## Homework 2

## Due: 23 March 2022

## Problem 2.1

Hosts A and B follow a connect/disconnect protocol that is supposed to use three-way handshakes as outlined in Section 5.3.2 of the book. Suppose host A sends a connection request to host B, which is (correctly) acknowledged by B , but A is not ready to actually send data yet, so it decides not to respond. (This would be a protocol violation, but we're imagining.) What would happen? What state do A and B think the connection is in?

What happens if A then changes its mind and initiates the disconnect part of the protocol-how would B respond?

## Problem 2.2

Suppose we're joining a TCP stream already in progress. Host G composes a segment with SYN=900, ACK=22500, which is 200 bytes long, and Host H composes a segment with $\mathrm{SYN}=22500, \mathrm{ACK}=900$, which is 1000 bytes long. They are sent at the exact same moment, so that they cross paths in transit.

- Based only on this information, what can/can't you say about the previous segments that were sent by each?

Before either arrives, each host composes and sends another segment of exactly 100 bytes.
After a further pause, long enough for the 100-byte segments to arrive on both sides, Host $G$ sends an additional segment of 200 bytes, and after that arrives, Host H composes and sends a segment of 500 bytes.

- Draw a diagram illustrating the entire interaction, labeling each segment with its SYN and ACK values and its size.
- Assuming that all the sequencing above was incidental (i.e. that neither process was specifically waiting for an incoming segment before
sending something, just that it happened to shake out that way), explain what would change about the diagram if the 100 -byte segment from H to G were lost in transit. Which segments would that change (and how)? What would each process do differently later as a result?

