**Dharmsinh Desai University, Nadiad**

**Department of Information Technology**

**Advanced Java Technology, IT619**

**B.Tech. IT, Sem: VI**

**Experiment – 11**

**Submitted By**

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**Aim:**  Create and use a session bean to calculate the income-tax on annual income. The bean takes salary (annual income), and total investment as arguments to business method and returns calculated income-tax as result. The business rules for calculating income-tax are as follows. No income-tax on first 100,000 Rs. of salary. 10% tax on next 100,000 Rs. of remaining salary, 20% on next 100,000 Rs. of remaining salary, 30% on next 100,000 Rs. of remaining salary, and 100% on remaining salary. The investment of maximum Rs.100,000 is considered as non-chargeable income.

**Steps:**

· **For EJB Module:**

1. Create New Project > Java EE > EJB Module.

2. Create Remote Interface CalculateIncomeTaxRemote.java

3. Create Home Interface CalculateIncomeTaxHome.java

4. Create Bean Class IncomeTaxCalculatorBean.java

5. Create ejb-jar.xml and glassfish-ejb-jar.xml under Configuration Files.

6. Now, clean and build project and deploy on Glassfish Server.

· **For Client:**

1. Create New Project > Java Web > Web Application.

2. Add EJB Module Project’s jar file in library.

3. Create web.xml and glassfish-web.xml under WEB-INF.

4. Create Servlet IncomeTaxCalculatorServlet.java which uses Remote object.

5. Create JSP file incometaxCalculator.jsp which take input from client.

6. Now, run the JSP file.

**Code:**

1. **ejb-jar.xml**

<?xml version="1.0" encoding="UTF-8"?>

<ejb-jar xmlns="http://xmlns.jcp.org/xml/ns/javaee"

version="3.2"

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/ejb-jar\_3\_2.xsd">

<enterprise-beans>

<session>

<display-name>IncomeTaxCalcualtor</display-name>

<ejb-name>IncomeTaxCalculatorBean</ejb-name>

<home>exp11.CalculateIncomeTaxHome</home>

<remote>exp11.CalculateIncomeTaxRemote</remote>

<ejb-class>exp11.IncomeTaxCalculatorBean</ejb-class>

<session-type>Stateless</session-type>

<transaction-type>Container</transaction-type>

</session>

</enterprise-beans>

<assembly-descriptor>

<container-transaction>

<method>

<ejb-name>IncomeTaxCalculatorBean</ejb-name>

<method-name>\*</method-name>

</method>

<trans-attribute>Required</trans-attribute>

</container-transaction>

</assembly-descriptor>

</ejb-jar>

1. **glassfish-ejb-jar.xml**

<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE glassfish-ejb-jar PUBLIC "-//GlassFish.org//DTD GlassFish Application Server 3.1 EJB 3.1//EN" "http://glassfish.org/dtds/glassfish-ejb-jar\_3\_1-1.dtd">

<glassfish-ejb-jar>

<enterprise-beans>

<ejb>

<ejb-name>IncomeTaxCalculatorBean</ejb-name>

<jndi-name>ejb/IncomeTaxCalculatorBean</jndi-name>

</ejb>

</enterprise-beans>

</glassfish-ejb-jar>

1. **CalculateIncomeTaxHome.java**

package exp11;

import java.rmi.RemoteException;

import javax.ejb.CreateException;

import javax.ejb.EJBHome;

public interface CalculateIncomeTaxHome extends EJBHome{

public CalculateIncomeTaxRemote create() throws RemoteException, CreateException;

}

1. **CalculateIncomeTaxRemote.java**

package exp11;

import java.rmi.RemoteException;

import javax.ejb.EJBObject;

public interface CalculateIncomeTaxRemote extends EJBObject{

public double calculateIncomeTax(long annualSalary, long investment) throws RemoteException;

}

1. **IncomeTaxCalculatorBean.java**

package exp11;

import java.rmi.RemoteException;

import javax.ejb.EJBException;

import javax.ejb.SessionBean;

import javax.ejb.SessionContext;

public class IncomeTaxCalculatorBean implements SessionBean{

private SessionContext sessionContext;

@Override

public void setSessionContext(SessionContext ctx) throws EJBException, RemoteException {

System.out.println("exp11.IncomeTaxCalculatorBean.setSessionContext()");

this.sessionContext = ctx;

}

public void ejbCreate() throws EJBException, RemoteException {

System.out.println("exp11.IncomeTaxCalculatorBean.ejbCreate()");

}

@Override

public void ejbRemove() throws EJBException, RemoteException {

System.out.println("exp11.IncomeTaxCalculatorBean.ejbRemove()");

}

@Override

public void ejbActivate() throws EJBException, RemoteException {

System.out.println("exp11.IncomeTaxCalculatorBean.ejbActivate()");

}

@Override

public void ejbPassivate() throws EJBException, RemoteException {

System.out.println("exp11.IncomeTaxCalculatorBean.ejbPassivate()");

}

public double calculateIncomeTax(long annualSalary, long investment) {

double incometax;

if(annualSalary <= 100000)

incometax=0.0;

else if(annualSalary <= 200000)

incometax = 0.1\*(annualSalary-100000);

else if(annualSalary <= 300000)

incometax = 0.1\*100000 + 0.2\*(annualSalary-200000);

else if(annualSalary <= 400000)

incometax = 0.1\*100000 + 0.2\*100000 + 0.3\*(annualSalary-300000);

else

incometax = 0.1\*100000 + 0.2\*100000 + 0.3\*100000 + (annualSalary - 400000);

if(investment <= 100000)

incometax += 0.0;

else if(investment <= 200000)

incometax += (0.1\*(investment-100000));

else if(investment <= 300000)

incometax += (0.1\*100000 + 0.2\*(investment-200000));

else if(investment <= 400000)

incometax += (0.1\*100000 + 0.2\*100000 + 0.3\*(investment-300000));

else

incometax += (0.1\*100000 + 0.2\*100000 + 0.3\*100000 + (investment - 400000));

return incometax;

}

}

1. **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>Income\_Tax\_Calculator\_Servlet</servlet-name>

<servlet-class>exp11.IncomeTaxCalculatorServlet</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>Income\_Tax\_Calculator\_Servlet</servlet-name>

<url-pattern>/exp11/incometaxcalculator</url-pattern>

</servlet-mapping>

<ejb-ref>

<ejb-ref-name>IncomeTaxCalculatorBean</ejb-ref-name>

<ejb-ref-type>Session</ejb-ref-type>

<home>exp11.CalculateIncomeTaxHome</home>

<remote>exp11.CalculateIncomeTaxRemote</remote>

</ejb-ref>

<session-config>

<session-timeout>

30

</session-timeout>

</session-config>

</web-app>

1. **glassfish-web.xml**

<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE glassfish-web-app PUBLIC "-//GlassFish.org//DTD GlassFish Application Server 3.1 Servlet 3.0//EN" "http://glassfish.org/dtds/glassfish-web-app\_3\_0-1.dtd">

<glassfish-web-app error-url="">

<class-loader delegate="true"/>

<jsp-config>

<property name="keepgenerated" value="true">

<description>Keep a copy of the generated servlet class' java code.</description>

</property>

</jsp-config>

<ejb-ref>

<ejb-ref-name>IncomeTaxCalculatorBean</ejb-ref-name>

<jndi-name>ejb/IncomeTaxCalculatorBean</jndi-name>

</ejb-ref>

</glassfish-web-app>

1. **incometaxCalculator.jsp**

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

<!DOCTYPE html>

<html>

<head>

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

<title>Income Tax Calculator</title>

</head>

<body style="background-color: #dcdcdc4f">

<h2>Enter Following Details for your Income Tax Calculations</h2>

<form action="incometaxcalculator" method="POST">

<table cellspacing="1" cellpadding="5">

<tr>

<td>Your Annual Salary</td>

<td><input type="number" name="annualsalary"/></td>

</tr>

<tr>

<td>Your Total Investment</td>

<td><input type="number" name="investment"/></td>

</tr>

<tr>

<td><input type="submit" value="Calculate Incometax"/></td>

</tr>

</table>

</form>

<%

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

String incometax = (String)request.getAttribute("tax").toString();

%>

<font color="green">Total Income Tax You have to pay : <%=incometax %></font>

<% } %>

</body>

</html>

1. **IncomeTaxCalculatorServlet.java**

package exp11;

import java.io.IOException;

import java.io.PrintWriter;

import java.rmi.RemoteException;

import javax.ejb.CreateException;

import javax.naming.Context;

import javax.naming.InitialContext;

import javax.naming.NamingException;

import javax.servlet.ServletException;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

public class IncomeTaxCalculatorServlet extends HttpServlet {

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

CalculateIncomeTaxRemote rObj = lookupIncomeTaxCalculatorBean();

long annualSalary = Long.parseLong(request.getParameter("annualsalary"));

long investment = Long.parseLong(request.getParameter("investment"));

double incometax = rObj.calculateIncomeTax(annualSalary, investment);

request.setAttribute("tax", incometax);

request.getRequestDispatcher("/exp11/incometaxCalculator.jsp")

.forward(request, response);

}

@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 "Servlet uses the IncomeTaxCalculatorBean as sessionBean ";

}

private CalculateIncomeTaxRemote lookupIncomeTaxCalculatorBean() {

try {

Context c = new InitialContext();

Object remote = c.lookup("java:comp/env/IncomeTaxCalculatorBean");

CalculateIncomeTaxHome rv = (CalculateIncomeTaxHome) javax.rmi.PortableRemoteObject.narrow(remote, exp11.CalculateIncomeTaxHome.class);

return rv.create();

} catch (NamingException ne) {

java.util.logging.Logger.getLogger(getClass().getName())

.log(java.util.logging.Level.SEVERE, "exception caught", ne);

throw new RuntimeException(ne);

} catch (CreateException ce) {

java.util.logging.Logger.getLogger(getClass().getName())

.log(java.util.logging.Level.SEVERE, "exception caught", ce);

throw new RuntimeException(ce);

} catch (RemoteException re) {

java.util.logging.Logger.getLogger(getClass().getName())

.log(java.util.logging.Level.SEVERE, "exception caught", re);

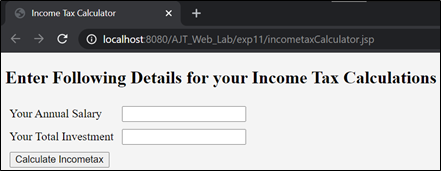
throw new RuntimeException(re);

}

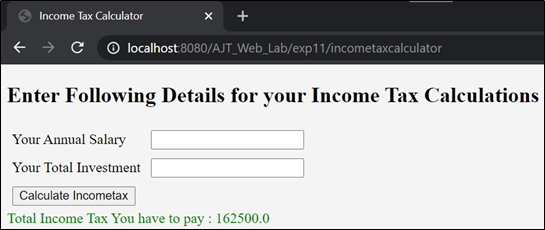
}

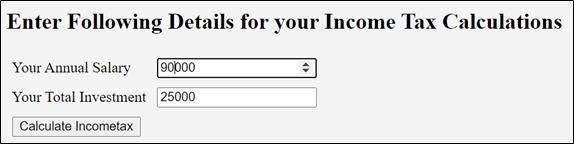
}

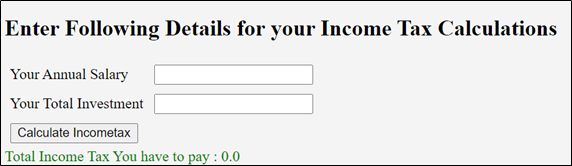
**Input/Output:**

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