Assignment 3: Implement p-persistent CSMA and CSMA/CD.

Submission due: *26th Feb -2 March* **2018**

CSMA is a media access control protocol used on shared network topologies like Ethernet to control access to the network. When a station attached to the network wants to transmit data, it first listens to the channel to see if anyone else is transmitting at that moment. If the channel is busy, the station waits for a back off time and checks again. If the channel is idle, it transmits the data. If a collision occurs while transmitting, the station waits for a back off time and attempts to transmit again. When the station transmits the data unconditionally given that the channel is idle, is called 1-persistent. When the station transmits the data with a probability p given that the channel is idle, is called p-persistent.

In this assignment, you have to implement followings

1) Implement p-persistent CSMA with exponential backoff and additive backoff. 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). Plot the comparison graphs for throughput and forwarding delay by varying p. State your observations on the impact of different data rates for exponential/additive backoff along with ppersistent CSMA.
2) Add the collision detection part to the above implementation. Vary the probability of frame collision on the given channel.