DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SUBJECT CODE: 19CS2109
COMPUTER NETWORKS AND SECURITY

FRAMING#1

Date of the Session: ___/___/___ **Time of the Session: _____to_____**

Learning outcomes:

- Understand the need of Framing.
- Understanding the working principle of Character count, Byte Stuffing(Character Stuffing),Bit Stuffing

IN-TUTORIAL:

1. a) Shawn Mendes wants to send a message "97652 321875 @" to his friend. While sending the message he used character count Framing method in order to re-construct the same frames at receiver's end. Following is the data sent by Shawn Mendes after using Character Stuffing. Find the number of frames at received at the receiver's end and illustrate the independent frames.

   Assume that the character count of frame-2 is changed to 6 instead of 7, due to bit errors. Now write the frames when there occurs an error in the character count.

6	9	7	6	5	2	**7**	3	2	1	8	7	5	**2**	@

Solution:

2. SCREAM indicates the beginning, and the ending of frames. Illustrate what happens if the sequence SCREAM is found in the message byte, and how this scenario is avoided with the help of character stuffing.(Assuming the stuffing byte to be 'ESC')
   Note: Neglect spaces between words.

   Frame: I SCREAM YOU SCREAM WE ALL SCREAM FOR AN ICE CREAM

   Solution:

3. Codechef wants to send a message "Your Submission is flagged" to Millie. Below is the data after performing Character Stuffing. Find the data passed to Network Layer at receiver's side and also explain the greatest disadvantage in following the Character Stuffing, with the help of above example.

   Start of Flag byte- FLAG STX
   End of Flag byte- FLAG ETX

FLAG	STX	YOUR	SUBMISSION	IS	FLAG	FLAG	GED	FLAG	ETX

Solution:

4. (i) Nemo lost her way and wants to send her friend Darla a code message which helps to explain Nemo's situation to her. The code word is 201.Perform bit stuffing on the above code word.(flag=01111110).
   (ii) INPUT STREAM = 0110111111100111110111111111110000 and FLAG=011111110.
   Perform bit stuffing.
   (iii) Consider data = 011011111 and assume Flag=01110
   Perform bit stuffing and write the final data after bit stuffing. Also explain the disadvantage in taking such type of Flag values.

Solution:

POST-TUTORIAL:

1. Hannah Baker sent a message to Clay Jensen. Divide the message(data) into frames of sizes 4, 5, 2, 7, 6 respectively using Character Count method and write the final data.

   Data: **WORRY LESS SMILE MORE!**
   Note: Neglect spaces between words.

   Solution:

2. Donald noticed Mickey being lazy all the time. So he decided to send a message to Mickey. Data(message) after being character stuffed is given below. Find the data passed to network layer on the Mickey's side.

DLE	STX	DON'T	BE	IDLE	DLE	DLE	ETX

Solution:

3. Simba wants to send some data to Nala. So, here are the data bits:
   Data = 1110001100111 and FLAG→ 01111110
   Now, find data after bit stuffing?

   Solution:

4. If STUFFED DATA = 01111110 11101111101111101011110 01111110 and FLAG = 01111110 then, find data before bit stuffing?

   Solution:

(For Evaluator's use only)

Comment of the Evaluator (if Any)	Evaluator's Observation Marks Secured: _____ out of _____ Full Name of the Evaluator: Signature of the Evaluator Date of Evaluation: