SIMULATION OF DNS USING UDP SOCKETS

PROGRAM:

DNSServer

```
import java.net.*;
import java.util.HashMap;
public class DNSServer {
   public static void main(String[] args) {
      try {
         DatagramSocket serverSocket = new DatagramSocket(9876);
         byte[] receiveData = new byte[1024];
         byte[] sendData;
         // DNS table
         HashMap<String, String> dnsTable = new HashMap<>();
         dnsTable.put("www.google.com", "142.250.190.4");
         dnsTable.put("www.example.com", "93.184.216.34");
         dnsTable.put("www.openai.com", "104.22.1.46");
         System.out.println("DNS Server is running...");
         while (true) {
            // Receive domain name from client
            DatagramPacket receivePacket = new DatagramPacket(receiveData,
receiveData.length);
            serverSocket.receive(receivePacket);
            String domainName = new String(receivePacket.getData(), 0,
receivePacket.getLength());
            System.out.println("Received request for: " + domainName);
            // Look up IP address
            String ipAddress = dnsTable.getOrDefault(domainName, "Domain not found");
            // Send IP address to client
            sendData = ipAddress.getBytes();
            InetAddress clientAddress = receivePacket.getAddress();
```

```
            int clientPort = receivePacket.getPort();


            DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length,
clientAddress, clientPort);
            serverSocket.send(sendPacket);
        }
    } catch (Exception e) {
        e.printStackTrace();
    }
  }
}
```

DNSClient

```
import java.net.*;
import java.util.Scanner;
public class DNSClient {
  public static void main(String[] args) {
    try {
      DatagramSocket clientSocket = new DatagramSocket();
      InetAddress serverAddress = InetAddress.getByName("localhost");
      Scanner sc = new Scanner(System.in);
      byte[] sendData;
      byte[] receiveData = new byte[1024];
      System.out.print("Enter domain name: ");
      String domainName = sc.nextLine();
      // Send domain name to server
      sendData = domainName.getBytes();
      DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length,
serverAddress, 9876);
      clientSocket.send(sendPacket);
      // Receive IP address from server
```

```
        DatagramPacket receivePacket = new DatagramPacket(receiveData,
receiveData.length);

        clientSocket.receive(receivePacket);

        String ipAddress = new String(receivePacket.getData(), 0,
receivePacket.getLength());

        System.out.println("IP Address: " + ipAddress);


        clientSocket.close();

    } catch (Exception e) {

        e.printStackTrace();

    }

  }

}
```

OUTPUT: