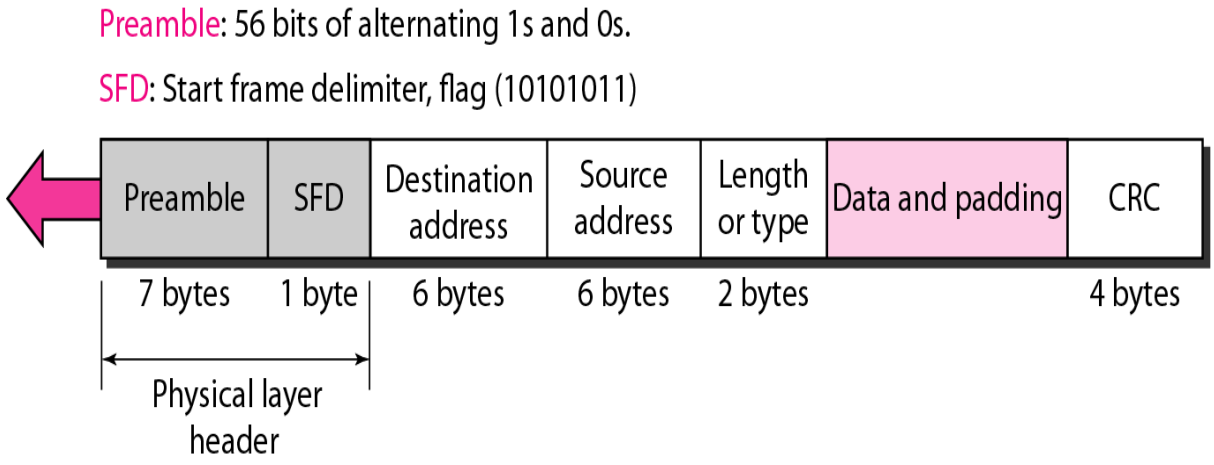
Course Name: A Level (2nd Sem) Subject: DCN

Topic: Ethernet contd. (Frame Format) Date: 22-05-20

Frame Format in Ethernet:

The Ethernet frame contains seven fields: preamble, SFD, DA, SA, length or type of protocol data unit (PDU), upper-layer data, and the CRC. Ethernet does not provide any mechanism for acknowledging received frames, making it what is known as an unreliable medium. Acknowledgments must be implemented at the higher layers. The format of the MAC frame is shown in Figure.



- **Preamble**: The first field of the 802.3 frame contains 7 bytes (56 bits) of alternating 0s and 1s that alerts the receiving system to the coming frame and enables it to synchronize its input timing. The pattern provides only an alert and a timing pulse. The 56-bit pattern allows the stations to miss some bits at the beginning of the frame. The preamble is actually added at the physical layer and is not (formally) part of the frame.

- **Start frame delimiter (SFD)**: The second field (1 byte: 10101011) signals the beginning of the frame. The SFD warns the station or stations that this is the last chance for synchronization. The last 2 bits is 11 and alerts the receiver that the next field is the destination address.

- **Destination address (DA):** The DA field is 6 bytes and contains the physical address of the destination station or stations to receive the packet.

- **Source address (SA**): The SA field is also 6 bytes and contains the physical address of the sender of the packet. We will discuss addressing shortly.

- **Length or type:** This field is defined as a type field or length field. The original Ethernet used this field as the type field to define the upper-layer protocol using the MAC frame. The IEEE standard used it as the length field to define the number of bytes in the data field. Both uses are common today.

- **Data:** This field carries data encapsulated from the upper-layer protocols. It is a minimum of 46 and a maximum of 1500 bytes.

- **CRC**: The last field contains error detection information, in this case a CRC-32.

Exercises:

A. **What is the frame format in Ethernet? Name each of the field in Ethernet frame.**

B. **What are the roles of Preamble and SFD fields in Ethernet?**