

DATA COMMUNICATION ASSIGNMENT

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Real Life Scenarios where Data Communication concepts are used (communication modes):

In Real-Life Dataflow happens using Different Communication Modes described in Data Communication. Such as Simplex, Half-Duplex, and Full-Duplex.

1. Simplex Mode:

In Simplex mode, communication is unidirectional, similar to a one-way street. Only one of the two devices on a link can transmit, while the other can only receive. Here are some real-life examples:

Broadcasting and Television:

Television broadcasting is a classic example of simplex communication. TV stations transmit signals to viewers' homes, and viewers can only receive the broadcast. There is no feedback or interaction from viewers to the station.

Public Address Systems (PA Systems):

PA systems in airports, train stations, or stadiums use simplex communication. The announcer broadcasts information, and the audience listens without providing any input.

Radio Transmissions:

AM/FM radio stations transmit music, news, and talk shows to listeners. Listeners can't send messages back to the station.

2. Half-Duplex Mode:

In Half-Duplex mode, each station can both transmit and receive, but not simultaneously. Here are some examples:

Walkie-Talkies:

Walkie-talkies used by emergency responders, security personnel, or outdoor enthusiasts operate in half-duplex mode. Users take turns transmitting and listening.

CB Radios:

Citizens' Band (CB) radios allow truckers, travelers, and hobbyists to communicate. Users switch between transmitting and receiving.

Ethernet Hubs (Legacy):

In older Ethernet networks, hubs operated in half-duplex mode. Devices connected to a hub shared the same communication channel and took turns sending data.

3. Full-Duplex Mode:

In Full-Duplex mode, both stations can transmit and receive simultaneously. Here are examples:

Telephone Networks:

Traditional telephone conversations occur in full-duplex mode. Both callers can speak and listen simultaneously.

Cellular Networks:

Mobile phones use full-duplex communication. You can talk while hearing the other person's voice in real time.

Computer Networks (Ethernet Switches):

Modern Ethernet switches operate in full-duplex mode. Devices connected to a switch can send and receive data simultaneously without collisions.

Video Conferencing:

Video conferencing tools (e.g., Zoom, Microsoft Teams) allow participants to see and hear each other in real time, enabling full-duplex communication.