubleshooting and configuration, that can also serve as a monitoring tool for connections over the network. Both incoming and outgoing connections, routing tables, port listening and usage statistics are common uses for this command.

The netstat command generates displays that show network status and protocol statistics. You can display the status of TCP and UDP endpoints in table format, routing table information, and interface information. The most frequently used options for determining network status are s, r and i.

Advantages of netstat command in linux

- It helps to print all the active network connections.
- Information regarding routing tables.
- Lists TCP and UDP Ports for the networks running the System.
- It also lists out statistics of all packets like TCP, ICMP.
- Also helps in displaying kernel route information.



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Chirag@terminator:~\$ traceroute -m 5 www.google.com
traceroute to www.google.com (142.250.77.228)
5 hops max, 60 byte packets

- 1) gateway (10.100.16.1) 8.887 ms 6.283 ms 7.318 ms

2) 192.168.250.1 (192.168.20.1) 5.271 ms 5.254 ms 5.238 ms

3) * * * zit tot 192.168.1.100 brug priktoedoorl. 8.887 ms 6.283 ms 7.318 ms

4) * * *

5) * * * vol. 231 zit tot 192.168.1.100 ✓ 8.887 ms 6.283 ms 7.318 ms

Experiment - 2(c)

Aim: Understanding the traceroute command.

Theory :-

Traceroute command in linux prints the route that a packet takes to reach the host. This command is helpful when you want to know about the route and about all hops that a packet takes. Below image depicts how traceroute command is used to reach the google host from the local machine and it also prints detail about all the hops that it visits in between.

The netstat command generates log files that show routing table information and interface information. The most frequently used option for determining routing table and interface information is:

Advantages of netstat command in Linux

- It helps to print all the active network connections.
- Provides information regarding routing tables.
- Lists TCP and UDP ports along with the networks using the system.
- It also prints out statistics of the packets like TCP, ICMP.
- Also helps in diagnosis and troubleshooting.

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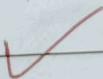
Experiment : 3(a).

Aim : Printer sharing over the LAN.

Theory :

We used UBUNTU 14.04 for this, but the process should be similar on other distributions.

- 1) Open Ubuntu's system settings window by clicking the gear icon on the top gear and selecting system settings.
- 2) Click the printers icon and icon printers you've added will appear in the list.
- 3) Click the server menu at the top of the screen and select server settings.
- 4) Click the "Publish shared printers connected to this system" checkbox to enable network sharing of connected printers.
- 5) Right-click the printer in the list, select properties and click policies. Ensure the shared box is checked so the printer will be shared.
- 6) open Ubuntu's system settings window and click the printers icon. Click the add button.
→ Expand the printer → network section, select window printer via SAMBA and click the browser button then browse and select the printer.



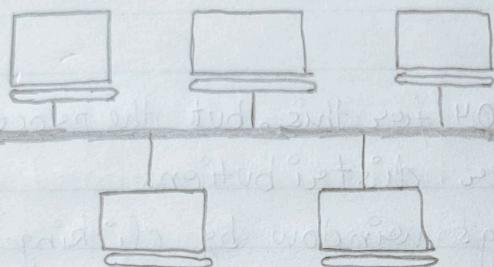
Teacher's Signature

Mtr
8/3/22

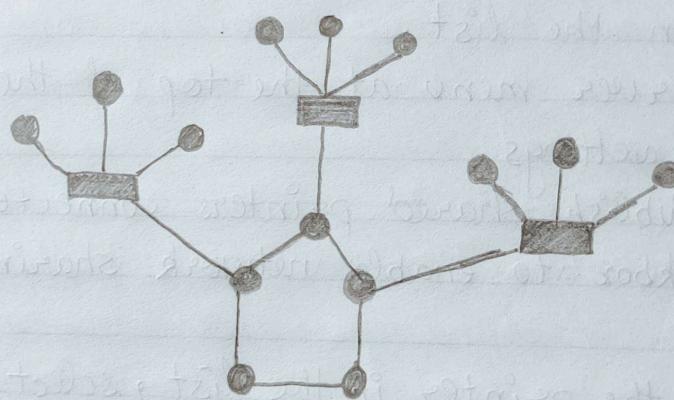
Experiment : 3(b)

(a) & (b) ~~transmission~~

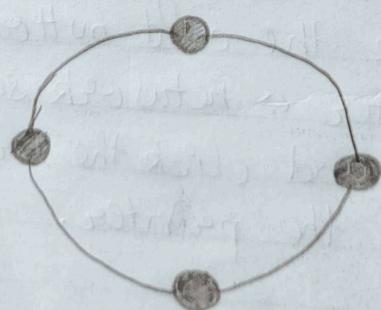
Network topologies :-



Bus Topology



Hybrid Topology.



Ring Topology.

Experiment - 3(b).

Aim: Understanding the network topologies.

Theory:

Network topology is an arrangement of various components such as nodes, link and devices of a network and how they interact. It can be utilized to define how different telecommunication networks are arranged, including computer networks, command & control radio network and industrial field buses.

Network:

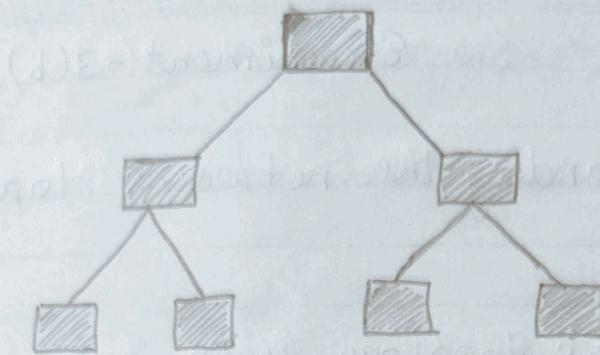
In computing, a network refers to an arrangement of two or more computers, devices or nodes communicating with each other through a wired or wireless connection.

Topology:

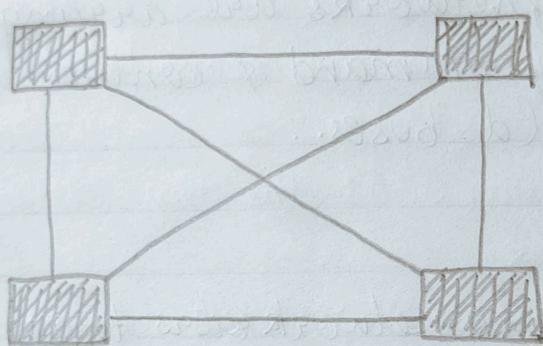
The way nodes interact with each other is called topology. So, topology refers to how computers are connected in a network, sharing information and network topology is how computers are arranged logically or physically to share information, serving different purpose.

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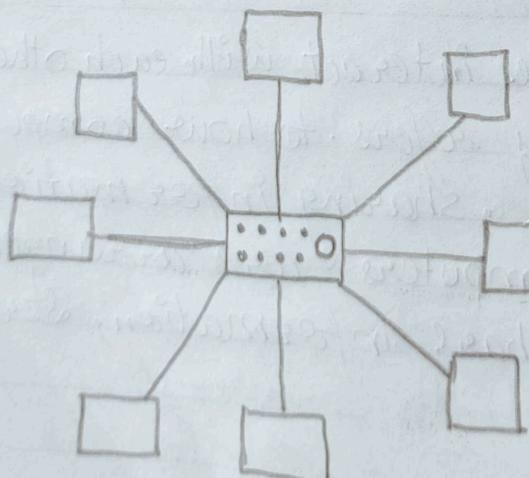
SC-E-11



Tree Topology.



Mesh Topology.



Star Topology.

Types of network topology:

- 1> Bus
- 2> Hybrid
- 3> Ring
- 4> Tree
- 5> Mesh
- 6> Star.

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Experiment :- 4

Aim : WiFi access and configuration of access point.

Theory :-

A Wireless access point (WAP) is a networking device that allows wireless-capable devices to connect to a wired network. Instead of using wires and cables to connect every computer or device in the network, installing WAPs is a more convenient, more secure and cost efficient.

Step-1: Open the access points web-based setup page by entering the default IP address "192.168.1.1" on the address bar then press enter.

Step 2: on the web-based setup page, click on wireless.

Step 3: Enter the network name (SSID). The SSID broadcast should be enabled so that wireless devices will be able to detect the wireless network of your access-point

Step 4: Click Wireless security and select your desired security mode.

Here we will take example of WPA-Personal Security.

→ Enter your desired password in the passphrase field.

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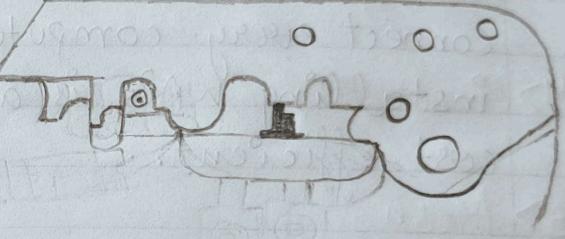
P
N

H - Transversal

transversal section has been made

- proximal

periosteum of (RAW) transversal section A
of bone or \rightarrow bone - 282 mm. walls took with
old bone with periosteum section broken
isolated all in 3 mm. of estomach was 100°
but 200 mm. fat was found in the



good outer bone layer was left in 100°
100° was left in transverse section of periosteum
was well and esophagus in the
was good and good outer bone left in 100°
was left in transverse section of bone 100°
was well left in the bone and blood vessels
good outer bone left in 100°

good transverse section of bone was left in 100°
good outer bone was left in 100°

peripheral 100° was left in 100°
was left in 100°

Experiment - 5(a)

Aim: Crimping and punching.

Theory:

Crimping is a process of joining two pieces of metal wire or metal plate by deforming one or both of them to hold the other. The bend or deformity is called the crimp. A crimping tool is a device that is used to make cold weld joints between wires and a connector. The connector is a very important part of the crimping which prevents the wires from falling out and helps to transmit date to wires.

To attach a connector with network cable or the end of a phone is the main objective of the crimping tool. Firstly, the wires is stripped and insulation is removed, followed by straightening the wires and inserting them into connector once the wires using crimping tools and now wire gets proper inserted into the connector for further use.



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Experiment + 5b

Aim : To make cable , straight through crossover and rollover .

Theory :

straight - Through wired cables -

It refers to cables that have the pin assignments on each end of cable. In other words , Pin 1 connector A goes to Pin 1 on connector B and so on . These wired cables are mostly used to connect a host to a client

Crossover wired cables -

They are very much like straight through cables with exception that TX and RX lines are crossed , they are at opposite positions on either end of the cable . Crossover wired cables are commonly used to connect two hosts directly .

Rollover wired cables -

Rollover wired cables most commonly called rollover cables have opposite pin assignment on each end of the cable or in other words ; " it is roll over " . Pin 1 of connector A would be connected to pins of connector B and so on . Rollover cables , sometimes referred to as null cables are most commonly used to connect to a device's console port to make programming changes to device . Unlike crossover and straight wired cables , rollover cables are not intended to carry data but instead create an interface with the device .

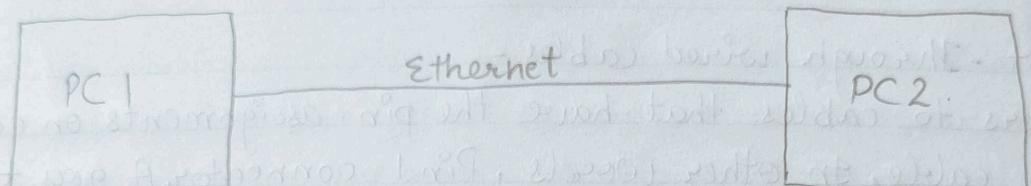


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Mst
15B722

dd : transmission

has addresses defined by interface, also known as card
addresses



IP address

192.168.1.2

IP address

192.168.1.3

~~192.168.1.3~~

MAC address appears in packets. It's always present on
the network. MAC address will work with X.25, X.75, PPP, etc.

MAC address will be the result of encapsulation. If 192.168.1.3 is
used outside of local network, it will be having

- MAC address used for
intermediate nodes. Different from MAC address used for

local network. MAC address has been re-translated and addressed and
address is 192.168.1.3. Now, & the above network is

expressions from previous topic of bridging or switching

Minimizing use of type of traffic which is not required
and the main purpose here is to reduce amount of traffic &

minimizing the period of latency for the video results
in better quality of video.

Switches can be used with other protocols like VLANs

Switch

Aim: PC to PC connectivity

Theory: PC to PC connectivity helps us to share resources b/w the PCs. There are two ways to connect PCs each other.

- 1) Using ethernet cable.
- 2) Using wirelessly.

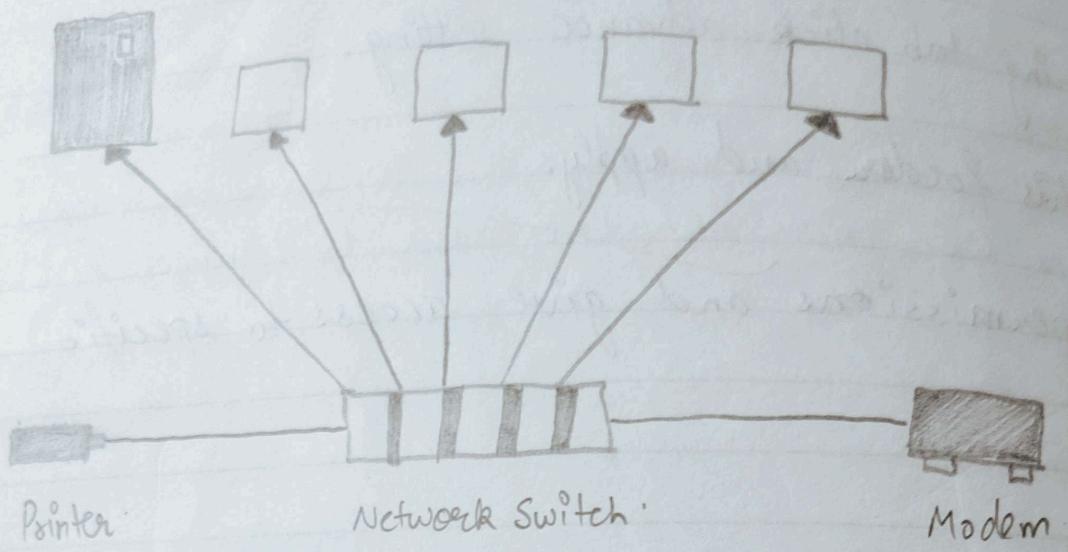
⇒ Using Ethernet

- (i) Go to control panel, then network and internet, then network and sharing center.
- (ii) Click adapter change setting.
- (iii) Choose a ethernet connection.
- (iv) Right click on properties.
- (v) In network properties tab click IPv4 and click properties.
- (vi) Choose IP address and subnet mask.
- (vii) Then connect the crossover cable to the PC's network ports.
- (viii) Right click this PC, change setting then create a workshop.
- (ix) Right click on the drive you want to share go to give access then advance settings.

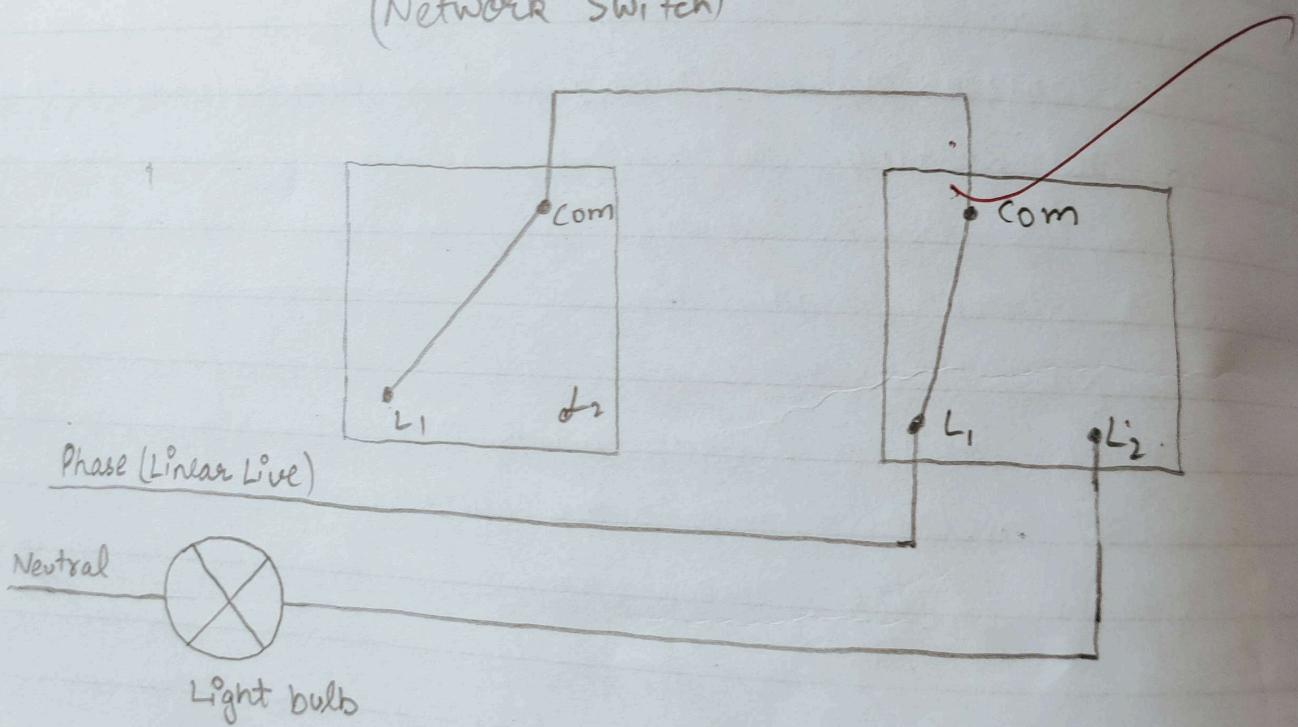
Teacher's Signature _____

- (x) In sharing tab click advance setting.
- (xi) Share this folder and apply.
- (xii) Provide permissions and give access to specific people.

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(Network Switch)



(2-way Switch)

Experiment : 6(b)

Aim : Connectivity through Switch

Theory : Switches are networking devices operating at layer 2 or a data link layer of the OSI model. They connect devices in a network and use packet switching to send, receive or forward data packet or data frames over the network.

Working of Single Switch :

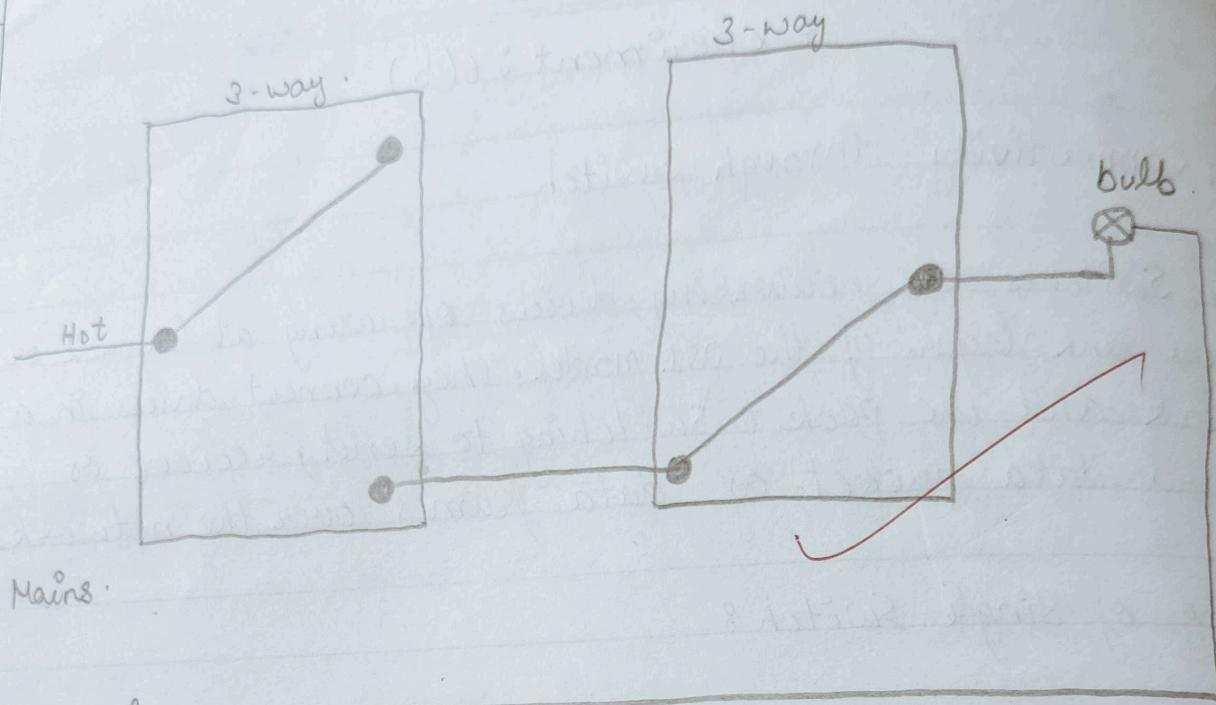
Once a device is connected to a switch, the switch notes its media access control (MAC) address, a code that is based into the devices network interface card (NIC) that attaches to the switch. The switch uses the MAC address to identify which attached device outgoing packets are being sent from and where to deliver incoming packets.

When a device sends a packets to another device, it enters the switch and the switch reads its reader to determine what to do with it. It matches the destination address or addresses and sends the packet out through the appropriate ports that leads to the destination devices.

Working of Multiway Switch :

A 2 way switch is very useful in staircase lighting as you can turn on the light just before you start to climb the

Teacher's Signature



Neutral —

3-way Switch

Stairs and once you reach upstairs, you can turn off the light simply by toggling the switch placed near the top of the staircase.

There are a couple of ways in which you can make a two ways switch connection. One is an older method, which is not often used now-a-days and the other is a more modern and safer version which is being implemented in industrial as well as residential applications. let us take those wiring..

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Remote Desktop Connection



Computer: obil23PC

User Name: None Specified

You will instead enter
credentials when connect

Show options Connect Help

Experiment : 7

A

Aim : Remote access

Theory : Remote Desktop is a feature that allows you to access other computer on a remote location from your computer.

Steps :

- ① Open Control Panel
- ② Choose System.
- ③ Note the System Name
- ④ Click the change settings then open system properties window
- ⑤ Click on Remote tab
- ⑥ Now select allow Remote connection to this computer.
- ⑦ Click apply ok.

⇒ Use Remote desktop from other computer

- ① Open Remote desktop connection.
- ② Type name of computer you want to connect then click connect.
- ③ Now you can work on the computer.

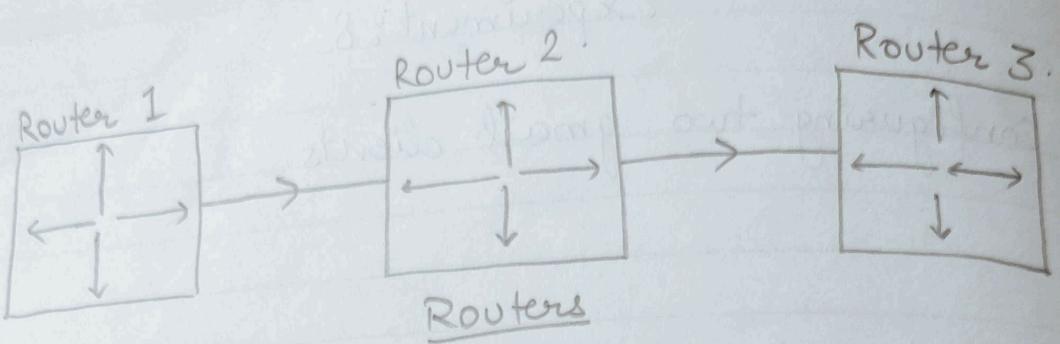
Experiment : 8

Aim : Configuring two gmail clients.

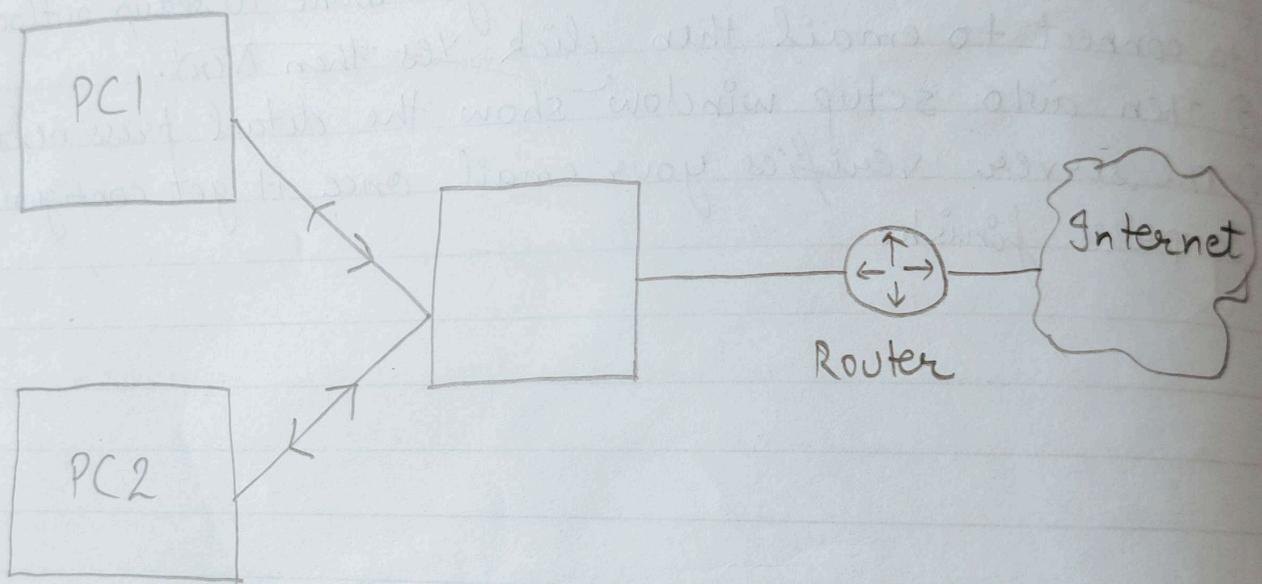
Steps :

- ① Open outlook express using start menu then press next from the bottom.
- ② Add an email account then do you want to setup outlook to connect to email then click Yes then Next..
- ③ Then auto setup window show the detail press next.
- ④ The server verifies your email once it get configuring by press finish.

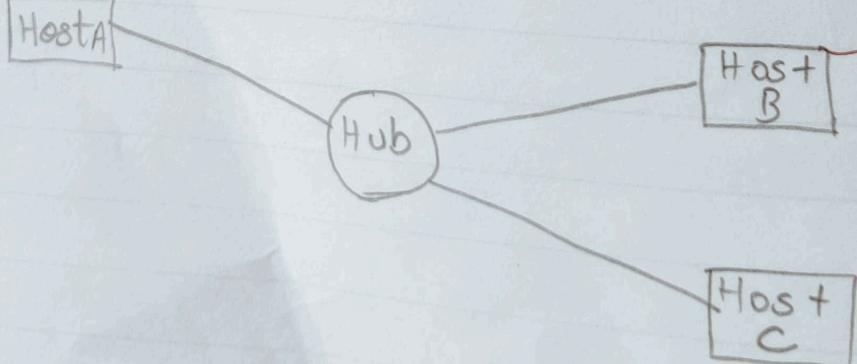
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① Router



② Gateway



Experiment: 9

Aim: Introduction to network devices.

Theory: The devices which are used for communication b/w different devices on the network called network devices.

Types of devices:

- ① Routers: It is a device used to connect two or more packet switch network transfer. The packet using routing table, using the best path. A router is a intelligent devices.
- ② Gateway: A gateway is a network mode, form a passage b/w two network operating with different transmission protocol. It can operate many layers of OSI model.
- ③ HUB: It is a basic network devices that connect multiple devices on network unlike the switch with hub does not have routing tables. and it is a not a intelligent device.

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④ Bridge: It is a network device which is used to divide LAN into multiple segments. It works on data link layer. Reduce network traffic and store the mac address of the device.

⑤ Switches: These are devices that operate on layer 2 to data link layer of OSI model. Using packet switches to send or receive or forward data on a network. There are 2 types of switches 2 layer and 3 layers.

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R Tripathy
T2 T04 | 22

Experiment : 10

Aim : Introduction to Mac Address, IP addresses, Subnet mask
Network Classes : A, B, C, D, E

Theory :

Mac Address : Mac address is used by Media Access Control sublayer of Data-Link Layer. Mac Address is worldwide unique, since millions of network devices exists and we need to uniquely identify each.

Format :

Mac Address is a 12-digit hexadecimal number (6-byte binary number), which is mostly represented by colon-hexadecimal notation. First 6-digits (say 00:40:98) of MAC address identifies the manufacturer, called as OUI.

IP address : An IP address is the identifier that enables your device to send or receive data packets across the internet. It holds information related to your location and therefore making devices available for two-way communication. An IP address is represented by a series of numbers segregated by periods(.). They are expressed in the form of four pairs. An example address might be 255.255.255.255 where in each set can range from 0 to 255.

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IP address

IP address is a number that identifies a computer or other host on a network.

IP address

IP address is a number that identifies a computer or other host on a network. It is used to identify devices on a network and to route traffic between them. IP addresses are assigned by network administrators and can be static or dynamic. Dynamic IP addresses are assigned automatically by a router or modem and change periodically.

- Local link address

- used between two hosts on a local network (e.g. 192.168.1.10) - loopback address

- 127.0.0.1 - used for testing and development

Range of special IP addresses

169.254.0.0 - 169.254.0.16 : Local link address

127.0.0.0 - 127.0.0.8 : Loopback address

0.0.0.0 - 0.0.0.8 : used to communicate within the current network.

Subnet mask: A subnet mask is a 32 bit number which is used to identify the subnet of an IP address. The subnet mask is a combination of 1's and 0's. 1's represent network and subnet ID while 0's represent host ID. For this case so in order to get the network which the destination address belongs to we have to bitwise & with subnet mask.

Network classes: Each of these classes has a valid range of IP addresses. Classes D and E are reserved for multicast and experimental purposes respectively. The order of bits in the first octet determine the classes of IP address. Each of these classes has a valid range of IP addresses. The class of IP address is used to determine the bits used for network ID and host ID and the number of total networks and hosts possible in that particular class.

Class A: 1.x.0.0 - 126.x.x.x

Class B: 128.0.x.x - 191.255.x.x

Class C: 192.0.0.x - 223.255.255.x

Class D: 224.0.0.0 - 239.255.255.255

Class E: 240.0.0.0 - 255.255.255.254

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R Tripathy
03/05/22

Experiment : 11

Aim : Introduction to Packet tracer.

Theory :

Cisco Packet Tracer as the name suggests, is a tool built by Cisco. This tool provides a network simulation to practice simple and complex networks. The main purpose of Cisco packet tracer is to help students learn the principles of networking with hands-on experience as well as develop Cisco technology specific skills. Since the protocols are implemented in software only method, this tool cannot replace the hardware Routers or Switches.

Work space :

1) Logical -

Logical workspace shows the logical network topology of the network the user has built. It represents the placing connecting and clustering virtual network devices.

2) Physical :

Physical workspace shows the graphical physical dimension of the logical network. It depicts the scale and placement in how network devices such as routers, switches and hosts would look in a real environment.

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Key features :

- 1) Unlimited devices
- 2) E-learning
- 3) customize Single / multi user activities
- 4) Interactive Environment.
- 5) Visualizing Network.
- 6) Realtime mode and Simulation mode.
- 7) Self - paced .
- 8) Supports majority of networking protocols .
- 9) International language support.
- 10) Cross platform compatibility .

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Experiment : 12.

Aim: Simulation of network devices (Hub, switches, Router). & connect more than two computers using switch star topology ..

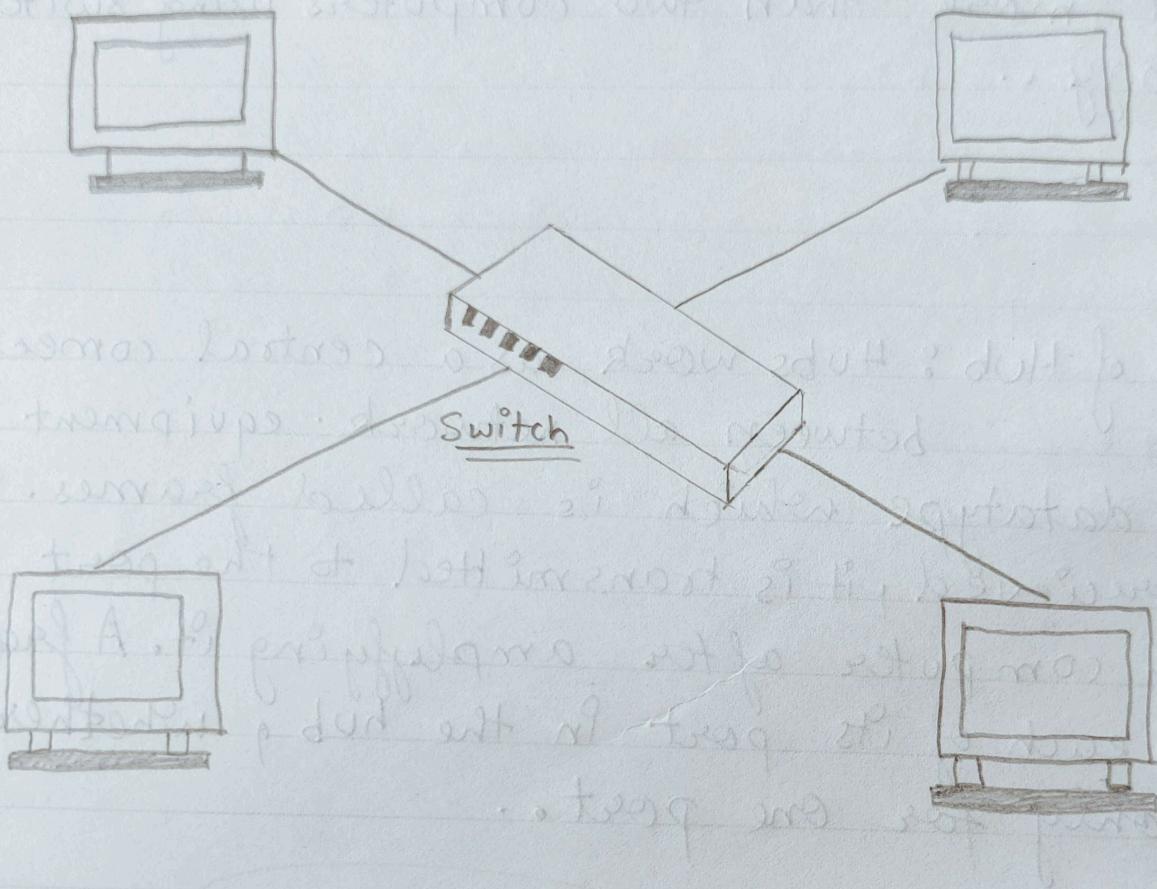
Theory:

Simulation of Hub: Hubs work as a central connection between all network equipment and handle a datatype which is called frames. If a frame is received, it is transmitted to the port of the destination computer after amplifying it. A frame is passed to each of its port in the hub, whether it is destined only for one port.

Simulation of Switches: Once a device is connected to a switch the switch notes its media access control (Mac address), a code that's baked into the device's network-interface card (NIC) that attaches to an ethernet cable that attaches to the switch. The switch uses the MAC address to identify which attached device outgoing packets are being sent from and where to deliver incoming packets.

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• 8.1 : Promisq.e3



Switch Star Topology

Simulation of Router! A typical home has a range of Internet-connected devices - personal computers, tablets, smartphones, printers, thermostats, smart TVs and more. Thanks to your router, these devices form a network. Your home's router directs incoming and outgoing Internet traffic on that network in the fastest and most efficient way.

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03/5/22

Experiment : 13 .

Aim : Subnetting of class A , B and C using FLSM .

Theory :

- FLSM refers to a strategy where every one of your network within your infrastructure is the same size i.e all subnets are of same size and have equal no of hosts
- It's preferred for private IP addresses .
- FLSM is not the same thing as classful addressing FLSM is simply using one size subnet mask on all the router interfaces
- In FLSM network, every subnet in your topology must be the same size . That is , if one subnet is 127 then all subnet need to be 127 .

Procedure .

1) Find the number of subsets :

2^x = no of subsets , where x is the no of mask bit of the IP .

2) Find the no of hosts per subset ;

3) Find the valid subnets .

4) Find the broadcast address for each subnet .

5) Find valid hosts .

Valid hosts are the number b/w the subnets , omitting the 0's and 1's .

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Possible Subnets

Subnet Mask	No of Hosts
124	204
125	126
126	64
127	32
128	16
129	6
130	2

Experiment : 14

Aim : To understand subnetting of class A, B, C using VLSM

Theory : Variable length Subnet Mask where the subnet design use more than one mask in same network which means more than one mask is used for different subnets of a single class A, B, C or network.

Procedure :

In VLSM subnets use block size based on requirement so subnetting is required multiple times.

Suppose the available IP address block is 192.168.1.0/24 and the requirement is to create four subnets for four departments:

$$A = 120 \text{ hosts} \quad B = 50 \text{ hosts} \quad C = 26 \text{ hosts} \quad D = 2 \text{ hosts}$$

Steps to allocate the IP's for departments using VLSM.

1. Select block size for each segment. This must be greater than or atleast equal to sum of host addresses.
2. List all possible subnets
3. Keeping the block size in mind, arrange all the segments in decreasing order. For this example the order would be

A B C D

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1. Hostname

H13 Konfiguration

M2IV priv Router > enable without password
Router # config t

Router (config) # hostname Router1

2) Console: Router1 # config t
Router1(config) # Line Console0
Router1(config-Line) # password - - - .

Auxiliary: Router # config t
Router (config) # line aux0

Router (config-line) # password - - - .

Enable: Router1 # config t

Router (config) # enable password - - - .

Router (config) # exit

Enable secret: Router1(config) # enable secret - - - .

1 2 3 4

Experiment : 15.

Aim: To understand basic Commands of routers: hostname, password, show run, show IP in brief, Assigning IP addresses to interfaces.

Theory:

1. Hostname: This command displays the name of the current host system. Only users with root user authority can set the hostname.

Syntax: /usr/bin/hostname.

2. Password: There are 5 main types of passwords:

- 1) Console Password
- 2) Auxiliary Password
- 3) Enable password
- 4) Enable Secret password
- 5) vty password.

- 3) Show run: To display the configuration information currently running on the terminal, use the show running config EXEC command. This command replace the write terminal command.

- 4) show IP: To get a detailed listing of all the IP-related characteristics of an interface use the show IP interface command.

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Experiment - 16.

Aim : To perform static routing.

Theory : Routers forward packets using either route information from route table entries that you manually configure or the route information that is calculated using dynamic routing algorithms. Static routing, which defines explicit paths b/w 2 routers can't be automatically updated; you must manually reconfigure static routes when network changes occur.

Configuring a static route:

- 1) Configure terminal
- 2) IP route
- 3) show ip static - route (optional)
- 4) copy running - config - startup - config (optional)

Experiment - 17

Aim: To perform dynamic routing using RIP(V1, V2)

Theory: Routing Information Protocol (RIP) is a dynamic routing protocol that uses hop count as a routing metric to find the best path between the source and destination network.

RIP Versions:

RIP V1

- Sends updates as broadcast
- Broadcast at 255.255.255.255
- Is Classful routing protocol

RIP V2

- Sends updates as multicast
- Multicast at 224.0.0.9
- Classes protocol updated
- supports classful

RIP V1 is known as classful Routing Protocol.

RIP V2 is known as Classless Routing Protocol.

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Experiment - 18

Aim: To perform Dynamic Routing using EIGRP.

Theory: Enhanced Interior Gateway Routing Protocol (EIGRP) is a Dynamic routing network-layer protocol which works on protocol numbers 88. EIGRP supports classless routing, VLSM, route summarization, ~~load~~ load balancing and many other useful features.

EIGRP exchange messages for communication between the routers operating.

Configuration.

Cisco IOS Example:

The 0.0.15.255 ~~wildcard~~ in this example indicates a subnet with a maximum of 1094 hosts - it is bitwise complement of the subnet mask 255.255.0.0

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Experiment - 19

Aim: To perform Dynamic routing using OSPF with single area concept.

Theory: Open shortest path first (OSPF) is a link state routing protocol (IGP) that is used to find the least path b/w the source and destination routes. SPF is developed by Internet Engineers task force (IETF) as one of the interior gateway protocol (IGP), the protocol which aims at moving the packet ~~within~~ the large autonomous system ~~on~~ routing domain.

Steps :

- Enabling the OSPF routing protocol using
- Defining OSPF network.

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Experiment - 20.

Aim : To perform dynamic routing using OSPF with multiple area network or concept.

Theory :

OSPF is a link state routing protocol that is used to find the most least path b/w the source and destination routers.

In OSPF multiple area network all routers flood the network only within this area.

Steps :

- Enabling OSPF 'routing protocol' using 'router OSPF' command.
- Defining OSPF network ..

Teacher's Signature

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10/5/22