**Aim: Program to simulate DHCP server and n clients.**

**Code:**

**Dhcpserver.java**

package dhcp;

import java.io.IOException; import java.net.\*;

import java.util.HashMap; import java.util.Map; public class dhcpserver {

private static final int SERVER\_PORT = 4003; public static void main(String[] args) throws IOException{

try {

DatagramSocket socket = new DatagramSocket(SERVER\_PORT); System.out.println("DHCP Server started.");

while (true) {

byte[] receiveData = new byte[1024];

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

socket.receive(receivePacket);

String message = new String(receivePacket.getData(), 0, receivePacket.getLength()); InetAddress clientAddress = receivePacket.getAddress();

int clientPort = receivePacket.getPort();

// Simulate assigning IP address

String ipAddress = "192.168.1." + (int) (Math.random() \* 255);

// Send response to client

String response = "Your IP address is: " + ipAddress; byte[] sendData = response.getBytes();

DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, clientAddress, clientPort);

socket.send(sendPacket);

System.out.println("IP address assigned to client " + clientAddress.getHostAddress() + ": " + ipAddress);

}

} catch (Exception e) { e.printStackTrace();

}

}

}

**Dhcpclient.java**

package dhcp;

import java.io.IOException; import java.net.\*;

public class dhcpclient {

private static final int SERVER\_PORT = 4003;

public static void main(String[] args) throws IOException{ try {

DatagramSocket socket = new DatagramSocket(); socket.setBroadcast(true);

// Send DHCP discovery message String message = "DHCP Discover"; byte[] sendData = message.getBytes();

DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, InetAddress.getByName("255.255.255.255"), SERVER\_PORT);

socket.send(sendPacket);

// Receive IP address assignment from DHCP server byte[] receiveData = new byte[1024];

DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length); socket.receive(receivePacket);

String response = new String(receivePacket.getData(), 0, receivePacket.getLength()); System.out.println("Received response from DHCP server: " + response); socket.close();

} catch (Exception e) { e.printStackTrace();

}

}

}

**Output:**



