19BIT0292

Bhaumik Tandan

ASSESSMENT-3

ADVANCED JAVA PROGRAMMING

ITE2005

L25+L26

Q1) Develop a java application for demonstrating the two way chat using UDP

CODE

```java
import java.util.Scanner;

import java.net.DatagramPacket;

import java.net.DatagramSocket;

import java.net.SocketException;

import java.lang.Thread;

import java.net.InetAddress;



class Receive extends Thread{

    DatagramSocket socket;

    public Receive(DatagramSocket socket){

        this.socket = socket;

    }


    public void run()

    {

        DatagramPacket packet =null;

        byte buffer[];

        try{

            while(true){

                buffer=new byte[1024];

                packet=new DatagramPacket(buffer,1024);

                socket.receive(packet);

                String str = new String(buffer);
```

```java
                System.out.println("Message Received: "+str);
            }
        }
        catch(Exception e){
            System.out.println("Error in receiving packet");
        }
    }
}


class Send extends Thread{
    DatagramSocket socket;
    int port;
    Send(DatagramSocket socket,int port){
        this.socket = socket;
        this.port=port;
    }
    public void run()
    {
        while(true)
        {
            try{
            Scanner s=new Scanner(System.in);
            String str=s.nextLine();
            byte buffer[]=str.getBytes();
            DatagramPacket packet = new
DatagramPacket(buffer,buffer.length,InetAddress.getLocalHost(),this.port);
            socket.send(packet);
            }
            catch(Exception e){
```

```java
            System.out.println("Error in sending packet: "+e);

        }

    }

  }



}
class Q1
{
public static void main(String[] a)
{
    Scanner s=new Scanner(System.in);
    System.out.print("Enter your port number: ");
    int port=s.nextInt();
    System.out.print("Enter the other port: ");
    int receiver_port=s.nextInt();
    try{
    DatagramSocket ds=new DatagramSocket(port);
    Receive r=new Receive(ds);
    r.start();
    Send send=new Send(ds,receiver_port);
    send.start();
    }
    catch(SocketException e){
        System.out.println("Error in creating socket: "+e);
    }
}
}
```

OUTPUT

```
    NotFoundException

PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4java Q1
Error: Could not find or load main cl
ass Q1
Caused by: java.lang.ClassNotFoundExc
eption: Q1
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4> cd ..
                          ktop\ja
  Focus folder in explorer (ctrl + click)  -da-3>j
ava Q1
Enter your port number: 3000
Enter the other port: 4000
```

```
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eatures and improvements! https://aka.m
s/PSWindows

PS C:\Users\bhaum\OneDrive\Desktop\java
-playground\ajava Q1java\lab-da-3>
Enter your port number: 4000
Enter the other port: 3000
```

```
    NotFoundException

PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4java Q1
Error: Could not find or load main cl
ass Q1
Caused by: java.lang.ClassNotFoundExc
eption: Q1
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4> cd ..
PS C:\Users\bhaum\OneDrive\Desktop\ja
                          -da-3>j
  Focus folder in explorer (ctrl + click)
Enter your port number: 3000
Enter the other port: 4000
19Bit092
```

```
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eatures and improvements! https://aka.m
s/PSWindows

PS C:\Users\bhaum\OneDrive\Desktop\java
-playground\ajava Q1java\lab-da-3>
Enter your port number: 4000
Enter the other port: 3000
Message Received: 19Bit092
```

Terminal 1 (left, top):
```
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4java Q1
Error: Could not find or load main cl
ass Q1
Caused by: java.lang.ClassNotFoundExc
eption: Q1
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4> cd ..
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3>j
ava Q1
Enter your port number: 3000
Enter the other port: 4000
19Bit092
bhaumik tandan
Message Received: hi
```

Terminal 2 (right, top):
```
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eatures and improvements! https://aka.m
s/PSWindows

PS C:\Users\bhaum\OneDrive\Desktop\java
-playground\ajava Q1java\lab-da-3>
Enter your port number: 4000
Enter the other port: 3000
Message Received: 19Bit092
Message Received: bhaumik tandan
hi
```

Middle row, Terminal 1:
```
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4java Q1
Error: Could not find or load main cl
ass Q1
Caused by: java.lang.ClassNotFoundExc
eption: Q1
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4> cd ..
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3>j
ava Q1
Enter your port number: 3000
Enter the other port: 4000
19Bit092
bhaumik tandan
Message Received: hi
```

Middle row, Terminal 2:
```
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eatures and improvements! https://aka.m
s/PSWindows

PS C:\Users\bhaum\OneDrive\Desktop\java
-playground\ajava Q1java\lab-da-3>
Enter your port number: 4000
Enter the other port: 3000
Message Received: 19Bit092
Message Received: bhaumik tandan
hi
Message Received: port
```

Middle row, Terminal 3:
```
Windows PowerShell
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ghts reserved.

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res and improvements! https://aka.ms/PSWind
ows

PS C:\Users\bhaum\OneDrive\Desktop\java Q1
                              ion in thread
    Focus folder in explorer (ctrl + click)
PS C:\Users\bhaum\OneDrive\Desktop\java-pla
yground\advance_java\lab-da-3> java Q1
Enter your port number: 7000
Enter the other port: 4000
port
```

Bottom row, Terminal 1:
```
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4java Q1
Error: Could not find or load main cl
ass Q1
Caused by: java.lang.ClassNotFoundExc
eption: Q1
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3\q
4> cd ..
PS C:\Users\bhaum\OneDrive\Desktop\ja
va-playground\advance_java\lab-da-3>j
ava Q1
Enter your port number: 3000
Enter the other port: 4000
19Bit092
bhaumik tandan
Message Received: hi
```

Bottom row, Terminal 2:
```
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eatures and improvements! https://aka.m
s/PSWindows

PS C:\Users\bhaum\OneDrive\Desktop\java
-playground\ajava Q1java\lab-da-3>
Enter your port number: 4000
Enter the other port: 3000
Message Received: 19Bit092
Message Received: bhaumik tandan
hi
Message Received: port
Message Received: BHaumik
```

Bottom row, Terminal 3:
```
Windows PowerShell
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ghts reserved.

Install the latest PowerShell for new featu
res and improvements! https://aka.ms/PSWind
ows

PS C:\Users\bhaum\OneDrive\Desktop\java Q1
                              ion in thread
    Focus folder in explorer (ctrl + click)
PS C:\Users\bhaum\OneDrive\Desktop\java-pla
yground\advance_java\lab-da-3> java Q1
Enter your port number: 7000
Enter the other port: 4000
port
BHaumik
```

Q2) Demonstrate RMI based String manipulation
   application

CODE

```java
import java.rmi.*;

import java.rmi.registry.*;

import java.rmi.server.*;


class StringManipulator extends UnicastRemoteObject implements StringManipulatorInterface{

    StringManipulator() throws RemoteException

    {

        super();

    }

    public String add(String s1, String s2) throws RemoteException

    {

        return s1 + s2;

    }

    public String toLowerCase(String s) throws RemoteException

    {

        return s.toLowerCase();

    }

    public String toUpperCase(String s) throws RemoteException

    {

        return s.toUpperCase();

    }

    public String substring(String s,int StartIndex, int LastIndex) throws RemoteException

    {
```

```java
            return s.substring(StartIndex, LastIndex);

        }


}

public class Server

{

    public static void main(String args[])

    {

        try

        {

            StringManipulator obj = new StringManipulator();

            LocateRegistry.createRegistry(1800);

            Naming.rebind("rmi://localhost:1800"+"/stringManipulator",obj);

        }

        catch(Exception ae)

        {

            System.out.println(ae);

        }

    }
}
```

Client.java

CODE

```java
import java.rmi.*;

public class Client {

    public static void main(String args[]){

        try{

        StringManipulatorInterface stub=(StringManipulatorInterface)Naming.lookup("rmi://localhost:1800/stringManipulator");
```

```java
        System.out.println("ADD: "+stub.add("Bhaumik ","Tandan"));

        System.out.println("To upper: "+stub.toUpperCase("bhaumik"));

        System.out.println("To lower: "+stub.toLowerCase("BHAUMIK"));

        System.out.println("Substring: "+stub.substring("BHAUMIK",1,3));

        }catch(Exception e){}

        }

    }
```

```
PS C:\Users\bhaum\OneDrive\Desktop\java-playground\advance_ja
va\lab-da-3\q2> java Server
```

```
PS C:\Users\bhaum\OneDrive\Desktop\java-playground\advance_ja
va\lab-da-3\q2> java Client
ADD: Bhaumik Tandan
To upper: BHAUMIK
To lower: bhaumik
Substring: HA
PS C:\Users\bhaum\OneDrive\Desktop\java-playground\advance_ja
va\lab-da-3\q2>
```

Q3) Develop a TCP based multithreaded server to compute the addition of complex number. Let the clients pass the complex number as inputs to the server.

Server.java

CODE

```java
import java.io.*;

import java.net.*;


class Server {

    public static void main(String[] args)

    {

        ServerSocket server = null;


        try {
```

```java
            server = new ServerSocket(1234);

            server.setReuseAddress(true);

            while (true) {


                Socket client = server.accept();


                System.out.println("New client connected"

                                    + client.getInetAddress()

                                        .getHostAddress());


                ClientHandler clientSock

                    = new ClientHandler(client);

                new Thread(clientSock).start();

            }

        }

        catch (IOException e) {

            e.printStackTrace();

        }

        finally {

            if (server != null) {

                try {

                    server.close();

                }

                catch (IOException e) {

                    e.printStackTrace();

                }

            }

        }

    }
```

```java
private static class ClientHandler implements Runnable {

        private final Socket clientSocket;

        public ClientHandler(Socket socket)

        {

                this.clientSocket = socket;

        }


        public void run()

        {

                PrintWriter out = null;

                BufferedReader in = null;

                try {

                        out = new PrintWriter(

                                clientSocket.getOutputStream(), true);

                        in = new BufferedReader(

                                new InputStreamReader(

                                        clientSocket.getInputStream()));


                        String line;

                        while ((line = in.readLine()) != null) {


                                System.out.printf(

                                        " Sent from the client: %s\n",

                                        line);

                                out.println(line);

                        }

                }
```

```java
                catch (IOException e) {

                        e.printStackTrace();

                }

                finally {

                        try {

                                if (out != null) {

                                        out.close();

                                }

                                if (in != null) {

                                        in.close();

                                        clientSocket.close();

                                }

                        }

                        catch (IOException e) {

                                e.printStackTrace();

                        }

                }

        }

    }

}
```

Client.java

CODE

```java
import java.io.*;

import java.net.*;

import java.util.*;



class Client {
```

```java
    public static void main(String[] args)
    {
            try (Socket socket = new Socket("localhost", 1234)) {

                    PrintWriter out = new PrintWriter(
                            socket.getOutputStream(), true);

                    BufferedReader in
                            = new BufferedReader(new InputStreamReader(
                                    socket.getInputStream()));

                    Scanner sc = new Scanner(System.in);
                    String line = null;

                    while (!"exit".equalsIgnoreCase(line)) {

                            line = sc.nextLine();

                            out.println(line);
                            out.flush();

                            System.out.println("Server replied "
                                                    + in.readLine());
                    }

                    sc.close();
            }
            catch (IOException e) {
                    e.printStackTrace();
            }
    }
}
```

Q4) Using ServletOutStream and ServletInputStream handle the display of images in the web application.

CODE

```java
package com.javatpoint;

import java.io.*;

import javax.servlet.*;

import javax.servlet.http.*;

public class Q4 extends HttpServlet {


    public void doGet(HttpServletRequest request,HttpServletResponse response)

            throws IOException

    {

    response.setContentType("image/jpeg");

    ServletOutputStream out;

    out = response.getOutputStream();

    FileInputStream fin = new FileInputStream("https://www.puma-catchup.com/wp-content/uploads/2022/03/gallery-RDH-750x417.jpg");


    BufferedInputStream bin = new BufferedInputStream(fin);

    BufferedOutputStream bout = new BufferedOutputStream(out);

    int ch =0; ;

    while((ch=bin.read())!=-1)

    {

    bout.write(ch);

    }


    bin.close();

    fin.close();
```
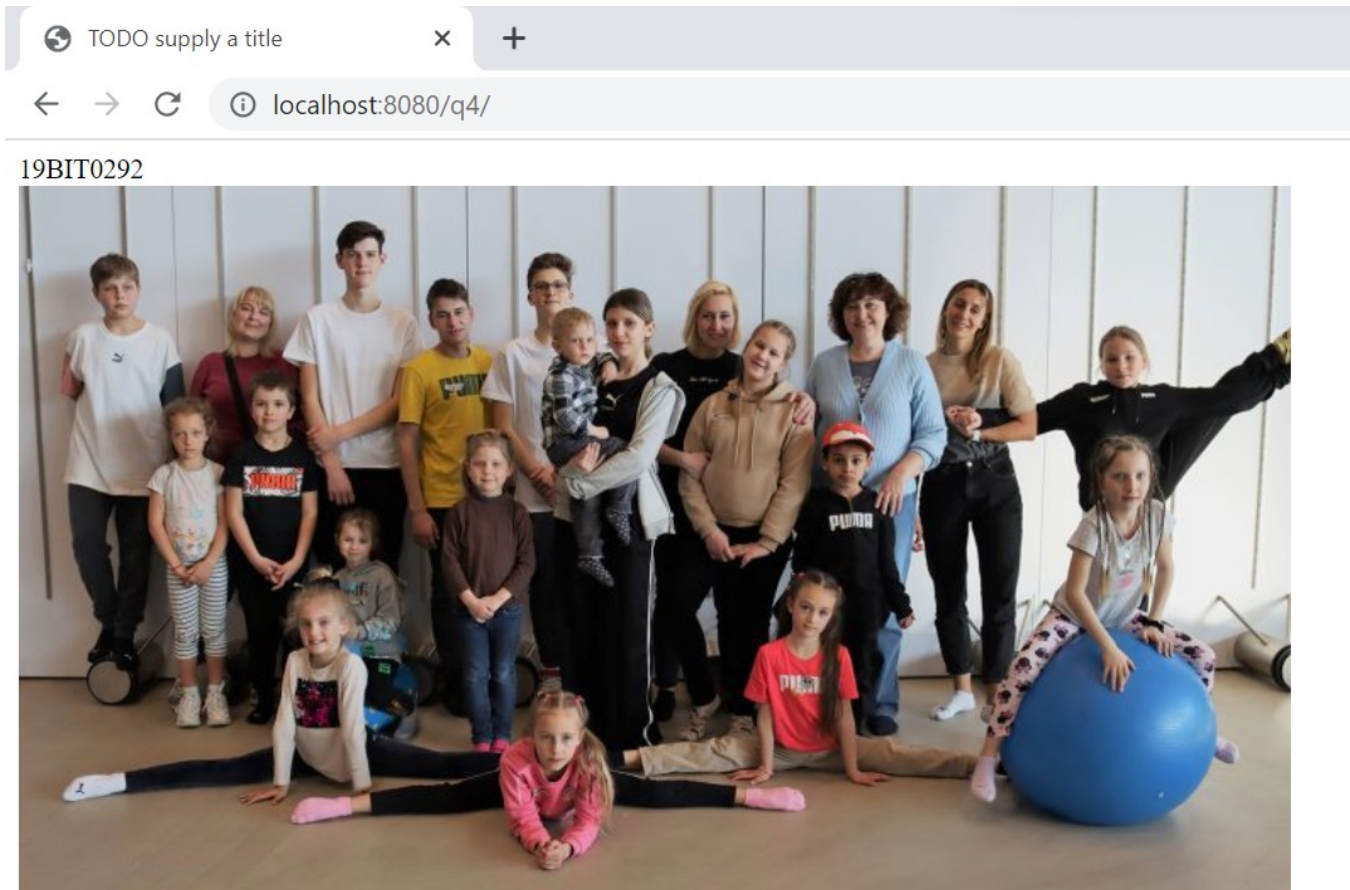
```
    bout.close();

    out.close();

    }

}
```


Q5) Develop a simple JDBC application to display the result of pattern matching query executed over the 'book' table in a tabular format.

CODE

```java
import java.sql.*;

public class connect {

    Connection con = null;
```

```java
    public static Connection connectDB()

    {

        try {
            Class.forName("com.mysql.jdbc.Driver");

            Connection con = DriverManager.getConnection(
                "jdbc:mysql://localhost:3306/book",
                "root", "");
            return con;
        }
        catch (SQLException e) {

            System.out.println(e);
        }
    }
}

import java.sql.*;

public class Q5 {

    public static void main(String[] args)
    {

            Connection con = null;
```

```java
PreparedStatement p = null;
ResultSet rs = null;


con = connect.connectDB();


try {


        String sql = "select * from books";
        p = con.prepareStatement(sql);
        rs = p.executeQuery();


        System.out.println("id\t\tname\t\temail");


        while (rs.next()) {

                int id = rs.getInt("id");
                String name = rs.getString("name");
                String email = rs.getString("email");
                System.out.println(id + "\t\t" + name
                                        + "\t\t" + email);
        }
}


catch (SQLException e) {
```

```
                System.out.println(e);

            }

        }

    }
```

Q6) Develop a Servlet application to display the various cookies stored in the client machine.

CODE

```java
import java.io.*;

import javax.servlet.*;

import javax.servlet.http.*;


public class ReadCookies extends HttpServlet {


    public void doGet(HttpServletRequest request, HttpServletResponse response)

        throws ServletException, IOException {


        Cookie cookie = null;

        Cookie[] cookies = null;




        cookies = request.getCookies();




        response.setContentType("text/html");
```

```java
      PrintWriter out = response.getWriter();
      String title = "Reading Cookies Example";
      String docType =
         "<!doctype html public \"-//w3c//dtd html 4.0 " +
         "transitional//en\">\n";

      out.println(docType +
         "<html>\n" +
         "<head><title>" + title + "</title></head>\n" +
         "<body bgcolor = \"#f0f0f0\">\n" );

      if( cookies != null ) {
         out.println("<h2> Found Cookies Name and Value</h2>");

         for (int i = 0; i < cookies.length; i++) {
            cookie = cookies[i];
            out.print("Name : " + cookie.getName( ) + ",  ");
            out.print("Value: " + cookie.getValue( ) + " <br/>");
         }
      } else {
         out.println("<h2>No cookies founds</h2>");
      }
      out.println("</body>");
      out.println("</html>");
   }
}
```