Computer Communications and Networks (COMN)
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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	2524	30
10	1126	27
15	776	28
20	281	29
25	218	29
30	206	26
40	205	25
50	190	24
75	208	23
100	200	20

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).

If the re-transmission timeout increases, there will be less re-transmissions because of less premature timeout/ delayed ACK. This is related with the one round-trip of a packet: if the re-transmission timeout is less than the round-trip time, the packet will be resend. The throughput will be affected only by the time that all packets are sent since the file size is a constant amount of bytes. The total time that all packets are sent will be depend on the total delay time including delays less than the timeout value, delays bigger and equal to the timeout value and the run time of the program.

If the re-transmission timeout increases, average throughout will decrease because in low re-transmission timeouts the sending process will be like asynchronous.

The optimal timeout value that minimizes re-transmissions and keeps the throughput as high as possible will be 20ms since the re-transmission rate is nearly the the same after this timeout value and the throughput is the maximum.