The LNM Institute of Information Technology, Jaipur
Computer Networks Lab
Lab Assignment 5

Objective: Implement the concepts of packet loss, retransmission, and timeout for the communication among the nodes in the network.

Task: Update behavioural design of the network implemented in Lab 4: Task 2 (Protocol Design and Simulation) with following functionalities:

- **Network Layer:** Define *number of packets* as a state variable (**Hint:** TicToc Tutorial: Step 3).
- **Data-Link Layer:** Include 10% packet loss at the destination end (**Hint:** TicToc Tutorial: Step 7).
- **Data-Link Layer:** Perform retransmission of packets if packet loss occurs. After receiving a data PDU, the destination sends an ACK PDU. If the ACK PDU does not reach the source before a certain time period, known as the *timeout*, the source sends the same data PDU again. The *timeout* event is reset after each data PDU transmission. (**Hint:** TicToc Tutorial: Steps 8 and 9).

Goal:

1. The students must know about creation of packets at the different layers of a node. Similarly, the students must be able to implement the concepts of packet loss, retransmission, and timeout mechanisms for the communication carried out in the network.
2. The students must understand and implement the event logging and viewing the results of the log in OMNeT++ environment.
3. Working with keywords: par(), gate(), cMessage, scheduleAt(), isSelfMessage(), send(), setPID(), getPID(), setPType(), getPType(), setSrc(), setDest(), cancelEvent(), encapsulate(), decapsulate(), check_and_cast().

Submission Instructions:

1. Submit the code, result and screenshot of the results obtained as a zip file named “rollno.zip” on Moodle for evaluation. No other forms of submission will be accepted for the evaluation.

2. Submit it by the deadline, failing which 2 marks will be deducted. Refrain from copying the answers strictly. It is to be noted that the originality of the submitted files will be checked. 1 mark will be deducted for all those answers which are the same, does not matter whether it is original or copied ones.