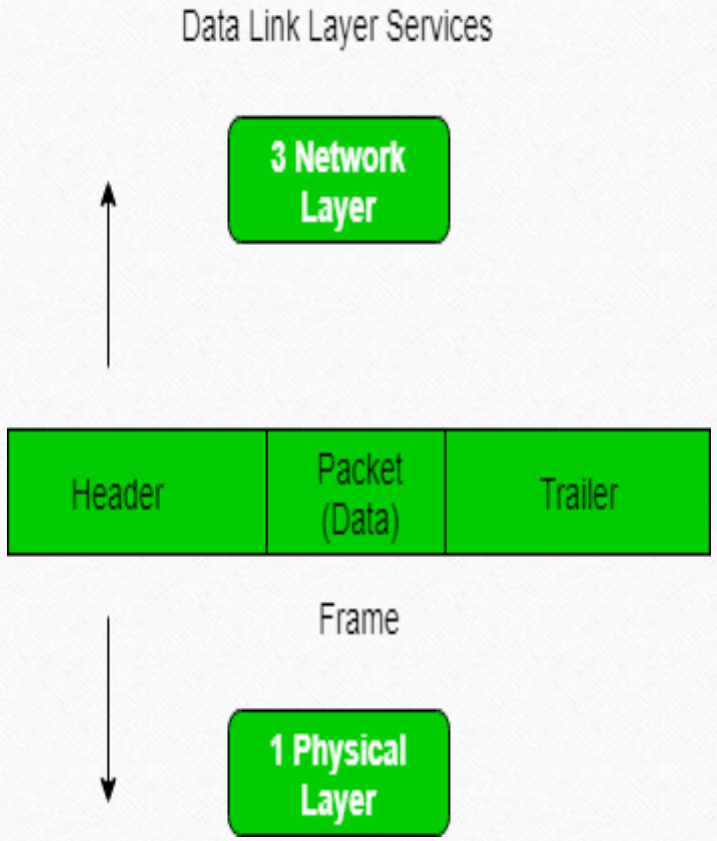
Framing

Prof. Amit K. Nerurkar
Assistant Professor
Department of Computer Engineering
Vidyalankar Institute of Technology, Wadala

Framing

- Data-link layer takes the packets from the Network Layer and encapsulates them into frames. If the frame size becomes too large, then the packet may be divided into small sized frames to make efficient flow control and error control a wide range of users.

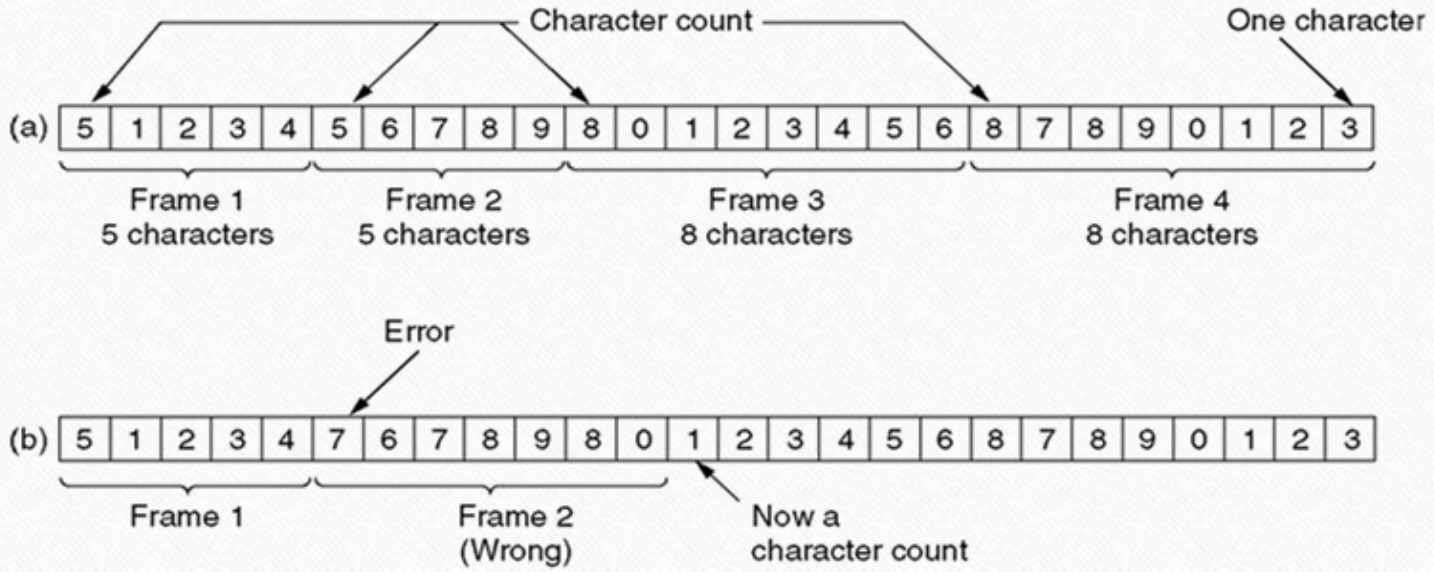


https://www.geeksforgeeks.org/wp-content/uploads/1-30.png

Types of Framing

1. Byte count.
2. Flag bytes with byte stuffing.
3. Flag bits with bit stuffing.
4. Physical layer coding violations.

Byte Count



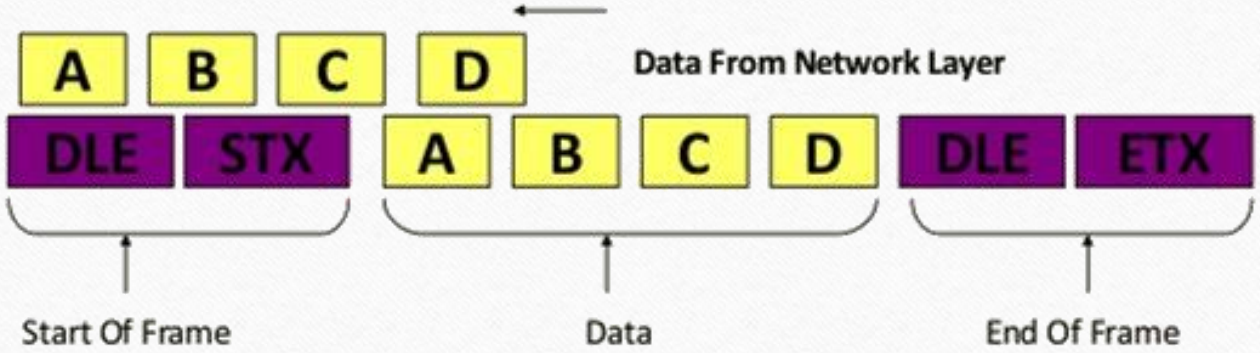
A character stream. (a) Without errors. (b) With one error.

Framing method uses a field in the header to specify the number of bytes in the frame.

Flag bytes with byte stuffing

Byte-Stuffing(Character-Stuffing)(1)

- In this method, Frame starts & end with a special character that mark the beginning & end of frame.
- Each character begins with the **ASCII** character sequence **DLE STX** (data link escape start of text) and end with **ASCII** character sequence **DLE ETX** (data link escape end of text).



Starting & Ending Characters Added By Link Layer

Flag bytes with byte stuffing

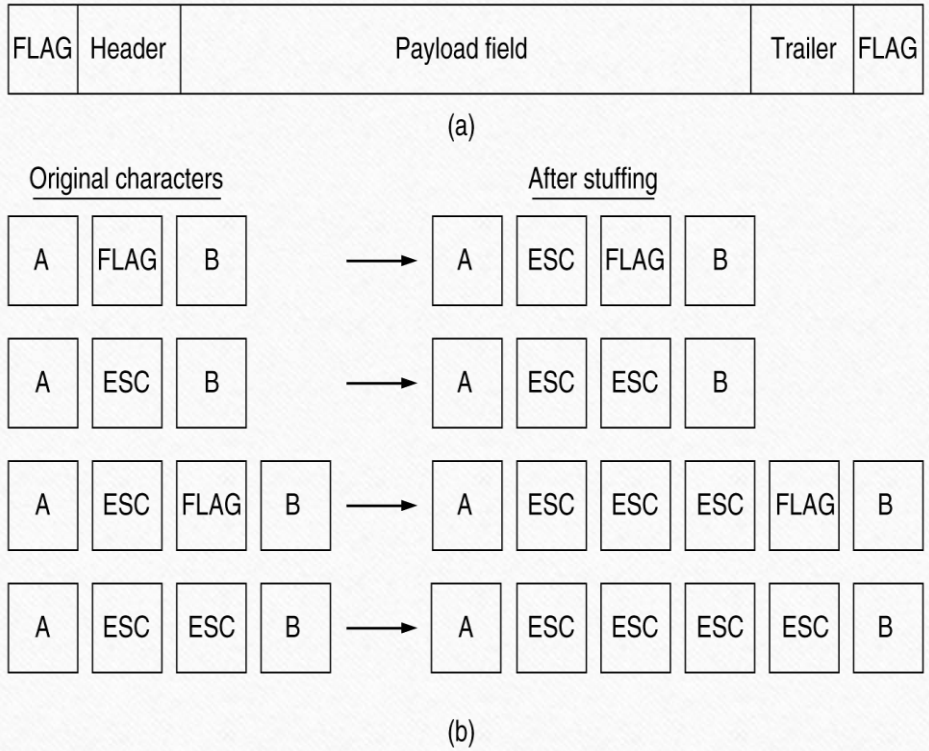
VIT Vidyalankar Institute of Technology Accredited A+ by NAAC

What if flag byte itself is in the data?

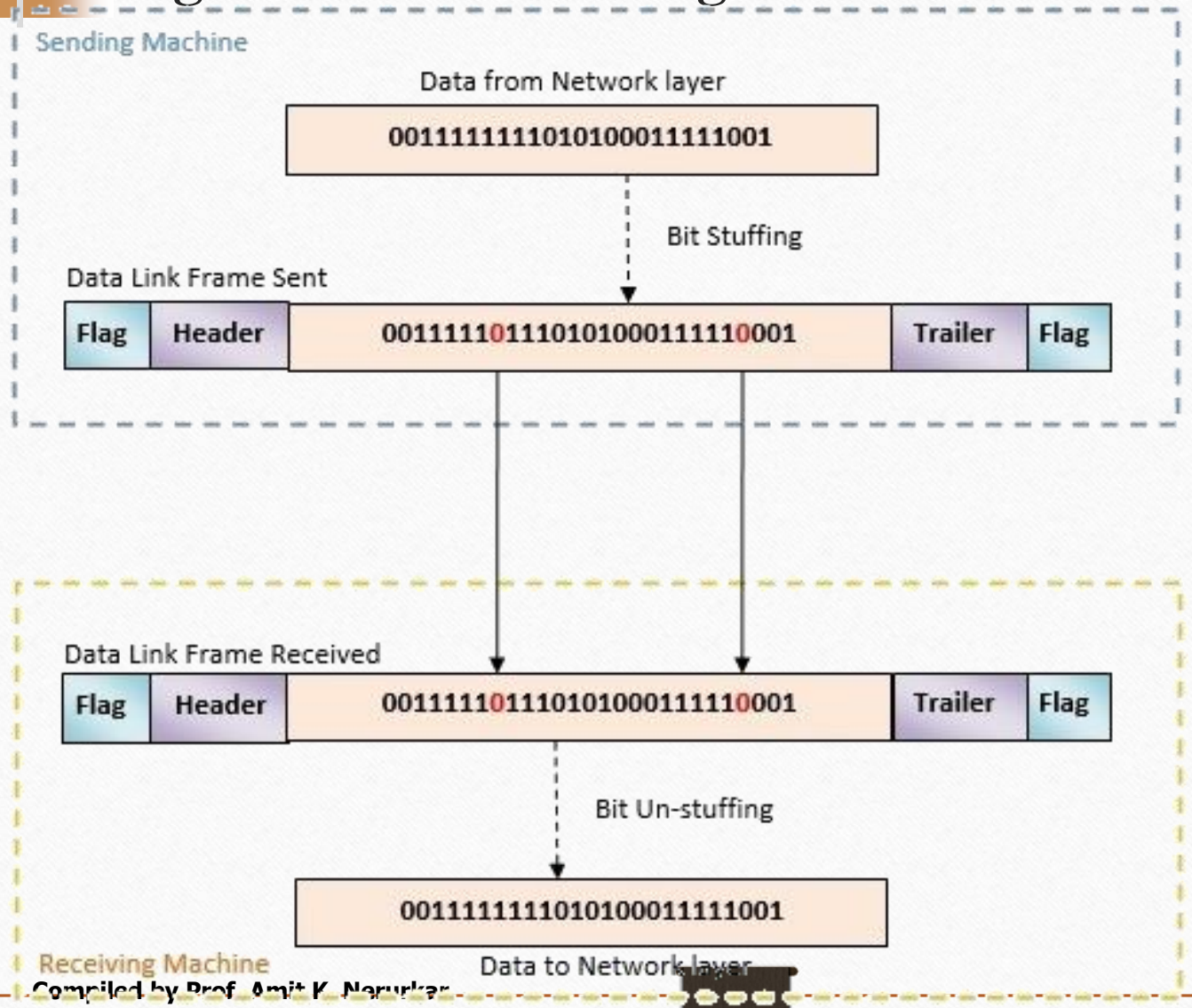
Insert special escape byte (ESC) before each FLAG in data. Removed at far end. This is called byte stuffing or character stuffing.

What if ESC itself is in data?

Insert another ESC before it.



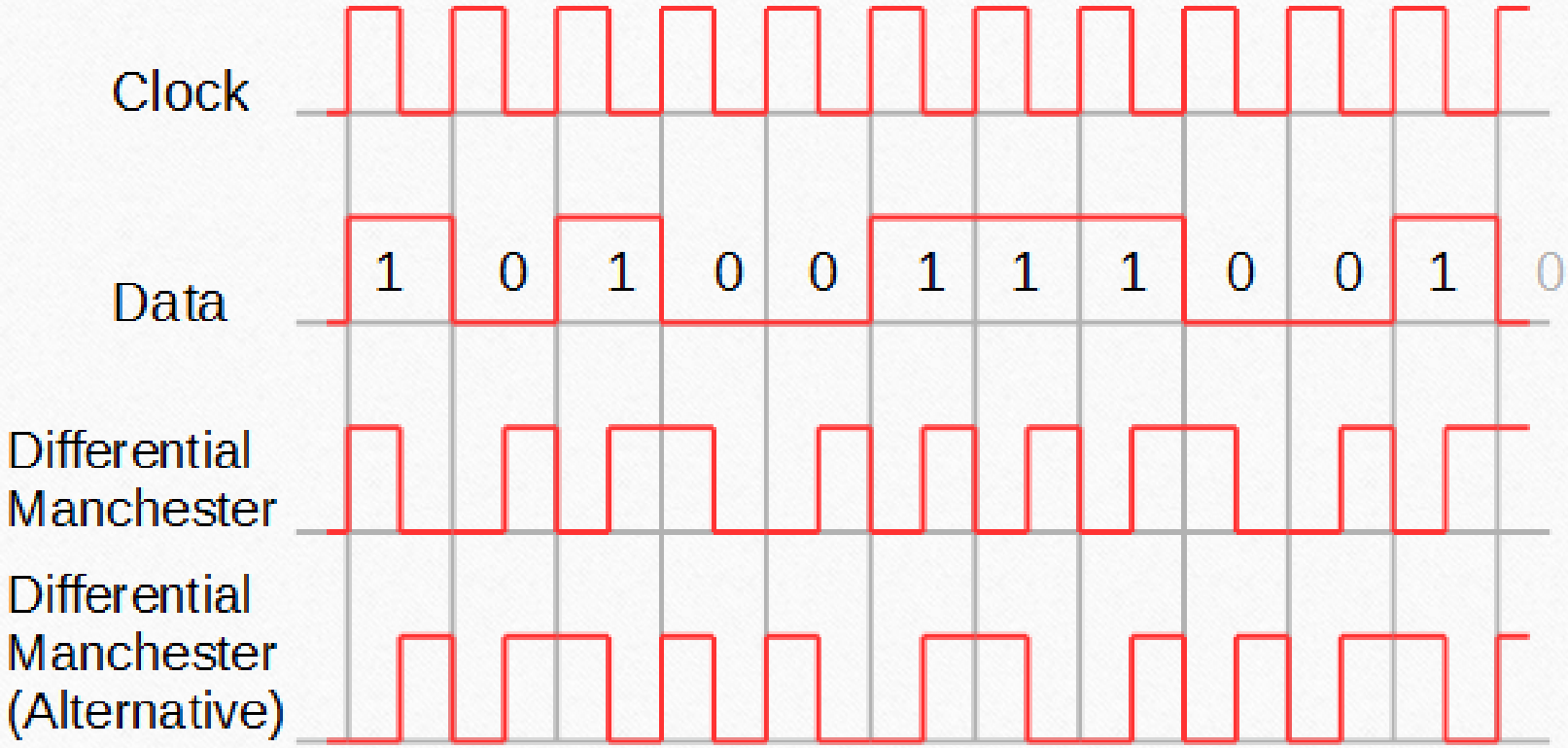
Flag bits with bit stuffing



Bit stuffing is the insertion of one or more bits into a transmission unit as a way to provide signaling information to a receiver.

Physical Layer Violations

Coding



Thank You

Name: *Amit K. Nerurkar*

Designation: *Assistant Professor*

College: *Vidyalankar Institute of Technology*

Email: *amit.nerurkar@vit.edu.in*

VIT | Vidyalankar Institute of Technology
Accredited A+ by NAAC