**Practical 3 - Codes Only**

**TCP Programs**

**tcpServerPrime.java**

import java.net.\*;  
import java.io.\*;  
  
class tcpServerPrime {  
 public static void main(String args[]) {  
 try {  
 ServerSocket ss = new ServerSocket(8001);  
 System.out.println("Server Started..........");  
 Socket s = ss.accept();  
 DataInputStream in = new DataInputStream(s.getInputStream());  
 int x = in.readInt();  
 DataOutputStream otc = new DataOutputStream(s.getOutputStream());  
 int y = x / 2;  
 if (x == 1 || x == 2 || x == 3) {  
 otc.writeUTF(x + " is Prime");  
 System.exit(0);  
 }  
 for (int i = 2; i <= y; i++) {  
 if (x % i != 0) {  
 otc.writeUTF(x + " is Prime");  
 } else {  
 otc.writeUTF(x + " is not Prime");  
 }  
 }  
 } catch (Exception e) {  
 System.out.println(e.toString());  
 }  
 }  
}

**tcpClientPrime.java**

import java.net.\*;  
import java.io.\*;  
  
class tcpClientPrime {  
 public static void main(String args[]) {  
 try {  
 Socket cs = new Socket("LocalHost", 8001);  
 BufferedReader infu = new BufferedReader(new InputStreamReader(System.in));  
 System.out.println("Enter a number : ");  
 int a = Integer.parseInt(infu.readLine());  
 DataOutputStream out = new DataOutputStream(cs.getOutputStream());  
 out.writeInt(a);  
 DataInputStream in = new DataInputStream(cs.getInputStream());  
 System.out.println(in.readUTF());  
 cs.close();  
 } catch (Exception e) {  
 System.out.println(e.toString());  
 }  
 }  
}

**TCPChatServer.java**

import java.io.\*;  
import java.net.\*;  
  
public class TCPChatServer {  
 public static void main(String[] args) {  
 try {  
 ServerSocket serverSocket = new ServerSocket(8000);  
 System.out.println("Waiting for client to connect...");  
 Socket socket = serverSocket.accept();  
 System.out.println("Client connected!");  
 BufferedReader userInput = new BufferedReader(new InputStreamReader(System.in));  
 BufferedReader clientInput = new BufferedReader(new InputStreamReader(socket.getInputStream()));  
 PrintWriter out = new PrintWriter(socket.getOutputStream(), true);  
 String receive, send;  
 while ((receive = clientInput.readLine()) != null) {  
 if (receive.equalsIgnoreCase("STOP")) {  
 System.out.println("Client terminated the chat.");  
 break;  
 }  
 System.out.println("Client: " + receive);  
 System.out.print("Server: ");  
 send = userInput.readLine();  
 out.println(send);  
 if (send.equalsIgnoreCase("STOP")) {  
 System.out.println("Server terminated the chat.");  
 break;  
 }  
 }  
 socket.close();  
 serverSocket.close();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}

**TCPChatClient.java**

import java.io.\*;  
import java.net.\*;  
  
public class TCPChatClient {  
 public static void main(String[] args) {  
 try {  
 Socket socket = new Socket("localhost", 8000);  
 System.out.println("Connected to server.");  
 BufferedReader userInput = new BufferedReader(new InputStreamReader(System.in));  
 BufferedReader serverInput = new BufferedReader(new InputStreamReader(socket.getInputStream()));  
 PrintWriter out = new PrintWriter(socket.getOutputStream(), true);  
 String msg, reply;  
 System.out.println("To stop chatting, type STOP.");  
 while (true) {  
 System.out.print("Client: ");  
 msg = userInput.readLine();  
 out.println(msg);  
 if (msg.equalsIgnoreCase("STOP")) {  
 System.out.println("Client terminated the chat.");  
 break;  
 }  
 reply = serverInput.readLine();  
 if (reply.equalsIgnoreCase("STOP")) {  
 System.out.println("Server terminated the chat.");  
 break;  
 }  
 System.out.println("Server: " + reply);  
 }  
 socket.close();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}

**UDP Programs**

**udpServerEO.java**

import java.io.\*;  
import java.net.\*;  
  
public class udpServerEO {  
 public static void main(String[] args) {  
 try {  
 DatagramSocket ds = new DatagramSocket(2000); // Server port  
 byte[] b = new byte[1024];  
 DatagramPacket dp = new DatagramPacket(b, b.length);  
 ds.receive(dp);  
 String str = new String(dp.getData(), 0, dp.getLength());  
 System.out.println("Received from client: " + str);  
 int num = Integer.parseInt(str);  
 String result;  
 if (num % 2 == 0)  
 result = "Number is even";  
 else  
 result = "Number is odd";  
 byte[] sendData = result.getBytes();  
 DatagramPacket dp1 = new DatagramPacket(sendData, sendData.length, InetAddress.getLocalHost(), 1000);  
 ds.send(dp1);  
 ds.close();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}

**udpClientEO.java**

import java.io.\*;  
import java.net.\*;  
  
public class udpClientEO {  
 public static void main(String[] args) {  
 try {  
 DatagramSocket ds = new DatagramSocket(1000); // Client port  
 BufferedReader br = new BufferedReader(new InputStreamReader(System.in));  
 System.out.print("Enter a number: ");  
 String num = br.readLine();  
 byte[] b = num.getBytes();  
 DatagramPacket dp = new DatagramPacket(b, b.length, InetAddress.getLocalHost(), 2000);  
 ds.send(dp);  
 byte[] b1 = new byte[1024];  
 DatagramPacket dp1 = new DatagramPacket(b1, b1.length);  
 ds.receive(dp1);  
 String result = new String(dp1.getData(), 0, dp1.getLength());  
 System.out.println(result);  
 ds.close();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}

**udpServerFact.java**

import java.io.\*;  
import java.net.\*;  
  
public class udpServerFact {  
 public static void main(String[] args) {  
 try {  
 DatagramSocket ds = new DatagramSocket(2000);  
 byte[] b1 = new byte[1024];  
 DatagramPacket dp = new DatagramPacket(b1, b1.length);  
 ds.receive(dp);  
 String str = new String(dp.getData(), 0, dp.getLength());  
 System.out.println("Received number: " + str);  
 int num = Integer.parseInt(str);  
 long fact = 1;  
 for (int i = 1; i <= num; i++) {  
 fact \*= i;  
 }  
 String result = "Factorial is " + fact;  
 byte[] b2 = result.getBytes();  
 DatagramPacket dp1 = new DatagramPacket(b2, b2.length, InetAddress.getLocalHost(), 1000);  
 ds.send(dp1);  
 ds.close();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}

**udpClientFact.java**

import java.io.\*;  
import java.net.\*;  
  
public class udpClientFact {  
 public static void main(String[] args) {  
 try {  
 DatagramSocket ds = new DatagramSocket(1000);  
 BufferedReader br = new BufferedReader(new InputStreamReader(System.in));  
 System.out.print("Enter a number: ");  
 String num = br.readLine();  
 byte[] b = num.getBytes();  
 DatagramPacket dp = new DatagramPacket(b, b.length, InetAddress.getLocalHost(), 2000);  
 ds.send(dp);  
 byte[] b1 = new byte[1024];  
 DatagramPacket dp1 = new DatagramPacket(b1, b1.length);  
 ds.receive(dp1);  
 String result = new String(dp1.getData(), 0, dp1.getLength());  
 System.out.println(result);  
 ds.close();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}