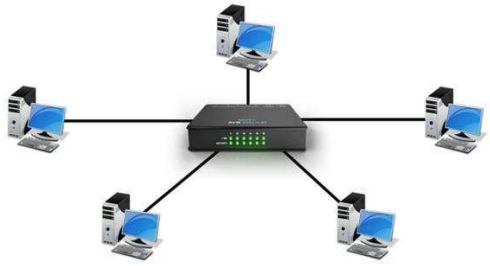
EXPERIMENT-2

Aim: Installation of Switch, Hub their cascading and network mapping.

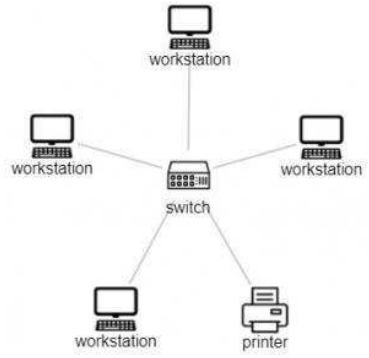
Hub:

- A hub is a multiport repeater. It connects multiple wires that come from different branches; for example, in topologies.
- It is a physical layer networking device used to connect multiple devices in network (such as LAN), the computer that needs to be connected should be plugged in into one of its ports.
- Hub cannot take an intelligent decision so when a data pack arrives it transports it to all the devices connected through its ports, without considering the correct destination or the better route leading to inefficiency and wastage.



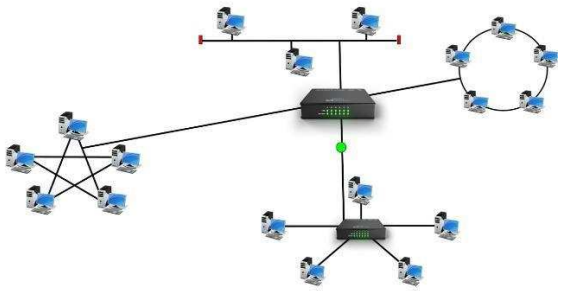
Switch:

- A switch is a multiport device which also consists of a buffer and a design to boost the efficiency and performance.
- It is a data link layer device which can check for errors before forwarding any data and hence forwards only selective correct data packets to the destined port only.
- It can be used to connect many devices to a network though its port and when a data packet arrives it sends it to the corresponding devices by reading the destination address and hence supports all unicast, multicast and broadcast communication.



Router:

- Router is like a switch that routes the data packets based on their IP addresses and is a Network Layer device.
- It is normally used for connecting the LANs and WANs together.
- It consists of a dynamically updating routing table based on which it makes a decision on routing the data packets.



Differences between Hub and Switch:

KEY	HUB	SWITCH
Objective	To transmit the signal to port to respond to where the signal was received.	To provide connection and termination settings based on need.
Layer	They operate in the physical layer of the OSI reference model.	They operate in the data link layer of the OSI reference model.
Transmission	It only broadcasts data packets. (sends it to all the receivers).	It can unicast, multicast or broadcast a data packet.
Feature	It is a non-intelligent device.	It is an intelligent device.
Active/passive device	It is a passive device as there is no software attached to it.	It is an active device with a software attached to it.
Transmission Mode	Transmission mode is half duplex.	Transmission mode if full duplex.
Number of ports	They have fewer ports generally (maximum ports being 4).	They have higher number of ports (24-28 ports).

Procedure:

1) Connect all the devices via LAN cable to the Hub/Switch.
2) Assign IP addresses by using the command *IP Config.*
3) Check connectivity for making sure they are correctly connected by using the command *Ping ip_address* (where write down the IP address of the required device).