Telecommunication Networks (332:423)
Fall 2003
Ethernet, CSMA/CD Homework Problems

1) Stations A and B make their first carrier sense while station C is transmitting. Draw a timeline showing a possible sequence of transmission attempts, collisions and exponential backoff. The timeline for this sequence should result in a scenario consisting of initial transmission attempts in the order (B,A), successful transmissions in the order (A,B) and at least 2 collisions between stations A and B.

2) In the CSMA/CD implementation of 10Mbps Ethernet, a minimum frame size of 64 bytes is specified to ensure that collision detection prior completion of frame transmission is always possible. Assuming a signal propagation speed of $2 \cdot 10^8$ m/s, what is the maximum permissible separation between stations in the CSMA/CD collision domain for the cases of: (a) 100Mbps Ethernet and (b) 1000Mbps Ethernet?