Bangladesh Army University of Engineering & Technology

CSE-3215
Data Communication

Lecture-02

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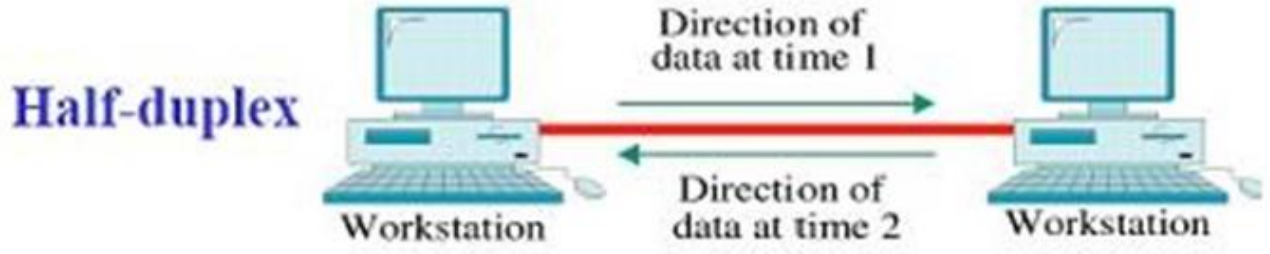
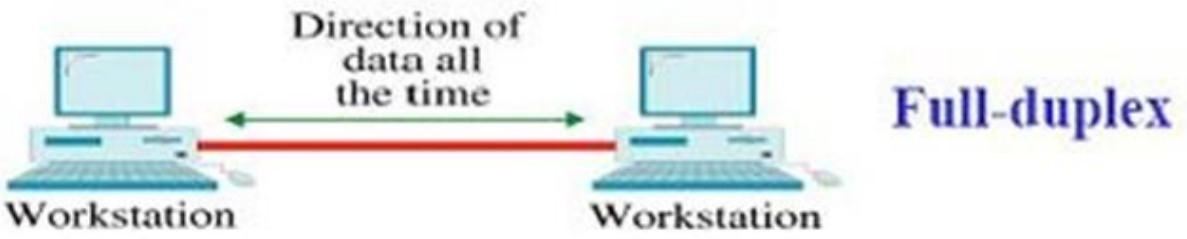
- Transmission Mode (Data Flow):- Simplex, Half-duplex, Full-duplex
- Introduction to Networks
- Types of Connections (Point-to-point, Multipoint)
- Topology

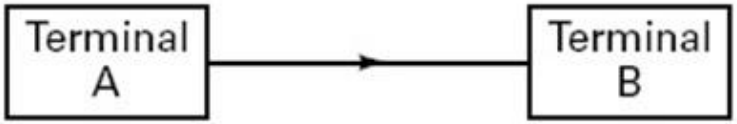
Transmission Mode

The **transmission mode** defines the direction of signal flow between two connected devices.



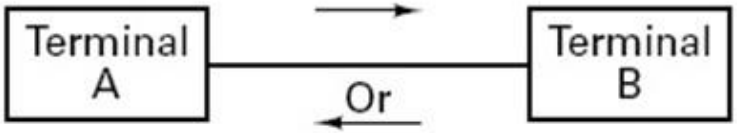


Transmission Mode (Cont.)



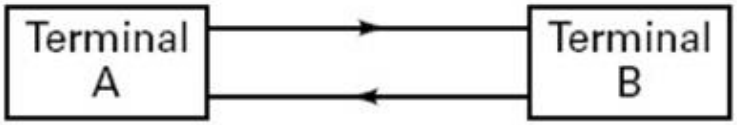
Transmission in only one direction

(a)



Transmission in either direction, but not simultaneously

(b)



Transmission in both directions simultaneously

(c)

(a) Simplex Mode, (b) Half-duplex Mode, (c) Full-duplex Mode

1. **Simplex:** In simplex mode, the communication is unidirectional. only one of the devices on a link can transmit, the other can only receive. e.g. keyboards, monitors, etc.
2. **Half-duplex:** In this mode, each station can both transmit and receive, but not at the same time. When one device is sending, the other can only receive, and vice-versa. e.g. walkie-talkies, CB(citizens band) etc.
3. **Full-duplex:** In full duplex mode, both stations can transmit and receive simultaneously. One common example of full duplex is the Telephone network. When two people are communicating by a telephone line, both can talk and listen at the same time. The full-duplex mode is used when communication in both directions is required all the time.

Introduction to Network

A network is a set of devices (often referred to as nodes) connected by communication links. A node can be a computer, printer, or any other device capable of sending and/or receiving data generated by other nodes on the network.

Topics to be discussed here:

i) Distributed Processing

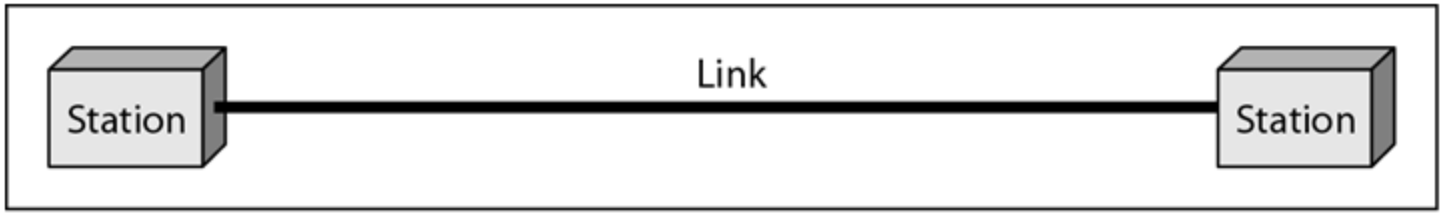
ii) Network Criteria (Performance, Reliability, Security)

iii) Categories of Network (PAN, LAN, MAN, WAN etc)

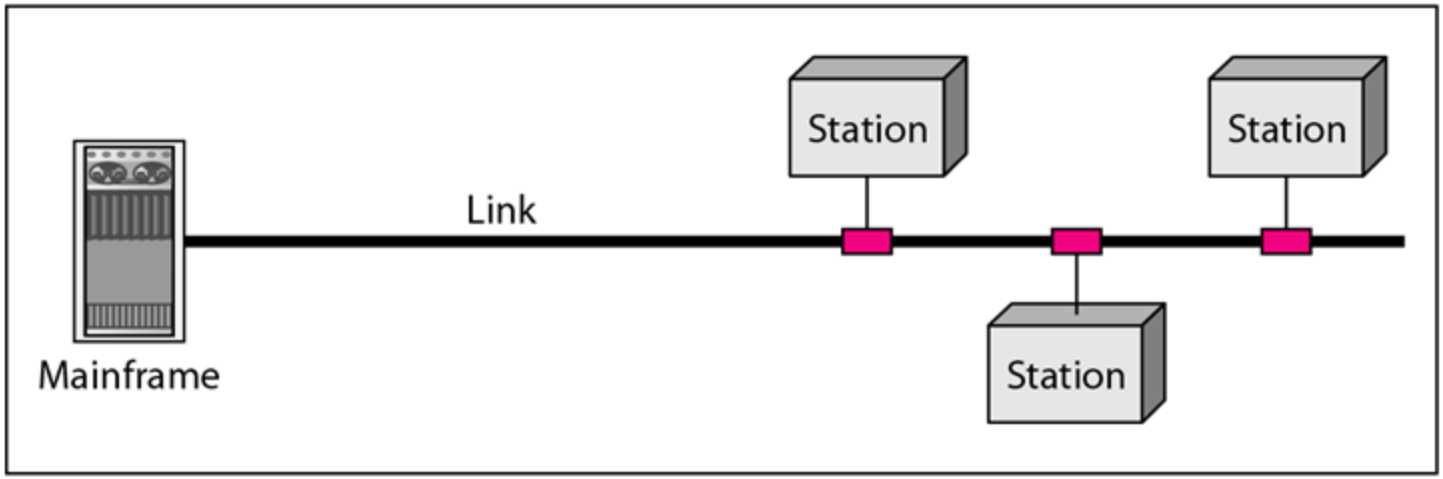
iv) Network Models (i.e; OSI, TCP/IP)

Types of Connection

Point-to-point and multipoint



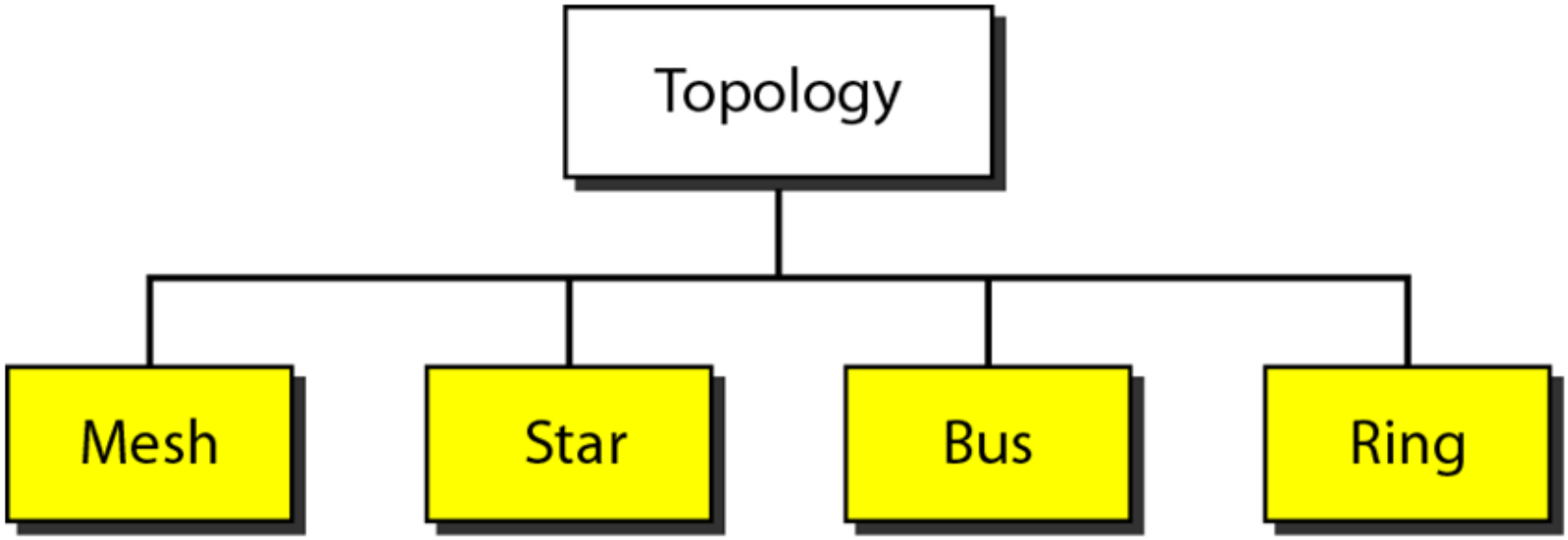
a. Point-to-point



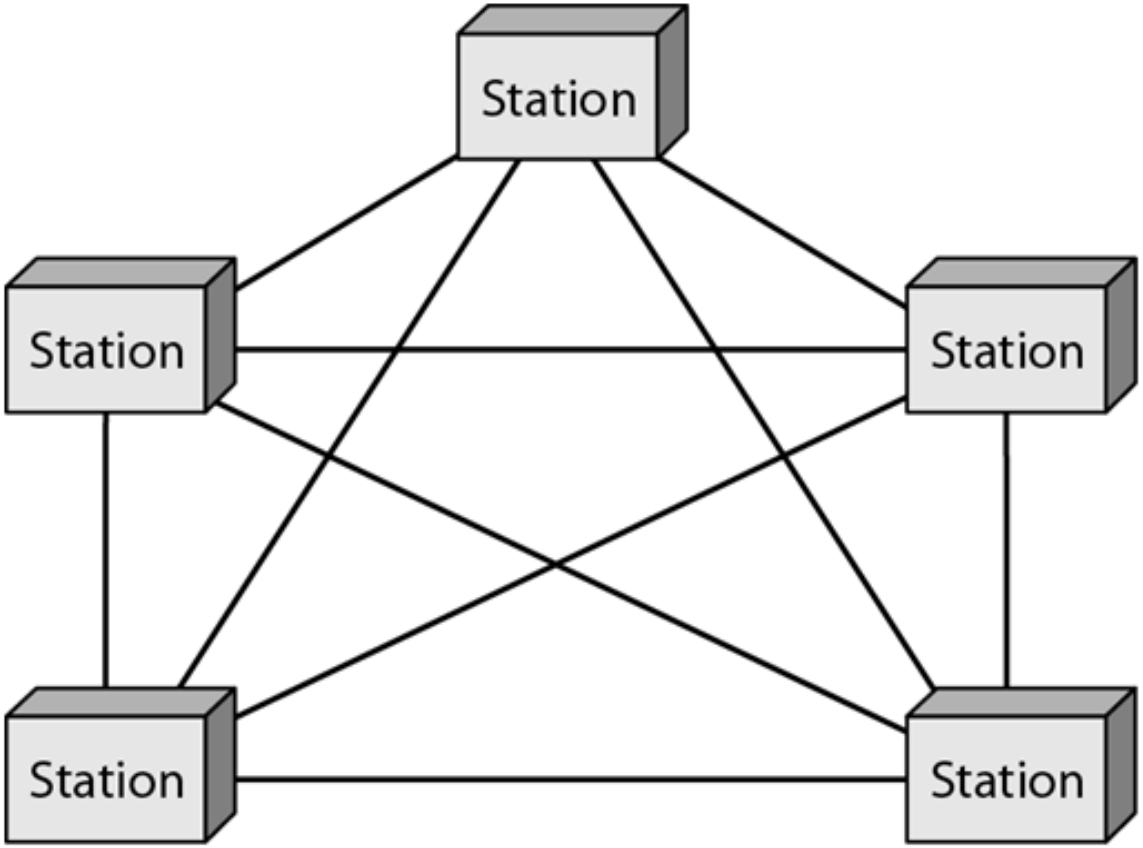
b. Multipoint

Network Topology

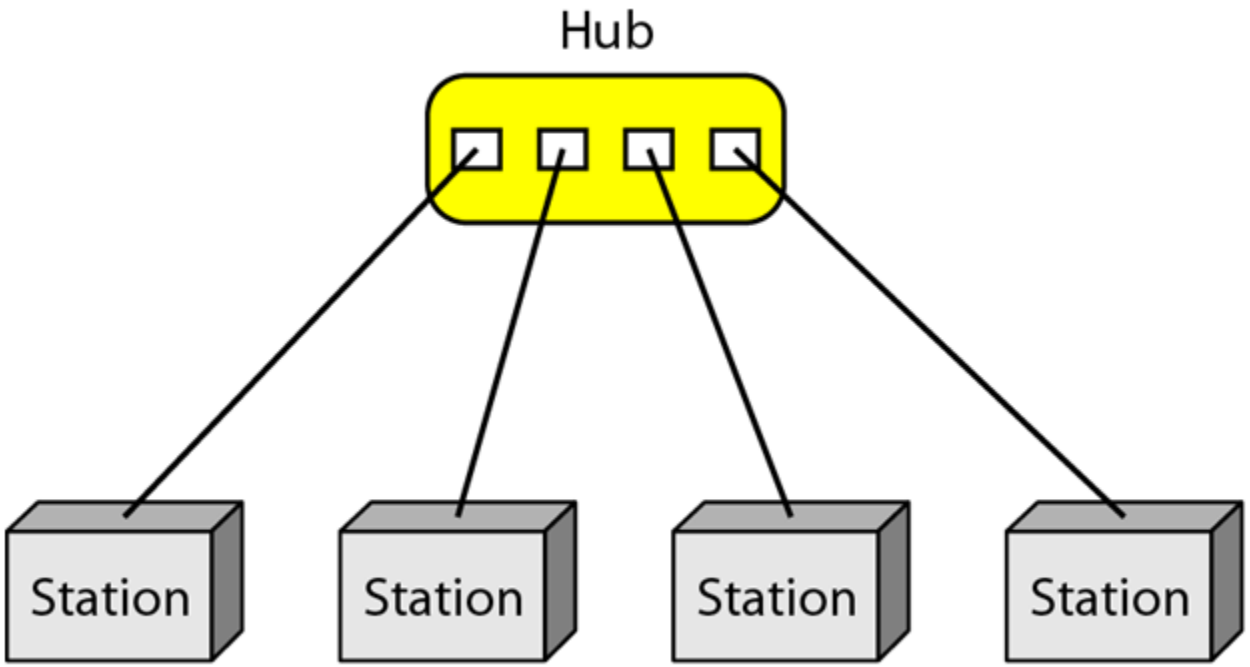
Network topology is the arrangement of the elements in a communication network.



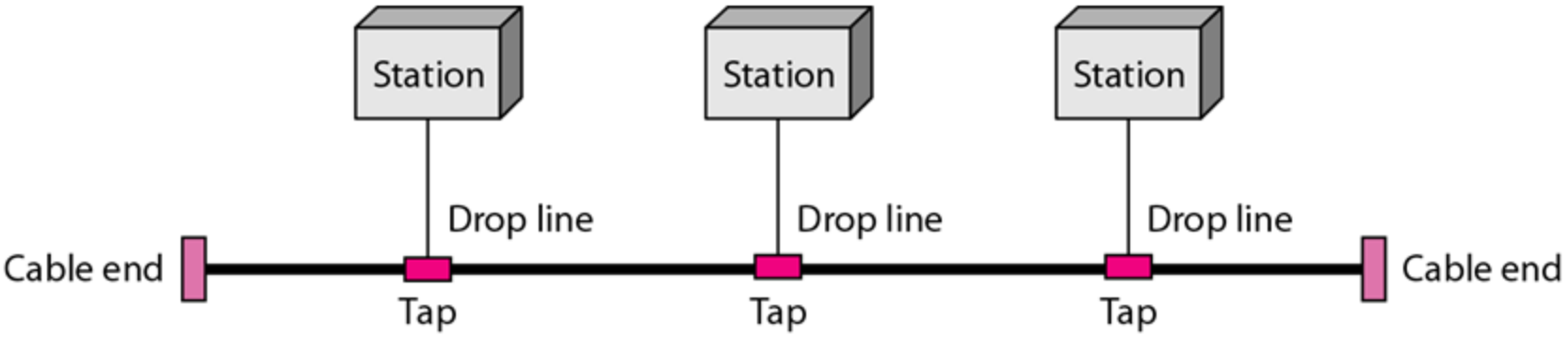
A Fully Connected Mesh (5 devices)



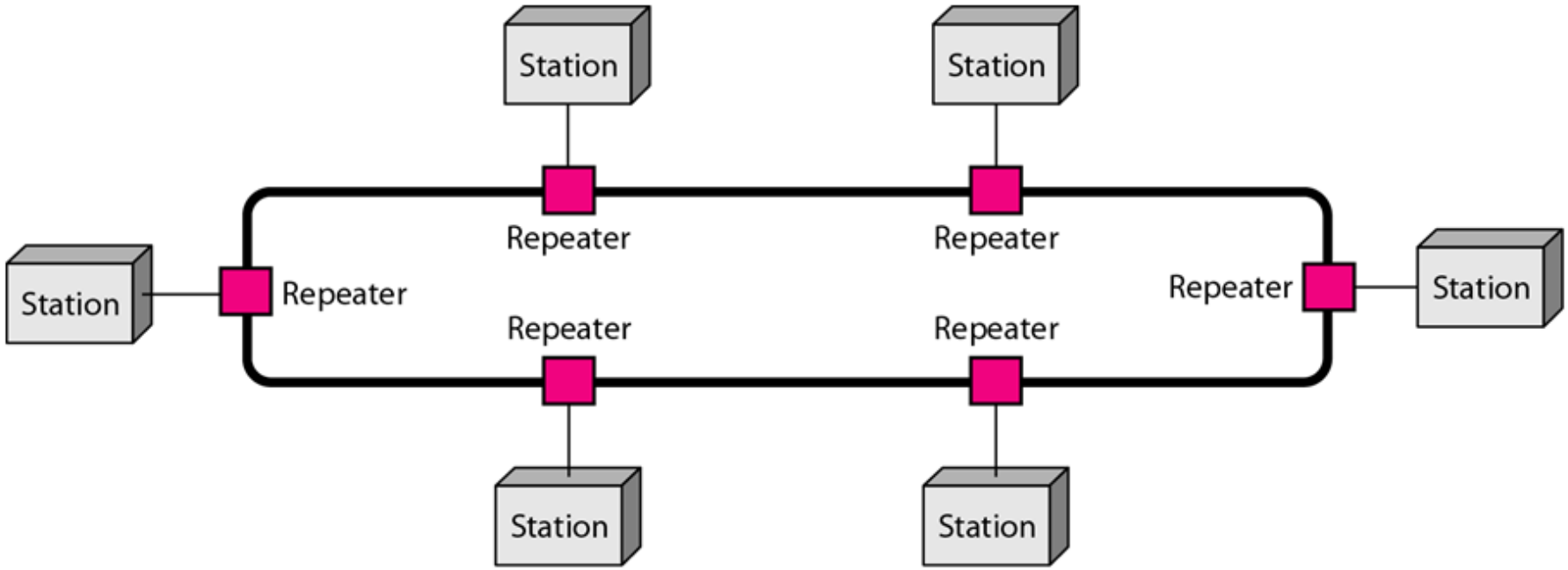
A Star Topology Connecting 4 Stations



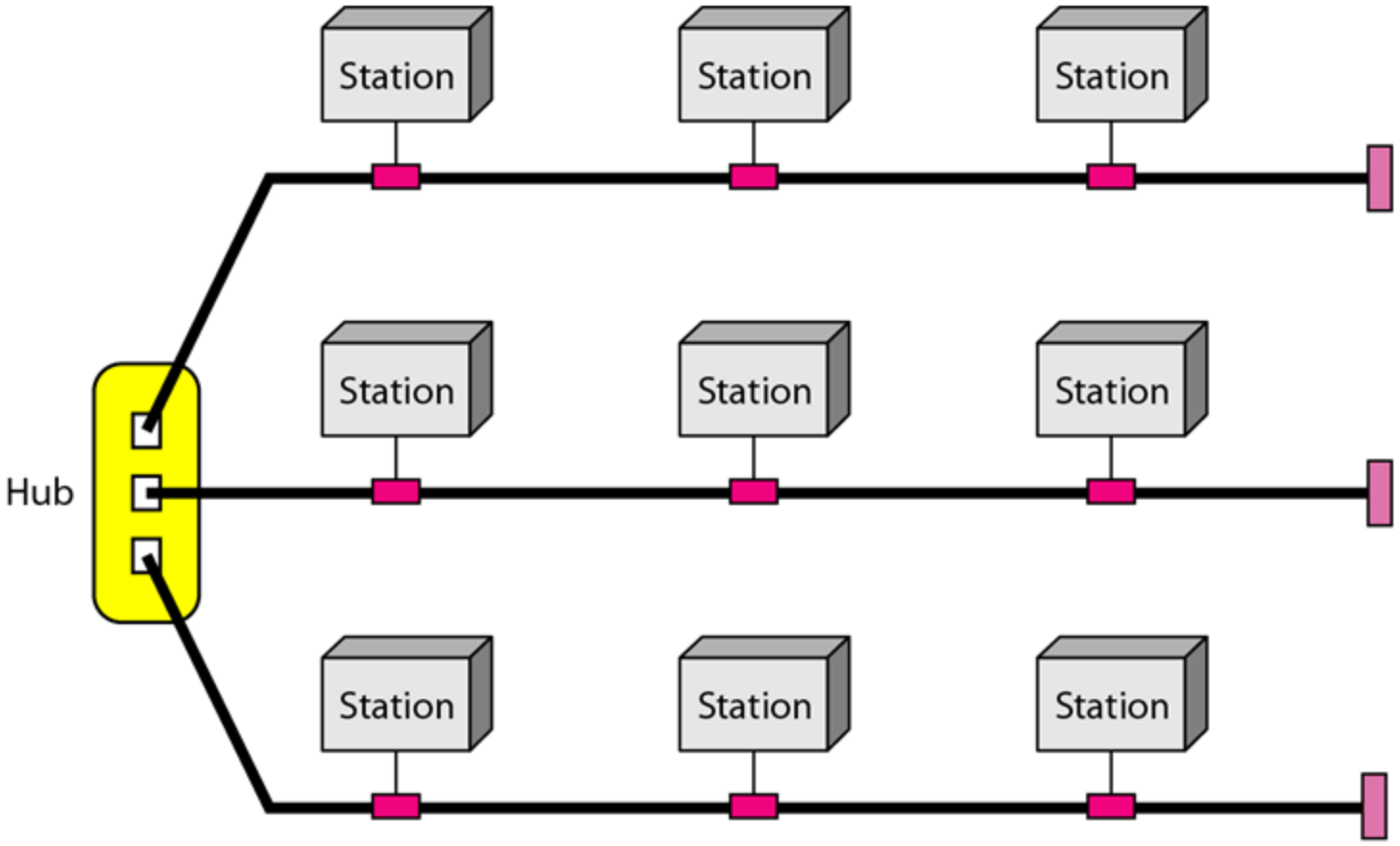
A Bus Topology Connecting 3 Stations



A Ring Topology Connecting 6 Stations



A Hybrid Topology: A Star Backbone with 3 Bus Networks



Home Work

Design a hybrid topology that contains a bus backbone with 2 ring networks and a star network.

Thank You