CprE 489 Assignment 7

Distributed: October 09, 1997. **Due**: October 16, 1997.

Reading:
Chapter 3 of Tanenbaum.

Exercises:

1. Tanenbaum exercise 3.12

2. Tanenbaum exercise 3.22.

3. Modify protocol 3 to implement ABP. The changes needed should be small. If you find yourself modifying several lines of code, you are probably doing wrong. Run your code with various parameters to convince yourself that ABP is correct. Submit a short output of one of the runs to show how this works compared to previous ones.

4. In p7.c implement a simplex version of the Go-Back-N protocol with sender's window size 7. Call this protocol 7. You can write the code by simply modifying protocol 5(p5.c), which is a duplex version of Go-back-N.

   Notice that in duplex version, the acks are piggybacked on the data frames. In the simplex case, the receiver never sends any data frames, so it has to send the acks by themselves. For this, use a straightforward implementation where the receiver sends an ack for each data frame received.

   In the class we said that the sequence number in an ack is the sequence number of the data frame that the receiver is *expecting*. However, in p5.c, the sequence number in an ack is the sequence number of the frame that is *last received*. You can do it either way in protocol 7, as long as the sender

and the receiver are consistent. The behavior of this protocol is show in the following figure.

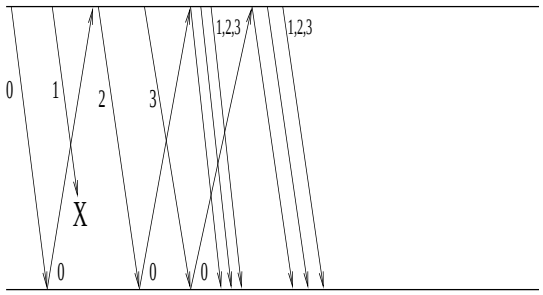

Figure 1: Simplex Go-back N Protocol

Fig. shows that frame 1 is lost. When the sender receives an ack with sequence number 0 for the second time, which indicates that frame 1 may have been lost or damaged; as a result it transmit frames 1, 2 and 3. In between receiver again sends ack with sequence number 0, which again causes the sender to send frames 1, 2 and 3.