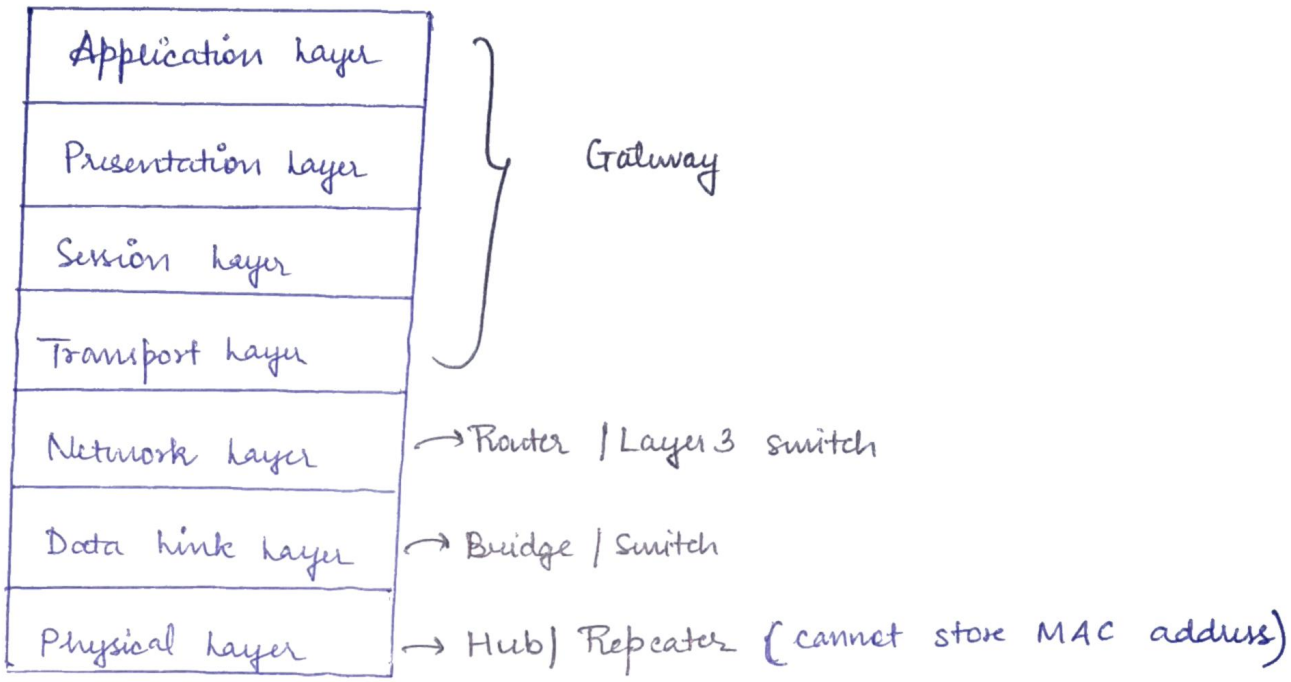
BASIC NETWORKING

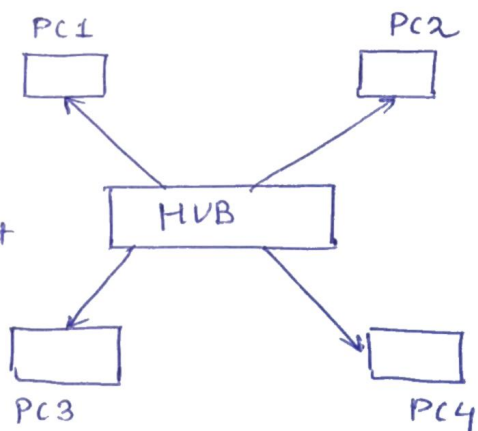
What we are going to learn? – Networking devices

1. Hub
2. Repeater
3. Bridge
4. Switch
5. Router
6. Gateway



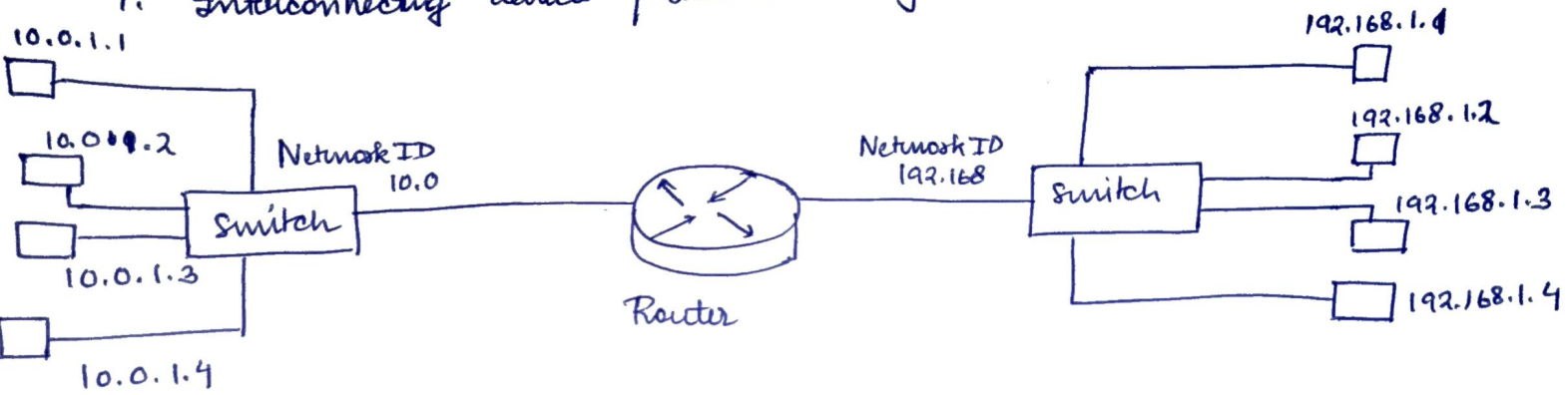
Hub (Layer 1 – Physical layer)

1. Port can be 2/4/8
2. Always Broadcast
   (Share data to all PC's only the distination PC will accept that all other will reject it)
3. Not intelligent devices
4. You can send electrical signal as well as Binary signal.
5. Half Duplex
6. Single collision domain
7. LAN device



Router (Layer 3- Network Layer)

1. Interconnecting devices / Internetworking device



2. It can communicate b/w 2 different networks.
3. Always have different Network ID for different Networks, to connect.
4. Maintains Routing table by adding which port no. have which Network ID.

Routing Table

Port NO.	Network ID
1	10.0.0.0
2	192.168.1.0

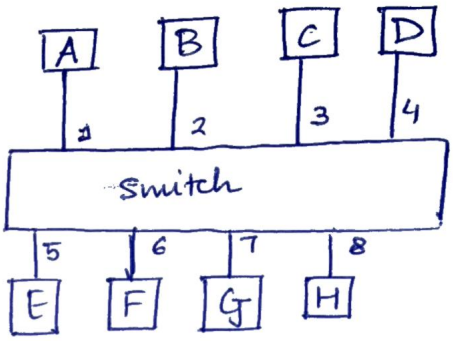
5. Only works on IP addrs.
6. WAN device
7. Every port has broadcast domain
8. 2/4/8 port. , Fast, 10
100
1 GBps.

Gateway (Layer 4,5,6,7 i.e Transport Layer, Session Layer, Presentation Layer, Application Layer)

1. Mostly it operates on Application layer.
2. Connecting device used to connect remote network with the host networks. Generally it acts as a entry or exit point.

Switch (Layer 2 - Data link Layer)

1. Also called Multiport Bridge.
2. Port can be 4/8/16/48.
3. Maintains CAM (Content accessible Memory) Table or MAC address table.



4. It first time Broadcast and then knows all the MAC address for next time it unicasts or Multicasts.
5. Full duplex.
6. Every port of switch is seprate collision domain
7. One Broadcast Domain

Slow 10 Mbps
100 Mbps.

CAM table.

Port No.	MAC addrn.
1	A's MAC addrn.
2	B's
3	C's
4	D's
5	E's
6	F's
7	G's
8	H's

Types of Switch

1. **Store and forward switch**
   Switch buffers and verifies each frame before forwarding, little bit slow but very reliable.
2. **Cut through Switch**
   Switch reads only upto the frame hardware addrn before starting to forward it.
   NO ERROR CHECKING
3. **Fragment free switch**
   Method that attempts to retain benefits of both store and forward and cut through check first 64 byte.
4. **Adeptive Switching**
   Method that attempts to automaticaley selecting b/w the other 3 modes.

8. Types of Hub.

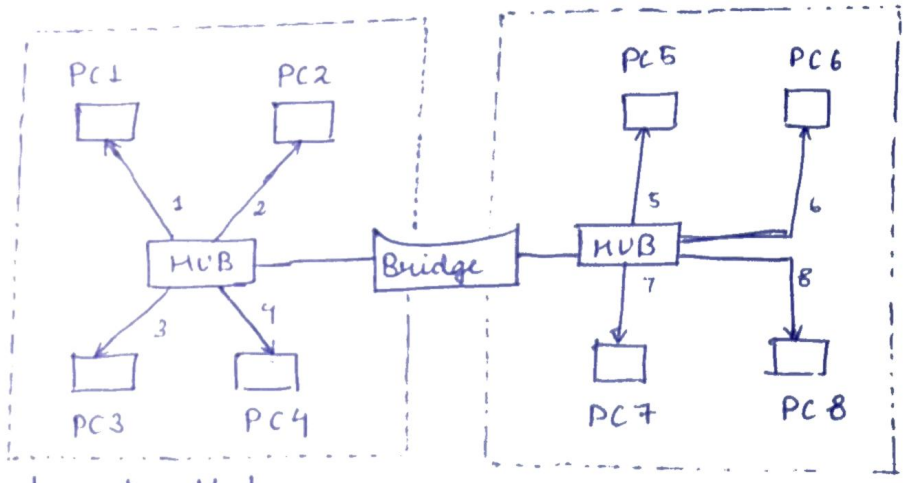
Active Hub	Passive Hub
1. Needs electricity	1. Doesn't requires electricity
2. Amplifies signal and regenerate digital signal	2. Doesn't amplify signals it simply recieves & forward it.

Repeater (Layer 1 - Physical Layer)

1. Everything is same as Hub except it works like Active Hub.
2. Regenerates signals at 185m distance.

Bridge (Layer 2 - Data Link Layer)

1. It inspect incoming traffic and decide whether to forward or reject.
   It check source and destination address.
2. divide network segments and then make the Bridge table.
   first time it Broadcast data to all network segments then unicast it for next time.



3. Intelligent device as compare to Hub.
4. Two collision domain.
5. Filter data traffic
6. Reduces the amount of traffic on LAN

Bridge Table

Port No.	MAC address
1	PC1(MAC. add.) PC2.
2	PC
3	
:	
8	