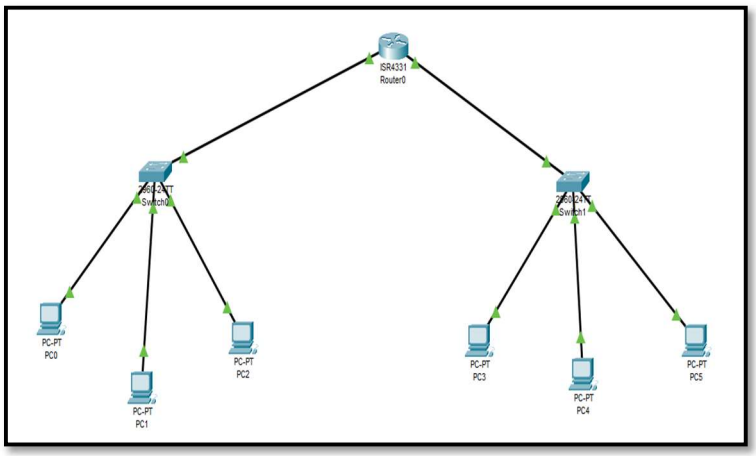
VIT Vidyalankar Institute of Technology Accredited A+ by NAAC	Department of Information Technology

Semester	S.E. Semester IV – Information Technology
Subject	Network Lab
Subject Professor In-charge	Prof Shashikant Mahajan
Assisting Teachers	Prof Shashikant Mahajan
Laboratory	L07D

Student Name	Mohammad Ahmed Ansari	
Roll Number	21101B0031	
Grade and Subject Teacher's Signature		

Experiment Number	04	
Experiment Title	Internetwork Communcation through Router and Switch	
Resources / Apparatus Required	Hardware: PC i3 processor and above	Software: Cisco Packet Tracer
Objectives (Skill Set / Knowledge Tested / Imparted)	1. See the Mac Table of each switch 2. See the Routing table of Router	
Theory	 After all settings are done user should be able to ping from 10.0.0.3 or 10.0.0.4 to 20.0.0.3 or 20.0.0.4 Eg. **Router(config)#int fa0/0** **Router(config)#ip address 10.0.0.2 255.0.0.0**	

Commands :-

1) To view routing table

   Router#ship route

2) To view Mac Address Table

   Switch#sh mac-address-table

Questions:-

1) What is default Gateway?

Ans]
The default gateway is the path used to pass information when the device doesn't know where the destination is. More directly, a default gateway is a router that connects your host to remote network segments. It's the exit point for all the packets in your network that have destinations outside your network.

2) What is MAC table?

Ans]
The MAC address table is where the switch stores information about the other Ethernet interfaces to which it is connected on a network. The table enables the switch to send outgoing data (Ethernet frames) on the specific port required to reach its destination, instead of broadcasting the data on all ports (flooding).
The MAC address table can contain two types of entries:

- Static: Static entries are manually added to the table by a switch administrator. Static entries have higher priority than dynamic entries. Static entries remain active until they are removed by the switch administrator.

- Dynamic: Dynamic entries are automatically added to the table through a process called MAC learning, in which the switch retrieves the source MAC address (and VLAN ID, if present) of each Ethernet frame received on a port. If the retrieved address does not exist in the table, it is added. Dynamic entries remain in the table for a predetermined amount of time (defined with the command mac-address-table age-time), after which they are automatically deleted.

3) What is Routing table?

Ans]
A routing table is a set of rules, often viewed in table format, that's used to determine where data packets traveling over an Internet

	Protocol (IP) network will be directed. This table is usually stored inside the Random Access Memory of forwarding devices, such as routers and network switches. In computer networking, each routing table is unique and acts as an address map for networks. It stores the source and destination IP addresses of the routing devices in the form of prefixes along with the default gateway addresses and corresponding routing information. Routing tables are typically updated dynamically through network routing protocols. But sometimes network administrators might add static entries manually. 4) How connection between two communicating devices is verified? Ans] The ping command can be used to verify connection between two communicating devices on a network. Ping uses the computer's echo request and operates within the Internet Control Message Protocol (ICMP), which is a fundamental component of any IP network. When the ping command is issued, an echo request packet is sent to the specified address. Once the remote host gets the echo request, it responds with an echo reply packet. Each echo request's outcome is displayed.
Conclusion	Routers and switches are essential components of modern computer networks, and their ability to facilitate internetwork communication is critical for the functioning of the Internet and other networks. Without routers and switches, it would be impossible for devices on different networks to communicate with each other, and the Internet as we know it today would not exist.