1)Write a JAVA Servlet Program to implement a dynamic HTML using Servlet (user name and Password should be accepted using HTML and displayed using a Servlet).

Lab1.html

```
<html>
  <head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <div>
      <form name ="frm1" action="Lab1servlet" method="get">
        <h2> Login Form</h2> username :<input type="text" name="txtusr" />
        password:<input type="password" name="txtpwd" />
        <input type ="submit" value="submit" />

      </form>
    </div>
  </body>
</html>
```

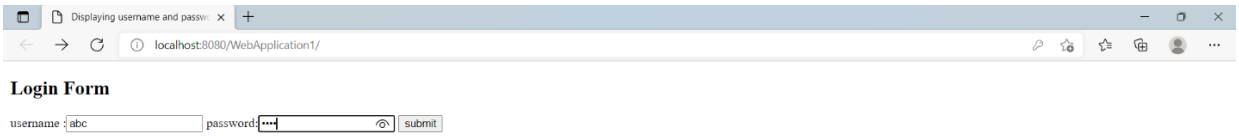
Lab1servlet.java

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

/**
 *
 * @author student
 */
public class Lab1serv extends HttpServlet {

  /**
   * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
   * methods.
   *
   * @param request servlet request
   * @param response servlet response
   * @throws ServletException if a servlet-specific error occurs
   * @throws IOException if an I/O error occurs
   */
  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 Lab1serv</title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>Servlet Lab1serv at " + request.getContextPath() + "</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);

    String usrname=request.getParameter("txtusr");
    String pwd=request.getParameter("txtpwd");
    PrintWriter out=response.getWriter();
    response.setContentType("text/HTML");
    out.println("<h2>Servelet displaying accepted username Anmd password</h2>");
    out.println("<h2>username : "+usrname +"</h2>");
    out.println("<h2>password : "+pwd +"</h2>");
    out.close();
}

/**
 * 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



2) Write a JAVA Servlet Program to Auto Web Page Refresh (Consider a webpage which is displaying Date and time or stock market status. For all such type of pages, you would need to refresh your web page regularly; Java Servlet makes this job easy by providing refresh automatically after a given interval).

Lab2.html

```
<html>
  <head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <div><a href="Lab2Servlet"> Click here to run Servlet </a></div>
  </body>
</html>
```

Lab2servlet.java

```
import java.io.IOException;
import  java.io.PrintWriter;
import java.util.Calendar;
import java.util.GregorianCalendar;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 *
 * @author Student
 */
public class Lab2Servlet extends HttpServlet {

   /**
    * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
    * methods.
    *
    * @param request servlet request
    * @param response servlet response
    * @throws ServletException if a servlet-specific error occurs
    * @throws IOException if an I/O error occurs
    */
   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 lab2Servlet</title>");
        out.println("</head>");
        out.println("<body>");
        out.println("<h1>Servlet lab2Servlet at " + request.getContextPath() + "</h1>");
        out.println("</body>");
        out.println("</html>");
    }
}

@Override
protected void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {

//   processRequest(request, response);

    //set response,autoload time as 5 seconds
response.setIntHeader("Refresh",2);

//set response content type
response.setContentType("text/html");

//get current time
Calendar calendar = new GregorianCalendar();
String am_pm;
int hour;
    hour = calendar.get(Calendar.HOUR_OF_DAY);
int minute = calendar.get(Calendar.MINUTE);
int second = calendar.get(Calendar.SECOND);
if(calendar.get(Calendar.AM_PM) == 0)
    am_pm = "AM";
else
    am_pm = "PM";

String CT = hour+ ":" + minute + ":" +second + " " + am_pm;

PrintWriter out = response.getWriter();

//Display Time
String title = "Auto page Refresh using Servlet";
String docType =
        "<!doctype html>";
out.println(docType +
        "<html><head><title>" + title + "</title></head>"+
        "<body><h1 align=center>" + title + " </h1>" +
```

```
            "<p> Current Time is: " + CT + "</p> </body></html>");

    }

    /**
     * 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

3) Write a JAVA Servlet Program to implement and demonstrate GET and POST methods (UsingHTTP Servlet Class).

L3page1.html

```
<html>
  <head>

    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <form action="Lab3Servlet" method="GET">

      <table>
        <tr>
          <th> Enter Subject code: </th>
          <td><input type="text" name="txtcode" /></td>
          <td><input type="submit" name="submit" /></td>

        </tr>
      </table>
    </form>
  </body>
</html>
```

L3page2.html

```
<html>
  <head>

    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
        <form action="Lab3Servlet" method="POST">

      <table>
        <tr>
          <th> Enter Subject code: </th>
          <td><input type="text" name="txtcode" /></td>
          <td><input type="submit" name="submit" /></td>

        </tr>
      </table>
    </form>
  </body>
</html>
```

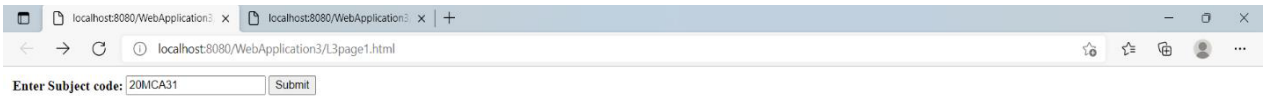
Lab3Servlet.java

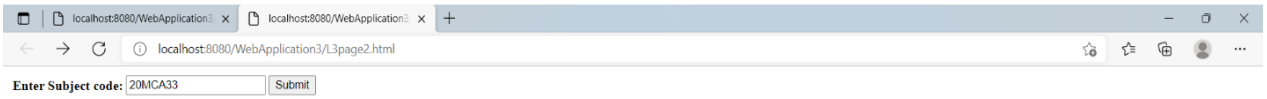
```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 *
 * @author Student
 */
public class Lab3Servlet extends HttpServlet {

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    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 Lab3Servlet</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet Lab3Servlet at " + request.getContextPath() + "</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);

        PrintWriter out=response.getWriter();
             response.setContentType("text/html");
             String code=request.getParameter("txtcode");
             out.println("<h1>In GET Method, Check URL.</h1>");
             display(out, code);
    }

    /**
     * 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);

        PrintWriter out=response.getWriter();
             response.setContentType("text/html");
             String code=request.getParameter("txtcode");
             out.println("<h1>In POST Method, Check URL.</h1>");
             display(out, code);

    }

    @Override
    public String getServletInfo() {
        return "Short description";
    }// </editor-fold>

    private void display(PrintWriter out, String code) {
        //throw new UnsupportedOperationException("Not supported yet."); //To change body of
generated methods, choose Tools | Templates.

        if(code.equals("20MCA31"))
            out.println("<h3> Data Analytics</h3>");
```

```
        else if(code.equals("20MCA32"))
          out.println("<h3>IOT</h3>");
        else if(code.equals("20MCA33"))
          out.println("<h3>ADVANCE IN JAVA</h3>");

    }

}
```

OUTPUT





4) Write a JAVA Servlet Program using cookies to remember user preferences.

index.jsp

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>Cookies</title>
  </head>
  <body>
  <center>
    <form id="form1" action="SetcookieServlet" method="post">
      <table>
        <tr>
          <td>username</td><td><input type="text" name="uname"</td>
        </tr>
        <tr>
          <td>password</td><td><input type="password" name="upass"</td>
        </tr>
      </table>
      <input type="submit" value="Set cookie"/>
    </form>
    <br/>
    <form id="form1" action="FetchcookieServlet" method="post">
      <input type="submit" value="fetch cookie"/>
    </form>
  </center>
  </body>
</html>
```

SetcookieServlet.java

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

/**
 *
 * @author Student
 */
public class SetcookieServlet extends HttpServlet {
```

```
    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    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 SetcookieServlet</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet SetcookieServlet at " + request.getContextPath() + "</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);

      Cookie ck = new Cookie(request.getParameter("uname"),request.getParameter("upass"));

            ck.setMaxAge(60*60*24);

            response.addCookie(ck);

            response.setContentType("text/html");
            PrintWriter out = response.getWriter();
            out.println("<!DOCTYPE HTML><html><head><title>Set Cookie</title></head>"+
                  "<body><center>"+
                  "<h1>Cookie has been set successfully!</h1><br/>"+
             "<a href='index.jsp'>Click here to go back to previous page</a>"+
             "</body></html>");

    }

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

}
```

FetchcookieServlet.java

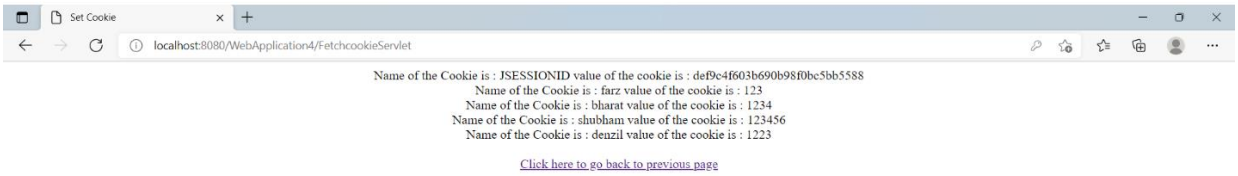
```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.Cookie;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 *
```

```
 * @author Student
 */
public class FetchcookieServlet extends HttpServlet {

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */

    Cookie ck = null;
      Cookie[] ckary = null;

      private String searchCookie(String s)
      {
         for (Cookie temp : ckary) {
            ck = temp;
            if((ck.getName()).compareTo(s)==0)
               return ck.getValue();
         }
         return "";
      }

    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 FetchcookieServlet</title>");
          out.println("</head>");
          out.println("<body>");
          out.println("<h1>Servlet FetchcookieServlet at " + request.getContextPath() + "</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);

        ckary = request.getCookies();
        response.setContentType("text/html");
        PrintWriter out;
        out = response.getWriter();
        out.println("<!DOCTYPE HTML><html><head><title>Set Cookie</title></head><body><center>");

        if( ckary != null )
        {
            for (int i=0; i < ckary.length - 1 ; i++)
            {
                Cookie tempck = ckary[i];
                out.println("Name of the Cookie is : " + tempck.getName());
                out.print(" value of the cookie is : " + tempck.getValue() + "<br/>");
            }
        }
        else
        {
            out.println("<h1>No Cookies found!</h1>");
        }
        out.println("<br/><a href='index.jsp'>Click here to go back to previous
page</a></center></body></html>");
    }
```

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

}
```

OUTPUT



5) Write a JAVA Servlet program to track HttpSession by accepting user name and passwordusing HTML and display the profile page on successful login.

index.html

```
<html>
  <head>
    <title>Login form</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <div>
      <h1>Sample progress using Http session</h1>
      <form action="Loginverify" method="post">
        username :<input type="text" name="uname"><br><br>

        password :<input type="password" name="pass"><br><br>

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

home.jsp

```
<%@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>
    <h3>
      Keep the page ideal for 10 seconds <br>
      And try reloading the page <br>
      you will be redirected to home page automatically <br>
    </h3>
    <%     if (session != null) {
     if (session.getAttribute("user") != null)
     {
        String name = (String) session.getAttribute("user");
        out.print("<h3> <span style='color:blue'> Hello, " +
              name + " </span> <br/> Welcome to ur Profile </h3>");
     }
    else
```

```
        {
            response.sendRedirect("index.html");

        }

        }
        else
        {
            response.sendRedirect("index.html");
        }
        %>
    </body>
</html>
```

Loginverify.java

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

/**
 *
 * @author student
 */
public class Loginverify extends HttpServlet {
    private static final long serialVersionUID =1L;

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    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 Loginverify</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet Loginverify at " + request.getContextPath() + "</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);

    response.setContentType("text/html");
    PrintWriter out = response.getWriter();
    String un = request.getParameter("uname");
    String pwd = request.getParameter("pass");
    if (un.equals("usrjava"))
    {
       out.print("welcome, " + un);
       HttpSession session = request.getSession(true); //reuse existing
```

```
        session.setAttribute("user", un);
        session.setMaxInactiveInterval(1*10); //30 seconds
        response.sendRedirect("home.jsp");
    }
    else
    {
        RequestDispatcher rd = request.getRequestDispatcher("index.html");
        out.println("<font color=red>Either user name or password is wrong.</font>");
        rd.include(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

6) Write a JSP Program which uses jsp:include and jsp:forward action to display a Webpage.

forwarded.jsp

```
<%@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>
    <h2> This is Forwarded page</h2>
    <h2> It terminates the action on the current page and request is forwarded to another page</h2>
     <h2>Welcome <%=request.getParameter("name")%>
       <br/></h2>
  </body>
</html>
```

toforwarded.jsp

```
<%@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
      [jsp:forward Action example]</title>
  </head>
  <body>
    <h2>JSP Page [jsp:forward action example]
      <jsp:forward page="forwarded.jsp">
        <jsp:param name="name"
            value="user" />
      </jsp:forward>
  </body>
</html>
```

include.jsp

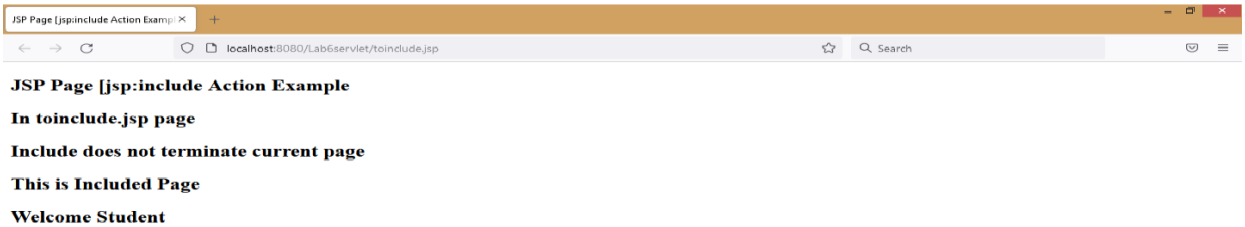
```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
```

```
        <h2> This is the Included page</h2>
        <h2>Welcome <%=request.getParameter("name")%>
          <br/></h2>
    </body>
</html>
```

toinclude.jsp

```
<%@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>
        <h2> This is the Included page</h2>
        <h2>Welcome <%=request.getParameter("name")%>
          <br/></h2>
    </body>
</html>
```

OUTPUT



7) Write a JSP Program which uses tag to run an applet

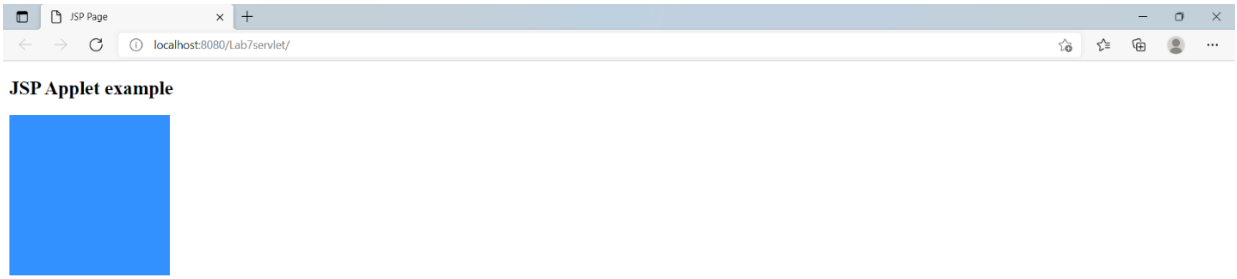
index.jsp

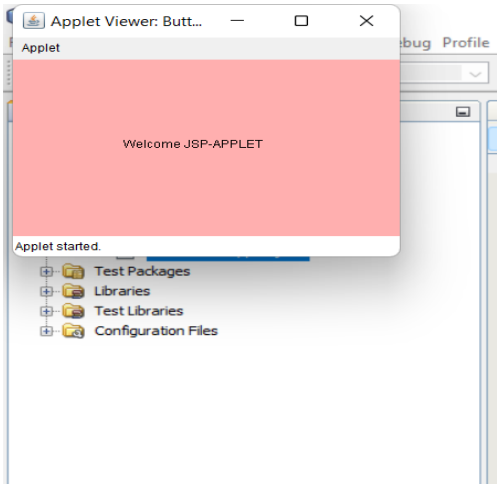
```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>
  <body>
    <h2>
      JSP Applet example
    </h2>
    <jsp:plugin type="applet" align="middle"
          code="ButtonMoveApplet.class"
          width="200" height="200" >
    <jsp:fallback>
    <p>
      Unable to load applet
    </p>
    </jsp:fallback>
  </jsp:plugin>
  </body>
</html>
```

ButtonMoveApplet.java

```
import java.awt.*;
import java.applet.*;
import java.awt.event.*;

public class ButtonMoveApplet extends Applet
{
  public void paint(Graphics g)
  {
     setBackground(Color.pink);
     setForeground(Color.black);
     g.drawString("Welcome JSP-APPLET",100,100);
   }
}
```

OUTPUT


JSP Page
localhost:8080/Lab7servlet/
JSP Applet example


Applet Viewer: Butt...
Applet
Welcome JSP-APPLET
Applet started.
Test Packages
Libraries
Test Libraries
Configuration Files

8) Write a JSP Program to get student information through a HTML and create a JAVA Bean class, populate Bean and display the same informationthrough another JSP.

index.html

```
<html>
  <head>
    <title>student info</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </head>
  <body>
    <div><h2>Form to Enter Student Information</h2>
      <form method="post" action="newjsp.jsp">
        Enter Student name : <input type="text" name="studName" size="20">
        Enter Student age : <input type="text" name="age" size="3"> <br>
        <input type="submit" value="submit">
      </form></div>
  </body>
</html>
```

newjsp.jsp

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

  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>JSP Page</title>
  </head>

    <h1>Populating Beans and displaying data through JSP</h1>
    <jsp:useBean id="myid" class="org.mypack.Lab8Beans" scope="request">
      <jsp:setProperty name="myid" property = "studName" />
      <jsp:setProperty name="myid" property = "age" />
    </jsp:useBean>

    <p><h2>Student Name:
      <jsp:getProperty name="myid" property="studName"/></h2>
  </p>
  <p><h2>Student age:
      <jsp:getProperty name="myid" property="age"/></h2>
  </p>
</body>
</html>
```

Lab8Beans.java

```
package org.mypack;

/**
 *
 * @author Student
 */
public class Lab8Beans {
   public Lab8Beans() { }
   String studName, age  ;
 public String getStudName() {
    return studName;
 }
 public void setStudName(String studName) {
    this.studName = studName;
 }
 public String getAge() {
    return age;
 }
 public void setAge(String age) {
    this.age = age;
 }

}
```

OUTPUT

9) Write a JSP program to implement all the attributes of page directive tag.

newjsp.jsp

```
<%@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>
    <form action="directive.jsp">
      <h1>Enter the value of n1 and n2: </h1>
      number1:<input type="number" name="n1"/><br/>
      number2:<input type="number" name="n2"/><br/>
        <input type="submit" value="submit"/><br/>
        <input type="reset" value="reset"/><br/>
    </form>
  </body>
</html>
```

directive.jsp

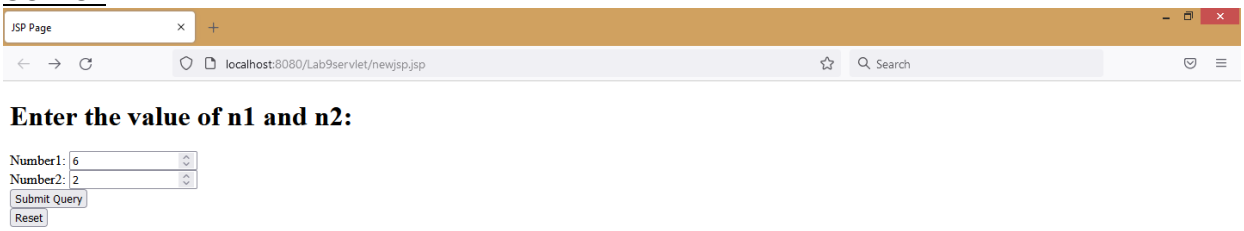
```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page import="java.util.*"%>
<%@page info="example of info attribute of page"%>
<%@page language="java"%>
<%@page buffer="16kb"%>
<%@page autoFlush="true"%>
<%@page isThreadSafe="true"%>
<%@page errorPage="error.jsp"%>
<%@page isELIgnored="true"%>
<!DOCTYPE html>
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
    <title>page attributes</title>
  </head>
  <body>
    <h2>usage of page attributes</h2>
    <h2>import attribute ==> todays date is:<%=new Date() %></h2>
    <h2>info attribute ==><%=getServletInfo()%></h2>
    <h2>isELIgnored attribute ==> <c:out value="${'This is expression language'}"/></h2>
    <h2>To see the use of error page enter n2 value zero and click submit</h2>
    <%
      int n1=Integer.parseInt(request.getParameter("n1"));
      int n2=Integer.parseInt(request.getParameter("n2"));
```

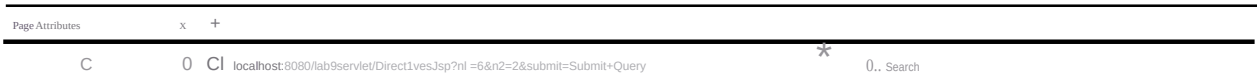
```
        %>
        <h2>Value of n1/n2 ==><%=n1+n2%></h2>


    </body>
</html>
```

error.jsp

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%@page isErrorPage="true" %>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Page attributes</title>
    </head>
    <body>
        <h2>Value of n2variableof zero(n/0 is infinity)</h2>
        <h3>Sorry an exception occured !</h3><br />
        <h3>The exception is: <%=exception%></h3>
    </body>
</html>
```

OUTPUT





Usage of Page Attributes

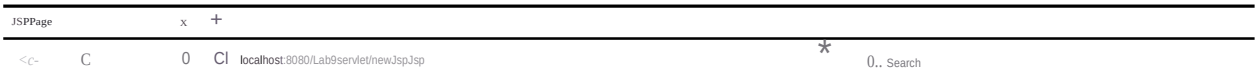
import attribute=> Today Date is: Tue Dec 2112:36:59 1ST 2021

info attribute ≥ Example of info attribute of page

isELignored attribute==>

To see the use of error page enter n2 value zero and click submit

Value of n1/n2 => 3



Enter the value of nl and n2:

Numbed: 6
Numbcr2, 0
Submit Query
Reset

Value of n2 variable of zero (n/0 is **infinity)**

Sorry an exception occurred !

The exception is: ja\'a.lang.ArithmeticExceptiou: / by zero

10) Write a JAVA Program to insert data into Student DATA BASE and retrieve info based on particular queries (For example update, delete, search etc…).

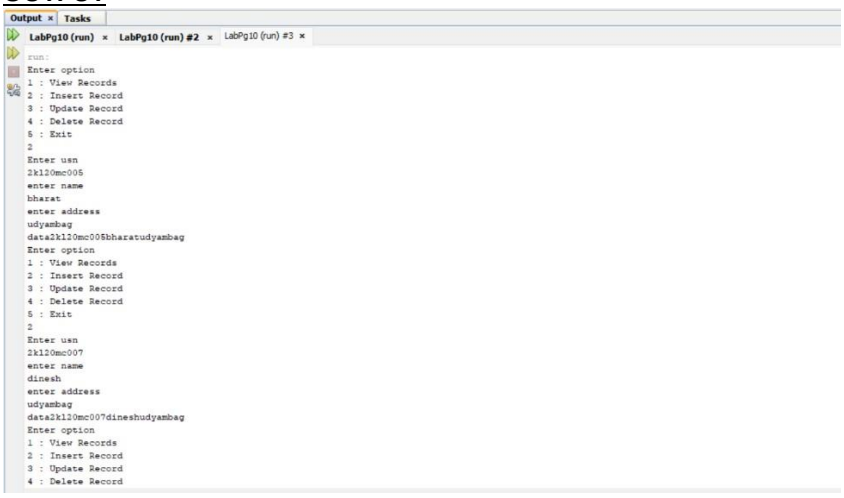
labpg10.java

```
package labpg10;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
import java.sql.PreparedStatement;
import java.util.Scanner;

public class LabPg10 {
   static final String DB_URL="jdbc:mysql://localhost:3306/labdb10";
   static final String DB_DRV="com.mysql.jdbc.Driver";
   static final String DB_USER="root";
   static final String DB_PASS="password";

   public static void main(String[] args) throws SQLException
   {
    Connection conn = null;
    Statement stat = null;
    PreparedStatement pstat = null;
    ResultSet result = null;
    int opt=0,n;
    String susn, sname, sadd, qry;
    try
    {
       conn=DriverManager.getConnection(DB_URL, DB_USER, DB_PASS);
       stat=(Statement) conn.createStatement();
       while(opt != 5)
       {
          System.out.println("Enter option");
          System.out.println("1 : View Records");
          System.out.println("2 : Insert Record");
          System.out.println("3 : Update Record");
          System.out.println("4 : Delete Record");
          System.out.println("5 : Exit");

          Scanner sc=new Scanner (System.in);
          opt = sc.nextInt();
          sc.nextLine();
          switch(opt)
          {
             case 1 :
```

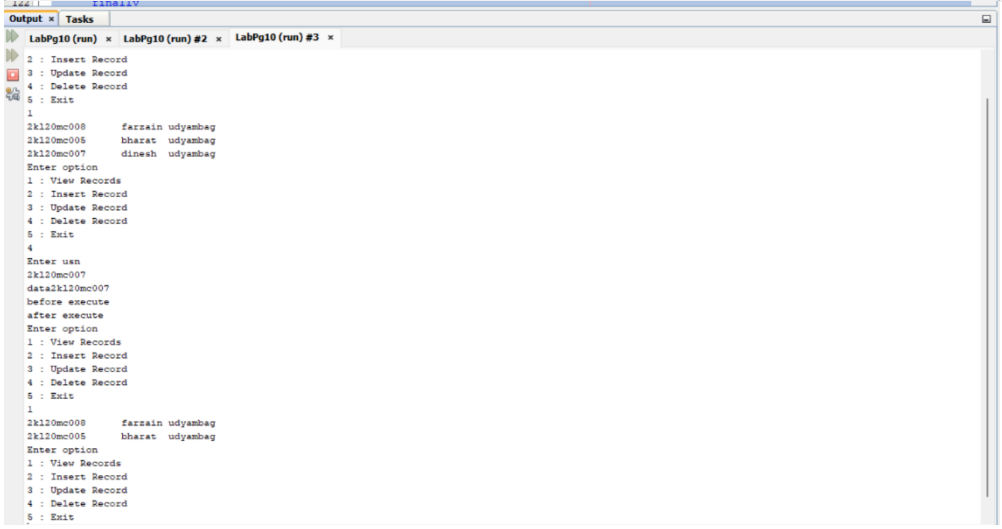
```
   result=stat.executeQuery("SELECT * FROM student");
   while(result.next())
   {
      System.out.printf("%s\t%s\t%s\n",
            result.getString(1),
            result.getString(2),
            result.getString(3));
   }
   break;

case 2 :
   System.out.println("Enter usn");
   susn=sc.nextLine();
   System.out.println("enter name");
   sname=sc.nextLine();
   System.out.println("enter address");
   sadd=sc.nextLine();
   System.out.println("data"+susn+""+sname+""+sadd);
   qry="Insert into student (usn, name, address)values (?,?,?)";
   pstat=conn.prepareStatement (qry);
   pstat.setString(1, susn);
   pstat.setString(2,sname);
   pstat.setString(3,sadd);
   n=pstat.executeUpdate();
   break;

case 3:
    System.out.println("ENter usn");
   susn=sc.nextLine();
   System.out.println("enter name");
   sname=sc.nextLine();
   System.out.println("enter address");
   sadd=sc.nextLine();
   System.out.println("data"+susn+""+sname+""+sadd);
   qry="Update student set name=?,address=?,where usn=?";
   pstat=conn.prepareStatement (qry);
   pstat.setString(1, susn);
   pstat.setString(2,sname);
   pstat.setString(3,sadd);
   pstat.executeUpdate();
   break;

case 4 :
System.out.println("Enter usn");
susn=sc.nextLine();
System.out.println("data"+susn);
qry="delete from student where usn=?";
pstat=conn.prepareStatement (qry);
```

```
                pstat.setString(1, susn);
                System.out.println("before execute");
                pstat.executeUpdate();
                System.out.println("after execute");
                break;
                case 5 :
                   break;
                default:
                  System.out.println("invalid options");
            }
        }
    }
    catch (SQLException ex)
    {
       System.out.println("Exception raised" +ex);
    }
    finally
    {
       try
       {
          stat.close();
          conn.close();
       }
       catch (SQLException ex)
       {
          System.out.println("Close failed");
       }
    }
   }
}
```

OUTPUT




Output
Tasks
LabPg10 (run)
LabPg10 (run) #2
LabPg10 (run) #3
2
Enter usn
2kl20mc007
enter name
dinesh
enter address
udyambag
data2kl20mc007dineshudyambag
Enter option
1 : View Records
2 : Insert Record
3 : Update Record
4 : Delete Record
5 : Exit
1
2kl20mc008 farzain udyambag
2kl20mc005 bharat udyambag
2kl20mc007 dinesh udyambag
Enter option
1 : View Records
2 : Insert Record
3 : Update Record
4 : Delete Record
5 : Exit
3
ENter usn
2kl20mc008
enter name
Farzain
enter address
udyambag
data2kl20mc008Farzainudyambag
Exception raisedcom.mysql.jdbc.exceptions.jdbc4.MySQLSyntaxErrorException: You have an error in your SQL syntax; check the manual that corresponds to your MySQL s
BUILD SUCCESSFUL (total time: 2 minutes 53 seconds)


Output
Tasks
LabPg10 (run)
LabPg10 (run) #2
LabPg10 (run) #3
2 : Insert Record
3 : Update Record
4 : Delete Record
5 : Exit
1
2kl20mc008 farzain udyambag
2kl20mc005 bharat udyambag
2kl20mc007 dinesh udyambag
Enter option
1 : View Records
2 : Insert Record
3 : Update Record
4 : Delete Record
5 : Exit
4
Enter usn
2kl20mc007
data2kl20mc007
before execute
after execute
Enter option
1 : View Records
2 : Insert Record
3 : Update Record
4 : Delete Record
5 : Exit
1
2kl20mc008 farzain udyambag
2kl20mc005 bharat udyambag
Enter option
1 : View Records
2 : Insert Record
3 : Update Record
4 : Delete Record
5 : Exit

11) An EJB application that demonstrates Session Bean (with appropriate business logic).

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">
   </head>
   <body>
      <div>EJB that demonstrates session bean</div>
      <a href="NewServlet" >click here to run the servlet</a>
   </body>
</html>
```

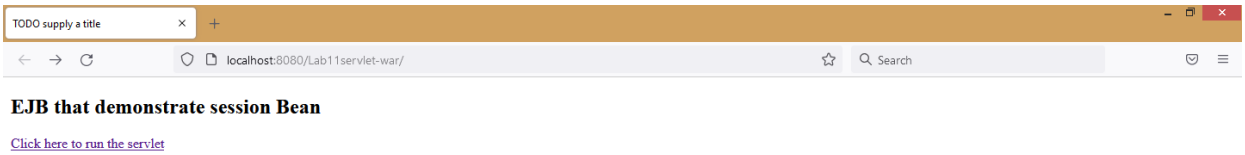
NewServlet.java

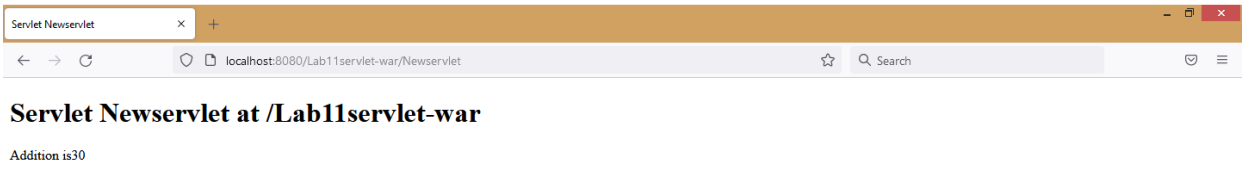
```
package mypack;

import java.io.IOException;
import  java.io.PrintWriter;
import javax.ejb.EJB;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 *
 * @author student
 */
public class NewServlet extends HttpServlet {

   @EJB
   private NewSessionBeanLocal newSessionBean;

   /**
    * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
    * methods.
    *
    * @param request servlet request
    * @param response servlet response
    * @throws ServletException if a servlet-specific error occurs
    * @throws IOException if an I/O error occurs
    */
   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 NewServlet</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Servlet NewServlet at " + request.getContextPath() + "</h1>");
            out.println("addition is" + newSessionBean.add(10, 20));
            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





12) An EJB application that demonstrates MDB (with appropriate business logic).

index.jsp

```
<%@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>
    <div>
      <form action="NewServlet">
        Enter message : <input type="text " name="msg" />
        <input type="submit" value="submit" />
      </form>
    </div>
  </body>
</html>
```

NewServlet.java

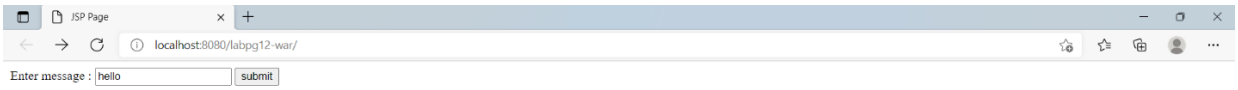
```
package mypack;

import java.io.IOException;
import java.io.PrintWriter;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.annotation.Resource;
import javax.jms.*;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 *
 * @author student
 */
public class NewServlet extends HttpServlet {
  @Resource(mappedName = "jms/dest")
  private Queue dest;
  @Resource(mappedName = "jms/queue")
  private ConnectionFactory queue;

  /**
   * Processes requests for both HTTP
```

```
     * <code>GET</code> and
     * <code>POST</code> methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        String str =request.getParameter("msg");
        try {
            sendJMSMessageToDest(str);
        } catch (JMSException ex) {
            Logger.getLogger(NewServlet.class.getName()).log(Level.SEVERE, null, ex);
        }
        try {
            /*
             * TODO output your page here. You may use following sample code.
             */
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet NewServlet</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1> your messsage is" + str +"</h1>");
            out.println("</body>");
            out.println("</html>");
        } finally {
            out.close();
        }
    }

    // <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>

    private Message createJMSMessageForjmsDest(Session session, Object messageData) throws
JMSException {
        // TODO create and populate message to send
        TextMessage tm = session.createTextMessage();
        tm.setText(messageData.toString());
        return tm;
    }

    private void sendJMSMessageToDest(Object messageData) throws JMSException {
        Connection connection = null;
        Session session = null;
        try {
            connection = queue.createConnection();
            session = connection.createSession(false, Session.AUTO_ACKNOWLEDGE);
            MessageProducer messageProducer = session.createProducer(dest);
            messageProducer.send(createJMSMessageForjmsDest(session, messageData));
        } finally {
            if (session != null) {
                try {
```

```
                session.close();
            } catch (JMSException e) {
                Logger.getLogger(this.getClass().getName()).log(Level.WARNING, "Cannot close session", e);
            }
        }
        if (connection != null) {
            connection.close();
        }
    }
  }
}
```

OUTPUT



13) An EJB application that demonstrates persistence (with appropriate business logic).

index.jsp

```
<%@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>
      <div><form  action="NewServlet">
            name:<input type="text" name="name" />
            Address: <input type="text" name="address" />
            <input type="submit" value="submit " />
         </form></div>
   </body>
</html>
```

NewServlet.java

```
package mypack;

import java.io.IOException;
import  java.io.PrintWriter;
import javax.ejb.EJB;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import persist.Employee;
import persist.EmployeeFacadeLocal;

/**
 *
 * @author student
 */
public class NewServlet extends HttpServlet {
   @EJB
   private EmployeeFacadeLocal employeeFacade;

   /**
    * Processes requests for both HTTP
    * <code>GET</code> and
    * <code>POST</code> methods.
    *
    * @param request servlet request
```

```
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        PrintWriter out = response.getWriter();
        Employee obj = new Employee();
        obj.setName(request.getParameter("name"));
        obj.setAddress(request.getParameter("address"));
        employeeFacade.create(obj);

        try {
            /*
             * TODO output your page here. You may use following sample code.
             */
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet NewServlet</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Data added</h1>");
            out.println("</body>");
            out.println("</html>");
        } finally {
            out.close();
        }
    }

    // <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);
    }

    @Override
```

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

    @Override
    public String getServletInfo() {
        return "Short description";
    }// </editor-fold>
}
```

OUTPUT