ECE 358 (Computer Networking)
Winter 2013, Project #2 (CSMA/CD)

Description

The learning objective of this project is to design and implement a ***discrete event simulator*** to evaluate the performance of local area networks (LAN) constructed using the CSMA/CD protocol. The network parameters are as follows:

- N: the number of computers connected to the LAN (variable)
- A: Data packets arrive at the MAC layer following a Poisson process with an average arrival rate of A packets/second (fixed)
- W: the speed of the LAN (fixed)
- L: packet length (fixed)

Performance evaluation

- Show the throughput of the LAN as a function of N for fixed values of A, W, and L.
- Show the average delay in transmitting a packet for different loads. Delay is defined as the gap between the time a packet is generated and the time it is successfully transmitted.

~~You should show the above result using the 1-persistent and the non-persistent CSMA/CD protocols.~~

Assumption

Make any other assumptions as needed.

Items to be submitted in your report (Give the report a look-and-feel of a software engineering document.)

Hard copy

- Description of the design of your simulator
- All the assumptions
- Performance graphs and discussions
- Source code

Online

- All the items listed under "Hard copy"