UNIT II DATA LINK LAYER (Puzzles)

Introduction

Puzzle: Identify the Concept

- Data transmission between two computers over a network involves several key components and processes. Can you name the primary purpose of data communication?
- **Answer:** To transmit data from one place to another

Framing

Puzzle: Framing Method

- In data communication, a method is used to divide data into manageable units for transmission. This method involves adding headers and trailers to the data. What is this method called?
- **Answer:** Framing

Flow and Error Control

Puzzle: Flow Control Technique

- Imagine you are sending a large file over a network, and you need to ensure that the receiver can handle the data flow without being overwhelmed. Which technique would you use to manage the data transmission rate?
- **Answer:** Flow Control

Noiseless Channels

Puzzle: Characteristics

- In a communication system where the transmission occurs without any noise or interference, what is the key characteristic that ensures data integrity?
- **Answer:** No data errors

Noisy Channels

Puzzle: Overcoming Noise

- You are transmitting data over a wireless channel, and you encounter signal interference. Which technique would you use to detect and correct errors introduced by the noisy channel?
- **Answer:** Error Control

HDLC (High-Level Data Link Control)

Puzzle: HDLC Function

- In a network, you need a protocol that provides reliable, error-free communication between connected devices. This protocol operates at the data link layer. What is the name of this protocol?
- **Answer:** HDLC

Point-to-Point Protocols

Puzzle: Protocol Identification

- You are setting up a direct communication link between two computers using a serial connection. Which protocol would you use to establish this point-to-point connection?
- **Answer:** PPP (Point-to-Point Protocol)

Medium Access Sub-layer: ALOHA

Puzzle: ALOHA Efficiency

- In an ALOHA-based network, multiple devices share a communication medium. However, collisions frequently occur. What is the maximum efficiency of the pure ALOHA protocol?
- **Answer:** 18.4%

Medium Access Sub-layer: CSMA/CD

Puzzle: Collision Handling

- In a CSMA/CD network, devices listen to the channel before transmitting data. If a collision is detected during transmission, what action is taken to resolve the collision?
- **Answer:** Transmission is halted, and a jam signal is sent to notify all devices. Then, each device waits for a random backoff time before attempting to retransmit.

LAN – Ethernet IEEE 802.3

Puzzle: Ethernet Standard

- This IEEE standard defines the physical and data link layers for wired LANs. It is the most widely used LAN technology. What is the name of this standard?
- **Answer:** IEEE 802.3

LAN – IEEE 802.5 (Token Ring)

Puzzle: Token Passing

- In a token ring network, a special data packet called a token circulates around the network. What must a device do to transmit data in this type of network?
- **Answer:** The device must wait to receive the token before it can transmit data.

LAN – IEEE 802.11 (Wi-Fi)

Puzzle: Wi-Fi Standard

- This IEEE standard specifies the protocols and technologies for wireless LANs. It is commonly known as Wi-Fi. What is the name of this standard?
- **Answer:** IEEE 802.11