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Description :

The code is divided into two parts (Server and Client).

Client reads request from a text file and pass it to the server to get the file then the client begins receiving different packets sent by the server and begin to send acks for these packets and write data of packets in file if the sequence number and waited ack are the same but if they are different then duplicate acks are sent.

Server receives the requested file from the client and searches for it , if it is found then the server begins sending the OK response to the client and different packets of file in which each packet has data of maximum size = 500 bytes . packets are sent starting from the position where the last ack was received to guarantee that data arrives in order to the client.

Data structures :

Struct packet :
struct that holds information about data packets (checksum , sequence number , length of data in packet and array of characters to hold data itself).

Struct ack_packet :
struct that holds information about ack packets (checksum , length and acknowledge number).

Main Functions and System calls:

Sendto : system call used to send data to a specific receiver.

Arguments:

- *socket:*

Specifies the socket file descriptor.

- *message:*

Points to a buffer containing the message to be sent.

- *length:*

Specifies the size of the message in bytes.

- *flags:*

Specifies the type of message transmission.

- *dest_addr:*

Points to a **sockaddr** structure containing the destination address. The length and format of the address depend on the address family of the socket.

- *dest_len:*

Specifies the length of the **sockaddr** structure pointed to by the *dest_addr* argument.

Recvfrom : system call used to receive data from a specific sender.

Arguments:

- *socket*

Specifies the socket file descriptor.

- *buffer*

Points to the buffer where the message should be stored.

- *length*

Specifies the length in bytes of the buffer pointed to by the *buffer* argument.

- *flags*

Specifies the type of message reception.

- *address*

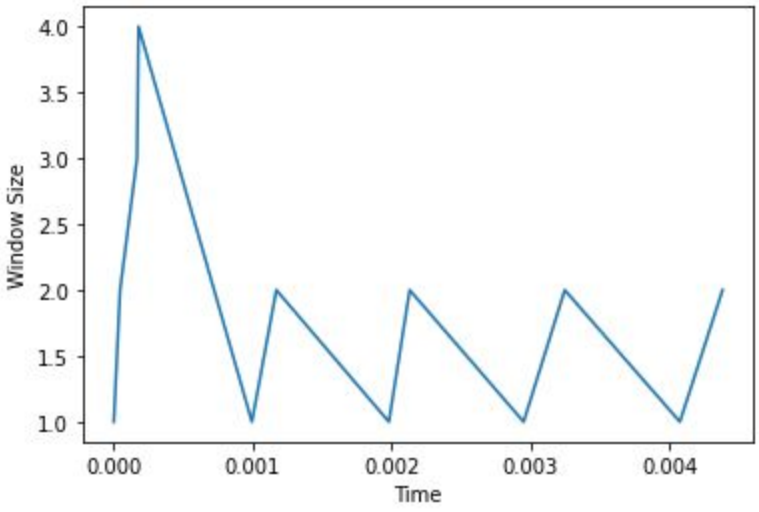
A null pointer, or points to a **sockaddr** structure in which the sending address is to be stored. The length and format of the address depend on the address family of the socket.

- *address_len*

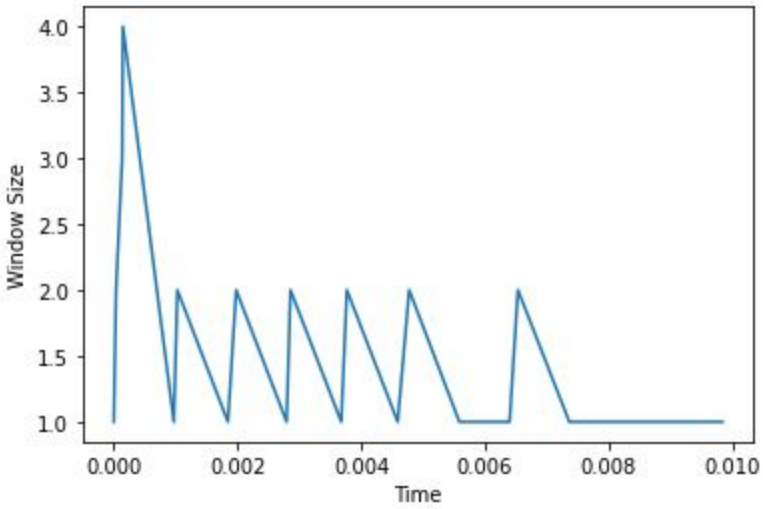
Specifies the length of the sockaddr structure pointed to by the *address* argument.

Network Analysis:

Graph for PLP = 1%



Graph for PLP = 5%



Graph for PLP = 30%