

Java Full Stack Lab Manual - JDBC Experiment

Aim

To study and implement the Model-View-Controller (MVC) architecture using the Spring Framework by creating a simple web application.

Technologies Used

Java, Spring Framework (Spring MVC), JSP, Maven, Apache Tomcat, Eclipse/IntelliJ

Project Structure

```
SpringMVCDemo/  
|- src/main/java/  
|   |- com/example/controller/  
|       |- HelloController.java  
|- src/main/webapp/  
|   |- WEB-INF/  
|       |- views/  
|           |- hello.jsp  
|       |- web.xml  
|   |- index.jsp  
|- pom.xml  
|- spring-servlet.xml
```

pom.xml (Dependencies)

```
<dependencies>  
  <dependency>  
    <groupId>org.springframework</groupId>  
    <artifactId>spring-webmvc</artifactId>  
    <version>5.3.20</version>  
  </dependency>  
  <dependency>  
    <groupId>javax.servlet</groupId>  
    <artifactId>javax.servlet-api</artifactId>  
    <version>4.0.1</version>  
    <scope>provided</scope>  
  </dependency>  
</dependencies>
```

web.xml (Deployment Descriptor)

```
<web-app>  
  <servlet>  
    <servlet-name>spring</servlet-name>  
    <servlet-class>org.springframework.web.servlet.DispatcherServlet</servlet-class>
```

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```
<load-on-startup>1</load-on-startup>
</servlet>
<servlet-mapping>
  <servlet-name>spring</servlet-name>
  <url-pattern>/</url-pattern>
</servlet-mapping>
</web-app>
```

spring-servlet.xml

```
<beans xmlns="http://www.springframework.org/schema/beans"
  xmlns:mvc="http://www.springframework.org/schema/mvc"
  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.xsd
    http://www.springframework.org/schema/mvc
    http://www.springframework.org/schema/mvc/spring-mvc.xsd
    http://www.springframework.org/schema/context
    http://www.springframework.org/schema/context/spring-context.xsd">

  <context:component-scan base-package="com.example.controller"/>
  <mvc:annotation-driven/>

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

</beans>
```

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HelloController.java

```
package com.example.controller;

import org.springframework.stereotype.Controller;
import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.*;

@Controller
public class HelloController {

    @RequestMapping("/hello")
    public String sayHello(@RequestParam("name") String name, Model model) {
        model.addAttribute("message", "Hello, " + name + "!");
        return "hello";
    }
}
```

index.jsp

```
<html>
<head><title>Spring MVC Demo</title></head>
<body>
    <h2>Enter Your Name</h2>
    <form action="/hello">
        <input type="text" name="name"/>
        <input type="submit" value="Submit"/>
    </form>
</body>
</html>
```

hello.jsp

```
<html>
<head><title>Greeting</title></head>
<body>
    <h2>${message}</h2>
</body>
</html>
```

How to Run

1. Create the Maven project and structure it as shown.
2. Add required Spring and Servlet dependencies in pom.xml.
3. Deploy to Apache Tomcat.

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4. Open browser and go to: <http://localhost:8080/SpringMVCDemo/>
5. Enter a name and observe the result.

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Expected Output

```
Enter Your Name: Madhu
```

```
Output:
```

```
Hello, Madhu!
```

Result

Successfully implemented MVC using Spring Framework.