Name:

Pitt ID:

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**Exercise 1: Using ss to observe TCP socket statistics**

**After running the `ss` command, copy here 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:

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**Exercise 2: Observing TCP Flows with TCP Reno**

**Paste your plot:**

**Using your plot and/or experiment data, explain how the behavior of TCP is different in the "Slow Start" and "Congestion Avoidance" phases. Also, using your plot, explain what happens to both the congestion window and the slow start threshold when multiple duplicate ACKs are received**

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**Exercise 3: Other Congestion Control Algorithms - TCP Cubic**

**Paste your figure and briefly comment on the differences as compared to the TCP Reno flow.**

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**Exercise 4: Low Delay Congestion Control - TCP Vegas**

**Paste your plot:**

**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:**

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**Exercise 5: TCP BBR**

**Briefly comments about the RTT values for BBR and the Reno/Cubic flows (something about comparison of the values):**

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**Exercise 6: Explicit congestion notification (ECN)**

**Compare (comment on) the delay performance of Reno with ECN (this experiment) to your previous experiment showing the delay performance without ECN:**