Program-1

import java.util.Scanner;

public class Demo {

    public static void main(String args[]){

        Scanner reader = new Scanner (System.in);

        String name;

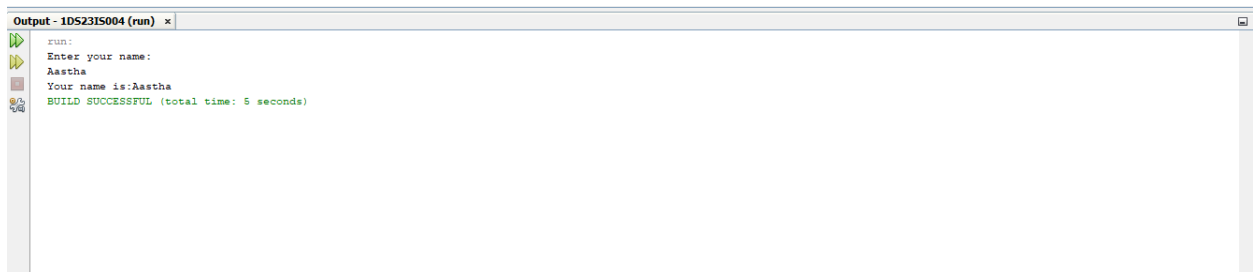   System.out.println("Enter your name:");

        name=reader.next();

        System.out.println("Your name is:"+name);

    }

}

Output:

```
Output - 1DS23IS004 (run)  x
    run:
    Enter your name:
    Aastha
    Your name is:Aastha
    BUILD SUCCESSFUL (total time: 5 seconds)
```

Program-2:

```java
abstract class Vehicle{
    public abstract void wheels();
    public abstract void brakes();
    public abstract void seating();
}

class Car extends Vehicle{
    public void wheels(){
        System.out.println("Car has four wheels");
    }
    public void brakes(){
        System.out.println("Car has power brakes");
    }
    public void seating(){
        System.out.println("Car has 4 seatings");
    }
}

class Bike extends Vehicle{
    public void wheels(){
        System.out.println("Bike has 2 wheels");
    }
    public void brakes(){
        System.out.println("Bike has Disc brakes");
    }
    public void seating(){
        System.out.println("Bike has 2 seatings");
    }
```

```java
        }
    }

class Demo{

    public static void main(String   args[]){

    Vehicle v=new Car();

    Vehicle v1=new Bike();

    v.wheels();

    v.brakes();

    v.seating();

    v1.wheels();

    v1.brakes();

    v1.seating();

    }

}
```

Output:


```
Output - 1DS23IS004 (run)  x
    run:
    Car has four wheels
    Car has power brakes
    Car has 4 seatings
    Bike has 2 wheels
    Bike has Disc brakes
    Bike has 2 seatings
    BUILD SUCCESSFUL (total time: 0 seconds)
```

```java
package balance;

import java.io.*;

public class Account
{
long acc,bal;

String name;

public void read()throws Exception
{
DataInputStream in=new DataInputStream(System.in);

System.out.println("Enter the name :");

name=in.readLine();

System.out.println("Enter the account number :");

acc=Long.parseLong(in.readLine());

System.out.println("Enter the account balance :");

bal=Long.parseLong(in.readLine());
}

public void disp()
{
System.out.println("~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");

System.out.println("--- Account Details ---");

System.out.println("~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~");

System.out.println("Name :"+name);

System.out.println("Account number :"+acc);

System.out.println("Balance :"+bal);
}
}
```
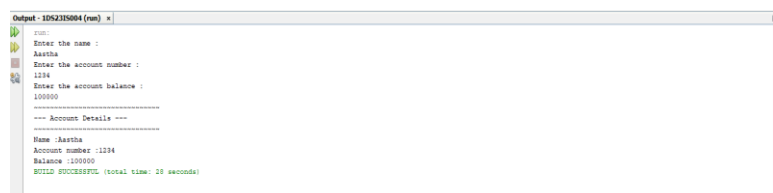
```
import balance.*

public class Bankbal {
 public static void main(String arg[]){
    try{
       balance.Account a=new balance.Account();
       a.read();
       a.disp();
    }
    catch (Exception e){
       System.out.println(e);
    }
 }
}
```

Output:

Program-3:

```java
import java.util.Scanner;

class  Employee
{
    String empId;
    String empName;
    long empPhone;
    float empSalary;
    public void accept()
    {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter Staff Id: ");
        empId = scanner.next();
        System.out.print("Enter Name: ");
        empName = scanner.next();
        System.out.print("Enter Phone: ");
        empPhone = scanner.nextLong();
        System.out.print("Enter Salary: ");
        empSalary = scanner.nextFloat();
    }
    public void display()
    {
        System.out.println("Staff Id: " + empId);
        System.out.println("Name: " + empName);
        System.out.println("Phone: " + empPhone);
        System.out.println("Salary: " + empSalary);
    }
}
```

```java
class Teaching extends Employee
{
    String domain;
    int n;
    public void accept()
    {
            super.accept();
            Scanner scanner = new Scanner(System.in);
            System.out.print("Enter Domain: ");
            domain = scanner.next();
            System.out.print("Enter Number of Publications: ");
            n = scanner.nextInt();
            System.out.println("\n");
            }
    public void display()
    {
            super.display();
            System.out.println("Domain: " + domain);
            System.out.println("Publications:" + n);
            System.out.println("\n");
            }
}

class Technical extends Employee
{
    String skill;
    public void accept()
    {
            super.accept();
            Scanner scanner = new Scanner(System.in);
```

```java
        System.out.print("Enter technical Skills: ");
         skill = scanner.nextLine();
          System.out.println("\n");
           }
    public void display()
{
        super.display();
         System.out.println("Technical Skills: " + skill);
        System.out.println("\n");
         }
}


class Contract extends Employee {
    int period;
    public void accept()
{
        super.accept();
         Scanner scanner = new Scanner(System.in);
        System.out.print("Enter Period: ");
        period = scanner.nextInt();
        System.out.println("\n");
        }
    public void display()
{
        super.display();
        System.out.println("Contract Period: " + period);
        }
}


class EmployeeFour
```

```java
{
    public static void main(String[] args) {
        Teaching teaching = new Teaching();
        System.out.println("Enter the details of Teaching Staff");
        teaching.accept();
        Technical technical = new Technical();
        System.out.println("Enter the details of Technical Staff");
        technical.accept();
        Contract contract = new Contract();
        System.out.println("Enter the details of Contract Staff");
        contract.accept();
        System.out.println("The details of Teaching Staff");
        teaching.display();
        System.out.println("The details of Technical Staff");
        technical.display();
        System.out.println("The details of Contract Staff");
        contract.display();
    }
}
```

Output:

```
run:
Enter the details of Teaching Staff
Enter Staff Id: 1
Enter Name: Aneesha
Enter Phone: 12345
Enter Salary: 22222
Enter Domain: ISE
Enter Number of Publications: 2


Enter the details of Technical Staff
Enter Staff Id: 2
Enter Name: Ambika
Enter Phone: 345
Enter Salary: 123454
Enter technical Skills: Web


Enter the details of Contract Staff
Enter Staff Id: 3
Enter Name: Anand
Enter Phone: 34567
Enter Salary: 34567
Enter Period: 2


The details of Teaching Staff
Staff Id: 1
Name: Aneesha
Phone: 12345
Salary: 22222.0
Domain: ISE
Publications:2


The details of Technical Staff
Staff Id: 2
Name: Ambika
Phone: 345
Salary: 123454.0
Technical Skills: Web


The details of Contract Staff
Staff Id: 3
Name: Anand
Phone: 34567
Salary: 34567.0
Contract Period: 2
BUILD SUCCESSFUL (total time: 1 minute 15 seconds)
```

Program-4

```java
import java.util.Scanner;

class ExceptionDivision
{
public static void main(String[] args)
{
int a,b,result;
Scanner input =new Scanner(System.in);
System.out.println("Input two integers");
a=input.nextInt();
b=input.nextInt();
try
{
result=a/b;
System.out.println("Result="+result);
}
catch(ArithmeticException e)
{
System.out.println("exception caught: Divide by zero error"+e);
}
}}
```

Output:

```
run:
Input two integers
34 0
exception caught: Divide by zero errorjava.lang.ArithmeticException: / by zero
BUILD SUCCESSFUL (total time: 4 seconds)
```

Program-5

```java
import java.net.URL;
public class URLMain {
    public static void main(String[] args)
    {
        try
        {
            URL url = new
            URL("https://www.example.com/path/to/file.html?key=value#fragment");
            System.out.println("Protocol: " + url.getProtocol());
            System.out.println("Host: " + url.getHost());
            System.out.println("Port: " + url.getPort());
            System.out.println("Path: " + url.getPath());
            System.out.println("Query: " + url.getQuery());
            System.out.println("Fragment: " + url.getRef());
        }
        catch (Exception e)
        {
            System.out.println("Error: " + e.getMessage());
        }
    }
}
```

Output:

```
run:
Protocol: https
Host: www.example.com
Port: -1
Path: /path/to/file.html
Query: key=value
Fragment: fragment
BUILD SUCCESSFUL (total time: 0 seconds)
```

Program-6

**ServerSide.java**

```java
import java.io.*;
 import java.net.*;
public class ServerSide
 {
        public static void main(String[]args)
        {
         try
        {
        ServerSocket ss=new ServerSocket(3306);
        Socket s=ss.accept();//establishes connection
        DataInputStream dis=new DataInputStream(s.getInputStream());
        String str=(String)dis.readUTF();
        System.out.println("message= "+str);
        ss.close();
        }
        catch(Exception e)
        {
        System.out.println(e);}
        }
    }
```

ClientSide.java

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

```
Socket s=new Socket("localhost",3306);
DataOutputStreamdout=new DataOutputStream(s.getOutputStream());
dout.writeUTF("Hello Server");
dout.flush()
dout.close();
s.close();
}
catch(Exception e)
{
System.out.println(e);}
}
}
```

Output:
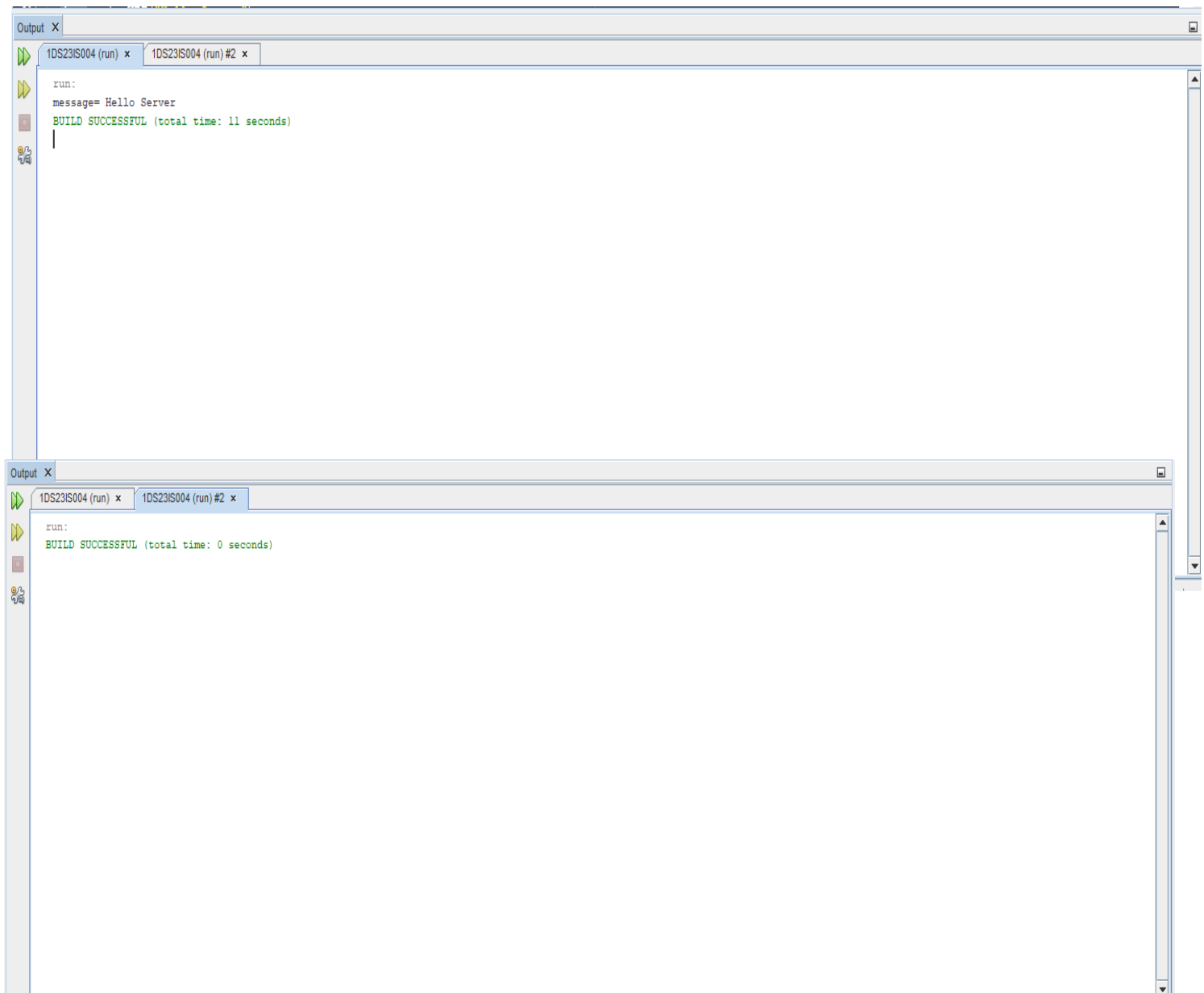
Program-7:

```java
import java.sql.*;

public class InsertDemo {

// JDBC driver name and database URL

static final String JDBC_DRIVER = "com.mysql.cj.jdbc.Driver";

static final String DB_URL = "jdbc:mysql://localhost:3306/";

// Database credentials

static final String USER = "root";

static final String PASS = "root";

static final String db_Name = "jdbctest";

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

Statement stmt = null;

try{

//STEP 2: Register JDBC driver

Class.forName("com.mysql.cj.jdbc.Driver");

//STEP 3: Open a connection

System.out.println("Connecting to a selected database...");

conn = DriverManager.getConnection(DB_URL+db_Name,USER,PASS);

System.out.println("Connected database successfully...");

//STEP 4: Execute a query

System.out.println("Inserting records into the table...");

stmt = conn.createStatement();

String sql = "INSERT INTO employees " + "VALUES ('5001', '30', 'Surendra', 'K','Coimbatore')";

stmt.executeUpdate(sql);

sql = "INSERT INTO employees " + "VALUES ('5002', '21', 'Athul', 'K','Wayanad')";
```

```java
stmt.executeUpdate(sql);

sql = "INSERT INTO employees " + "VALUES ('5003', '20', 'Yadhu', 'K T','Palakkad')";

stmt.executeUpdate(sql);

sql = "INSERT INTO employees " + "VALUES ('5004', '23', 'Pravin', 'K P','Thrissur')";

stmt.executeUpdate(sql);

sql = "UPDATE employees " + "SET age = 21 WHERE EMP_ID in (5003, 5004)";

stmt.executeUpdate(sql);

System.out.println("Inserted records into the table...");

String sql2="DELETE FROM employees where EMP_ID=5004";

stmt.executeUpdate(sql2);

System.out.println("deleted records in the table where id is 5004...");

ResultSet rs= stmt.executeQuery("select * from employees");

while(rs.next()){

   System.out.println(rs.getString(1)+ " "+rs.getString(2)+ " "+rs.getString(3)+ " "+rs.getString(4)+ " "+rs.getString(5)+" ");

}

}catch(SQLException se){

//Handle errors for JDBC

se.printStackTrace();

}

catch(Exception e){

//Handle errors for Class.forName

e.printStackTrace();

}

finally{

//finally block used to close resources

try{

   if(stmt!=null) conn.close();

}

catch(SQLException se){
```

```java
}// do nothing

try{

if(conn!=null) conn.close();

}

catch(SQLException se){

    se.printStackTrace();

}//end finally try

}//end try System.out.println("Goodbye!");

}//end main

}
```

Output:

```
mysql> CREATE TABLE employees ( EMP_ID INT, AGE INT, FIRST_NAME VARCHAR(30),LAST_NAME VARCHAR(30),ADDRESS VARCHAR(30) );
Query OK, 0 rows affected (0.02 sec)

mysql> SELECT * FROM employees;
+--------+------+------------+-----------+------------+
| EMP_ID | AGE  | FIRST_NAME | LAST_NAME | ADDRESS    |
+--------+------+------------+-----------+------------+
|   5001 |   30 | Surendra   | K         | Coimbatore |
|   5002 |   21 | Athul      | K         | Wayanad    |
|   5003 |   21 | Yadhu      | K T       | Palakkad   |
+--------+------+------------+-----------+------------+
3 rows in set (0.00 sec)
```

```
Output - 1DS23IS004 (run)  X
    run:
    Connecting to a selected database...
    Connected database successfully...
    Inserting records into the table...
    Inserted records into the table...
    deleted records in the table where id is 5004...
    5001 30 Surendra K Coimbatore
    5002 21 Athul K Wayanad
    5003 21 Yadhu K T Palakkad
    BUILD SUCCESSFUL (total time: 0 seconds)
```

Program-8:

Login.html

```html
<html>
<head>
<title>Login</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
<form action="login.jsp" method="post" id="styleform">
<h2>Login Authentication</h2><hr color="black"><br>
Username: <input type="text" name="user"/><br><br>
Password: <input type="password" name="pwd"/><br><br><br>
<input type="submit" value="Submit" id="stylesub"/>
</form>
</body>
</html>
```

Login.jsp

```jsp
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Login</title>
</head>
<body>
<%@ page import ="java.sql.*" %>
<%@ page import ="javax.sql.*" %>
```

```
<%String userid = request.getParameter("user");
```

```jsp
String pwd = request.getParameter("pwd");
Class.forName("com.mysql.jdbc.Driver");
java.sql.Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/emp","users","");
Statement st= con.createStatement();
ResultSet rs= st.executeQuery("select * from users where user_id='"+userid+"'");
if(rs.next())
{if(rs.getString(2).equals(pwd)) {
session.setAttribute("user",rs.getString(3));
String name=(String)session.getAttribute("user");
out.println("Welcome "+ name);
}else
System.out.println("Invalid password try again");
}
%></body>
</html>
```

Output:
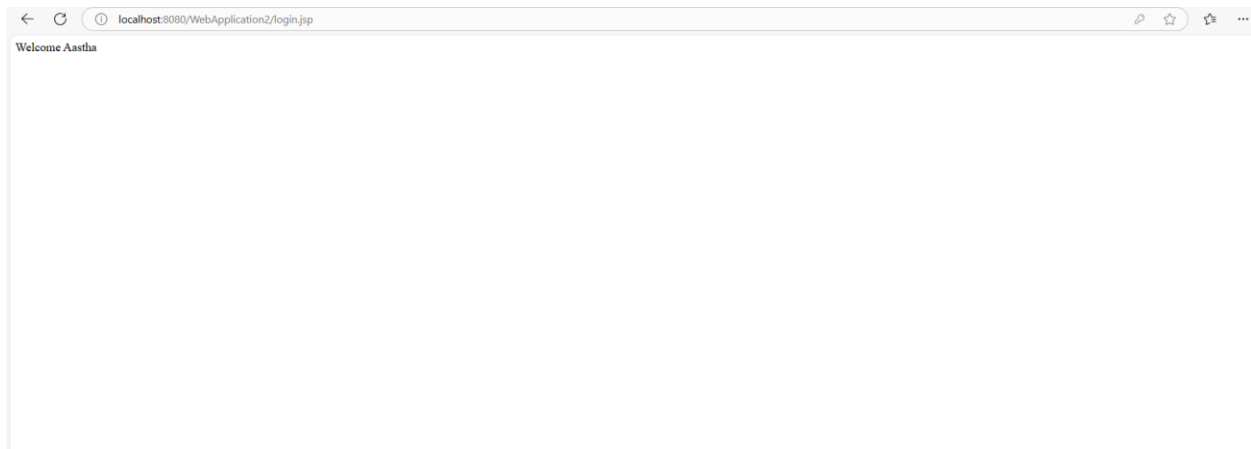
Login Authentication

Username: Aastha

Password: •••••••

Submit

Program-9:

/*

 * To change this license header, choose License Headers in Project Properties.

 * To change this template file, choose Tools | Templates

 * and open the template in the editor.

 */

import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

/**

 *

```java
 * @author iselab5
 */
public class PageHitCounter extends HttpServlet {


    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    private int hitCount;
public void init() { hitCount = 0; }



    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");


        hitCount++;


        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
```

```java
        out.println("<head>");



        out.println("<title>Servlet PageHitCounter</title>");

        out.println("</head>");

        out.println("<body>");

        out.println("<h1>hitCount shows number of click on website</h1>");

      out.println("<h2 align = \"center\">" + hitCount + "</h2>\n" );

        out.println("</body>");

        out.println("</html>");

    }

  }


    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the + sign on
the left to edit the code.">

    /**
     * Handles the HTTP <code>GET</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
          throws ServletException, IOException {
        processRequest(request, response);
```

```java
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Returns a short description of the servlet.
     *
     * @return a String containing servlet description
     */
    @Override
    public String getServletInfo() {
        return "Short description";
    }// </editor-fold>

}
```

hitCount shows number of click on website

<div align="center">5</div>

Program-10

import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.sql.*;

public class P9_DatabaseAccess extends HttpServlet

{

    public void doGet(HttpServletRequest request, HttpServletResponse

    response) throws ServletException, IOException

    {

      String JDBC_DRIVER = "com.mysql.jdbc.Driver";

```java
String DB_URL="jdbc:mysql://localhost/STUDENT";

String USER = "root";

String PASS = "root";

response.setContentType("text/html");

PrintWriter out = response.getWriter();

String title = "Database Result";

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" +

 "<h1 align = \"center\">" + title + "</h1>\n");

try

{

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

   Connection conn = DriverManager.getConnection(DB_URL, USER,PASS);

   Statement stmt = conn.createStatement();

   String sql;

   sql = "SELECT * from stu";

   ResultSet rs = stmt.executeQuery(sql);

   out.println("<table border=1>");

   out.println("<tr><th>ID</th><th>Name</th><th>Age</th></tr>");

   while(rs.next())

   {

      int id  = rs.getInt(1);

      String name = rs.getString(2);
```

```java
                int age = rs.getInt(3);
                out.println(
                "<tr><td>"+id+"</td><td>"+name+"</td><td>"+age+
"</td></tr>");
                out.println("<br>");
            }
        out.println("</body></html>");
        rs.close();
        stmt.close();
        conn.close();
        }
        catch(SQLException se)
        {
          out.println(se);
          se.printStackTrace();
        }
        catch(Exception e)
        {
           e.printStackTrace();
           out.println(e);
        }
      }
}
```
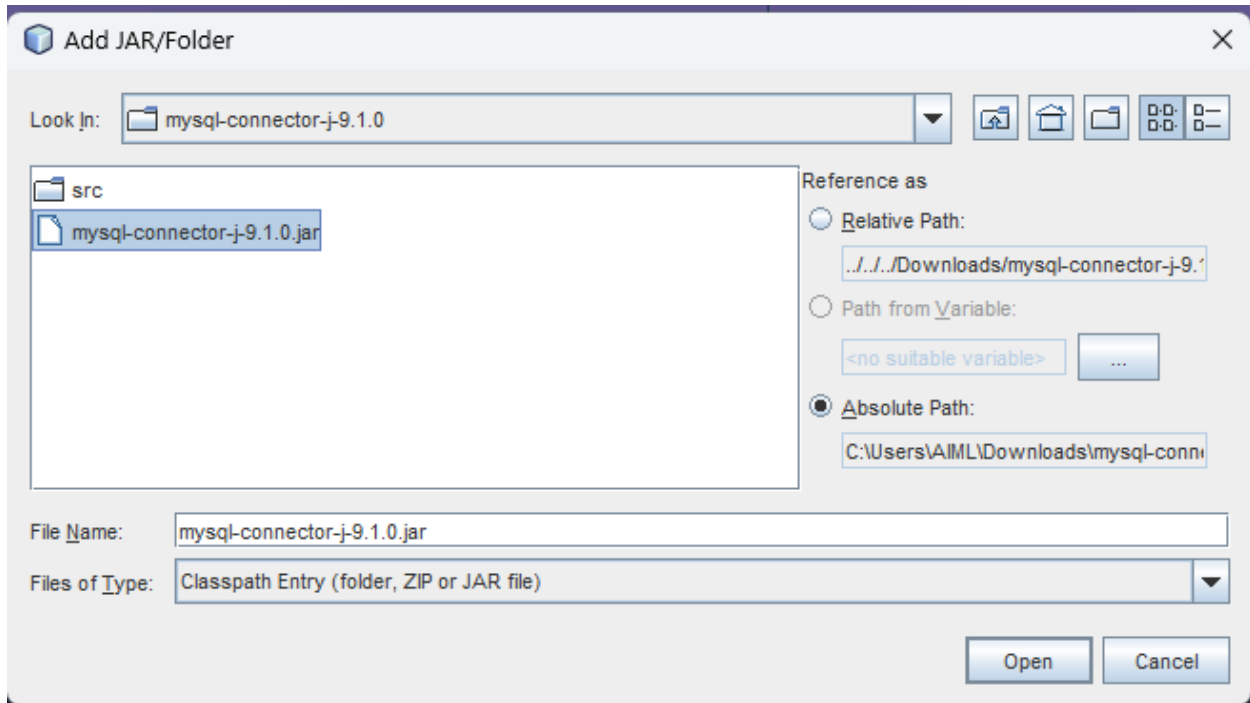
Note:
Steps to create :

STEP 1:   File->New Project->Java Web->next->next->Finish

STEP 2: right click on Webapplication(whatever name given)->New->Servlet->tick the Add info ->Finish

STEP 3:Right click Libraries->Add Library->Java DB Driver

STEP 4:Right click Libraries->Add JAR ->

STEP 5:In mysql

Output:

Database Result

ID	Name	Age
1	Arun	20

Modifications

Program-8:
Add register page

login.html

```
<html>
<head>
    <title>Login</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
    <form action="login.jsp" method="post" id="styleform">
        <h2>Login Authentication</h2><hr color="black"><br>
        Username: <input type="text" name="user"/><br><br>
        Password: <input type="password" name="pwd"/><br><br><br>
        <input type="submit" value="Submit" id="stylesub"/>
        <p>Don't have an account? <a href="Register.html">Register here</a></p>
    </form>
</body>
```

register.html
```
<html>
<head>
    <title>Register</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>
    <form action="register.jsp" method="post" id="styleform">
        <h2>User Registration</h2><hr color="black"><br>
```

```
      Username: <input type="text" name="user" required/><br><br>
      Password: <input type="password" name="pwd" required/><br><br>
      Confirm Password: <input type="password" name="confirm_pwd" required/><br><br><br>
      Full Name: <input type="text" name="full_name" required/><br><br><br>
      <input type="submit" value="Register" id="stylesub"/>
      <p>Already have an account? <a href="Login.html">Login here</a></p>
   </form>
</body>
</html>
```

Login.jsp

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
   <head>
   <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
   <title>Login</title>
   </head>
   <body>
   <%@ page import ="java.sql.*" %>
   <%@ page import ="javax.sql.*" %>
   <%String username = request.getParameter("user");
   String pwd = request.getParameter("pwd");
   Class.forName("com.mysql.jdbc.Driver");
   java.sql.Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/emp","root","root");
   Statement st= con.createStatement();
   ResultSet rs= st.executeQuery("select * from users where  user_id='"+username+"'");
   if(rs.next())
   {if(rs.getString(2).equals(pwd)) {
      session.setAttribute("user",rs.getString(1));
      String name=(String)session.getAttribute("user");
      out.println("Welcome "+ name);
   }else
   System.out.println("Invalid password try again");
   }
   %></body>
</html>
```

Register.jsp
```
<%@ page import ="java.sql.*" %>
<%@ page import ="javax.sql.*" %>
<%
   String userid = request.getParameter("user");
   String pwd = request.getParameter("pwd");
   String confirmPwd = request.getParameter("confirm_pwd");
   String fullName = request.getParameter("full_name");
```

```
    if (!pwd.equals(confirmPwd)) {
        out.println("Passwords do not match. Please go back and try again.");
        return;
    }

    try {
        Class.forName("com.mysql.jdbc.Driver");
        java.sql.Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/emp","root","root");
        PreparedStatement ps = con.prepareStatement("insert into users (user_id, password,
full_name) values (?, ?, ?)");
        ps.setString(1, userid);
        ps.setString(2, pwd);
        ps.setString(3, fullName);
        int i = ps.executeUpdate();

        if (i > 0) {
            out.println("Registration successful! You can now <a href='Login.html'>login here</a>.");
        } else {
            out.println("Registration failed. Please try again.");
        }

        ps.close();
        con.close();

    } catch (Exception e) {
        e.printStackTrace();
        out.println("An error occurred during registration: " + e.getMessage());
    }
%>
```

OUTPUT:

Registration successful! You can now login here.

Login Authentication

Username: [   ]

Password: [   ]

[Submit]

Don't have an account? [Register here](#)

User Registration

Username: [Test   ]

Password: [   ]

Confirm Password: [   ]

Full Name: [Testuse   ]

[Register]

Already have an account? [Login here](#)

Program-10

```java
import java.io.IOException;

import java.io.PrintWriter;

import javax.servlet.ServletException;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.sql.*;


public class Student extends HttpServlet {


  // Database connection details

  String JDBC_DRIVER = "com.mysql.jdbc.Driver";

  String DB_URL = "jdbc:mysql://localhost/ise";

  String USER = "root";

  String PASS = "root";


  // doGet method to handle both displaying records and operations (insert, update, delete)

  public void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException,
IOException {

    response.setContentType("text/html");

    PrintWriter out = response.getWriter();

    String title = "Database Result";

    String docType =

      "<!doctype html public \"-//w3c//dtd html 4.0 " + "transitional//en\">\n";


    out.println(docType +

        "<html>\n" +
```

```java
          "<head><title>" + title + "</title></head>\n" +

          "<body bgcolor = \"#f0f0f0\">\n" +

          "<h1 align = \"center\">" + title + "</h1>\n");


// Get the action parameter for delete or update

String action = request.getParameter("action");

String id = request.getParameter("id");


try {

    // Establish database connection

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

    Connection conn = DriverManager.getConnection(DB_URL, USER, PASS);


    // Handle delete operation

    if ("delete".equals(action) && id != null) {

        String deleteSQL = "DELETE FROM student WHERE id = ?";

        PreparedStatement stmt = conn.prepareStatement(deleteSQL);

        stmt.setInt(1, Integer.parseInt(id));

        stmt.executeUpdate();

        stmt.close();

        response.sendRedirect("Student"); // Redirect to show updated records

        return; // End execution after redirect

    }


    // Handle update operation

    if ("update".equals(action) && id != null) {

        String name = request.getParameter("name");

        String age = request.getParameter("age");

        String updateSQL = "UPDATE student SET name = ?, age = ? WHERE id = ?";

        PreparedStatement stmt = conn.prepareStatement(updateSQL);

        stmt.setString(1, name);
```

```java
        stmt.setInt(2, Integer.parseInt(age));

        stmt.setInt(3, Integer.parseInt(id));

        stmt.executeUpdate();

        stmt.close();

        response.sendRedirect("Student"); // Redirect to show updated records

        return; // End execution after redirect

    }


    // Display records from the student table

    Statement stmt = conn.createStatement();

    String sql = "SELECT * FROM student";

    ResultSet rs = stmt.executeQuery(sql);


    out.println("<table border=1>");

    out.println("<tr><th>ID</th><th>Name</th><th>Age</th><th>Actions</th></tr>");

    while (rs.next()) {

        int studentId = rs.getInt(1);

        String name = rs.getString(2);

        int age = rs.getInt(3);

        out.println("<tr><td>" + studentId + "</td><td>" + name + "</td><td>" + age +

            "</td><td><a href='?action=delete&id=" + studentId + "'>Delete</a> | " +

            "<a href='?action=update&id=" + studentId + "&name=" + name + "&age=" + age +
"'>Update</a></td></tr>");

    }

    out.println("</table><br>");


    // Display Insert Form (Allow ID input as user will enter it manually)

    out.println("<h2>Insert New Student</h2>");

    out.println("<form action='Student' method='POST'>" +

        "ID: <input type='number' name='id' required><br>" +

        "Name: <input type='text' name='name' required><br>" +
```

```java
            "Age: <input type='number' name='age' required><br>" +

            "<input type='submit' value='Insert Student'>" +

            "</form>");


    out.println("</body></html>");

    rs.close();

    stmt.close();

    conn.close();


  } catch (SQLException | ClassNotFoundException se) {

    out.println(se);

    se.printStackTrace();

  }

}


// doPost method to handle Insert operation

public void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException,
IOException {

    response.setContentType("text/html");

    PrintWriter out = response.getWriter();

    String id = request.getParameter("id");

    String name = request.getParameter("name");

    String age = request.getParameter("age");


    // Insert Student into the database

    if (id != null && name != null && age != null) {

      try {

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

        Connection conn = DriverManager.getConnection(DB_URL, USER, PASS);

        String insertSQL = "INSERT INTO student (id, name, age) VALUES (?, ?, ?)";

        PreparedStatement stmt = conn.prepareStatement(insertSQL);
```

```
        stmt.setInt(1, Integer.parseInt(id));

        stmt.setString(2, name);

        stmt.setInt(3, Integer.parseInt(age));

        stmt.executeUpdate();

        stmt.close();

        conn.close();


        response.sendRedirect("Student"); // Refresh the page to show new records
    } catch (SQLException | ClassNotFoundException e) {

        out.println(e);

        e.printStackTrace();

    }

  }

 }

}
```

OUTPUT:

Database Result

ID	Name	Age	Actions
1	Alice	18	Delete | Update

Insert New Student

ID: [_____]
Name: [_____]
Age: [_____]
[Insert Student]

Database Result

ID	Name	Age	Actions

Insert New Student

ID: [_____]
Name: [_____]
Age: [_____]
[Insert Student]

Database Result

ID	Name	Age	Actions

Insert New Student

ID: 1

Name: Alice

Age: 18

Insert Student