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**Class:** B.Sc. Computer Science (Entire)- III

**Semester : 5**

**Course Title:** Data Communication

# UNIT 1

## Data Communication

### Data Communication Characteristics

**1. Delivery:** The system must deliver data to the correct destination.

**2. Accuracy:**

- Data delivered accurately.
- Altered data which left uncorrected are unusable.

**3. Timelines:**

The system must deliver data in timely manner without delay (real-time).

## Data Flow in Communication

- **Simplex** : one direction only.



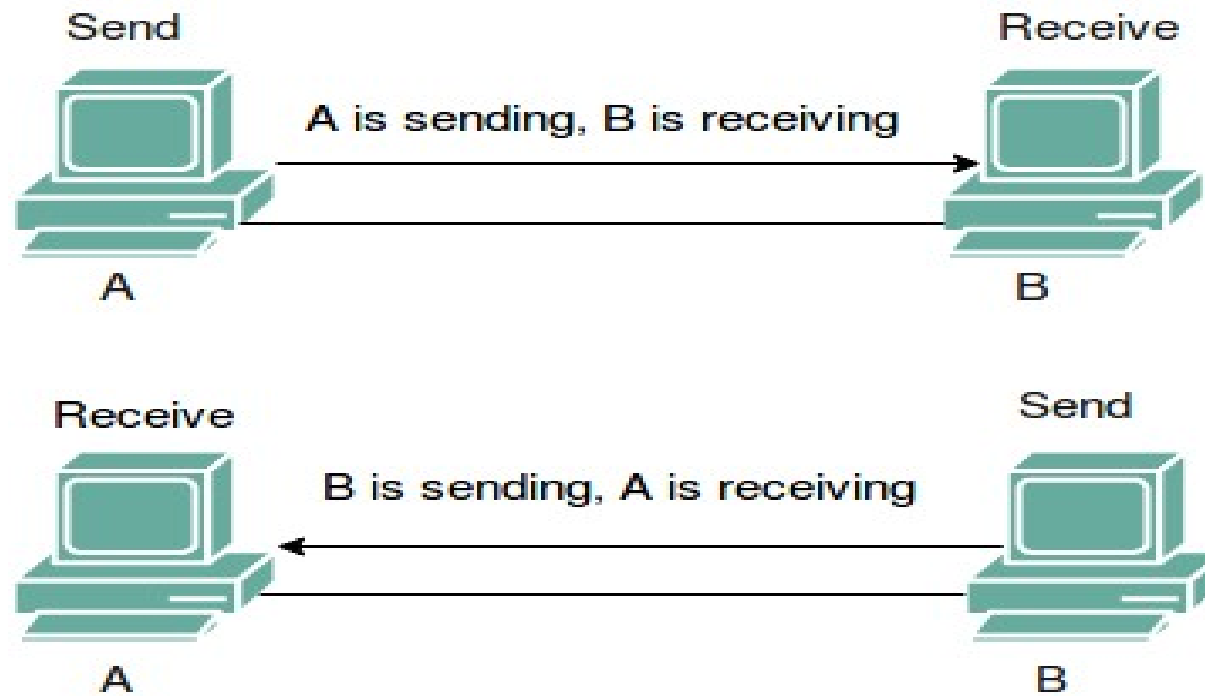
Remote Control



TV

- Always one side sender and another side receiver.

- **Half-Duplex: two-way alternate.**



# Data Flow in Communication

- **Half-Duplex:** two-way alternate.

Walki-Talki



In different time

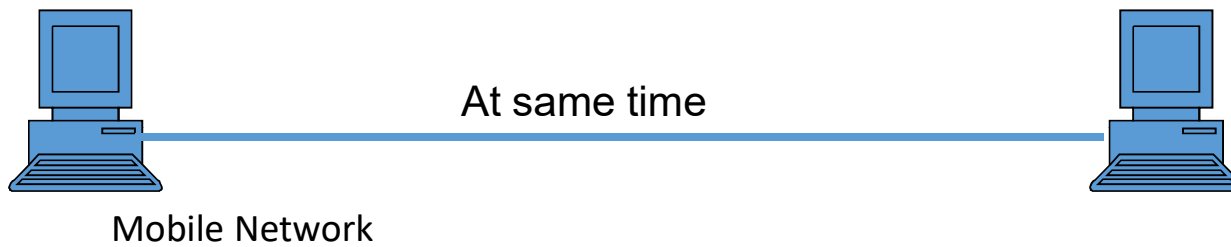


- Each side maybe sender or receiver but not a same time.

# Data Flow in Communication cont.

- Duplex: two-way concurrent.

Computer network



- Each side sender and receiver at same time.

# Network

- **A Network** is a set of node connect together by communication link to sharing of resources and to transmit information.
- **Node:** Computer, Printer, Scanner, Software , PDA, etc.
- **Information:** text, voice, picture, etc.

# Advantages of Network

- Easy Communication and Speed
- Ability to share files, Data and Information
- Sharing Hardware
- Sharing Software
- Security
- Speed



# Disadvantages of Network

Breakdowns and possible loss resources

Expensive to build

Security Threats

Bandwidth Issue

# Network Components

- ❑ Transmission media (wired, wireless ).
- ❑ Network Operating System (NOS).
- ❑ Network Interface Card (NIC).
- ❑ Network Hardware:-
  1. Hubs.
  2. Switches.
  3. Routers.
  4. Gateways.
  5. Access Point.
  6. Repeaters.

# Network Classification

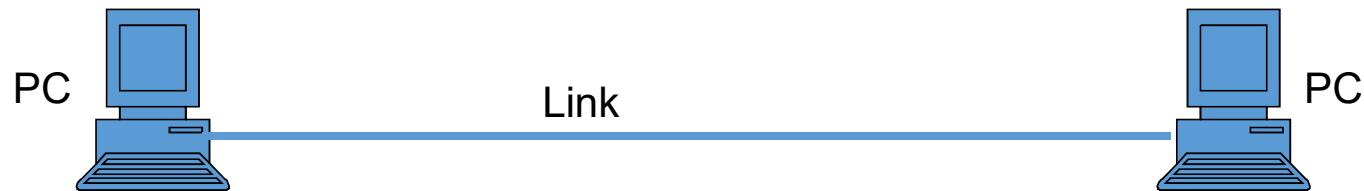
- Upon the transmission medium (type of connection):-

1. Point-to-point:

2. Multipoint:

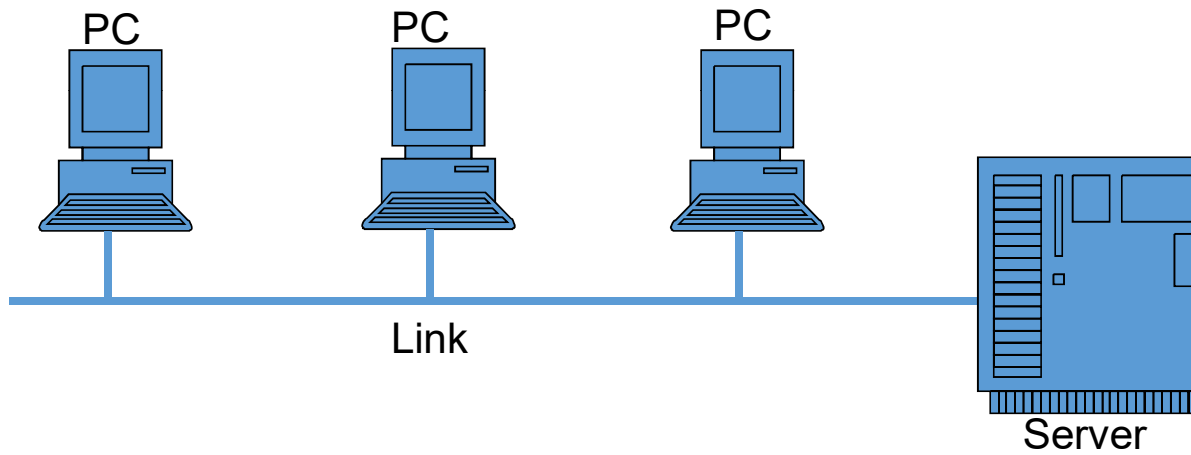
# Point-to-Point

- A pair of nodes connected together via dedicated link.



# Multipoint

- Number of node connected and share a single link.



# Network Classification

Upon the scale (size):-

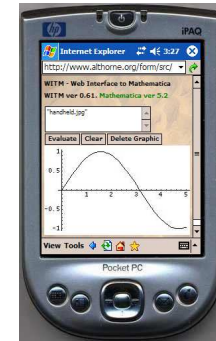
1. PAN (Personal Area Network).
2. LAN (Local Area Network).
3. CAN (Campus Area Network).
4. MAN (Metropolitan Area Network).
5. WAN (Wide Area Network).

# PAN (Personal Area Network)

- PAN is a short-distance network design to individual user (person).
- PAN may be contain:- printer, mobile, computer, wireless printers , PDA, etc.
- components of PAN connected together via Bluetooth , USB cable ,IrDA (infrared), etc.



Wireless Printer



Bluetooth

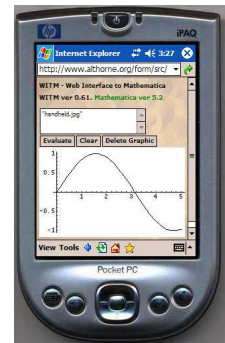


IrDA

USB Cable



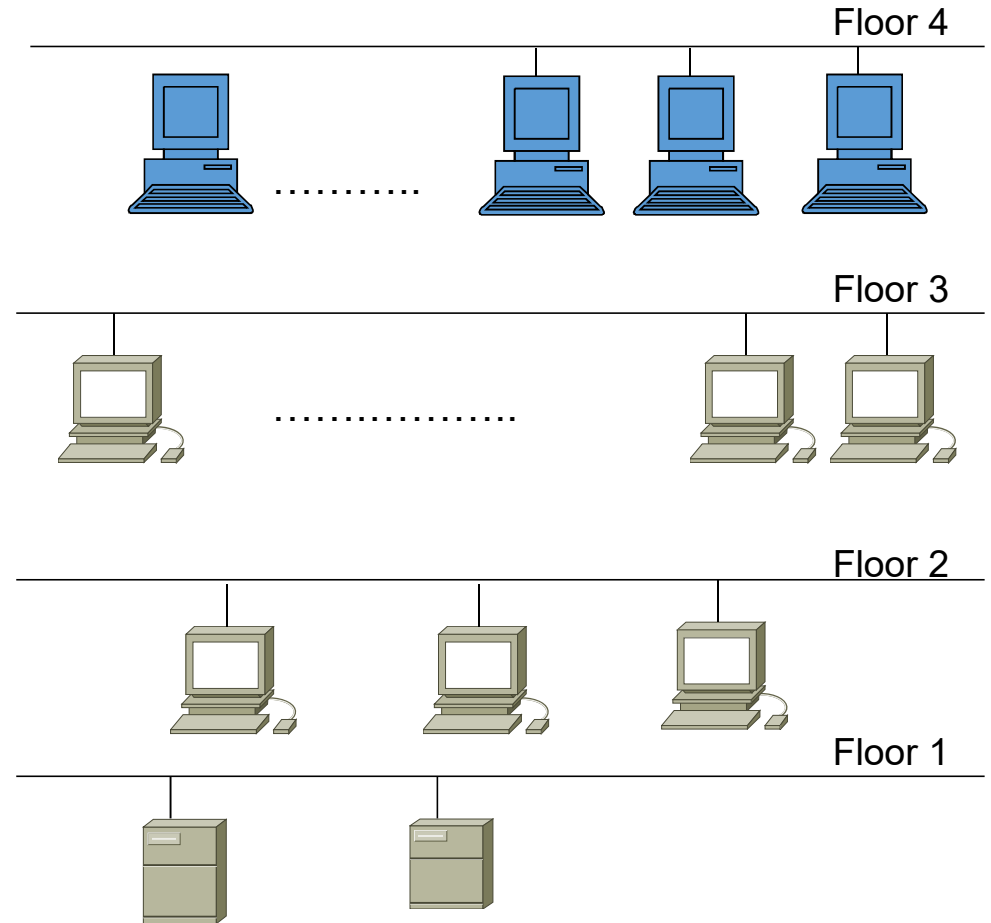
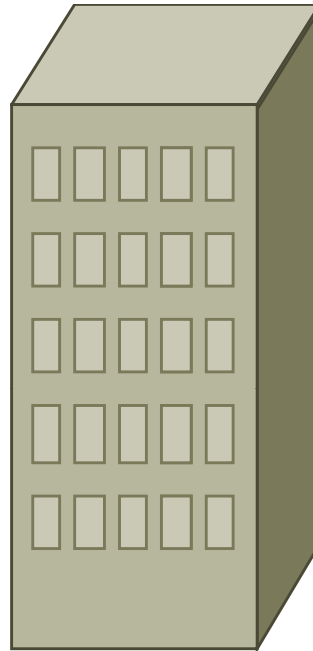
Scanner



PDA

# LAN (Local Area Network)

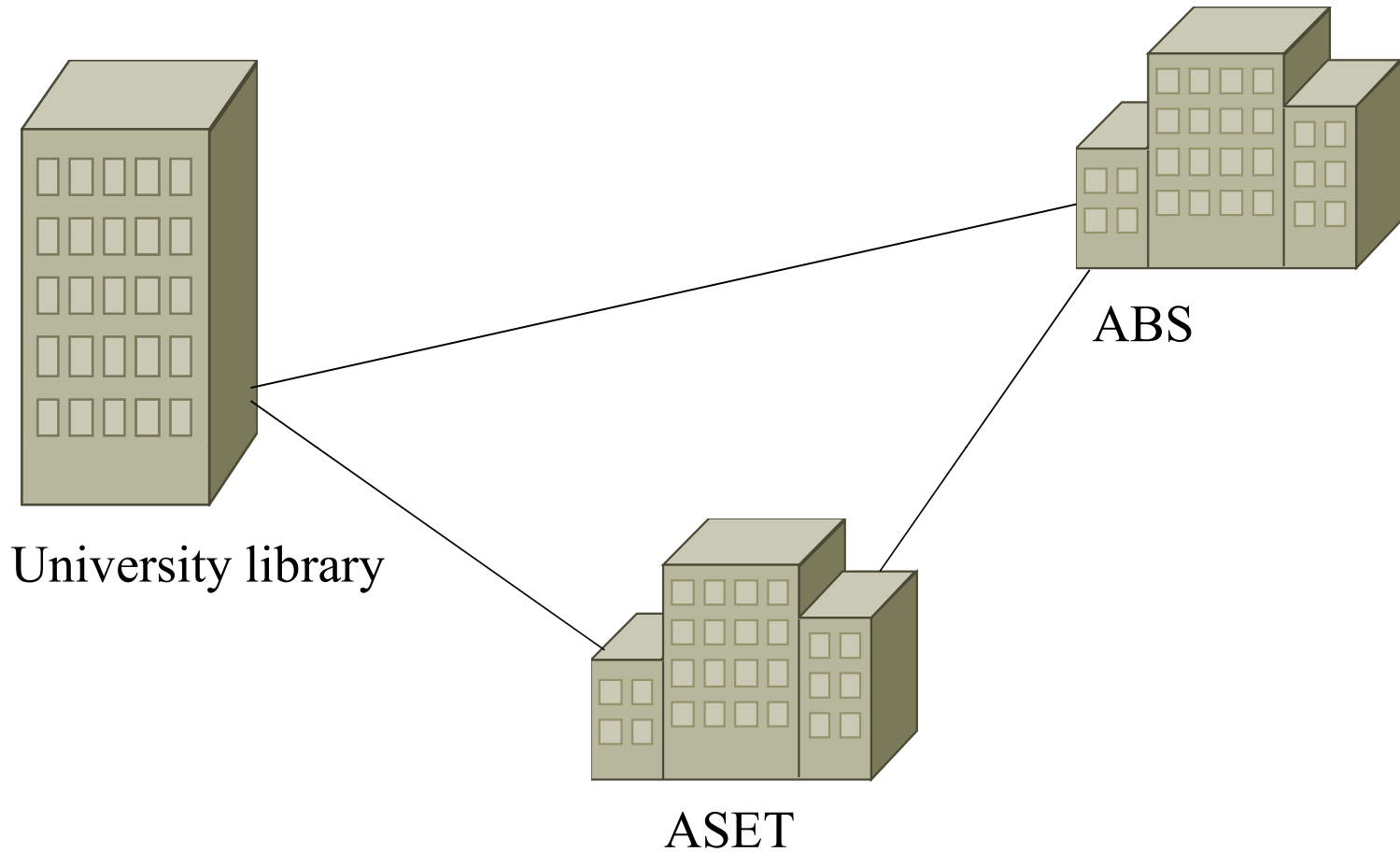
- A LAN is a group of node connected together in a small specific area.
- LAN may be contain workstations, computers, scanner, printers, servers, etc.





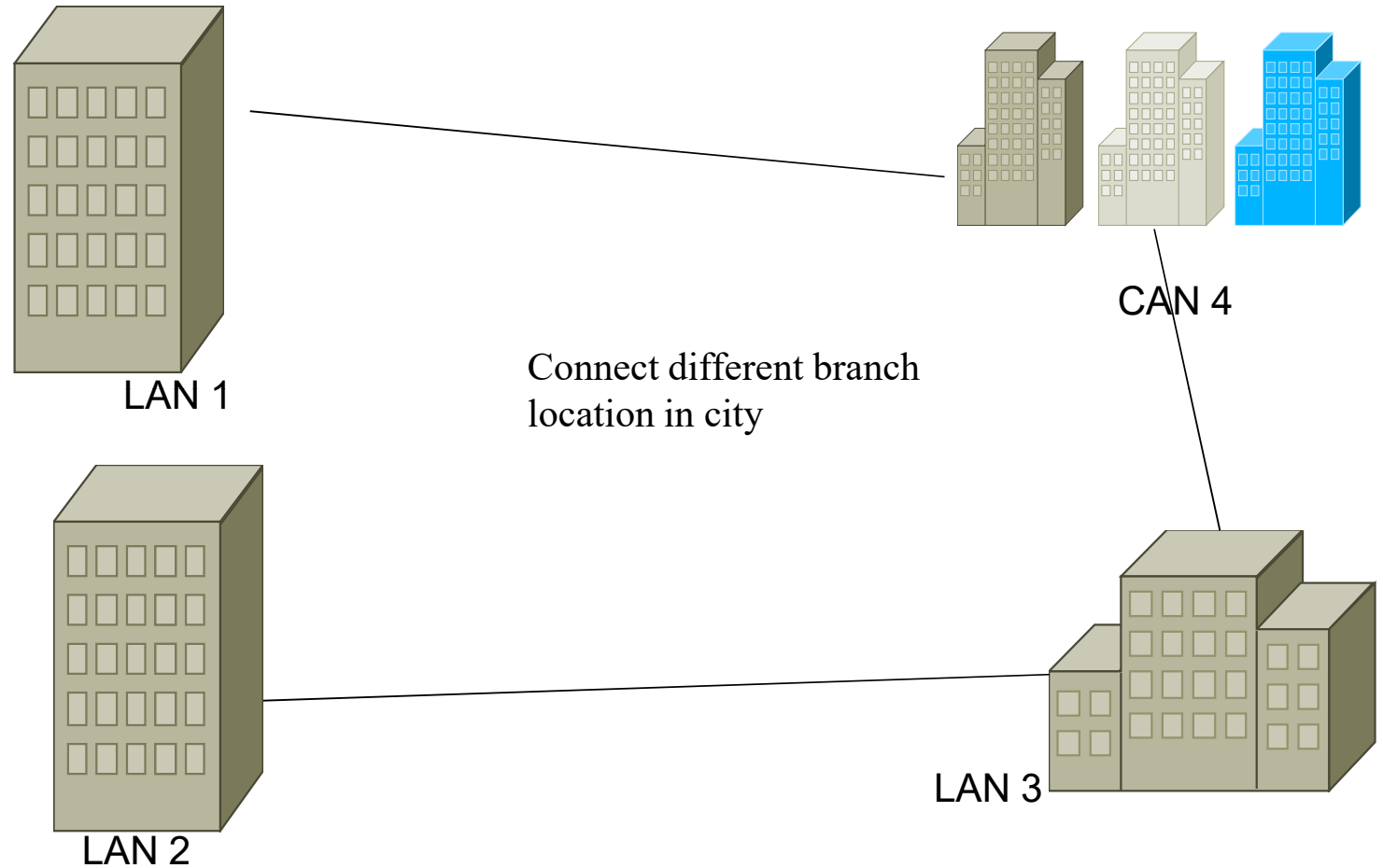
## CAN (Campus Area Network)

- A CAN is a group of interconnection LAN within limited geographical area.
- A CAN using in school campus, military base, university campus ,etc.



## MAN (Metropolitan Area Network)

- A MAN is a large computer network used to connect between LAN in different locations (cities).
- A MAN is a group of nodes connected together over a city.



## WAN (Wide Area Network)

- A WAN is a computer network that covers large geographical area.
- WANs are used to connect types of networks together.



***THANK YOU...***