
# CMR INSTITUTE OF TECHNOLOGY

## Department of Information Science and Engineering

## LAB MANUAL

## ADVANCED JAVA (BIS402)

**Semester-IV**

**Academic Year: 2025-2026**

# Syllabus

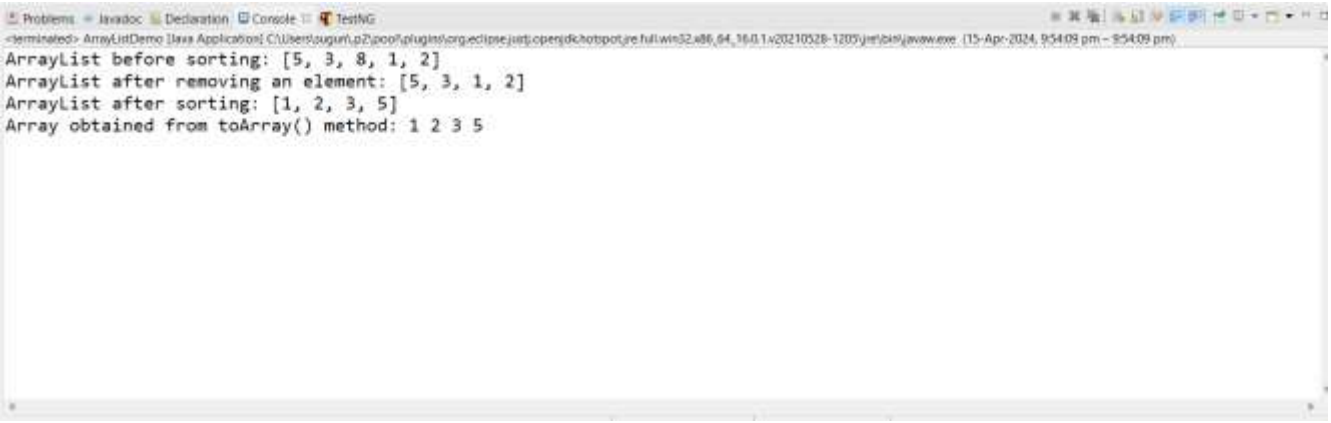
***List of problems for which student should develop program and execute in the Laboratory***

| Sl.NO | Experiments |
|---|---|
| 1 | Implement a java program to demonstrate creating an ArrayList, adding elements, removing elements, sorting elements of ArrayList. Also illustrate the use of toArray() method. |
| 2 | Develop a program to read random numbers between a given range that are multiples of 2 and 5, sort the numbers according to tens place using comparator. |
| 3 | Implement a java program to illustrate storing user defined classes in collection. |
| 4 | Implement a java program to illustrate the use of different types of string class constructors. |
| 5 | Implement a java program to illustrate the use of different types of character extraction, string comparison, string search and string modification methods. |
| 6 | Implement a java program to illustrate the use of different types of StringBuffer methods |
| 7 | Demonstrate a swing event handling application that creates 2 buttons Alpha and Beta and displays the text “Alpha pressed” when alpha button is clicked and “Beta pressed” when beta button is clicked. |
| 8 | A program to display greeting message on the browser “Hello UserName”, “How Are You?”, accept username from the client using servlet. |
| 9 | A servlet program to display the name, USN, and total marks by accepting student detail |
| 10 | A Java program to create and read the cookie for the given cookie name as “EMPID” and its value as “AN2356”. |
| 11 | Write a JAVA Program to insert data into Student DATA BASE and retrieve info based on particular queries(For example update, delete, search etc…). |
| 12 | A program to design the Login page and validating the USER_ID and PASSWORD using JSP and DataBase. |

**Program-1: Implement a java program to demonstrate creating an ArrayList, adding elements, removing elements, sorting elements of ArrayList. Also illustrate the use of toArray() method.**

```
import java.util.ArrayList;
import java.util.Collections;

public class ArrayListDemo {
    public static void main(String[] args) {
        // Creating an ArrayList
        ArrayList<Integer> numbers = new ArrayList<>();

        // Adding elements to the ArrayList
        numbers.add(5);
        numbers.add(3);
        numbers.add(8);
        numbers.add(1);
        numbers.add(2);

        // Printing the ArrayList before sorting
        System.out.println("ArrayList before sorting: " + numbers);

        // Removing an element from the ArrayList
        numbers.remove(2); // Remove the element at index 2

        // Printing the ArrayList after removing an element
        System.out.println("ArrayList after removing an element: " + numbers);

        // Sorting the elements of the ArrayList
        Collections.sort(numbers);

        // Printing the ArrayList after sorting
        System.out.println("ArrayList after sorting: " + numbers);

        // Using toArray() method to convert ArrayList to an array
        Integer[] numbersArray = new Integer[numbers.size()];
        numbersArray = numbers.toArray(numbersArray);

        // Printing the array obtained from toArray() method
        System.out.print("Array obtained from toArray() method: ");
        for (int num : numbersArray) {
            System.out.print(num + " ");
        }
        System.out.println();
    }
}
```

Output:


Problems Javadoc Declaration Console TestNG
<terminated> ArrayListDemo [Java Application] C:\Users\ougur\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.1.v20210528-1205\jre\bin\javaw.exe (15-Apr-2024, 9:54:09 pm – 9:54:09 pm)
ArrayList before sorting: [5, 3, 8, 1, 2]
ArrayList after removing an element: [5, 3, 1, 2]
ArrayList after sorting: [1, 2, 3, 5]
Array obtained from toArray() method: 1 2 3 5

**Program-2: Develop a program to read random numbers between a given range that are multiples of 2 and 5, sort the numbers according to tens place using comparator.2**

```
import java.util.ArrayList;
import java.util.Comparator;
import java.util.Random;

class TensPlaceComparator implements Comparator<Integer> {
    @Override
    public int compare(Integer num1, Integer num2) {
        // Extract tens place
        int tensPlace1 = (num1 % 100) / 10;
        int tensPlace2 = (num2 % 100) / 10;

        // Compare tens places
        return Integer.compare(tensPlace1, tensPlace2);
    }
}

public class RandomNumbersSort {
    public static void main(String[] args) {
        int min = 100; // Minimum value of random number (inclusive)
        int max = 1000; // Maximum value of random number (exclusive)
        int count = 10; // Number of random numbers to generate

        ArrayList<Integer> numbers = new ArrayList<>();
        Random rand = new Random();

        // Generate random numbers between min and max that are multiples of 2 and 5
        for (int i = 0; i < count; i++) {
            int randomNumber;
            do {
                randomNumber = rand.nextInt(max - min) + min;
            } while (randomNumber % 2 != 0 || randomNumber % 5 != 0); // Ensure multiple of 2 and 5
            numbers.add(randomNumber);
        }

        // Print unsorted numbers
        System.out.println("Unsorted numbers:");
        for (int num : numbers) {
            System.out.println(num);
        }

        // Sort numbers according to tens place using Comparator
        numbers.sort(new TensPlaceComparator());

        // Print sorted numbers
        System.out.println("\nSorted numbers according to tens place:");
        for (int num : numbers) {
            System.out.println(num);
```

```
    }
  }
}
```


**Program-3: Implement a java program to illustrate storing user defined classes in collection**

```
import java.util.ArrayList;

class Student {
   private String name;
   private int id;

   public Student(String name, int id) {
      this.name = name;
      this.id = id;
   }

   // Getters and setters
   public String getName() {
      return name;
```

```
    }

    public void setName(String name) {
        this.name = name;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    @Override
    public String toString() {
        return "Student{" +
                "name='" + name + '\'' +
                ", id=" + id +
                '}';
    }
}

public class Main {
    public static void main(String[] args) {
        // Creating an ArrayList to store Student objects
        ArrayList<Student> students = new ArrayList<>();

        // Adding Student objects to the ArrayList
        students.add(new Student("Arnav", 101));
        students.add(new Student("Ben", 102));
        students.add(new Student("Charu", 103));

        // Printing the contents of the ArrayList
        System.out.println("Students:");
        for (Student student : students) {
            System.out.println(student);
        }
    }
}
```

Output:


**Program-4: Implement a java program to illustrate the use of different types of string class constructors**

```
public class StringConstructorsDemo {
   public static void main(String[] args) {
      // Using the default constructor
      String str1 = new String();
      System.out.println("String using default constructor: \"" + str1 + "\"");

      // Using a char array constructor
      char[] charArray = {'H', 'e', 'l', 'l', 'o'};
```

```
        String str2 = new String(charArray);
        System.out.println("String using char array constructor: \"" + str2 + "\"");

        // Using a byte array constructor with explicit character encoding
        byte[] byteArray = {72, 101, 108, 108, 111};
        String str3 = new String(byteArray);
        System.out.println("String using byte array constructor: \"" + str3 + "\"");

        // Using a byte array constructor with character encoding specified
        byte[] byteArrayUtf8 = {72, 101, 108, 108, 111}; // "Hello" in UTF-8
        String str4 = new String(byteArrayUtf8, java.nio.charset.StandardCharsets.UTF_8);
        System.out.println("String using byte array constructor with UTF-8 encoding: \"" + str4 + "\"");

        // Using a byte array constructor with character encoding specified
        byte[] byteArrayUtf16 = {0, 72, 0, 101, 0, 108, 0, 108, 0, 111}; // "Hello" in UTF-16
        String str5 = new String(byteArrayUtf16, java.nio.charset.StandardCharsets.UTF_16);
        System.out.println("String using byte array constructor with UTF-16 encoding: \"" + str5 + "\"");

        // Using a StringBuffer constructor
        StringBuffer stringBuffer = new StringBuffer("Hello");
        String str6 = new String(stringBuffer);
        System.out.println("String using StringBuffer constructor: \"" + str6 + "\"");

        // Using a StringBuilder constructor
        StringBuilder stringBuilder = new StringBuilder("Hello");
        String str7 = new String(stringBuilder);
        System.out.println("String using StringBuilder constructor: \"" + str7 + "\"");
    }
}
```

Output:


Problems Javadoc Declaration Console TestNG
<terminated> StringConstructorsDemo [Java Application] C:\Users\suguri\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.1.v20210528-1205\jre\bin\javaw.exe (15-Apr-2024, 10:00:32 pm – 10:00:35 pm)
String using default constructor: ""
String using char array constructor: "Hello"
String using byte array constructor: "Hello"
String using byte array constructor with UTF-8 encoding: "Hello"
String using byte array constructor with UTF-16 encoding: "Hello"
String using StringBuffer constructor: "Hello"
String using StringBuilder constructor: "Hello"

**Program-5: Implement a java program to illustrate the use of different types of character extraction, string comparison, string search and string modification methods.**

```
public class StringMethodsDemo {
   public static void main(String[] args) {
      // Character Extraction
      String str = "Hello, World!";
      System.out.println("Original string: " + str);

      // charAt() method
      char firstChar = str.charAt(0);
      System.out.println("First character: " + firstChar);

      // substring() method
      String substr = str.substring(7, 12);
      System.out.println("Substring from index 7 to 12: " + substr);

      // String Comparison
      String str1 = "hello";
      String str2 = "Hello";
      System.out.println("String 1: " + str1);
      System.out.println("String 2: " + str2);

      // equals() method
      boolean isEqual = str1.equals(str2);
      System.out.println("Using equals() method: " + isEqual);

      // equalsIgnoreCase() method
      boolean isEqualIgnoreCase = str1.equalsIgnoreCase(str2);
      System.out.println("Using equalsIgnoreCase() method: " + isEqualIgnoreCase);

      // String Search
      String sentence = "The quick brown fox jumps over the lazy dog.";
      System.out.println("Original sentence: " + sentence);

      // indexOf() method
      int index = sentence.indexOf("fox");
      System.out.println("Index of 'fox': " + index);

      // lastIndexOf() method
      int lastIndex = sentence.lastIndexOf("the");
      System.out.println("Last index of 'the': " + lastIndex);

      // String Modification
      String original = "  Hello, World!  ";
      System.out.println("Original string: \"" + original + "\"");

      // trim() method
      String trimmed = original.trim();
      System.out.println("Trimmed string: \"" + trimmed + "\"");
```

```
        // toLowerCase() method
        String lowerCase = original.toLowerCase();
        System.out.println("Lowercase string: \"" + lowerCase + "\"");

        // toUpperCase() method
        String upperCase = original.toUpperCase();
        System.out.println("Uppercase string: \"" + upperCase + "\"");

        // replace() method
        String replaced = original.replace("o", "0");
        System.out.println("String with 'o' replaced by '0': \"" + replaced + "\"");
    }
}
```

Output:

**Program-6: Implement a java program to illustrate the use of different types of StringBuffer methods**

```
public class StringBufferMethodsDemo {
   public static void main(String[] args) {
      // Creating a StringBuffer
      StringBuffer stringBuffer = new StringBuffer("Hello");
      System.out.println("Original StringBuffer: " + stringBuffer);

      // append() method
      stringBuffer.append(" World!");
      System.out.println("After append(): " + stringBuffer);

      // insert() method
      stringBuffer.insert(5, ", Java");
      System.out.println("After insert(): " + stringBuffer);

      // delete() method
      stringBuffer.delete(5, 11);
      System.out.println("After delete(): " + stringBuffer);

      // deleteCharAt() method
      stringBuffer.deleteCharAt(5);
      System.out.println("After deleteCharAt(): " + stringBuffer);

      // reverse() method
      stringBuffer.reverse();
      System.out.println("After reverse(): " + stringBuffer);

      // capacity() method
      int capacity = stringBuffer.capacity();
      System.out.println("Capacity of StringBuffer: " + capacity);

      // setLength() method
      stringBuffer.setLength(5);
      System.out.println("After setLength(): " + stringBuffer);

      // ensureCapacity() method
      stringBuffer.ensureCapacity(30);
      System.out.println("After ensureCapacity(): " + stringBuffer);

      // charAt() method
      char charAtIndex = stringBuffer.charAt(2);
      System.out.println("Character at index 2: " + charAtIndex);

      // indexOf() method
      int indexOfSubstring = stringBuffer.indexOf("llo");
      System.out.println("Index of 'llo': " + indexOfSubstring);
```

```
        // substring() method
        String substring = stringBuffer.substring(1, 3);
        System.out.println("Substring from index 1 to 3: " + substring);

        // replace() method
        stringBuffer.replace(1, 3, "i");
        System.out.println("After replace(): " + stringBuffer);
    }
}
```

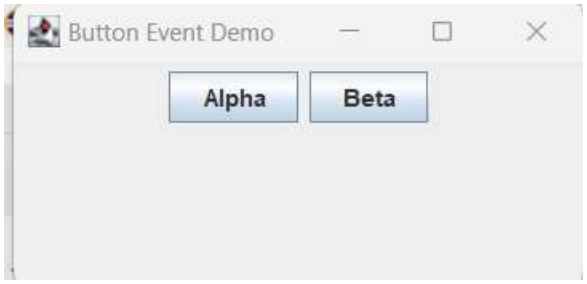
Output:

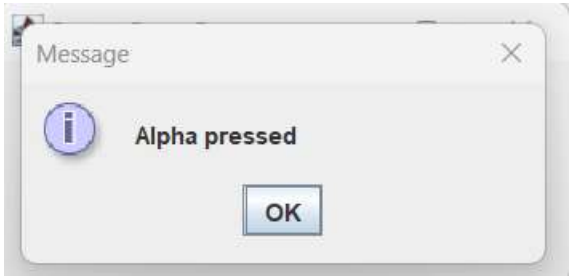
**Program-7: Demonstrate a swing event handling application that creates 2 buttons Alpha and Beta and displays the text "Alpha pressed" when alpha button is clicked and "Beta pressed" when beta button is clicked.**

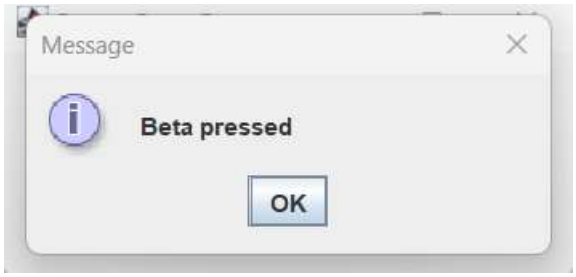
```
import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

public class ButtonEventDemo extends JFrame implements ActionListener {
   private JButton alphaButton;
   private JButton betaButton;

   public ButtonEventDemo() {
      setTitle("Button Event Demo");
      setSize(300, 150);
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

      // Create buttons
      alphaButton = new JButton("Alpha");
      betaButton = new JButton("Beta");

      // Add action listener to buttons
      alphaButton.addActionListener(this);
      betaButton.addActionListener(this);

      // Add buttons to the content pane
      Container contentPane = getContentPane();
      contentPane.setLayout(new FlowLayout());
      contentPane.add(alphaButton);
      contentPane.add(betaButton);
   }

   @Override
   public void actionPerformed(ActionEvent e) {
      if (e.getSource() == alphaButton) {
         JOptionPane.showMessageDialog(this, "Alpha pressed");
      } else if (e.getSource() == betaButton) {
         JOptionPane.showMessageDialog(this, "Beta pressed");
      }
   }

   public static void main(String[] args) {
      // Create and display the JFrame
      SwingUtilities.invokeLater(() -> {
         ButtonEventDemo frame = new ButtonEventDemo();
         frame.setVisible(true);
      });
```

```
    }
}
```

Output:


Button Event Demo
Alpha
Beta


Message
Alpha pressed
OK

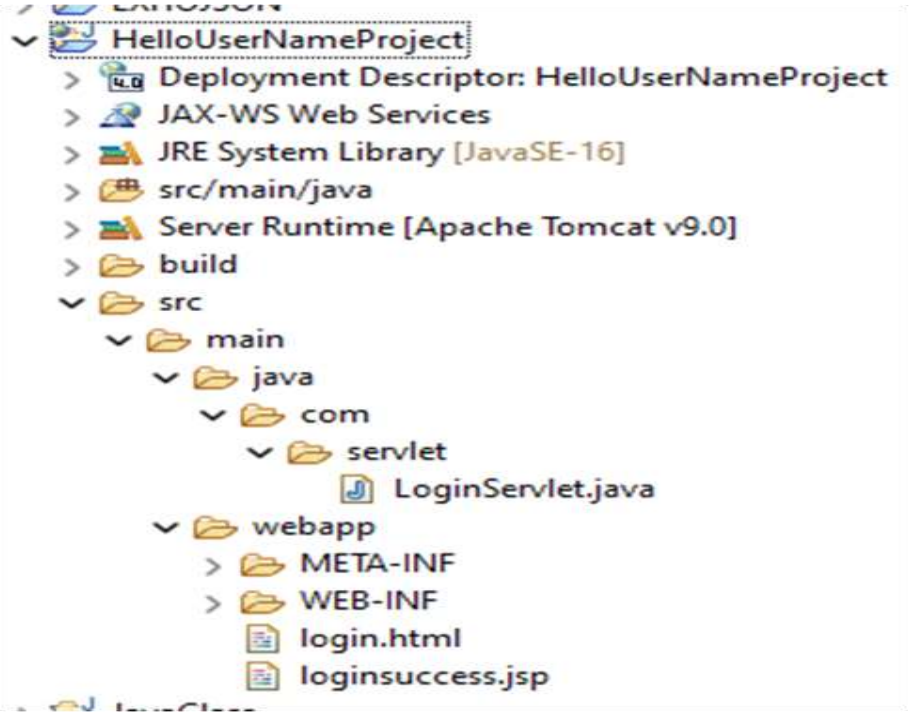

Message
Beta pressed
OK

**Program 8: A program to display greeting messages on the browser "Hello UserName", "How are you?", accept user name from client servlet.**

**To create a new dynamic Web project in Eclipse:**

**1. On the main menu select File > New > Project....**

**2. In the upcoming wizard choose Web > Dynamic Web Project.**




**// login.html**

```
<!DOCTYPEhtml>

<html>
```

```
<head>
<metacharset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<divalign="center">
<h1>Employee Login Form</h1>
<formaction="login"method="post">
<table>
<tr>
<td>UserName</td>
<td><inputtype="text"name="username"/></td>
</tr>
</table>
<inputtype="submit"value="Submit"/>
</form>
</div>
</body>
</html>
```

// loginsuccess.jsp

```
<!DOCTYPEhtml>
```

```
<html>
<head>
<metacharset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<divalign="center">
<h1>Hello  <%=
 session.getAttribute("username")%>, How are you?</h1>
</div>
</body>
</html>
```

// LoginServlet.java

```
package com.servlet;
import java.io.IOException;
 import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
```

```
@WebServlet("/login")
public class LoginServlet extends HttpServlet {
        private static final long serialVersionUID = 1l;

        public void init() {
        }

        protected void doPost(HttpServletRequest request, HttpServletResponse
response)
    throws ServletException, IOException {
            String username = request.getParameter("username");
            try {
                    HttpSession session = request.getSession();
                    session.setAttribute("username", username);
                    response.sendRedirect("loginsuccess.jsp");
            } catch (Exception e) {
                    e.printStackTrace();
            }
        }
}
```

**OUTPUT:**


Employee Login Form
UserName neera
Submit


Hello neera, How are you?

## Program 9: A Servlet program to display the name,USN, and total marks by accepting student details.

```
import java.io.Serializable;

public class Student implements Serializable {

private static final long serialVersionUID = 1l;

private String name;

private String usn;

private float total;

        public String getName() {

                returnname;

        }

        public void setName(String name) {

                this.name = name;

        }

        public String getUsn() {

                returnusn;

        }

        public void setUsn(String usn) {

                this.usn = usn;

        }

        public float getTotal() {
```

```
        return total;
    }
    public void setTotal(float total) {
        this.total = total;
    }
    public Student(String name, String usn, float total) {
        this.name = name;
        this.usn = usn;
        this.total = total;
    }

}
```

//LoginServlet.java

```
package com.servlet;
import java.io.IOException;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
```

```
import com.bean.Student;



@WebServlet("/login")
public class LoginServlet extends HttpServlet {
	private static final long serialVersionUID = 1l;

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

	String name = request.getParameter("name");
	String usn = request.getParameter("usn");
	float mrks1 = Float.parseFloat(request.getParameter("mrks1"));
	float mrks2 =Float.parseFloat( request.getParameter("mrks2"));
	float total = mrks1+ mrks2;
	Student student = new Student(name, usn, total);

	try {
	HttpSession session = request.getSession();
			session.setAttribute("student", student);
			response.sendRedirect("showstudeentdetails.jsp");
	} catch (Exception e) {
	e.printStackTrace();
	}
```

```
        }
}
```

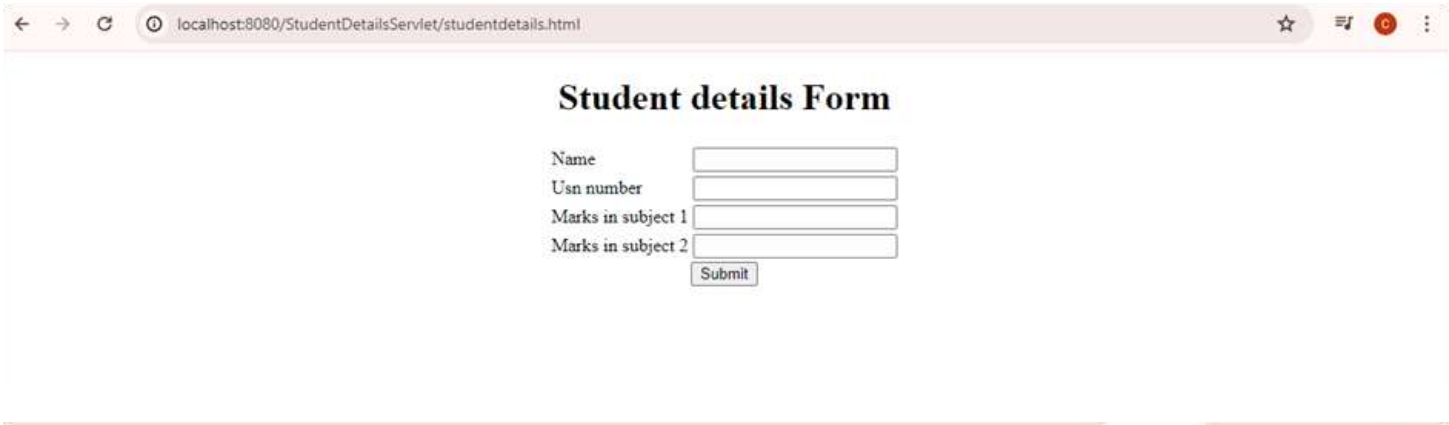
```
<!DOCTYPEhtml>
<%@pageimport="com.bean.Student"%>
<html>
<head>
<metacharset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<divalign="center">
<%
  Student student = (Student) session.getAttribute("student");
//System.out.println("name: " + student.getName());
%>
<tablestyle="with: 100%">
<tr>
<td>Name</td>
<td><%=student.getName() %></td>
</tr>
<tr>
<td>Usn number</td>
<td><%=student.getUsn() %></td>
```

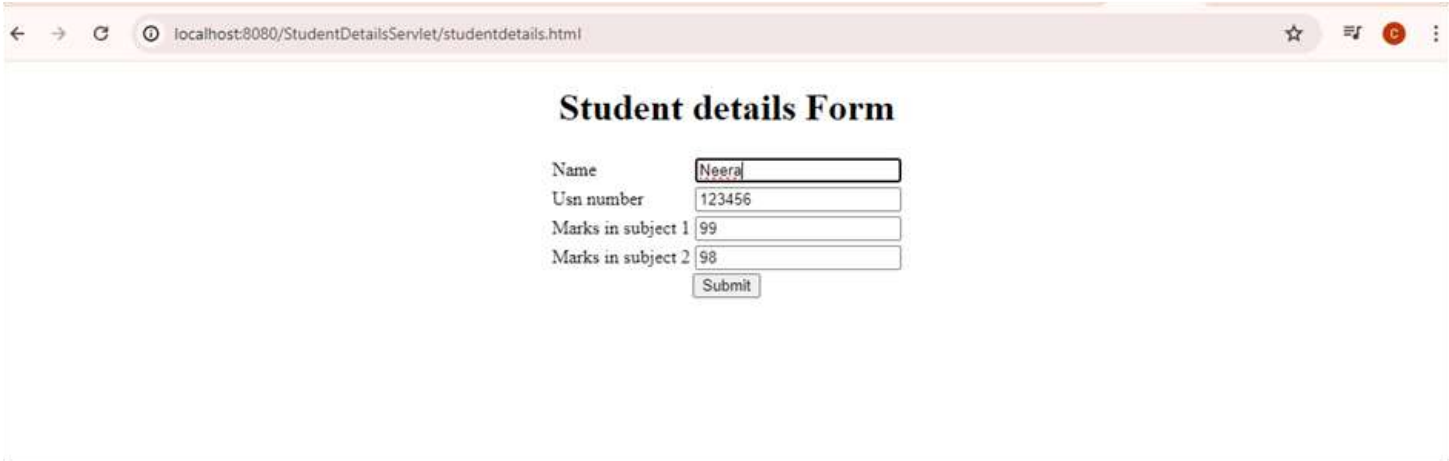
```
</tr>
<tr>
<td>Total Marks</td>
<td><%=student.getTotal() %></td>
</tr>
</table>
</div>
</body>
</html>
```

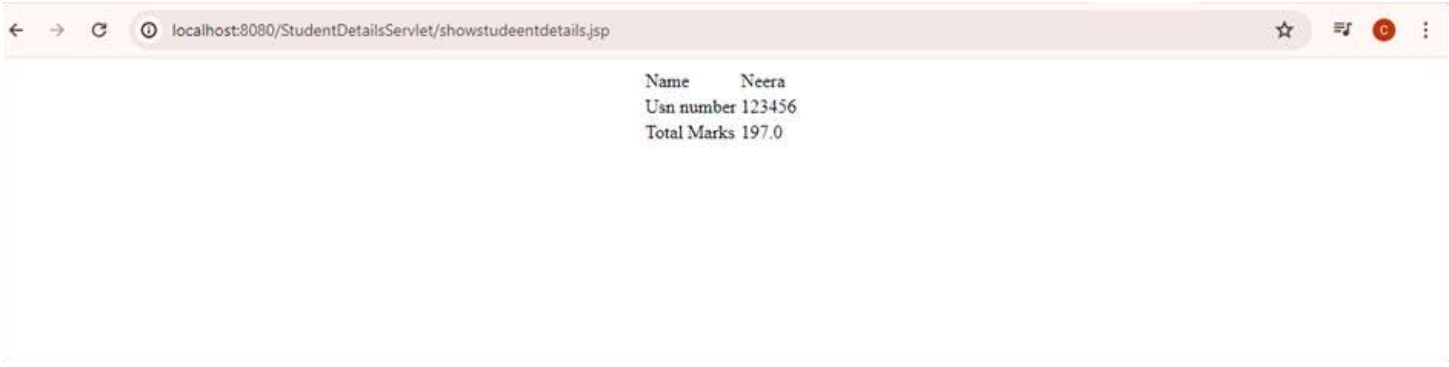
```
<!DOCTYPEhtml>
<html>
<head>
<metacharset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<divalign="center">
<h1>Student details Form</h1>
<formaction="login"method="post">
<tablestyle="with: 100%">
<tr>
<td>Name</td>
<td><inputtype="text"name="name"/></td>
```

```
</tr>

<tr>

<td>Usn number</td>

<td><inputtype="text"name="usn"/></td>

</tr>

<tr>

<td>Marks in subject 1</td>

<td><inputtype="text"name="mrks1"/></td>

</tr>

<tr>

<td>Marks in subject 2</td>

<td><inputtype="text"name="mrks2"/></td>

</tr>

</table>

<inputtype="submit"value="Submit"/>

</form>

</div>

</body>

</html>
```

**OUTPUT:**


localhost:8080/StudentDetailsServlet/studentdetails.html
Student details Form
Name
Usn number
Marks in subject 1
Marks in subject 2
Submit


localhost:8080/StudentDetailsServlet/studentdetails.html
Student details Form
Name Neera
Usn number 123456
Marks in subject 1 99
Marks in subject 2 98
Submit


localhost:8080/StudentDetailsServlet/showstudeentdetails.jsp
Name Neera
Usn number 123456
Total Marks 197.0

## Program 10: AJava program to create and read the cookie for the given cookie name as “EMPID” and its value as “AN2356”.

### //code for index.html

```
<form action="servlet1"method="post">
EmpId:<input type="text"name="userName"/><br/>
<input type="submit"value="go"/>
</form>
```

**// code servlet.java**

```
package com.cookie;
import java.io.*;
import javax.servlet.*;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;

@WebServlet("/servlet1")
public class FirstServlet extends HttpServlet {

  public void doPost(HttpServletRequest request, HttpServletResponse response){
    try{

    response.setContentType("text/html");
    PrintWriter out = response.getWriter();
```

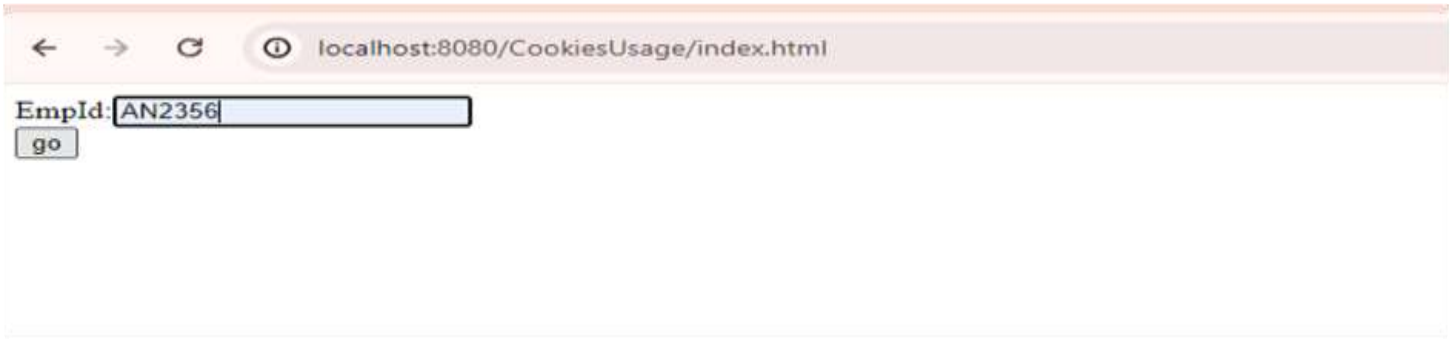
```
    String n=request.getParameter("userName");
    out.print("Welcome "+n);

    Cookie ck=new Cookie("uname",n);//creating cookie object
    response.addCookie(ck);//adding cookie in the response

    //creating submit button
    out.print("<form action='servlet2'>");
    out.print("<input type='submit' value='go'>");
    out.print("</form>");

    out.close();

        }catch(Exception e){System.out.println(e);}
  }
}
```

## // code for second servlet p-rogram

```
package com.cookie;
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class SecondServlet extends HttpServlet {
```

```
public void doPost(HttpServletRequest request, HttpServletResponse response){
    try{

    response.setContentType("text/html");
    PrintWriter out = response.getWriter();

    Cookie ck[]=request.getCookies();
    out.print("Hello "+ck[0].getValue());
     out.close();
  }catch(Exception e){System.out.println(e);}
    }
}
```

**OUTPUT:**




## Program 11: Write a program to insert data into Student DATA BASE and retrieve info based on particular queries.

## //code for html

```
<!DOCTYPEhtml>

<html>

<head>

<meta charset="ISO-8859-1">

<title>Insert title here</title>

</head>

<body>


<h1>Add New Student</h1>

<form action="SaveServlet"method="post">

<table>

<tr><td>Name:</td><td><input type="text"name="name"/></td></tr>

<tr><td>Password:</td><td><input type="password"name="password"/></td></tr>

<tr><td>Email:</td><td><input type="email"name="email"/></td></tr>

<tr><td>Country:</td><td>

<select name="country"style="width:150px">

<option>India</option>

<option>USA</option>

<option>UK</option>

<option>Other</option>

</select>
```

```
</td></tr>
<tr><td colspan="2"><input type="submit"value="Save Student"/></td></tr>
</table>
</form>
 <br/>
<a href="ViewServlet">view Student</a>
 </body>
</html>
```

## //code for deleteServlet

```
package com.student;
import java.io.IOException;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
@WebServlet("/DeleteServlet")
public class DeleteServlet extends HttpServlet {
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        String sid=request.getParameter("id");
        int id=Integer.parseInt(sid);
        StudentDao.delete(id);
        response.sendRedirect("ViewServlet");
```

```
    }
}
```

## // code for editservlet

```
package com.student;
import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
@WebServlet("/EditServlet")
public class EditServlet extends HttpServlet {
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out=response.getWriter();
        out.println("<h1>Update Student</h1>");
        String sid=request.getParameter("id");
        int id=Integer.parseInt(sid);

        Student e=StudentDao.getStudentById(id);

        out.print("<form action='EditServlet2' method='post'>");
        out.print("<table>");
```

```
        out.print("<tr><td></td><td><input type='hidden' name='id' value='"+e.getId()+"'/></td></tr>");

        out.print("<tr><td>Name:</td><td><input type='text' name='name'
value='"+e.getName()+"'/></td></tr>");

        out.print("<tr><td>Password:</td><td><input type='password' name='password'
value='"+e.getPassword()+"'/></td></tr>");

        out.print("<tr><td>Email:</td><td><input type='email' name='email'
value='"+e.getEmail()+"'/></td></tr>");

        out.print("<tr><td>Country:</td><td>");

        out.print("<select name='country' style='width:150px'>");

        out.print("<option>India</option>");

        out.print("<option>USA</option>");

        out.print("<option>UK</option>");

        out.print("<option>Other</option>");

        out.print("</select>");

        out.print("</td></tr>");

        out.print("<tr><td colspan='2'><input type='submit' value='Edit & Save '/></td></tr>");

        out.print("</table>");

        out.print("</form>");



        out.close();

    }

}
```

## // code for edit servlet-2

```
package com.student;

import java.io.IOException;

import java.io.PrintWriter;
```

```
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
@WebServlet("/EditServlet2")
public class EditServlet2 extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
          throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out=response.getWriter();

        String sid=request.getParameter("id");
        int id=Integer.parseInt(sid);
        String name=request.getParameter("name");
        String password=request.getParameter("password");
        String email=request.getParameter("email");
        String country=request.getParameter("country");

        Student e=new Student();
        e.setId(id);
        e.setName(name);
        e.setPassword(password);
        e.setEmail(email);
        e.setCountry(country);
```

```
        int status=StudentDao.update(e);
        if(status>0){
            response.sendRedirect("ViewServlet");
        }else{
            out.println("Sorry! unable to update record");
        }

        out.close();
    }

}
```

**// code for saveservlet**

```
package com.student;
import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
@WebServlet("/SaveServlet")
public class SaveServlet extends HttpServlet {
```

```
protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
   response.setContentType("text/html");
   PrintWriter out=response.getWriter();

   String name=request.getParameter("name");
   String password=request.getParameter("password");
   String email=request.getParameter("email");
   String country=request.getParameter("country");

   Student e=new Student();
   e.setName(name);
   e.setPassword(password);
   e.setEmail(email);
   e.setCountry(country);

   int status=StudentDao.save(e);
   if(status>0){
      out.print("<p>Record saved successfully!</p>");
      request.getRequestDispatcher("index.html").include(request, response);
   }else{
      out.println("Sorry! unable to save record");
   }

   out.close();
}
```

```
}
```

// code for student.java

```
package com.student;
publicclass Student {
privateintid;
private String name,password,email,country;
publicint getId() {
returnid;
}
publicvoid setId(intid) {
this.id = id;
}
public String getName() {
returnname;
}
publicvoid setName(String name) {
this.name = name;
}
public String getPassword() {
returnpassword;
}
```

```
publicvoid setPassword(String password) {
this.password = password;
}
public String getEmail() {
returnemail;
}
publicvoid setEmail(String email) {
this.email = email;
}
public String getCountry() {
returncountry;
}
publicvoid setCountry(String country) {
this.country = country;
}

}
```

//code for studentdemo.java

```
package com.student;
import java.util.*;
import java.sql.*;
```

```
public class StudentDao {
   public static Connection getConnection(){
      Connection con=null;
      try{
                  Class.forName("com.mysql.jdbc.Driver");
          con = DriverManager.getConnection("jdbc:mysql://localhost:3306/demo?useSSL=false", "root", "root");

      }catch(Exception e){System.out.println(e);}
      return con;
   }
   public static int save(Student e){
      int status=0;
      try{
         Connection con=StudentDao.getConnection();
         PreparedStatement ps=con.prepareStatement(
                  "insert into user905(name,password,email,country) values (?,?,?,?)");
         ps.setString(1,e.getName());
         ps.setString(2,e.getPassword());
         ps.setString(3,e.getEmail());
         ps.setString(4,e.getCountry());

         status=ps.executeUpdate();

         con.close();
      }catch(Exception ex){ex.printStackTrace();}
```

```
    return status;
}
public static int update(Student e){
    int status=0;
    try{
        Connection con=StudentDao.getConnection();
        PreparedStatement ps=con.prepareStatement(
                "update user905 set name=?,password=?,email=?,country=? where id=?");
        ps.setString(1,e.getName());
        ps.setString(2,e.getPassword());
        ps.setString(3,e.getEmail());
        ps.setString(4,e.getCountry());
        ps.setInt(5,e.getId());

        status=ps.executeUpdate();

        con.close();
    }catch(Exception ex){ex.printStackTrace();}

    return status;
}
public static int delete(int id){
    int status=0;
    try{
        Connection con=StudentDao.getConnection();
        PreparedStatement ps=con.prepareStatement("delete from user905 where id=?");
```

```
        ps.setInt(1,id);
        status=ps.executeUpdate();

        con.close();
    }catch(Exception e){e.printStackTrace();}

    return status;
}
public static Student getStudentById(int id){
    Student e=new Student();

    try{
        Connection con=StudentDao.getConnection();
        PreparedStatement ps=con.prepareStatement("select * from user905 where id=?");
        ps.setInt(1,id);
        ResultSet rs=ps.executeQuery();
        if(rs.next()){
                e.setId(rs.getInt(1));
            e.setName(rs.getString(2));
            e.setPassword(rs.getString(3));
            e.setEmail(rs.getString(4));
            e.setCountry(rs.getString(5));
        }
        con.close();
    }catch(Exception ex){ex.printStackTrace();}
```

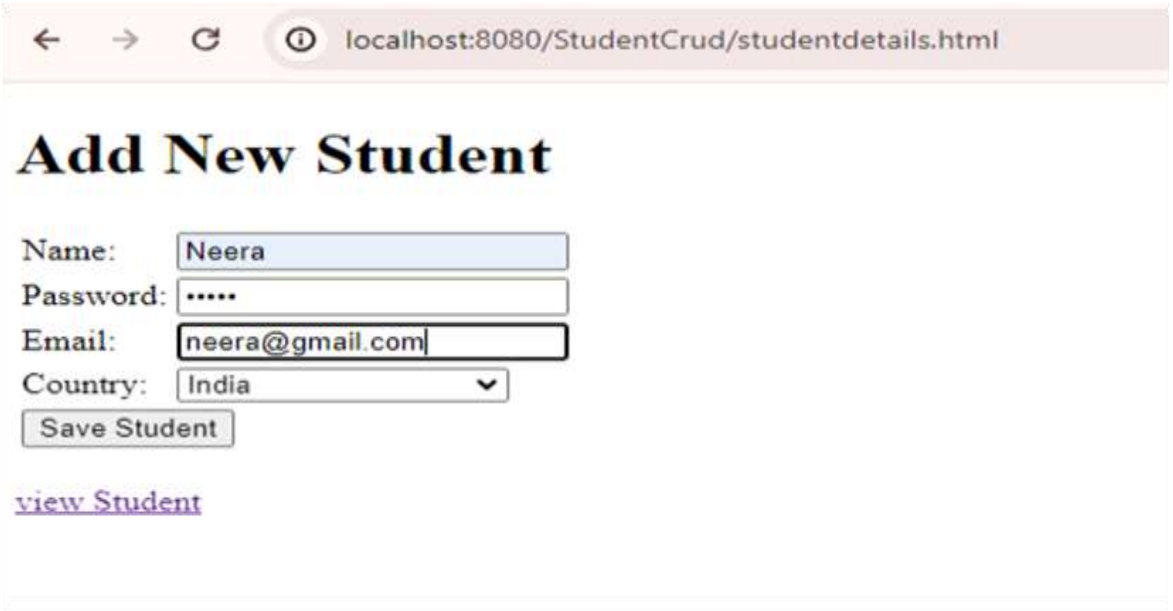
```
        return e;
    }
    public static List<Student> getAllStudent(){
        List<Student> list=new ArrayList<Student>();

        try{
            Connection con=StudentDao.getConnection();
            PreparedStatement ps=con.prepareStatement("select * from user905");
            ResultSet rs=ps.executeQuery();
            while(rs.next()){
                    Student e=new Student();
                    e.setId(rs.getInt(1));
                    e.setName(rs.getString(2));
               e.setPassword(rs.getString(3));
               e.setEmail(rs.getString(4));
               e.setCountry(rs.getString(5));
                    list.add(e);
            }
            con.close();
        }catch(Exception e){e.printStackTrace();}

        return list;
    }
}
```

//code for view servlet.java

```
package com.student;

import java.io.IOException;

import java.io.PrintWriter;

import java.util.List;


import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

@WebServlet("/ViewServlet")

public class ViewServlet extends HttpServlet {

   protected void doGet(HttpServletRequest request, HttpServletResponse response)

         throws ServletException, IOException {

      response.setContentType("text/html");

      PrintWriter out=response.getWriter();

      out.println("<a href='index.html'>Add New Student</a>");

      out.println("<h1>Student List</h1>");


      List<Student> list=StudentDao.getAllStudent();


      out.print("<table border='1' width='100%'");

out.print("<tr><th>Id</th><th>Name</th><th>Password</th><th>Email</th><th>Country</th><th>Edit</th>
<th>Delete</th></tr>");

      for(Student e:list){
```

```
out.print("<tr><td>"+e.getId()+"</td><td>"+e.getName()+"</td><td>"+e.getPassword()+"</td><td>"+e.getEmail()+"</td><td>"+e.getCountry()+"</td><td><a href='EditServlet?id="+e.getId()+"'>edit</a></td><td><a href='DeleteServlet?id="+e.getId()+"'>delete</a></td></tr>");

        }

        out.print("</table>");


        out.close();

    }

}
```

**OUTPUT:**





Add New Student

## Student List

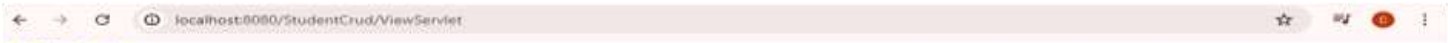
| Id | Name | Password | Email | Country | Edit | Delete |
|---|---|---|---|---|---|---|
| 1 | Atul kumar | 12345 | neera@gmail.com | India | edit | delete |
| 2 | Neera | 12345 | neera@gmail.com | India | edit | delete |



Add New Student

## Student List

| Id | Name | Password | Email | Country | Edit | Delete |
|---|---|---|---|---|---|---|
| 1 | Atul kumar | 12345 | neera@gmail.com | India | edit | delete |
| 2 | Neera chaudhary | 12345 | neera@gmail.com | India | edit | delete |




Add New Student

## Student List

| Id | Name | Password | Email | Country | Edit | Delete |
|---|---|---|---|---|---|---|
| 2 | Neera chaudhary | 12345 | neera@gmail.com | India | edit | delete |

## Program 12: A program to design the Login page and validate the USER_ID and PASSWORD using JSP and DataBase.

```
package com.bean;

import java.io.Serializable;


public class LoginBean implements Serializable {

	/**

	*

	*/

	private static final long serialVersionUID = 1l;

	private String username;

	private String password;


	public String getUsername() {

	return username;

	}


	public void setUsername(String username) {

	this.username = username;

	}


	public String getPassword() {

	return password;

	}
```

```
    public void setPassword(String password) {
    this.password = password;
    }
}
```

```
package com.dao;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;

import com.bean.LoginBean;

public class LoginDao {

    public boolean validate(LoginBean loginBean) throws ClassNotFoundException {
    boolean status = false;

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

    try (Connection connection = DriverManager
    .getConnection("jdbc:mysql://localhost:3306/demo?useSSL=false", "root", "root");
```

```
// Step 2:Create a statement using connection object
PreparedStatement preparedStatement = connection
.prepareStatement("select * from login where username = ? and password = ? ")) {
preparedStatement.setString(1, loginBean.getUsername());
preparedStatement.setString(2, loginBean.getPassword());

System.out.println(preparedStatement);
ResultSet rs = preparedStatement.executeQuery();
status = rs.next();

} catch (SQLException e) {
// process sql exception
printSQLException(e);
}
return status;
}

private void printSQLException(SQLException ex) {
for (Throwable e: ex) {
if (e instanceof SQLException) {
            e.printStackTrace(System.err);
    System.err.println("SQLState: " + ((SQLException) e).getSQLState());
            System.err.println("Error Code: " + ((SQLException) e).getErrorCode());
    System.err.println("Message: " + e.getMessage());
            Throwable t = ex.getCause();
            while (t != null) {
```

```
            System.out.println("Cause: " + t);
                t = t.getCause();
                }
        }
        }
        }
}
```

```
package com.servlet;
import java.io.IOException;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

import com.bean.LoginBean;
import com.dao.LoginDao;



@WebServlet("/login")
```

```
public class LoginServlet extends HttpServlet {
    private static final long serialVersionUID = 1l;
    private LoginDao loginDao;

    public void init() {
    loginDao = new LoginDao();
    }

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

    String username = request.getParameter("username");
    String password = request.getParameter("password");
    LoginBean loginBean = new LoginBean();
    loginBean.setUsername(username);
    loginBean.setPassword(password);

    try {
    if (loginDao.validate(loginBean)) {
       response.sendRedirect("loginsuccess.jsp");
    } else {
            HttpSession session = request.getSession();
    }
    } catch (ClassNotFoundException e) {
    e.printStackTrace();
    }
```

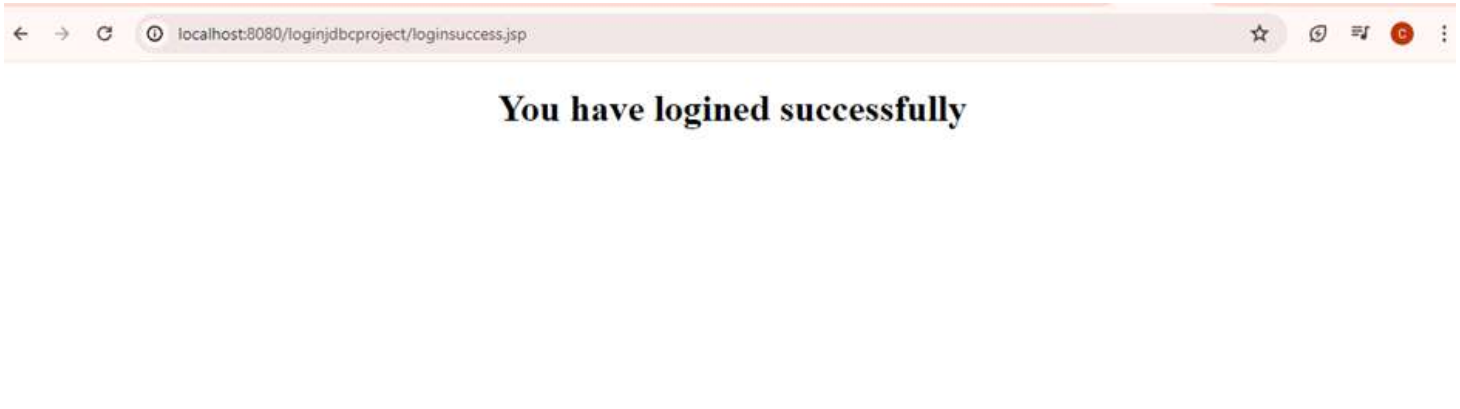
```
        }
}
```

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
 pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
 <div align="center">
  <h1>Employee Login Form</h1>
  <form action="<%=request.getContextPath()%>/login" method="post">
   <table style="with: 100%">
            <tr>
            <td>UserName</td>
            <td><input type="text" name="username" /></td>
            </tr>
            <tr>
            <td>Password</td>
            <td><input type="password" name="password" /></td>
```

```
    </tr>


  </table>
  <input type="submit" value="Submit" />
 </form>
</div>
</body>
</html>
```

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
 pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
 <div align="center">
  <h1>You have logined successfully</h1>
 </div>
</body>
</html>
```

## OUTPUT:


localhost:8080/loginjdbcproject/loginsuccess.jsp
You have logined successfully


localhost:8080/loginjdbcproject/login.jsp
Employee Login Form
UserName neera
Password
Submit