COL334
Assignment-4 Part A

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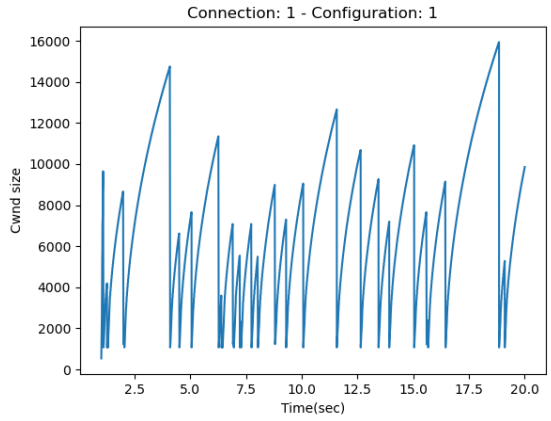
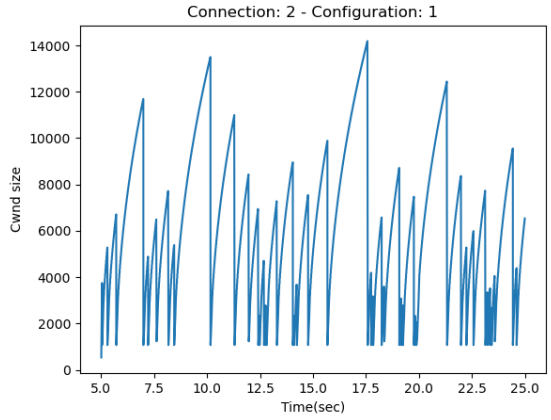
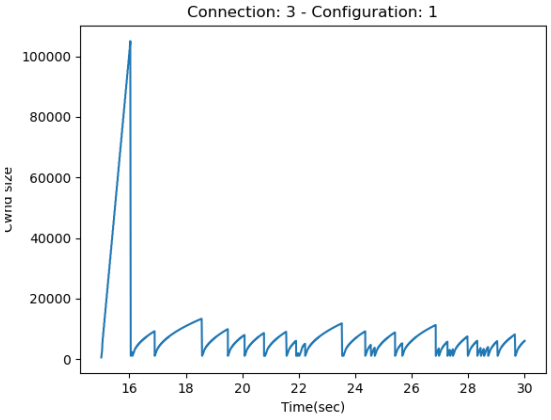
2019PH10629

1. Plot Congestion window size vs time (from t=1 to t=30 seconds)

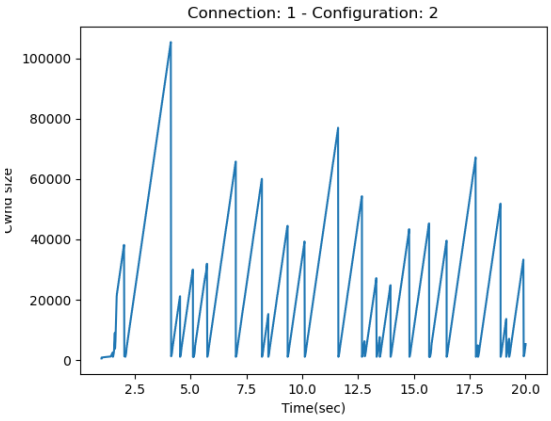
a. TcpNewReno

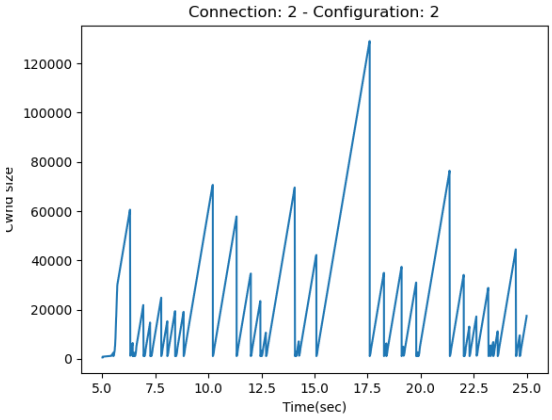


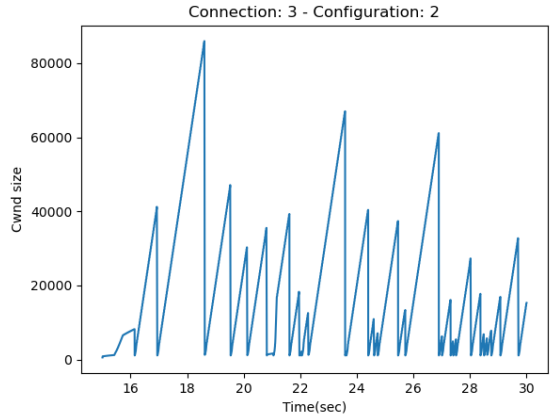




b. TcpNewRenoPlus







S.No.	Congestion Protocol	Packets Dropped
1	TcpNewReno	113
2	TcpNewRenoPlus	110

2. How does the congestion avoidance phase vary on the same sender when using *TCPNewRenoPlus vs TCPNewReno*? Explain the observed trends. How does it impact the entire network?

It is discovered that the number of packets dropped is nearly identical for both configurations. The reason for this could be that, while the congestion window size varies between configurations, the effective data transmission rate for each link remains constant, so the number of packets transmitted and, as a result, the number of packets dropped remains relatively constant.

We can see that for TCPNewReno the congestion windows grows logarithmically in the congestion avoidance phase as the increase in cwnd is inversely proportional to cwnd. Hence the max window size reached is smaller compared to TCPNewRenoPlus.

In TCPNewRenoPlus, the window size is increasing linearly with time in the congestion avoidance phase and hence it reaches a very high max value.

Even though the connections 1,2 and connection 3 are on different channels, they have a common sink node. In configuration 1, when connection 3 is switched on at t=15s, we see a huge peak and subsequent decrease in cwnd at connection 2. Also due to the linear nature of TCPNewRenoPlus, similar drop is seen at t=18s due to connection 2 due to rise in connection 3.

Included Files

Part A/

1. Congestion/
    a. TcpNewRenoPlus.cc
    b. TcpNewRenoPlus.h
2. Congestion_topology_files/
    a. **First.cc**: It contains the code to run the simulation and generate csv files for each connection (3) for each configuration (2) in the home directory containing time vs cwnd size values. It asks to choose a configuration upon running as input (1 or 2)
    b. **part1.py**: It reads all the 6 .csv files and generates a .png plot in the same directory. Libraries imported are matplotlib and pandas.
3. 2019PH10629_Report_PartA.pdf