

DC tut-0 : summary:

▷ Data representation:

Text : Unicode (32 bits), ASCII

Number : Digits converted into Binary.

Images : In form of pixels (made of matrix) ^{each pixel represented by bits}

Video : Can be discrete & continuous.

Audio : Only continuous, not discrete.

▷ Network criteria:

- Performance : transit time, response time, no. of users, types of transmission medium, capabilities of connected hardware, efficiency of software, throughput & delay.
- Reliability : Reliability is the measure of how often a network is used. frequency of failure, time taken for a link to recover from a failure, network's failure can be : hardware, data carrying medium and Network operating system.
- Secure : Protecting data from unauthorized access, protecting data from damage & development, independent policies and procedures for recovery from breaches and data failure.

▷ Physical Structure in Networks:

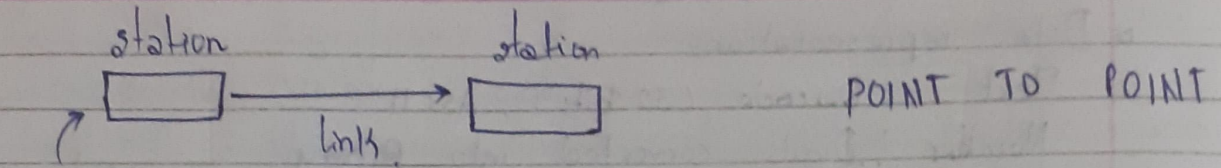
→ A network is 2 or more devices connected through links.

→ 2 types of connections:

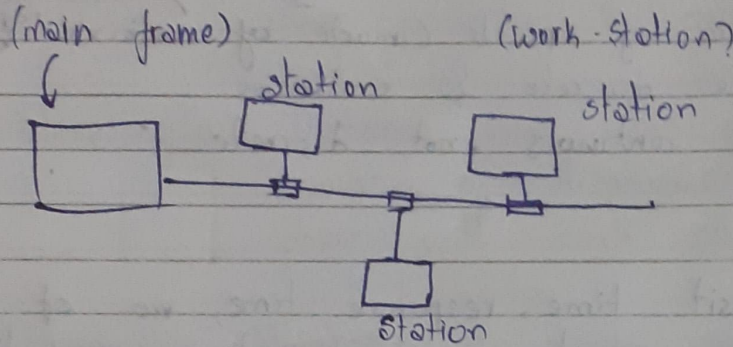
i) Point to Point : dedicated link b/w 2 devices.

ii) Multipoint connection.

The link is shared b/w more than two devices.



POINT TO POINT

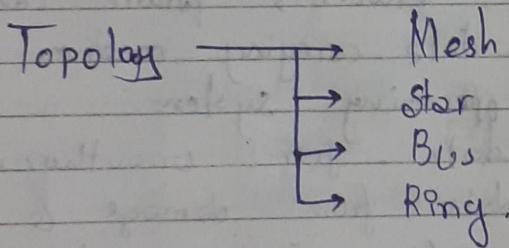


MULTI POINT

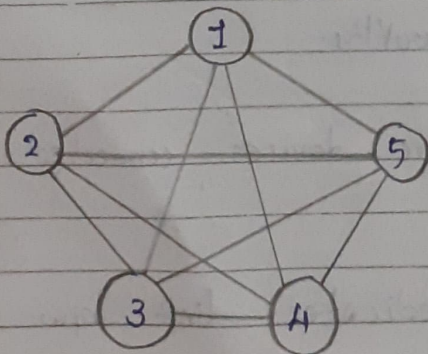
In multipoint, if the link fails, entire system would shut down [This is the drawback]

Physical Topology:

Way in which network is laid physically.



1. Mesh Topology :



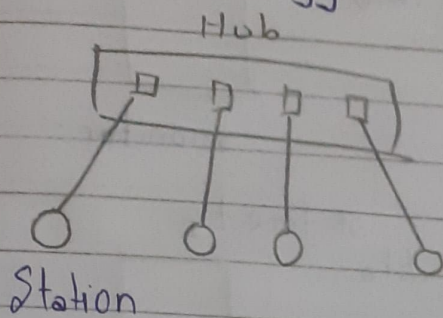
- dedicated link.
- no. of physical link:
 - $n(n-1)$ → if simplex
 - $\frac{n(n-1)}{2}$ → if full duplex

Example: telephone

Drawbacks:

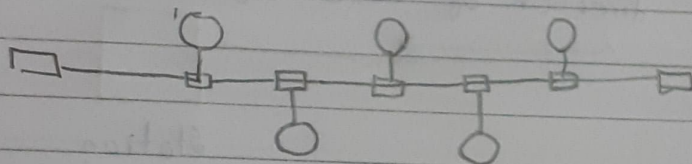
- too much links
 - Very clumsy.
- Hence, not very much used.

2) Star Topology:



- each device has dedicated links with the central controller
- doesn't allow direct traffic b/w devices.
- Example: LANs

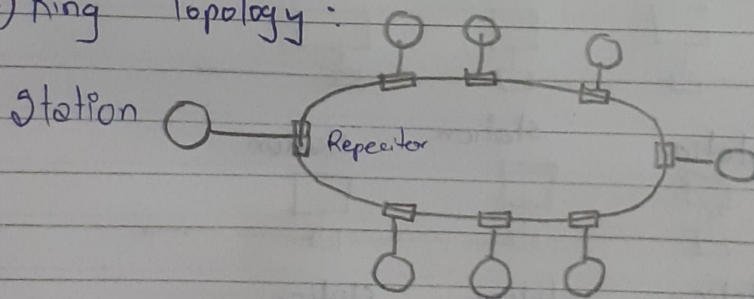
3) Bus topology



- multi point topology
- difficult to reconnect and manage faulty installation.

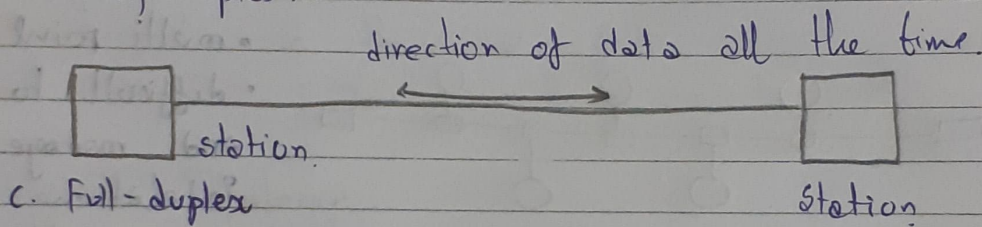
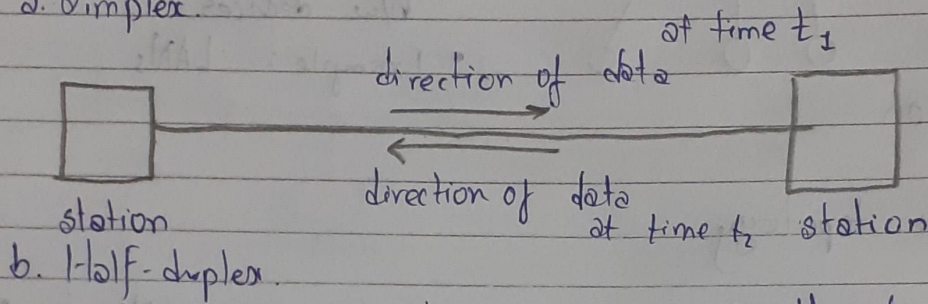
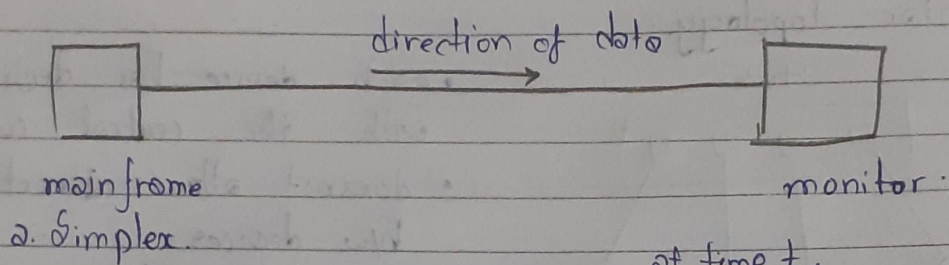
- All devices share single communication line or cable.

4) Ring Topology:

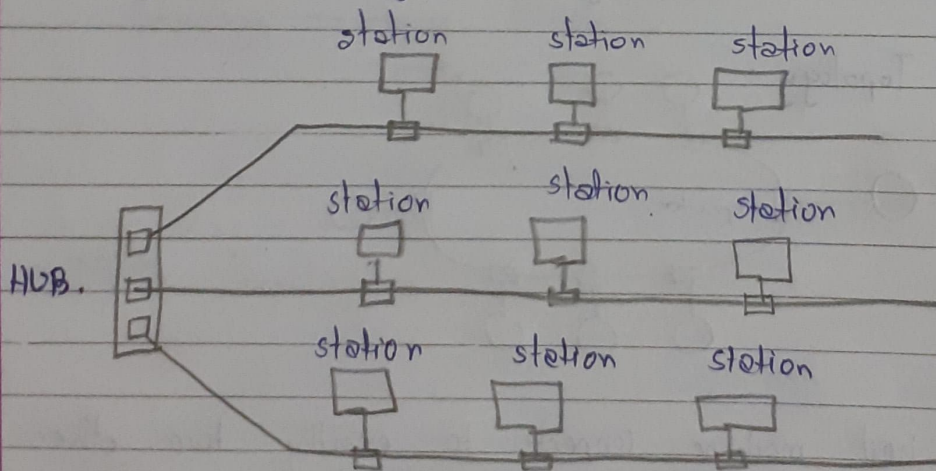


- Each host machine connects to exactly two other machines creating a circular network structure.
- Data travels around the ring in one direction through all intermediate hosts.

▷ Simplex, Half-duplex, Full-duplex



► Topologies in hybrid Network:



► Data communication effectiveness depends on:

- ↳ Delivery: System must deliver data on correct destination.
- ↳ Accuracy: System must deliver data accurately.
- ↳ Timeliness: System must deliver data in timely manner.
- ↳ Jitter - Variation in packet arrival time.