Transport java questions

**Modify the UDP Sender to Send Multiple Messages**

**Question:** Modify the UDPSender class to send five consecutive messages to the UDPReceiver. After each message, include a short delay (e.g., 500 milliseconds) before sending the next one.

*What to Change:*

* Add a loop in UDPSender to send multiple messages.
* Use Thread.sleep(500) to delay each message.

**2. Add an Acknowledgment Response to the UDP Server**

**Question:** Modify the UDPReceiver to send a short acknowledgment message back to the UDPSender for each received message. The UDPSender should also be modified to listen for and print these acknowledgments.

*What to Change:*

* In UDPReceiver, create a new DatagramPacket to send a response back to the UDPSender using the client’s address and port.
* Modify UDPSender to receive and print acknowledgment messages from the server.

**3. Simulate Packet Loss in UDP by Dropping Random Messages in the Receiver**

**Question:** Modify the UDPReceiver to randomly ignore (drop) 50% of the messages it receives. Then, in the UDPSender, add logic to resend messages if no acknowledgment is received after a short delay.

*What to Change:*

* In UDPReceiver, use Random to decide if each packet should be ignored.
* Modify UDPSender to wait for an acknowledgment and resend if none is received within a set timeout.

**4. Implement Connection Termination in TCP**

**Question:** Modify the TCPClient and TCPServer to implement a graceful connection termination process. After sending a message, the TCPClient should send a special "TERMINATE" message to indicate it is done, prompting the server to close the connection gracefully.

*What to Change:*

* In TCPClient, send an extra "TERMINATE" message after the main message.
* In TCPServer, detect the "TERMINATE" message and close the socket gracefully when received.