Problem Set 4
(due November 10th)

Important note: *Make sure that all your programs and simulation results are well documented (i.e., comments, how to run the simulation program, display intermediate results, and graphs). Make sure that your code is clean and well designed, because future homeworks might use it as a building bloc.*

Problem 1 (**60 points**) Extend Problem 2, of HW3 to use more elaborate ARQ mechanisms for the UDP based ftp application.
   1. Implement Go Back N, where N is a parameter of the program.
   2. Implement Selective Repeat ARQ.

   Artificially introduce an error probability of packets by dropping packets with probability *p*. Also introduce an artificial delay *d*. What is the average throughput that you get for the following values of *p* and *d:* $p = 0.2, 0.1, 0.01;$ and $d = 10ms, 100ms.$ Compare Go Back N and Selective Repeat.

Problem 2 (15 points) textbook 3.13, page 245.

Problem 3 (15 points) textbook 3.14, page 246.

Problem 4 (10 points) textbook 3.21, page 247.