Spring Boot + Spring Security + Thymeleaf example

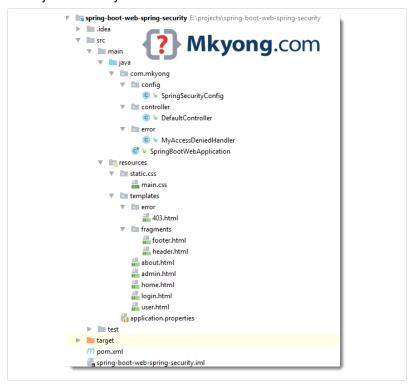
By mkyong (http://www.mkyong.com/author/mkyong/) | May 4, 2017 | Viewed : 88,370 times

A Spring Boot Thymeleaf example, uses Spring Security to protect path /admin and /user

Technologies used:

- 1. Spring Boot 1.5.3.RELEASE
- 2. Spring 4.3.8.RELEASE
- 3. Spring Security 4.2.2
- 4. Thymeleaf 2.1.5.RELEASE
- 5. Thymeleaf extras Spring Security4 2.1.3
- 6. Tomcat Embed 8.5.14
- 7. Maven 3
- 8. Java 8

1. Project Directory





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2. Project Dependencies

Declares spring-boot-starter-security, it will get anything you need to develop a Spring Boot + Spring Security web application.

```
pom.xml
<?xml version="1.0" encoding="UTF-8"?>
project xmlns="http://maven.apache.org/POM/4.0.0"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
   http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <artifactId>spring-boot-web-spring-security</artifactId>
    <packaging>jar</packaging>
    <name>Spring Boot Web Spring Security</name>
    <description>Spring Boot Web Spring Security Example</description>
    <url>https://www.mkyong.com</url>
    <version>1.0</version>
    <parent>
       <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-parent</artifactId>
       <version>1.5.3.RELEASE
    </parent>
    cproperties>
       <java.version>1.8</java.version>
    </properties>
    <dependencies>
        <!-- Spring Security -->
        <dependency>
           <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-security</artifactId>
        </dependency>
       <!-- do you like thymeleaf? -->
        <dependency>
            <groupId>org.springframework.boot</groupId>
           <artifactId>spring-boot-starter-thymeleaf</artifactId>
        </dependency>
       <!-- optional, it brings userful tags to display spring security stuff -->
        <dependency>
           <groupId>org.thymeleaf.extras/groupId>
            <artifactId>thymeleaf-extras-springsecurity4</artifactId>
        </dependency>
       <!-- hot swapping, disable cache for template, enable live reload -->
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-devtools</artifactId>
           <optional>true</optional>
       </dependency>
        <!-- Optional, for bootstrap -->
        <dependency>
           <groupId>org.webjars
            <artifactId>bootstrap</artifactId>
           <version>3.3.7
        </dependency>
    </dependencies>
    <build>
        <plugins>
            <!-- Package as an executable jar/war -->
            <plugin>
                <groupId>org.springframework.boot</groupId>
                <artifactId>spring-boot-maven-plugin</artifactId>
           </plugin>
        </plugins>
    </build>
</project>
```

Display project dependencies :

```
$ mvn dependency:tree
[INFO] Scanning for projects...
[INFO]
[INFO]
[INFO] Building Spring Boot Web Spring Security 1.0 \,
[INFO] ---
[INFO]
[INFO] --- maven-dependency-plugin:2.10:tree (default-cli) @ spring-boot-web-spring-secu
[INFO] \ org.springframework.boot:spring-boot-web-spring-security:jar:1.0
[INFO] +- org.springframework.boot:spring-boot-starter-thymeleaf:jar:1.5.3.RELEASE:compi
[INFO] | +- org.springframework.boot:spring-boot-starter:jar:1.5.3.RELEASE:compile
[INFO] | +- org.springframework.boot:spring-boot-starter-logging:jar:1.5.3.RELEASE:c
[INFO] |
            +- ch.gos.logback:logback-classic:jar:1.1.11:compile
[INFO] |
         | | \- ch.gos.logback:logback-core:jar:1.1.11:compile
[INFO] I
            | +- org.slf4j:jcl-over-slf4j:jar:1.7.25:compile
[INF0]
           | +- org.slf4j:jul-to-slf4j:jar:1.7.25:compile
[INFO] |
            | \- org.slf4j:log4j-over-slf4j:jar:1.7.25:compile
[INFO]
            +- org.springframework:spring-core:jar:4.3.8.RELEASE:compile
[INFO] |
            \- org.yaml:snakeyaml:jar:1.17:runtime
[INFO]
          +- org.springframework.boot:spring-boot-starter-web:jar:1.5.3.RELEASE:compile
[INFO] |
            +- org.springframework.boot:spring-boot-starter-tomcat:jar:1.5.3.RELEASE:co
[INFO]
            | +- org.apache.tomcat.embed:tomcat-embed-core:jar:8.5.14:compile
            | +- org.apache.tomcat.embed:tomcat-embed-el:jar:8.5.14:compile
[INFO] |
[INFO] |
            | \- org.apache.tomcat.embed:tomcat-embed-websocket:jar:8.5.14:compile
[INFO] |
            +- org.hibernate:hibernate-validator:jar:5.3.5.Final:compile
[INFO]
            +- javax.validation:validation-api:jar:1.1.0.Final:compile
[INFO]
           | +- org.jboss.logging:jboss-logging:jar:3.3.1.Final:compile
[INFO]
            | \- com.fasterxml:classmate:iar:1.3.3:compile
            +- com.fasterxml.jackson.core:jackson-databind:jar:2.8.8:compile
[INFO]
[INFO] |
            +- com.fasterxml.jackson.core:jackson-annotations:jar:2.8.0:compile
[INFO]
           | \- com.fasterxml.jackson.core:jackson-core:jar:2.8.8:compile
[INFO]
            +- org.springframework:spring-web:jar:4.3.8.RELEASE:compile
[INFO]
            \- org.springframework:spring-webmvc:jar:4.3.8.RELEASE:compile
[INFO] |
            org.thymeleaf:thymeleaf-spring4:jar:2.1.5.RELEASE:compile
[INFO]
            \- org.thymeleaf:thymeleaf:jar:2.1.5.RELEASE:compile
[INFO] |
               +- ognl:ognl:jar:3.0.8:compile
[INFO]
               +- org.javassist:javassist:jar:3.21.0-GA:compile
[INF0]
               \- org.unbescape:unbescape:jar:1.1.0.RELEASE:compile
[INFO] |
         \- nz.net.ultraq.thymeleaf:thymeleaf-layout-dialect:jar:1.4.0:compile
[INFO] |
            \- org.codehaus.groovv:groovv:jar:2.4.10:compile
[INFO] +- org.springframework.boot:spring-boot-starter-security:jar:1.5.3.RELEASE:compil
[INFO] | +- org.springframework:spring-aop:jar:4.3.8.RELEASE:compile
[INFO] |
         | \- org.springframework:spring-beans:jar:4.3.8.RELEASE:compile
          +- org.springframework.security:spring-security-config:jar:4.2.2.RELEASE:compi
[INF0]
[INFO] |
          | +- org.springframework.security:spring-security-core:jar:4.2.2.RELEASE:comp
[INF0]
           \- org.springframework:spring-context:jar:4.3.8.RELEASE:compile
[INF0] |
         \- org.springframework.security:spring-security-web:jar:4.2.2.RELEASE:compile
[INFO] |
            \- org.springframework:spring-expression:jar:4.3.8.RELEASE:compile
[INFO] +- org.thymeleaf.extras:thymeleaf-extras-springsecurity4:jar:2.1.3.RELEASE:compil
[INFO] | \- org.slf4j:slf4j-api:jar:1.7.25:compile
[INFO] +- org.springframework.boot:spring-boot-devtools:jar:1.5.3.RELEASE:compile
[INFO] | +- org.springframework.boot:spring-boot:jar:1.5.3.RELEASE:compile
[INFO] | \- org.springframework.boot:spring-boot-autoconfigure:jar:1.5.3.RELEASE:compil
[INFO] \- org.webjars:bootstrap:jar:3.3.7:compile
[INF0]
        \- org.webjars:jquery:jar:1.11.1:compile
[INFO] ----
[INFO] BUILD SUCCESS
[INFO] ------
[INFO] Total time: 2.072 s
[INFO] Finished at: 2017-05-04T10:13:05+08:00
[INFO] Final Memory: 19M/309M
```

3. Spring Security

3.1 Extends WebSecurityConfigurerAdapter, and defined the security rules in the configure method.

For user "admin" :

- 1. Able to access /admin page
- 2. Unable to access /user page, redirect to 403 access denied page.

For user "user":

- 1. able to access /user page
- 2. unable to access /admin page, redirect to 403 access denied page.

```
SpringSecurityConfig.java
 package com.mkyong.config;
 import org.springframework.beans.factory.annotation.Autowired;
 import org.springframework.context.annotation.Configuration;
 import\ org. spring framework. security. config. annotation. authentication. builders. Authentication authent
 import\ org. spring framework. security. config. annotation. web. builders. Http Security; and the security of the security 
 import\ org. spring framework. security. config. annotation. we b. configuration. We b Security Configuration and the security of the securi
 import\ org.spring framework.security.web.access. Access Denied Handler;
 public class SpringSecurityConfig extends WebSecurityConfigurerAdapter {
                   private AccessDeniedHandler accessDeniedHandler;
                    // roles admin allow to access /admin/**
                    // roles user allow to access /user/**
                    // custom 403 access denied handler
                    @Override
                    protected void configure(HttpSecurity http) throws Exception {
                                         http.csrf().disable()
                                                                                 .authorizeRequests()
                                                                                                       .antMatchers("/", "/home", "/about").permitAll()
                                                                                                       .antMatchers("/admin/**").hasAnyRole("ADMIN")
                                                                                                       .antMatchers("/user/**").hasAnyRole("USER")
                                                                                                       .anyRequest().authenticated()
                                                                                    .and()
                                                                                    .formLogin()
                                                                                                     .loginPage("/login")
                                                                                                       .permitAll()
                                                                                                       .and()
                                                                                    .logout()
                                                                                                       .permitAll()
                                                                                    . \verb| exceptionHandling().accessDeniedHandler(accessDeniedHandler);\\
                     // create two users, admin and user
                    public void configureGlobal(AuthenticationManagerBuilder auth) throws Exception {
                                         auth.inMemoryAuthentication()
                                                                                    . \verb|withUser("user").password("password").roles("USER")|\\
                                                                                    .withUser("admin").password("password").roles("ADMIN");
                    }
}
```

3.2 Custom 403 Access denied handler, logs the request and redirect to /403

```
WelcomeController.java
```

```
package com.mkyong.error;
import org.slf4j.Logger;
import\ org.slf4j.LoggerFactory;
import org.springframework.security.access.AccessDeniedException;
import\ org.spring framework.security.core. Authentication;\\
import\ org.spring framework.security.core.context.Security Context Holder;
import\ org.spring framework.security.web.access. Access Denied Handler;
import\ org.springframework.stereotype.Component;\\
import javax.servlet.ServletException;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import java.io.IOException;
// handle 403 page
@Component
public\ class\ MyAccessDeniedHandler\ implements\ AccessDeniedHandler\ \{
    private static Logger logger = LoggerFactory.getLogger(MyAccessDeniedHandler.class);
    @Override
    \verb"public void handle(HttpServletRequest httpServletRequest",
                      HttpServletResponse httpServletResponse,
                      AccessDeniedException e) throws IOException, ServletException {
       Authentication auth
               = SecurityContextHolder.getContext().getAuthentication();
       if (auth != null) {
           + httpServletRequest.getRequestURI());
       httpServletResponse.sendRedirect(httpServletRequest.getContextPath() + "/403");
```

4. Spring Boot

4.1 A controller class, to define the http request and view name.

```
DefaultController.java
```

```
package com.mkyong.controller;
import org.springframework.stereotype.Controller;
import\ org.spring framework.web.bind.annotation. Get Mapping;
@Controller
public class DefaultController {
    @GetMapping("/")
   public String home1() {
       return "/home";
    @GetMapping("/home")
   public String home() {
       return "/home";
    @GetMapping("/admin")
   public String admin() {
       return "/admin";
    @GetMapping("/user")
   public String user() {
       return "/user";
   @GetMapping("/about")
   public String about() {
       return "/about";
   @GetMapping("/login")
   public String login() {
       return "/login";
   @GetMapping("/403")
   public String error403() {
       return "/error/403";
```

4.2 Start Spring Boot application.

```
DefaultController.java

package com.mkyong;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication
public class SpringBootWebApplication {
    public static void main(String[] args) throws Exception {
        SpringApplication.run(SpringBootWebApplication.class, args);
    }
}
```

5. Thymeleaf + Resources + Static files

- 5.1 For Thymeleaf files, put in src/main/resources/templates/ folder.
- ${\it 5.2 Thymeleaf fragments, for template layout-header.}$

src/main/resources/templates/fragments/header.html

```
<html xmlns:th="http://www.thymeleaf.org">
<head>
   <div th:fragment="header-css">
       <!-- this is header-css -->
       <link rel="stylesheet" type="text/css"</pre>
             href="webjars/bootstrap/3.3.7/css/bootstrap.min.css" />
       <link rel="stylesheet" th:href="@{/css/main.css}"</pre>
             href="../../css/main.css" />
   </div>
</head>
<body>
<div th:fragment="header">
   <!-- this is header -->
   <nav class="navbar navbar-inverse">
       <div class="container">
           <div class="navbar-header">
              <a class="navbar-brand" th:href="@{/}">Spring Boot</a>
           </div>
           <div id="navbar" class="collapse navbar-collapse">
               <a th:href="@{/}">Home</a>
              </div>
       </div>
   </nav>
</div>
</body>
</html>
```

5.3 Thymeleaf fragments, for template layout – footer. Review the sec tag, it is a useful tag to display the Spring Security stuff, refer to this Thymeleaf extra Spring Security (https://github.com/thymeleaf/thymeleaf-extras-springsecurity) for detail.

```
src/main/resources/templates/fragments/footer.html
<html xmlns="http://www.w3.org/1999/xhtml"
     xmlns:th="http://www.thymeleaf.org"
      xmlns:sec="http://www.thymeleaf.org/thymeleaf-extras-springsecurity4">
<head>
</head>
<div th:fragment="footer">
    <div class="container">
       <footer>
       <!-- this is footer -->
       © 2017 mkvong.com
           <span sec:authorize="isAuthenticated()">
               | Logged user: <span sec:authentication="name"></span> |
               Roles: <span sec:authentication="principal.authorities"></span> |
               <a th:href="@{/logout}">Sign Out</a>
           </span>
        <script type="text/javascript"</pre>
               src="webjars/bootstrap/3.3.7/js/bootstrap.min.js"></script>
       </footer>
    </div>
</div>
</hody>
</html>
```

5.4 List of the Thymeleaf files, nothing special, self-explanatory.

home ~

```
src/main/resources/templates/home.html
```

```
<!DOCTYPE HTML>
<html xmlns:th="http://www.thymeleaf.org">
<head>
   <title>Spring Boot Thymeleaf + Spring Security</title>
   <div th:replace="fragments/header :: header-css"/>
</head>
<body>
<div th:replace="fragments/header :: header"/>
<div class="container">
    <div class="starter-template">
       <h1>Spring Boot Web Thymeleaf + Spring Security</h1>
       <h2>1. Visit <a th:href="@{/admin}">Admin page (Spring Security protected, Need
       <h2>2. Visit <a th:href="@{/user}">User page (Spring Security protected, Need Us
       <h2>3. Visit <a th:href="@{/about}">Normal page</a></h2>
   </div>
</div>
<!-- /.container -->
<div th:replace="fragments/footer :: footer"/>
</body>
</html>
```

admin ~

```
src/main/resources/templates/admin.html
<!DOCTYPE HTML>
<html xmlns:th="http://www.thymeleaf.org">
<head>
   <div th:replace="fragments/header :: header-css"/>
</head>
<body>
<div th:replace="fragments/header :: header"/>
<div class="container">
    <div class="starter-template">
       <h1>Admin page (Spring Security protected)</h1>
       <h1 th:inline="text">Hello [[${#httpServletRequest.remoteUser}]]!</h1>
       <form th:action="@{/logout}" method="post">
           <input type="submit" value="Sign Out"/>
       </form>
   </div>
</div>
<!-- /.container -->
<div th:replace="fragments/footer :: footer"/>
</body>
</html>
```

user ~

```
src/main/resources/templates/user.html
```

```
<!DOCTYPE HTML>
<html xmlns:th="http://www.thymeleaf.org">
<head>
   <div th:replace="fragments/header :: header-css"/>
</head>
<body>
<div th:replace="fragments/header :: header"/>
<div class="container">
    <div class="starter-template">
        <h1>User page (Spring Security protected)</h1>
        <h1 th:inline="text">Hello [[${#httpServletRequest.remoteUser}]]!</h1>
        <form th:action="@{/logout}" method="post">
     <input type="submit" value="Sign Out"/>
        </form>
    </div>
</div>
<!-- /.container -->
<div th:replace="fragments/footer :: footer"/>
</body>
</html>
```

about ~

```
src/main/resources/templates/about.html
<html xmlns:th="http://www.thymeleaf.org">
<head>
   <div th:replace="fragments/header :: header-css"/>
</head>
<body>
<div th:replace="fragments/header :: header"/>
<div class="container">
    <div class="starter-template">
       <h1>Normal page (No need login)</h1>
    </div>
</div>
<!-- /.container -->
<div th:replace="fragments/footer :: footer"/>
</body>
</html>
```

login ~

```
src/main/resources/templates/login.html
```

```
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml" xmlns:th="http://www.thymeleaf.org"</pre>
<head>
    <title>Spring Security Example </title>
   <div th:replace="fragments/header :: header-css"/>
</head>
<body>
<div th:replace="fragments/header :: header"/>
<div class="container">
    <div class="row" style="margin-top:20px">
        <div class="col-xs-12 col-sm-8 col-md-6 col-sm-offset-2 col-md-offset-3">
            <form th:action="@{/login}" method="post">
                <fieldset>
                    <h1>Please Sign In</h1>
                    <div th:if="${param.error}">
                        <div class="alert alert-danger">
                            Invalid username and password.
                        </div>
                    </div>
                    <div th:if="${param.logout}">
                        <div class="alert alert-info">
                            You have been logged out.
                        </div>
                    </div>
                    <div class="form-group">
                        <input type="text" name="username" id="username" class="form-con</pre>
                               placeholder="UserName" required="true" autofocus="true"/>
                    <div class="form-group">
                        <input type="password" name="password" id="password" class="form</pre>
                               placeholder="Password" required="true"/>
                    </div>
                    <div class="row">
                        <div class="col-xs-6 col-sm-6 col-md-6">
                            <input type="submit" class="btn btn-lg btn-primary btn-block</pre>
                        <div class="col-xs-6 col-sm-6 col-md-6">
                        </div>
                    </div>
                </fieldset>
            </form>
        </div>
    </div>
<div th:replace="fragments/footer :: footer"/>
</body>
</html>
```

403 ~

src/main/resources/templates/error/403.html

```
<!DOCTYPE HTML>
<html xmlns:th="http://www.thymeleaf.org">
<head>
   <div th:replace="fragments/header :: header-css"/>
</head>
<body>
<div th:replace="fragments/header :: header"/>
<div class="container">
    <div class="starter-template">
       <h1>403 - Access is denied</h1>
       <div th:inline="text">Hello '[[${#httpServletRequest.remoteUser}]]',
               you do not have permission to access this page.</div>
   </div>
</div>
<!-- /.container -->
<div th:replace="fragments/footer :: footer"/>
</body>
</html>
```

5.5 For static files like CSS or Javascript, put in /src/main/resources/static/

```
/src/main/resources/static/css/main.css

h1{
    color:#0000FF;
}

h2{
    color:#FF0000;
}

footer{
    margin-top:60px;
}
```

Note

Read this Spring Boot Serving static content (http://docs.spring.io/spring-boot/docs/current /reference/htmlsingle/#boot-features-spring-mvc-static-content) to understand the resource mapping.

6. Demo

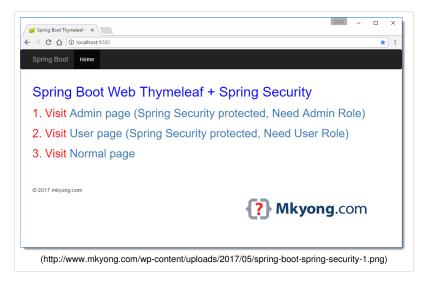
6.1 Start the Spring Boot web app. This /admin/** is protected, you need login as admin to access it.

```
Terminal

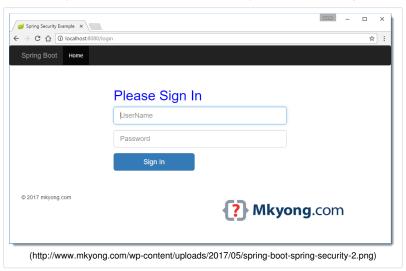
$ mvn spring-boot:run

//...
```

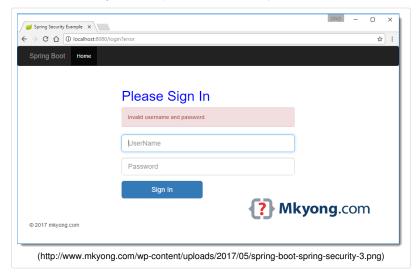
6.2 Access http://localhost:8080



6.3 Access http://localhost:8080/admin,redirect to http://localhost:8080/login



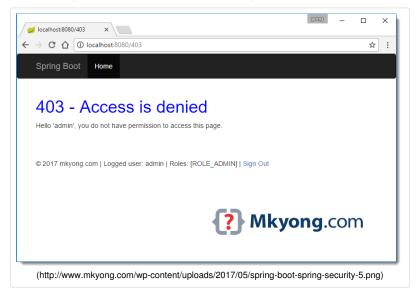
6.4 Invalid username or password http://localhost:8080/login



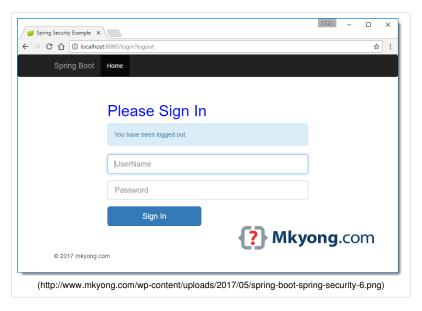
6.5 Login successful, redirect back to admin page http://localhost:8080/admin , review the footer section, the user info is displayed.



6.6 Access http://localhost:8080/user, redirect to http://localhost:8080/403



6.7 Clicks on the sign out link in the footer, redirect to http://localhost:8080/login?logout



Done. Try login with another username "user" and access the admin page.

Download Source Code

Download it – spring-boot-spring-security-thymeleaf.zip (http://www.mkyong.com/wp-content/uploads/2017/05/spring-boot-spring-security-thymeleaf.zip) (15 KB)

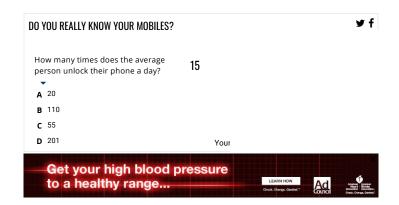
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Tags: custom login (http://www.mkyong.com/tag/custom-login/)
security (http://www.mkyong.com/tag/security/)
spring boot (http://www.mkyong.com/tag/spring-boot/)
spring security (http://www.mkyong.com/tag/spring-security/)
template (http://www.mkyong.com/tag/template/)
thymeleaf (http://www.mkyong.com/tag/thymeleaf/)

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mkyong

Founder of Mkyong.com (http://mkyong.com), love Java and open source stuff. Follow him on Twitter (https://twitter.com/mkyong), or befriend him on Facebook (http://www.facebook.com/java.tutorial) or Google Plus (https://plus.google.com

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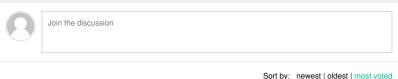
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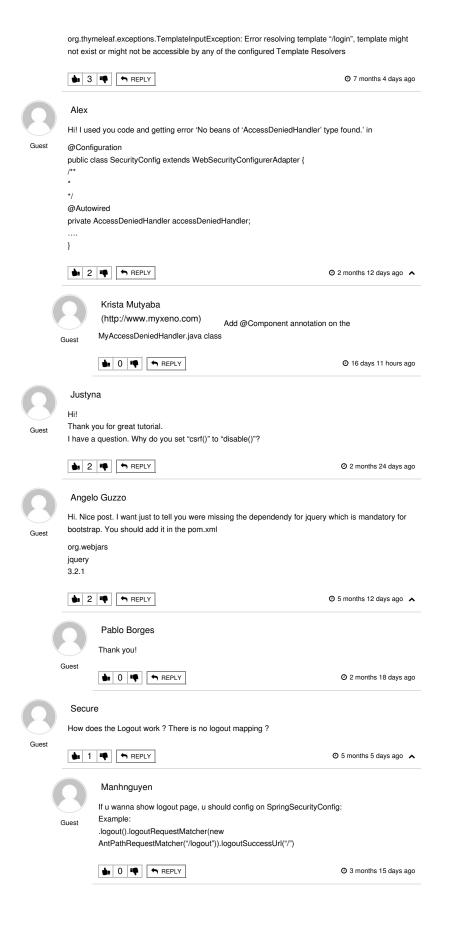
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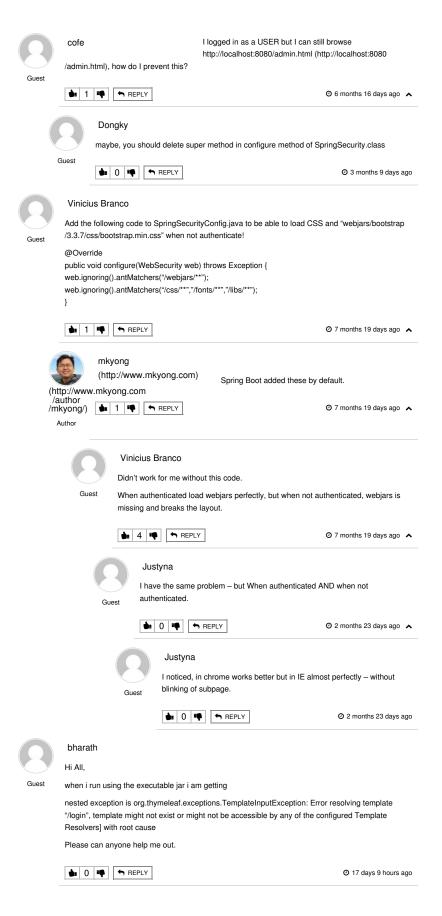


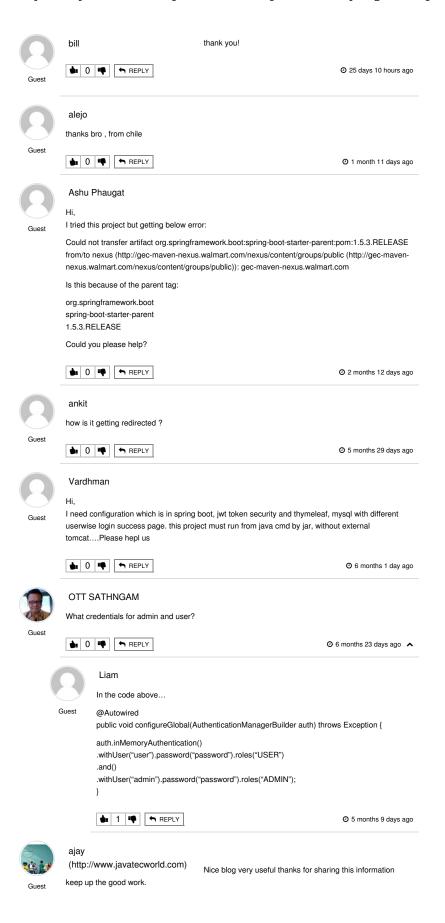
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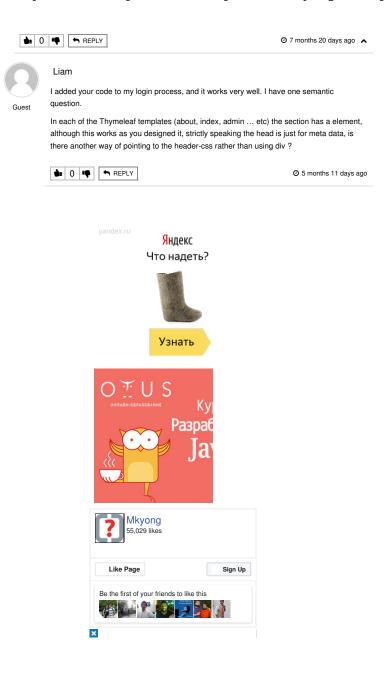
Thank you for putting this together.

When I try to run this code from a command line I get an error:











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