**SECTION 1 - CONFIGURE STS FOR SPRING BOOT:**

1. **INSTALL** ‘**MAVEN’**:

First, install **HOMEBREW**. <https://brew.sh/>

brew install maven

mvn --version

2. **INSTALL ‘Eclipse Enterprise Java and Web Developer Tools’**

**STS** > **Help** > **Eclipse** **Marketplace**

Search for ‘Eclipse Enterprise Java and Web Developer Tools’

Click ‘**install’**

Restart after installation.

3. **INSTALL ‘EMMET’ SOFTWARE**

Help with highlighting and syntax of .jsp files

**STS** > **Help** > **Install New Software**

Work with: [*http://download.emmet.io/eclipse/updates/*](http://download.emmet.io/eclipse/updates/)

> Check the box for ‘**Emmet’**

*(NOTE: may need to click 'Add...', type in 'Emmet' under name, and click 'Add' for it to appear.)*

**STS** > **Settings**… (=Preferences?) > **Emmet** > add "**jsp**" to the list of associated files > **Apply and Close**

(may need to restart STS for changes to take effect)

**SECTION 2 - NEW SPRING BOOT PROJECT:**

***TO RUN PROJECT:*** *RIGHT CLICK ON PROJECT > Run As > Spring Boot App*

**IN** **STS**:

1 FILE > NEW > SPRING STARTER PROJECT

2 name: <yourprojectname>,

Type: Maven

Version: 17

Packaging: War

Group: com.<company>.<projectname>

Artifact: <yourprojectname>

Description: <short description about your project>

Package: <same as Group>

NEXT >

3 Spring Boot Version: *latest version*

Available (Dependencies): Spring Web, Spring Boot DevTools

FINISH

**RECONCILING** PROMPT? --> SELECT ‘**NO**’

**FOR EACH NEW PROJECT:**

**Right click** > **Properties** > **Project Facets**

Change ‘**Dynamic Web Module**’ to **5.0**

**Apply and Close**

**ADD CODE TO** ‘**src/main/resources/applications.properties’**:

spring.mvc.view.prefix=/WEB-INF/

**CREATE NEW FOLDERS:**

**src/main/webapp** (if it doesn’t already exist)

**src/main/webapp/WEB-INF**  *.jsp files go here*

**src/main/resources/static/css**

**src/main/resources/static/js**

**CREATE NEW CSS FILE:**

**File** > **New** > **Other** > search for ‘**CSS’** > select **‘CSS File’** > **Next**

enter file name, place file in **static/css** folder > **Finish**

**OR**

Right click on **‘/static/css’** > **New** > **CSS File** >

enter file name, place file in **static/css** folder > **Finish**

**CREATE NEW JS FILE:**

**File** > **New** > **Other** > search for ‘**JavaScript’** > select **‘JavaScript File’** >  **Next** >

enter file name, place file in **static/js** folder > **Finish**

**OR**

Right click on **‘/static/js** > **New** > **JavaScript File** >

enter file name, place file in **static/js** folder > **Finish**

**ADD DEPENDENCIES TO POM.XML:**

<!-- required to render .jsp's' -->

<dependency>

<groupId>org.apache.tomcat.embed</groupId>

<artifactId>tomcat-embed-jasper</artifactId>

</dependency>

<!-- required for JSTL tags -->

<dependency>

<groupId>jakarta.servlet.jsp.jstl</groupId>

<artifactId>jakarta.servlet.jsp.jstl-api</artifactId>

</dependency>

<dependency>

<groupId>org.glassfish.web</groupId>

<artifactId>jakarta.servlet.jsp.jstl</artifactId>

</dependency>

<!-- enables auto-detection of the version -->

<!-- means .jsp file links will be version-agnostic -->

<!-- in case versions here in pom.xml are updated -->

<dependency>

<groupId>org.webjars</groupId>

<artifactId>webjars-locator</artifactId>

<version>0.46</version>

</dependency>

<!-- BOOTSTRAP DEPENDENCIES -->

<dependency>

<groupId>org.webjars</groupId>

<artifactId>bootstrap</artifactId>

<version>5.2.3</version>

</dependency>

**CREATE CONTROLLER**

Right click on main package > **New** > **Package** > ‘mainpackagename.controller’ > **Finish**

Right click on new package > **New** > **Class** > ‘ClassNameController’ > **Finish**

**@CONTROLLER -** to respond with **html**

import org.springframework.stereotype.Controller;

*@Controller*

public class HomeController {

}

**@RESTCONTROLLER** - to respond with data (**text** or **JSON**)

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

*@RestController*

public class HomeController {

}

**ROUTING**:

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

*@Controller*

*@RequestMapping*("/hello") // add this

public class HomeController {

*@RequestMapping*("") // add this

public String index() {

return "index.jsp";

}

*@RequestMapping*("/dunningKrueger")

public String derp() {

return “redirect:/”

}

}

**REQUEST METHODS:**

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

**QUERY PARAMETERS:**

***localhost:8080/hello?q=xxx+xxx***

public String index(*@*RequestParam(value="q" , required = false) String searchQuery) {

return "You searched for: " + searchQuery;

**PATH VARIABLES:**

*@*RequestMapping("/m/{courseId}/{moduleId}")

public String showLesson(*@*PathVariable("courseId") String courseId, *@*PathVariable("moduleId") String moduleId){

return "Course: " + courseId + ", Module: " + moduleId;

}

**SESSION:**

**SETTING SESSION ATTRIBUTES**

import jakarta.servlet.http.HttpSession;

*@Controller*

public class MainController {

public String index(HttpSession session){

session.setAttribute("count", 0)

return "index.jsp"

}

}

}

**INCREMENTING SESSION ATTRIBUTES**

//If the count is not already in session

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

// Use setAttribute to initialize the count in session

}

else {

// increment the count by 1 using getAttribute and setAttribute

}

**READING SESSION IN THE .jsp FILE**

<**c:out** value=*"*${count}*"*/>

**CLEAR SESSION SESSION**

session.invalidate();

[**Http HYPERLINK "https://docs.oracle.com/javaee/7/api/javax/servlet/http/HttpSession.html"S HYPERLINK "https://docs.oracle.com/javaee/7/api/javax/servlet/http/HttpSession.html"ession interface**](https://docs.oracle.com/javaee/7/api/javax/servlet/http/HttpSession.html)

**SECTION 3 - NEW JSP FILE:**

**DISPLAY JSP FILE:**

**localhost:8080/xxxxx.jsp**

**FOR NEW JSP FILE:**

Right-click on ‘**WEB-INF**' folder > **New** > **JSP File**

**IMPORT INTO .jsp FILE:** (below line 1 boiler plate code)

<%@ **taglib** prefix = *"c"* uri = *"*[*http://java.sun.com/jsp/jstl/core*](http://java.sun.com/jsp/jstl/core)"%> <!-- for JSTTL tags -->

<!-- for Bootstrap CSS, place inside <head></head> -->

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

<**link** rel=*"stylesheet"* type=*"text/css"* href=*"/css/style.css"* >

<!-- For any Bootstrap that uses JS, place above closing </body> tag-->

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

<**script** type=*"text/javascript"* src=*"/js/script.js"*></**script**>

(Don’t forget dependencies from Section 2!)

**INSERTING JAVA CODE INTO JSP:**

**JSP template syntax =** <% %>

**USING JSP TEMPLATE SYNTAX:**

**add to line 1 boiler plate:**

import=*"java.util.Date"*%>

**add to body:**

<% for (int i = 0; i < 5; i++) { %>

<**h1**><%= i %></**h1**>

<% } %>

<**h3**>The time is: <%= new Date() %></**h3**>

**DATE FORMAT**

<%@ **page** import=*"java.util.Date"* %>

<%@ **page** import=*"java.text.SimpleDateFormat"* %>

<% Date currentDate = new Date();

SimpleDateFormat formatter = new SimpleDateFormat("h:mm a");

String formattedDate = formatter.format(currentDate);

%>

<**a** href=*"/date"*>

<%= formattedDate %>

</**a**>

[SimpleDateFo HYPERLINK "https://docs.oracle.com/javase/7/docs/api/java/text/SimpleDateFormat.html"r HYPERLINK "https://docs.oracle.com/javase/7/docs/api/java/text/SimpleDateFormat.html"mat](https://docs.oracle.com/javase/7/docs/api/java/text/SimpleDateFormat.html)

**JSTL TAGS** – ‘JSP Standard Tag Library’

**A Guide to the JSTL Library:** [**https://www.baeldung.com/jstl**](https://www.baeldung.com/jstl)

**<c:out/>**

**In the controller:**

import org.springframework.ui.Model; < - - - ADD THIS

*@RequestMapping*("/")

public String demo3(Model model) { < - - - ADD THIS

model.addAttribute("fruit","banana"); < - - - ADD THIS

return "demo3.jsp";

**In the .JSP FILE:**

<**h2**><**c:out** value=*"*${2+2}*"*/></**h2**>

<**h2**><**c:out** value=*"*${fruit}*"*/></**h2**>

**<c:forEach></forEach>**

<**c:forEach** var=*"oneDojo"* items=*"*${dojosFromMyController}*"*>

<**p**><**c:out** value=*"*${oneDojo}*"*></**c:out**></**p**>

</**c:forEach**>

**Suppress Error Warning (Windows):**

Click **'Window'** -> **'Preferences'** -> **'Web'** -> **'JSP** **Files'** -> **'Validation'** -> **'Custom** **actions'** and change the **'Other problems with TagExtraInfo class:**' to **'Ignore'**

**Apply** your changes and close the **'Preferences'** window.

**Suppress Error Warning (Mac):**

Click **'SpringToolSuite4'** -> **'Settings…’** -> **'Web'** -> **'JSP** **Files'** -> **'Validation'** -> **'Custom** **actions'** and change the **'Other problems with TagExtraInfo class:**' to **'Ignore'**

**Apply** your changes and close the **'Preferences'** window.

**<c:if></c:if>**

<**c:if** test = *"*${number==secretNumber}*"*>

<**p**><**c:out** value=*"You got it!"*/></**p**>

</**c:if**>

<**c:if** test = *"*${number!=secretNumber}*"*>

<**p**><**c:out** value=*"Try again."*/></**p**>

</**c:if**>

<**c:if** test = *"*${number<secretNumber}*"*>

<**p**><**c:out** value=*"Your number is too low."*/></**p**>

</**c:if**>

<**c:if** test = *"*${number>secretNumber}*"*>

<**p**><**c:out** value=*"Your number is too high."*/></**p**>

</**c:if**>

<**c:if** test = *"*${number==secretNumber}*"*>

<**p**><**c:out** value=*"You got it!"*/></**p**>

</**c:if**>

**<c:choose></c:choose>**

<**c:choose**>

<**c:when** test=*"*${number<secretNumber}*"*>

<**p**><**c:out** value=*"Your number is too low."*/></**p**>

</**c:when**>

<**c:when** test=*"*${number>secretNumber}*"*>

<**p**><**c:out** value=*"Your number is too high."*/></**p**>

</**c:when**>

<**c:otherwise**>

<**p**><**c:out** value=*"You got it!"*/></**p**>

</**c:otherwise**>

</**c:choose**>

**<c:set/>**

<**c:set** var=*"textColor"* value=*"*${fruit.name.toLowerCase().startsWith('g') ? 'orange' : 'black'}*"*/>

<**tr** style=*"color:*${textColor}*"*>

**FORM SUBMISSION**

<**form** action=*'/login'* method=*'POST'*>

<**label**>Email:</**label**>

<**input** type=*"text"* name=*'email'*>

<**label**>Password:</**label**>

<**input** type=*'text'* name=*'password'*>

<**input** type=*'submit'* value=*'login'*>

</**form**>

*@RequestMapping*("/login")

public String login(

*@RequestParam*(value="email") String email,

*@RequestParam*(value="password") String password,

HttpSession session) {

session.setAttribute("email", email);

return "redirect:/results";

}

Never render on a **POST** request, always **redirect**

*@RequestMapping*("/results")

public String login() {

return "results.jsp";

<**h1**>Hello, <**c:out** value=*"*${email}*"*/></**h1**>

**FLASH MESSAGES**

*@RequestMapping*("/createError")

public String flashMessages(RedirectAttributes redirectAttributes) {

redirectAttributes.addFlashAttribute("error", "A test error!");

return "redirect:/";

}

<**p**><**c:out** value=*"*${error}*"*/></**p**>

**XXXXX**