Web Development: Spring MVC (Action-based)

Created by *Lasse Jenssen*

Home

Agenda: Using Spring Web MVC

- Rewrite our Shopping List Application to use Spring Web MVC and Thymeleaf.

- Action Based Web Framework.

- Introduction to Spring Web MVC.

- Introduction to Thymeleaf.

Sources

- https://www.baeldung.com/spring-controllers#Overview.
- To be updated

Web Frameworks: Spring Web MVC (Action based)

Some background:

- The Spring Framework (previous lecture)

- Spring Boot (previous lecture)

- Spring Web MVC
  (https://docs.spring.io/spring-
  framework/docs/current/reference/html/web.html#mvc)

Web Frameworks: Spring Web MVC (Action based)

- A module of the Spring framework dealing with the Model-View-Controller or MVC pattern.

- Combines all the advantages of the MVC pattern with the convenience of Spring.

- Spring implements MVC with the front controller pattern using its **DispatcherServlet**.

Maven Dependencies

Web Frameworks: Spring Web MVC (Action based)

```
1  <dependency>
2      <groupid>org.springframework</groupid>
3      <artifactid>spring-web</artifactid>
4      <version>${org.springframework.version}</version>
5  </dependency>
6
7  <dependency>
8      <groupid>org.springframework</groupid>
9      <artifactid>spring-webmvc</artifactid>
10     <version>${org.springframework.version}</version>
11 </dependency>
```

Spring Boot: Maven Dependencies

Web Frameworks: Spring Web MVC (Action based)

```xml
1  <parent>
2      <groupid>org.springframework.boot</groupid>
3      <artifactid>spring-boot-starter-parent</artifactid>
4      <version>2.7.1</version>
5      <relativepath> <!-- lookup parent from repository -->
6  </relativepath></parent>
7  ...
8  <dependencies>
9      ...
10     <dependency>
11         <groupid>org.springframework.boot</groupid>
12         <artifactid>spring-boot-starter-web</artifactid>
13     </dependency>
14     ...
15 </dependencies>
```

Introduction to Thymeleaf

- More to come

Demo: demo-05-spring-web

- Smal demo applications keeping track of Inventory (Items).
- Based on Spring Boot.
- Run by: ***mvn install clean spring-boot:run***
- *Code: demo-05-spring-web.zip (see course overview)*

```xml
<!--?xml version="1.0" encoding="UTF-8"?-->
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/20
    <modelversion>4.0.0</modelversion>

    <parent>
        <groupid>org.springframework.boot</groupid>
        <artifactid>spring-boot-starter-parent</artifactid>
        <version>2.7.4</version>
        <relativepath> <!-- lookup parent from repository -->
    </relativepath></parent>

    <groupid>no.hvl.dat152</groupid>
    <artifactid>demo-05-spring-web</artifactid>
    <version>0.0.1-SNAPSHOT</version>
    <name>demo-05-spring-web</name>
    <description>Demo application with ShoppingList (Items example)</description>

    <properties>
        <java.version>11</java.version>
    </properties>
    ...
</project>
```

```xml
...
<dependencies>
    <dependency>
        <groupid>org.springframework.boot</groupid>
        <artifactid>spring-boot-starter-web</artifactid>
    </dependency>

    <dependency>
        <groupid>org.springframework.boot</groupid>
        <artifactid>spring-boot-starter-thymeleaf</artifactid>
    </dependency>

    <dependency>
        <groupid>org.springframework.boot</groupid>
        <artifactid>spring-boot-starter-test</artifactid>
        <scope>test</scope>
    </dependency>
</dependencies>
...
```

```
...
<build>
    <plugins>
        <plugin>
            <groupid>org.springframework.boot</groupid>
            <artifactid>spring-boot-maven-plugin</artifactid>
        </plugin>
    </plugins>
</build>
...
```

Project: demo-05-spring-web

```
|-- pom.xml
|-- src
    |-- main
    |   |-- java
    |   |   |-- no
    |   |   |   |-- hvl
    |   |   |       |-- dat152
    |   |   |           |-- Demo05SpringWebApplication.java
    |   |   |           |-- controller
    |   |   |           |   |-- ItemController.java
    |   |   |           |-- model
    |   |   |           |   |-- Item.java
    |   |   |           |-- repositories
    |   |   |               |-- ItemDAO.java
    |   |   |               |-- ItemDAOMemorySingleton.java
    |   |-- resources
    |   |   |-- application.properties
    |   |   |-- static
    |   |   |   |-- bootstrap.min.css
    |   |   |-- templates
    |   |   |   |-- createitem.html
    |   |   |   |-- fragments
    |   |   |   |   |-- general.html
    |   |   |   |-- index.html
    |   |   |   |-- shoppinglist.html
    |   |   |   |-- viewitem.html
    |-- test
```

Project: demo-05-spring-web

src/main/java/no/hvl/dat152/controller/ItemController.java

```java
@Controller
public class ItemController {

    @RequestMapping(value = "/", method = RequestMethod.GET)
    public String viewShoppingDefault() {
        return "index";
    }

    ...
}
```

Project: demo-05-spring-web

src/main/resources/templates/index.html
See project: demo-05-spring-web.zip

Summary: Web Development: Frameworks
Where are we now?

- Component Based

- FrontController Pattern: Centralized control and common logic.

- Command Pattern: Business logic in regular classes.

- FlowManager: Centralized controll of page flow.

Web Services: Spring Framework