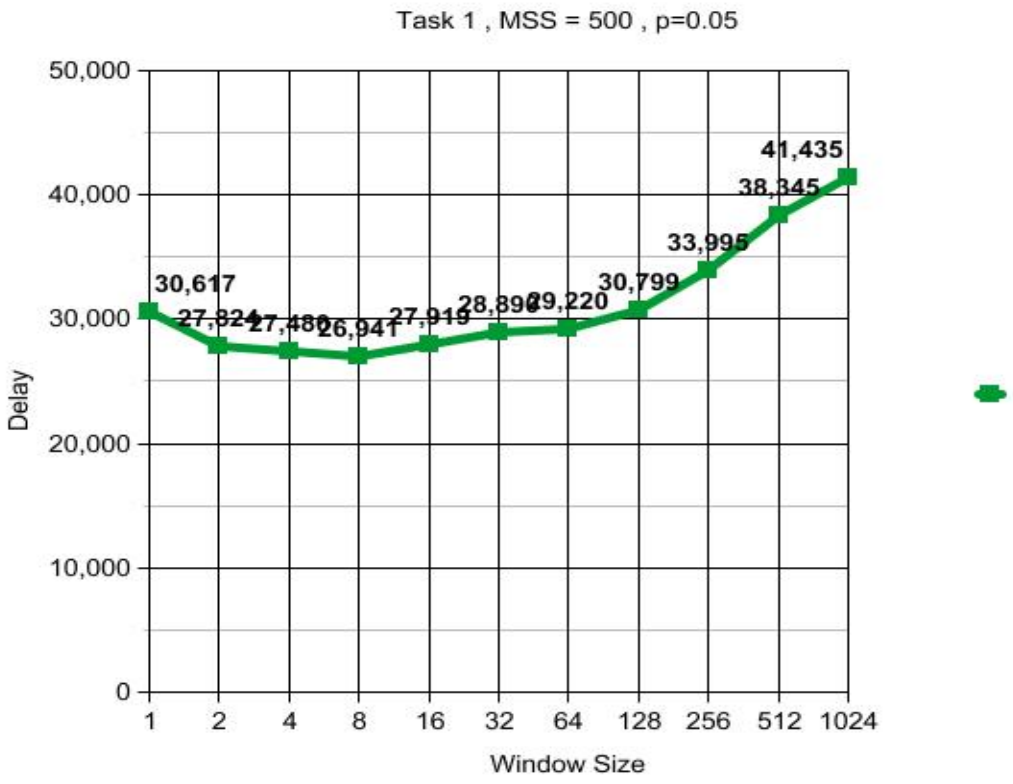
CSC 573
Internet Protocols
Fall 2012

Project 2
Go-Back-N
Task Reports

Name 1: Altaf Hussain Palanawala Student ID1: 001029804
Name 2: Raheel Kazi Student ID2: 001079586

Task 1
Effect of Window Size N

N	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Average
1	30267	30967	29869	31452	30534	30617
2	28489	26396	26583	28554	29102	27824
4	27658	27893	28798	26352	26699	27480
8	26875	25763	28090	26333	27647	26941
16	27854	27690	27699	29675	26677	27919
32	28789	27698	28669	29657	29637	28890
64	29452	29348	30654	28644	28004	29220
128	31806	30116	30775	29410	31889	30799
256	33786	33722	34589	33992	33889	33995
512	37690	38654	38621	38906	37854	38345
1024	40450	41441	42456	41909	40919	41435



Explanation Task 1

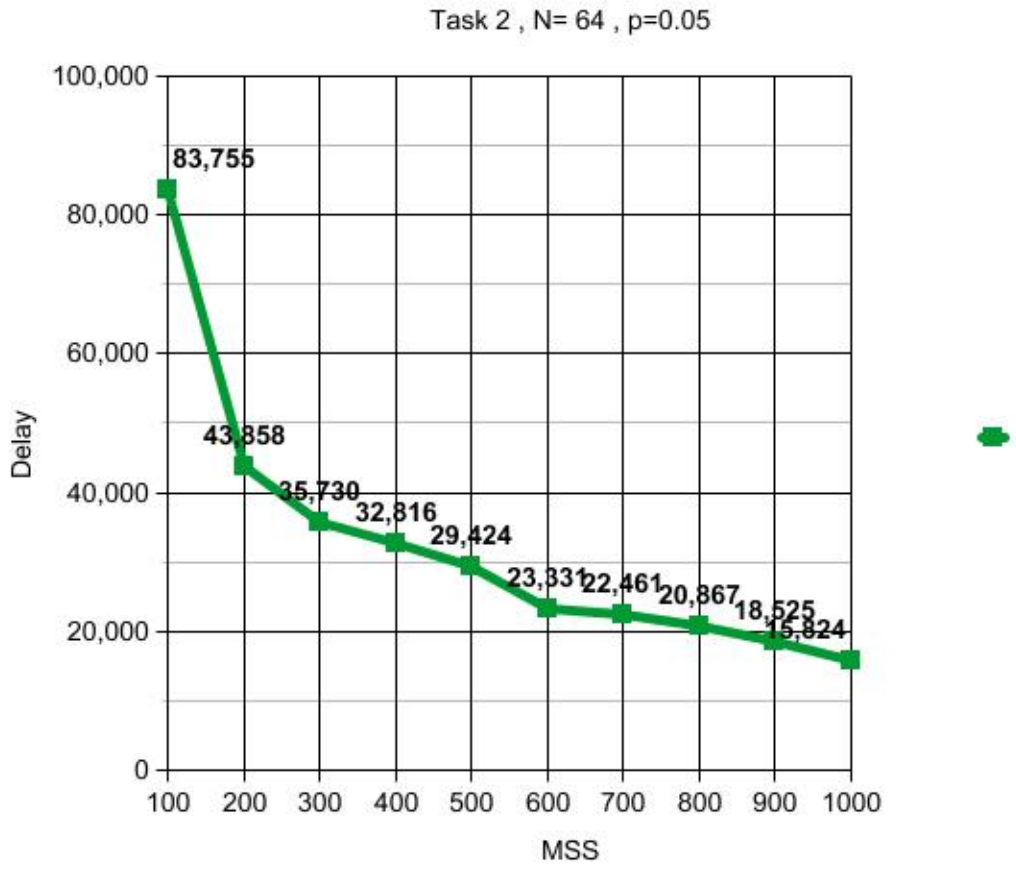
In the graph above when the window size is increased the time taken decreases and after a certain point it starts to increase again. The reason can be formulated as such.

If the window size is too large then it leads to more number of retransmissions when a packet is lost because all the packets from the one dropped need to be transmitted. This scenario is even worse if the packet that is dropped is one of the initial packets of the window, which will cause the whole window to be retransmitted.

There is definitely a tradeoff between a big window and a small window. If the window is too big the issue mentioned above can happen and if the window is too small then it can lead to a lot of waiting because the sender will not send until the window slides (acknowledgements arrive for the sent packets) and this is likely to choke the sender and make him wait for an acknowledgement to arrive before he can start sending again. The worst case is that of the window size being equal to 1 and this is analogous to a Stop and Wait protocol. Thus a proper tradeoff needs to be maintained while choosing a window size.

Task 2
Effect of MSS

MSS	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Average
100	81339	85256	86754	82443	82987	83755.8
200	45177	42361	43112	43661	44981	43858.4
300	33778	35711	36341	36921	35903	35730.8
400	32485	33298	32699	34112	31489	32816.6
500	28986	29885	29221	30110	28919	29424.2
600	22367	23887	22118	24522	23765	23331.8
700	22321	22660	23116	21336	22876	22461.8
800	20775	21711	20881	20871	20101	20867.8
900	18889	18117	18353	19001	18267	18525.4
1000	16665	16231	15221	15899	15106	15824.4

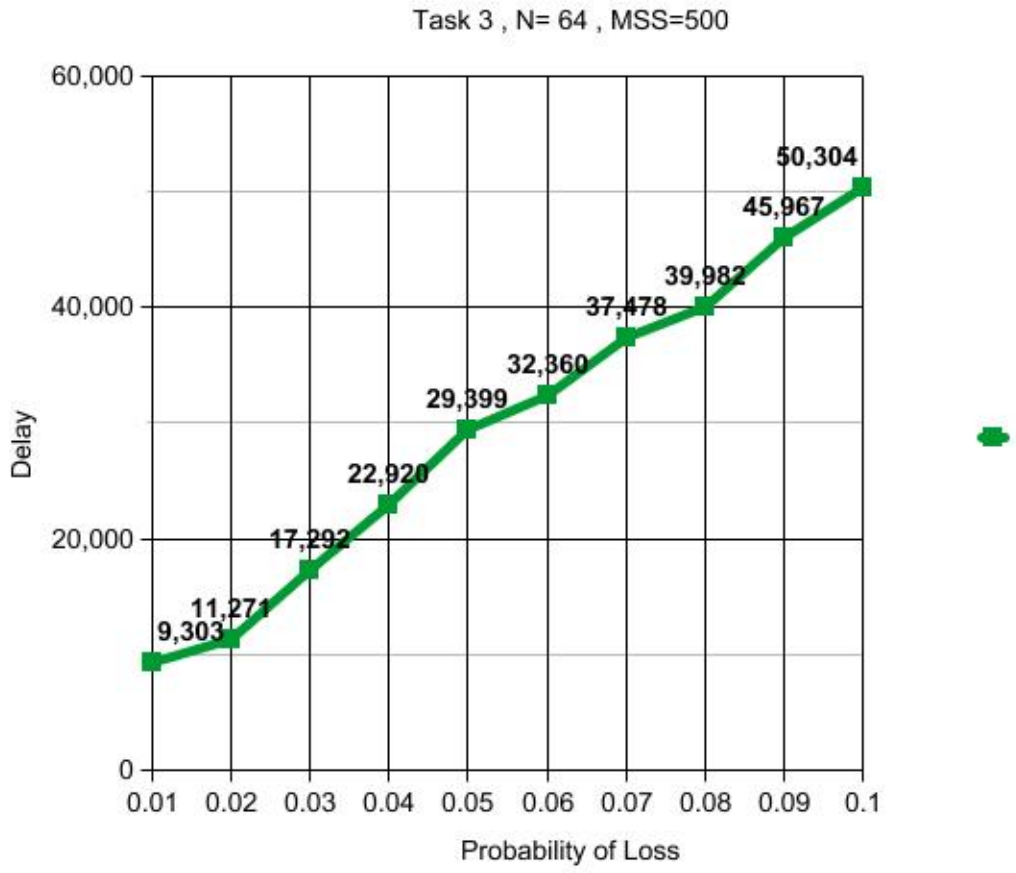


Explanation: Task 2

As the MSS is increased from 100 bytes to 1000 bytes keeping Window size and drop probability constant we see that that the delay decreases. This is because more number of bytes are transferred in every packet. Thus more the MSS less will be the number of packets required. Thus lesser packets will obviously take lesser time. (Assuming here that the bandwidth is sufficiently high).

Task3
Effect of Loss Probability

Probability	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5	Average
0.01	9466	9067	9107	9988	8891	9303.8
0.02	11870	11501	11189	10461	11337	11271.6
0.03	17781	17897	16675	17112	16998	17292.6
0.04	22776	23112	23774	22662	22276	22920
0.05	28789	29885	29221	28991	30113	29399.8
0.06	29886	32334	32776	33689	33119	32360.8
0.07	35900	37812	37441	38113	38127	37478.6
0.08	39614	40781	39110	40178	40227	39982
0.09	44221	47223	44199	46998	47195	45967.2
0.1	50453	49879	51776	50226	49189	50304.6



Explanation Task 3

As the loss probability is increased the chances of the packet getting dropped are more. As more packets are dropped they are bound to trigger re-transmissions thereby increasing the overall delay. Hence as more packets are lost it can be seen in the graph that the time taken will definitely increase.