Program 1.Write a networking program in Java to implement a TCP server that provides services for a TCPClient.

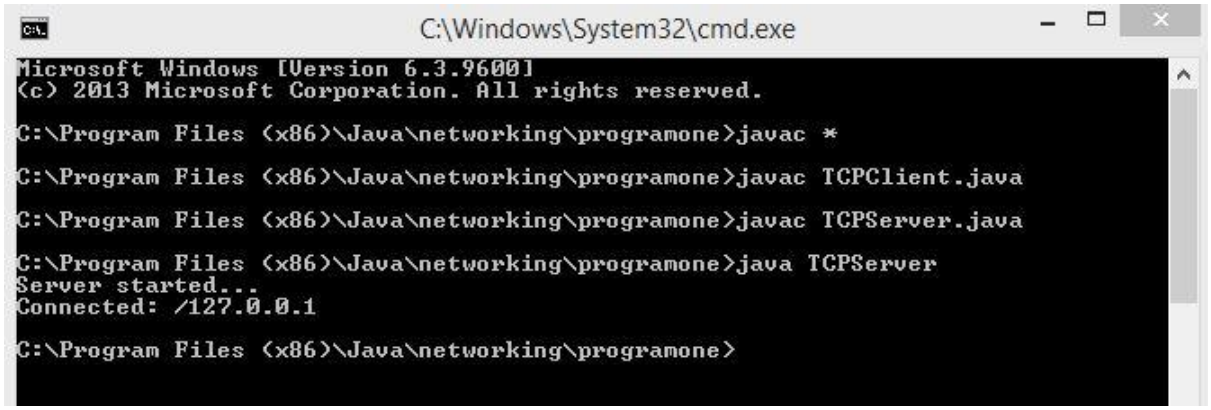
TCP Client -

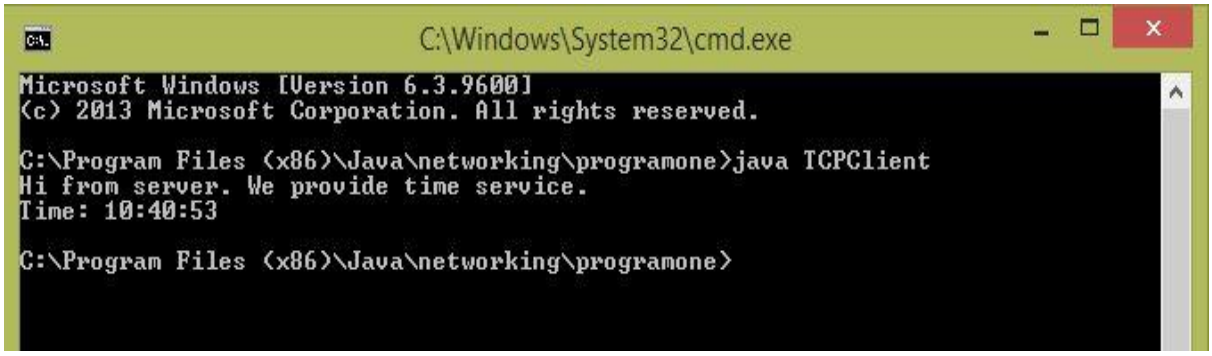
```
import java.io.*;
import java.net.*;
class TCPClient{
   public static void main(String[] args){
      Socket client;
InputStreaminputStream;
DataInputStreamdataInputStream;
      try{
         client = new Socket("localhost", 7313);
inputStream = client.getInputStream();
dataInputStream =new DataInputStream(inputStream);
System.out.println(dataInputStream.readUTF());
System.out.println(dataInputStream.readUTF());
client.close();
      }catch(IOException e){
System.out.println(e);
      }
   }
}
```

TCP Server -

```
import java.io.*;
import java.net.*;
importjava.util.*;
class TCPServer{
   public static void main(String[] args){
ServerSocket server;
      Socket client;
OutputStreamoutputStream;
DataOutputStreamdataOutputStream;
      Calendar calendar;
      try{
         server = new ServerSocket(7313);
System.out.println("Server started...");
         client = server.accept();
System.out.println("Connected:" +  client.getInetAddress());
outputStream = client.getOutputStream();
dataOutputStream = new DataOutputStream(outputStream);
dataOutputStream.writeUTF("Hi from server. We provide time          service.");
         calendar = Calendar.getInstance();
dataOutputStream.writeUTF("Time:"+ calendar.get(Calendar.HOUR_OF_DAY) + ":" +
calendar.get(Calendar.MINUTE)
         + ":" + calendar.get(Calendar.SECOND));
server.close();
      }catch(IOException e){
System.out.println(e);
      }
   }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programone>javac *
C:\Program Files (x86)\Java\networking\programone>javac TCPClient.java
C:\Program Files (x86)\Java\networking\programone>javac TCPServer.java
C:\Program Files (x86)\Java\networking\programone>java TCPServer
Server started...
Connected: /127.0.0.1
C:\Program Files (x86)\Java\networking\programone>


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programone>java TCPClient
Hi from server. We provide time service.
Time: 10:40:53
C:\Program Files (x86)\Java\networking\programone>

Program 2.Write a networking program to implement socketprogramming using User datagram Protocol inJava.

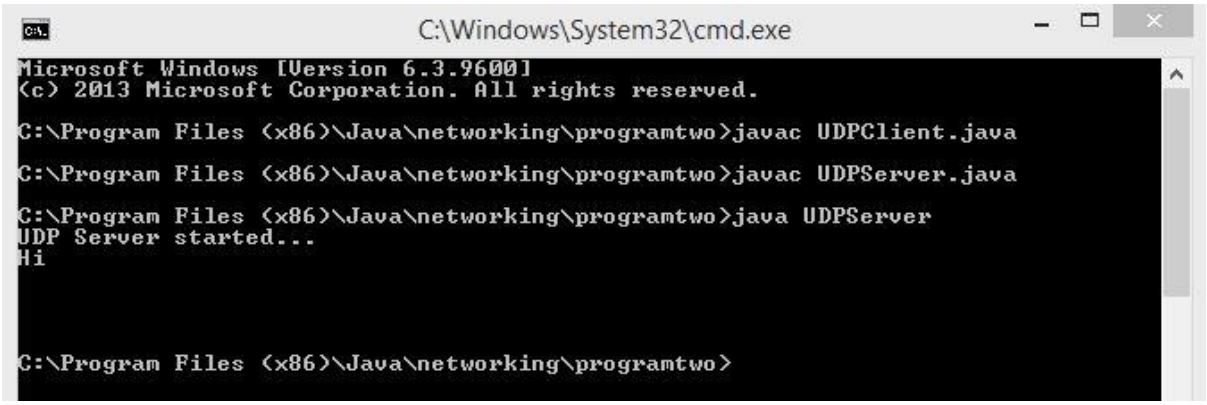
UDP Client –

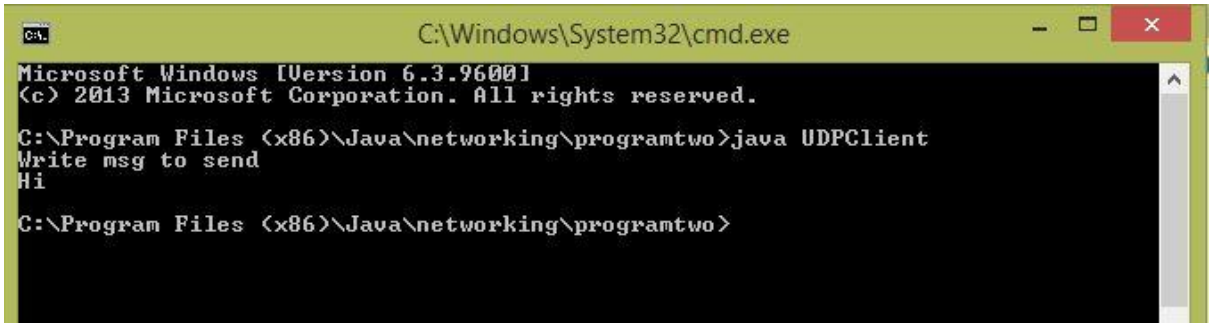
```
import java.net.*;
import java.io.*;
importjava.util.*;

public class UDPClient {
   public static void main(String[] args){
DatagramSocketdatagramSocket;
DatagramPacketdatagramPacket;
      String userInput;
InetAddressipAddr;
      Scanner scanner = new Scanner(System.in);
      byte[] bytes = new byte[1024];
      try{
datagramSocket = new DatagramSocket(7314);
ipAddr = InetAddress.getByName("localhost");
System.out.println("Write msg to send");
userInput = scanner.nextLine();
      bytes = userInput.getBytes();
datagramPacket =new DatagramPacket(bytes,bytes.length,ipAddr,7313);
datagramSocket.send(datagramPacket);
scanner.close();
      } catch (SocketException ex) {
System.out.println(ex);
      } catch (UnknownHostException ex) {
System.out.println(ex);
      } catch (IOException ex) {
System.out.println(ex);
      }
   }
}
```

UDP Server –

```
import java.net.*;
import java.io.*;
importjava.util.*;

public static void main(String[] args) {
DatagramSocketdatagramSocket;
DatagramPacketdatagramPacket;
 byte[] bytes;
       String msg;
       try {
datagramSocket = new DatagramSocket(7313);
System.out.println("UDP Server started...");
           bytes = new byte[1024];
datagramPacket = new DatagramPacket(bytes, 0,  bytes.length);
datagramSocket.receive(datagramPacket);
msg = new String(bytes);
System.out.println(msg);
       } catch (SocketException ex) {
System.out.println(ex);
       } catch (IOException ex) {
System.out.println(ex);
       }
   }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programtwo>javac UDPClient.java
C:\Program Files (x86)\Java\networking\programtwo>javac UDPServer.java
C:\Program Files (x86)\Java\networking\programtwo>java UDPServer
UDP Server started...
Hi
C:\Program Files (x86)\Java\networking\programtwo>


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programtwo>java UDPClient
Write msg to send
Hi
C:\Program Files (x86)\Java\networking\programtwo>

Program 3.Implement an FTP server using socketprogramming.

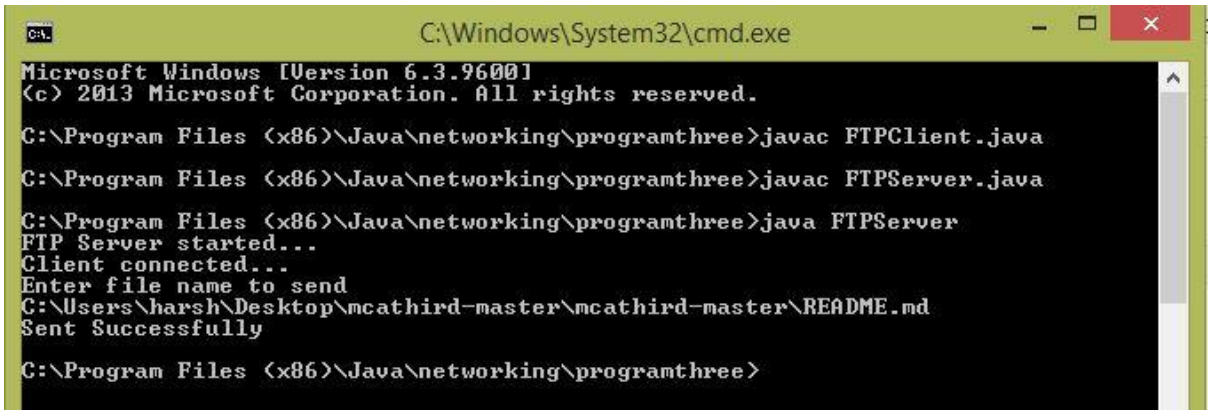
FTP Client -

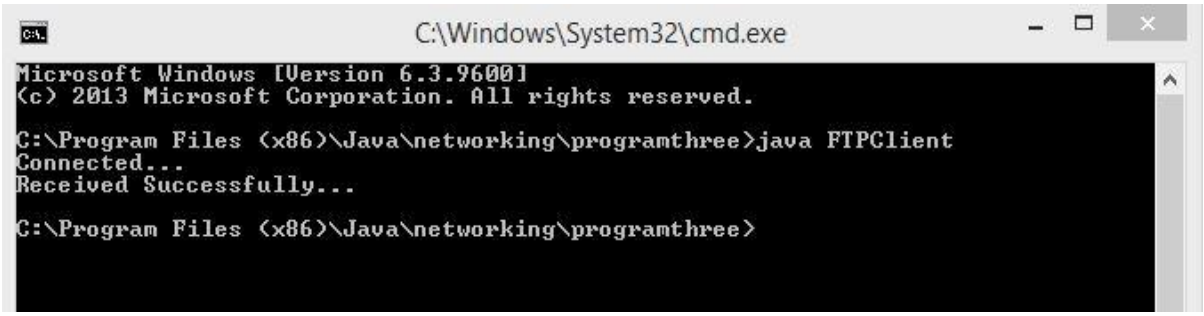
```
import java.net.*;
import java.io.*;

class FTPClient{
   public static void main(String[] args){

      String fileName;
      File file;
      FileOutputStream fileOutputStream = null;

      InputStream inputStream = null;
      DataInputStream dataInputStream = null;
      Socket socket = null;
      byte[] byteArray;
      try {
         socket = new Socket("localhost", 7313);
         System.out.println("Connected...");

         inputStream = socket.getInputStream();

         dataInputStream = new DataInputStream(inputStream);

         fileName = dataInputStream.readUTF();
         file = new File(fileName);
         fileOutputStream = new FileOutputStream(file);

         int bytesRead = 0;
         byteArray = new byte[1024 * 10];

         while((bytesRead = inputStream.read(byteArray)) > -1){
            fileOutputStream.write(byteArray, 0, bytesRead);
         }
         System.out.println("Received Successfully...");
         fileOutputStream.close();
         socket.close();

      } catch (IOException e) {
         System.err.println("Error 1");
         e.printStackTrace();
      }
   }
}
```

FTPServer -

```
import java.net.*;
import java.io.*;
import java.util.*;

class FTPServer{
   public static void main(String[] args){
      String fileName = null;
      FileInputStream fileInputStream = null;
      OutputStream outputStream = null;
      DataOutputStream dataOutputStream = null;
      ServerSocket serverSocket = null;
      Socket client = null;
      Scanner scan = new Scanner(System.in);
      File file;
      byte[] bytes;
      try
      {
         serverSocket = new ServerSocket(7313);
         System.out.println("FTP Server started...");
         client = serverSocket.accept();
         System.out.println("Client connected...");
         outputStream = client.getOutputStream();
         dataOutputStream = new DataOutputStream(outputStream);
         System.out.println("Enter file name to send");
         fileName = scan.nextLine();
         file = new File(fileName);
         fileInputStream = new FileInputStream(file);
         int fileLength = (int) file.length();
         bytes = new byte[fileLength];
         fileInputStream.read(bytes, 0, bytes.length);
         dataOutputStream.writeUTF(file.getName());
         outputStream.write(bytes, 0, bytes.length);
         outputStream.close();
         scan.close();
         System.out.println("Sent Successfully");
         serverSocket.close();
      } catch (IOException e) {
         e.printStackTrace();
      }
   }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programthree>javac FTPClient.java
C:\Program Files (x86)\Java\networking\programthree>javac FTPServer.java
C:\Program Files (x86)\Java\networking\programthree>java FTPServer
FTP Server started...
Client connected...
Enter file name to send
C:\Users\harsh\Desktop\mcathird-master\mcathird-master\README.md
Sent Successfully
C:\Program Files (x86)\Java\networking\programthree>


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programthree>java FTPClient
Connected...
Received Successfully...
C:\Program Files (x86)\Java\networking\programthree>

Program 4.Implement a chat server using socketprogramming.

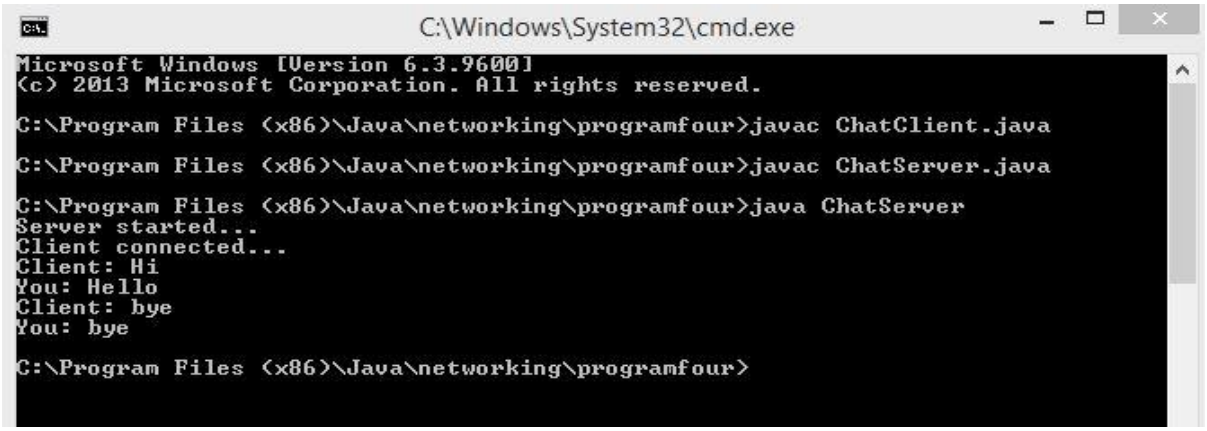
Chat Client -

```
import java.net.*;
import java.io.*;
import java.util.*;

class ChatClient{
   public static void main(String[] args){
      Socket socket = null;
      Scanner scan = new Scanner(System.in);
      String yourMsg, serverMsg;
      InputStream inputStream = null;
      OutputStream outputStream = null;
      DataInputStream dataInputStream = null;
      DataOutputStream dataOutputStream = null;
      try{
         socket = new Socket("localhost", 7313);
         System.out.println("Connected...");
         inputStream = socket.getInputStream();
         outputStream = socket.getOutputStream();
         dataInputStream = new DataInputStream(inputStream);
         dataOutputStream = new DataOutputStream(outputStream);
         while(true){
            serverMsg = dataInputStream.readUTF();
            if(serverMsg.equals("exit")){
               break;
            }
            System.out.println("Server: " + serverMsg);
            System.out.print("You: ");
            yourMsg = scan.nextLine();
            dataOutputStream.writeUTF(yourMsg);
            if(yourMsg.equals("exit")){
               break;
            }
         }
         socket.close();
      }catch(IOException e){
         System.out.println(e);
      }
   }
}
```

ChatServer -

```
import java.net.*;
import java.io.*;
import java.util.*;

class ChatServer{
   public static void main(String[] args){
      ServerSocket serverSocket = null;
      Socket client = null;
      Scanner scan = new Scanner(System.in);
      String yourMsg, clientMsg;
      OutputStream outputStream = null;
      InputStream inputStream = null;
      DataOutputStream dataOutputStream = null;
      DataInputStream dataInputStream = null;
      try {
         serverSocket = new ServerSocket(7313);
         System.out.println("Server started...");
         client = serverSocket.accept();
         System.out.println("Client connected...");
         outputStream = client.getOutputStream();
         inputStream = client.getInputStream();
         dataOutputStream = new DataOutputStream(outputStream);
         dataInputStream = new DataInputStream(inputStream);
         dataOutputStream.writeUTF("Hi from server");
         while(true){
            clientMsg = dataInputStream.readUTF();
            if(clientMsg.equals("exit")){
               break;
            }
            System.out.println("Client: " + clientMsg);
            System.out.print("You: ");
            yourMsg = scan.nextLine();
            dataOutputStream.writeUTF(yourMsg);
            if(yourMsg.equals("exit")){
               break;
            }
         }
         serverSocket.close();
      }catch(IOException e){
         System.out.println(e);
      }
   }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programfour>javac ChatClient.java
C:\Program Files (x86)\Java\networking\programfour>javac ChatServer.java
C:\Program Files (x86)\Java\networking\programfour>java ChatServer
Server started...
Client connected...
Client: Hi
You: Hello
Client: bye
You: bye
C:\Program Files (x86)\Java\networking\programfour>


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programfour>java ChatClient
Connected...
Server: Hi from server
You: Hi
Server: Hello
You: bye
Server: bye
You: exit
C:\Program Files (x86)\Java\networking\programfour>

Program 5.Implement an ECHO server using socketprogramming.

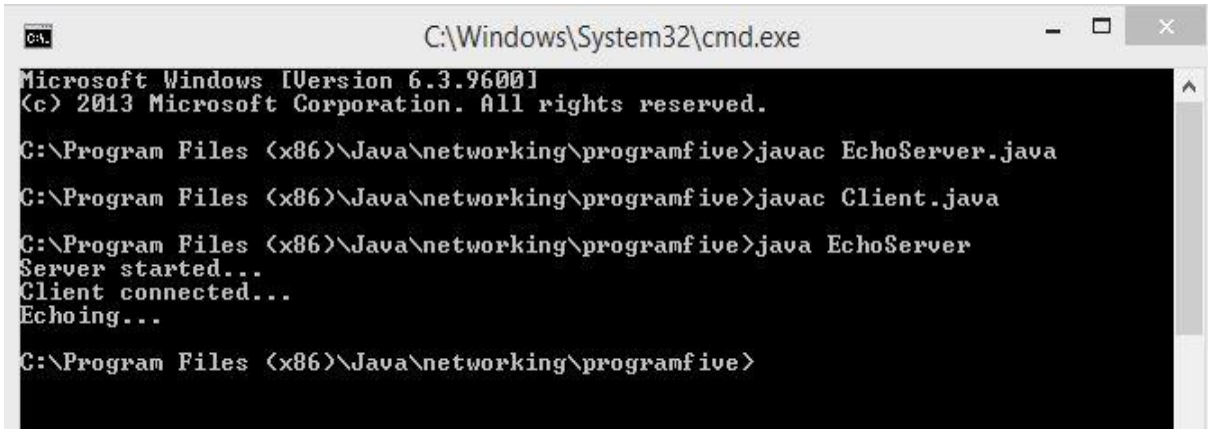
ECHO Client -

```
import java.net.*;
import java.io.*;
import java.util.*;

class Client{
   public static void main(String[] args){
      Socket socket = null;
      Scanner scan = new Scanner(System.in);
      String yourMsg, echo;
      InputStream inputStream = null;
      OutputStream outputStream = null;
      DataInputStream dataInputStream = null;
      DataOutputStream dataOutputStream = null;
      try{
         socket = new Socket("localhost", 7313);
         System.out.println("Connected...");

         inputStream = socket.getInputStream();
         outputStream = socket.getOutputStream();

         dataInputStream = new DataInputStream(inputStream);
         dataOutputStream = new DataOutputStream(outputStream);

         System.out.println("Enter msg to echo...");
         yourMsg = scan.nextLine();

         dataOutputStream.writeUTF(yourMsg);
         echo = dataInputStream.readUTF();

         System.out.println(echo);
         System.out.println("Echoed successfully");
         socket.close();
         scan.close();
      }catch(IOException e){
         System.out.println(e);
      }
   }
}
```

ECHOServer -

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

class EchoServer{
   public static void main(String[] args){
      ServerSocket serverSocket = null;
      Socket client = null;
      String clientMsg;

      InputStream inputStream = null;
      OutputStream outputStream = null;

      DataInputStream dataInputStream = null;
      DataOutputStream dataOutputStream = null;
      try
      {
         serverSocket = new ServerSocket(7313);
         System.out.println("Server started...");
         client = serverSocket.accept();
         System.out.println("Client connected...");

         inputStream = client.getInputStream();
         outputStream = client.getOutputStream();

         dataInputStream = new DataInputStream(inputStream);
         dataOutputStream = new DataOutputStream(outputStream);

         clientMsg = dataInputStream.readUTF();
         System.out.println("Echoing...");
         dataOutputStream.writeUTF(clientMsg);

         serverSocket.close();
      }catch(IOException e){
         System.out.println(e);
      }
   }
}
```

Output:

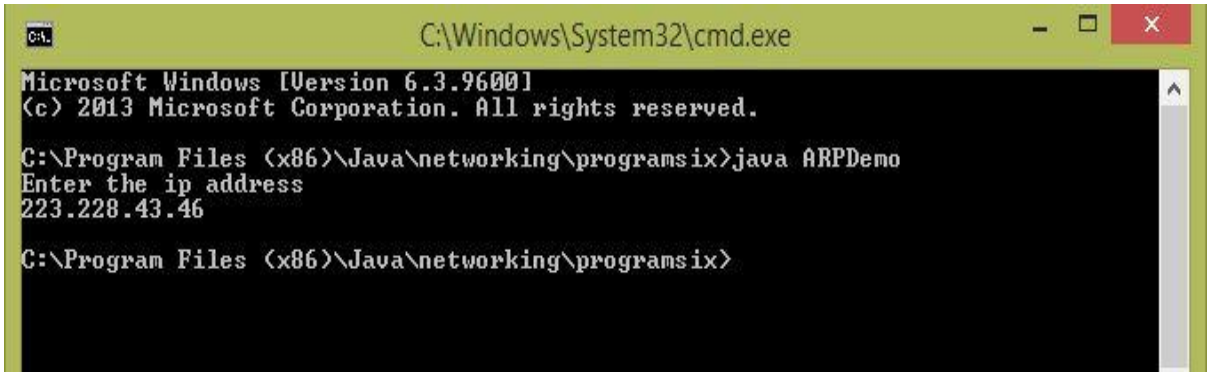

C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programfive>javac EchoServer.java
C:\Program Files (x86)\Java\networking\programfive>javac Client.java
C:\Program Files (x86)\Java\networking\programfive>java EchoServer
Server started...
Client connected...
Echoing...
C:\Program Files (x86)\Java\networking\programfive>


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programfive>java Client
Connected...
Enter msg to echo...
hii
hii
Echoed successfully
C:\Program Files (x86)\Java\networking\programfive>

Program 6.Implement Address Resolution Protocol using socketprogramming.

```
import java.net.*;
import java.io.*;
import java.util.*;

public class ARPDemo {
   public static void main(String[] args) {
      String ip;
         Scanner scan = new Scanner(System.in);
      ProcessBuilder processBuilder = new ProcessBuilder();
      Process process;
         System.out.println("Enter the ip address");
         ip = scan.nextLine();
      InputStream is;
         try{
         InetAddress inet = InetAddress.getByName(ip);
         if(inet.isReachable(5000)){
            process = processBuilder.command("arp", "-a").start();
            is = process.getInputStream();
            BufferedReader buff = new BufferedReader(new InputStreamReader(is));
            String res;
            while((res = buff.readLine()) != null){
               if(res.contains(ip)){
                  res = res.trim();
                  res = res.replaceAll(" +", " ");
                  String[] array = res.split(" ");
                  System.out.println(array[0] + " ==> " + array[1]);
               }
            }
         }else{
            System.out.println("Host is not present");
         }
         }catch(Exception e){
         System.out.println(e);
         }
   }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programsix>java ARPDemo
Enter the ip address
223.228.43.46
C:\Program Files (x86)\Java\networking\programsix>

Program 7.Implement Ping server and Ping client using socketprogramming.

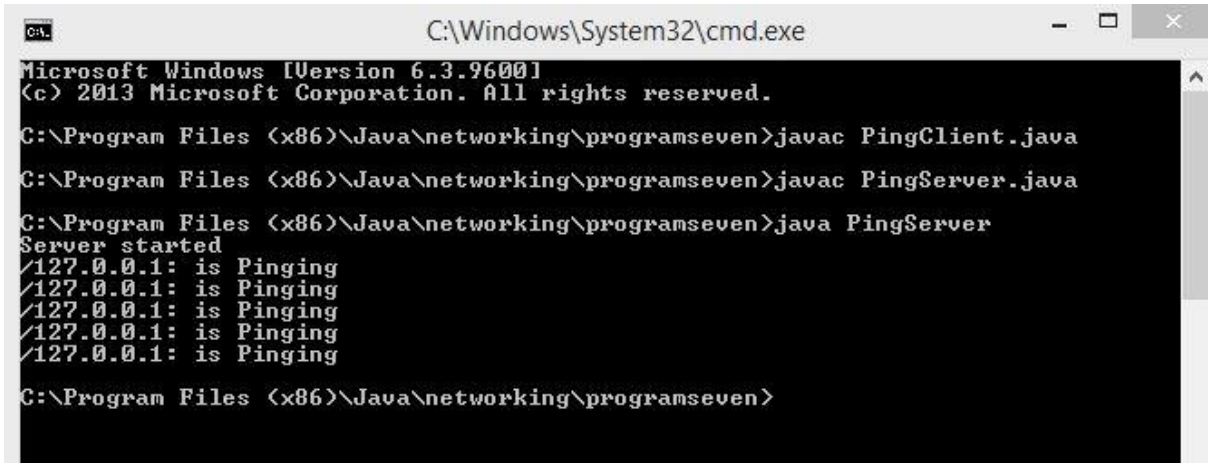
Ping Client –

```
import java.net.*;
import java.io.*;
import java.util.*;

public class PingClient {
   public static void main(String[] args){
      DatagramSocket socket;
      DatagramPacket packet;
      InetAddress ipaddr;
      byte[] bytes;
      int n = 0;
      String str;
      long sTime;
      long rTime;
      long cTime;
      try{
         socket = new DatagramSocket(7312);
         ipaddr = InetAddress.getByName("localhost");
         while(n < 5){
            str = "dummy packet";
            bytes = str.getBytes();
           packet=new DatagramPacket(bytes,bytes.length,ipaddr,7313);
            socket.send(packet);
            sTime = new Date().getTime();
            try{
               byte[] rBytes = new byte[1024];
               DatagramPacket rPacket = new DatagramPacket(rBytes, 0, rBytes.length);
                                    socket.setSoTimeout(5000);                socket.receive(rPacket);
                                    rTime = new Date().getTime();
               cTime = rTime - sTime;
               System.out.println("Reply from " + rPacket.getAddress().toString() + ": time < " +
                     cTime + "ms");
            }catch(IOException ex){
               System.out.println("Request Timeout: " + n);
            }
            Thread.sleep(1000);
            n++;
         }

      } catch (SocketException ex) {
         System.out.println(ex.getMessage());
      } catch (UnknownHostException ex) {
         System.out.println(ex.getMessage());
      } catch (IOException ex) {
         System.out.println(ex.getMessage());
      } catch (InterruptedException ex) {
         System.out.println(ex.getMessage());
      }

   }
}
```

PingServer –

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

public class PingServer {
   public static void main(String[] args){
      DatagramSocket sock;
      DatagramPacket packet;
      byte[] rBytes = new byte[1024];
      String msg;
      String str;
      int n = 0;
      try {
         sock = new DatagramSocket(7313);
         System.out.println("Server started");
         packet = new DatagramPacket(rBytes, 0, rBytes.length);
         while(n < 5){
            sock.receive(packet);
            msg = new String(rBytes);
            System.out.println(packet.getAddress().toString() + ": is Pinging");
            byte[] sBytes;
            str = "dummy packet";
            sBytes = str.getBytes();
            DatagramPacket sPacket = new DatagramPacket(sBytes,0, sBytes.length,
InetAddress.getByName("localhost"), 7312);
            sock.send(sPacket);
            n++;
         }
      } catch (SocketException ex) {
         System.out.println(ex.getMessage());
      } catch (IOException ex) {
         System.out.println(ex.getMessage());
      }
   }
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programseven>javac PingClient.java
C:\Program Files (x86)\Java\networking\programseven>javac PingServer.java
C:\Program Files (x86)\Java\networking\programseven>java PingServer
Server started
/127.0.0.1: is Pinging
/127.0.0.1: is Pinging
/127.0.0.1: is Pinging
/127.0.0.1: is Pinging
/127.0.0.1: is Pinging
C:\Program Files (x86)\Java\networking\programseven>


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programseven>java PingClient
Reply from /127.0.0.1: time < 9ms
Reply from /127.0.0.1: time < 1ms
Reply from /127.0.0.1: time < 1ms
Reply from /127.0.0.1: time < 1ms
Reply from /127.0.0.1: time < 1ms
C:\Program Files (x86)\Java\networking\programseven>

Program 8.Implement Remote Command Execution using networkprogramming.

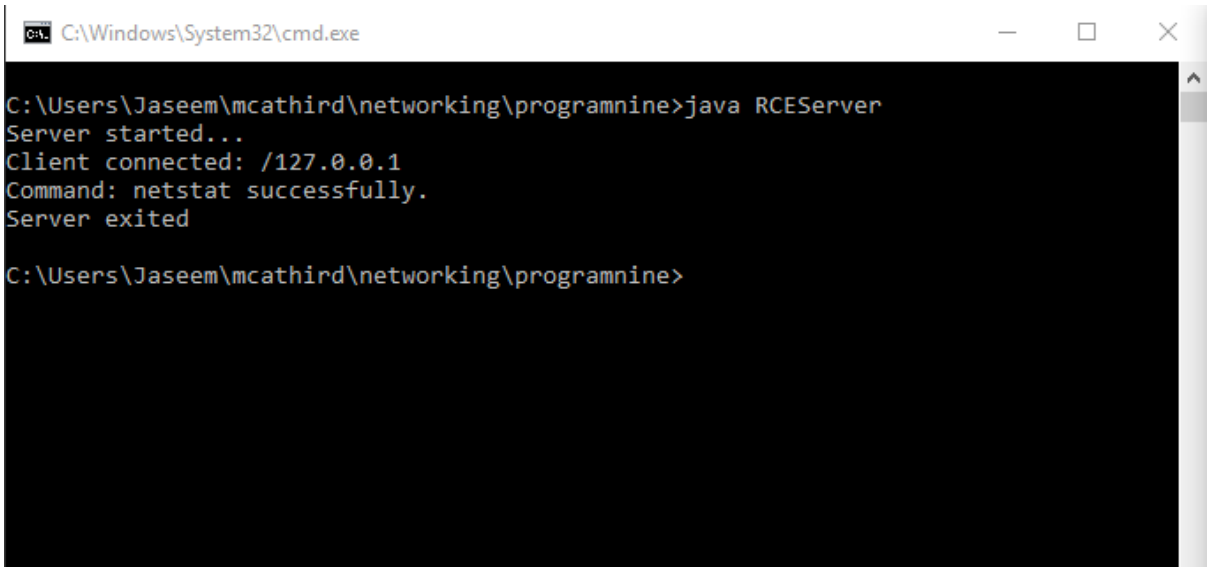
RCE Client –

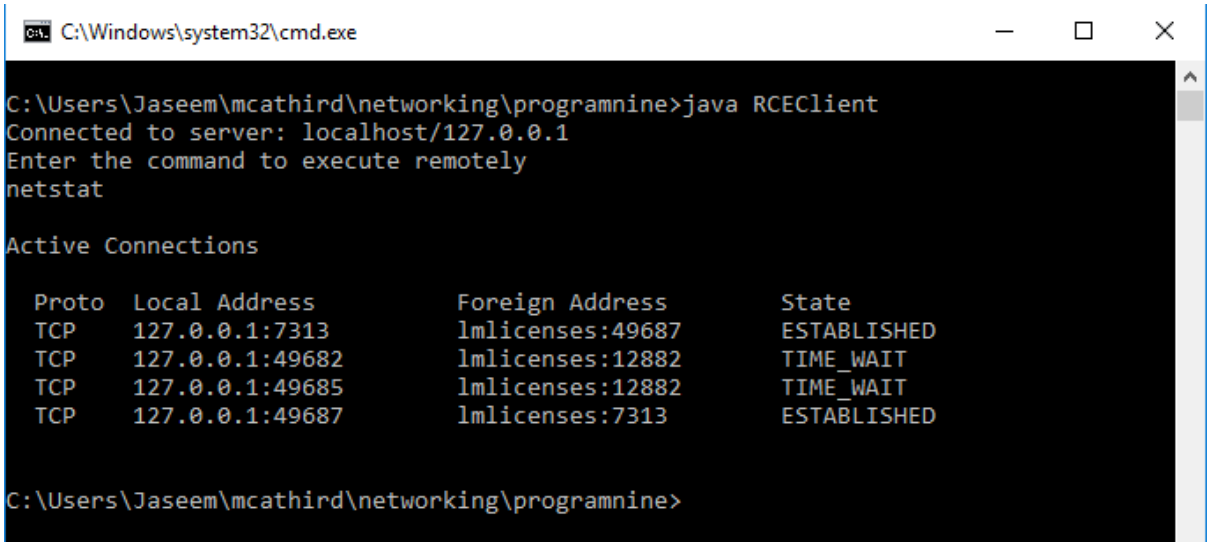
```
import java.net.*;
import java.io.*;
import java.util.*;

public class RCEClient {
   public static void main(String[] args){
Socket client;
      InputStream is;
      OutputStream os;
      DataOutputStream dos;
DataInputStream dis;
      Scanner scan = new Scanner(System.in);
      String cmd;

      try{
         client = new Socket("localhost", 7313);
         System.out.println("Connected to server: " + client.getInetAddress());
         System.out.println("Enter the command to execute remotely");
         cmd = scan.nextLine();
         is = client.getInputStream();
         os = client.getOutputStream();
         dis = new DataInputStream(is);
         dos = new DataOutputStream(os);
         dos.writeUTF(cmd);
         System.out.println(dis.readUTF());
         os.flush();
         client.close();
      }catch(IOException e){
         System.out.println(e.getMessage());
      }
}
}
```

RCEServer –

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

class RCEServer {

   public static void main(String[] args) {
        ServerSocket server;
        Socket client;
        OutputStream os;
        InputStream is;
        InputStream commandInputStream;
 DataInputStream dis;
        DataOutputStream dos;
        String[] command;
        Process process;
        ProcessBuilder pB = new ProcessBuilder();
        try{
           server = new ServerSocket(7313);
           System.out.println("Server started...");
           client = server.accept();
           System.out.println("Client connected: " + client.getInetAddress());
           os = client.getOutputStream();
           is = client.getInputStream();
           dis = new DataInputStream(is);
           dos = new DataOutputStream(os);
           String cmd = dis.readUTF();
           cmd = cmd.trim();
           command = cmd.split(" ");
           process = pB.command(command).start();
         commandInputStream = process.getInputStream();
           BufferedReader buff = new BufferedReader(new
         InputStreamReader(commandInputStream));
          String read;
         String result = "";
         while ((read = buff.readLine()) != null){
                  result = read + "\n" + result;
         }
         dos.writeUTF(result);
         dos.flush();
         System.out.println("Command: " + cmd + " successfully.");
         System.out.println("Server exited");
         server.close();
       }catch(IOException e){
                  System.out.println(e.getMessage());
         }
   }
}
```

Output:

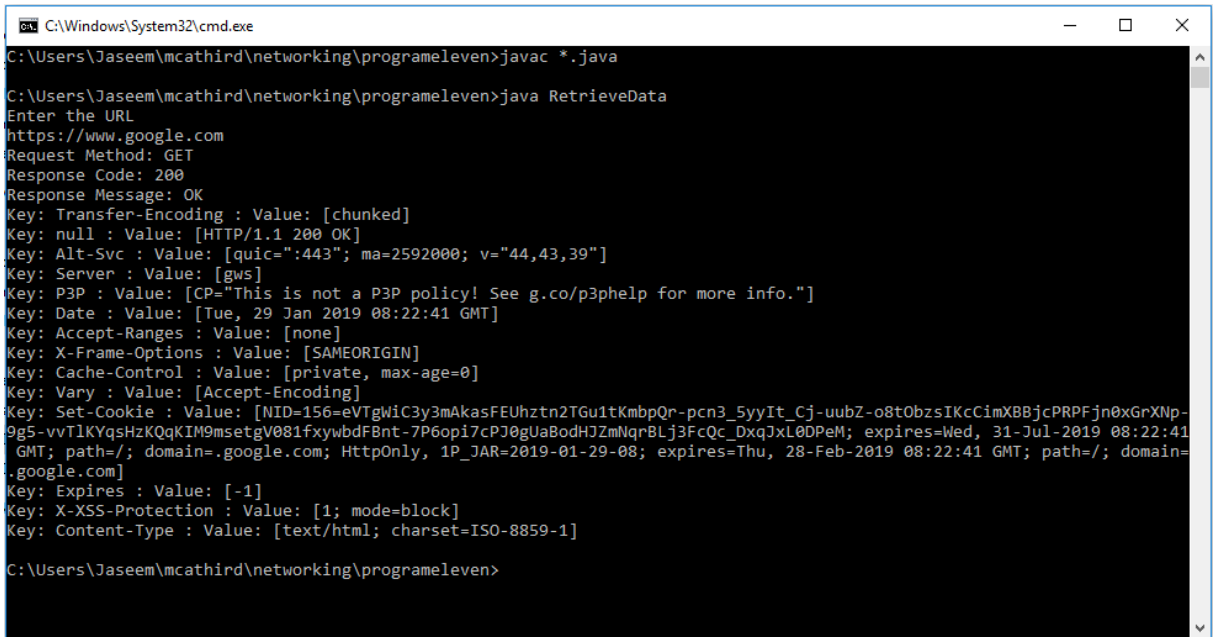

C:\Windows\System32\cmd.exe
C:\Users\Jaseem\mcathird\networking\programnine>java RCEServer
Server started...
Client connected: /127.0.0.1
Command: netstat successfully.
Server exited
C:\Users\Jaseem\mcathird\networking\programnine>


C:\Windows\system32\cmd.exe
C:\Users\Jaseem\mcathird\networking\programnine>java RCEClient
Connected to server: localhost/127.0.0.1
Enter the command to execute remotely
netstat
Active Connections
Proto Local Address Foreign Address State
TCP 127.0.0.1:7313 lmlicenses:49687 ESTABLISHED
TCP 127.0.0.1:49682 lmlicenses:12882 TIME_WAIT
TCP 127.0.0.1:49685 lmlicenses:12882 TIME_WAIT
TCP 127.0.0.1:49687 lmlicenses:7313 ESTABLISHED
C:\Users\Jaseem\mcathird\networking\programnine>

Program 9.Implement a program to retrieve the data for the specifiedURL.

```
import java.net.*;
import java.io.*;
import java.util.*;

public class RetrieveData {
   public static void main(String[] args) {
      Scanner scan = new Scanner(System.in);
      HttpURLConnection connection;
      URL url;
      String input;
      try {
         System.out.println("Enter the URL");
         input = scan.nextLine();
         url = new URL(input);
         connection = (HttpURLConnection) url.openConnection();
         System.out.println("Request Method: " + connection.getRequestMethod());
         System.out.println("Response Code: " + connection.getResponseCode());
         System.out.println("Response Message: " + connection.getResponseMessage());
         Map<String, List<String>> headerFields = connection.getHeaderFields();
         Set<String> headerKeys = headerFields.keySet();
         for(String key: headerKeys){
            System.out.println("Key: " + key + " : " + "Value: " + headerFields.get(key));
         }
         connection.disconnect();
         scan.close();
      } catch (Exception ex) {
         System.out.println(ex);
      }
   }
}
```

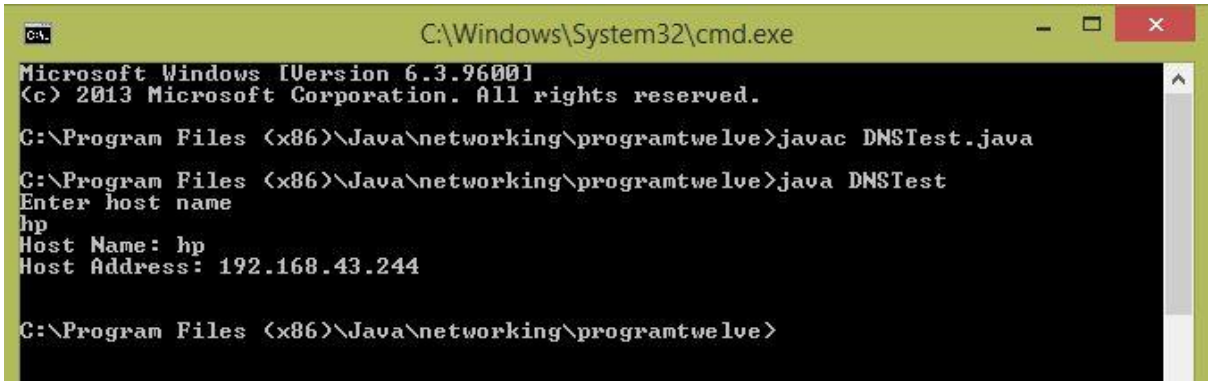
Output:


C:\Windows\System32\cmd.exe
C:\Users\Jaseem\mcathird\networking\programeleven>javac *.java
C:\Users\Jaseem\mcathird\networking\programeleven>java RetrieveData
Enter the URL
https://www.google.com
Request Method: GET
Response Code: 200
Response Message: OK
Key: Transfer-Encoding : Value: [chunked]
Key: null : Value: [HTTP/1.1 200 OK]
Key: Alt-Svc : Value: [quic=":443"; ma=2592000; v="44,43,39"]
Key: Server : Value: [gws]
Key: P3P : Value: [CP="This is not a P3P policy! See g.co/p3phelp for more info."]
Key: Date : Value: [Tue, 29 Jan 2019 08:22:41 GMT]
Key: Accept-Ranges : Value: [none]
Key: X-Frame-Options : Value: [SAMEORIGIN]
Key: Cache-Control : Value: [private, max-age=0]
Key: Vary : Value: [Accept-Encoding]
Key: Set-Cookie : Value: [NID=156=eVTgWiC3y3mAkasFEUhztn2TGu1tKmbpQr-pcn3_5yyIt_Cj-uubZ-o8tObzsIKcCimXBBjcPRPFjn0xGrXNp-9g5-vvTlKYqsHzKQqKIM9msetgV081fxywbdFBnt-7P6opi7cPJ0gUaBodHJZmNqrBLj3FcQc_DxqJxL0DPeM; expires=Wed, 31-Jul-2019 08:22:41 GMT; path=/; domain=.google.com; HttpOnly, 1P_JAR=2019-01-29-08; expires=Thu, 28-Feb-2019 08:22:41 GMT; path=/; domain=.google.com]
Key: Expires : Value: [-1]
Key: X-XSS-Protection : Value: [1; mode=block]
Key: Content-Type : Value: [text/html; charset=ISO-8859-1]
C:\Users\Jaseem\mcathird\networking\programeleven>

Program 10.Write a Java program to check whether the given DNS is found in the internet ornot.

```
import java.net.*;
import java.util.*;

class DNSTest{
        public static void main(String[] args){
                String host = new String();
                Scanner input = new Scanner(System.in);
                InetAddress inetAddress;
                try{
                        System.out.println("Enter host name");
                        host = input.nextLine();
                        inetAddress = InetAddress.getByName(host);
                        System.out.println("Host Name: " + inetAddress.getHostName());
                        System.out.println("Host Address: " +
inetAddress.getHostAddress());
                        System.out.println();
                }catch(UnknownHostException e){
                        System.out.println("Host not found: " + host);
                }

        }
}
```

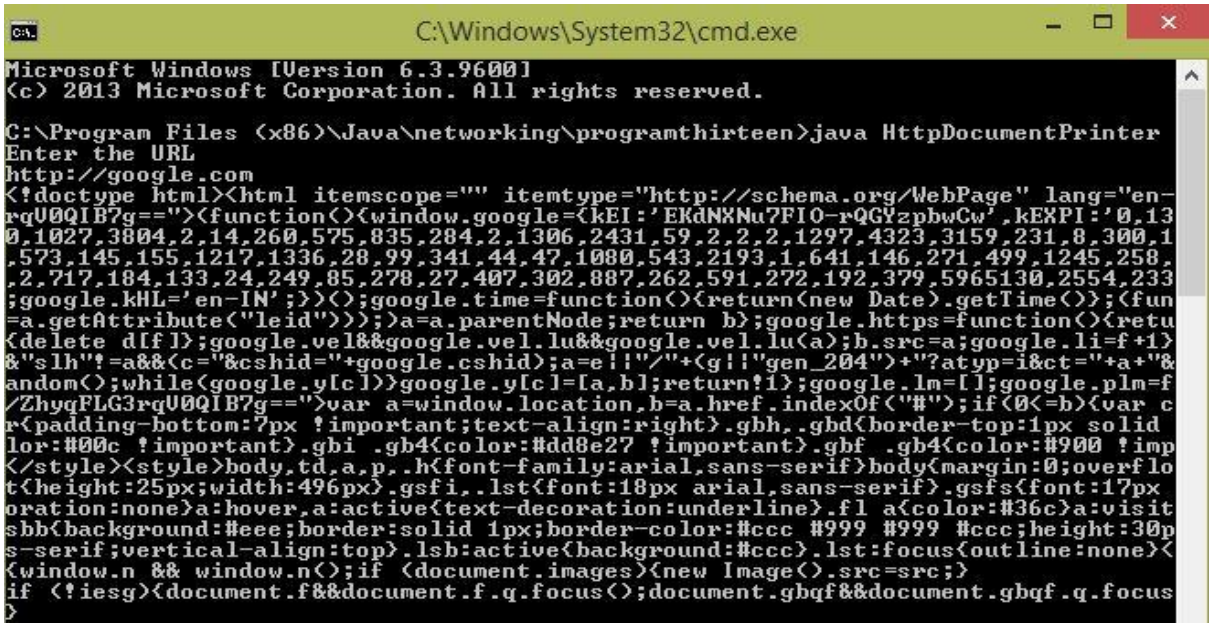
Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programtwelve>javac DNSTest.java
C:\Program Files (x86)\Java\networking\programtwelve>java DNSTest
Enter host name
hp
Host Name: hp
Host Address: 192.168.43.244
C:\Program Files (x86)\Java\networking\programtwelve>

Program 11.Write a network program using HTTP to print the document for the givenURL.

```
import java.net.*;
import java.io.*;
import java.util.*;

public class HttpDocumentPrinter {

   public static void main(String[] args) {
      Scanner scan = new Scanner(System.in);
      HttpURLConnection connection;
      URL url;
      InputStream inputStream;
      String input;
      try {
         System.out.println("Enter the URL");
         input = scan.nextLine();
         url = new URL(input);
         connection = (HttpURLConnection) url.openConnection();
         inputStream = connection.getInputStream();
         int read;
         while((read = inputStream.read()) > -1){
            char ch = (char) read;
            System.out.print(ch);
         }
         scan.close();
      } catch (Exception ex) {
         System.out.println(ex);
      }
   }
}
```

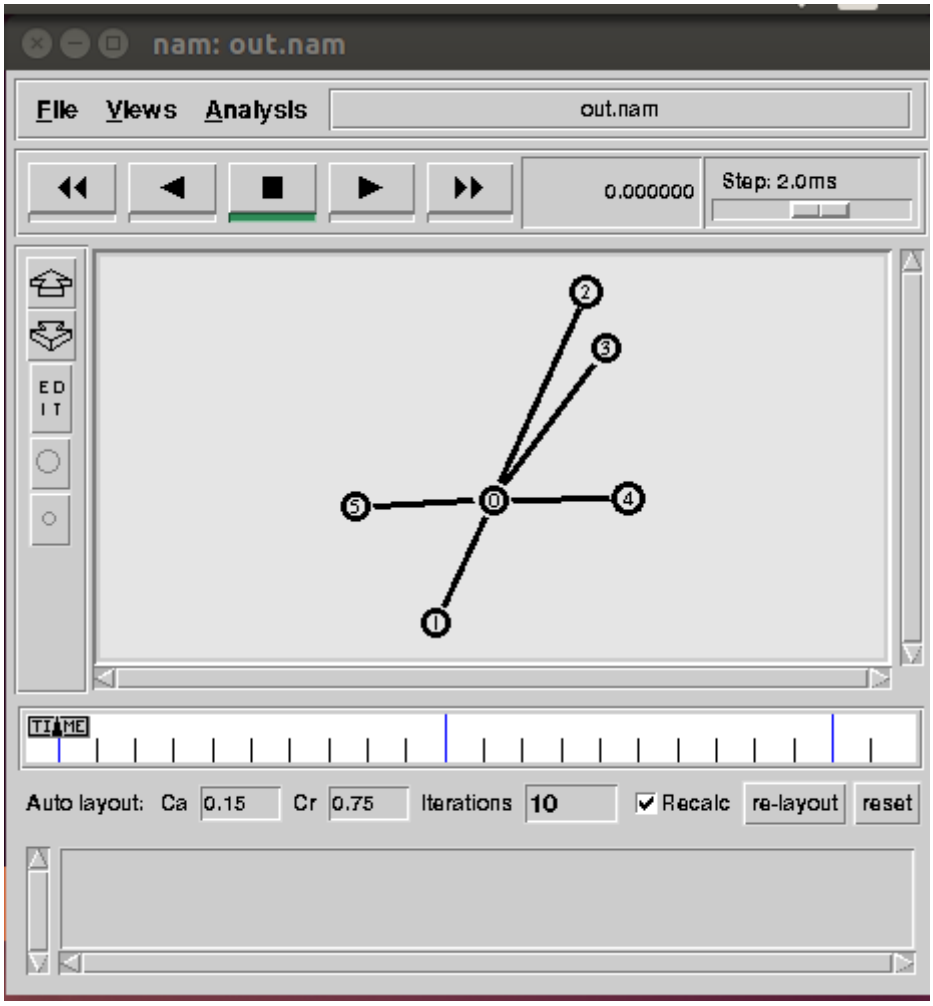
Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\Java\networking\programthirteen>java HttpDocumentPrinter
Enter the URL
http://google.com
<!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="en-
rqV0QIB7g==">(function(){window.google={kEI:'EKdNXNu7FIO-rQGYzpbwCw',kEXPI:'0,13
0,1027,3804,2,14,260,575,835,284,2,1306,2431,59,2,2,2,1297,4323,3159,231,8,300,1
,573,145,155,1217,1336,28,99,341,44,47,1080,543,2193,1,641,146,271,499,1245,258,
,2,717,184,133,24,249,85,278,27,407,302,887,262,591,272,192,379,5965130,2554,233
;google.kHL='en-IN';})();google.time=function(){return(new Date).getTime()};(fun
=a.getAttribute("leid")));)a=a.parentNode;return b};google.https=function(){retu
{delete d[f];google.vel&&google.vel.lu&&google.vel.lu(a);b.src=a;google.li=f+1}
&"slh"!=a&&(c="&cshid="+google.cshid);a=e||"/"+(g||"gen_204")+"?atyp=i&ct="+a+"&
andom();while(google.y[c])}google.y[c]=[a,b];return!1};google.lm=[];google.plm=f
/ZhyqFLG3rqV0QIB7g==">var a=window.location,b=a.href.indexOf("#");if(0<=b){var c
r{padding-bottom:7px !important;text-align:right}.gbh,.gbd{border-top:1px solid
lor:#00c !important}.gbi .gb4{color:#dd8e27 !important}.gbf .gb4{color:#900 !imp
</style><style>body,td,a,p,.h{font-family:arial,sans-serif}body{margin:0;overflo
t{height:25px;width:496px}.gsfi,.lst{font:18px arial,sans-serif}.gsfs{font:17px
oration:none}a:hover,a:active{text-decoration:underline}.fl a{color:#36c}a:visit
sbb{background:#eee;border:solid 1px;border-color:#ccc #999 #999 #ccc;height:30p
s-serif;vertical-align:top}.lsb:active{background:#ccc}.lst:focus{outline:none}(
{window.n && window.n();if (document.images){new Image().src=src;}
if (!iesg){document.f&&document.f.q.focus();document.gbqf&&document.gbqf.q.focus
}

Program 12.Implementation of STAR topology.

```
set ns [new Simulator]
set f [open "Out.tr" w]

$ns trace-all $f
setfr [open "out.nam" w]
$ns namtrace-all $fr

proc finish {} {
global ns f fr
$ns flush-trace
close $f
close $fr
execnamout.nam&
exit
}

set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
set n4 [$ns node]
set n5 [$ns node]

$ns duplex-link $n1 $n0 2Mb 5ms DropTail
$ns duplex-link $n2 $n0 2Mb 5ms DropTail
$ns duplex-link $n3 $n0 2Mb 5ms DropTail
$ns duplex-link $n4 $n0 2Mb 5ms DropTail
$ns duplex-link $n5 $n0 2Mb 5ms DropTail

set tcp0 [new Agent/TCP]
$ns attach-agent $n1 $tcp0
set ftp [new Application/FTP]
$ftp attach-agent $tcp0

set sink [new Agent/TCPSink]
$ns attach-agent $n3 $sink
$ns connect $tcp0 $sink

$ns at .1 "$ftp start"

$ns at 2 "$ftp stop"

$ns at 2.1 "finish"

$ns run
```

Output:

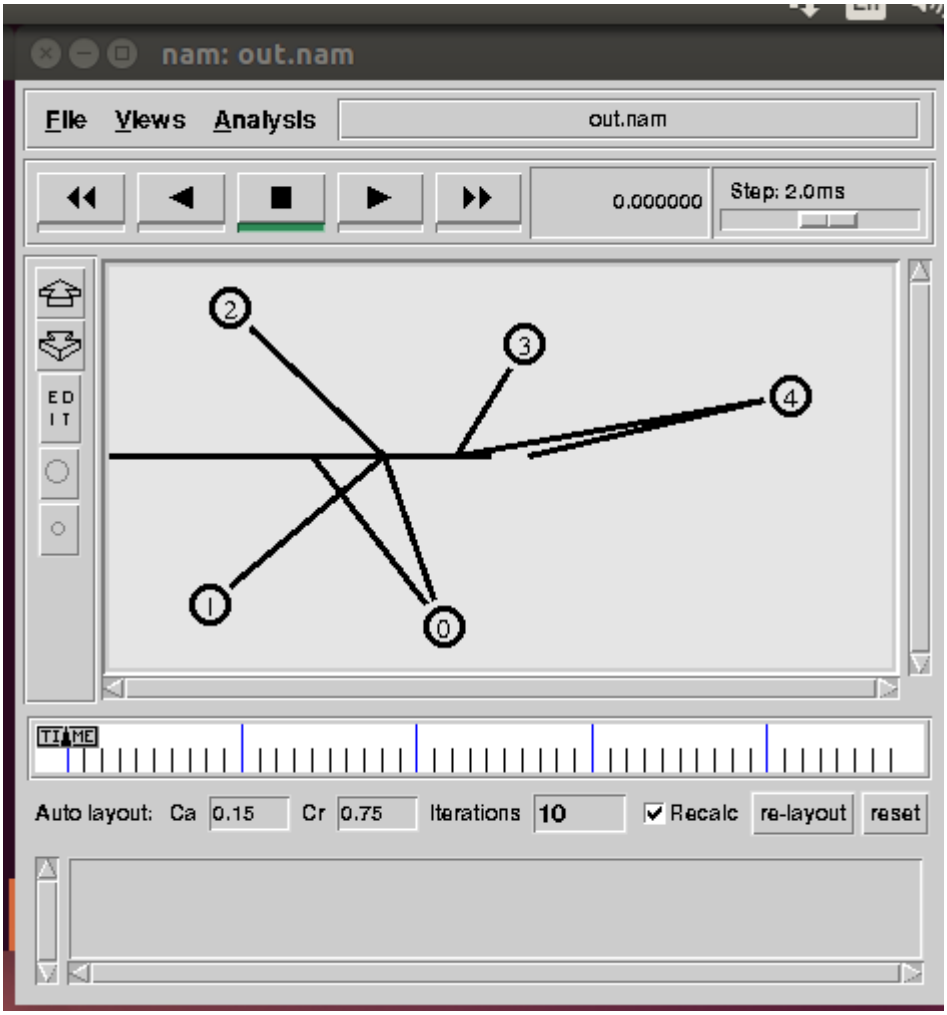

nam: out.nam
File
Views
Analysis
out.nam
0.000000
Step: 2.0ms
ED
IT
TIME
Auto layout:
Ca
0.15
Cr
0.75
Iterations
10
Recalc
re-layout
reset

Program 13.Monitoring traffic for the given topology.

```
set ns [new Simulator]

#Open the nam trace file
setnf [open out.nam w]
$ns namtrace-all $nf

#Define a 'finish' procedure
proc finish {} {
global ns nf
   $ns flush-trace
   #Close the trace file
close $nf
   #Executenam on the trace file
execnamout.nam&
exit 0
}

#Create four nodes
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
set n4 [$ns node]

#CreateLanbetween the nodes

set lan0 [$ns newLan "$n0 $n1 $n2 $n3 $n4" 0.5Mb 40ms LL Queue/DropTail MAC/Csma/Cd Channel]

#Create a TCP agent and attach it to node n0

set tcp0 [new Agent/TCP]
$tcp0 set class_ 1
$ns attach-agent $n1 $tcp0
#Create a TCP Sink agent (a traffic sink) for TCP and attach it to node n3
set sink0 [new Agent/TCPSink]
$ns attach-agent $n3 $sink0
#Connect the traffic sources with the traffic sink
$ns connect $tcp0 $sink0

# Create a CBR traffic source and attach it to tcp0

set cbr0 [new Application/Traffic/CBR]
$cbr0 set packetSize_ 500
$cbr0 set interval_ 0.01
$cbr0 attach-agent $tcp0
#Schedule events for the CBR agents
$ns at 0.5 "$cbr0 start"
```

```
$ns at 4.5 "$cbr0 stop"


#Call the finish procedure after 5 seconds of simulation time
$ns at 5.0 "finish"

#Run the simulation
$ns run
```

Output:


nam: out.nam
File
Views
Analysis
out.nam
0.000000
Step: 2.0ms
ED
IT
2
3
4
1
0
TIME
Auto layout:
Ca
0.15
Cr
0.75
Iterations
10
Recalc
re-layout
reset