

Practical -1

Aim: Write a JDBC desktop program to perform following CRUD and Search operation. Create appropriate table in database to store objects of Student class.

1. Add Student. (Create)
2. View Students. (Display all students)
3. Edit Student. (Update)
4. Delete Student. (Delete)
5. Search Student (Find student based on enrolment No)

Code:

```
import java.sql.*;
import java.util.Scanner;

public class prac1
{
    // JDBC driver name and database URL
    static final String JDBC_DRIVER = "com.mysql.jdbc.Driver";
    static final String DB_URL = "jdbc:mysql://localhost:3306/college";

    // Database credentials
    static final String USER = "root";
    static final String PASS = "";

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

```
Scanner sc = new Scanner(System.in);

Connection conn = null;

Statement stmt = null;

try{
    // Register JDBC driver
    Class.forName(JDBC_DRIVER);

    // Open a connection
    System.out.println("Connecting to database...");
    conn = DriverManager.getConnection(DB_URL,USER,PASS);

    int flag=0;

    // Creating Table
    // String sql1 = "CREATE TABLE Student " + "(ID INTEGER(3) not NULL, " + " Name
    VARCHAR(30), " + " PRIMARY KEY ( ID ))";
    // stmt.executeUpdate(sql1);
    // System.out.println("*****");
    // System.out.println("Created table in given database...");
    // System.out.println("*****");

    //choice
    do
    {
        // Execute a query
        stmt = conn.createStatement();
        String sql;
        sql = "SELECT * FROM student";
        ResultSet rs = stmt.executeQuery(sql);
```

```
//Query
String sql1;
//Object for query
PreparedStatement stmt1;
//Enrolment and name
String n,e;
int count=0;

System.out.println("Enter which operation you want to perform:-\n1. Add Student\n2.
View Students\n3. Edit Student\n4. Delete Student\n5. Search Student");
int c=sc.nextInt();
if(c<6&& c>0)
{
    switch(c)
    {
        case 1:
            int flag2=0;
            do
            {
                try {
                    System.out.println("Enter Enrolment number of student:");
                    e=sc.next();
                    System.out.println("Enter Name of student:");
                    n=sc.next();
                    sql1 = "INSERT INTO student (Er_no, Name ) VALUES (?, ?)";

                    stmt1 = conn.prepareStatement(sql1);
                    stmt1.setString(1, e);
                    stmt1.setString(2, n);

                    int rowsInserted = stmt1.executeUpdate();
```

```
        if (rowsInserted > 0) {
            System.out.println("A new user "+n+" was inserted successfully!");
        }
        break;
    }
    catch (Exception e1)
    {
        System.out.println("Enrolment number already exists!!!");
        flag2=1;
    }
}while(flag2==1);
break;
case 2:
    while(rs.next())
    {
        //Retrieve by column name
        int id = rs.getInt("Er_no");
        String name = rs.getString("Name");

        //Display values
        System.out.print("Enrolment No: " + id);
        System.out.println(", Name: " + name);
    }
    break;
case 3:
    System.out.println("Enter Enrolment number of student:");
    e=sc.next();
    System.out.println("Enter Name of student:");
    n=sc.next();
    sql1 = "UPDATE student SET Er_no=?,Name=? WHERE Er_no=?";

    stmt1 = conn.prepareStatement(sql1);
    stmt1.setString(1, e);
```

```
stmt1.setString(2, n);
stmt1.setString(3, e);

int rowsUpdated = stmt1.executeUpdate();
if (rowsUpdated > 0) {
    System.out.println("An existing user "+n+" was updated successfully!");
}
break;
case 4:
    System.out.println("Enter Enrolment number of student:");
    e=sc.next();

    sql1 = "DELETE FROM student WHERE Er_no=?";

    stmt1 = conn.prepareStatement(sql1);
    stmt1.setString(1, e);

    int rowsDeleted = stmt1.executeUpdate();
    if (rowsDeleted > 0) {
        System.out.println("A user with Enrolment no "+e+" is deleted successfully!");
    }
    break;
case 5:
    int flag3=0;
    do
    {
        System.out.println("How you want to search:-\n1. By Enrolment Number\n2.
        Name");
        int s=sc.nextInt();
        if(s==1)
        {
            System.out.println("Enter Enrolment number of student:");
            e=sc.next();
```

```
sql1 = "SELECT * FROM student WHERE Er_no="+e;
stmt1 = conn.prepareStatement(sql1);

rs = stmt1.executeQuery(sql1);
while(rs.next()){
    count++;
    //Retrieve by column name
    int id = rs.getInt("Er_no");
    String name = rs.getString("Name");

    //Display values
    System.out.println("ID: " + id);
    System.out.println("Name: " + name);
}
if (count ==1) {
    System.out.println("User found!!");
}
else if (count >1) {
    System.out.println(count + " Users found!!");
}
else
{
    System.out.println("User not found!!");
}
break;
}
else if(s==2)
{
    System.out.println("Enter Name of student:");
    n=sc.next();
    sql1 = "SELECT Name,Er_no FROM student WHERE Name like
    '+'+"%"+n+"%";
    stmt1 = conn.prepareStatement(sql1);
```

```
rs = stmt1.executeQuery(sql1);
while(rs.next()){
    count++;
    //Retrieve by column name
    int id = rs.getInt("Er_no");
    String name = rs.getString("Name");

    //Display values
    System.out.println("ID: " + id);
    System.out.println("Name: " + name);
}
if (count ==1) {
    System.out.println("User found!!");
}
else if (count >1) {
    System.out.println(count+" Users found!!");
}
else
{
    System.out.println("User not found!!");
}
break;
}
else
{
    System.out.println("Invalid choice!!");
    flag3=1;
}
}while(flag3==1);
break;
default:
System.out.println("Inavalid choice");
```

```
        flag=1;
    }
}
else
{
    System.out.println("Invalid choice!!");
    flag=1;
}
//Repeat Process
System.out.println("Enter 1 to do operation again:-");
flag=sc.nextInt();
rs.close();
}while(flag==1);

// Clean-up environment
stmt.close();
conn.close();
}
catch(Exception e)
{
    System.out.println(e);
}
finally
{
    //finally block used to close resources
    try
    {
        if(stmt!=null)
            stmt.close();
    }
    catch(SQLException se2)
    {
        // nothing we can do
    }
}
```



```
}  
  
try  
{  
    if(conn!=null)  
        conn.close();  
}  
catch(Exception e)  
{  
    System.out.println(e);  
    //end finally try  
}  
  
} //end try  
  
System.out.println("Goodbye!");  
sc.close();  
} //end main  
  
} //end FirstExample
```

Output:

```
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
1
Enter Enrolment number of student:
10
Enter Name of student:
Aeshwary
A new user Aeshwary was inserted successfully!
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
1
Enter Enrolment number of student:
39
Enter Name of student:
Dhruval
A new user Dhruval was inserted successfully!
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
1
Enter Enrolment number of student:
67
Enter Name of student:
Huned
A new user Huned was inserted successfully!
```

```
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
1
Enter Enrolment number of student:
57
Enter Name of student:
Harshad
A new user Harshad was inserted successfully!
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
1
Enter Enrolment number of student:
66
Enter Name of student:
Hitendra
A new user Hitendra was inserted successfully!
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
2
Enrolment No: 10, Name: Aeshwary
Enrolment No: 39, Name: Dhruval
Enrolment No: 57, Name: Harshad
Enrolment No: 66, Name: Hitendra
Enrolment No: 67, Name: Huned
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
3
Enter Enrolment number of student:
```

```
67
Enter Name of student:
Hunaid
An existing user Hunaid was updated successfully!
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
2
Enrolment No: 10, Name: Aeshwary
Enrolment No: 39, Name: Dhruval
Enrolment No: 57, Name: Harshad
Enrolment No: 66, Name: Hitendra
Enrolment No: 67, Name: Hunaid
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
4
Enter Enrolment number of student:
66
A user with Enrolment no 66 is deleted successfully!
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
2
Enrolment No: 10, Name: Aeshwary
Enrolment No: 39, Name: Dhruval
Enrolment No: 57, Name: Harshad
Enrolment No: 67, Name: Hunaid
Enter 1 to do operation again:-
1
Enter which operation you want to perform:-
1. Add Student
2. View Students
3. Edit Student
4. Delete Student
5. Search Student
5
How you want to search:-
1. By Enrolment Number
2. Name
1
```

```
1
Enter Enrolment number of student:
67
ID: 67
Name: Hunaid
User found!!
Enter 1 to do operation again:-
0
Goodbye!
```

Practical-2

Aim :- Write servlet which get data from html form and display all data into servlet.

Index.html :-

```
<html>
<head>
  <title>TODO supply a title</title>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <style>
    label{
      position: absolute;
      float: left;
    }
    input[type="text"]{
      margin-left: 8%;
    }
  </style>
</head>
<body>
  <div style="text-align: center">
    <form action="Form" method="get">
      <label>Full Name : </label>
      <input type="text" name="name"><br><br>
      <label>Phone No. : </label>
      <input type="text" maxlength="10" name="number"><br><br>
      <label>Email Address : </label>
      <input type="text" name="email"><br><br>
      <label>Department : </label>
      <input type="text" name="dept"><br><br>
      <input type="submit">
    </form>
  </div>
</body>
</html>
```

NewServlet :-

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletConfig;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
```

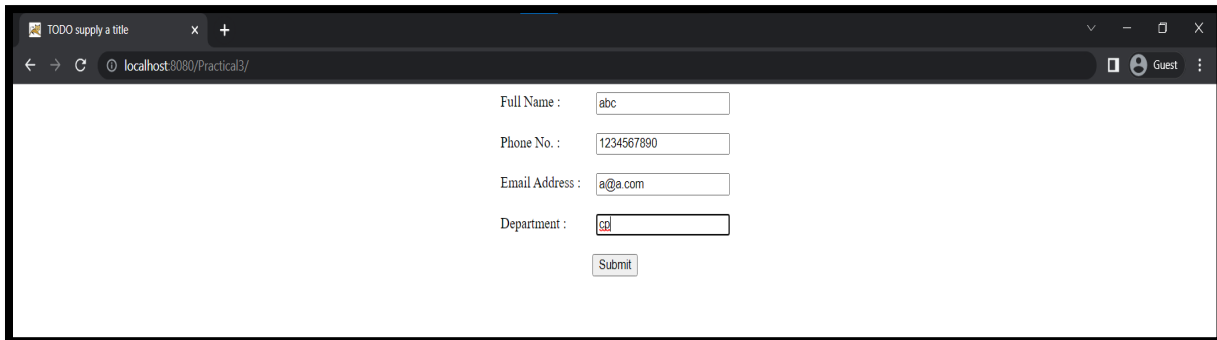
```
public class Form extends HttpServlet {
  public void init(ServletConfig config){
  }
}
```

```
protected void processRequest(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");
    try ( PrintWriter out = response.getWriter()) {
        /* TODO output your page here. You may use following sample code. */
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<title></title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h4>Hello </h4><p>" + request.getParameter("name") + "</p>");
        out.println("<h5>Phone No : </h5><p>" + request.getParameter("number") + "</p>");
        out.println("<h5>Email Adderss : </h5><p>" + request.getParameter("email") + "</p>");
        out.println("<h5>Department : </h5><p>" + request.getParameter("dept") + "</p>");
        out.println("</body>");
        out.println("</html>");
    }
}

protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
    processRequest(request, response);
}

protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
    processRequest(request, response);
}
}
```

Output :



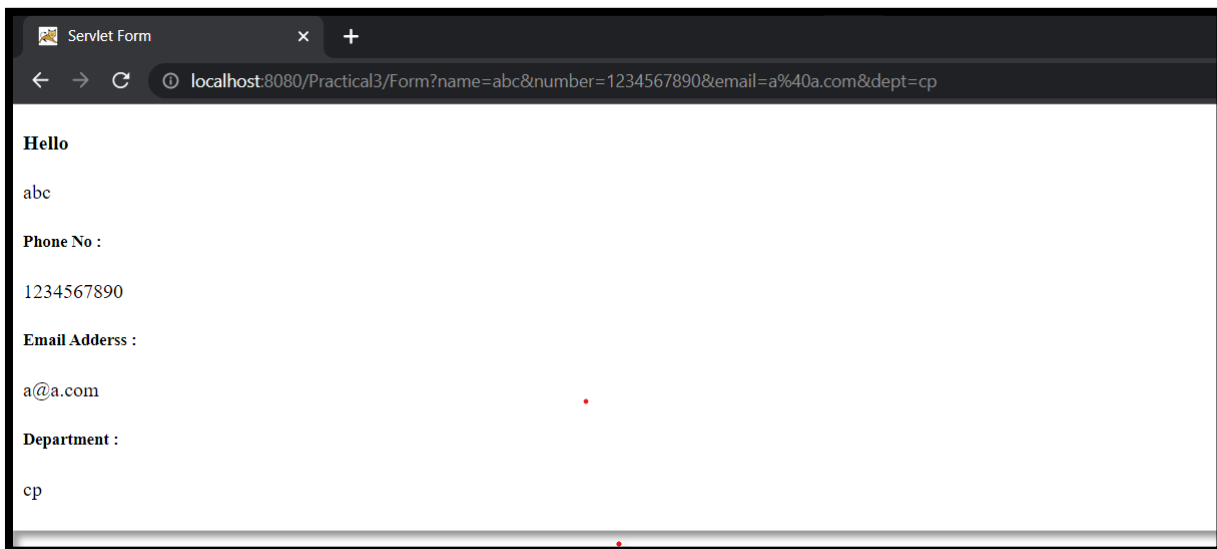
TODO supply a title

Full Name :

Phone No. :

Email Address :

Department :



Servlet Form

localhost:8080/Practical3/Form?name=abc&number=1234567890&email=a%40a.com&dept=cp

Hello

abc

Phone No :

1234567890

Email Addresss :

a@a.com

Department :

cp

Practical-3

Aim :-

Convert following servlets in MVC architecture. Write different servlets which get data from html form and perform following database operations.

1. Add Student. (Create)
2. Edit Student. (Update)
3. Delete Student. (Delete)
4. Search Student (Find student based on enrolment No)
5. View All Students

HTML :-

```
<html>
  <head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <style>
      label{
        position: absolute;
        float: left;
      }
      input[type="text"]{
        margin-left: 8%;
      }
      input[type="date"]{
        margin-left: 8%;
      }
    </style>
  </head>
  <body>
    <form action="Process" method="get">
      <center>
        <h1>Select the operation to perform on student table</h1>
        <label>Id : </label>
        <input type="text" name="id" required><br><br>
        <label>First Name : </label>
        <input type="text" name="fname"><br><br>
        <label>Last Name : </label>
        <input type="text" name="lname"><br><br>
        <label>Contact : </label>
        <input type="text" name="contact"><br><br>
        <label>Branch : </label>
        <input type="text" name="branch"><br><br>
        <label>Address : </label>
        <input type="text" name="address"><br><br>
        <label>DOB : </label>
        <input type="date" name="dob"><br><br>
      </center>
    </form>
  </body>
</html>
```

```
<input type="submit" name="submit" value="Add">
<input type="submit" name="submit" value="Update">
<input type="submit" name="submit" value="Delete">
<input type="submit" name="submit" value="Search">
<input type="submit" name="submit" value="Show All">
</center>
</form>
</body>
</html>
```

Process.Java :-

```
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.*;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet(urlPatterns = {"/Process"})
public class Process extends HttpServlet {
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet Process</title>");
            out.println("</head>");
            out.println("<body>");
            String btn = request.getParameter("submit");
            out.println("<h1>You Are Click : " + btn + "</h1>");
            HttpSession session = request.getSession();
            switch (btn) {
                case "Add":
                    session.setAttribute("id", request.getParameter("id"));
                    session.setAttribute("fname", request.getParameter("fname"));
                    session.setAttribute("lname", request.getParameter("lname"));
                    session.setAttribute("contact", request.getParameter("contact"));
                    session.setAttribute("branch", request.getParameter("branch"));
                    session.setAttribute("address", request.getParameter("address"));
                    session.setAttribute("dob", request.getParameter("dob"));
                    response.sendRedirect("Add_student");
                    break;
                case "Update":
```

```
session.setAttribute("id", request.getParameter("id"));
session.setAttribute("fname", request.getParameter("fname"));
session.setAttribute("lname", request.getParameter("lname"));
session.setAttribute("contact", request.getParameter("contact"));
session.setAttribute("branch", request.getParameter("branch"));
session.setAttribute("address", request.getParameter("address"));
session.setAttribute("dob", request.getParameter("dob"));
response.sendRedirect("Update_student");
break;
case "Delete":
    session.setAttribute("id", request.getParameter("id"));
    response.sendRedirect("Delete_Student");
    break;
case "Search":
    session.setAttribute("id", request.getParameter("id"));
    response.sendRedirect("Search_Student");
    break;
case "Show All":
    request.getRequestDispatcher("ShowAll_Student").forward(request, response);
    break;
default:
    break;
}
out.println("</body>");
out.println("</html>");
}
}
```

Add_student.Java :-

```
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;
import java.sql.*;
import javax.servlet.http.HttpSession;
```

```
@WebServlet(urlPatterns = {"/Add_student"})
public class Add_student extends HttpServlet {
```

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

```
/* TODO output your page here. You may use following sample code. */
out.println("<!DOCTYPE html>");
out.println("<html>");
out.println("<head>");
out.println("<title>Servlet Add_student</title>");
out.println("</head>");
out.println("<body>");
HttpSession session = request.getSession(false);
try{
    Class.forName("com.mysql.jdbc.Driver");
    Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
    PreparedStatement stmt = con.prepareStatement("insert into student values(?,?,?,?,?,?,?)");
    stmt.setInt(1, Integer.parseInt((String) session.getAttribute("id")));
    stmt.setString(2, (String) session.getAttribute("fname"));
    stmt.setString(3, (String) session.getAttribute("lname"));
    stmt.setString(4, (String) session.getAttribute("contact"));
    stmt.setString(5, (String) session.getAttribute("branch"));
    stmt.setString(6, (String) session.getAttribute("address"));
    stmt.setString(7, (String) session.getAttribute("dob"));
    int i = stmt.executeUpdate();
    if(i==0){
        out.println("<Center><p>Data Is Not Inserted</p></Center>");
    }else{
        out.println("<Center><p>Data Is Inserted</p></ Center>");
    }
} catch(Exception e){
    out.println("<p>"+e+"</p>");
}
out.println("</body>");
out.println("</html>");
}
}
```

Update_student.Java :-

```
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;
import java.sql.*;
import javax.servlet.http.HttpSession;

@WebServlet(urlPatterns = {"/Update_student"})
public class Update_student extends HttpServlet {
```

```
protected void processRequest(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");
    try (PrintWriter out = response.getWriter()) {
        /* TODO output your page here. You may use following sample code. */
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<title>Servlet Update_student</title>");
        out.println("</head>");
        out.println("<body>");
        HttpSession session = request.getSession(false);
        try {
            Class.forName("com.mysql.jdbc.Driver");
            Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
            PreparedStatement stmt = con.prepareStatement("update student set
First_name=?,Last_name=?,Contact_no=?,Branch=?,Address=?,DOB=? where Id=?");
            stmt.setString(1, (String) session.getAttribute("fname"));
            stmt.setString(2, (String) session.getAttribute("lname"));
            stmt.setString(3, (String) session.getAttribute("contact"));
            stmt.setString(4, (String) session.getAttribute("branch"));
            stmt.setString(5, (String) session.getAttribute("address"));
            stmt.setString(6, (String) session.getAttribute("dob"));
            stmt.setInt(7, Integer.parseInt((String) session.getAttribute("id")));
            int i = stmt.executeUpdate();
            if(i!=0){
                out.println("<Center><p>Data Is Updated</p></Center>");
            } else {
                out.println("<Center><p>Data Is Not Update</p></Center>");
            }
        } catch (Exception e) {
            out.println("<p>"+e+"</p>");
        }
        out.println("</body>");
        out.println("</html>");
    }
}
```

Delete_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;
import java.sql.*;
import javax.servlet.http.HttpSession;

@WebServlet(urlPatterns = {"/Delete_Student"})
public class Delete_Student extends HttpServlet {

    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet Delete_Student</title>");
            out.println("</head>");
            out.println("<body>");
            HttpSession session = request.getSession(false);
            try {
                Class.forName("com.mysql.jdbc.Driver");
                Connection con =
                DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
                PreparedStatement stmt = con.prepareStatement("delete from student where id = ?");
                stmt.setInt(1,Integer.parseInt((String) session.getAttribute("id")));
                int i = stmt.executeUpdate();
                if(i!=0){
                    out.println("<Center><p>Data Is Deleted</p></Center>");
                }else{
                    out.println("<Center><p>Data Is Not Deleted</p></Center>");
                }
            } catch (Exception e) {
                out.println("<p>"+e+"</p>");
            }
            out.println("</body>");
            out.println("</html>");
        }
    }
}
```

Search_Student.java :-

```
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;
import java.sql.*;
import javax.servlet.http.HttpSession;
```

```
@WebServlet(urlPatterns = {"/Search_Student"})
public class Search_Student extends HttpServlet {
```

```
protected void processRequest(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
    response.setContentType("text/html;charset=UTF-8");
    try (PrintWriter out = response.getWriter()) {
        /* TODO output your page here. You may use following sample code. */
        out.println("<!DOCTYPE html>");
        out.println("<html>");
        out.println("<head>");
        out.println("<title>Servlet Search_Student</title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<center>");
        HttpSession session = request.getSession(false);
        try{
            Class.forName("com.mysql.jdbc.Driver");
            Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
            PreparedStatement stmt = con.prepareStatement("select * from student where id = ?");
            stmt.setInt(1,Integer.parseInt((String) session.getAttribute("id")));
            ResultSet rs = stmt.executeQuery();
            if(rs!=null){
                out.println("<table style='width:auto' border= '1px solid black'>");
                out.println("<th>ID</th><th>First Name</th><th>Last Name</th><th>Contact
No</th><th>Branch</th><th>Address</th><th>DOB</th>");
                while(rs.next()){
                    out.println("<tr>");

out.println("<td>" +rs.getInt(1)+"</td><td>" +rs.getString(2)+"</td><td>" +rs.getString(3)+"</td><td>"
+rs.getString(4)+"</td><td>" +rs.getString(5)+"</td><td>" +rs.getString(6)+"</td><td>" +rs.getStr
ing(7)+"</td>");
                    out.println("</tr>");
                }
                out.println("</table>");
            }else{
                out.println("<p>Data Is Not Found</p>");
            }
        }catch(Exception e){
            out.println("<p>" +e+"</p>");
        }
        out.println("</center>");
        out.println("</body>");
        out.println("</html>");
    }
}
```

```
}  
}  
}
```

ShowAll_Student.Java :-

```
import java.io.IOException;  
import java.io.PrintWriter;  
import java.sql.Connection;  
import java.sql.DriverManager;  
import java.sql.PreparedStatement;  
import java.sql.ResultSet;  
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(urlPatterns = {"/ShowAll_Student"})  
public class ShowAll_Student extends HttpServlet {
```

```
protected void processRequest(HttpServletRequest request, HttpServletResponse response)
```

```
throws ServletException, IOException {  
    response.setContentType("text/html;charset=UTF-8");  
    try (PrintWriter out = response.getWriter()) {  
        /* TODO output your page here. You may use following sample code. */  
        out.println("<!DOCTYPE html>");  
        out.println("<html>");  
        out.println("<head>");  
        out.println("<title>Servlet ShowAll_Student</title>");  
        out.println("</head>");  
        out.println("<body>");
```

```
        out.println("<center>");
```

```
        try {
```

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

```
            Connection con =
```

```
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
```

```
            PreparedStatement stmt = con.prepareStatement("select * from student");
```

```
            ResultSet rs = stmt.executeQuery();
```

```
            if(rs!=null){
```

```
                out.println("<table style='width:auto' border= '1px solid black'>");
```

```
                out.println("<th>ID</th><th>First Name</th><th>Last Name</th><th>Contact
```

```
No</th><th>Branch</th><th>Address</th><th>DOB</th>");
```

```
                while(rs.next()){
```

```
                    out.println("<tr>");
```

```
                    out.println("<td>" + rs.getInt(1) + "</td><td>" + rs.getString(2) + "</td><td>" + rs.getString(3) + "</td><td>" + rs.getString(4) + "</td><td>" + rs.getString(5) + "</td><td>" + rs.getString(6) + "</td><td>" + rs.getStr
```



```
ing(7)+"</td>");
        out.println("</tr>");
    }
    out.println("</table>");
} else {
    out.println("<p>Data Is Not Found</p>");
}
} catch (Exception e) {
    out.println("<p>" + e + "</p>");
}
out.println("</center>");
out.println("</body>");
out.println("</html>");
}
}
}
```

Output:

localhost:8080/WebApplication3/

Select the operation to perform on student table

Id :

First Name :

Last Name :

Contact :

Branch :

Address :

DOB :

localhost:8080/WebApplication3/Process?id=4&fname=Mr.+ABC&lname=CBA&contact=123456789&branch=IT&address=XYZ....&dob=2000-09-09&submit=Show+All

ID	First Name	Last Name	Contact No	Branch	Address	DOB
1	XYZ	ZZZ	987654321	CE	abc	25-05-2003
2	PQR	BBB	456789123	CE	def	09-09-2002
3	LMN	CCC	123789465	CE	ghi	27-06-2000
4	Mr. ABC	CBA	123456789	CE	xyz	09-09-2000

localhost:8080/WebApplication3/

Select the operation to perform on student table

Id :

First Name :

Last Name :

Contact :

Branch :

Address :

DOB :

localhost:8080/WebApplication3/Search_Student

ID	First Name	Last Name	Contact No	Branch	Address	DOB
4	Mr. ABC	CBA	123456789	IT	XYZ....	2000-09-09

Practical-4

Aim :- Create and maintain HttpSession in all servlets written in previous labs.

HTML :-

```
<html>
<head>
  <title>TODO supply a title</title>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <style>
    label{
      position: absolute;
      float: left;
    }
    input[type="text"]{
      margin-left: 8%;
    }
    input[type="date"]{
      margin-left: 8%;
    }
  </style>
</head>
<body>
  <form action="Process" method="get">
    <center>
      <h1>Select the operation to perform on student table</h1>
      <label>Id : </label>
      <input type="text" name="id" required><br><br>
      <label>First Name : </label>
      <input type="text" name="fname"><br><br>
      <label>Last Name : </label>
      <input type="text" name="lname"><br><br>
      <label>Contact : </label>
      <input type="text" name="contact"><br><br>
      <label>Branch : </label>
      <input type="text" name="branch"><br><br>
      <label>Address : </label>
      <input type="text" name="address"><br><br>
      <label>DOB : </label>
      <input type="date" name="dob"><br><br>
      <input type="submit" name="submit" value="Add">
      <input type="submit" name="submit" value="Update">
      <input type="submit" name="submit" value="Delete">
      <input type="submit" name="submit" value="Search">
      <input type="submit" name="submit" value="Show All">
    </center>
  </form>
</body>
```

</html>

Process.Java :-

```
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(urlPatterns = {"/Process"})
public class Process extends HttpServlet {
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet Process</title>");
            out.println("</head>");
            out.println("<body>");
            String btn = request.getParameter("submit");
            out.println("<h1>You Are Click : " + btn + "</h1>");
            switch (btn) {
                case "Add":
                    request.getRequestDispatcher("Add_student").forward(request, response);
                    break;
                case "Update":
                    request.getRequestDispatcher("Update_student").forward(request, response);
                    break;
                case "Delete":
                    request.getRequestDispatcher("Delete_Student").forward(request, response);
                    break;
                case "Search":
                    request.getRequestDispatcher("Search_Student").forward(request, response);
                    break;
                case "Show All":
                    request.getRequestDispatcher("ShowAll_Student").forward(request, response);
                    break;
                default:
                    break;
            }
            out.println("</body>");
            out.println("</html>");
        }
    }
}
```

```
}  
}
```

Add_student.Java :-

```
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;  
import java.sql.*;  
  
@WebServlet(urlPatterns = {"/Add_student"})  
public class Add_student extends HttpServlet {  
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)  
        throws ServletException, IOException {  
        response.setContentType("text/html;charset=UTF-8");  
        try (PrintWriter out = response.getWriter()) {  
            /* TODO output your page here. You may use following sample code. */  
            out.println("<!DOCTYPE html>");  
            out.println("<html>");  
            out.println("<head>");  
            out.println("<title>Servlet Add_student</title>");  
            out.println("</head>");  
            out.println("<body>");  
            try {  
                Class.forName("com.mysql.jdbc.Driver");  
                Connection con =  
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");  
                PreparedStatement stmt = con.prepareStatement("insert into student values(?,?,?,?,?,?)");  
                stmt.setInt(1,Integer.parseInt(request.getParameter("id")));  
                stmt.setString(2,request.getParameter("fname"));  
                stmt.setString(3,request.getParameter("lname"));  
                stmt.setString(4,request.getParameter("contact"));  
                stmt.setString(5,request.getParameter("branch"));  
                stmt.setString(6,request.getParameter("address"));  
                stmt.setString(7,request.getParameter("dob"));  
                int i = stmt.executeUpdate();  
                if(i==0){  
                    out.println("<Center><p>Data Is Not Inserted</p></Center>");  
                }else{  
                    out.println("<Center><p>Data Is Inserted</p></ Center>");  
                }  
            } catch (Exception e) {  
                out.println("<p>"+e+"</p>");  
            }  
            out.println("</body>");  
            out.println("</html>");  
        }  
    }  
}
```

```
}
}
}
```

Update_student.Java :-

```
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;
import java.sql.*;

@WebServlet(urlPatterns = {"/Update_student"})
public class Update_student extends HttpServlet {
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet Update_student</title>");
            out.println("</head>");
            out.println("<body>");
            try {
                Class.forName("com.mysql.jdbc.Driver");
                Connection con =
                DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
                PreparedStatement stmt = con.prepareStatement("update student set
                First_name=?,Last_name=?,Contact_no=?,Branch=?,Address=?,DOB=? where Id=?");
                stmt.setString(1,request.getParameter("fname"));
                stmt.setString(2,request.getParameter("lname"));
                stmt.setString(3,request.getParameter("contact"));
                stmt.setString(4,request.getParameter("branch"));
                stmt.setString(5,request.getParameter("address"));
                stmt.setString(6,request.getParameter("dob"));
                stmt.setInt(7,Integer.parseInt(request.getParameter("id")));
                int i = stmt.executeUpdate();
                if(i!=0){
                    out.println("<Center><p>Data Is Updated</p></Center>");
                }else{
                    out.println("<Center><p>Data Is Not Update</p></Center>");
                }
            } catch (Exception e) {
                out.println("<p>"+e+"</p>");
            }
        }
    }
}
```

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

Delete_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;  
import java.sql.*;  
  
@WebServlet(urlPatterns = {"/Delete_Student"})  
public class Delete_Student extends HttpServlet {  
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)  
        throws ServletException, IOException {  
        response.setContentType("text/html;charset=UTF-8");  
        try (PrintWriter out = response.getWriter()) {  
            /* TODO output your page here. You may use following sample code. */  
            out.println("<!DOCTYPE html>");  
            out.println("<html>");  
            out.println("<head>");  
            out.println("<title>Servlet Delete_Student</title>");  
            out.println("</head>");  
            out.println("<body>");  
            try {  
                Class.forName("com.mysql.jdbc.Driver");  
                Connection con =  
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");  
                PreparedStatement stmt = con.prepareStatement("delete from student where id = ?");  
                stmt.setInt(1,Integer.parseInt(request.getParameter("id")));  
                int i = stmt.executeUpdate();  
                if(i!=0){  
                    out.println("<Center><p>Data Is Deleted</p></Center>");  
                }else{  
                    out.println("<Center><p>Data Is Not Deleted</p></Center>");  
                }  
            } catch (Exception e) {  
                out.println("<p>" + e + "</p>");  
            }  
            out.println("</body>");  
            out.println("</html>");  
        }  
    }  
}
```

```
}  
}
```

Search_Student.java :-

```
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;  
import java.sql.*;  
  
@WebServlet(urlPatterns = {"/Search_Student"})  
public class Search_Student extends HttpServlet {  
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)  
        throws ServletException, IOException {  
        response.setContentType("text/html;charset=UTF-8");  
        try (PrintWriter out = response.getWriter()) {  
            /* TODO output your page here. You may use following sample code. */  
            out.println("<!DOCTYPE html>");  
            out.println("<html>");  
            out.println("<head>");  
            out.println("<title>Servlet Search_Student</title>");  
            out.println("</head>");  
            out.println("<body>");  
            out.println("<center>");  
            try {  
                Class.forName("com.mysql.jdbc.Driver");  
                Connection con =  
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");  
                PreparedStatement stmt = con.prepareStatement("select * from student where id = ?");  
                stmt.setInt(1,Integer.parseInt(request.getParameter("id")));  
                ResultSet rs = stmt.executeQuery();  
                if(rs!=null){  
                    out.println("<table style='width:auto' border= '1px solid black'>");  
                    out.println("<th>ID</th><th>First Name</th><th>Last Name</th><th>Contact  
No</th><th>Branch</th><th>Address</th><th>DOB</th>");  
                    while(rs.next()){  
                        out.println("<tr>");  
  
out.println("<td>"+rs.getInt(1)+"</td><td>"+rs.getString(2)+"</td><td>"+rs.getString(3)+"</td><td>  
>"+rs.getString(4)+"</td><td>"+rs.getString(5)+"</td><td>"+rs.getString(6)+"</td><td>"+rs.getStr  
ing(7)+"</td>");  
                        out.println("</tr>");  
                    }  
                    out.println("</table>");  
                }else{  

```



```
        out.println("<p>Data Is Not Found</p>");
    }
} catch(Exception e){
    out.println("<p>"+e+"</p>");
}
out.println("</center>");
out.println("</body>");
out.println("</html>");
}
}
}
```

ShowAll_Student.Java :-

```
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
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(urlPatterns = {"/ShowAll_Student"})
public class ShowAll_Student extends HttpServlet {
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet ShowAll_Student</title>");
            out.println("</head>");
            out.println("<body>");

            out.println("<center>");
            try{
                Class.forName("com.mysql.jdbc.Driver");
                Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test","root","");
                PreparedStatement stmt = con.prepareStatement("select * from student");
                ResultSet rs = stmt.executeQuery();
                if(rs!=null){
                    out.println("<table style='width:auto' border= '1px solid black'>");
```

```
        out.println("<th>ID</th><th>First Name</th><th>Last Name</th><th>Contact  
No</th><th>Branch</th><th>Address</th><th>DOB</th>");  
        while(rs.next()){  
            out.println("<tr>");  
  
            out.println("<td>" + rs.getInt(1) + "</td><td>" + rs.getString(2) + "</td><td>" + rs.getString(3) + "</td><td>  
>" + rs.getString(4) + "</td><td>" + rs.getString(5) + "</td><td>" + rs.getString(6) + "</td><td>" + rs.getStr  
ing(7) + "</td>");  
            out.println("</tr>");  
        }  
        out.println("</table>");  
    } else {  
        out.println("<p>Data Is Not Found</p>");  
    }  
    } catch (Exception e) {  
        out.println("<p>" + e + "</p>");  
    }  
    out.println("</center>");  
  
    out.println("</body>");  
    out.println("</html>");  
    }  
    }  
}
```

Output :-

localhost:8080/WebApplication3/

Select the operation to perform on student table

Id :

First Name :

Last Name :

Contact :

Branch :

Address :

DOB :

localhost:8080/WebApplication3/Process?id=4&fname=Mr.+ABC&lname=CBA&contact=123456789&branch=IT&address=XYZ....&dob=2000-09-09&submit=Show+All

ID	First Name	Last Name	Contact No	Branch	Address	DOB
1	XYZ	ZZZ	987654321	CE	abc	25-05-2003
2	PQR	BBB	456789123	CE	def	09-09-2002
3	LMN	CCC	123789465	CE	ghi	27-06-2000
4	Mr. ABC	CBA	123456789	CE	xyz	09-09-2000

localhost:8080/WebApplication3/

Select the operation to perform on student table

Id :

First Name :

Last Name :

Contact :

Branch :

Address :

DOB :

localhost:8080/WebApplication3/Search_Student

ID	First Name	Last Name	Contact No	Branch	Address	DOB
4	Mr. ABC	CBA	123456789	IT	XYZ....	2000-09-09

Practical-5

Aim: Write simple web application in which display email address from servlet init parameter and context init parameter. Write a Servlet which display no of hits of 1. Particular servlet 2. Your web application.

Prac5.java:

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.*;
import javax.servlet.http.*;
```

```
public class Prac5 extends HttpServlet {
```

```
    private int hitCounter;
    static int ahitCounter = 1;
```

```
    public void init() {
        hitCounter = 0;
    }
```

```
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
```

```
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        hitCounter++;
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            ServletContext scont = getServletContext();
            String emailcont = scont.getInitParameter("email");
            String n = String.valueOf(ahitCounter);
            Cookie c = new Cookie("visit", n);
            response.addCookie(c);
            int j = Integer.parseInt(c.getValue());
            System.out.println(ahitCounter++);
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet Prac5</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet Context parameter " + emailcont + "</h1>");
            out.println("<h1>Servlet Init parameter " + getInitParameter("email") + "</h1>");
            out.println("<h1>Servlet hit count: " + hitCounter + "</h1>");
            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);
}

/**
 * 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>
```

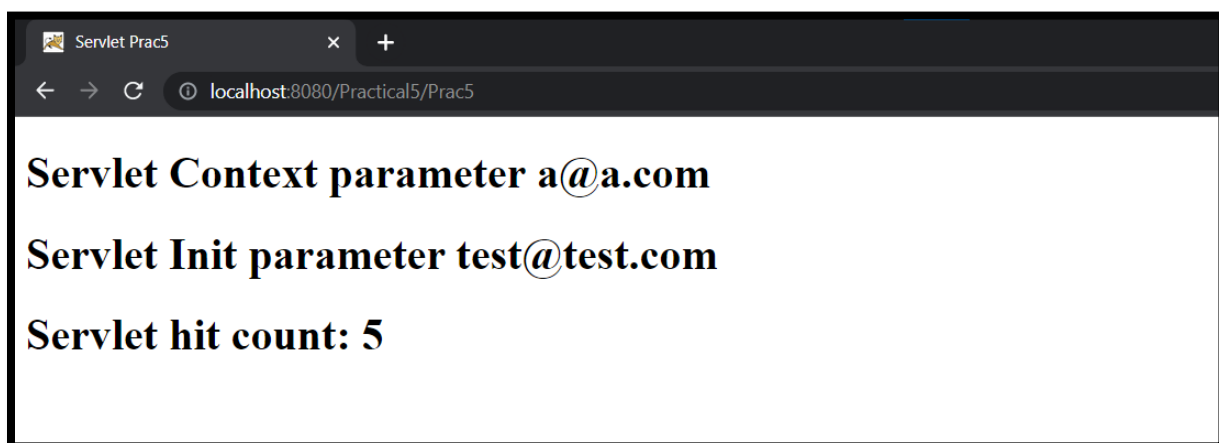
```
}
Web.xml
<?xml version="1.0" encoding="UTF-8"?>
<web-app version="3.1" xmlns="http://xmlns.jcp.org/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee http://xmlns.jcp.org/xml/ns/javaee/web-
app_3_1.xsd">
    <servlet>
        <servlet-name>Prac5</servlet-name>
        <servlet-class>Prac5</servlet-class>
```

```
<init-param>
  <param-name>email</param-name>
  <param-value>test@test.com</param-value>
</init-param>

</servlet>
<servlet-mapping>
  <servlet-name>Prac5</servlet-name>
  <url-pattern>/Prac5</url-pattern>
</servlet-mapping>
<session-config>
  <session-timeout>
    30
  </session-timeout>
</session-config>
<context-param>
  <param-name>email</param-name>
  <param-value>a@a.com</param-value>
</context-param>

</web-app>
```

Output:



Practical-6

Aim: Write small web application with at least 2 servlets which share the common object of Student class. Student class is having instance variable roll no, assign the five rollnos and display all in both servlets.

Student.java
package demo;

```
public class Student
{
    int roll[] = new int[5];
}
```

One.java
package demo;

```
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 javax.servlet.http.HttpSession;
```

```
public class one extends HttpServlet {

    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            Student s = new Student();
            int n1 = s.roll[0] = 1;
            int n2 = s.roll[1] = 2;
            int n3 = s.roll[2] = 3;
            int n4 = s.roll[3] = 4;
            int n5 = s.roll[4] = 5;
            HttpSession session = request.getSession();
            session.setAttribute("rollno1", n1);
            session.setAttribute("rollno2", n2);
            session.setAttribute("rollno3", n3);
            session.setAttribute("rollno4", n4);
            session.setAttribute("rollno5", n5);

            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet one</title>");
            out.println("</head>");
        }
    }
}
```

```
        out.println("<body>");
        out.println("<h1>Servlet one at " + n1 + "</h1>");
        out.println("<h1>Servlet one at " + n2 + "</h1>");
        out.println("<h1>Servlet one at " + n3 + "</h1>");
        out.println("<h1>Servlet one at " + n4 + "</h1>");
        out.println("<h1>Servlet one at " + n5 + "</h1>");
        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);
}
```

```
/**
 * 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>

}
Two.java
package demo;

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 javax.servlet.http.HttpSession;

public class two extends HttpServlet {

    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            HttpSession session = request.getSession(false);
            int one = (int) session.getAttribute("rollno1");
            int two = (int) session.getAttribute("rollno2");
            int th = (int) session.getAttribute("rollno3");
            int fo = (int) session.getAttribute("rollno4");
            int five = (int) session.getAttribute("rollno5");
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet two</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet two at " + one + "</h1>");
            out.println("<h1>Servlet two at " + two + "</h1>");
            out.println("<h1>Servlet two at " + th + "</h1>");
            out.println("<h1>Servlet two at " + fo + "</h1>");
            out.println("<h1>Servlet two at " + five + "</h1>");
            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

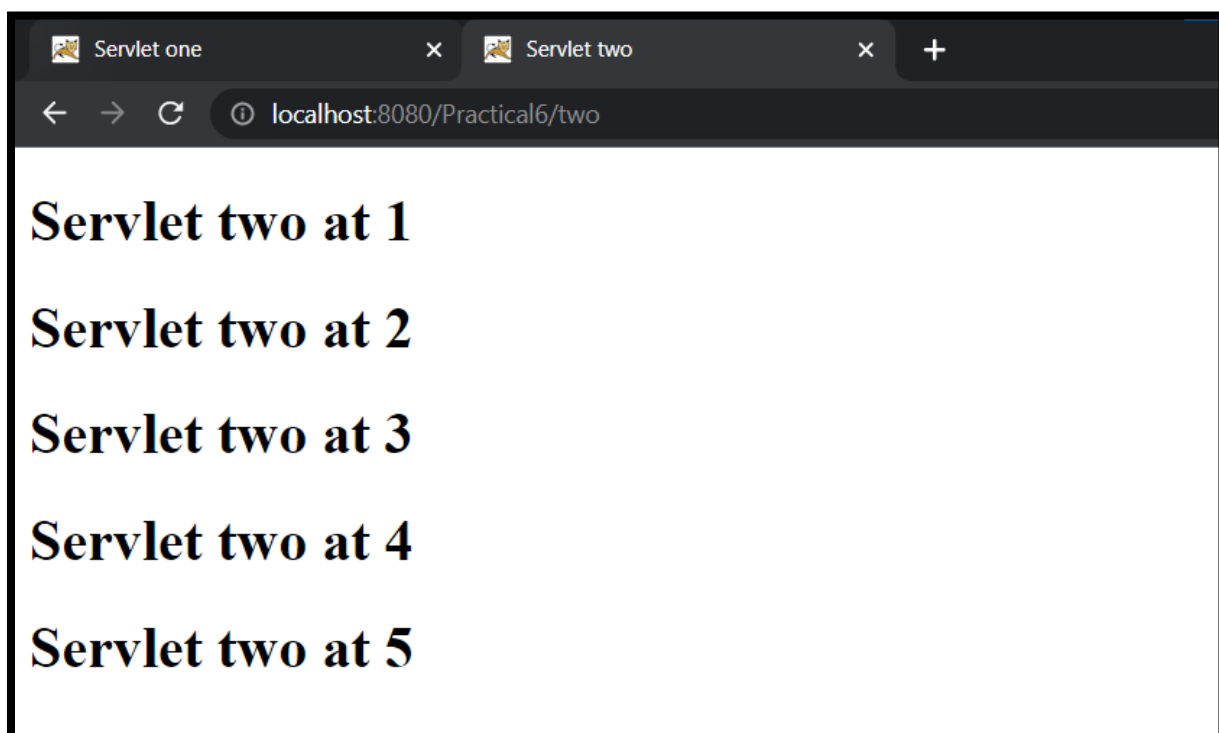
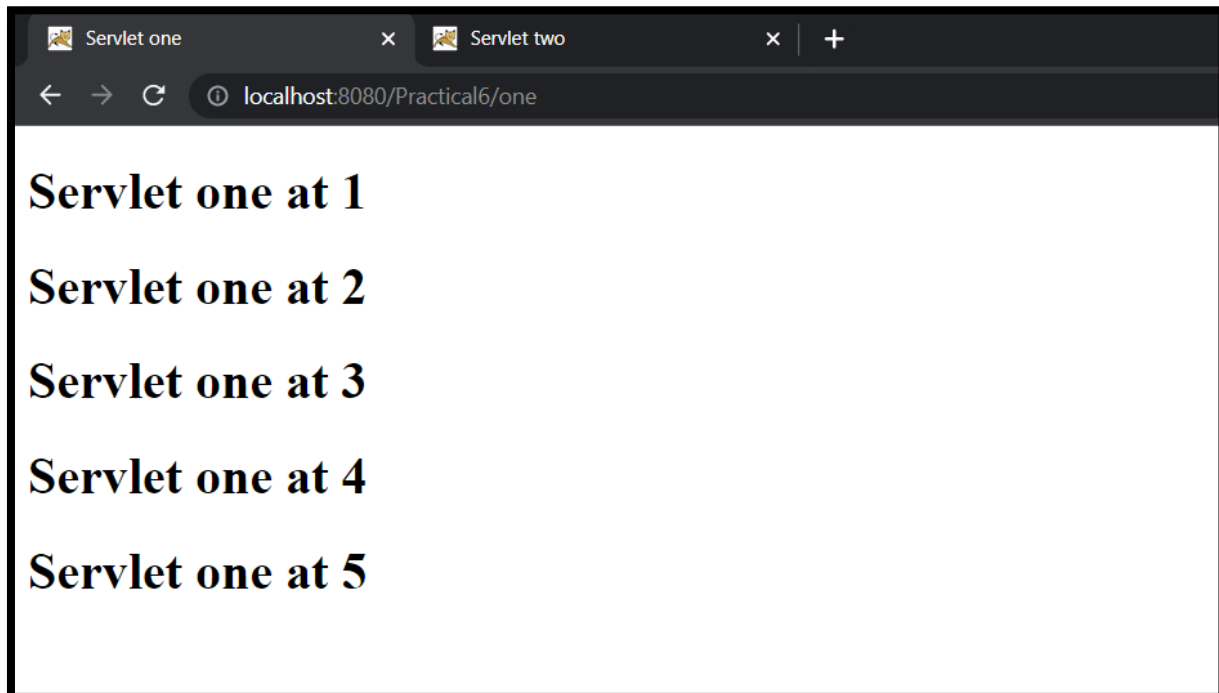
```

```
* @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);
}

/**
 * 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>
}
```

Output:



Practical-7

Aim: Develop User registration module using JSP 1. Create a User Page 4 of 3 2. Update a User 3. Delete a User 4. Retrieve a User 5. List of all Users.

Index.html

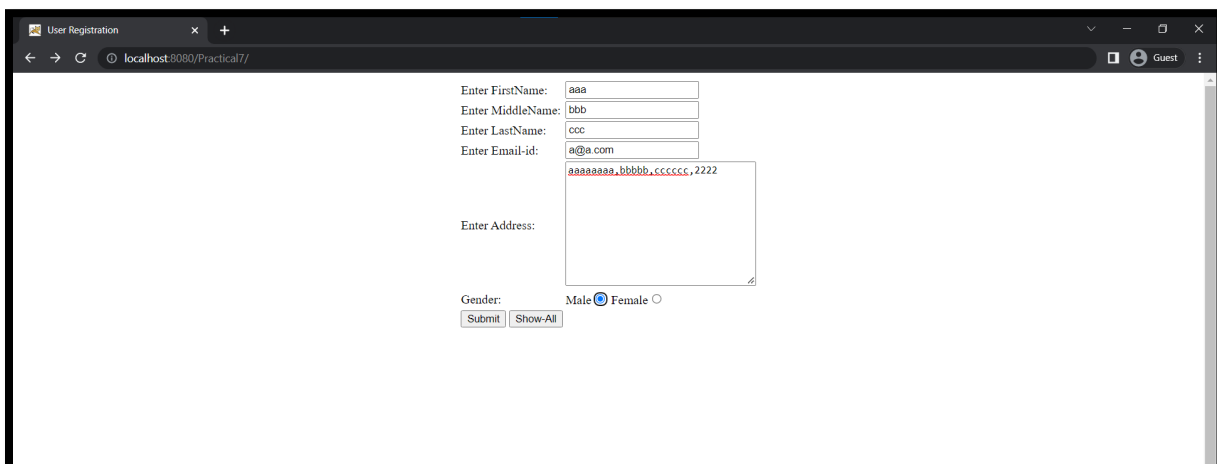
```
<!DOCTYPE html>
<!--
Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Html.html to edit this template
-->
<html>
  <head>
    <title>User Registration</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <table style="min-height: 100vh;width: 100%;display: grid;justify-content: center;">
      <form action="/userCreate.jsp" method="post">
        <tr>
          <td>
            <label for="">Enter FirstName:</label>
          </td>
          <td>
            <input type="text" name="fname">
          </td>
        </tr>
        <tr>
          <td>
            <label for="">Enter MiddleName:</label>
          </td>
          <td>
            <input type="text" name="mname">
          </td>
        </tr>
        <tr>
          <td>
            <label for="">Enter LastName:</label>
          </td>
          <td>
            <input type="text" name="lname">
          </td>
        </tr>
        <tr>
          <td>
            <label for="">Enter Email-id:</label>
          </td>
          <td>
            <input type="text" name="email">
          </td>
        </tr>
      </form>
    </table>
  </body>
</html>
```

```

        <td>
            <input type="email" name="email">
        </td>
    </tr>
    <tr>
        <td>
            <label for="">Enter Address:</label>
        </td>
        <td>
            <textarea name="address" id="" cols="30" rows="10"></textarea>
        </td>
    </tr>
    <tr>
        <td>
            <label for="">Gender:</label>
        </td>
        <td>
            Male<input type="radio" name="gen" value="male" id="">
            Female<input type="radio" name="gen" value="female" id="">
        </td>
    </tr>
    <tr>
        <td>
            <button type="submit" name="register">Submit</button>
            <a href="display.jsp"><button>Show-All</button></a>
        </td>
    </tr>
</form>
</table>
</body>
</html>

```

Output:



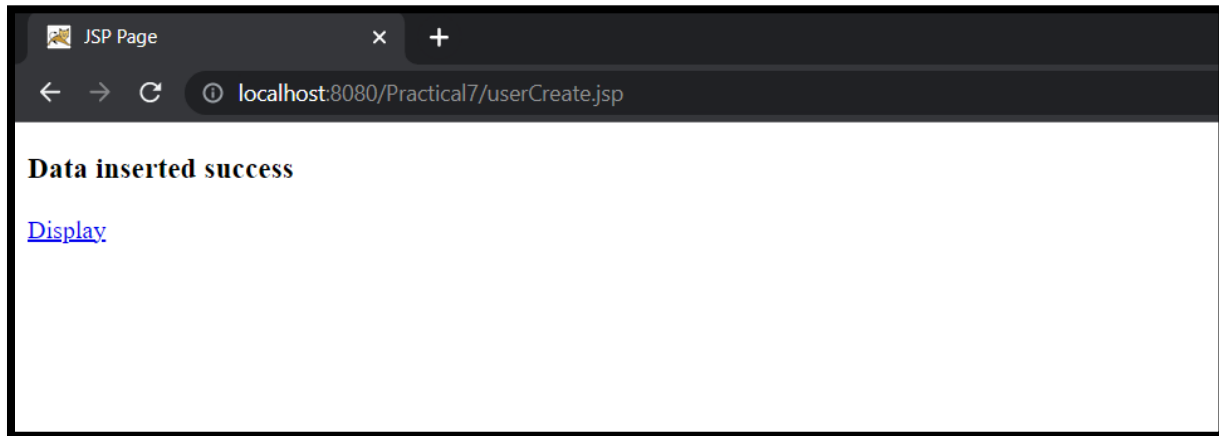
userCreate.jsp

```
<%@page import="java.sql.*,java.io.*"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%--<%@page import="java.sql.*" %>--%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
    <%
      String fname = request.getParameter("fname");
      String mname = request.getParameter("mname");
      String lname = request.getParameter("lname");
      String email = request.getParameter("email");
      String Addresss = request.getParameter("address");
      String gender = request.getParameter("gen");
      try {
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con = DriverManager.getConnection(
          "jdbc:mysql://localhost:3306/java_db",
          "root",
          ""
        );
        if (request.getParameter("register") != null) {
          PreparedStatement pst = con.prepareStatement("insert into user values(?,?,?,?,?,?,?)");
          pst.setString(1, fname);
          pst.setString(2, mname);
          pst.setString(3, lname);
          pst.setString(4, email);
          pst.setString(5, Addresss);
          pst.setString(6, gender);
          pst.setInt(7, 0);
          int x = pst.executeUpdate();
          out.println("<h3>Data inserted success</h3>");
          out.println("<a href='display.jsp'>Display</a>");
        } else {
    %>
    <jsp:forward page="display.jsp"></jsp:forward>
    <%
      }

    } catch (Exception e) {
      out.print(e);
    }
  %>
</body>
</html>
```

```
    }
  %>
</body>
</html>
```

Output:



Display.jsp

```
<%@page import="java.sql.*,java.io.*"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
    <%
      try {
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con = DriverManager.getConnection(
          "jdbc:mysql://localhost:3306/java_db",
          "root",
          ""
        );
        Statement stm = con.createStatement();
        ResultSet rs = stm.executeQuery("select * from user");
        out.println("<table border='2'>");
        out.println("<thead><tr><th>First-Name</th><th>Middle-Name</th><th>Last-
Name</th><th>Email</th><th>Address</th><th>Gender</th></tr></thead>");
        while (rs.next()) {
```

```

        out.println("<tr>");
        out.println("<td>" + rs.getString(1) + "</td>"
        );
        out.println("<td>" + rs.getString(2) + "</td>"
        );
        out.println("<td>" + rs.getString(3) + "</td>"
        );
        out.println("<td>" + rs.getString(4) + "</td>"
        );
        out.println("<td>" + rs.getString(5) + "</td>"
        );
        out.println("<td>" + rs.getString(6) + "</td>"
        );
        out.println("<td><a href='update.jsp?id=" + rs.getInt(7) + "'>update</td>"
        );
        out.println("<td><a href='delete.jsp?id=" + rs.getInt(7) + "'>delete</td>"
        );
        out.println("</tr>");
    }
    out.println("</table>");

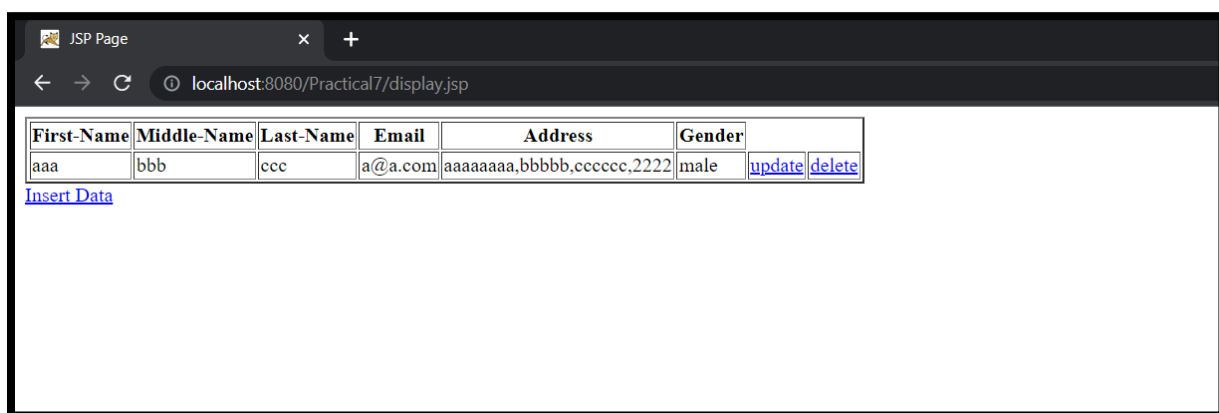
    out.println("<a href='index.html'>Insert Data</a>");

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

    %>
</body>
</html>

```

Output:



Update.jsp

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
```



```
<%@page import="java.sql.*,java.io.*"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
    <%
      if (request.getParameter("Submit") != null) {
        String fname = request.getParameter("fname");
        String mname = request.getParameter("mname");
        String lname = request.getParameter("lname");
        String email = request.getParameter("email");
        String Addresss = request.getParameter("address");
        String gender = request.getParameter("gen");
        int id = Integer.parseInt(request.getParameter("id"));
        try {
          Class.forName("com.mysql.cj.jdbc.Driver");
          Connection con = DriverManager.getConnection(
            "jdbc:mysql://localhost:3306/java_db",
            "root",
            ""
          );
          PreparedStatement pst = con.prepareCall("update user set first_name =
?,middle_name=?,last_name=?,email=?,Address=?,Gender=? where id=?");
          pst.setString(1, fname);
          pst.setString(2, mname);
          pst.setString(3, lname);
          pst.setString(4, email);
          pst.setString(5, Addresss);
          pst.setString(6, gender);
          pst.setInt(7, id);
          int x = pst.executeUpdate();
          if (x == 1) {
            %>
            <script>
              alert("Data updated");
            </script>
            <%
              out.print("<a href='display.jsp'>Display Page</a>");
            } else {
              out.print("not updated");
            }

          } catch (Exception e) {
            out.print(e);
          }
        }
      }
    %>
  </body>
</html>
```

```

    }
%>
<table style="min-height: 100vh;width: 100%;display: grid;justify-content: center;">
  <form action="#" method="post">
    <%
      try {

        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con = DriverManager.getConnection(
          "jdbc:mysql://localhost:3306/java_db",
          "root",
          ""

        );
        int id1 = Integer.parseInt(request.getParameter("id"));
        PreparedStatement pst = con.prepareStatement("select * from user where id = ?");
        pst.setInt(1, id1);
        ResultSet rs = pst.executeQuery();
        while (rs.next()) {

%>
<tr>
  <td>
    <label for="">Enter FirstName:</label>
  </td>
  <td>
    <input type="text" name="fname" value="<%= rs.getString(1)%>">
  </td>
</tr>
<tr>
  <td>
    <label for="">Enter MiddleName:</label>
  </td>
  <td>
    <input type="text" name="mname" value="<%= rs.getString(2)%>">
  </td>
</tr>
<tr>
  <td>
    <label for="">Enter LastName:</label>
  </td>
  <td>
    <input type="text" name="lname" value="<%= rs.getString(3)%>">
  </td>
</tr>
<tr>
  <td>
    <label for="">Enter Email-id:</label>
  </td>
  <td>

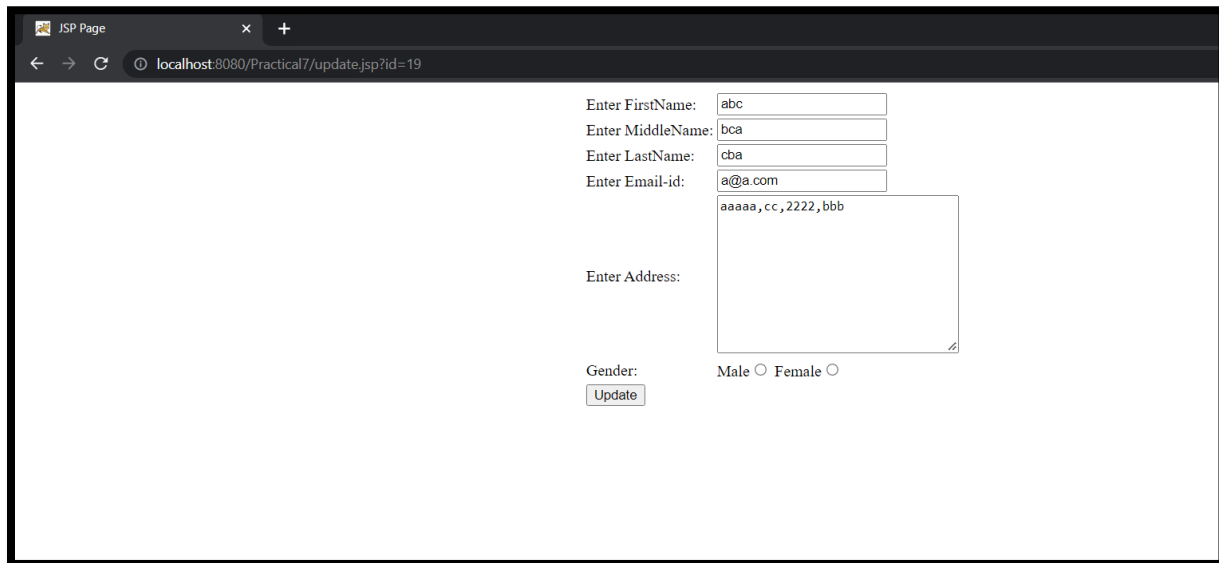
```

```

        <input type="email" name="email" value="<%= rs.getString(4)%>">
    </td>
</tr>
<tr>
    <td>
        <label for="">Enter Address:</label>
    </td>
    <td>
        <textarea name="address" id="" cols="30" rows="10" ><%=
rs.getString(5)%></textarea>
    </td>
</tr>
<tr>
    <td>
        <label for="">Gender:</label>
    </td>
    <td>
        Male<input type="radio" name="gen" value="male" id="" >
        Female<input type="radio" name="gen" value="female" id="" >
    </td>
</tr>
</tr>
<tr>
    <td>
        <button type="submit" name="Submit">Update</button>
    </td>
</tr>
<%}
    } catch (Exception e) {
        out.print(e);
    }%>
</form>
</table>
</body>
</html>

```

Output:



Enter FirstName:

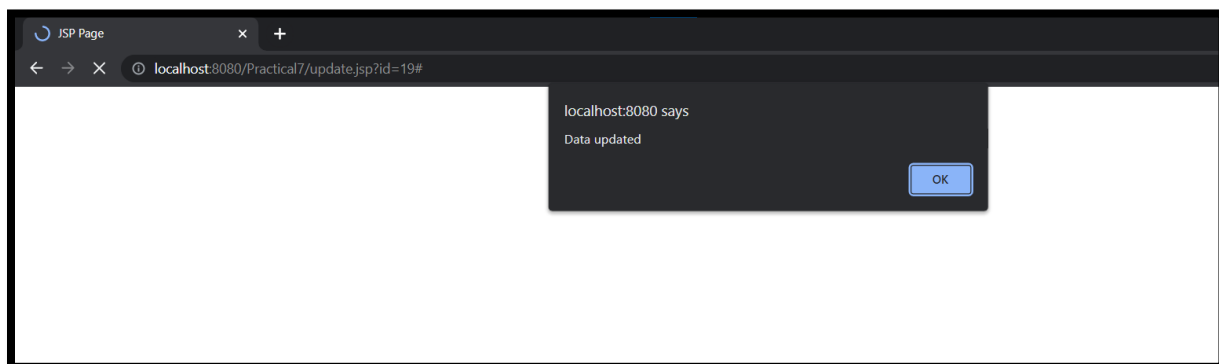
Enter MiddleName:

Enter LastName:

Enter Email-id:

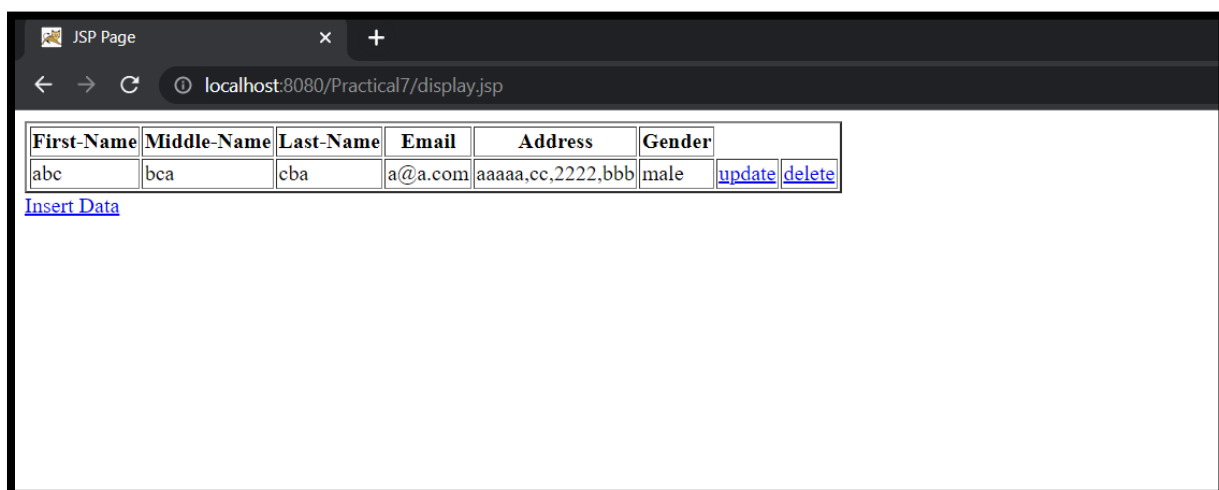
Enter Address:

Gender: ☒ Male ☐ Female



localhost:8080 says

Data updated



First-Name	Middle-Name	Last-Name	Email	Address	Gender		
abc	bca	cba	a@a.com	aaaaa, cc, 2222, bbb	male	update	delete

[Insert Data](#)

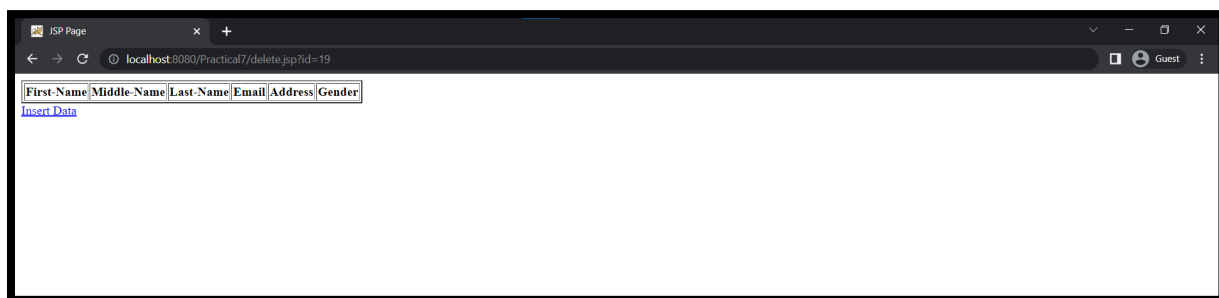
Delete.jsp

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>

<%@page import="java.sql.*,java.io.*"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
    <%
      int id = Integer.parseInt(request.getParameter("id"));
      out.print(id);
      try {
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection con = DriverManager.getConnection(
          "jdbc:mysql://localhost:3306/java_db",
          "root",
          ""
        );
        PreparedStatement pstmt = con.prepareStatement("delete from user where id = ?");
        pstmt.setInt(1, id);
        int x = pstmt.executeUpdate();
        out.println("Deleted");

      } catch (Exception e) {
        out.print(e);
      }
    %>
    <jsp:forward page="display.jsp" ></jsp:forward>
  </body>
</html>
```

Output:



Practical - 8

Aim :- Reuse Student class as bean. Write JSP page to set and display all property.

Index.html :-

```
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>JSP CRUD Example</title>
</head>
<body>
<h1>JSP CRUD Example</h1>
<a href="adduserform.jsp">Add User</a>
<a href="viewusers.jsp">View Users</a>

</body>
</html>
```

adduserform.jsp :-

```
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Add User Form</title>
</head>
<body>

<jsp:include page="userform.html"></jsp:include>

</body>
</html>
```

userform.html:-

```
<a href="viewusers.jsp">View All Records</a><br/>

<h1>Add New User</h1>
<form action="adduser.jsp" 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>Sex:</td><td>
<input type="radio" name="sex" value="male"/>Male
<input type="radio" name="sex" value="female"/>Female </td></tr>
```

```
<tr><td>Country:</td><td>
<select name="country" style="width:155px">
<option>India</option>
<option>Pakistan</option>
<option>Afghanistan</option>
<option>Berma</option>
<option>Other</option>
</select>
</td></tr>
<tr><td colspan="2"><input type="submit" value="Add User"/></td></tr>
</table>
</form>
```

adduser.jsp:-

```
<%@page import="com.javatpoint.dao.UserDao"%>
<jsp:useBean id="u" class="com.javatpoint.bean.User"></jsp:useBean>
<jsp:setProperty property="*" name="u"/>

<%
int i=UserDao.save(u);
if(i>0){
response.sendRedirect("adduser-success.jsp");
}else{
response.sendRedirect("adduser-error.jsp");
}
%>
```

User.java:-

```
package com.javatpoint.bean;
public class User {
private int id;
private String name,password,email,sex,country;
//generate getters and setters
}
```

UserDao.java:-

```
package com.javatpoint.dao;
import java.sql.*;
import java.util.ArrayList;
import java.util.List;
import com.javatpoint.bean.User;
public class UserDao {

public static Connection getConnection(){
    Connection con=null;
    try{
```

```
        Class.forName("com.mysql.jdbc.Driver");
        con=DriverManager.getConnection("jdbc:mysql://localhost:3306/test","","");
    } catch (Exception e) { System.out.println(e); }
    return con;
}
public static int save(User u) {
    int status=0;
    try {
        Connection con=getConnection();
        PreparedStatement ps=con.prepareStatement(
"insert into register(name,password,email,sex,country) values(?,?,?,?,?)");
        ps.setString(1,u.getName());
        ps.setString(2,u.getPassword());
        ps.setString(3,u.getEmail());
        ps.setString(4,u.getSex());
        ps.setString(5,u.getCountry());
        status=ps.executeUpdate();
    } catch (Exception e) { System.out.println(e); }
    return status;
}
public static int update(User u) {
    int status=0;
    try {
        Connection con=getConnection();
        PreparedStatement ps=con.prepareStatement(
"update register set name=?,password=?,email=?,sex=?,country=? where id=?");
        ps.setString(1,u.getName());
        ps.setString(2,u.getPassword());
        ps.setString(3,u.getEmail());
        ps.setString(4,u.getSex());
        ps.setString(5,u.getCountry());
        ps.setInt(6,u.getId());
        status=ps.executeUpdate();
    } catch (Exception e) { System.out.println(e); }
    return status;
}
public static int delete(User u) {
    int status=0;
    try {
        Connection con=getConnection();
        PreparedStatement ps=con.prepareStatement("delete from register where id=?");
        ps.setInt(1,u.getId());
        status=ps.executeUpdate();
    } catch (Exception e) { System.out.println(e); }

    return status;
}
public static List<User> getAllRecords() {
    List<User> list=new ArrayList<User>();
```



```
try{
    Connection con=getConnection();
    PreparedStatement ps=con.prepareStatement("select * from register");
    ResultSet rs=ps.executeQuery();
    while(rs.next()){
        User u=new User();
        u.setId(rs.getInt("id"));
        u.setName(rs.getString("name"));
        u.setPassword(rs.getString("password"));
        u.setEmail(rs.getString("email"));
        u.setSex(rs.getString("sex"));
        u.setCountry(rs.getString("country"));
        list.add(u);
    }
} catch(Exception e){System.out.println(e);}
return list;
}
public static User getRecordById(int id){
    User u=null;
    try{
        Connection con=getConnection();
        PreparedStatement ps=con.prepareStatement("select * from register where id=?");
        ps.setInt(1,id);
        ResultSet rs=ps.executeQuery();
        while(rs.next()){
            u=new User();
            u.setId(rs.getInt("id"));
            u.setName(rs.getString("name"));
            u.setPassword(rs.getString("password"));
            u.setEmail(rs.getString("email"));
            u.setSex(rs.getString("sex"));
            u.setCountry(rs.getString("country"));
        }
    } catch(Exception e){System.out.println(e);}
    return u;
}
}
```

adduser-success.jsp:-

```
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Add User Success</title>
</head>
<body>
```

```
<p>Record successfully saved!</p>
<jsp:include page="userform.html"></jsp:include>

</body>
</html>
```

adduser-error.jsp:-

```
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Add User Error</title>
</head>
<body>

<p>Sorry, an error occurred!</p>
<jsp:include page="userform.html"></jsp:include>

</body>
</html>
```

viewusers.jsp:-

```
<!DOCTYPE html>

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>View Users</title>
</head>
<body>

<%@page import="com.javatpoint.dao.UserDao,com.javatpoint.bean.*,java.util.*"%>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>

<h1>Users List</h1>

<%
List<User> list=UserDao.getAllRecords();
request.setAttribute("list",list);
%>

<table border="1" width="90%">
<tr><th>Id</th><th>Name</th><th>Password</th><th>Email</th>
<th>Sex</th><th>Country</th><th>Edit</th><th>Delete</th></tr>
<c:forEach items="${list}" var="u">
<tr><td>${u.getId()}</td><td>${u.getName()}</td><td>${u.getPassword()}</td>
<td>${u.getEmail()}</td><td>${u.getSex()}</td><td>${u.getCountry()}</td>
```

```
<td><a href="editform.jsp?id=${u.getId()}">Edit</a></td>
<td><a href="deleteuser.jsp?id=${u.getId()}">Delete</a></td></tr>
</c:forEach>
</table>
<br/><a href="adduserform.jsp">Add New User</a>

</body>
</html>
```

editform.jsp:-

```
<!DOCTYPE html>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Edit Form</title>
</head>
<body>
<%@page import="com.javatpoint.dao.UserDao,com.javatpoint.bean.User"%>

<%
String id=request.getParameter("id");
User u=UserDao.getRecordById(Integer.parseInt(id));
%>

<h1>Edit Form</h1>
<form action="edituser.jsp" method="post">
<input type="hidden" name="id" value="<%=u.getId() %>" />
<table>
<tr><td>Name:</td><td>
<input type="text" name="name" value="<%= u.getName() %>" /></td></tr>
<tr><td>Password:</td><td>
<input type="password" name="password" value="<%= u.getPassword() %>" /></td></tr>
<tr><td>Email:</td><td>
<input type="email" name="email" value="<%= u.getEmail() %>" /></td></tr>
<tr><td>Sex:</td><td>
<input type="radio" name="sex" value="male"/>Male
<input type="radio" name="sex" value="female"/>Female </td></tr>
<tr><td>Country:</td><td>
<select name="country">
<option>India</option>
<option>Pakistan</option>
<option>Afghanistan</option>
<option>Berma</option>
<option>Other</option>
</select>
</td></tr>
<tr><td colspan="2"><input type="submit" value="Edit User" /></td></tr>
</table>
</form>

</body>
```

</html>

edituser.jsp:-

```
<%@page import="com.javatpoint.dao.UserDao"%>
<jsp:useBean id="u" class="com.javatpoint.bean.User"></jsp:useBean>
<jsp:setProperty property="*" name="u"/>
<%
int i=UserDao.update(u);
response.sendRedirect("viewusers.jsp");
%>
```

deleteuser.jsp:-

```
<%@page import="com.javatpoint.dao.UserDao"%>
<jsp:useBean id="u" class="com.javatpoint.bean.User"></jsp:useBean>
<jsp:setProperty property="*" name="u"/>
<%
UserDao.delete(u);
response.sendRedirect("viewusers.jsp");
%>
```

Output :-



sonoo

Add User Success

Record successfully saved!

[View All Records](#)

Add New User

Name:

Password:

Email:

Sex: ☐ Male ☐ Female

Country:

sonoo

View Users

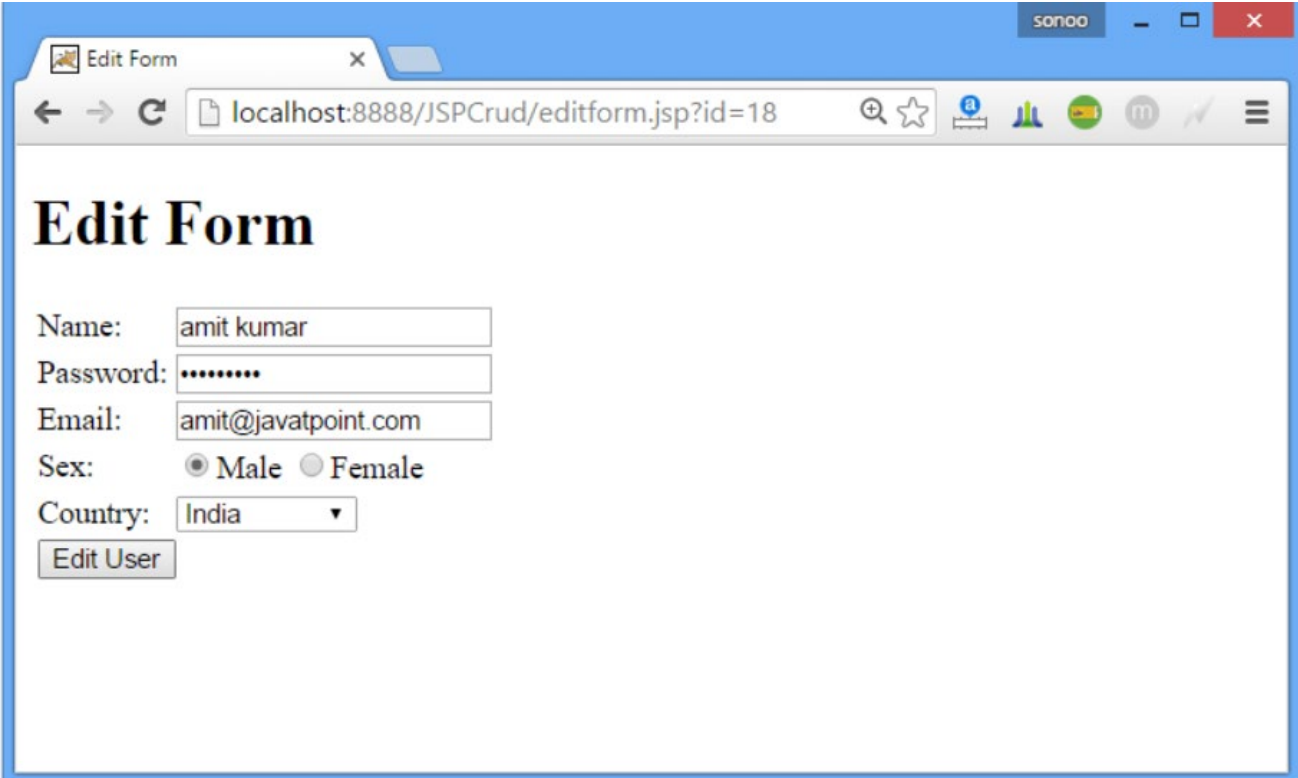
localhost:8888/JSPCrud/viewusers.jsp

Users List

Id	Name	Password	Email	Sex	Country	Edit	Delete
17	arun	kumar	arun@gmail.com	Male	India	Edit	Delete
18	amit	kumar	amit@gmail.com	Male	India	Edit	Delete
19	sonoo	jaiswal	sonoo@javatpoint.com	male	India	Edit	Delete
20	Ashok	ashok	ashok@javatpoint.com	male	India	Edit	Delete

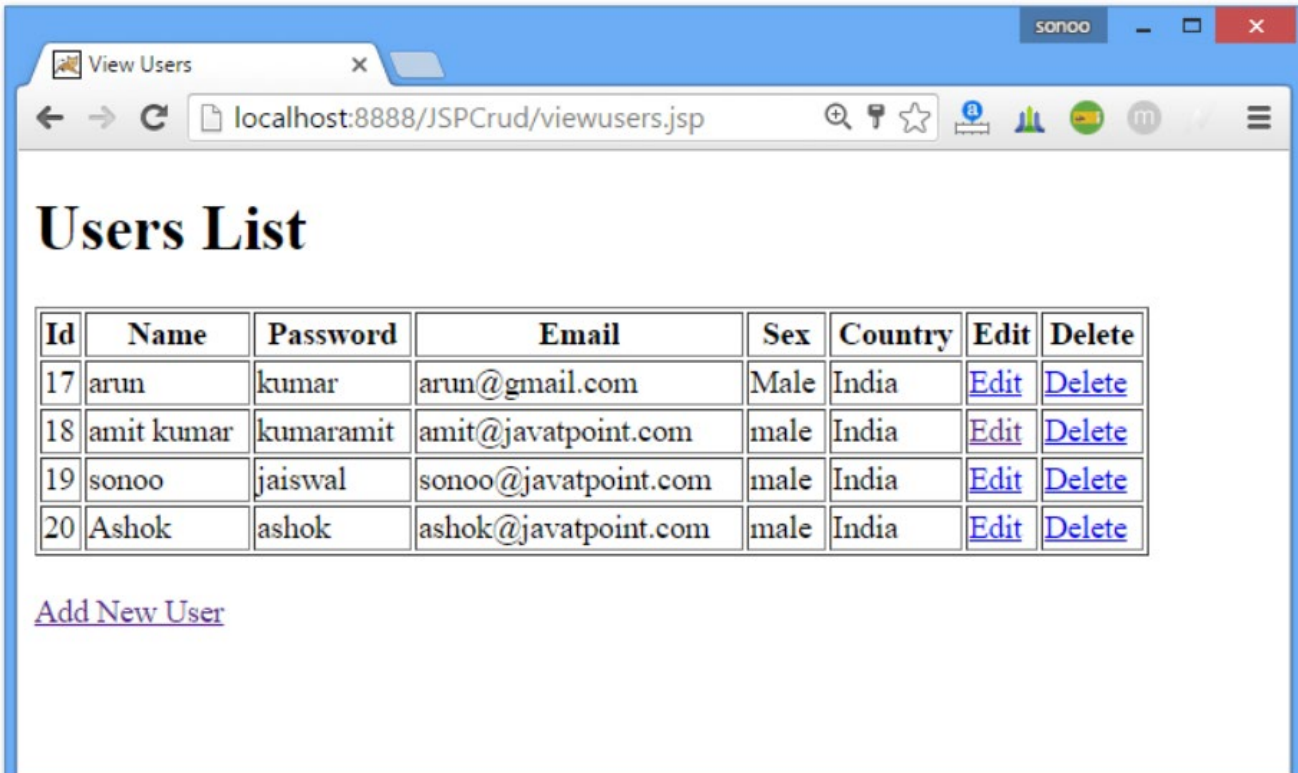
[Add New User](#)

localhost:8888/JSPCrud/editform.jsp?id=18



Edit Form

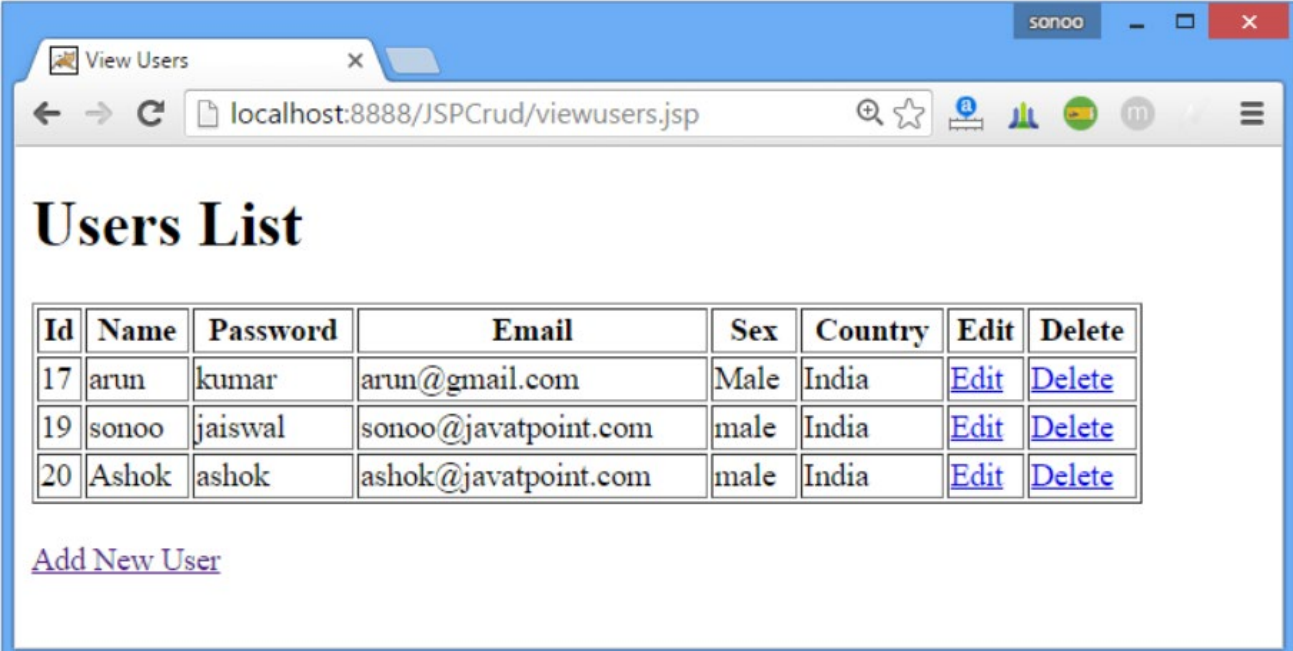
Name:
 Password:
 Email:
 Sex: ☒ Male ☐ Female
 Country:



Users List

Id	Name	Password	Email	Sex	Country	Edit	Delete
17	arun	kumar	arun@gmail.com	Male	India	Edit	Delete
18	amit kumar	kumaramit	amit@javatpoint.com	male	India	Edit	Delete
19	sonoo	jaiswal	sonoo@javatpoint.com	male	India	Edit	Delete
20	Ashok	ashok	ashok@javatpoint.com	male	India	Edit	Delete

[Add New User](#)



Users List

Id	Name	Password	Email	Sex	Country	Edit	Delete
17	arun	kumar	arun@gmail.com	Male	India	Edit	Delete
19	sonoo	jaiswal	sonoo@javatpoint.com	male	India	Edit	Delete
20	Ashok	ashok	ashok@javatpoint.com	male	India	Edit	Delete

[Add New User](#)

Practical – 9

Aim :- Rewrite all .jsp pages of previous labs using EL and JSTL.

Java Bean Class:-

```
package com.journaldev.model;

public class Employee {

    private int id;
    private String name;
    private String role;
    public Employee() {
    }
    public int getId() {
        return id;
    }
    public void setId(int id) {
        this.id = id;
    }
    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
    }
    public String getRole() {
        return role;
    }
    public void setRole(String role) {
        this.role = role;
    }
}
```

Servlet Class:-

```
package com.journaldev.servlet;

import java.io.IOException;
import java.util.ArrayList;
import java.util.List;

import javax.servlet.RequestDispatcher;
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 com.journaldev.model.Employee;

@WebServlet("/HomeServlet")
public class HomeServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        List<Employee> empList = new ArrayList<Employee>();
        Employee emp1 = new Employee();
        emp1.setId(1); emp1.setName("Pankaj"); emp1.setRole("Developer");
        Employee emp2 = new Employee();
        emp2.setId(2); emp2.setName("Meghna"); emp2.setRole("Manager");
        empList.add(emp1); empList.add(emp2);
        request.setAttribute("empList", empList);

        request.setAttribute("htmlTagData", "<br/> creates a new line.");
        request.setAttribute("url", "https://www.journaldev.com");
        RequestDispatcher rd = getServletContext().getRequestDispatcher("/home.jsp");
        rd.forward(request, response);
    }
}
```

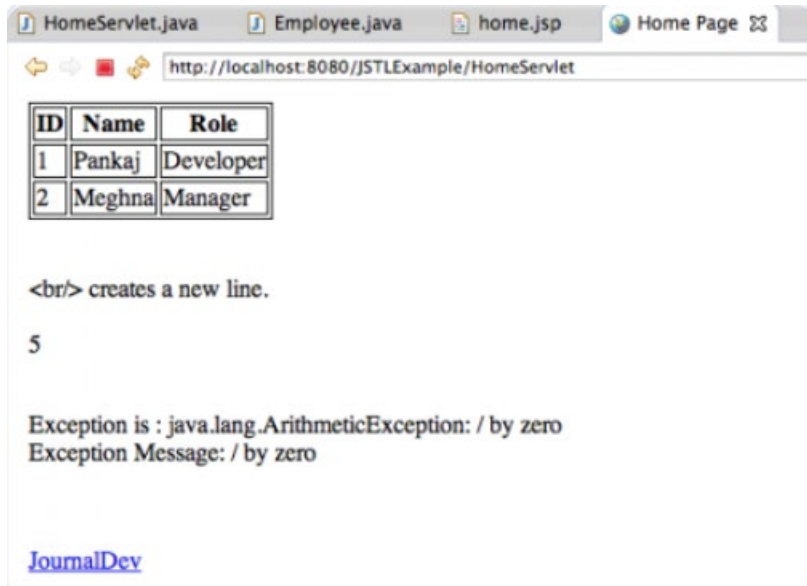
JSP Page:-

```
<%@ page language="java" contentType="text/html; charset=US-ASCII"
    pageEncoding="US-ASCII"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
    "https://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=US-ASCII">
<title>Home Page</title>
<%@ taglib uri="https://java.sun.com/jsp/jstl/core" prefix="c" %>
<style>
table,th,td
{
border: 1px solid black;
}
</style>
</head>
<body>
<%-- Using JSTL forEach and out to loop a list and display items in table --%>
<table>
<tbody>
<tr><th>ID</th><th>Name</th><th>Role</th></tr>
```

```
<c:forEach items="${requestScope.empList}" var="emp">
<tr><td><c:out value="${emp.id}"></c:out></td>
<td><c:out value="${emp.name}"></c:out></td>
<td><c:out value="${emp.role}"></c:out></td></tr>
</c:forEach>
</tbody>
</table>
<br><br>
<%-- simple c:if and c:out example with HTML escaping --%>
<c:if test="${requestScope.htmlTagData ne null}">
<c:out value="${requestScope.htmlTagData}" escapeXml="true"></c:out>
</c:if>
<br><br>
<%-- c:set example to set variable value --%>
<c:set var="id" value="5" scope="request"></c:set>
<c:out value="${requestScope.id}"></c:out>
<br><br>
<%-- c:catch example --%>
<c:catch var="exception">
  <% int x = 5/0;%>
</c:catch>

<c:if test = "${exception ne null}">
  <p>Exception is : ${exception} <br>
  Exception Message: ${exception.message}</p>
</c:if>
<br><br>
<%-- c:url example --%>
<a href="<c:url value="${requestScope.url}"></c:url>">JournalDev</a>
</body>
</html>
```

Output :-



Practical – 10

Aim :- Write Hibernate application to store student records and retrieve the student record including name, enrolment no, sem, div, dept, sgpa, cgpa, etc.

Emp.java :-

```
package com.javatpoint.beans;

public class Emp {
    private int id;
    private String name;
    private float salary;
    private String designation;

    public int getId() {
        return id;
    }
    public void setId(int id) {
        this.id = id;
    }
    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
    }
    public float getSalary() {
        return salary;
    }
    public void setSalary(float salary) {
        this.salary = salary;
    }
    public String getDesignation() {
        return designation;
    }
    public void setDesignation(String designation) {
        this.designation = designation;
    }
}
```

EmpController.java :-

```
package com.javatpoint.controllers;
import java.util.List;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Controller;
```

```
import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.ModelAttribute;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;
import com.javatpoint.beans.Emp;
import com.javatpoint.dao.EmpDao;
@Controller
public class EmpController {
    @Autowired
    EmpDao dao;//will inject dao from XML file

    /*It displays a form to input data, here "command" is a reserved request attribute
    *which is used to display object data into form
    */
    @RequestMapping("/empform")
    public String showform(Model m){
        m.addAttribute("command", new Emp());
        return "empform";
    }
    /*It saves object into database. The @ModelAttribute puts request data
    * into model object. You need to mention RequestMethod.POST method
    * because default request is GET*/
    @RequestMapping(value="/save",method = RequestMethod.POST)
    public String save(@ModelAttribute("emp") Emp emp){
        dao.save(emp);
        return "redirect:/viewemp";//will redirect to viewemp request mapping
    }
    /* It provides list of employees in model object */
    @RequestMapping("/viewemp")
    public String viewemp(Model m){
        List<Emp> list=dao.getEmployees();
        m.addAttribute("list",list);
        return "viewemp";
    }
    /* It displays object data into form for the given id.
    * The @PathVariable puts URL data into variable.*/
    @RequestMapping(value="/editemp/{id}")
    public String edit(@PathVariable int id, Model m){
        Emp emp=dao.getEmpById(id);
        m.addAttribute("command",emp);
        return "empeditform";
    }
    /* It updates model object. */
    @RequestMapping(value="/editsave",method = RequestMethod.POST)
    public String editsave(@ModelAttribute("emp") Emp emp){
        dao.update(emp);
        return "redirect:/viewemp";
    }
}
```

```
/* It deletes record for the given id in URL and redirects to /viewemp */
@RequestMapping(value="/deleteemp/{id}",method = RequestMethod.GET)
public String delete(@PathVariable int id){
    dao.delete(id);
    return "redirect:/viewemp";
}
}
```

EmpDao.java :-

```
package com.javatpoint.dao;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.List;
import org.springframework.jdbc.core.BeanPropertyRowMapper;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.jdbc.core.RowMapper;
import com.javatpoint.beans.Emp;

public class EmpDao {
    JdbcTemplate template;

    public void setTemplate(JdbcTemplate template) {
        this.template = template;
    }

    public int save(Emp p){
        String sql="insert into Emp99(name,salary,designation)
values('"+p.getName()+"','"+p.getSalary()+"','"+p.getDesignation()+"')";
        return template.update(sql);
    }

    public int update(Emp p){
        String sql="update Emp99 set name='"+p.getName()+"',
salary='"+p.getSalary()+"',designation='"+p.getDesignation()+"' where id='"+p.getId()+"'";
        return template.update(sql);
    }

    public int delete(int id){
        String sql="delete from Emp99 where id='"+id+"'";
        return template.update(sql);
    }

    public Emp getEmpById(int id){
        String sql="select * from Emp99 where id=?";
        return template.queryForObject(sql, new Object[] {id},new
BeanPropertyRowMapper<Emp>(Emp.class));
    }

    public List<Emp> getEmployees(){
        return template.query("select * from Emp99",new RowMapper<Emp>(){
            public Emp mapRow(ResultSet rs, int row) throws SQLException {
                Emp e=new Emp();
                e.setId(rs.getInt(1));
            }
        });
    }
}
```

```

        e.setName(rs.getString(2));
        e.setSalary(rs.getFloat(3));
        e.setDesignation(rs.getString(4));
        return e;
    }
});
}
}

```

web.xml:-

```

<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://java.sun.com/xml/ns/javaee" xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_3_0.xsd" id="WebApp_ID" version="3.0">
    <display-name>SpringMVC</display-name>
    <servlet>
        <servlet-name>spring</servlet-name>
        <servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>
        <load-on-startup>1</load-on-startup>
    </servlet>
    <servlet-mapping>
        <servlet-name>spring</servlet-name>
        <url-pattern>/</url-pattern>
    </servlet-mapping>
</web-app>

```

spring-servlet.xml:-

```

<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:context="http://www.springframework.org/schema/context"
xmlns:mvc="http://www.springframework.org/schema/mvc"
xsi:schemaLocation="
    http://www.springframework.org/schema/beans
    http://www.springframework.org/schema/beans/spring-beans.xsd
    http://www.springframework.org/schema/context
    http://www.springframework.org/schema/context/spring-context.xsd
    http://www.springframework.org/schema/mvc
    http://www.springframework.org/schema/mvc/spring-mvc.xsd">
    <context:component-scan base-package="com.javatpoint.controllers"></context:component-scan>

    <bean class="org.springframework.web.servlet.view.InternalResourceViewResolver">
        <property name="prefix" value="/WEB-INF/jsp/"></property>
        <property name="suffix" value=".jsp"></property>
    </bean>

    <bean id="ds" class="org.springframework.jdbc.datasource.DriverManagerDataSource">

```



```
<property name="driverClassName" value="com.mysql.jdbc.Driver"></property>
<property name="url" value="jdbc:mysql://localhost:3306/test"></property>
<property name="username" value=""></property>
<property name="password" value=""></property>
</bean>

<bean id="jt" class="org.springframework.jdbc.core.JdbcTemplate">
<property name="dataSource" ref="ds"></property>
</bean>

<bean id="dao" class="com.javatpoint.dao.EmpDao">
<property name="template" ref="jt"></property>
</bean>
</beans>
```

index.jsp:-

```
<a href="empform">Add Employee</a>
<a href="viewemp">View Employees</a>
```

empform.jsp:-

```
<%@ taglib uri="http://www.springframework.org/tags/form" prefix="form"%>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>
```

```
<h1>Add New Employee</h1>
<form:form method="post" action="save">
<table >
<tr>
<td>Name : </td>
<td><form:input path="name" /></td>
</tr>
<tr>
<td>Salary :</td>
<td><form:input path="salary" /></td>
</tr>
<tr>
<td>Designation :</td>
<td><form:input path="designation" /></td>
</tr>
<tr>
<td></td>
<td><input type="submit" value="Save" /></td>
</tr>
</table>
</form:form>
```

empeditform.jsp:-

```
<%@ taglib uri="http://www.springframework.org/tags/form" prefix="form"%>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>

<h1>Edit Employee</h1>
<form:form method="POST" action="/SpringMVCCRUDSimple/editsave">
<table >
<tr>
<td></td>
<td><form:hidden path="id" /></td>
</tr>
<tr>
<td>Name : </td>
<td><form:input path="name" /></td>
</tr>
<tr>
<td>Salary :</td>
<td><form:input path="salary" /></td>
</tr>
<tr>
<td>Designation :</td>
<td><form:input path="designation" /></td>
</tr>

<tr>
<td> </td>
<td><input type="submit" value="Edit Save" /></td>
</tr>
</table>
</form:form>
```

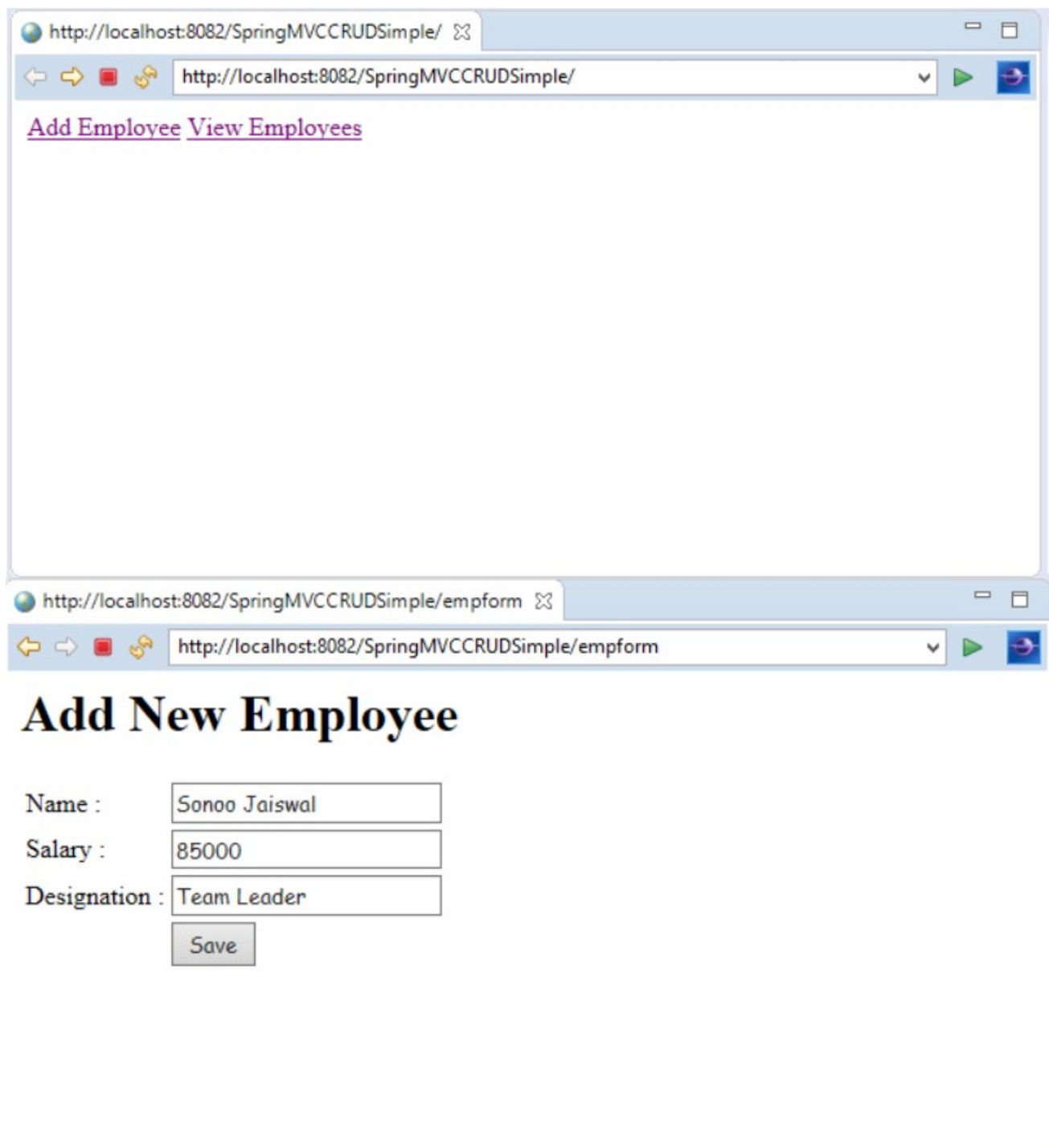
viewemp.jsp:-

```
<%@ taglib uri="http://www.springframework.org/tags/form" prefix="form"%>
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>

<h1>Employees List</h1>
<table border="2" width="70%" cellpadding="2">
<tr><th>Id</th><th>Name</th><th>Salary</th><th>Designation</th><th>Edit</th><th>Delete</th>
</tr>
<c:forEach var="emp" items="${list}">
<tr>
<td>${emp.id}</td>
<td>${emp.name}</td>
<td>${emp.salary}</td>
<td>${emp.designation}</td>
<td><a href="editemp/${emp.id}">Edit</a></td>
<td><a href="deleteemp/${emp.id}">Delete</a></td>
```

```
</tr>
</c:forEach>
</table>
<br/>
<a href="empform">Add New Employee</a>
```

Output :-



http://localhost:8082/SpringMVCCRUDSimple/

[Add Employee](#) [View Employees](#)

http://localhost:8082/SpringMVCCRUDSimple/empform

Add New Employee

Name :

Salary :

Designation :

http://localhost:8082/SpringMVCCRUDSimple/viewemp

http://localhost:8082/SpringMVCCRUDSimple/viewemp

Employees List

Id	Name	Salary	Designation	Edit	Delete
8	Sonoo Jaiswal	85000.0	Team Leader	Edit	Delete
9	Ashutosh Kumar	50000.0	Enginner	Edit	Delete
10	Yash Tyagi	25000.0	Data Entry	Edit	Delete
11	John William	75000.0	Manager	Edit	Delete

[Add New Employee](#)

http://localhost:8082/SpringMVCCRUDSimple/editemp/10

http://localhost:8082/SpringMVCCRUDSimple/editemp/10

Edit Employee

Name :

Salary :

Designation :

http://localhost:8082/SpringMVCCRUDSimple/viewemp

http://localhost:8082/SpringMVCCRUDSimple/viewemp

Employees List

ID	Name	Salary	Designation	Edit	Delete
8	Sonoo Jaiswal	85000.0	Team Leader	Edit	Delete
9	Ashutosh Kumar	50000.0	Enginner	Edit	Delete
10	Yash Tyagi	35000.0	Data Entry Operator	Edit	Delete
11	John William	75000.0	Manager	Edit	Delete

[Add New Employee](#)

http://localhost:8082/SpringMVCCRUDSimple/viewemp

http://localhost:8082/SpringMVCCRUDSimple/viewemp

Employees List

ID	Name	Salary	Designation	Edit	Delete
8	Sonoo Jaiswal	85000.0	Team Leader	Edit	Delete
9	Ashutosh Kumar	50000.0	Enginner	Edit	Delete
11	John William	75000.0	Manager	Edit	Delete

[Add New Employee](#)

Practical – 11

Aim :- Write an application to keep, update and retrieve record of student. The record includes student name, enrollment no, semester, dept, percentage, etc. Use SPRING MVC architecture

index.jsp:-

```
<form action="register.jsp" method="post">
Name:<input type="text" name="name"/><br><br>
Password:<input type="password" name="password"/><br><br>
Email ID:<input type="text" name="email"/><br><br>
<input type="submit" value="register"/>

</form>
```

register.jsp:-

```
<%@page import="com.javatpoint.mypack.UserDao"%>
<jsp:useBean id="obj" class="com.javatpoint.mypack.User">
</jsp:useBean>
<jsp:setProperty property="*" name="obj"/>

<%
int i=UserDao.register(obj);
if(i>0)
out.print("You are successfully registered");

%>
```

User.java:-

```
package com.javatpoint.mypack;

public class User {
private int id;
private String name,password,email;

//getters and setters

}
```

user.hbm.xml:-

```
<?xml version='1.0' encoding='UTF-8'?>
<!DOCTYPE hibernate-mapping PUBLIC
"-//Hibernate/Hibernate Mapping DTD 5.3//EN"
```

```
"http://hibernate.sourceforge.net/hibernate-mapping-5.3.dtd">
```

```
<hibernate-mapping>
<class name="com.javatpoint.mypack.User" table="u400">
<id name="id">
<generator class="increment"></generator>
</id>
<property name="name"></property>
<property name="password"></property>
<property name="email"></property>
</class>

</hibernate-mapping>
```

UserDao.java:-

```
package com.javatpoint.mypack;

import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;
import org.hibernate.boot.Metadata;
import org.hibernate.boot.MetadataSources;
import org.hibernate.boot.registry.StandardServiceRegistry;
import org.hibernate.boot.registry.StandardServiceRegistryBuilder;

public class UserDao {

    public static int register(User u){
        int i=0;

        StandardServiceRegistry          ssr          =          new
StandardServiceRegistryBuilder().configure("hibernate.cfg.xml").build();
        Metadata meta = new MetadataSources(ssr).getMetadataBuilder().build();

        SessionFactory factory = meta.getSessionFactoryBuilder().build();
        Session session = factory.openSession();
        Transaction t = session.beginTransaction();

        i=(Integer)session.save(u);

        t.commit();
        session.close();

        return i;

    }
}
```

hibernate.cfg.xml:-

```
<?xml version='1.0' encoding='UTF-8'?>
<!DOCTYPE hibernate-configuration PUBLIC
    "-//Hibernate/Hibernate Configuration DTD 5.3//EN"
    "http://hibernate.sourceforge.net/hibernate-configuration-5.3.dtd">

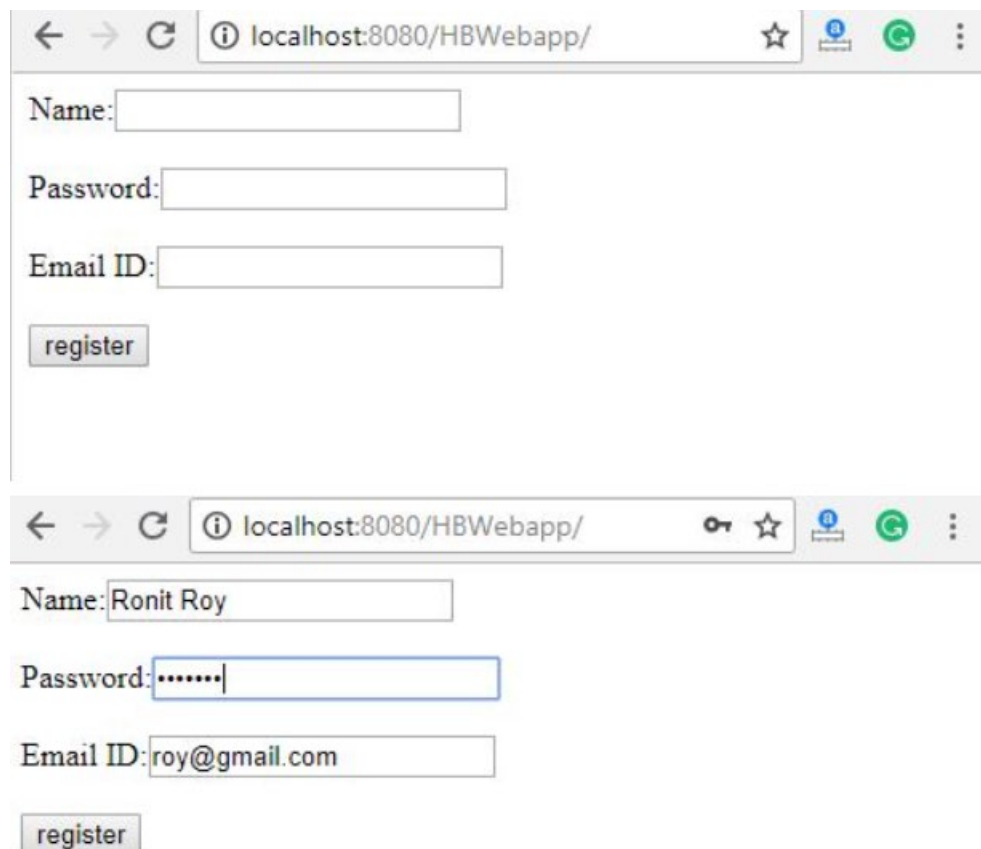
<hibernate-configuration>

<session-factory>
<property name="hbm2ddl.auto">create</property>
<property name="dialect">org.hibernate.dialect.Oracle9Dialect</property>
<property name="connection.url">jdbc:oracle:thin:@localhost:1521:xe</property>
<property name="connection.username">system</property>
<property name="connection.password">jtp</property>
<property name="connection.driver_class">oracle.jdbc.driver.OracleDriver</property>

<mapping resource="user.hbm.xml"/>
</session-factory>

</hibernate-configuration>
```

Output :-



localhost:8080/HBWebapp/

Name:

Password:

Email ID:

localhost:8080/HBWebapp/

Name:

Password:

Email ID: