CSC573 Project 2

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For the implementation of the project, we performed the assigned tasks using a 1.05 MB text file. We ran the client and server files on the same machine and found the following relations among the desired parameters. Since this project is run with client and server on the same machine, the approximate round trip time is 0ms.

Task 1 conclusions:

For this experiment, we considered the probability of loss as 0.05 and the MSS as 500 bytes. For each N(Window size) values namely, 1,2,4,8,16,32,64,128,256,512,1024, we ran the client and server files for 5 times in order to transfer the 1.05 MB file and observed the following delay in transmission:
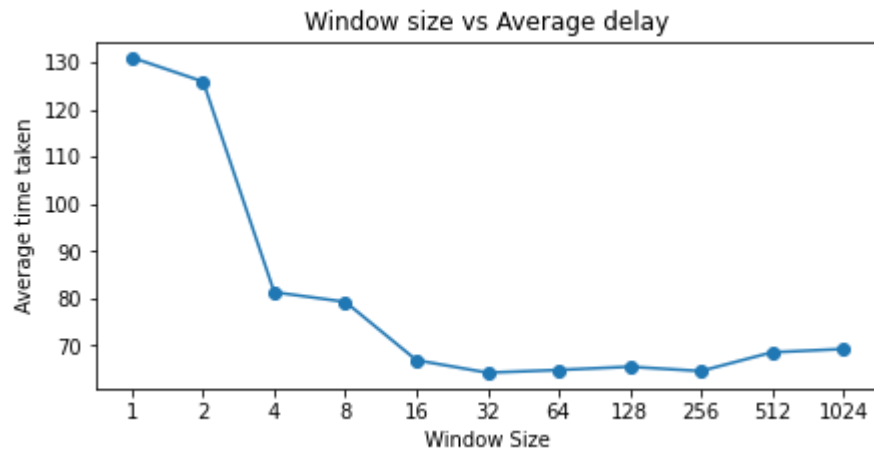

With increase in window size, it can be observed through the above graph that the transmission time is decreased drastically at a point when N=4 and later on the delay gets stable with larger window sizes. This is because with a constant probability of loss, there would be more number of packets that would reach the other end successfully and so the transmission delay is less compared to the case when the window size is smaller and due to loss of packets relative to the chunk sent, retransmission would take time thereby increasing the overall delay.

Task 2 Conclusions:

MSS vs Average Delay
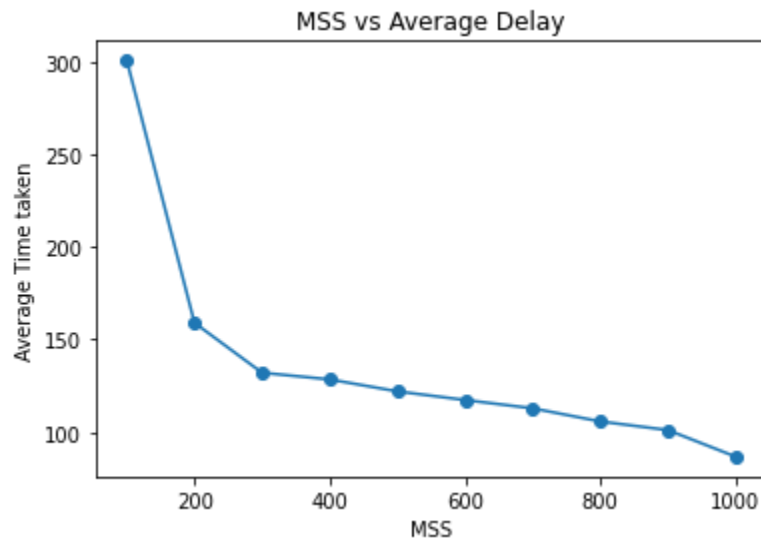
With constant window size ie., N=64 and a packet loss probability of 0.05, the effect of incrementing the MSS value from 100 bytes to 1000 bytes with an increment of 100 bytes each time and executing for 5 times with each MSS value to take the average delay is that, we get a drastically less average delay with higher MSS values. This is because, with higher MSS value, the file size to be sent at a time increases and the number of transmissions decreases which in turn will decrease the overall transmission time. To conclude, according to the trend followed by the graph, with increase in MSS value, the overall delay in the file to reach the receiver is decreasing.

Task 3 Conclusions:

packet loss probability vs Average delay
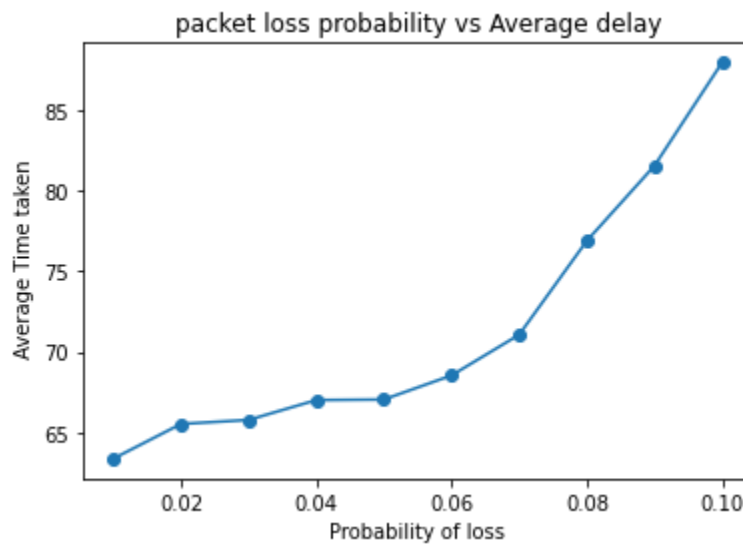
As is evident from the above graph, with constant window size N = 64 and constant MSS which is 500 bytes, and varying probability starting from 0.01 to 0.10, the average delay increases with an increase in packet loss probability. This is because with more loss probability, there are frequent timeouts at the client side and the client needs to retransmit the lost packets chunk again and this time would add up to the overall transmission time increasing the overall delay in transmission.