Computer Networks
SPRING 2024
Assignment#1 (6A)

Due Date: Tuesday, 13th February, 2024
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.

PART-1

Use the following text for completion of this part of the assignment:
Computer Networking - A Top-Down Approach 8th Edition by Kurose & Ross.

Solve the following problems from the back of **Chapter 1**. Every Question has equal marksi.e.
(5*9 = 45 marks) **[CLO 1]**

Review Questions:

R11, R12, R19, R24

Problems:

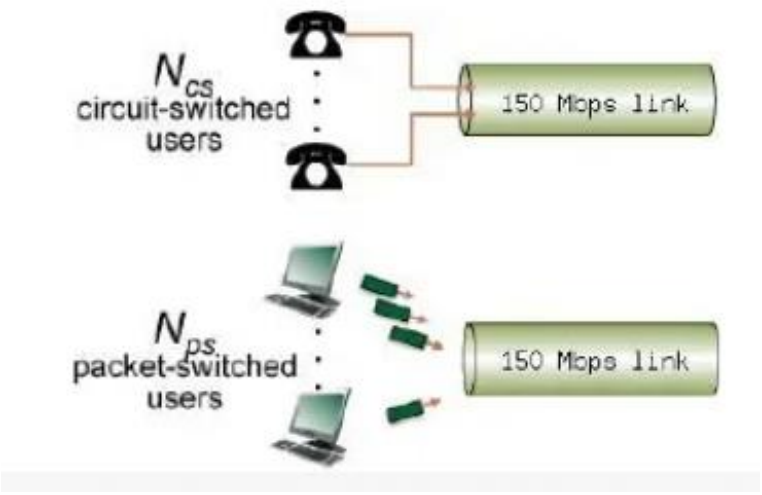
P6, P10, P20, P25(only a, b, c part), P3

PART-2

(2.5*2 =5 marks) [CLO 1]

Consider the two scenarios below:
A circuit-switching scenario in which Ncs users, each requiring a bandwidth of 25 Mbps, must share a link of capacity 150 Mbps.

- A packet-switching scenario with Nps users sharing a 150 Mbps link, where each user again requires 25 Mbps when transmitting, but only needs to transmit 30 percent of the time



Answer the following:

1. When circuit switching is used, what is the maximum number of circuit-switched users that can be supported? Explain your answer.
2. Now suppose that packet switching is used. Suppose there are 11 packet-switching users (i.e., Nps = 11). Can this many users be supported under circuit-switching? Explain.