Capstone Resources: Hello Security Code-Along

Overview

In this code-along, we are going to build a simple three page Spring MVC application and configure Spring Security to limit access to certain pages based on if the user is logged in and what role or roles the user has in the system.

In this first step, we will create the entire application without Spring Security so that all users can access all parts of the application. In subsequent steps, we will apply Spring Security to restrict access to parts of the application. This is the recommended approach to developing web applications that require Spring Security - build the application first with security in mind, but only apply Spring Security after the application has been built and you know that the functionality is working correctly.

This is not a tutorial on how to build Spring MVC web applications - we assume you already know how to do that. We provide code for the application without explanation except for the portions of the code along that deal directly with Spring Security.

Initial Project Creation

First, create a new Spring MVC web application called *HelloSecurity*, using the Software Guild Spring MVC Maven Archetype. Once created, delete the following files (we're going to start the application from scratch):

- index.jsp
- hello.jsp
- HelloController.java

POM Updates

Spring Security requires additional libraries. Add the following dependencies to your POM file (do not update the Spring Security version - version 4.x introduced breaking changes that are incompatible with our implementation!):

```xml
<dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-core</artifactId>
    <version>3.2.10.RELEASE</version>
</dependency>
<dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-web</artifactId>
    <version>3.2.10.RELEASE</version>
</dependency>
<dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-config</artifactId>
    <version>3.2.10.RELEASE</version>
</dependency>
<dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-taglibs</artifactId>
    <version>3.2.10.RELEASE</version>
    <type>jar</type>
    <scope>compile</scope>
</dependency>
```

Controllers

Our application has four controllers - one for each page in the application and one to handle the login form for Spring Security. Create the following classes in the controllers package.

AdminController.java

```java
package com.sg.hellosecurity.controller;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;

@Controller
public class AdminController {

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

}
```

ContentController.java

```java
package com.sg.hellosecurity.controller;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;

@Controller
public class ContentController {

    @RequestMapping(value="/content", method=RequestMethod.GET)
    public String displayContentPage() {
        return "content";
    }
}
```

HomeController.java

```java
package com.sg.hellosecurity.controller;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;

@Controller
public class HomeController {

    @RequestMapping(value={"/", "/home"}, method=RequestMethod.GET)
    public String displayHomePage() {

        return "home";
    }

}
```

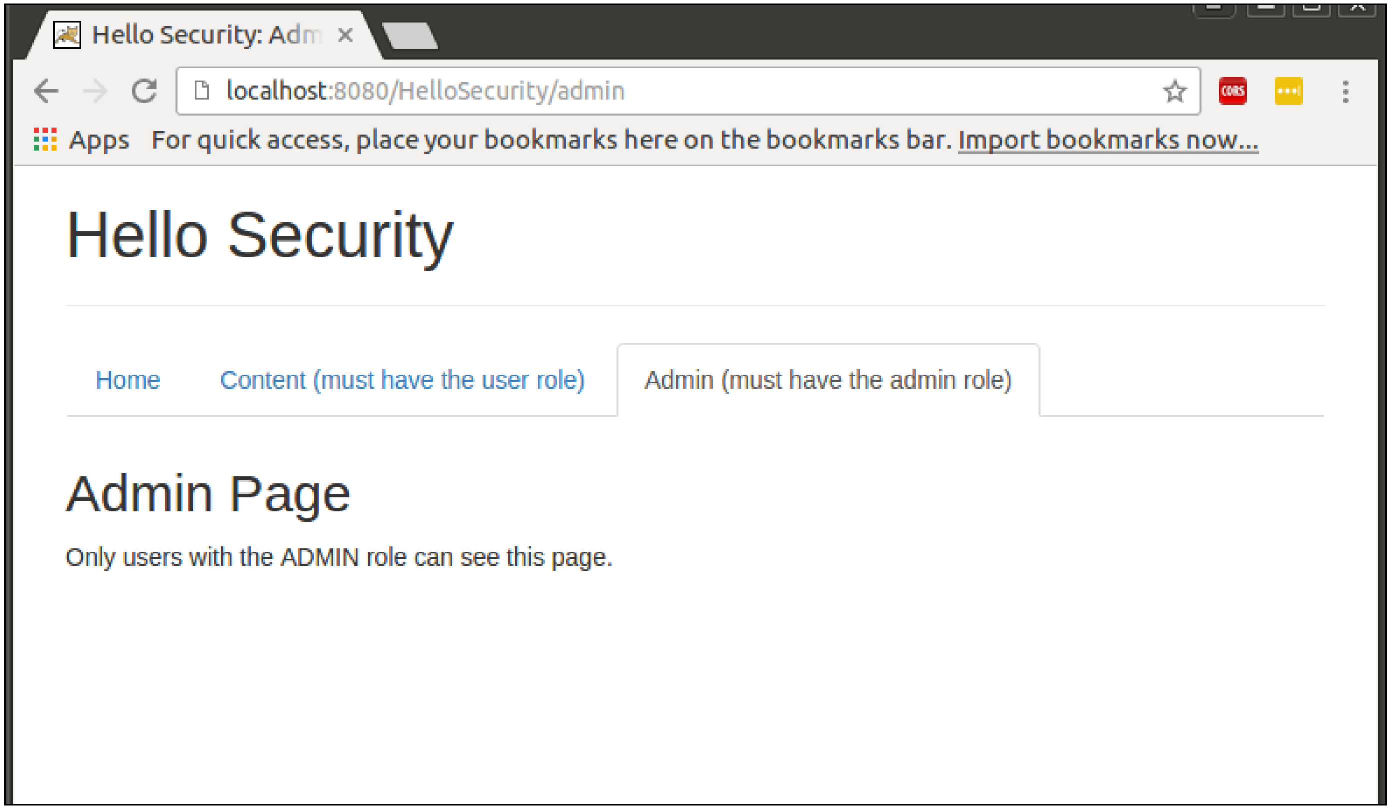
LoginController.java

```java
package com.sg.hellosecurity.controller;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;

@Controller
public class LoginController {

    @RequestMapping(value = "/login", method = RequestMethod.GET)
    public String showLoginForm() {
        return "login";
    }
}
```

Views

The pages of our application are simple. There is a nav bar at the top that has links to the three pages (Home, Content, and Admin) and a main content area containing a simple message on each page. As depicted here:

Hello Security - Admin Page



Hello Security: Adm ×
localhost:8080/HelloSecurity/admin
Apps
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

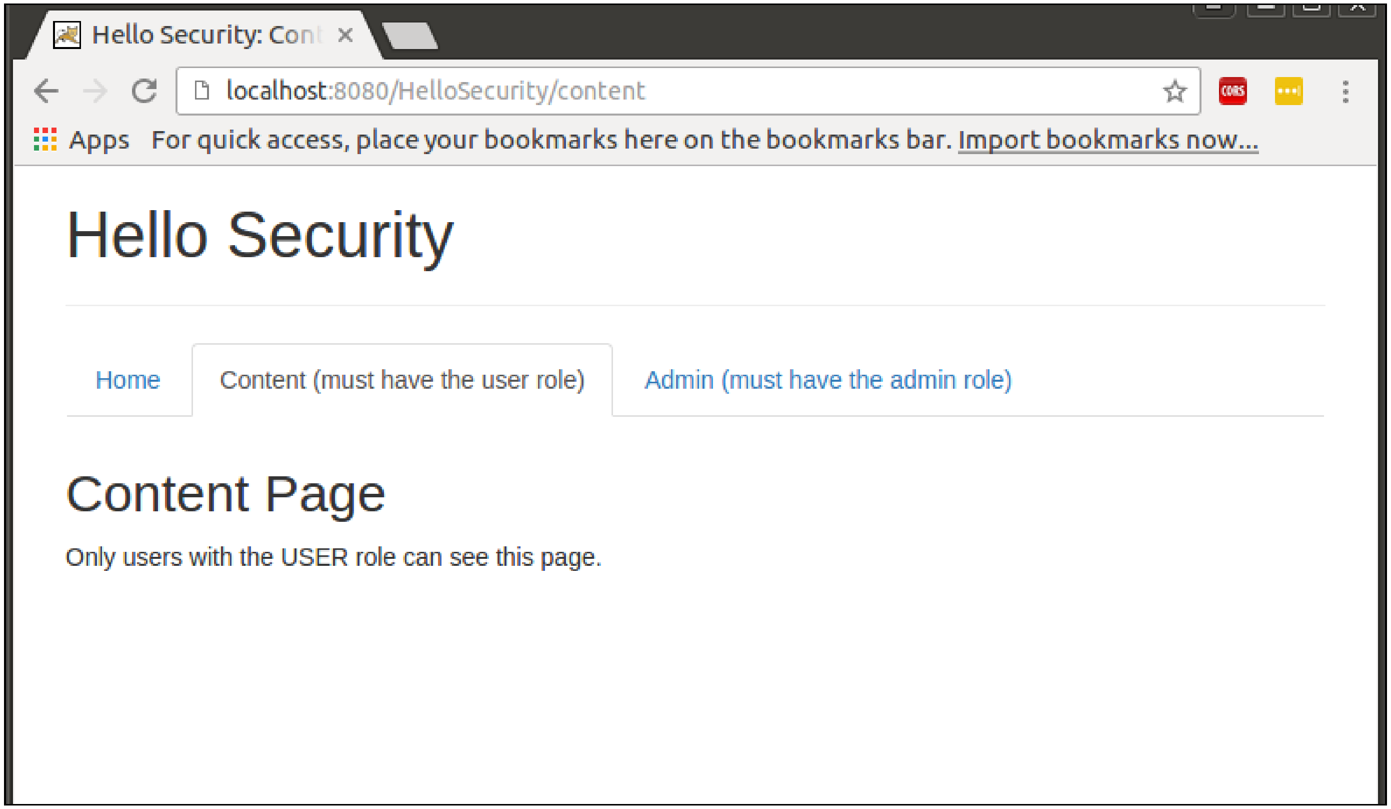
Hello Security

Home | Content (must have the user role) | Admin (must have the admin role)

Admin Page

Only users with the ADMIN role can see this page.

Hello Security - Content Page


Hello Security: Cont ×
localhost:8080/HelloSecurity/content
Apps
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

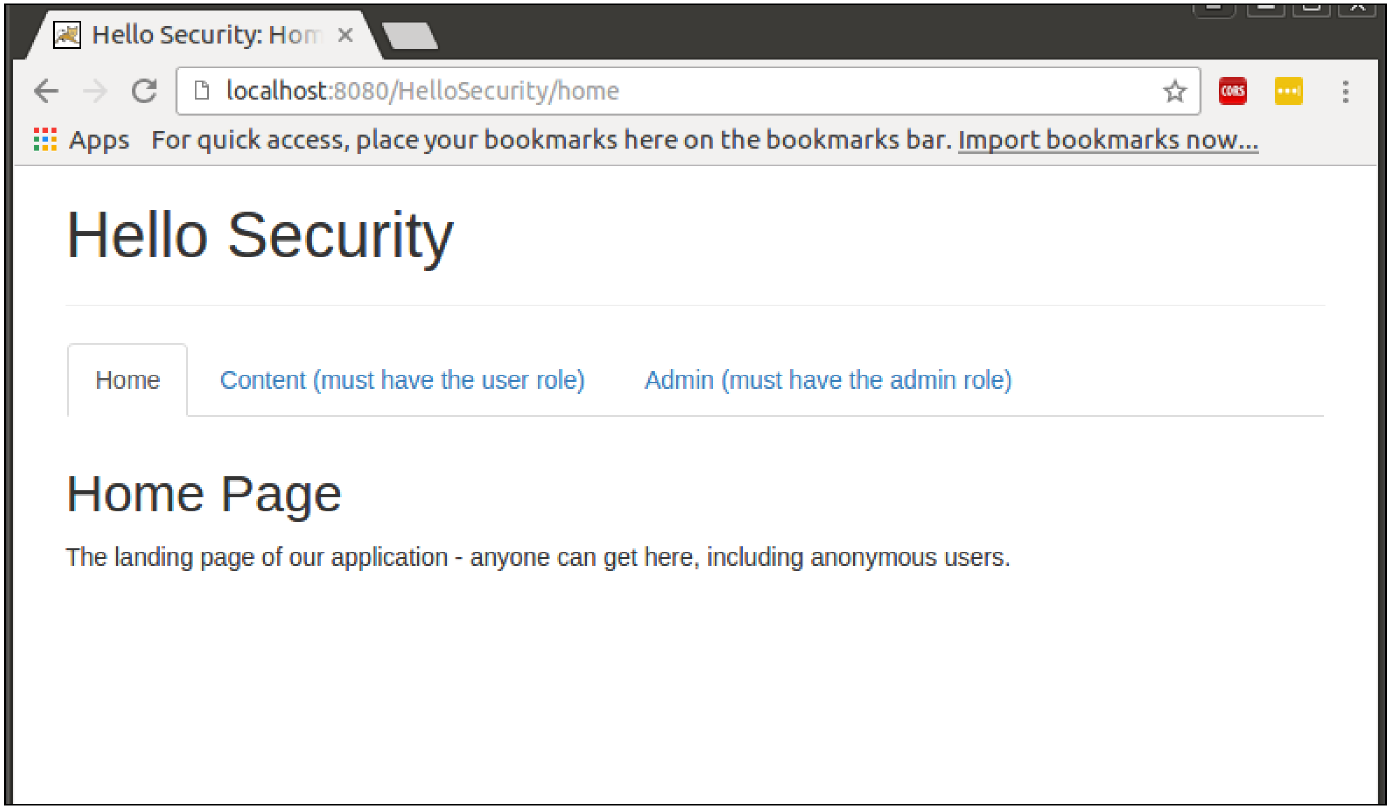
Hello Security

Home
Content (must have the user role)
Admin (must have the admin role)

Content Page

Only users with the USER role can see this page.

Hello Security - Home Page


Hello Security: Hom
localhost:8080/HelloSecurity/home
Apps
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

Hello Security

Home | Content (must have the user role) | Admin (must have the admin role)

Home Page

The landing page of our application - anyone can get here, including anonymous users.

Now create the view components that correspond to our controllers:

admin.jsp

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ taglib prefix="s" uri="http://www.springframework.org/tags"%>
<%@ taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <title>Hello Security: Admin</title>
        <!-- Bootstrap core CSS -->
        <link href="${pageContext.request.contextPath}/css/bootstrap.min.css" rel="stylesheet">
    </head>
    <body>
        <div class="container">
            <h1>Hello Security</h1>
            <hr/>
            <div class="navbar">
                <ul class="nav nav-tabs">
                    <li role="presentation">
                      <a href="${pageContext.request.contextPath}/home">
                        Home
                      </a>
                    </li>
                    <li role="presentation">
                      <a href="${pageContext.request.contextPath}/content">
                        Content (must have the user role)
                      </a>
                    </li>
                    <li role="presentation" class="active">
                      <a href="${pageContext.request.contextPath}/admin">
                        Admin (must have the admin role)
                      </a>
                    </li>
                </ul>
            </div>
            <h2>Admin Page</h2>

            <p>
                Only users with the ADMIN role can see this page.
            </p>
        </div>
        <!-- Placed at the end of the document so the pages load faster -->
        <script src="${pageContext.request.contextPath}/js/jquery-3.1.1.min.js"></script>
        <script src="${pageContext.request.contextPath}/js/bootstrap.min.js"></script>

    </body>
</html>
```

content.jsp

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ taglib prefix="s" uri="http://www.springframework.org/tags"%>
<%@ taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <title>Hello Security: Content</title>
        <!-- Bootstrap core CSS -->
        <link href="${pageContext.request.contextPath}/css/bootstrap.min.css" rel="stylesheet">
    </head>
    <body>
        <div class="container">
            <h1>Hello Security</h1>
            <hr/>
            <div class="navbar">
                <ul class="nav nav-tabs">
                    <li role="presentation">
                      <a href="${pageContext.request.contextPath}/home">
                        Home
                      </a>
                    </li>
                    <li role="presentation" class="active">
                      <a href="${pageContext.request.contextPath}/content">
                        Content (must have the user role)
                      </a>
                    </li>
                    <li role="presentation">
                      <a href="${pageContext.request.contextPath}/admin">
                        Admin (must have the admin role)
                      </a>
                    </li>
                </ul>
            </div>
            <h2>Content Page</h2>

            <p>
                Only users with the USER role can see this page.
            </p>


        </div>
        <!-- Placed at the end of the document so the pages load faster -->
        <script src="${pageContext.request.contextPath}/js/jquery-3.1.1.min.js"></script>
        <script src="${pageContext.request.contextPath}/js/bootstrap.min.js"></script>

    </body>
</html>
```

home.jsp

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ taglib prefix="s" uri="http://www.springframework.org/tags"%>
<%@ taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <title>Hello Security: Home</title>
        <!-- Bootstrap core CSS -->
        <link href="${pageContext.request.contextPath}/css/bootstrap.min.css" rel="stylesheet">
    </head>
    <body>
        <div class="container">
            <h1>Hello Security</h1>
            <hr/>
            <div class="navbar">
                <ul class="nav nav-tabs">
                    <li role="presentation" class="active">
                      <a href="${pageContext.request.contextPath}/home">
                        Home
                      </a>
                    </li>
                    <li role="presentation">
                      <a href="${pageContext.request.contextPath}/content">
                        Content (must have the user role)
                      </a>
                    </li>
                    <li role="presentation">
                      <a href="${pageContext.request.contextPath}/admin">
                        Admin (must have the admin role)
                      </a>
                    </li>
                </ul>
            </div>
            <h2>Home Page</h2>

            <p>
                The landing page of our application - anyone can get here, including anonymous users.
            </p>
        </div>
        <!-- Placed at the end of the document so the pages load faster -->
        <script src="${pageContext.request.contextPath}/js/jquery-3.1.1.min.js"></script>
        <script src="${pageContext.request.contextPath}/js/bootstrap.min.js"></script>

    </body>
</html>
```

login.jsp

We'll discuss the login.jsp in detail later on. For now, just create the file as shown here:

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@ taglib prefix="s" uri="http://www.springframework.org/tags"%>
<%@ taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <title>Hello Security: Login</title>
        <!-- Bootstrap core CSS -->
        <link href="${pageContext.request.contextPath}/css/bootstrap.min.css" rel="stylesheet">
    </head>
    <body>
        <div class="container">
            <h1>Hello Security</h1>
            <hr/>
            <h2>Login Page</h2>

            <c:if test="${param.login_error == 1}">
                <h3>Wrong id or password!</h3>
            </c:if>
            <form class="form-horizontal"
                  role="form"
                  method="post"
                   action="j_spring_security_check">
                <div class="form-group">
                    <label for="j_username" class="col-md-4 control-label">Username:</label>
                    <div class="col-md-8">
                        <input type="text"
                               class="form-control"
                               name="j_username"
                               placeholder="Username"/>
                    </div>
                </div>
                <div class="form-group">
                    <label for="j_password" class="col-md-4 control-label">Password:</label>
                    <div class="col-md-8">
                        <input type="text"
                               class="form-control"
                               name="j_password"
                               placeholder="Password"/>
                    </div>
                </div>
                <div class="form-group">
                    <div class="col-md-offset-4 col-md-8">
                        <input type="submit"
                               class="btn btn-default"
                               id="search-button"
                               value="Sign In"/>
                    </div>
                </div>
            </form>
        </div>
        <!-- Placed at the end of the document so the pages load faster -->
        <script src="${pageContext.request.contextPath}/js/jquery-3.1.1.min.js"></script>
        <script src="${pageContext.request.contextPath}/js/bootstrap.min.js"></script>

    </body>
</html>
```

Summary

At this point, you have a simple three-page application. In the next steps, we will make the configuration changes necessary to add Spring Security to our application.

Video: Hello Security - Project Setup

Time: 5:04

Transcript: Hello Security Project Setup