Homework 2

Due: 22 March 2023

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 SEQ=800, ACK=23600, which is 300 bytes long, and Host H composes a segment with SEQ=23600, ACK=800, which is 1600 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, each of exactly 200 bytes.

After a further pause, long enough for the original segments and the 200-byte segments to arrive on both sides, Host G sends an additional segment of 100 bytes, and *after* that arrives, Host H composes and sends a segment of 400 bytes.

- Draw a diagram illustrating the entire interaction, labeling each segment with its SEQ 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 200-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?