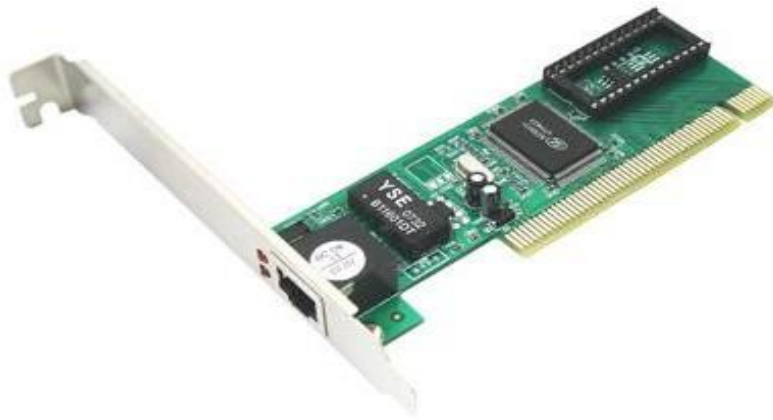


Experiment No 3

AIM:-Familiarization with Networking Components and devices: LAN Adapters, Hubs, Switches, and Routers etc.

LAN Adapter:-

An expansion board that is used to connect a computer or computing device to a network. LAN adapter is the most common and generic alternate name for a Network Interface Card (NIC). However, many similar products, such as a Wireless USB LAN Adapter is also called a LAN adapter.



Wireless USB LAN adapter:-

A high-speed wireless network card that is used to access a network through a USB port on a computer or laptop. Most wireless USB LAN adapters look like small USB flash drives and usually are based on the 802.11g standard which provides a data rate up to 54-Mbps in a wireless LAN environment. Some wireless USB LAN adapters may also support the 802.11b standard. A wireless USB LAN adapter basically enables you to share files, folders, printers, other network resources and Internet access.



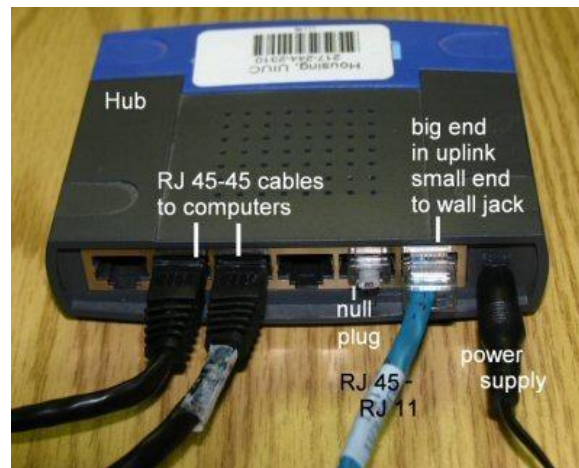
Network Hub:-

Definition: In computer networking, a **hub** is a small, simple, inexpensive device that joins multiple computers together. Many network hubs available today support the Ethernet standard. Other types including USB hubs also exist, but Ethernet is the type traditionally used in home networking.

Technically speaking, two different types of hubs exist:

- passive
- active

Passive hubs do not amplify the electrical signal of incoming packets before broadcasting them out to the network. **Active hubs**, on the other hand, do perform this amplification, as does a different type of dedicated network device called a repeater. Some people use the terms **concentrator** when referring to a passive hub and **multiport repeater** when referring to an active hub.



Network switch:-

A **network switch** (sometimes known as a *switching hub*) is a computer networking device that is used to connect devices together on a computer network. A switch is considered more advanced than a hub because a switch will only send a message to the device that needs or requests it, rather than broadcasting the same message out of each of its ports.^[1]

A switch is a multi-port network bridge that processes and forwards data at the data link layer (layer 2) of the OSI model. Some switches have additional features, including the ability to route packets. These switches are commonly known as *layer-3* or *multilayer switches*.



Router:-

Router: Routers are devices (computers) containing software that help in determining the best path out of the available paths, for a particular transmission. They consist of a combination of hardware and software. The hardware includes the physical interfaces to the various networks in the internet work. The two main pieces of software in a router are the operating system and the routing protocol.

Routers use logical and physical addressing to connect two or more logically separate networks. They accomplish this connection by organizing the large network into logical network segments or sub-networks. Each of these sub networks is given a logical address. This allows the networks to be separate but still access each other and exchange data when necessary. Data is grouped into packets, or blocks of data. Each packet, in addition to having a physical device address, has a logical network address.

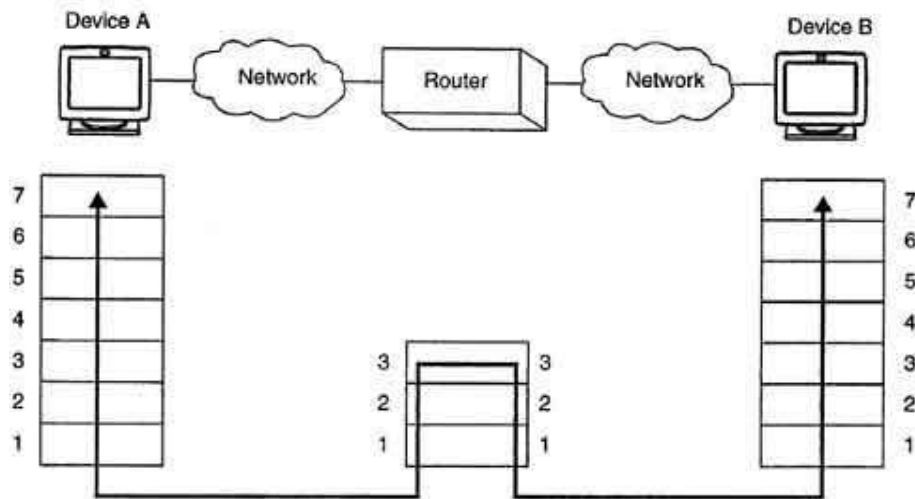
Routers are frequently used to interconnect identical networks as well as to interconnect networks with different types of hardware.

How Routers Works

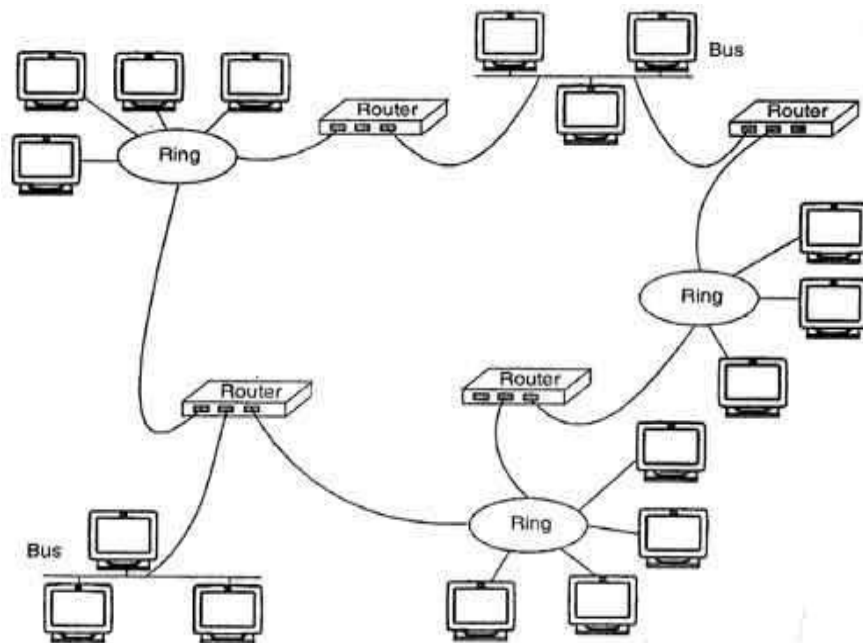
Routers are interconnectivity devices that are used to transfer the datum packets along networks by visualizing the networks path. Routers visualizing the networks path to many networks such as Electronic networks, Transport networks and phone networks. Two ways are exist for routers operation using either control plane or forwarding plane. In control plane the router sends the precise data packets to their specific location. On the other hand in forwarding plane router does not remember the sending or receiving information about the packets.

Advantages of Routers

Routers route the data in an organized way. Routers generate a reliable connection between hosts. Routers are used for alternative in case the main is fail to transfer data.



A Router in the OSI Model



Routers is an internet

