CSE/PC/B/S/314 Computer Networks Lab

CO3: Design and implement medium access control mechanisms within a simulated network environment using IEEE 802 standards.

Assignment 3: Implement p-persistent CSMA technique with collision detection.

Code demonstration due on: 16-20 September 2024 (in your respective lab classes)
Report submission due on: 23-27 September 2024 (in respective lab classes)
Softcopy of the report to be uploaded in the drive.

Language: You can write the program in any high level language like C, C++, Java, Python etc.

Please note that you may need to use these schemes separately for other applications (assignments).

Use the same sender-receiver design as previous assignments.

In this assignment, you have to implement a p-persistent CSMA technique with collision detection. Measure the performance parameters like throughput (i.e., average amount of data bits successfully transmitted per unit time) and forwarding delay (i.e., average end-to-end delay, including the queuing delay and the transmission delay) experienced by the CSMA frames (IEEE 802.3). Consider adding a Collision Detection module at the sender side. This will randomly inject collisions in the system.

Test the above schemes for the following cases (not limited to).

i) Plot the comparison graphs for throughput and forwarding delay by varying p.

ii) Compare efficiency of the above approach by varying p.

State your observations on the impact of performance of CSMA-CD in different scenarios.