**­­­­­­­**

**Java Frameworks (Spring)**

**Spring MVC**

**Exercises and Solutions**

**Program 1: How to print Hello MVC Framework?**

**Dynamic Web Project Name: HelloWeb**

**HelloController.java**

**(One Controller and one method):**

package com.ofss;

import org.springframework.stereotype.Controller;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RequestMethod;

import org.springframework.ui.ModelMap;

@Controller

@RequestMapping("/hello")

public class HelloController{

@RequestMapping(method = RequestMethod.GET)

public String printHello(ModelMap model) {

model.addAttribute("message", "Hello Spring MVC Framework!");

return "hello";

}

}

**web.xml:**

<web-app id=*"WebApp\_ID"* version=*"2.4"*

xmlns=*"http://java.sun.com/xml/ns/j2ee"*

xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"*

xsi:schemaLocation=*"http://java.sun.com/xml/ns/j2ee*

*http://java.sun.com/xml/ns/j2ee/web-app\_2\_4.xsd"*>

<display-name>Spring MVC Application</display-name>

<servlet>

<servlet-name>HelloWeb</servlet-name>

<servlet-class>

org.springframework.web.servlet.DispatcherServlet

</servlet-class>

<load-on-startup>1</load-on-startup>

</servlet>

<servlet-mapping>

<servlet-name>HelloWeb</servlet-name>

<url-pattern>/</url-pattern>

</servlet-mapping>

</web-app>

**HelloWeb-servlet.xml:**

<beans xmlns=*"http://www.springframework.org/schema/beans"*

xmlns:context=*"http://www.springframework.org/schema/context"*

xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"*

xsi:schemaLocation=*"*

*http://www.springframework.org/schema/beans*

*http://www.springframework.org/schema/beans/spring-beans-3.0.xsd*

*http://www.springframework.org/schema/context*

*http://www.springframework.org/schema/context/spring-context-3.0.xsd"*>

<context:component-scan base-package=*"com.ofss"* />

<bean class=*"org.springframework.web.servlet.view.InternalResourceViewResolver"*>

<property name=*"prefix"* value=*"/WEB-INF/jsp/"* />

<property name=*"suffix"* value=*".jsp"* />

</bean>

</beans>

hello.jsp: (under WEB-INF/jsp)

<%@ page contentType=*"text/html; charset=UTF-8"* %>

<html>

<head>

<title>Hello World</title>

</head>

<body>

<h2>${message}</h2>

</body>

</html>

Enter the following URL in the browser:

<http://localhost:8081/HelloWeb/hello>

**Program 2: Writing Spring MVC Program with Two controllers:**

Dynamic Web Project Name: HelloWeb

**HelloController.java:**

**As above**

**HelloController1.java:**

package com.ofss;

import org.springframework.stereotype.Controller;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RequestMethod;

import org.springframework.ui.ModelMap;

@Controller

@RequestMapping("/bolo")

public class HelloController1{

@RequestMapping(method = RequestMethod.GET)

public String printHello(ModelMap model) {

model.addAttribute("message", "2nd Controller!");

return "bolo";

}

}

**bolo.jsp: (under WEB-INF/jsp):**

<%@ page contentType=*"text/html; charset=UTF-8"* %>

<html>

<head>

<title>Bolo World</title>

</head>

<body>

<h2>${message}</h2>

</body>

</html>

web.xml, HelloWeb-servlet.xml are all same

**Program 3: How to use GET & POST methods: (Extra Reading)**

**Dynamic Web Project Name: HelloSpringWeb1**

**MyForm.html**

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<html>

<head>

<meta http-equiv=*"Content-Type"* content=*"text/html; charset=ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body>

Click

<form action=*"http://localhost:8081/HelloSpringWeb1/helloGuru.guru"* method=*"post"*>

<input type=*"submit"* value=*"Go"*>

</form>

</body>

</html>

**web.xml:**

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

<web-app id=*"WebApp\_ID"* version=*"2.4"* xmlns=*"http://java.sun.com/xml/ns/j2ee"* xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"* xsi:schemaLocation=*"http://java.sun.com/xml/ns/j2ee http://java.sun.com/xml/ns/j2ee/web-app\_2\_4.xsd"*>

<display-name>HelloSpringWeb1</display-name>

<servlet>

<servlet-name>HelloSpringWeb1</servlet-name>

<servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>HelloSpringWeb1</servlet-name>

<url-pattern>\*.guru</url-pattern>

</servlet-mapping>

</web-app>

**HelloSpringWeb1-servlet.xml:**

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

<beans xmlns=*"http://www.springframework.org/schema/beans"*

xmlns:context=*"http://www.springframework.org/schema/context"*

xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"*

xsi:schemaLocation=*"*

*http://www.springframework.org/schema/beans*

*http://www.springframework.org/schema/beans/spring-beans-3.0.xsd*

*http://www.springframework.org/schema/context*

*http://www.springframework.org/schema/context/spring-context-3.0.xsd"*>

<context:component-scan base-package=*"com.ofss"* />

<bean class=*"org.springframework.web.servlet.view.InternalResourceViewResolver"*>

<property name=*"prefix"* value=*"/WEB-INF/myjsp/"* />

<property name=*"suffix"* value=*".jsp"* />

</bean>

</beans>

**x.jsp (under WEB-INF/myjsp):**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<html>

<head>

<meta http-equiv=*"Content-Type"* content=*"text/html; charset=ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body>

<h1> This is X JSP</h1>

${mymessage1}</body></html>

**y.jsp (under WEB-INF/myjsp):**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<html>

<head>

<meta http-equiv=*"Content-Type"* content=*"text/html; charset=ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body>

<h1> This is y page </h1>

${mymessage2}

</body>

</html>

**HelloSpringWeb1Controller.java:**

package com.ofss;

import org.springframework.stereotype.Controller;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RequestMethod;

import org.springframework.ui.ModelMap;

@Controller

@RequestMapping("helloGuru.guru")

public class HelloSpringWeb1Controller{

@RequestMapping(method = RequestMethod.GET)

public String printHello(ModelMap model) {

model.addAttribute("mymessage1", "Hello Guru 1 get method!");

return "x";

}

@RequestMapping(method = RequestMethod.POST)

public String printHello1(ModelMap model) {

model.addAttribute("mymessage2", "Hello Guru 2 post method !");

return "y";

}

}

To invoke POST method, enter the following URL:

<http://localhost:8081/HelloSpringWeb1/MyForm.html>

To invoke GET method, enter the following URL:

<http://localhost:8081/HelloSpringWeb1/helloGuru.guru>

**Program 6: Spring MVC with JDBC: (Extra Reading)**

**(Dynamic Web Project name: SpringMVCJDBC**

**web.xml**

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

<web-app id=*"WebApp\_ID"* version=*"2.4"* xmlns=*"http://java.sun.com/xml/ns/j2ee"* xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"* xsi:schemaLocation=*"http://java.sun.com/xml/ns/j2ee http://java.sun.com/xml/ns/j2ee/web-app\_2\_4.xsd"*>

<display-name>SpringMVCJDBC</display-name>

<servlet>

<servlet-name>Guru</servlet-name>

<servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>Guru</servlet-name>

<url-pattern>/</url-pattern>

</servlet-mapping>

<welcome-file-list>

<welcome-file>index.html</welcome-file>

<welcome-file>index.htm</welcome-file>

<welcome-file>index.jsp</welcome-file>

<welcome-file>default.html</welcome-file>

<welcome-file>default.htm</welcome-file>

<welcome-file>default.jsp</welcome-file>

</welcome-file-list>

</web-app>

**Guru-servlet.xml:**

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

<beans xmlns=*"http://www.springframework.org/schema/beans"*

xmlns:context=*"http://www.springframework.org/schema/context"*

xmlns:xsi=*"http://www.w3.org/2001/XMLSchema-instance"*

xsi:schemaLocation=

*"http://www.springframework.org/schema/beans*

*http://www.springframework.org/schema/beans/spring-beans-3.0.xsd*

*http://www.springframework.org/schema/context*

*http://www.springframework.org/schema/context/spring-context-3.0.xsd"*>

<context:annotation-config />

<context:component-scan base-package=*"com.ofss"*></context:component-scan>

<bean class=*"org.springframework.web.servlet.view.InternalResourceViewResolver"*>

<property name=*"prefix"* value=*"/WEB-INF/myjsp/"*></property>

<property name=*"suffix"* value=*".jsp"*></property>

</bean>

<!-- declare beans -->

<bean id=*"edao"* class=*"com.ofss.EmployeeDAO"* />

<!-- declare datasource bean -->

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

<property name=*"driverClassName"* value=*"oracle.jdbc.driver.OracleDriver"* />

<property name=*"url"* value=*"jdbc:oracle:thin:@localhost:1521:xe"* />

<property name=*"username"* value=*"system"* />

<property name=*"password"* value=*"Peoples0"* />

</bean>

</beans>

**Success.jsp (under WEB-INF/jsp):**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<html>

<head>

<meta http-equiv=*"Content-Type"* content=*"text/html; charset=ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body>

<h1> Successfully Inserted </h1>

</body>

</html>

**EmployeeForm.jsp (under WEB-INF/jsp):**

<html>

<head> <title> Form Handling in Spring MVC </title> </head>

<body>

<h1> Enter your name here and click Go: </h1>

<form action=*"addEmployee"*>

Enter Employee ID: <input type=*"text"* name=*"employeeId"*><br>

Enter Employee Name: <input type=*"text"* name=*"employeeName"*><br>

Enter Department ID: <input type=*"text"* name=*"departmentId"*><br>

<input type=*"submit"* value=*"Go"*>

</form>

</body>

</html>

**ShowEmployee.jsp (under WEB-INF/jsp):**

<%@ page language=*"java"* contentType=*"text/html; charset=ISO-8859-1"*

pageEncoding=*"ISO-8859-1"*%>

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<%@page import=*"java.util.\*, com.ofss.\*"* %>

<html>

<head>

<meta http-equiv=*"Content-Type"* content=*"text/html; charset=ISO-8859-1"*>

<title>Insert title here</title>

</head>

<body>

<h1> Show Employee</h1>

<p> The employee Litc as follows: </p>

<%

ArrayLitc al=(ArrayLitc)request.getAttribute("employeeLitc");

**for** (Object e:al){

Employee ee=(Employee)e;

out.println(ee.getEmployeeId()+"...."+ee.getEmployeeName()+"..."+ee.getDepartmentId()+"<br>");

}

%>

<a href=*"/SpringMVCJDBC"*>Add Employee</a>

</body>

</html>

Employee.java (POJO):

**package** com.ofss;

**public** **class** Employee {

**int** employeeId;

String employeeName;

**int** departmentId;

**public** Employee()

{

}

**public** Employee(**int** eId, String eName, **int** dId )

{

employeeId=eId;

employeeName=eName;

departmentId=dId;

}

**public** **int** getEmployeeId() {

**return** employeeId;

}

**public** **void** setEmployeeId(**int** employeeId) {

**this**.employeeId = employeeId;

}

**public** String getEmployeeName() {

**return** employeeName;

}

**public** **void** setEmployeeName(String employeeName) {

**this**.employeeName = employeeName;

}

**public** **int** getDepartmentId() {

**return** departmentId;

}

**public** **void** setDepartmentId(**int** departmentId) {

**this**.departmentId = departmentId;

}

}

**EmployeeDAO.java**

package com.ofss;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.util.ArrayLitc;

import java.util.Litc;

import javax.sql.DataSource;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.jdbc.core.JdbcTemplate;

import org.springframework.jdbc.core.RowMapper;

public class EmployeeDAO {

@Autowired

DataSource dataSource;

JdbcTemplate jdbcTemplate;

public JdbcTemplate giveMeJdbcTemplate()

{

if (jdbcTemplate==null)

jdbcTemplate=new JdbcTemplate(dataSource);

return jdbcTemplate;

}

public int saveEmployee(Employee e){

jdbcTemplate=giveMeJdbcTemplate();

String query="insert into employee values(" +

"'"+e.getEmployeeId()+"','"+e.getEmployeeName()+"','"+e.getDepartmentId()+"')";

return jdbcTemplate.update(query);

}

public int updateEmployee(Employee e){

String query="update employee set" +

"name='"+e.getEmployeeName()+"' where id='"+e.getEmployeeId()+"' ";

return jdbcTemplate.update(query);

}

public int deleteEmployee(Employee e){

String query="delete from employee where id='"+e.getEmployeeId()+"' ";

return jdbcTemplate.update(query);

}

public Litc<Employee> getEmployeeLitc(){

jdbcTemplate=giveMeJdbcTemplate();

return jdbcTemplate.query("select \* from employee",new RowMapper(){

@Override

public Employee mapRow(ResultSet rs, int rownumber) throws SQLException {

Employee e=new Employee();

e.setEmployeeId(rs.getInt(1));

e.setEmployeeName(rs.getString(2));

e.setDepartmentId(rs.getInt(3));

return e;

}

});

}

}

**GuruController.java (Controller class):**

package com.ofss;

import java.util.Litc;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.stereotype.Controller;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RequestMethod;

import org.springframework.web.servlet.ModelAndView;

@Controller

public class GuruController {

@Autowired

EmployeeDAO employeeDAO;

@RequestMapping(value="/addEmployee", method=RequestMethod.GET)

public String insertData(Employee employee)

{

if (employee!=null){

employeeDAO.saveEmployee(employee);

}

return "Success";

//return "redirect:/getEmployeeLitc";

}

@RequestMapping(value="/",method=RequestMethod.GET)

public ModelAndView employee()

{

return new ModelAndView("EmployeeForm"," ",new Employee());

}

@RequestMapping("/getEmployeeLitc")

public ModelAndView getEmployeeLitc() {

Litc<Employee> employeeLitc = employeeDAO.getEmployeeLitc();

return new ModelAndView("ShowEmployee", "employeeLitc", employeeLitc);

}

}