EXPERIMENT: 35

IMPLEMENTION OF SLIDING WINDOW PROTOCOL IN JAVA/C

Aim: To implement sliding window protocol in java.

Steps:

1. Set up the client-server connection:
   - Create a server socket using the `socket()` function.
   - Bind the server socket to a specific IP address and port using the `bind()` function.
   - Listen for incoming client connections using the `listen()` function.
   - Create a client socket using the `socket()` function.
   - Connect the client socket to the server using the `connect()` function.
2. Implement the sliding window protocol:
   - Define the window size (number of packets) and other necessary parameters.
   - Split the data to be sent into packets, and assign a sequence number to each packet.
   - Implement a sender, receiver window to keep track of sent and acknowledged packets.
   - Send packets from the sender window and maintain a timer for each packet.
   - Receive packets at the receiver, send acknowledgments (ACK) for correctly received packets, and discard duplicates.
   - Update the sender and receiver window based on acknowledgments.
   - Repeat the process until all packets have been sent and acknowledged.

```
Sender: Sending frame 0
Sender: Sending frame 1
Sender: Sending frame 2
Sender: Sending frame 3
Receiver: ACK 0 received
Receiver: ACK 1 received
Receiver: ACK 2 received
Receiver: ACK 3 lost!
Sender: Sending frame 3
Sender: Sending frame 4
Sender: Sending frame 5
Sender: Sending frame 6
Receiver: ACK 3 lost!
Receiver: ACK 4 received
Receiver: ACK 5 received
Receiver: ACK 6 lost!
Sender: Sending frame 3
Sender: Sending frame 6
Receiver: ACK 3 received
Receiver: ACK 6 lost!
Sender: Sending frame 6
Sender: Sending frame 7
Sender: Sending frame 8
Sender: Sending frame 9
Receiver: ACK 6 received
Receiver: ACK 7 received
Receiver: ACK 8 lost!
Receiver: ACK 9 received
Sender: Sending frame 8
Receiver: ACK 8 received

All 10 frames successfully transmitted with Selective Repeat!
```

Result: Hence implementation of sliding window protocol was done successfully in C.