Networking with Linux Lab
Module 2: Client Server Network topology using NS-3

Assignment 9: UDP Client Server Program using Java (Eclipse) OR C in NS3

Aim: To demonstrate communication between client and server using the User Datagram Protocol (UDP) within a network environment

Theory: UDP Protocol

UDP (User Datagram Protocol) is a connectionless transport protocol that operates on top of IP (Internet Protocol) and provides a simple, unreliable, and low-overhead communication mechanism between hosts in a network. In a UDP client-server program, the server listens for incoming UDP datagrams on a specific port, while the client sends UDP datagrams to the server's IP address and port. In Java, this can be done using the DatagramSocket and DatagramPacket classes.

Code:

> UDPServer.java

```
package UDP;

import java.io.*;
import java.net.*;

public class UDPServer {

        public static void main(String[] args) throws IOException{
                DatagramSocket server = new DatagramSocket(3500);
                byte[] buf = new byte[256];
                DatagramPacket packet = new DatagramPacket(buf, buf.length);
                server.receive(packet);
                String response = new String(packet.getData(), 0, packet.getLength());
                System.out.println("Resource Data: " + response);
                server.close();
        }

}
```

> **UDPClient.java**

package UDP;

import java.io.*;
import java.net.*;

public class UDPClient {

        public static void main(String[] args) throws IOException{
                DatagramSocket client = new DatagramSocket();
        InetAddress add = InetAddress.getByName("localhost");
        String str = "Hello, Everyone!";
        byte[] buf = str.getBytes();
        DatagramPacket p = new DatagramPacket(buf, buf.length, add, 3500);
        client.send(p);
            }

}

Output:
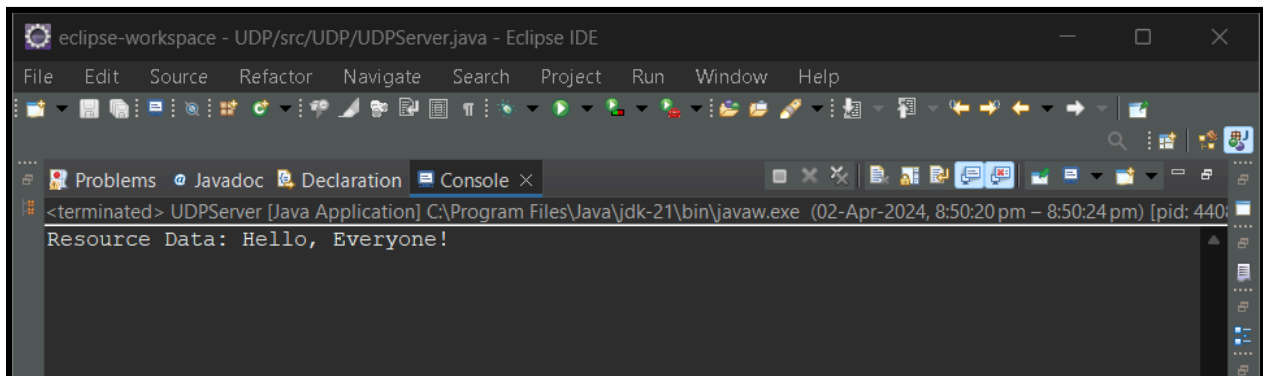
Conclusion: Successfully implemented and tested UDP communication between client and server using Java in the Eclipse environment.