Name:

Pitt ID:

-------------------------------------------------------------------------------------------------------------------------------

**`ss` output**

**After running the `ss` command, fill the table with the following information:**

* data flow information:
* control flow information:

**Find the following information in the output about the data flow:**

* the current CWND of this flow (in MSS):
* the slow start threshold of this flow (in MSS):
* the number of retransmitted segments:

-------------------------------------------------------------------------------------------------------------------------------

**Additional exercises: low delay congestion control**

“measure the queuing delay with a loss-based congestion control (like Reno or Cubic) and with a delay-based congestion control (Vegas)”

Comments:

-------------------------------------------------------------------------------------------------------------------------------

**Additional exercises: low delay congestion control**

“Make a note of the iperf3 throughput and the round trip time estimated by ping during the TCP Vegas flow.”

“Make a note of the throughput reported by iperf3 for each flow.”

Comment about ‘fairness’ between users if different protocols used at the same time:

-------------------------------------------------------------------------------------------------------------------------------

**BBR**

“if you look at the raw ss data for the BBR and the Reno/Cubic flows, you'll note that the BBR flows see a much lower RTT, since they do not fill the queue.”

Comments (something about comparison of the values):

-------------------------------------------------------------------------------------------------------------------------------

**Explicit congestion notification (ECN)**

“compare the delay performance of Reno with ECN (this experiment) to your previous experiment showing the delay performance without ECN”

“transfer the packet captures to your laptop with scp, and look for the ECN-related fields in the IP header and TCP header, during connection establishment and during data transfer.” And note them here: