Sr.No	Date	Practical List	Sign
1.		Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: ping, traceroute, netstat, arp, ipconfig, Getmac, hostname, NSLookUp, pathping, SystemInfo	
2.		Using Packet Tracer, create a basic network of two computers using appropriate network wire through Static IP address allocation and verify connectivity	
3.		Using Packet Tracer, create a basic network of one server and two computers using appropriate network wire. Use Dynamic IP address allocation and show connectivity	
4.		Using Packet Tracer, create a basic network of one server and two computers and two mobile / movable devices using appropriate network wire. And verify the connectivity	
5.		Using Packet Tracer to create a network with three routers with RIPv1 and each router associated network will have minimum three PC and show the connectivity	
6.		Using Packet Tracer to create a network with three routers with RIPv2 and each router associated network will have minimum three PC and show the connectivity	
7.		Using Packet Tracer, create a network with three routers with OSPF and each router associated network will have minimum three PC and show Connectivity	

Practical No 1

Aim: Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: ping, traceroute, netstat, arp, ipconfig, Getmac, hostname, NSLookUp, pathping, SystemInfo

Theory:

ping: ping is a computer network administration software utility used to test the reachability of a host on an Internet Protocol network.

IPCONFIG

The IPCONFIG network command provides a comprehensive view of information regarding the IP address configuration of the device we are currently working on.

Traceroute

tracing the path an IP packet takes across one or many networks.
Tracert

Getmac

The Physical Address will be your MAC address.

Hostname

displays the name of the current host system

Netstat

generates displays that show network status and protocol statistics.

Arp

ARP stands for Address Resolution Protocol. The primary function of this protocol is to resolve the IP address of a system to its mac address, and hence it works between level 2(Data link layer) and level 3(Network layer)

Nslookup

a useful command for getting information from the DNS server.

Pathping

This command ***sends multiple echo Request messages to each router between a source and destination***,

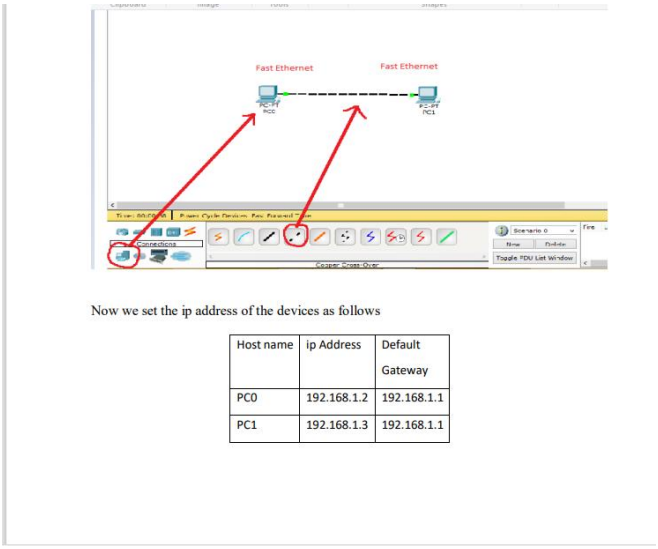
Systeminfo

displays detailed information about the computer's hardware and software configuration.

Practical No 2

Aim: Using Packet Tracer, create a basic network of two computers using appropriate network wire through Static IP address allocation and verify connectivity

Theory: We use the following network to verify the connectivity using Cisco packet tracer



Now we set the ip address of the devices as follows

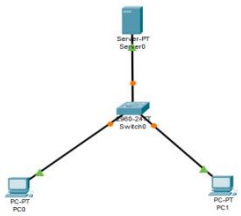
Host name	ip Address	Default Gateway
PC0	192.168.1.2	192.168.1.1
PC1	192.168.1.3	192.168.1.1

In order to check the connectivity we send a ping command from PC0 to PC1.

Practical No 3

Aim: Using Packet Tracer, create a basic network of one server and two computers using appropriate network wire. Use Dynamic IP address allocation and show connectivity

Theory: For assigning ip addresses dynamically we use the DHCP protocol Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway. The DHCP server maintains a pool of IP addresses and leases an address to any DHCP‐enabled client when it starts up on the network. Because the IP addresses are dynamic (leased) rather than static (permanently assigned), addresses no longer in use are automatically returned to the pool for reallocation.



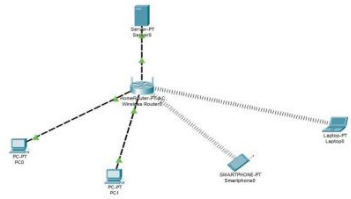
Practical No 4

Aim: Using Packet Tracer, create a basic network of one server and two computers and two mobile / movable devices using appropriate network wire. And verify the connectivity

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

alternative. Setting up a wireless network provides a lot of advantages and benefits for you and your small business. 1) It is easier to set up compared to setting up a wired network. 2) It is more convenient to access. 3) It is less complicated to add new users in the network. 4) It gives users more flexibility to stay online even when moving from one area in the office to another. 5) Guest users can have Internet access by just using a password. 6) Wireless network protection can be set up even if the network is visible to the public by configuring maximum wireless security. 7) Segmentation of users, such as guests and employees, is possible by creating Virtual Local Area Networks (VLANs) to protect your network resources and assets.

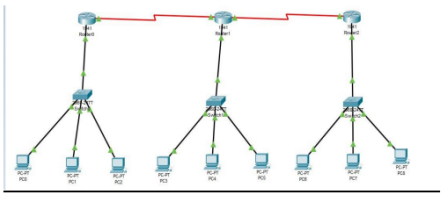
For the present case we use the following topology



Practical No 5

Aim: Using Packet Tracer to create a network with three routers with RIPv1 and each router associated network will have minimum three PC and show the connectivity

Theory: RIP is one of the dynamic routing protocols and the first distance-vector routing protocol that uses the hop count as a routing metric. A lower hop count is preferred. Each router between the source and destination network is counted as one hop. RIP prevents routing loops by imposing a maximum number of hops on the path between source and destination. In RIP, Every 30 seconds, each router broadcasts its entire routing table to its nearest neighbours.



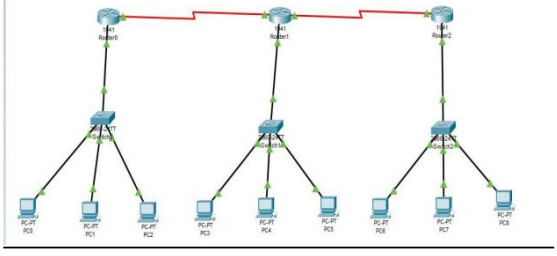
Host	Interface	IP address	Network Address	Default Gateway
Router 0	G0/0	10.0.0.1	10.0.0.0	
	S0/1/0	192.168.0.1	192.168.0.0	
Router 1	G0/0	20.0.0.1	20.0.0.0	
	S0/1/0	192.168.0.2	192.168.0.0	
	S0/1/1	192.168.1.1	192.168.1.0	
Router 2	G0/0	30.0.0.1	30.0.0.0	
	S0/1/1	192.168.1.2	192.168.1.0	
PC0	FastEthernet0	10.0.0.2	10.0.0.0	10.0.0.1
PC1	FastEthernet0	10.0.0.3	10.0.0.0	10.0.0.1
PC2	FastEthernet0	10.0.0.4	10.0.0.0	10.0.0.1
PC3	FastEthernet0	20.0.0.2	20.0.0.0	20.0.0.1
PC4	FastEthernet0	20.0.0.3	20.0.0.0	20.0.0.1

Practical No 6

Aim: Using Packet Tracer to create a network with three routers with RIPv2 andeach router associated network will have minimum three PC and show the connectivity

Theory: RIPv2 is an enhancement to the original RIP protocol developed in 1994. RIPv2 is also a distance vector routing protocol but has a few enhancements to make it more efficient than RIPv1. RIPv2 is more efficient than RIPv1, but is not suitable for larger, more complex networks. It simply provides more flexibility on smaller networks. RIPv2 uses the same routing metric as RIPv1, the hop count.

We use the following topology for the present case



Practical No 7

Aim: Using Packet Tracer, create a network with three routers with OSPF and each router associated network will have minimum three PC and show Connectivity

Theory: Open shortest path first (OSPF) is a link-state routing protocol that is used to find the best path between the source and the destination router using its own shortest path first (SPF) algorithm. A link-state routing protocol is a protocol that uses the concept of triggered updates, i.e., if there is a change observed in the learned routing table then the updates are triggered only, not like the distance-vector routing protocol where the routing table is exchanged at a period of time.