1. What are the roles of data link layer? Point out more than three.

* Framing: Responsible for converting data stream to signal bit by bit, send the data over the underlying hardware. At the receiver, picks up data from hardware which are in the form of electrical signals, assemble them in a recognizable frame format and send to the upper layer
* Addressing
* Synchronization
* Error Control: Detect and attempt to correct error bits in transmission
* Flow Control: Regulate the transfer speed
* Multi-Access: Provides mechanism for accessing shared medias to avoid collisions.

1. How a frame is formed from a stream of bits? Illustrate with some examples.

Diagram

Description automatically generated

* Flag: delimit frame at both ends
* Address: identify the receiver
* Control: specify different frame types
* FCS: frame check sequence (error detecting code)

1. Give some examples of data link protocol (standard).

* Synchronous DLP
* High-level DLP
* PPP
* LAP
* NCP

1. Explain the difference between IEEE802.3 and IEEE802.5 media access technology. Give some  
   features of each standard.
2. Discuss the minimum frame length of IEEE802.3. How the 64-byte minimum length is  
   defined?
3. How the data link address is used? Give some examples?’

* Used to deliver data frame from one network interface to another network interface on the same network
* Source data link address: The physical address of the device that is sending the packet. Initially this is the NIC that is the source of the IP packet
* Destination data link address: The physical address of the network interface of either the next hop router or the destination device

1. Discuss the difference between the bridge and the repeater from the viewpoint of their roles and  
   operations.

* Bridge: Operate at the data link layer, used to connect 2 networks together that uses the same protocol
* Repeater: Operate at the physical layer, used to expand the range of a network