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## Assignment 3:

### My program:

#### Server:

- 1- We start to read input from a file the file contain port number ,maximum window size and PLP.
- 2- Function start()
- 3- Connect to client and indicate which protocol will be used GBN or stop and wait.
- 4- Then we call send by GBN or stop and wait.
- 5- And we make two functions timers one for GBN and one for stop and wait  
In GBN if packet lost change threshold= $\frac{1}{2}$  window size and current window size ==1.  
But for stop and wait we send one packet and wait for its ack .
- 6-two functions one for GBN and one for stop and wait to receive acks from client .
- 7-write current window size with time and graph it .

For client .

It connect with server then start to take packets and send acks and put packets into a file.

Data Structure used:

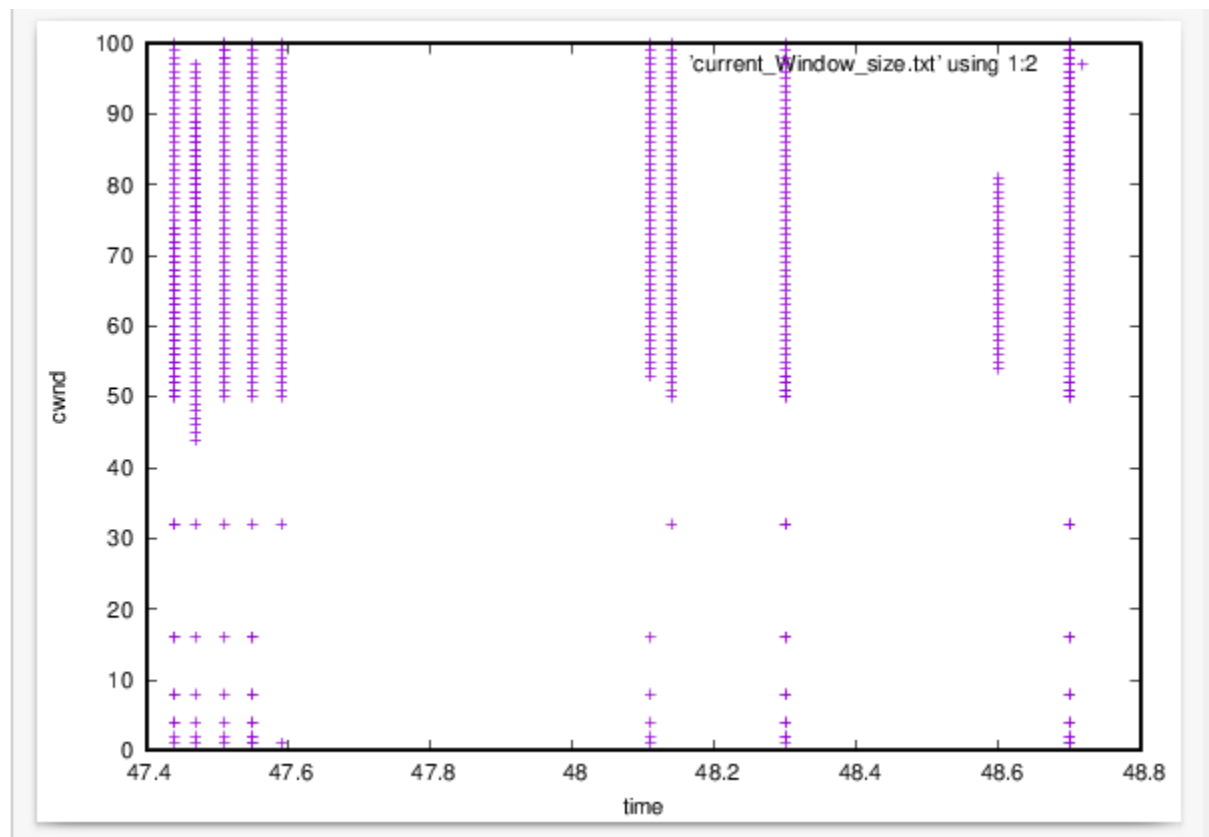
Vectors , arraies and structs.

We make global variable protocol and if it 0 stop and wait is chosen and if it 1 GBN is chosen.

For PLP= 1%=0.01

|               | Time      | average           |
|---------------|-----------|-------------------|
| Stop and wait | 28 second | $454.5/28=16,232$ |
| GBN           | 33 second | 13,772            |

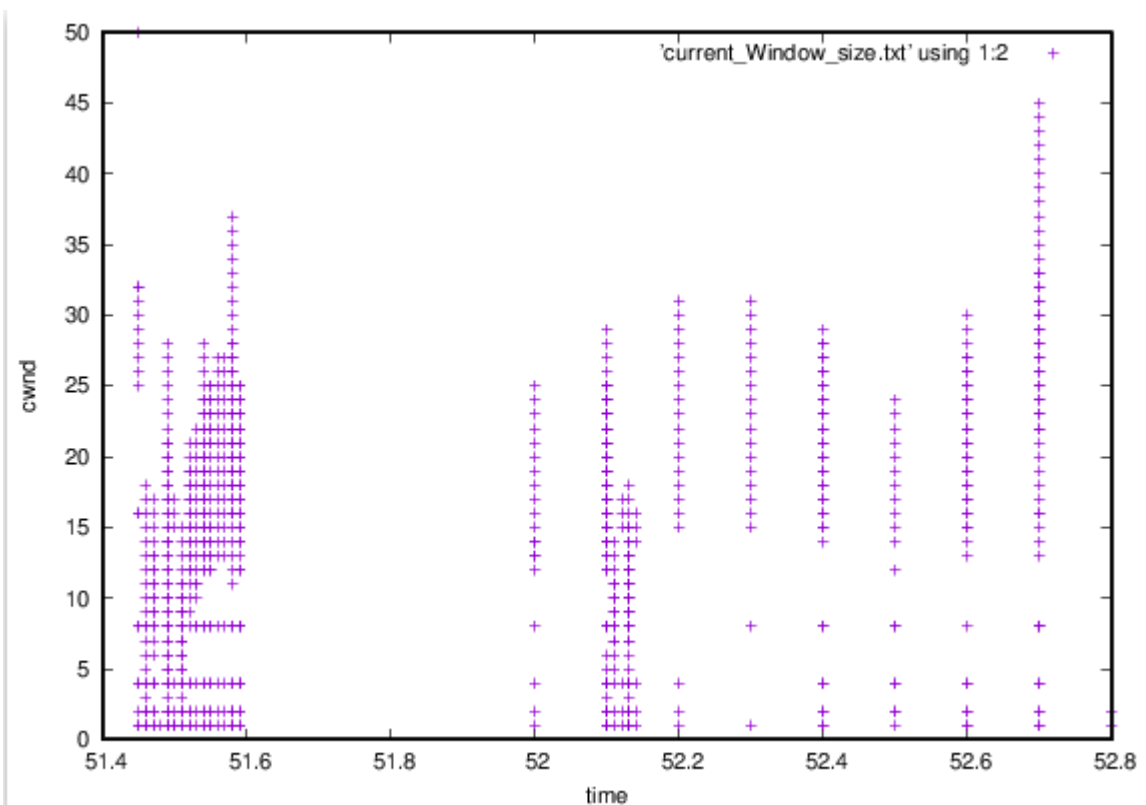
GBN



For PLP=5%=0.05

|               | Time      | average |
|---------------|-----------|---------|
| Stop and wait | 19 second | 23,921  |
| GBN           | 23 second | 19,760  |

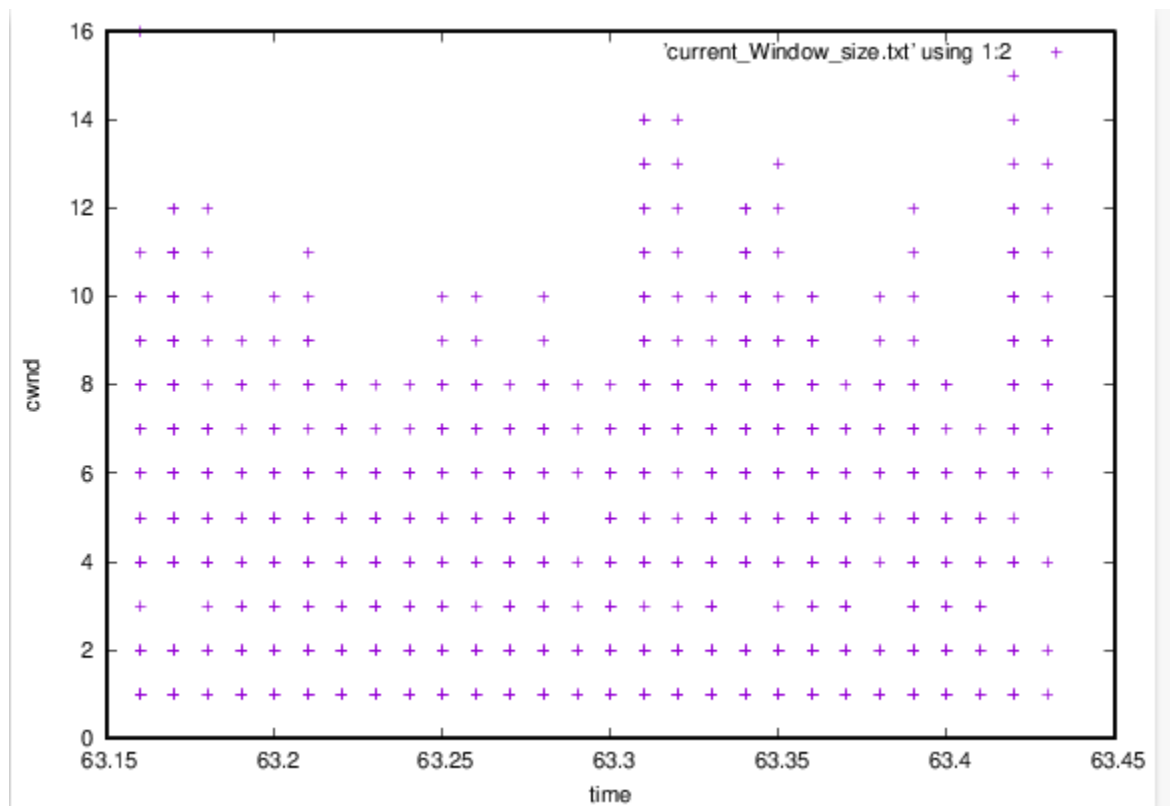
GBN



For PLP=10%=0.1

|               | Time      | average |  |  |
|---------------|-----------|---------|--|--|
| Stop and wait | 32 second | 14,203  |  |  |
| GBN           | 35 second | 12,985  |  |  |

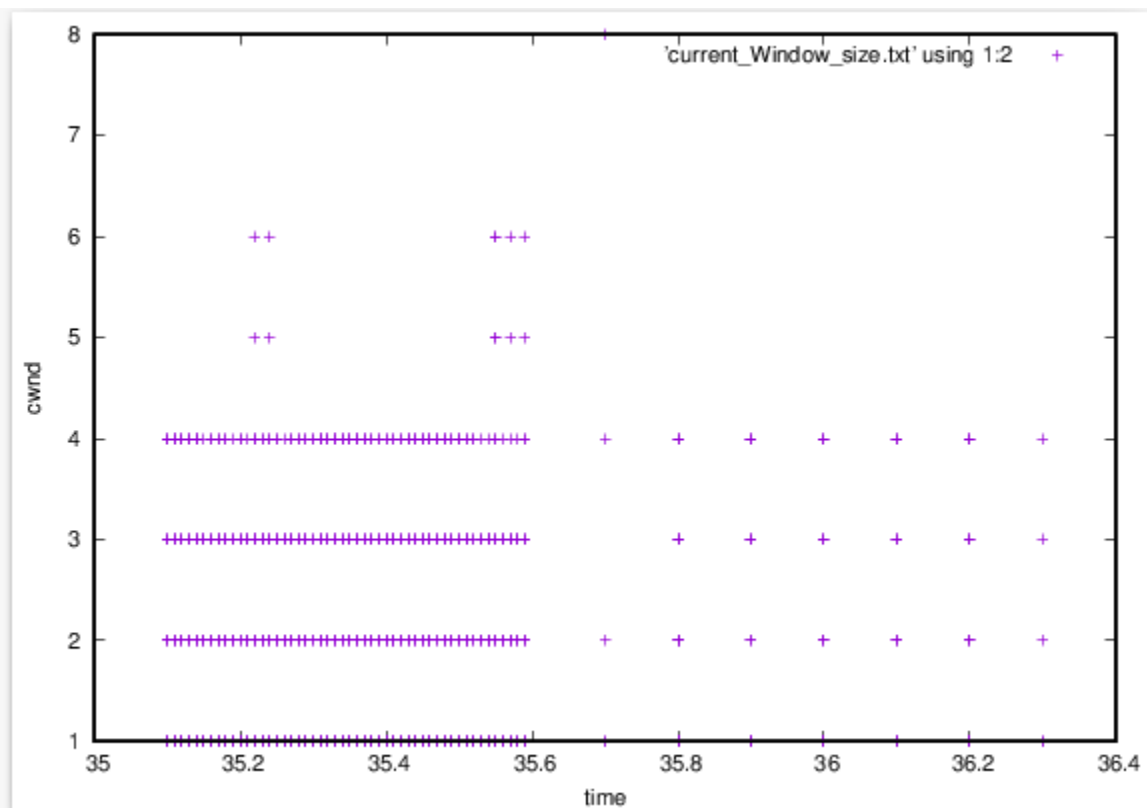
GBN



For PLP=30%=0.3

|               | Time        | average |  |  |
|---------------|-------------|---------|--|--|
| Stop and wait | ~100 second | 4,545   |  |  |
| GBN           | 77 second   | 5,902   |  |  |

GBN





Code :

[https://github.com/omaryy/assignment\\_3\\_network](https://github.com/omaryy/assignment_3_network)