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Documentation

Stop and Wait Algorithm (Client): For the stop and wait algorithm, first there is a variable retransmission and ack. Then I start looping through the message count. The message is sent, then a timer is started. I then loop infinitely and check if there is anything to receive from the UdpSocket and until there is or the time lapped is greater the time out, I break. Then if the time out flag is true, I continue the loop. When it isn’t I receive a message since no time out and I check if the message is correctly acked or not. If not, I decrement i and increment the retransmission. At the end of the loop, I return the num of retransmissions.

Stop and Wait Algorithm (Server): For the server side I again loop through the max message count, and then inside there is a do while. If there is anything to receive, I receive and then check if message is acked, and if so, I call ackto and break since server is waiting for message.

Sliding Window (Client): For the sliding window, I keep track if the retransmissions, acks, and ackseq. In the loop, I sendTo the message until unacks is equal to window size and if it’s the same, I start a timer and loop infinitely checking if polllRecFrom has a message and then receive it. I check if there is a message to receive and then I receive and increment ackseq if equal to acks. After that I check if ack seq is greater than max inside else, and if so I break. If not, I check the timer, and then start again and send to and increment retransmission.

Sliding Window (Server): In the server side early Retrans, I loop twice within and check if I should receive. I do so and ackto. Then if current message is equal to I, I break.

Performance

Discussion

The stop and wait test are significantly slower than the sliding window. There is also much more retransmits than in sliding window. Since you are focusing on only one instance, the time will be much slower. Also since there is a significant wait time as well. This sends a lot of retransmissions and takes longer. For the sliding window, the wait isn’t as long since there is multiple windows and all are reading messages. The window size affects the performance greatly. In terms of retransmits, the greater the size, the significantly greater the increase in retransmits. It is almost always in the thousands and sometimes even 10s of thousands. When the size was 20, the retransmits occasionally would reach a few thousands. Time wise, It was mostly the same. when window size is 30, the numbers are either in millions, or 200 thousands. Retransmissions ranges from 0 to 8100 about.