

Computer Communications and Networks (COMN)

2019/20, Semester 2

Assignment Part 1 Results Sheet

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Question 1 – Number of retransmissions and throughput with different retransmission timeout values with stop-and-wait protocol. For each value of retransmission timeout, run the experiments for **5 times** and write down **average number of retransmissions** and **average throughput**.

Retransmission timeout (ms)	Average number of re-transmissions	Average throughput (Kilobytes per second)
5	5145	48.54
10	3174	46.74
15	1160	43.33
20	242	41.75
25	199	39.04
30	213	37.43
40	198	34.86
50	196	32.04
75	190	27.61
100	188	24.12

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).

From my observation, when the retransmission timeout is less than the round-trip time(20ms), the average number of re-transmissions exponentially increase with the decrease of the timeout, and slowly increase when the retransmission timeout is greater than the round-trip time delay in the link. On the other hand, the average throughput seems to almost linearly increase as the retransmission timeout decreases but very slowly increase as the retransmission timeout become very small. The optimal timeout value from communication efficiency viewpoint is 25 as it takes into account the fact that the round-trip time is 20ms plus other node processing time delays. Additionally, if we equally weight the utility of

minimizing the number of re-transmissions and maximizing throughput, the optimal timeout would be 25 from my collected data.