|  |  |  |  |
| --- | --- | --- | --- |
| **Ex. No. 06** | **DESIGNING ENTERPRISE APPLICATION USING SESSION BEAN – EMPLOYEE PAYROLL** | | |
| Date of Exercise |  | Date of Output Verification |  |

**Aim**

To develop and deploy the enterprise application using session beans for employee payroll system.

**Description**

**Stateless Bean**

A stateless session bean is a type of enterprise bean which is normally used to do independent operations. A stateless session bean as per its name does not have any associated client state, but it may preserve its instance state. EJB Container normally creates a pool of few stateless bean's objects and use these objects to process client's request. Because of pool, instance variable values are not guaranteed to be same across lookups/method calls.

Steps

* Create a remote/local interface exposing the business methods.
* This interface will be used by the ejb client application.
* Use @Local annotation if ejb client is in same environment where ejb session bean is to be deployed.
* Use @Remote annotation if ejb client is in different environment where ejb session bean is to be deployed.
* Create a stateless session bean implementing the above interface.
* Use @Stateless annotation to signify it a stateless bean. EJB Container automatically creates the relevant configurations or interfaces required by reading this annotation during deployment.

**Stateful Bean**

A stateful session bean is a type of enterprise bean which preserve the conversational state with client. A stateful session bean as per its name keeps associated client state in its instance variables. EJB Container creates a separate stateful session bean to process client's each request. As soon as request scope is over, statelful session bean is destroyed.

Steps

* Create a remote/local interface exposing the business methods.
* This interface will be used by the ejb client application.
* Use @Local annotation if ejb client is in same environment where ejb session bean is to be deployed.
* Use @Remote annotation if ejb client is in different environment where ejb session bean is to be deployed.
* Create a stateful session bean implementing the above interface.
* Use @Stateful annotation to signify it a stateful bean. EJB Container automatically creates the relevant configurations or interfaces required by reading this annotation during deployment.

**Procedure**

* Create a Java EE project in NetBeans
* Following the MVC pattern create the model, view and the controller
* View will be the jsp pages for display
* Controller will be the servlet which takes the requests and sends to the necessary business logic and then back to the view
* The controller will now send the request for the business logic processing to the session bean.
* It is not recommended to use database coding in session bean, so create a java class to handle the database management
* And the process will go back in the same order, java class -> session bean -> controller -> view
* It is recommended to create the java class in beans component
* To create a session bean, right click on the beans component and then click on new session bean
* Provide the session bean name and package name and click finish
* To add the business methods, right click in the session bean and click insert code and then add business methods. This will add the method to interface and the session bean as well
* In the servlet (controller), to call the session bean, right click and insert code, and click call enterprise bean and then select the bean that we need
* From the controller we can call session bean methods by using the bean object that is provided
* Before running the project once, clean and build the EJB module.

**Program**

**Bean**

JavaClass

package a;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import java.util.HashMap;

public class JavaClass {

Connection con;

String return\_value;

public JavaClass() throws Exception {

Class.forName("org.apache.derby.jdbc.ClientDriver");

con = DriverManager.getConnection("jdbc:derby://localhost:1527/J2EE-Lab-Experiments", "ws", "6477");

}

public String signin(String username, String password) throws Exception {

String query = "select name from WS.REGISTERED\_USERS where USERNAME='" + username + "' and PASSWORD='" + password.hashCode() + "'";

Statement st = con.createStatement();

ResultSet rs = st.executeQuery(query);

return\_value = "failed";

if (rs.next()) {

return\_value = rs.getString("name");

}

return return\_value;

}

public String signup(String name, String username, String email, String dob, String pwd) throws Exception {

String query = "insert into ws.Registered\_users values('" + name + "', '" + username + "', '" + email + "', '" + dob + "', '" + pwd.hashCode() + "')";

Statement st = con.createStatement();

int a = st.executeUpdate(query);

return\_value = "failed";

if (a == 1) {

return\_value = name;

}

return return\_value;

}

public HashMap getPayroll(String username) throws Exception {

String query = "select \* from Employee\_pay where USERNAME='" + username + "'";

Statement st = con.createStatement();

ResultSet rs = st.executeQuery(query);

return\_value = "failed";

HashMap hm = new HashMap();

if (rs.next()) {

double bp = Double.parseDouble(rs.getString("basic\_pay"));

double hra = Double.parseDouble(rs.getString("hra"));

double tax = Double.parseDouble(rs.getString("tax"));

double grosspay = bp + hra;

double netsalary = grosspay - tax;

hm.put("Basic Pay", bp);

hm.put("HRA", hra);

hm.put("Tax", tax);

hm.put("Gross Pay", grosspay);

hm.put("Net Salary", netsalary);

}

return hm;

}

public boolean addDetails(String username, double bp, double hra, double tax) throws Exception {

String query = "select \* from Employee\_pay where USERNAME='" + username + "'";

Statement st = con.createStatement();

ResultSet rs = st.executeQuery(query);

Boolean flag = false;

if (rs.next()) {

query = "update employee\_pay set basic\_pay=" + bp + ", hra=" + hra + ", tax=" + tax + " where username='" + username + "'";

Statement st2 = con.createStatement();

int i = st2.executeUpdate(query);

if (i == 1) {

flag = true;

}

} else {

query = "insert into employee\_pay values('" + username + "', " + bp + ", " + hra + ", " + tax + ")";

Statement st3 = con.createStatement();

int a = st3.executeUpdate(query);

if (a == 1) {

flag = true;

}

}

return flag;

}

}

PayrollBean

package a;

import java.util.HashMap;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.ejb.Stateless;

@Stateless

public class PayrollBean implements PayrollBeanLocal {

JavaClass jc;

public PayrollBean() throws Exception {

this.jc = new JavaClass();

}

@Override

public String signin(String username, String password) {

try {

return jc.signin(username, password);

} catch (Exception ex) {

Logger.getLogger(PayrollBean.class.getName()).log(Level.SEVERE, null, ex);

}

return "failed";

}

@Override

public String signup(String name, String username, String email, String dob, String password) {

try {

return jc.signup(name, username, email, dob, password);

} catch (Exception ex) {

Logger.getLogger(PayrollBean.class.getName()).log(Level.SEVERE, null, ex);

}

return "failed";

}

@Override

public HashMap getPayroll(String username) {

try {

return jc.getPayroll(username);

} catch (Exception ex) {

Logger.getLogger(PayrollBean.class.getName()).log(Level.SEVERE, null, ex);

}

return new HashMap();

}

@Override

public boolean setPayDetails(String username, double bp, double hra, double tax) {

try {

return jc.addDetails(username, bp, hra, tax);

} catch (Exception ex) {

Logger.getLogger(PayrollBean.class.getName()).log(Level.SEVERE, null, ex);

}

return false;

}

}

PayrollBeanLocal

package a;

import java.util.HashMap;

import javax.ejb.Local;

@Local

public interface PayrollBeanLocal {

String signin(String username, String password);

String signup(String name, String username, String email, String dob, String password);

HashMap getPayroll(String username);

boolean setPayDetails(String username, double bp, double hra, double tax);

}

**War**

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>WS | Exp 6</title>

<script src="js/jquery-1.11.3.min.js"></script>

<script src="js/bootstrap.min.js"></script>

<script src="js/script.js"></script>

<link rel="stylesheet" href="css/bootstrap.min.css" />

<link rel="stylesheet" href="css/styles.css" />

</head>

<body>

<jsp:include flush="true" page="header.jsp"></jsp:include>

<jsp:include flush="true" page="index\_body.jsp"></jsp:include>

<div style="margin-bottom: 30px;"></div>

<jsp:include flush="true" page="footer.jsp"></jsp:include>

</body>

</html>

Header.jsp

<nav class="navbar navbar-default ">

<div class="container">

<div class="navbar-header">

<button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-example-navbar-collapse-1" aria-expanded="false">

<span class="sr-only">Toggle navigation</span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

</button>

<a class="navbar-brand" href="#">WS | Employee Payroll Calculator</a>

</div>

<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">

<ul class="nav navbar-nav">

<li class="active"><a href="index.jsp">Home <span class="sr-only">(current)</span></a></li>

<li class="dropdown">

<a href="#" class="dropdown-toggle" data-toggle="dropdown" role="button" aria-haspopup="true" aria-expanded="false"> Extras <span class="caret"></span></a>

<ul class="dropdown-menu">

<li><a href="#">Action</a></li>

<li><a href="#">Another action</a></li>

<li role="separator" class="divider"></li>

<li><a href="#">Separated link</a></li>

<li role="separator" class="divider"></li>

<li><a href="#">One more separated link</a></li>

</ul>

</li>

</ul>

<form class="navbar-form navbar-left" role="search">

<div class="form-group">

<input type="text" class="form-control" placeholder="Search">

</div>

<button type="submit" class="btn btn-default">Submit</button>

</form>

<ul class="nav navbar-nav navbar-right">

<li><a href="#">Options<span class=""></span></a></li>

<%

if (session.getAttribute("name") == null) {

%>

<li><a href="login.jsp">Login <span class=""></span></a></li>

<%

} else if (session.getAttribute("name") == "failed") {

%>

<li><a href="login.jsp">Login <span class=""></span></a></li>

<%

} else {

%>

<li class="dropdown">

<a href="#" class="dropdown-toggle" data-toggle="dropdown" role="button" aria-haspopup="true" aria-expanded="false"> <%=session.getAttribute("name")%> <span class="caret"></span></a>

<ul class="dropdown-menu">

<li><a href="#">Account Settings</a></li>

<li><a href="#">Privacy Settings</a></li>

<li><a href="Action?payroll=true">Check Payroll</a></li>

<li role="separator" class="divider"></li>

<li><a href="logout.jsp">Logout</a></li>

</ul>

</li>

<%

}

%>

</ul>

</div><!-- /.navbar-collapse -->

</div><!-- /.container-fluid -->

</nav>

Footer.jsp

<style>

#footer{

position: fixed;

bottom: 0px;

text-align: center;

line-height: 1.2em;

background: #357ebd;

color: whitesmoke;

font-size: 1.2em;

right: 0px;

left: 0px;

letter-spacing: 1.5px;

padding-top: 12px;

}

</style>

<div id="footer">

<p class="footer-block">Developed by WS</p>

</div>

Index\_body.jsp

<%@page import="java.sql.ResultSet"%>

<%

if (session.getAttribute("name") != null) {

if (session.getAttribute("name").toString().equals("William Scott")) {

%>

<a href="admin\_modify.jsp" class="btn btn-success col-sm-offset-10"> Modify Database </a>

<%

}

}

%>

<div class="panel col-sm-4 col-sm-offset-4 panel-default">

<div class="panel-heading panel-success">Note</div>

<div class="panel-body">

<%

if (session.getAttribute("name") == null) {

%>

To Check your Payroll Please <a class="btn btn-success" href="login.jsp">Signin</a>

<%

} else if (session.getAttribute("name") == "failed") {

%>

To Check your Payroll Please <a class="btn btn-success" href="login.jsp">Signin</a>

<%

} else {

%>

To Check your Payroll Please <a class="btn btn-success" href="Action?payroll=true">Click Here</a>

<%

}

%>

</div>

</div>

Login\_body.jsp

<script>

$(document).ready(function () {

$("#signupform").hide();

$("#signinclick").click(function () {

$("#signupform").slideUp();

$("#signinform").slideDown();

});

$("#signupclick").click(function () {

$("#signinform").slideUp();

$("#signupform").slideDown();

});

});

</script>

<style>

body{

background-image: url('img/login-background.jpg');

overflow-x: hidden;

}

#body form, #body{

width: 450px;

margin: 0px auto;

padding: 0px;

}

#body form{

background: rgba(0,0,0,0.4);

padding: 7px;

margin-top: 40px;

border-radius: 2px;

color: white;

border:1px white solid;

box-shadow: 0 0 5px black;

transition: box-shadow 1s ease;

}

#body form:hover{

box-shadow: 0 0 15px black;

}

#body{

margin-top: 50px;

}

#body .heading{

font-size: 2em;

margin:0 auto;

}

#body ul{

margin-left: 70px

}

#body ul li{

display: inline;

padding: 10px 15px;

cursor: pointer;

background: rgba(0,0,0,0.3);

transition: background 0.3s ease;

margin-left: 20px;

border-radius: 2px;

color: white;

}

#body ul li:hover{

background: rgba(0,0,255,0.2);

color: black;

}

</style>

<%

if (session.getAttribute("name") != null) {

if (session.getAttribute("name") == "failed") {

%>

<div class='container alert alert-danger'>Error, Try Again!....</div>

<%

}

}

%>

<div id="body">

<ul id="tabs">

<li id="signinclick">SignIn</li>

<li id="signupclick">SignUp</li>

</ul>

<form id="signinform" class="form-horizontal" action="LoginSignup" method="post">

<p class="heading">Login</p>

<div class="form-group">

<label for="signin\_username" class="control-label col-sm-3">Username</label>

<div class="col-sm-8">

<input type="text" name="signin\_username" id="signin\_username" placeholder="Enter Username" class="form-control" required>

</div>

</div>

<div class="form-group">

<label for="signin\_password" class="control-label col-sm-3">Password</label>

<div class="col-sm-8">

<input type="password" name="signin\_password" id="signin\_password" placeholder="Enter Password" class="form-control" required>

</div>

</div>

<div class="form-group">

<div class="col-sm-offset-8">

<input type="submit" name="submit\_button" class="btn btn-default" value="SignIn" />

</div>

</div>

</form>

<form id="signupform" class="form-horizontal" action="LoginSignup" method="post">

<p class="heading">Sign Up</p>

<div class="form-group">

<label for="signup\_fullname" class="control-label col-sm-3">Full Name</label>

<div class="col-sm-8">

<input type="text" name="signup\_fullname" id="signup\_fullname" placeholder="Enter Full Name" class="form-control" required>

</div>

</div>

<div class="form-group">

<label for="signup\_username" class="control-label col-sm-3">Username</label>

<div class="col-sm-8">

<input type="text" name="signup\_username" id="signup\_username" placeholder="Enter Username" class="form-control" required>

</div>

</div>

<div class="form-group">

<label for="signup\_email" class="control-label col-sm-3">Email</label>

<div class="col-sm-8">

<input type="email" name="signup\_email" id="signup\_email" placeholder="Enter Email" class="form-control" required>

</div>

</div>

<div class="form-group">

<label for="signup\_dob" class="control-label col-sm-3">Date of Birth</label>

<div class="col-sm-8">

<input type="date" name="signup\_dob" id="signup\_dob" class="form-control">

</div>

</div>

<div class="form-group">

<label for="signup\_Password" class="control-label col-sm-3">Password</label>

<div class="col-sm-8">

<input type="password" name="signup\_Password" id="signup\_Password" placeholder="Enter Password" class="form-control" required>

</div>

</div>

<div class="form-group">

<div class="col-sm-offset-8">

<input type="submit" name="submit\_button" class="btn btn-default" value="SignUp" />

</div>

</div>

</form>

</div>

Payroll\_body.jsp

<%@page import="java.util.Map"%>

<%@page import="java.util.HashMap"%>

<div class="panel col-sm-4 col-sm-offset-4 panel-default">

<div class="panel-heading panel-success">Payroll</div>

<div class="panel-body">

<%

if (session.getAttribute("name") == null) {

%>

To Check your Payroll Please <a class="btn btn-success" href="login.jsp">Signin</a>

<%

} else if (session.getAttribute("name") == "failed") {

%>

To Check your Payroll Please <a class="btn btn-success" href="login.jsp">Signin</a>

<%

} else {

HashMap<String, Double> hm;

if (session.getAttribute("payrollMap") != null) {

hm = (HashMap) session.getAttribute("payrollMap");

%>

<table class="table table-hover">

<tbody>

<tr>

<td>Basic Pay</td>

<td>Rs <%=hm.get("Basic Pay")%>/-</td>

</tr>

<tr>

<td>HRA</td>

<td>Rs <%=hm.get("HRA")%>/-</td>

</tr>

<tr>

<td>Tax</td>

<td>Rs <%=hm.get("Tax")%>/-</td>

</tr>

<tr>

<td>Gross Pay</td>

<td>Rs <%=hm.get("Gross Pay")%>/-</td>

</tr>

<tr>

<td>Net Salary</td>

<td>Rs <%=hm.get("Net Salary")%>/-</td>

</tr>

</tbody>

</table>

<%

}

}

%>

</div>

</div>

Admin\_modify\_body.jsp

<%@page import="java.sql.DriverManager"%>

<%@page import="java.sql.Statement"%>

<%@page import="java.sql.Connection"%>

<%

if (!session.getAttribute("name").toString().equals("William Scott")) {

RequestDispatcher rd = request.getRequestDispatcher("index.jsp");

rd.forward(request, response);

}

if (request.getAttribute("flag") != null) {

if (request.getAttribute("flag").toString() == "true") {

%>

<div class='container alert alert-success'>Successfully Updated / Inserted</div>

<%

} else {

%>

<div class='container alert alert-danger'>Error, Try Again!....</div>

<%

}

}

%>

<form class="form-horizontal" role="form" style="overflow: hidden;" action="Action" method="post">

<div class="form-group">

<label class="control-label col-sm-4" for="username">Username</label>

<div class="col-sm-5">

<input type="text" class="form-control" id="username" name="username" placeholder="Enter Username">

</div>

</div>

<div class="form-group">

<label class="control-label col-sm-4" for="bp">Basic Pay</label>

<div class="col-sm-5">

<input type="text" class="form-control" id="bp" name="bp" placeholder="Enter Basic Pay">

</div>

</div>

<div class="form-group">

<label class="control-label col-sm-4" for="hra">HRA</label>

<div class="col-sm-5">

<input type="text" class="form-control" id="hra" name="hra" placeholder="Enter HRA">

</div>

</div>

<div class="form-group">

<label class="control-label col-sm-4" for="tax">Tax</label>

<div class="col-sm-5">

<input type="text" class="form-control" id="tax" name="tax" placeholder="Enter Tax">

</div>

</div>

<div class="form-group">

<div class="col-sm-offset-8 col-sm-10">

<input type="submit" name="sbtn" class="btn btn-primary" value="Add / Update Details for Employee" />

</div>

</div>

</form>

<div style="margin-bottom: 30px;"></div>

Logout.jsp

<%

session.invalidate();

response.sendRedirect("index.jsp");

%>

Action

import a.PayrollBeanLocal;

import java.io.IOException;

import javax.ejb.EJB;

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;

public class Action extends HttpServlet {

@EJB

private PayrollBeanLocal payrollBean;

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

response.setContentType("text/html;charset=UTF-8");

try {

HttpSession session = request.getSession();

if (request.getParameter("payroll") != null) {

session.setAttribute("payrollMap", payrollBean.getPayroll((String) session.getAttribute("username")));

RequestDispatcher rd = request.getRequestDispatcher("payroll.jsp");

rd.forward(request, response);

}

if (request.getParameter("bp") != null) {

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

double bp = Double.parseDouble(request.getParameter("bp"));

double hra = Double.parseDouble(request.getParameter("hra"));

double tax = Double.parseDouble(request.getParameter("tax"));

boolean flag = payrollBean.setPayDetails(username, bp, hra, tax);

request.setAttribute("flag", flag);

RequestDispatcher rd = request.getRequestDispatcher("admin\_modify.jsp");

rd.forward(request, response);

}

} catch (ServletException | IOException e) {

}

}

@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);

}

}

LoginSignup

import a.PayrollBeanLocal;

import java.io.IOException;

import javax.ejb.EJB;

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;

public class LoginSignup extends HttpServlet {

@EJB

private PayrollBeanLocal payrollBean;

@Override

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

try {

response.setContentType("text/html;charset=UTF-8");

HttpSession session = request.getSession();

String sbutton = request.getParameter("submit\_button");

switch (sbutton) {

case "SignIn": {

String username = request.getParameter("signin\_username");

String password = request.getParameter("signin\_password");

String name = payrollBean.signin(username, password);

session.setAttribute("name", name);

session.setAttribute("username", username);

if (!"failed".equals(name)) {

RequestDispatcher rd = request.getRequestDispatcher("index.jsp");

rd.forward(request, response);

} else {

RequestDispatcher rd = request.getRequestDispatcher("login.jsp");

rd.forward(request, response);

}

break;

}

case "SignUp": {

String name = request.getParameter("signup\_fullname");

String username = request.getParameter("signup\_username");

String email = request.getParameter("signup\_email");

String dob = request.getParameter("signup\_dob");

String pwd = request.getParameter("signup\_Password");

String return\_value = payrollBean.signup(name, username, email, dob, pwd);

session.setAttribute("name", return\_value);

session.setAttribute("username", username);

if (!"failed".equals(return\_value)) {

RequestDispatcher rd = request.getRequestDispatcher("index.jsp");

rd.forward(request, response);

} else {

RequestDispatcher rd = request.getRequestDispatcher("login.jsp");

rd.include(request, response);

}

break;

}

default:

session.setAttribute("name", "failed");

RequestDispatcher rd = request.getRequestDispatcher("login.jsp");

rd.forward(request, response);

break;

}

} catch (IOException | ServletException ex) {

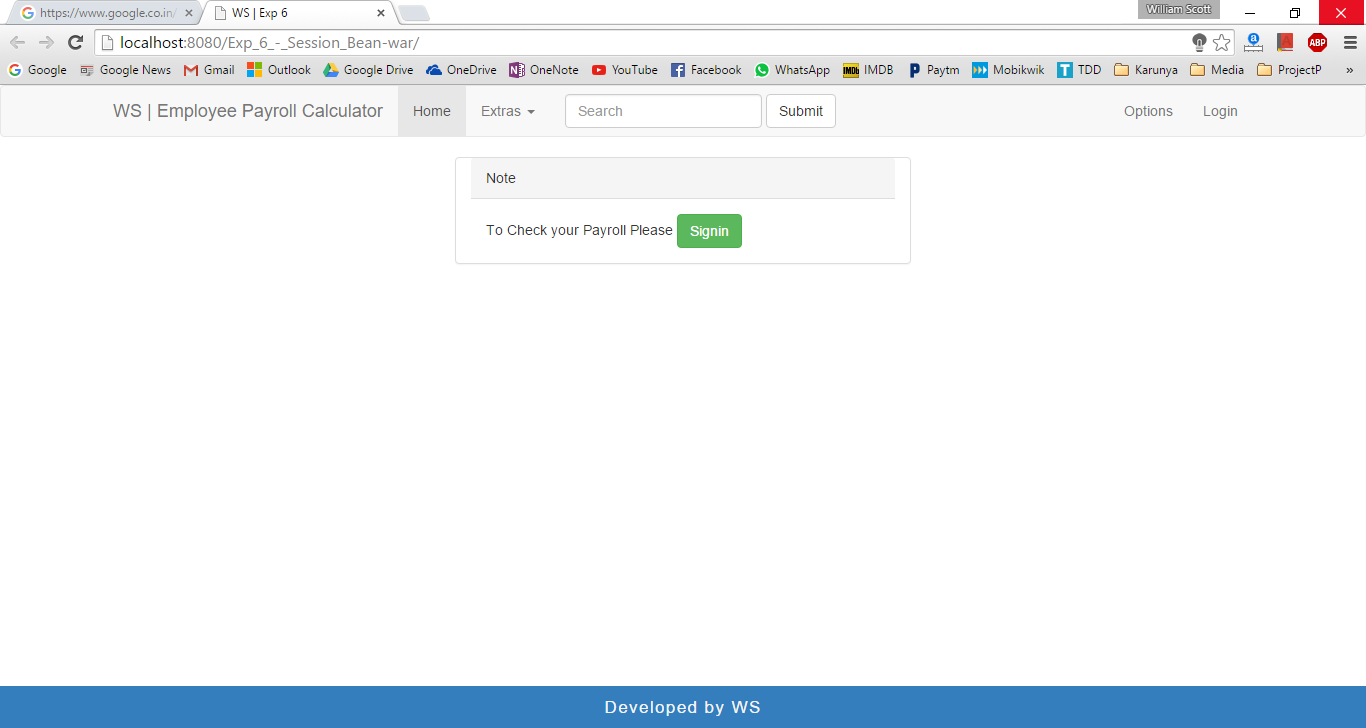
System.out.println(ex);

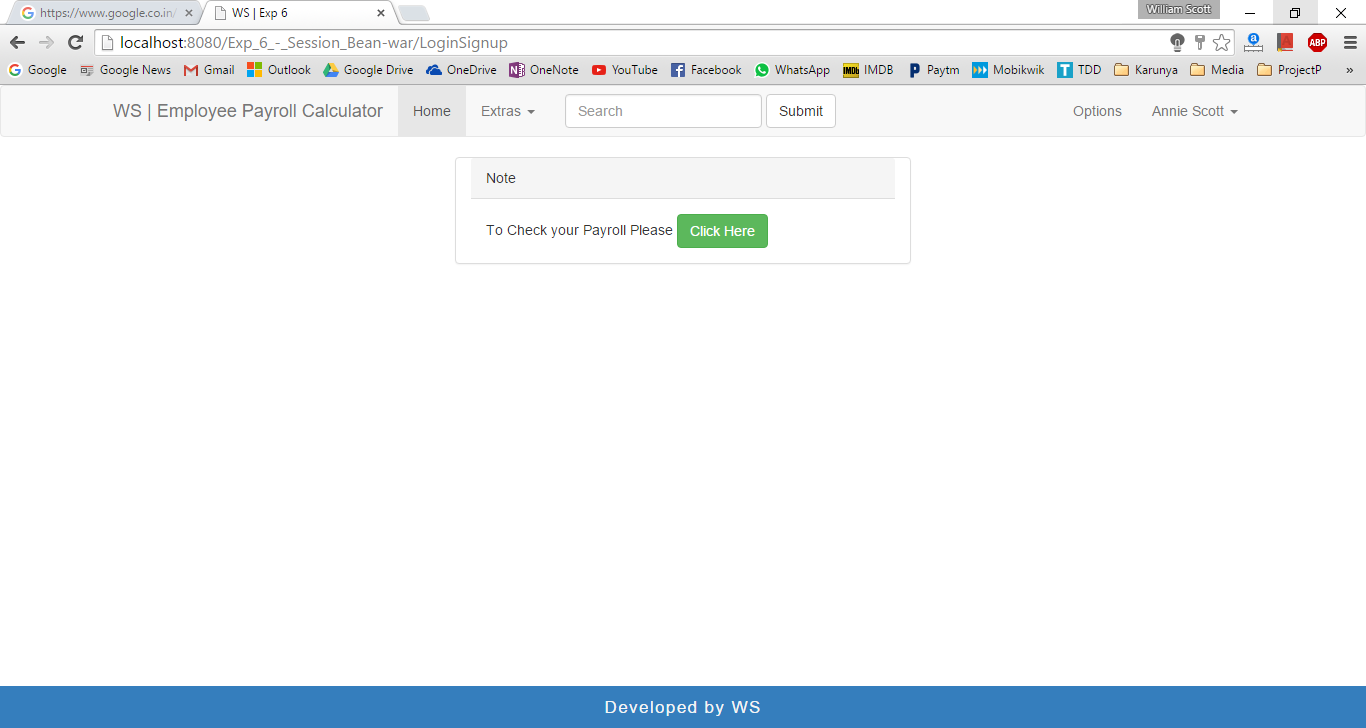
}

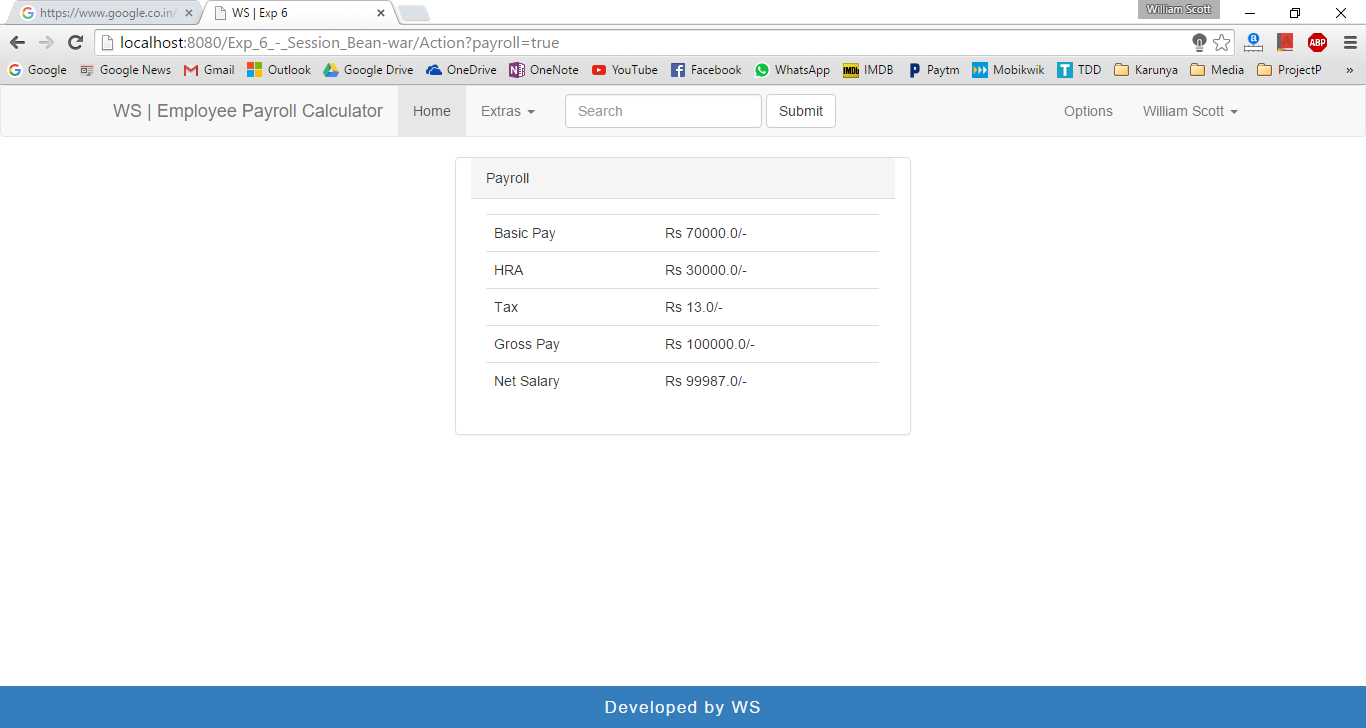
}

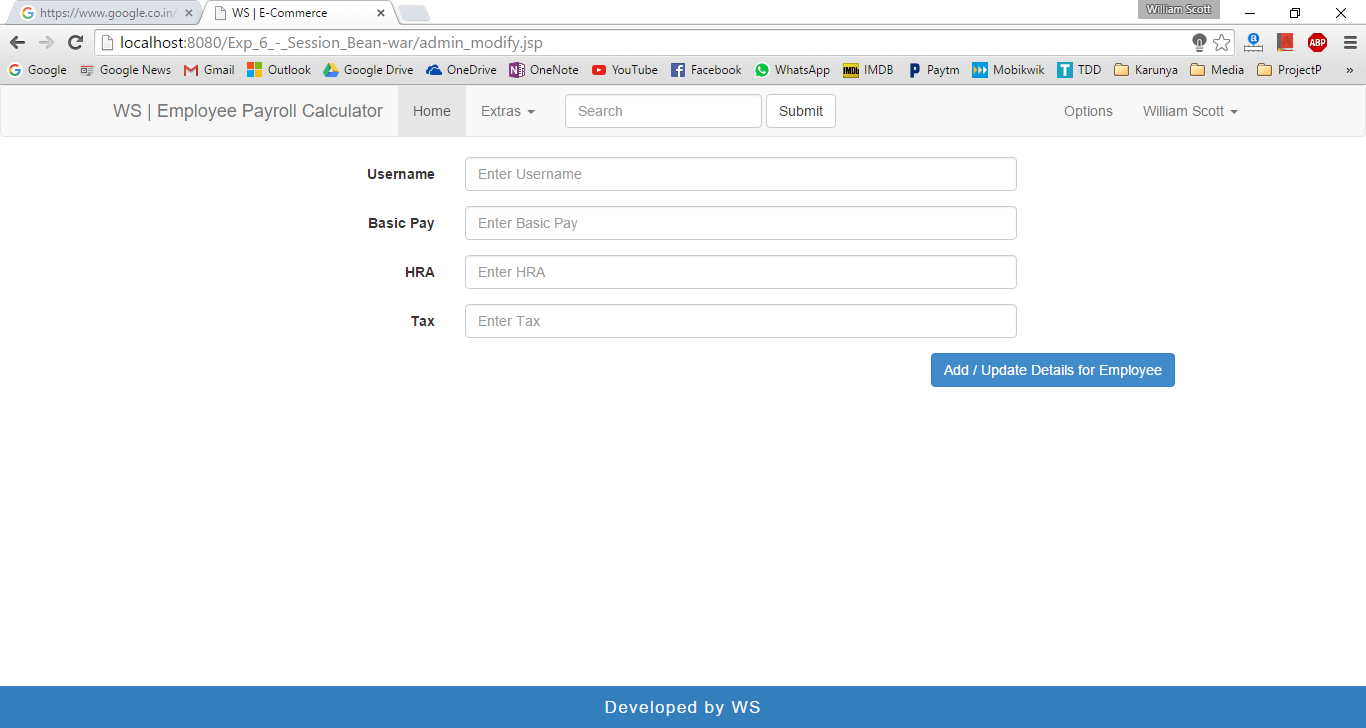
}

**Output**









**Result**

Thus, the enterprise using session beans for employee payroll system was successfully developed and deployed

[Signature of the Staff In-charge]

[Name of the Staff In – charge]