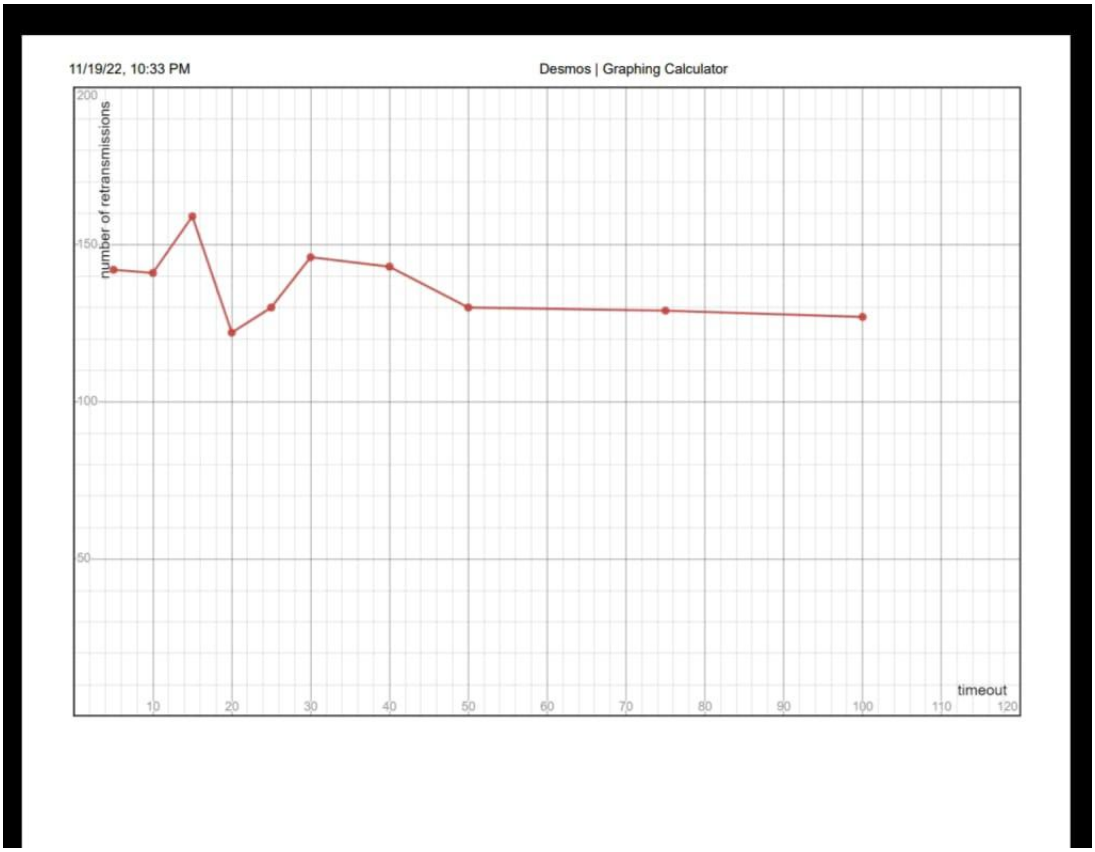
CN-3530/CS 301 Assignment 2

1. Stop and Wait Protocol

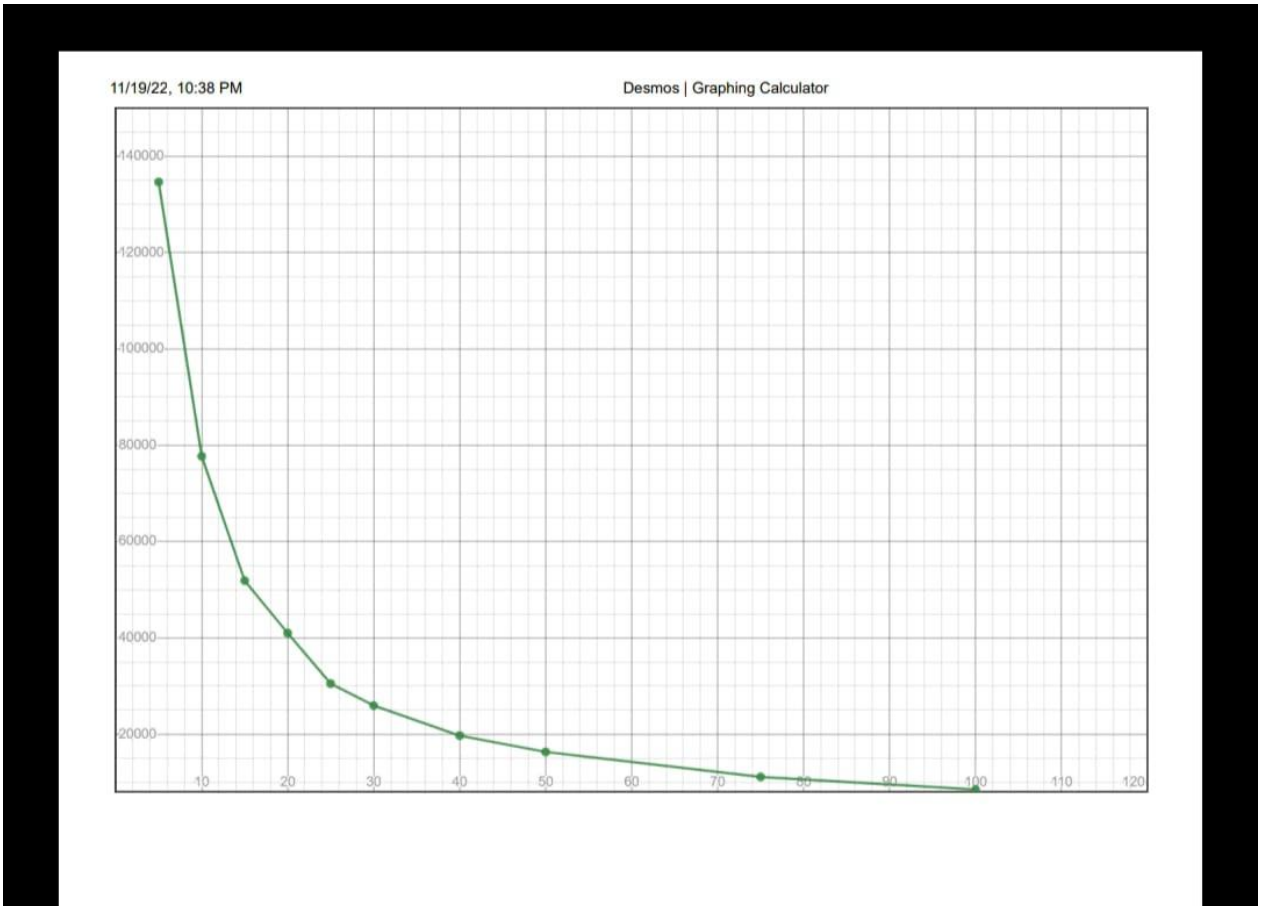
Question 1 – Number of retransmissions and throughput with different retransmission timeout values with stop-and-wait protocol.

Retransmission timeout (ms)	Average number of re-transmissions	Average throughput (bytes per second)
5	142	134691.785
10	141	77743.565
15	159	51908.603
20	122	41014.280
25	130	30536.096
30	146	25986.847
40	143	19732.661
50	130	16343.466
75	129	11154.234
100	127	8534.793

Question 2 – Discuss the impact of retransmission timeout value on number of retransmissions and throughput. Indicate the optimal timeout value from communication efficiency viewpoint (i.e., the timeout that minimizes the number of retransmissions and keeps the throughput as high as possible).



Graph: number of retransmissions vs timeout



Graph: throughput vs timeout

Ideally, the number of retransmissions should decrease with increase in timeout as the time of receiving is more with more timeout. But, the number of retransmissions does not depend solely on timeout, loss and delay also affect them. So, the graph between number of retransmissions and timeout is not a strictly increasing; rather it increases initially and reaches a local minima at optimal timeout and then after, it decreases with not much difference.

In case of throughput, as the timeout increases, the waiting period increases thus decreasing the throughput. So, the graph between throughput and timeout is continuously decreasing.

Talking about optimal timeout, for less timeout, throughput is quite high but comes at the cost of higher number of retransmissions. Higher timeout gives less retransmissions but costs throughput. So, for the timeout, the optimal value would be in the interval 20ms to 30ms.

PLAGIARISM STATEMENT <Include it in your report>

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