Computer Networks
Fall 2022
Assignment # 3 (Section – 5A)

Due Date: - 18th October, 2022
Submission Mode & Time: Handwritten solutions to be submitted during the lecture.

Please note the following:

1. No exceptions to the above date and time will be allowed. Inability to submit the assignment by the required time will result in zero marks.

2. To ensure self-completion of assignments and discourage plagiarism, the instructor or the relevant TA may randomly contact you and ask for an explanation of your answers. Where plagiarism and/or cheating is evident, you will be referred to the departmental disciplinary committee. In extreme cases of plagiarism an F may be awarded immediately with further referral to university disciplinary committee.

3. All solutions must be **hand-written.**

4. **Assignment Solution Submission**: In case of **in person / physical lectures at the campus**, hard copy of the hand-written assignment's solutions will be submitted by **hand** by each student to the Instructor / TA directly during the lecture on the due date.

Use the following text for completion of this part of the assignment:
Computer Networking - A Top-Down Approach 6th Edition by Kurose & Ross.

PART I:
Solve the following problems from the back of **Chapter 3**. Every Question has equal marks i.e., **(5*5 =25 marks)**

Review Questions:

R4, R8, R11

Problems:

P7, P10

PART II:

Q2: Considering TCP reliable transfer mechanism, suppose that a TCP segment with sequence number 500 having 46 bytes was sent from A to B, what will be the acknowledgement number to be sent back from B to A provided segment was received without any issue. Write the answer and justify it. **(5 marks)**

Q3: Suppose you have the following 2 bytes: 11111010 and 01100101. Compute UDP checksum assuming that UDP uses 8- bit words in computing the checksum. Also state how will the receiver know whether an error has occurred or not? **(5 marks)**

Q4. Suppose Host A sends two TCP segments back-to-back to Host B over a TCP connection. The first segment
has sequence number 90; the second has sequence number 110. **(4 Marks)**

(a.) How much data is in the first segment?

(b.) Suppose that the first segment is lost but the second segment arrives at B. In the acknowledgment that
Host B sends to Host A, what will be the acknowledgment number?