TRIBHUVAN UNIVERSITY
INSTITUTE OF SCIENCE AND TECHNOLOGY

Lab Report on

Advanced Java Programming

Submitted To

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Submitted By

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Er. Jeewan Rai

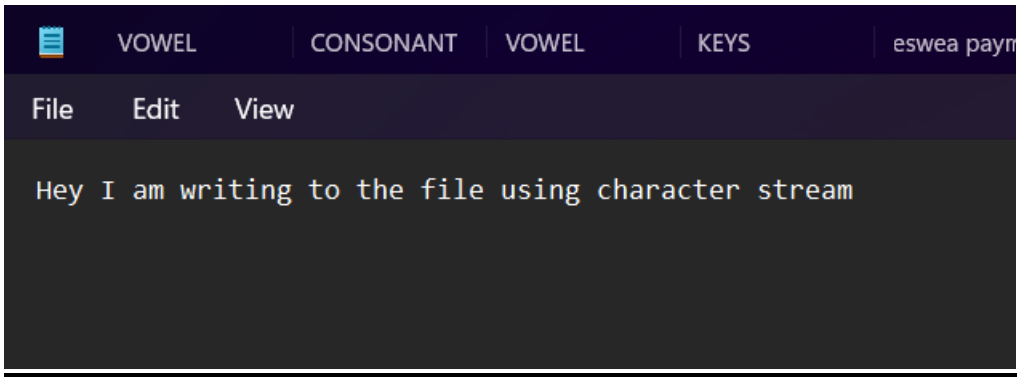
1) Write a simple java program to read from and write to files.

Source Code

```
import java.io.*;
public class WriteReadExample {
   public static void main(String[] args){
      try{
         //wrtiting to file
         FileWriter file = new FileWriter("testFile.txt");
         file.write("Hey I am writing to the file using character stream");
          file.close();
         //reading from a file
         FileReader fileRead = new FileReader("testFile.txt");
         int i;
         while((i= fileRead.read()) != -1){
            System.out.print((char)i);
         }

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

Output

```
--- exec:3.1.0:exec (default-cli) @ AssignmentOne ---
Hey I am writing to the file using character stream
------------------------------------------------------------
BUILD SUCCESS
------------------------------------------------------------
Total time:  3.248 s
Finished at: 2024-02-20T09:29:08+05:45
```



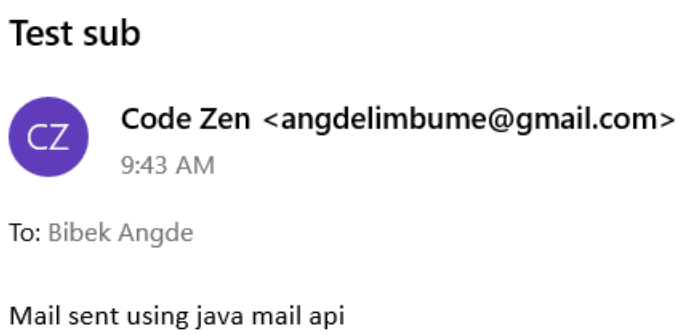
2) Write a java program for sending email messages

Source Code

```
import java.util.*;
import javax.mail.*;
import javax.mail.internet.*;
import javax.activation.*;
import javax.mail.Session;
import javax.mail.Transport;



public class SendEmail
{


  public static void main(String [] args)
  {
    String recipient = "Bibekangdembay@gmail.com";
     String sender = "Angdelimbume@gmail.com";
    String host = "127.0.0.1";
    Properties properties = System.getProperties();
      properties.setProperty("mail.smtp.host", host);
      Session session = Session.getDefaultInstance(properties);
    try
    {
      // MimeMessage object.
      MimeMessage message = new MimeMessage(session);
        message.setFrom(new InternetAddress(sender));
      message.addRecipient(Message.RecipientType.TO,                    new
InternetAddress(recipient));
        message.setSubject("Test sub");
```

```
            message.setText("Mail sent using java mail api");
        Transport.send(message);
    }
    catch (MessagingException mex)
    {
      mex.printStackTrace();
    }
  }
}
```

Output



3) Write a program using swing components to find simple interest. Use text fields for inputs and output. Your program should display the result when the user presses a button.

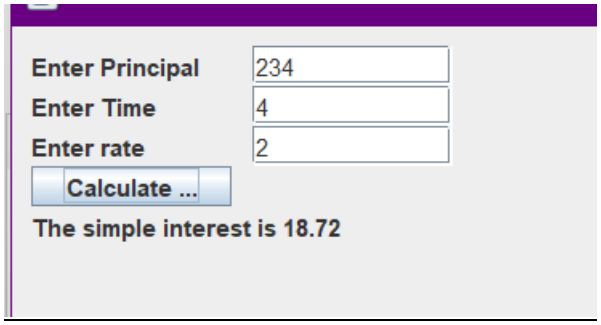
Source Code

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
import static javax.swing.WindowConstants.EXIT_ON_CLOSE;
public class SimpleInterest {
   private JLabel p , t ,r ,result;
   private JTextField pf,tf,rf;
   private JButton b;

   public SimpleInterest(){
      JFrame f = new JFrame();
      f.setDefaultCloseOperation(EXIT_ON_CLOSE);
      p = new JLabel("Enter Principal");
      p.setBounds(10,10,100,20);
      f.add(p);

      pf = new JTextField();
      pf.setBounds(120,10,100,20);
      f.add(pf);

       t = new JLabel("Enter Time");
      t.setBounds(10,30,100,20);
      f.add(t);

      tf = new JTextField();
```

```
tf.setBounds(120,30,100,20);
f.add(tf);

 r = new JLabel("Enter rate");
r.setBounds(10,50,100,20);
f.add(r);

rf = new JTextField();
rf.setBounds(120,50,100,20);
f.add(rf);

b = new JButton("Calculate SI");
b.setBounds(10,70,100,20);
f.add(b);

result = new JLabel();
result.setBounds(10,90,400,20);
f.add(result);

b.addActionListener(new ActionListener(){
    public void actionPerformed(ActionEvent e){
        double prin = Double.parseDouble(pf.getText());
        double time = Double.parseDouble(tf.getText());
        double rate = Double.parseDouble(rf.getText());

        double SI = (prin*time*rate)/100;
        result.setText("The simple interest is " + SI);
    }
});
f.setLayout(null);
```

```
        f.setSize(500,500);
        f.setVisible(true);

    }
    public static void main(String[] args) {
        new SimpleInterest();
    }
}
```

Output



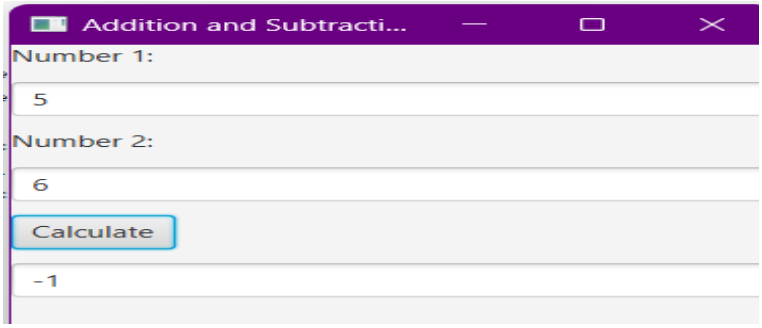
4) Write a program using JavaFX components to add and subtract of two numbers. Use text fields for inputs and output. Your program should display the addition result when the user presses a button and subtract when release the button.

Source Code

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.VBox;
import javafx.stage.Stage;
public class AddSub extends Application {
  private TextField num1Field, num2Field, resultField;
   @Override
   public void start(Stage primaryStage) {
      Label num1Label = new Label("Number 1:");
      num1Field = new TextField();
      Label num2Label = new Label("Number 2:");
      num2Field = new TextField();
      Button calculateButton = new Button("Calculate");
      calculateButton.setOnMousePressed(e -> handleAddition());
      calculateButton.setOnMouseReleased(e -> handleSubtraction());
      resultField = new TextField();
      resultField.setEditable(false);
      VBox root = new VBox(10);
      root.getChildren().addAll(num1Label, num1Field, num2Label, num2Field, calculateButton, resultField);
      Scene scene = new Scene(root, 300, 250);
      primaryStage.setTitle("Addition and Subtraction");
      primaryStage.setScene(scene);
```

```
        primaryStage.show();
    }
    private void handleAddition() {
        try {
            int num1 = Integer.parseInt(num1Field.getText());
            int num2 = Integer.parseInt(num2Field.getText());
            int result = num1 + num2;
            resultField.setText(Integer.toString(result));
        } catch (NumberFormatException e) {
            resultField.setText("Invalid input");
        }   }
    private void handleSubtraction() {
        try {
            int num1 = Integer.parseInt(num1Field.getText());
            int num2 = Integer.parseInt(num2Field.getText());
            int result = num1 - num2;
            resultField.setText(Integer.toString(result));
        } catch (NumberFormatException e) {
            resultField.setText("Invalid input");
        } }

    public static void main(String[] args) {
        launch(args);
    }}
```

Output



5) Write a Java programs using RMI to find the addition of two numbers.

Step 1: Create the remote interface

```
//Adder.java
import java.rmi.*;
public interface Adder extends Remote {
   public int Add(int a , int b) throws RemoteException;
}
```

Step 2: Implementation of the remote interface

```
//AddImplement.java
import java.rmi.*;
import java.rmi.server.*;
public  class AddImplement  extends UnicastRemoteObject implements Adder{
   AddImplement() throws RemoteException{
      super();
   }
   @Override
   public int Add(int a , int b) throws RemoteException{
      return a+b;
   }
}
```

Step 3: Compile the implementation class and create the stub and skeleton objects using the rmic tool

```
rmic AdderRemote
```

Step 4: Start the registry service by rmiregistry tool

rmiregistry portNumber

Step 5: Create and start the remote application

```
//ClientRmi.java
import java.rmi.*;
public class ClientRmi {
   public static void main(String[] args){
      try{
         Adder stub =(Adder)Naming.lookup("rmi://localhost:5000/test");
         int sum = stub.Add(5,6);
         System.out.println("Return sum " + sum);
      }catch(Exception e){
         System.out.println(e);
      }
   }
}
```

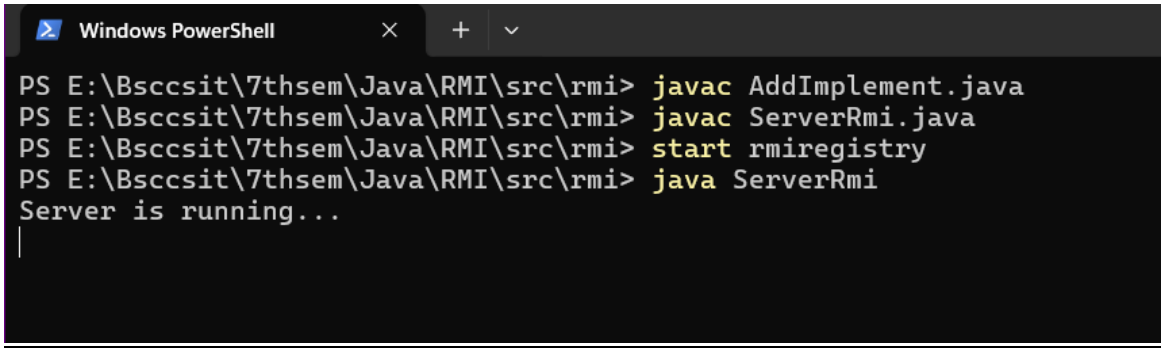
Step 6: Create and start the client application

```
//ServerRmi.java
import java.rmi.*;
public class ServerRmi {
   public static void main(String[] args){
      try{
         Adder skeleton =  (Adder) new  AddImplement();
```

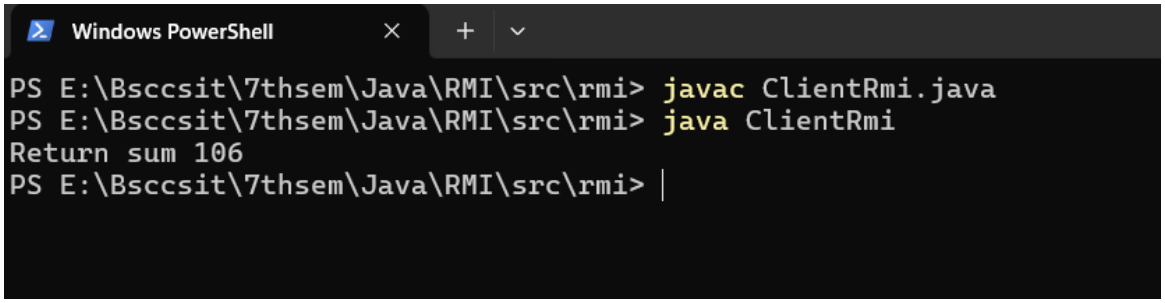
```
        Naming.rebind("rmi://localhost:5000/test", skeleton);
        }
        catch(Exception e){
            System.out.println(e);
        }
    }
}
```

Output

//Server



//Client



6) Create a simple Servlet that reads and displays data from HTML form.

Assume a HTML form with two fields username and password.

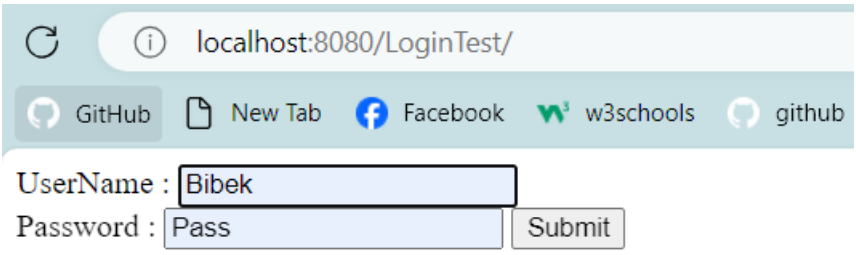
Source Code

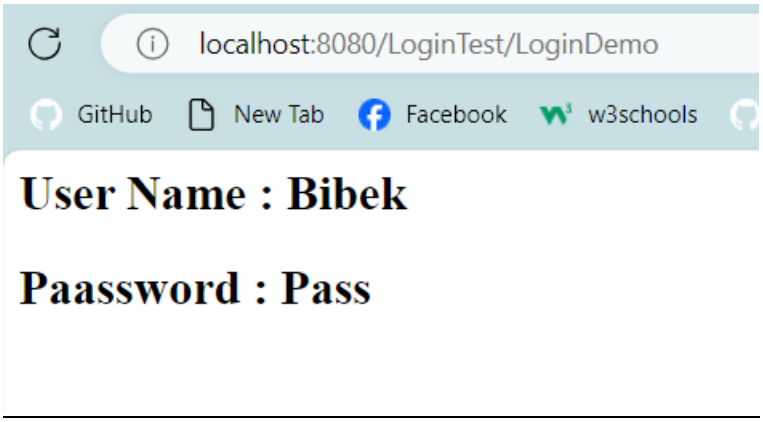
```
//index.html
<!DOCTYPE html>
<html>
   <head>
      <title>TODO supply a title</title>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1.0">
   </head>
   <body>
      <form action="LoginDemo" method="post" >
         UserName :
         <input type="text" name="user_name" />
         </br>
         Password :
          <input type="text" name="password" />
          <input type="submit" value="Submit" />
      </form>
   </body>
</html>


//web.xml
<?xml version="1.0" encoding="UTF-8"?>
<web-app version="3.1" xmlns="http://xmlns.jcp.org/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
http://xmlns.jcp.org/xml/ns/javaee/web-app_3_1.xsd">
   <servlet>
      <servlet-name>LoginDemo</servlet-name>
```

```
        <servlet-class>LoginDemo</servlet-class>
    </servlet>
    <servlet-mapping>
        <servlet-name>LoginDemo</servlet-name>
        <url-pattern>/LoginDemo</url-pattern>
    </servlet-mapping>
    <session-config>
        <session-timeout>
            30
        </session-timeout>
    </session-config>
</web-app>

//LoginDemo.java

import java.io.*;
import javax.servlet.http.*;

public class LoginDemo extends HttpServlet {

   @Override
    protected void doPost(HttpServletRequest request,HttpServletResponse response){
        response.setContentType("text/html;charset=utf-8");


        try{
            String name = request.getParameter("user_name");
        String pass = request.getParameter("password");
            PrintWriter out = response.getWriter();
        out.println("<h2>User Name : " + name + "</h2>");
```

```
        out.println("<h2>Paassword : " + pass + "</h2>");
        }catch(Exception e){
            System.out.println(e);
        }
    }
}
```

Output





---

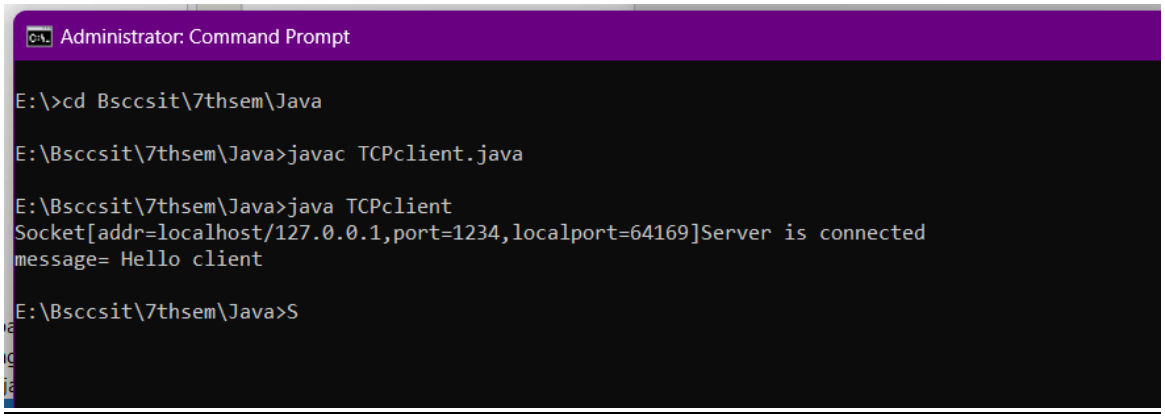
7) Write TCP and UDP based socket programming using Java to communicate between client and server.

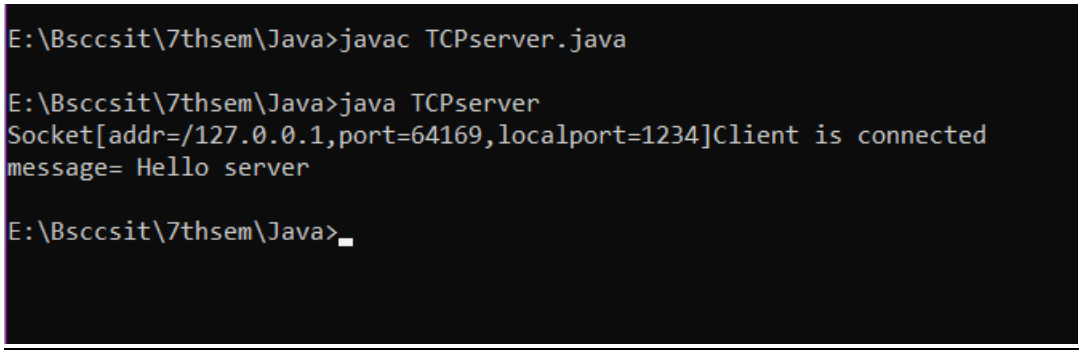
Source Code

```
//TCPclient.java
import java.io.*;
import java.net.*;
public class TCPclient {
   public static void main(String[] args){
      try{
         Socket socket = new Socket("localhost",1234);
         System.out.println(socket + "Server is connected");
         DataOutputStream out=new DataOutputStream(socket.getOutputStream());
        DataInputStream in=new DataInputStream(socket.getInputStream());
        out.writeUTF("Hello server");
        String str=(String) in.readUTF();
        System.out.println("message= "+str);
        socket.close();
      }catch(Exception e){
         System.out.println(e);
      }
   }}

//TCPserver.java
import java.io.*;
import java.net.*;
public class TCPserver {
   public static void main(String[] args){
      try{
```

```
 ServerSocket server=new ServerSocket(1234);
        Socket client=server.accept();//establishes connection
        System.out.println(client + "Client is connected");
        DataOutputStream out=new DataOutputStream(client.getOutputStream());
        DataInputStream in=new DataInputStream(client.getInputStream());
        String str=(String) in.readUTF();
        System.out.println("message= "+str);
        out.writeUTF("Hello client");
        client.close();
}catch(Exception e)
{
   System.out.println(e);}
} }
```

Output





8) Write a Java programs to insert, select, delete and update the students records (fullname, email, phoneno, gender, title) in database using JDBC

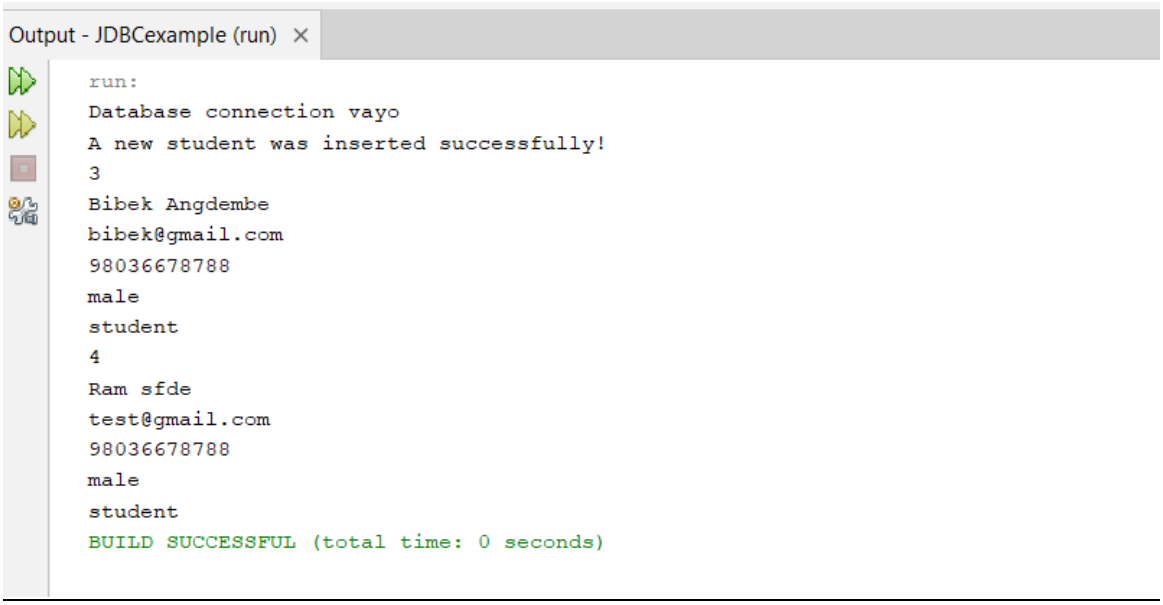
Source Code

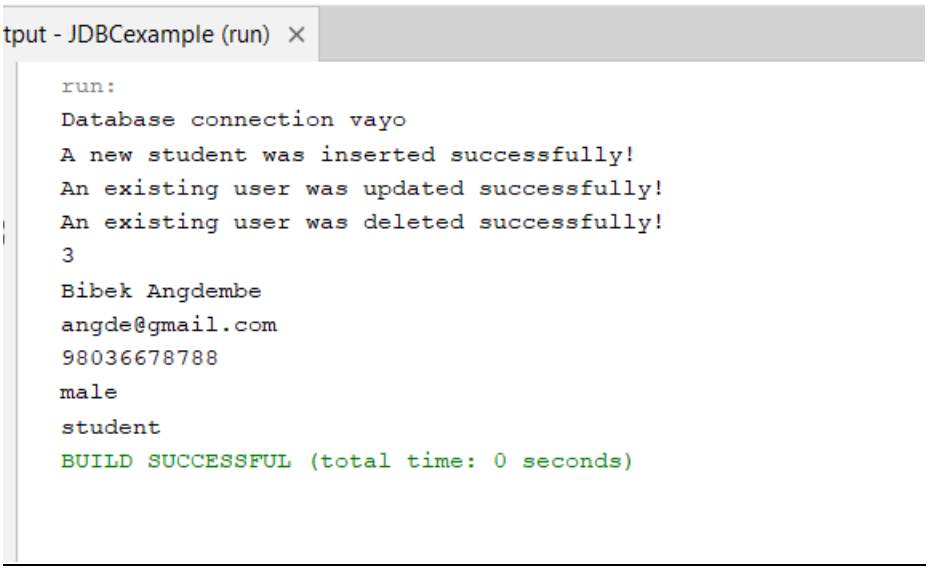
```
package jdbcexample;

import java.sql.*;
public class CrudExmp {

   static String driver = "com.mysql.cj.jdbc.Driver";
   static String url = "jdbc:mysql://localhost:3306/";
   static String db = "college_javaad";
   static String user = "root";
   static String pw = "";

   public static void main(String[] args) {
      Connection conn = null;
      Statement st = null;
      ResultSet set = null;

      try {
         conn = DriverManager.getConnection(url + db, user, pw);
         if (conn != null) {
            System.out.println("Database connection vayo");

            String sqlQ = "INSERT INTO users ( fullname, email,phoneno,gender,title) VALUES (?, ?, ?, ?, ?)";

            PreparedStatement statement = conn.prepareStatement(sqlQ);
            statement.setString(1, "Ram sfde");
            statement.setString(2, "test@gmail.com");
```

```
statement.setString(3, "98036678788");
statement.setString(4, "male");
statement.setString(5, "student");

int rowsInserted = statement.executeUpdate();
if (rowsInserted > 0) {
   System.out.println("A new student was inserted successfully!");
}


String Updatesql = "UPDATE users SET email = ? WHERE fullname=?";

PreparedStatement state = conn.prepareStatement(Updatesql);
state.setString(1, "angde@gmail.com");
state.setString(2, "Bibek Angdembe");

int rowsUpdated = state.executeUpdate();
if (rowsUpdated > 0) {
   System.out.println("An existing user was updated successfully!");
}

String delsql = "DELETE FROM users WHERE fullname = ?";

PreparedStatement statem = conn.prepareStatement(delsql);
statem.setString(1, "Ram sfde");

int rowsDeleted = statem.executeUpdate();
if (rowsDeleted > 0) {
   System.out.println("An existing user was deleted successfully!");
}
```

```
String sql = "SELECT * FROM users";
            st = conn.createStatement();
            set = st.executeQuery(sql);
            while (set.next()) {
               System.out.println(set.getString("id"));
               System.out.println(set.getString("fullname"));
               System.out.println(set.getString("email"));
               System.out.println(set.getString("phoneno"));
               System.out.println(set.getString("gender"));
               System.out.println(set.getString("title"));
            }

         }
         }catch (SQLException e) {
         System.out.println(e);
      }
      }

  }
```

Output


Output - JDBCexample (run)
run:
Database connection vayo
A new student was inserted successfully!
3
Bibek Angdembe
bibek@gmail.com
98036678788
male
student
4
Ram sfde
test@gmail.com
98036678788
male
student
BUILD SUCCESSFUL (total time: 0 seconds)


tput - JDBCexample (run)
run:
Database connection vayo
A new student was inserted successfully!
An existing user was updated successfully!
An existing user was deleted successfully!
3
Bibek Angdembe
angde@gmail.com
98036678788
male
student
BUILD SUCCESSFUL (total time: 0 seconds)