CprE 489, Section 4
Lab Experiment #4: Error Detection and Go-Back-N Protocol

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In this lab, we implemented Go-Back-N Protocol with a window size of three. Go-Back-N protocol is a protocol for handling packet loss or corruption. A sender sends N packets to a receiver at a time, and the receiver sends an acknowledgement that all packets were correctly received. In this lab, three packets were sent at a time, with each packet holding two characters. If at least one of the sent packets is either corrupted or lost, all three packets are sent again and the receiver discards any packets that were corrupted or received out of order. In this lab, we learned how to implement this protocol using given functions that operated on packets, how to receive and send packets between the server and client.

The program was tested to relate BER with the total amount of packets sent. With each error, an additional three packets had to be retransmitted. The following graphs shows averages taken from five attempts for each BER value and how many transmissions occured. While increasing the BER does increase the attempts per packet, it does not do so proportionately to the change in BER. This may be due to the fact that a higher percentage of errors per bit does not necessarily change the amount of packets that must be resent. This is because a packet is corrupted regardless of how many bits are subjected to error, i.e a one-bit error has the same effect as a five-bit error if each error affects the same packet.

BER	Avg Attempts Per Packet
0.001	1
0.002	1.507692308
0.005	2.384615385
0.01	5.446153846
0.02	10.04615385
0.05	22.09230769