CS 162 Section 8

True/False:

1. TCP guarantees reliable, in--order, and at most once delivery.
2. It is possible to solve the Two Generals Problem with certainty over a lossy channel.
3. One computer can only have one network card.
4. All hosts in a LAN can share same physical communication media.
5. BSD Socket API was created at Stanfurd.

Short Answer:

1. What are the 5 layers of networking? Briefly describe each one.

2. What are some drawbacks of layering?

Long answer:

Assume two end-hosts use the sliding window protocol to implement flow control, and **Selective Repeat** to implement reliability. Assume sender sends 7 packets. The window size at the receiver is 3 packets, the round-trip time is 200ms, and the retransmission timeout is 500ms. The transmission time of the packet is negligible, i.e., assume the size of a packet is 0. The time to send all packets is the interval between the time the sender sends the first packet and the time the sender receives the ack from the last packet.

1. How long does it take to send all packets, assuming no losses? Draw the time diagram.

2. How long does it take to send all packets assuming the ack of the 6th packet is lost? Draw the time diagram.

NAME: _____

5. (16 points) Networking.

a. (4 points) Consider a TCP network connection with packet size 1000 bytes, and current receiver advertised window size of 100 packets, over a cross-country link with one-way latency (for a 0-byte packet) of 50 milliseconds in each direction, and a link bandwidth of 100 Mbit/second. You may assume that no packets are lost for this particular problem, and that the times to assemble, unpack and process packets at each end of the connection are negligible.

How long does it take TCP to transmit 1 million bytes across the link? That is, how much time elapses from when the first byte is sent by the sender to when the sender *knows* that the receiver has received the last byte?

b. (4 points) Assume that the receiver can process incoming data with zero latency, what is the optimal window size that the receiver should advertise?