spring-security-examples (0.0.1)

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Introduction

This documentation contains some help to examples from spring-security-examples repository. It's contains some spring-security playground projects

Chapter 1. CSRF Protection with Single Page Apps using JS

user / password can't do post admin / admin can

security configuration

```
@EnableWebSecurity
public class WebSecurityConfig extends WebSecurityConfigurerAdapter {

  @Override
  @Autowired
  protected void configure(final AuthenticationManagerBuilder auth) throws Exception {

    auth
        .inMemoryAuthentication()
        .withUser("user")
          .password("password")
          .roles("USER")
          .and()
        .withUser("admin")
          .password("admin")
          .roles("ADMIN");
  }

  @Override
  public void configure(final WebSecurity web) throws Exception {

    web.ignoring()
       .antMatchers(
           "/favicon.ico",
           "/webjars/**",
           "/login.html",
           "/index.html",
           "/logout.html"
       );
  }

  @Override
  protected void configure(final HttpSecurity http) throws Exception {

    http
        .authorizeRequests()
          .antMatchers(POST)
          .hasRole("ADMIN")
        .anyRequest()
          .authenticated()
          .and()
        .formLogin()
```

```
          .defaultSuccessUrl("/", true)
          .permitAll()
          .and()
        .logout()
          .logoutUrl("/logout")
          .logoutSuccessUrl("/")
          .clearAuthentication(true)
          .deleteCookies("JSESSIONID")
          .invalidateHttpSession(false)
          .permitAll()
          .and()
        .headers()
          .frameOptions()
          .sameOrigin()
          .and()
        .csrf()
          .csrfTokenRepository(CookieCsrfTokenRepository.withHttpOnlyFalse())
          .and()
        .sessionManagement()
          .sessionCreationPolicy(SessionCreationPolicy.NEVER)
    ;
  }
}
```

manual logout endpoint

```
@GetMapping("/logout")
public String logoutGet(final HttpServletRequest request, final HttpServletResponse
response) {
  return logout(request, response);
}

@PostMapping("/logout")
public String logoutPost(final HttpServletRequest request, final HttpServletResponse
response) {
  return logout(request, response);
}

private String logout(final HttpServletRequest request, final HttpServletResponse
response) {

  Optional.ofNullable(SecurityContextHolder.getContext())
          .map(SecurityContext::getAuthentication)
          .ifPresent(authentication -> new SecurityContextLogoutHandler().logout
(request, response, authentication));

  return "redirect:/login";
}
```

set header from client cookie on javascript single page app

```
function getCookie(cookiePrefix) {
  var name = cookiePrefix + "=";
  var decodedCookie = decodeURIComponent(document.cookie);
  var ca = decodedCookie.split(';');
  for(var i = 0; i < ca.length; i++) {
    var c = ca[i];
    while (c.charAt(0) == ' ') {
      c = c.substring(1);
    }
    if (c.indexOf(name) == 0) {
      return c.substring(name.length, c.length);
    }
  }
  return "";
}

var headers = {
  'X-XSRF-TOKEN': getCookie('XSRF-TOKEN'),
  'content-type': 'application/json',
};

var options = {
  method: 'post',
  headers: headers,
  credentials: 'include',
  body: { ololo: 'trololo '}
};

fetch("/user", options)
  .then(data => data.json())
  .then(json => render(JSON.stringify(json)));
```

links:

1. youtube talk
2. some demo

Chapter 2. Keycloack and Spring Boot

TODO: in progress....

links:

1. Keycloak project
2. Devoxx talk

Chapter 3. Spring 5 Security OAuth2 (Github / Facebook)

3.1. spring-5-security-oauth2

1. spring-framework 5
2. spring-boot 2
3. oauth2
4. github
5. facebook
6. facebook + github together

build

```
bash ./gradlew
bash spring-mvc-facebook-github/build/libs/*.jar
bash spring-mvc-facebook/build/libs/*.jar
bash spring-mvc-github/build/libs/*.jar

http :8080
http :8080/login
```

TODO:

1. authorization callback URL: http://localhost:8080/login/oauth2/code/github (github is registration id from applicatin.yaml)
2. okta
3. google

links:

1. Next Generation OAuth Support with Spring Security 5.0 - Joe Grandja
2. Github: jgrandja/springone2017-demo
3. Spring Boot and OAuth2

generated by daggerok-fatjar yeoman generator

Chapter 4. Others

4.1. Web MVC: testing with mock user

security config

```
@Log4j2
@Configuration
@EnableWebSecurity
@EnableGlobalMethodSecurity(prePostEnabled = true)
class SecurityConfig extends WebSecurityConfigurerAdapter {

  @Override
  protected void configure(HttpSecurity http) throws Exception {
    //@formatter:off
    http
        .authorizeRequests()
          .antMatchers("/login", "/webjars", "/favicon.*")
            .permitAll()
          .anyRequest()
            .fullyAuthenticated()
          .and()
        .formLogin()
          .defaultSuccessUrl("/")
          .failureUrl("/login?error")
          .failureForwardUrl("/login?failure")
          .and()
        .logout()
          .clearAuthentication(true)
          .invalidateHttpSession(true)
          .deleteCookies("JSESSIONID", "PLAY_SESSION", "NXSESSIONID", "csrfToken",
"SESSION")
          .permitAll(true)
    ;
    //@formatter:on
  }

  @Override
  @Autowired
  protected void configure(AuthenticationManagerBuilder auth) throws Exception {
    //@formatter:off
    HashMap.of("usr", "pwd")
           .forEach((username, password) -> Try.run(() -> auth
               .inMemoryAuthentication()
                 .withUser(username)
                 .password(passwordEncoder().encode(password))
                 .roles("APP", "APP_USER", "APPLICATION_USER")));
    //@formatter:on
  }

  @Bean
  PasswordEncoder passwordEncoder() {
    return PasswordEncoderFactories.createDelegatingPasswordEncoder();
  }
}
```

application controller

```
```

index.html page

```
<!DOCTYPE html>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
<head>
  <meta charset="UTF-8">
  <title>Index Page</title>
  <link rel="shortcut icon" th:href="@{/favicon.ico}" type="image/x-icon">
</head>
<body>
<h1>Hola!</h1>
</body>
</html>
```

testing unauthorized access: application must redirect user to login page

```
@RunWith(SpringRunner.class)
@SpringBootTest(webEnvironment = RANDOM_PORT)
public class MockMvcSecurityTests {

  @Autowired
  WebApplicationContext wac;

  private MockMvc mvc;

  @Before
  public void setup() {
    this.mvc = MockMvcBuilders.webAppContextSetup(wac)
                              .apply(springSecurity())
                              .build();
  }

  @Test
  @SneakyThrows
  public void unauthorized_request_should_be_redirected_to_login_page() {
    mvc.perform(get("/"))
       .andExpect(status().isFound())
       .andExpect(header().string("location", containsString("/login")))
    ;
  }
```

testing login page: must be publicly accessible for non-authorized users

```
  @Test
  @SneakyThrows
  public void login_page_is_publicly_accessible() {
    mvc.perform(get("/login"))
       .andExpect(status().isOk())
    ;
  }
```

testing authorized request

```
  @Test
  @SneakyThrows
  @WithMockUser
  public void authorized_request_test() {
    mvc.perform(get("/"))
       .andExpect(status().isOk())
       .andExpect(content().contentType(parseMediaType("text/html;charset=UTF-8")))
       .andExpect(content().string(containsString("<title>Index Page</title>")))
    ;
  }
```

4.2. Web MVC: testing with web driver

security config

```
@Log4j2
@Configuration
@EnableWebSecurity
@EnableGlobalMethodSecurity(prePostEnabled = true)
class SecurityConfig extends WebSecurityConfigurerAdapter {

  @Override
  protected void configure(HttpSecurity http) throws Exception {
    //@formatter:off
    http
        .authorizeRequests()
          .antMatchers("/login", "/webjars", "/favicon.*")
            .permitAll()
          .anyRequest()
            .fullyAuthenticated()
          .and()
        .cors()
          .disable()
        .csrf()
          .csrfTokenRepository(new LazyCsrfTokenRepository(new
HttpSessionCsrfTokenRepository()))
          .and()
```

```
        .headers()
          .frameOptions()
            .sameOrigin()
          .xssProtection()
            .xssProtectionEnabled(true)
            .and()
          .and()
        .formLogin()
          .defaultSuccessUrl("/")
          .failureUrl("/login?error")
          .failureForwardUrl("/login?failure")
          .and()
        .sessionManagement()
          .sessionCreationPolicy(IF_REQUIRED)
          .invalidSessionUrl("/login?invalidSession")
          .sessionAuthenticationErrorUrl("/login?sessionAuthenticationError")
          .sessionFixation()
            .migrateSession()
            .and()
        .logout()
          .clearAuthentication(true)
          .invalidateHttpSession(true)
          .deleteCookies("JSESSIONID", "PLAY_SESSION", "NXSESSIONID", "csrfToken",
"SESSION")
          .permitAll(true)
    ;
    //@formatter:on
  }

  @Override
  @Autowired
  protected void configure(AuthenticationManagerBuilder auth) throws Exception {
    //@formatter:off
    HashMap.of("usr", "pwd")
           .forEach((username, password) -> Try.run(() -> auth
               .inMemoryAuthentication()
                 .withUser(username)
                 .password(passwordEncoder().encode(password))
                 .roles("APP", "APP_USER", "APPLICATION_USER")));
    //@formatter:on
  }

  @Bean
  PasswordEncoder passwordEncoder() {
    return PasswordEncoderFactories.createDelegatingPasswordEncoder();
  }
}
```

application controller

```
@Controller
class IndexPage {

  // @GetMapping
  // with get mapping here we're receiving an error like:
  // POST method is not supported right after re-login
  @RequestMapping({ "/", "/err", "/index" })
  public String index() {
    return "index";
  }

  @GetMapping("")
  public String redirect() {
    return "forward:/";
  }

  @RequestMapping({ "/logout", "/logout/**" })
  public String logout() {
    return "redirect:/login?logout";
  }
}
```

index.html page

```
<!DOCTYPE html>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
<head>
  <meta charset="UTF-8">
  <title>Index Page</title>
  <link rel="shortcut icon" th:href="@{/favicon.ico}" type="image/x-icon">
</head>
<body>
  <h1>Hola!</h1>
</body>
</html>
```

4.2.1. HtmlUnit e2e testing

testing login page: must be publicly accessible for non-authorized users

```
@RunWith(SpringRunner.class)
@SpringBootTest(webEnvironment = RANDOM_PORT)
public class HtmlUnitWebDriverSecurityTests {

  @Autowired
  Environment env;

  private HtmlUnitDriver driver;

  @Before
  public void setUp() throws Exception {
    this.driver = new LocalHostWebConnectionHtmlUnitDriver(env);
  }

  @Test
  @SneakyThrows
  public void login_page_is_publicly_accessible() {
    driver.get("/");
    assertThat(driver.getTitle()).contains("Login Page");
  }
```

testing login

```
  @Test
  @SneakyThrows
  public void login_test() {

    driver.get("/");

    final WebElement form = driver.findElementByTagName("form");

    form.findElement(By.cssSelector("input[name=username]"))
        .sendKeys("usr");
    form.findElement(By.cssSelector("input[name=password]"))
        .sendKeys("pwd");
    form.submit();

    assertThat(driver.getTitle()).contains("Index Page");
  }
}
```

4.2.2. E2E testing in Chrome by using WebDriver

testing login page: must be publicly accessible for non-authorized users

```
@RunWith(SpringRunner.class)
@SpringBootTest(webEnvironment = RANDOM_PORT)
public class ChromeWebDriverSecurityTests {

  @LocalServerPort
  int port;

  private ChromeDriver driver;
  private String baseUrl;

  @Before
  public void setUp() throws Exception {
    final boolean headless = false;
    System.setProperty("webdriver.chrome.driver", "/path/to/chromedriver");
    this.driver = new ChromeDriver(new ChromeOptions().setHeadless(headless));
    this.baseUrl = format("http://127.0.0.1:%d", port);
  }

  public void open(final String uri) {
    final boolean isValidUri = null != uri && uri.startsWith("/");
    final String path = isValidUri ? uri : "/" + uri;
    driver.get(baseUrl + path);
  }

  @Test
  @SneakyThrows
  public void login_page_is_publicly_accessible() {
    open("/");
    assertThat(driver.getTitle()).contains("Login Page");
  }
```

testing login

```
  @Test
  @SneakyThrows
  public void login_test() {

    open("/");
    assertThat(driver.getTitle()).contains("Login Page");

    final WebElement form = driver.findElementByTagName("form");

    form.findElement(By.cssSelector("input[name=username]"))
        .sendKeys("usr");
    form.findElement(By.cssSelector("input[name=password]"))
        .sendKeys("pwd");
    form.submit();

    assertThat(driver.getTitle()).contains("Index Page");
  }
}
```

4.2.3. E2E testing in Chrome by using Selenide

testing login page: must be publicly accessible for non-authorized users

```
@RunWith(SpringRunner.class)
@SpringBootTest(webEnvironment = RANDOM_PORT)
public class ChromeWebDriverSecurityTests {

  @LocalServerPort
  int port;

  private ChromeDriver driver;
  private String baseUrl;

  @Before
  public void setUp() throws Exception {
    final boolean headless = false;
    System.setProperty("webdriver.chrome.driver", "/path/to/chromedriver");
    this.driver = new ChromeDriver(new ChromeOptions().setHeadless(headless));
    this.baseUrl = format("http://127.0.0.1:%d", port);
  }

  public void open(final String uri) {
    final boolean isValidUri = null != uri && uri.startsWith("/");
    final String path = isValidUri ? uri : "/" + uri;
    driver.get(baseUrl + path);
  }

  @Test
  @SneakyThrows
  public void login_page_is_publicly_accessible() {
    open("/");
    assertThat(driver.getTitle()).contains("Login Page");
  }
```

testing login

```
  @Test
  @SneakyThrows
  public void login_test() {

    open("/");
    assertThat(driver.getTitle()).contains("Login Page");

    final WebElement form = driver.findElementByTagName("form");

    form.findElement(By.cssSelector("input[name=username]"))
        .sendKeys("usr");
    form.findElement(By.cssSelector("input[name=password]"))
        .sendKeys("pwd");
    form.submit();

    assertThat(driver.getTitle()).contains("Index Page");
  }
}
```

Chapter 5. Basic security

Add needed dependencies fist:

pom.xml

```
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-security</artifactId>
        </dependency>
```

Implement simple in memory security:

SecurityCfg.java

```
@Configuration
public class SecurityCfg extends WebSecurityConfigurerAdapter {

    @Bean
    PasswordEncoder passwordEncoder() {
        return PasswordEncoderFactories.createDelegatingPasswordEncoder();
    }

    @Override
    protected void configure(AuthenticationManagerBuilder auth) throws Exception {
        auth.inMemoryAuthentication()
            .withUser(User.withUsername("user")
                          .password(passwordEncoder().encode("password"))
                          .roles("USER")
                          .build())
        ;
    }
}
```

Setup RestTemplate to use user basic authentication for remote calls:

RestTemplateCfg.java

```
@Configuration
public class RestTemplateCfg {

    @Bean
    RestTemplate restTemplate() {
        return new RestTemplateBuilder().basicAuthentication("user", "password")
                                        .build();
    }
}
```

Fetch remote data before rendering MVC template with Thymeleaf view engine by using configured

rest template for basic authentication:

IndexPage.java

```
@Controller
@RequiredArgsConstructor
public class IndexPage {

    private final RestTemplate restTemplate;

    @GetMapping({"", "/"})
    String index(Model model) {
        var response = restTemplate.getForEntity("http://127.0.0.1:8080/api/greeting",
Map.class);
        var map = response.getBody();
        model.addAttribute("message", map.get("message"))
             .addAttribute("ctx", SecurityContextHolder.getContext());
        return "index";
    }
}
```

index.html

```
    <p data-th-if="message != null">message: [[ ${message} ?: 'no message' ]]</p>
    <pre data-th-if="ctx != null">ctx: [[ ${ctx} ?: 'no ctx' ]]</pre>
```

Chapter 6. links

This repository contains spring-security playgroung projects

- https://github.com/daggerok/spring-security-basics
- Spring Security OAuth2 JWT steps and samples
- Spring Web MVC Security testing using HtmUnit / Chrome WebDriver and also using Selenide
- Spring Web MVC Security testing using @WithMockUser annotation
- Spring 5 | Spring Security OAuth2 | Spring Boot 2 | Github | Facebook
- CSRF protection for client javascript on SPA
- Keycloack with Spring Boot

Other related repositories:

- Spring Servlet application with JWT stateless security
- https://github.com/daggerok/spring-boot-jpa-react-jwt-auth-app
- https://github.com/daggerok/boot-jwt
- https://github.com/daggerok/yet-another-oauth-spring-security-example
- https://github.com/daggerok/spring-kotlin-examples
- https://github.com/daggerok/security-first
- https://github.com/daggerok/secure-me-please
- Spring Security Angular
- Spring Security React
- Spring Security LDAP
- JavaEE Spring Security integration
- Spring OAuth2 (JDBC token store) authorization server + resource server + client web app
- Webflux, Reactive security, CSRF, etc..
- some sucured app
- OAuth playgroung
- yet another spring secururity repository
- https://github.com/daggerok/multi-security
- https://github.com/daggerok/war-multi-security
- https://github.com/daggerok/spring-security-rest-auth-token

1. Asciidoctor attributes

Chapter 7. Enjoy! :)