I have read and understood the course academic integrity policy.

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CSE 589

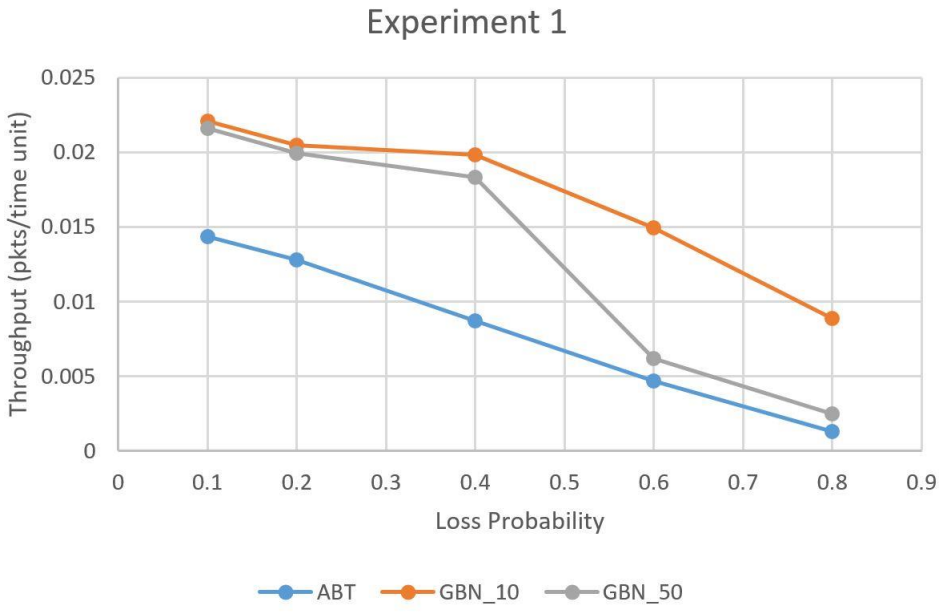
Programming Assignment 2

ANALYSIS AND REPORT

The timeout value for all the protocols were chosen to be a value of 20.0 time units, because when the timeout value was chosen to be something lower, such as say 10.0 time units, there used to be too much re-transmission from the sender because it times-out more often. If we pick a larger timeout value such as 30.0, or 40.0 time units, the throughput will reduce a lot as the sender will be waiting for the acknowledgement back from the receiver for much longer, and if the acknowledgement or the packet itself gets lost or corrupted, the retransmission will occur only after a very long period of time.

EXPERIMENT 1

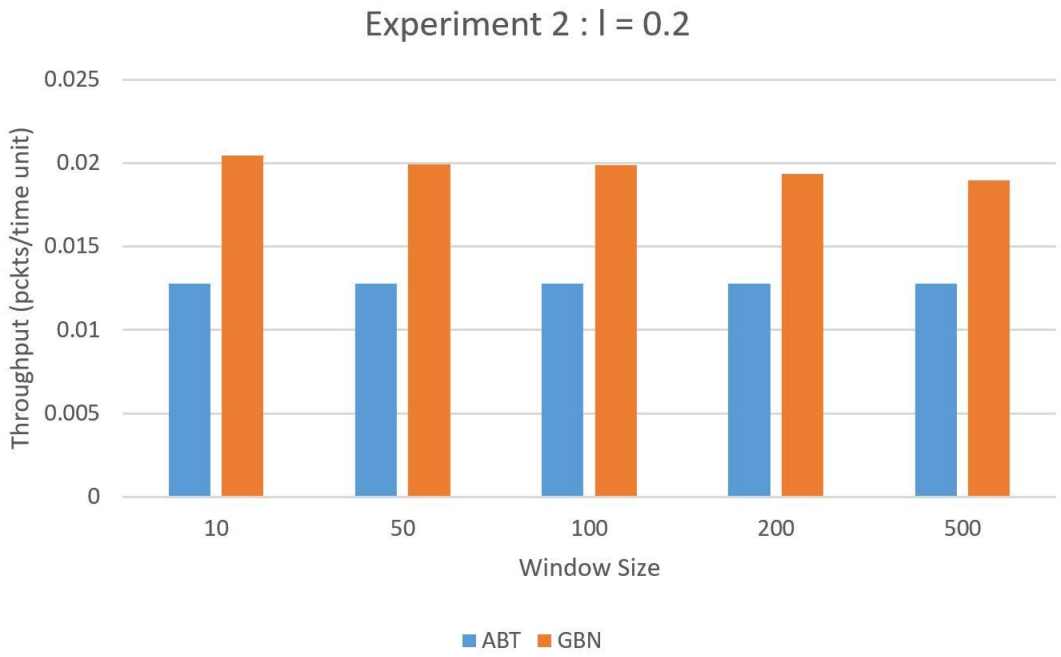
As we can see from the graph below, as and when we increase the loss probability, the throughput also decreases in the case of all protocols. ABT has lower throughput than GBN because it sends data only one packet at a time. GBN sends several packets at once, depending on the window size. There is also a sharp decrease in the throughput when the window size is 50 for GBN vs a window size of 10. This is because of too many retransmission of packets that have already been delivered, as GBN delivers all packets that are uptil the last received acknowledgement.



EXPERIMENT 2

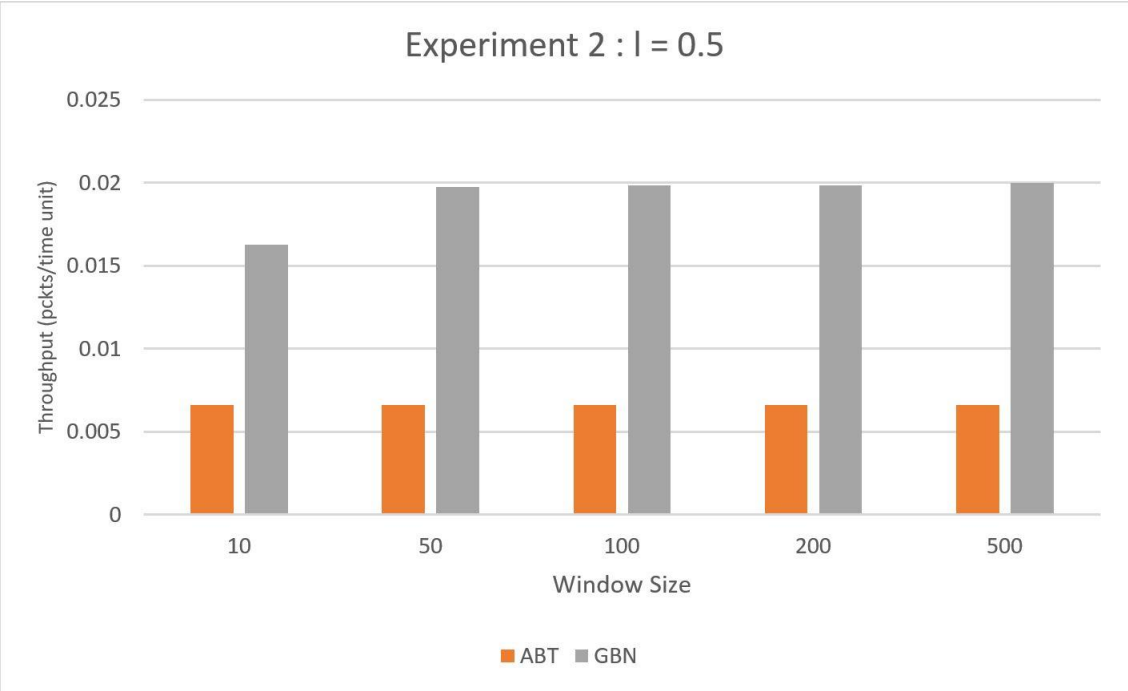
We perform this experiment for three different loss probabilities : l = 0.2, 0.5, 0.8

Case 1 –



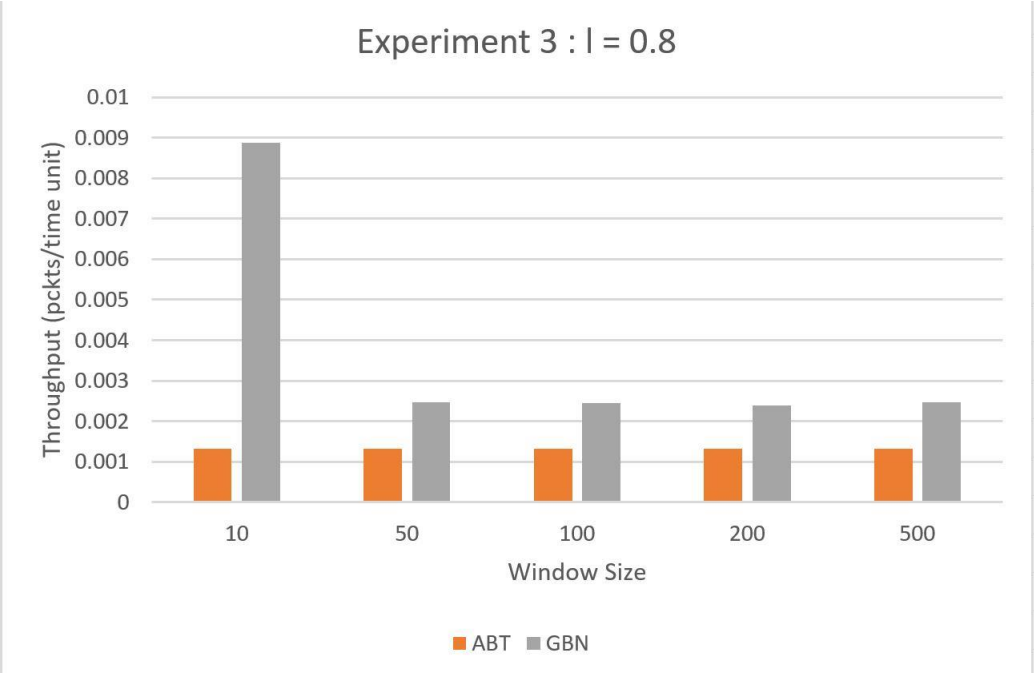
The windows size for ABT is always 1, hence the throughput does not change for it as we go from left to right in the graph. Also, the throughput for GBN decreases by a very small amount as the window size is increased. This can be due to re-transmitting more packets just because of one loss within a large window.

Case 2 –



The windows size for ABT is always 1, hence the throughput does not change for it as we go from left to right in the graph. We can see that the ABT throughput is lesser than that of the previous bar chart. Also, the throughput for GBN increases initially as the window size goes from 10 to 50, this is because more packets can be sent at once, but as the window size increases exponentially, we notice the throughput remains almost the same, varying by very little. This is due to the fact that more packets are being sent at once, but also more re-transmissions are happening.

Case 3-



For a very high loss probability such as 0.5, the ABT throughput is lower the values present in the above two bar graphs. For GBN window size 10, the throughput is the highest because if a packet is dropped, atmost 10 packets need to be re-transmitted. In case of window size 50 and above, we can observe that the throughput drops drastically as compared to the value at window size 10, because it is likely that more packets are lost with loss probability 0.8, hence more number of re-transmissions also occur.