Quick answers to common problems

Spring Security 3.x Cookbook

Over 60 recipes to help you successfully safeguard your web applications with Spring Security

Anjana Mankale

[PACKT] open source* community experience distilled PUBLISHING

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Anjana is passionate about blogging (`http://jtechspace.blogspot.in/`) where she shares her write-ups and technical code that she has worked on.

I would like thank Mr. Dharanidhara Mishra who is a Senior Solution Architect and has been guiding me on application security.

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About the Reviewers

Laurent Frisée is a freelance consultant with 13 years of experience working for well known as well as less well known companies. He has been a Java developer for the last 10 years and has been involved in the architecture development of the software most of this time. In recent years, he has focused on Java persistence-related problems and is looking forward to working with new technologies (like GWT) or enterprise solutions (like ESB).

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Preface

Introduction

Spring Security is a security layer that comes with Spring framework. Spring framework is an active open source project which has made further development of the application easier. It provides various layers to handle different scenarios and challenges that we face during the design and implementation life cycle of the project.

The Spring Security layer of Spring framework is very loosely coupled with the Spring framework, hence it can be easily integrated with other applications.

In this book we will be integrating Spring Security with other frameworks and we will also demonstrate it with coded examples.

What this book covers

Chapter 1, *Basic Security*, covers the basics of security in a J2ee application. It introduces to the reader the various mechanisms of applying security to authenticate and authorize the users to the application. It also explains container management security.

Chapter 2, *Spring Security with Struts 2*, provides steps to integrate Spring Security in a Struts 2 application. It demonstrates database authentication and LDAP authentication and authorization with other security mechanism offered by Spring framework.

Chapter 3, *Spring Security with JSF*, explains all the aspects of Spring Security with a JSF application. It shows how to make the JSF application communicate with Spring Security using listeners.

Chapter 4, *Spring Security with Grails*, demonstrates how the grails application can seamlessly integrate with Spring Security. We have also shown how Spring Security UI offers screens to create users and roles. We have demonstrated the use of Spring Security tags in GSP pages.

Chapter 5, *Spring Security with GWT*, focuses on the GWT framework. The GWT framework is integrated with GWT and Spring Security can be used to authenticate and authorize users accessing the GWT application.

Chapter 6, *Spring Security with Vaadin*, puts forward various options for integrating Spring Security with the Vaadin framework. We have created a sample product catalog application to demonstrate Spring Security integration with the Vaadin framework.

Chapter 7, *Spring Security with Wicket*, demonstrates the integration of the wicket framework with Spring Security. Wicket itself has an authentication and authorization framework inbuilt, but the challenge was to make wicket use an external framework for authentication and authorization.

Chapter 8, *Spring Security with ORM and NoSQL DB*, explains Hibernate and MongoDB in authentication and authorization using Spring Security API classes.

Chapter 9, *Spring Security with Spring Social*, introduces Spring Social, which is a framework developed by Spring Source to provide integration to social networking sites. Spring Social intern uses Spring Security to do the authentication and authorization. The chapter demonstrates how Spring Social and Spring Security integrate with each other by demonstrating a Facebook login application.

Chapter 10, *Spring Security with WebServices*, explains various options to secure RESTFUL and SOAP based webservices.

Chapter 11, *More on Spring Security*, is a miscellaneous chapter. It explains integrating Spring Security with the Kaptcha API and providing multiple input authentications.

What you need for this book

In order to complete all the recipes in this book you will need an understanding of the following:

- JBOSS server
- Netbeans
- Maven
- Java
- Tomcat
- Open LDAP
- Apache DS
- Eclipse IDE

Who this book is for

This book is for all Spring-based application developers as well as Java web developers who wish to implement robust security mechanisms into web application development using Spring Security.

Readers are assumed to have a working knowledge of Java web application development, a basic understanding of the Spring framework, and some knowledge of the fundamentals of the Spring Security framework architecture.

Working knowledge of other web frameworks such as Grails and so on would be an added advantage to exploit the whole breadth of recipes provided in this book, but this is not mandatory.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text are shown as follows: "We can include other contexts through the use of the `include` directive."

A block of code is set as follows:

```
<%@ page contentType="text/html; charset=UTF-8" %>
<%@ page language="java" %>
<html >
  <HEAD>
    <TITLE>PACKT Login Form</TITLE>
    <SCRIPT>
      function submitForm() {
        var frm = document. myform;
        if( frm.j_username.value == "" ) {
          alert("please enter your username, its empty");
          frm.j_username.focus();
          return ;
        }
```

When we wish to draw your attention to a particular part of a code block, the relevant lines or items are set in bold:

```
<%@ page contentType="text/html; charset=UTF-8" %>
<%@ page language="java" %>
<html >
  <HEAD>
    <TITLE>PACKT Login Form</TITLE>
    <SCRIPT>
```

```
function submitForm() {
  var frm = document. myform;
  if( frm.j_username.value == "" ) {
    alert("please enter your username, its empty");
    frm.j_username.focus();
    return ;
  }
```

Any command-line input or output is written as follows:

```
[INFO] Parameter: groupId, Value: com.packt
[INFO] Parameter: artifactId, Value: spring-security-wicket
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
```

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes for example, appear in the text like this: "After clicking on **submit** we need to get an authenticated session."

[Warnings or important notes appear in a box like this.]

[Tips and tricks appear like this.]

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1
Basic Security

In this chapter we will cover:

- JAAS-based security authentication on JSPs
- JAAS-based security authentication on servlet
- Container-based basic authentication on servlet
- Form-based authentication on servlet
- Form-based authentication with open LDAP and servlet
- Hashing/Digest Authentication on servlet
- Basic authentication for JAX-WS and JAX-RS
- Enabling and disabling the file listing

Introduction

Authentication and authorization has become a major part of all web applications. Authentication involves checking who is accessing the application. Authorization is a process of checking the access rights of the user. In the native approach, we usually store the user's information in the database and write the code in the application. We also create roles for the user and we do the mapping. Here, it is tightly coupled with the application because we have to rewrite the entire code when we connect to a new database or use any other tools such as LDAP or Kerbose. But there are advance options to handle authentication and authorization. J2EE container provides different ways to authenticate the user by configuring the XML files. We can classify authentication into two types, that is, the container-based authentication and authorization and application level authentication and authorization.

J2EE container provides interfaces and classes to provide authentication. In this chapter, we can see how we authenticate the user using JAAS, basic authentication, and form-based authentication.

In this book, we have used JAAS because it a standard framework for authentication. JAAS works on the **PAM** (**pluggable authentication module**) framework.

Authentication and authorization can be provided in the following ways:

- Basic authentication: In this technique the application server gives a login form with a username and password textbox, so you don't have to create a login page yourself. You will also know the caller identity.
- Form-based authentication: In this technique the container handles the authentication, but the login form is provided by the user as a JSP page.
- Digest-based authentication: In this method user credentials are hashed with certain algorithms.
- Certificate-based authentication: In this technique the client and the server exchange certificates to verify their identity. Achieving an SSL certificate makes the data transfer over the network secure.

JAAS-based security authentication on JSPs

The deployment descriptor is the main configuration file of all the web applications. The container first looks out for the deployment descriptor before starting any application.

The deployment descriptor is an XML file, `web.xml`, inside the `WEB-INF` folder.

If you look at the XSD of the `web.xml` file, you can see the security-related schema.

The schema can be accessed using the following URL: `http://java.sun.com/xml/ns/j2ee/web-app_2_4.xsd`.

The following is the schema element available in the XSD:

```
<xsd:element name="security-constraint" type="j2ee:security-
  constraintType"/>
<xsd:element name="login-config" type="j2ee:login-configType"/>
<xsd:element name="security-role "type="j2ee:security-roleType"/>
```

Getting ready

You will need the following to demonstrate authentication and authorization:

- JBoss 7
- Eclipse Indigo 3.7
- Create a dynamic web project and name it `Security Demo`
- Create a package, `com.servlets`

- Create an XML file in the `WebContent` folder, `jboss-web.xml`
- Create two JSP pages, `login.jsp` and `logoff.jsp`

How to do it...

Perform the following steps to achieve JAAS-based security for JSPs:

1. Edit the `login.jsp` file with the input fields `j_username`, `j_password`, and submit it to `SecurityCheckerServlet`:

```
<%@ page contentType="text/html; charset=UTF-8" %>
<%@ page language="java" %>
<html >
  <HEAD>
    <TITLE>PACKT Login Form</TITLE>
    <SCRIPT>
      function submitForm() {
        var frm = document. myform;
        if( frm.j_username.value == "" ) {
          alert("please enter your username, its empty");
          frm.j_username.focus();
          return ;
        }

        if( frm.j_password.value == "" ) {
          alert("please enter the password,its empty");
          frm.j_password.focus();
          return ;
        }
        frm.submit();
      }
    </SCRIPT>
  </HEAD>
  <BODY>
    <FORM name="myform" action="SecurityCheckerServlet"
      METHOD=get>
    <TABLE width="100%" border="0" cellspacing="0" cellpadding=
      "1" bgcolor="white">
    <TABLE width="100%" border="0" cellspacing=
      "0" cellpadding="5">
    <TR align="center">
    <TD align="right" class="Prompt"></TD>
    <TD align="left">
      <INPUT type="text" name="j_username" maxlength=20>
    </TD>
    </TR>
    <TR align="center">
    <TD align="right" class="Prompt"> </TD>
    <TD align="left">
    <INPUT type="password"
      name="j_password" maxlength=20 >
    <BR>
    <TR align="center">
    <TD align="right" class="Prompt"> </TD>
    <TD align="left">
    <input type="submit" onclick="javascript:submitForm();"
      value="Login">
    </TD>
    </TR>
    </TABLE>
    </FORM>
  </BODY>
</html>
```

The `j_username` and `j_password` are the indicators of using form-based authentication.

2. Let's modify the `web.xml` file to protect all the files that end with `.jsp`. If you are trying to access any JSP file, you would be given a login form, which in turn calls a `SecurityCheckerServlet` file to authenticate the user. You can also see role information is displayed. Update the `web.xml` file as shown in the following code snippet. We have used `2.5 xsd`. The following code needs to be placed in between the `webapp` tag in the `web.xml` file:

```
<display-name>jaas-jboss</display-name>
 <welcome-file-list>
    <welcome-file>index.html</welcome-file>
    <welcome-file>index.htm</welcome-file>
    <welcome-file>index.jsp</welcome-file>
    <welcome-file>default.html</welcome-file>
    <welcome-file>default.htm</welcome-file>
    <welcome-file>default.jsp</welcome-file>
 </welcome-file-list>

 <security-constraint>
    <web-resource-collection>
     <web-resource-name>something</web-resource-name>
     <description>Declarative security tests</description>
     <url-pattern>*.jsp</url-pattern>
     <http-method>HEAD</http-method>
     <http-method>GET</http-method>
     <http-method>POST</http-method>
     <http-method>PUT</http-method>
     <http-method>DELETE</http-method>
    </web-resource-collection>
    <auth-constraint>
     <role-name>role1</role-name>
    </auth-constraint>
    <user-data-constraint>
     <description>no description</description>
     <transport-guarantee>NONE</transport-guarantee>
    </user-data-constraint>
</security-constraint>
<login-config>
    <auth-method>FORM</auth-method>
    <form-login-config>
     <form-login-page>/login.jsp</form-login-page>
     <form-error-page>/logoff.jsp</form-error-page>
    </form-login-config>
</login-config>
<security-role>
    <description>some role</description>
    <role-name>role1</role-name>
</security-role>
<security-role>
    <description>packt managers</description>
    <role-name>manager</role-name>
</security-role>
<servlet>
    <description></description>
    <display-name>SecurityCheckerServlet</display-name>
    <servlet-name>SecurityCheckerServlet</servlet-name>
    <servlet-class>com.servlets.SecurityCheckerServlet
      </servlet-class>
</servlet>
<servlet-mapping>
    <servlet-name>SecurityCheckerServlet</servlet-name>
    <url-pattern>/SecurityCheckerServlet</url-pattern>
</servlet-mapping>
```

3. JAAS Security Checker and Credential Handler: Servlet is a security checker. Since we are using JAAS, the standard framework for authentication, in order to execute the following program you need to import `org.jboss.security.SimplePrincipal` and `org.jboss.security.auth.callback.SecurityAssociationHandle` and add all the necessary imports. In the following `SecurityCheckerServlet`, we are getting the input from the JSP file and passing it to the `CallbackHandler`.

   We are then passing the Handler object to the `LoginContext` class which has the `login()` method to do the authentication. On successful authentication, it will create `Subject` and `Principal` for the user, with user details. We are using iterator interface to iterate the `LoginContext` object to get the user details retrieved for authentication.

   In the `SecurityCheckerServlet` Class:

```
package com.servlets;
public class SecurityCheckerServlet extends HttpServlet {
  private static final long serialVersionUID = 1L;

    public SecurityCheckerServlet() {
      super();
    }

    protected void doGet(HttpServletRequest request,
     HttpServletResponse response) throws ServletException,
     IOException {
       char[] password = null;
       PrintWriter out=response.getWriter();
       try
       {

         SecurityAssociationHandler handler = new
           SecurityAssociationHandler();
         SimplePrincipal user = new
           SimplePrincipal(request.getParameter
           ("j_username"));
         password=request.getParameter("j_password").
           toCharArray();
         handler.setSecurityInfo(user, password);
         System.out.println("password"+password);

         CallbackHandler myHandler = new
           UserCredentialHandler(request.getParameter
           ("j_username"),request.getParameter
           ("j_password"));
         LoginContext lc = new LoginContext("other",
           handler);
```

```
          lc.login();

          Subject subject = lc.getSubject();
          Set principals = subject.getPrincipals();

          List l=new ArrayList();
          Iterator it = lc.getSubject().getPrincipals().
            iterator();
          while (it.hasNext()) {
            System.out.println("Authenticated: " +
              it.next().toString() + "<br>");
            out.println("<b><html><body><font
              color='green'>Authenticated: " +
              request.getParameter("j_username")+"
            <br/>"+it.next().toString() +
              "<br/></font></b></body></html>");
               }
            it = lc.getSubject().getPublicCredentials
              (Properties.class).iterator();
            while (it.hasNext())
              System.out.println(it.next().toString());

            lc.logout();
        }     catch (Exception e) {
              out.println("<b><font color='red'>failed
                authenticatation.</font>-</b>"+e);

        }
     }
  protected void doPost(HttpServletRequest request,
  HttpServletResponse response) throws ServletException,
  IOException {
   }

}
```

Create the `UserCredentialHandler` file:

```
package com.servlets;
class UserCredentialHandler implements CallbackHandler {
  private String user, pass;

  UserCredentialHandler(String user, String pass) {
    super();
    this.user = user;
    this.pass = pass;
  }
  @Override
  public void handle(Callback[] callbacks) throws
    IOException, UnsupportedCallbackException {
      for (int i = 0; i < callbacks.length; i++) {
        if (callbacks[i] instanceof NameCallback) {
          NameCallback nc = (NameCallback) callbacks[i];
          nc.setName(user);
        } else if (callbacks[i] instanceof
            PasswordCallback) {
          PasswordCallback pc = (PasswordCallback)
            callbacks[i];
          pc.setPassword(pass.toCharArray());
        } else {
        throw new UnsupportedCallbackException
          (callbacks[i], "Unrecognized Callback");
      }
    }
  }
 }
```

In the `jboss-web.xml` file:

```
<?xml version="1.0" encoding="UTF-8"?>
<jboss-web>
<security-domain>java:/jaas/other</security-domain>
</jboss-web>
```

`Other` is the name of the application policy defined in the `login-config.xml` file.

All these will be packed in as a `.war` file.

4. Configuring the JBoss Application Server. Go to `jboss-5.1.0.GA\server\default\conf\login-config.xml` in JBoss. If you look at the file, you can see various configurations for database LDAP and a simple one using the properties file, which I have used in the following code snippet:

```
<application-policy name="other">
  <!-- A simple server login module, which can be used
    when the number of users is relatively small. It uses
    two properties files:
  users.properties, which holds users (key) and their
    password (value).
  roles.properties, which holds users (key) and a comma-
    separated list of
  their roles (value).
  The unauthenticatedIdentity property defines the name of
    the principal
    that will be used when a null username and password are
      presented as is
    the case for an unauthenticated web client or MDB. If you
      want to allow such users to be authenticated add the
      property, e.g.,
      unauthenticatedIdentity="nobody"
    -->
    <authentication>
    <login-module
      code="org.jboss.security.auth.spi.UsersRoles
        LoginModule"
      flag="required"/>
      <module-option name="usersProperties">
        users.properties</module-option>
      <module-option name="rolesProperties">
        roles.properties</module-option>
      <module-option name="unauthenticatedIdentity">
        nobody</module-option>
    </authentication>
  </application-policy>
```

5. Create the `users.properties` file in the same folder. The following is the `Users.properties` file with username mapped with role.

   User.properties

   ```
   anjana=anjana123
   ```

   roles.properties

   ```
   anjana=role1
   ```

6. Restart the server.

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How it works...

JAAS consists of a set of interfaces to handle the authentication process. They are:

- The `CallbackHandler` and `Callback` interfaces
- The `LoginModule` interface
- `LoginContext`

The `CallbackHandler` interface gets the user credentials. It processes the credentials and passes them to `LoginModule`, which authenticates the user.

JAAS is container specific. Each container will have its own implementation, here we are using JBoss application server to demonstrate JAAS.

In my previous example, I have explicitly called JASS interfaces.

`UserCredentialHandler` implements the `CallbackHandler` interfaces.

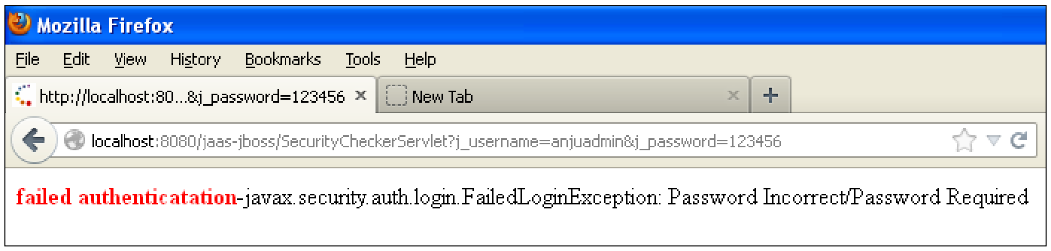
So, `CallbackHandler`s are storage spaces for the user credentials and the `LoginModule` authenticates the user.

`LoginContext` bridges the `CallbackHandler` interface with `LoginModule`. It passes the user credentials to `LoginModule` interfaces for authentication:

```
CallbackHandler myHandler = new UserCredentialHandler(request.
  getParameter("j_username"),request.getParameter("j_password"));
  LoginContext lc = new LoginContext("other", handler);
  lc.login();
```

The `web.xml` file defines the security mechanisms and also points us to the protected resources in our application.

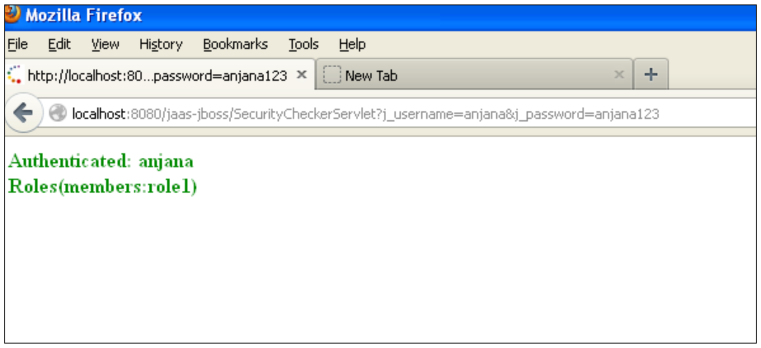
The following screenshot shows a failed authentication window:


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:80...&j_password=123456
New Tab

localhost:8080/jaas-jboss/SecurityCheckerServlet?j_username=anjuadmin&j_password=123456

failed authenticatation-javax.security.auth.login.FailedLoginException: Password Incorrect/Password Required

The following screenshot shows a successful authentication window:


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:80...password=anjana123
New Tab
localhost:8080/jaas-jboss/SecurityCheckerServlet?j_username=anjana&j_password=anjana123

```
Authenticated: anjana
Roles(members:role1)
```

See also

- The *JAAS-based security authentication on servlet* recipe
- The *Container-based basic authentication on servlet* recipe
- The *Form-based authentication on servlet* recipe
- The *Form-based authentication with open LDAP and servlet* recipe
- The *Hashing/Digest Authentication on servlet* recipe
- The *Basic authentication for JAX-WS and JAX-RS* recipe
- The *Enabling and disabling the file listing* recipe

JAAS-based security authentication on servlet

The JAAS-based security authentication on servlet is an extension of JAAS-based security authentication for JSPs. In this section, we are demonstrating that we can even apply security on servlets.

Getting ready

- Create a new **Web Project** in Eclipse
- Create a package, `com.packt.security.servlets`
- Create a Servlet with name `ProtectedServlets`

How to do it...

The following are the steps for JAAS-based security for servlet:

1. Create a servlet and name it `ProtectedServlets`:

```
public class ProtectedServlets extends HttpServlet {
  private static final long serialVersionUID = 1L;

  public ProtectedServlets() {
    super();

  }
  protected void doGet(HttpServletRequest request,
    HttpServletResponse response) throws ServletException,
    IOException {
    PrintWriter out=response.getWriter();
    try
    {
      out.println("Hello User");
      out.println("Authtype:"+request.getAuthType());
      out.println("User Principal:"+
        request.getUserPrincipal());
      out.println("User role:"+
        request.isUserInRole("role1"));
    }
    catch (Exception e) {
      out.println("<b><font color='red'>failed
        authenticatation</font>-</b>"+e);

    }
  }

  protected void doPost(HttpServletRequest request,
    HttpServletResponse response) throws ServletException,
    IOException {
    // TODO Auto-generated method stub
  }

}
```

2. Now, edit the `web.xml` file to secure the servlet:

```
<web-resource-collection>
<web-resource-name>Servlet Protection</web-resource-name>
<description>Declarative security tests</description>
```

```
<url-pattern>/ProtectedServlets</url-pattern>
<http-method>HEAD</http-method>
<http-method>GET</http-method>
<http-method>POST</http-method>
<http-method>PUT</http-method>
<http-method>DELETE</http-method>
</web-resource-collection>
```

How it works...

Restart the server and access the URL: `http://localhost:8080/jaas-jboss/ProtectedServlets`.

You would get a login form, which will authenticate the user. The servlet is the protected resource, and anyone accessing the servlet will be asked to log in. The authentication is handled by JAAS API, which is application-server-specific. Each application server will have its own implementation of security.

See also

- The *Container-based basic authentication on servlet* recipe
- The *Form-based authentication on servlet* recipe
- The *Form-based authentication with open LDAP and servlet* recipe
- The *Hashing/Digest Authentication on servlet* recipe
- The *Basic authentication for JAX-WS and JAX-RS* recipe
- The *Enabling and disabling the file listing* recipe

Container-based basic authentication on servlet

In our previous examples we used interfaces provided by JAAS to authenticate with `loginform.jsp`. The previous application had a custom login form design with authentication handled by JAAS API provided by the application server.

Getting ready

- Create a simple web-app project
- Create a servlet class
- Edit the `web.xml` file for basic authentication
- Add a constraint to restrict the user from accessing the servlet

How to do it...

Now, we will see the basic authentication. The container provides the login form and authenticates the user and redirects the user to the servlet after authentication is successful. There is no login form involved.

Make the following changes in the `web.xml` file:

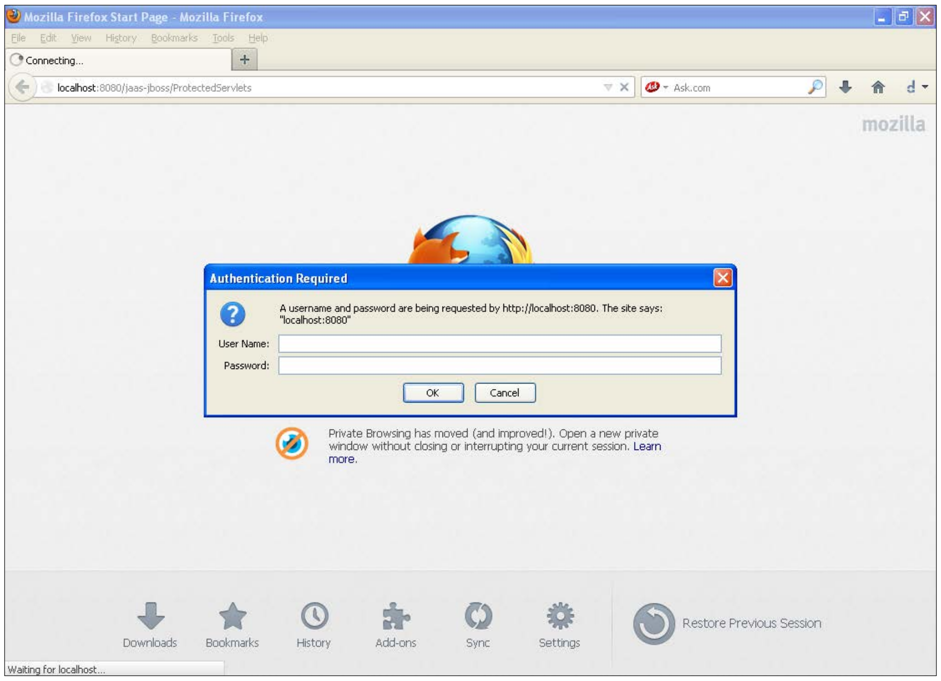
```
<login-config>
   <auth-method>BASIC</auth-method>
<form-login-config>
```

Export the `.war` to JBoss, restart the server, and access the servlet.

How it works...

In the previous example the container decides the mechanism for authenticating the servlet by reading the `web.xml` file. Here the `<auth-method>` tag has defined `BASIC` as the mode of authentication. We should get a login dialog box popped up when we access the secured resource.

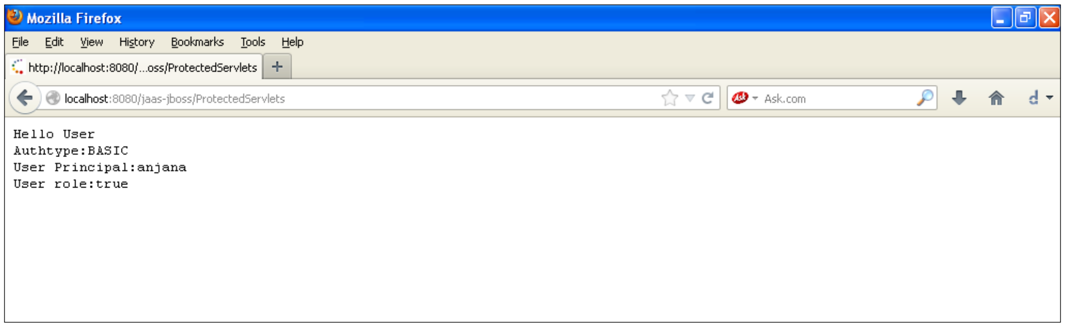
The following screenshots show the workflow of the implementation:


Mozilla Firefox Start Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Connecting...
localhost:8080/jaas-jboss/ProtectedServlets
Ask.com
mozilla
Authentication Required

A username and password are being requested by http://localhost:8080. The site says: "localhost:8080"

User Name:
Password:

OK
Cancel
Private Browsing has moved (and improved!). Open a new private window without closing or interrupting your current session. Learn more.
Downloads
Bookmarks
History
Add-ons
Sync
Settings
Restore Previous Session
Waiting for localhost...


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:8080/...oss/ProtectedServlets
localhost:8080/jaas-jboss/ProtectedServlets
Ask.com

```
Hello User
Authtype:BASIC
User Principal:anjana
User role:true
```

See also

- The *Form-based authentication on servlet* recipe
- The *Form-based authentication with open LDAP and servlet* recipe
- The *Hashing/Digest Authentication on servlet* recipe
- The *Basic authentication for JAX-WS and JAX-RS* recipe
- The *Enabling and disabling the file listing* recipe

Form-based authentication on servlet

In the previous sections, we demonstrated the basic authentication on servlets and JSPs. Now let's use form-based authentication on servlets.

Getting ready

Let's apply form-based authentication on servlet. You will need a simple web application with a servlet, a web container to handle the authentication, and the `web.xml` file that tells the container what to authenticate.

How to do it...

Let's see some simple steps for implementing form-based authentication on servlets:

1. Create a JSP file named `Containerform.jsp`:

```
<%@ page language="java" contentType="text/html;
  charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
```

```
<head>
<meta http-equiv="Content-Type" content="text/html;
charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<form method="POST" action="j_security_check">
Username:<input type="text" name="j_username">
password:<input type="password" name="j_password">
<input type=submit>
</form>
</body>
</html>
```

What do you observe in the previous code?

`action=j_security_check` is the default URL, which is recognized by the web container. It tells the container that it has the user credentials to be authenticated.

2. Now, edit the `web.xml` file:

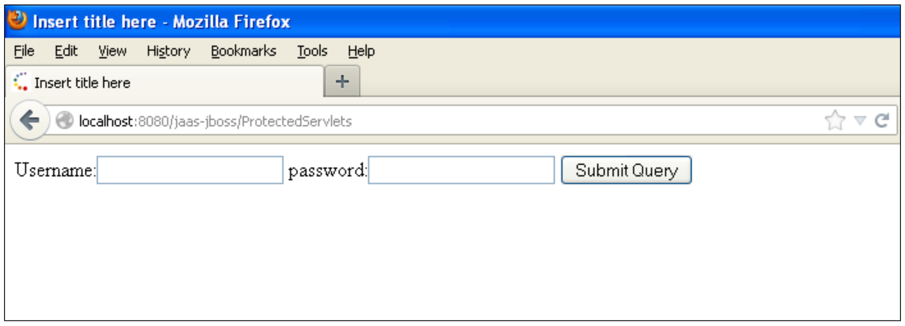
```
<login-config>
  <auth-method>FORM</auth-method>
  <form-login-config>
    <form-login-page>/Containerform.jsp</form-login-page>
    <form-error-page>/logoff.jsp</form-error-page>
  </form-login-config>
</login-config>
```

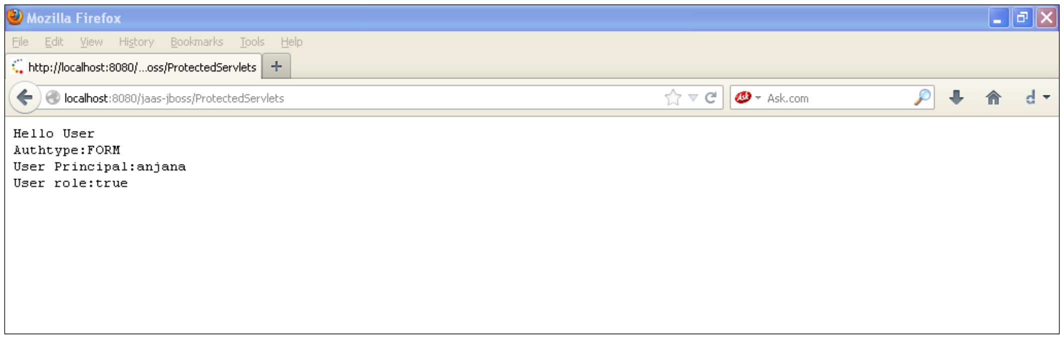
Build the project and export the `.war` files to JBoss.

How it works...

The previous example demonstrated the Form-based authentication. The J2EE container reads the `web.xml` file, the `<auth-method>` tag has the `form` attribute set. Then it further looks for the `login.jsp` file, which needs to be displayed to do form-based authentication. The `<form-error-page>` and `<form-login-page>` has the login file name and the error page that needs to be displayed on authentication failure. When the user tries to access the secured resource, the J2EE container redirects the request to the login page. The user credentials are submitted to `j_security_check` action. This action is identified by the container and does the authentication and authorization; on success the user is redirected to the secured resource and on failure the error page shows up.

The following are the screenshots of the workflow which shows the login page for the user and displays the user information on successful authentication:


Insert title here - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Insert title here
localhost:8080/jaas-jboss/ProtectedServlets
Username:
password:
Submit Query


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:8080/...oss/ProtectedServlets
localhost:8080/jaas-jboss/ProtectedServlets
Ask.com

```
Hello User
Authtype:FORM
User Principal:anjana
User role:true
```

See also

- The *Form-based authentication with open LDAP and servlet* recipe
- The *Hashing/Digest Authentication on servlet* recipe
- The *Basic authentication for JAX-WS and JAX-RS* recipe
- The *Enabling and disabling the file listing* recipe

Form-based authentication with open LDAP and servlet

In this section we will see how we can authenticate users by retrieving the user information stored in open LDAP and JAAS. Open LDAP, as its name suggests, is a free version of the lightweight user directory protocol, which allows us to create groups and add users to it.

Getting ready

Download open LDAP, create roles, groups, and user.

In the JBoss application server, edit the `login-config.xml` file.

How to do it...

Perform the following steps to configure the application server to retrieve users from Open LDAP:

1. In the `login-config.xml` file provide the LDAP port with the URL, credentials, and the domain that needs to be searched to find the username and password provided by the application:

```
<application-policy name="example">
 <authentication>
 <login-module code="org.jboss.security.auth.
  spi.LdapExtLoginModule" flag="required" >
 <module-option name="java.naming.factory.initial">
  com.sun.jndi.ldap.LdapCtxFactory</module-option>
 <module-option name="java.naming.provider.url">
  ldap://localhost:389</module-option>
 <module-option name="java.naming.security.
  authentication">simple</module-option>
 <module-option name="bindDN">cn=Manager,dc=maxcrc,dc=com
  </module-option>
 <module-option name="bindCredential">secret</module-option>
 <module-option name="baseCtxDN">ou=People,
  dc=maxcrc,dc=com</module-option>
 <module-option name="baseFilter">(uid={0})</module-option>

 <module-option name="rolesCtxDN">ou=Roles,
  dc=maxcrc,dc=com</module-option>
  <module-option name="rolesCtxDN">ou=Department,
  dc=maxcrc,dc=com</module-option>
 <module-option name="roleFilter">(member={1})</module-
  option>
 <module-option name="roleAttributeID">cn</module-option>
 <module-option name="searchScope">ONELEVEL_SCOPE</module-
  option>
 <module-option name="allowEmptyPasswords">true</module-
  option>
 </login-module>
</authentication>
</application-policy>
```

2. In the `jboss-web.xml` file, we will specify the lookup name for JAAS:

```
jboss-web.xml
<?xml version="1.0" encoding="UTF-8"?>
<jboss-web>
<security-domain>java:/jaas/example</security-domain>
</jboss-web>
```

How it works...

Build and deploy the WAR on JBoss, restart the server, and access the browser.

You will be prompted with a login form and JBoss authenticates the user based on the open LDAP credentials provided. The user is retrieved and is authorized with roles mentioned in the application policy. The container provides built-in APIs for authentication. The module `org.jboss.security.auth.spi.LdapExtLoginModule` handles the LDAP authentication process.

See also

- The *Hashing/Digest Authentication on servlet* recipe
- The *Basic authentication for JAX-WS and JAX-RS* recipe
- The *Enabling and disabling the file listing* recipe

Hashing/Digest authentication on servlet

In the previous authentication mechanisms, the client sends the user credentials and the container validates.

The client doesn't attempt to encrypt the password.

So, our application is still not safe and is vulnerable to attacks.

This section is about passing an encrypted user credential to the server and telling the server which encryption algorithm can be used to decrypt the data.

JBoss is the application server that I have chosen to demonstrate it.

Getting ready

- Modify `Login-config.xml`
- Create `encrypt-users. properties`
- Create `encrypt-roles. properties`

How to do it....

1. Modify the `web.xml` file:

```
<login-config>
    <auth-method>DIGEST</auth-method>
    <realm-name>PACKTSecurity</realm-name>
</login-config>
```

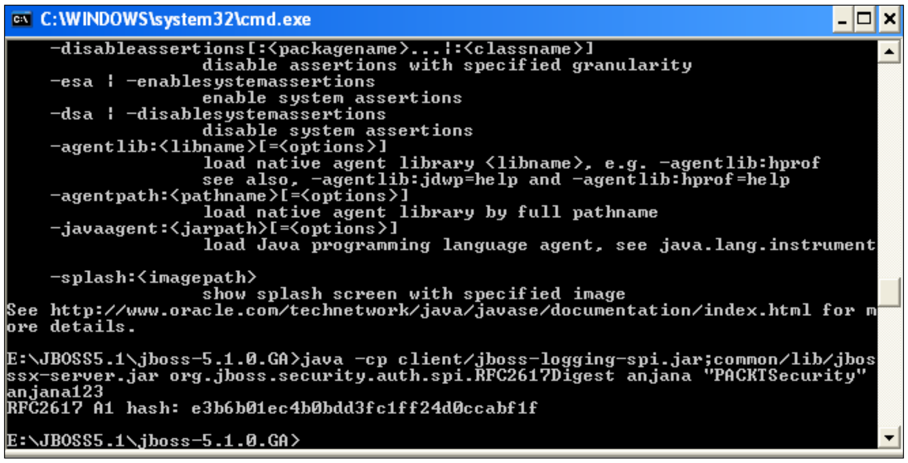
2. Now, modify the `jboss-web.xml` file. The realm name is used for hashing:

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- <jboss-web> -->
<!-- <security-domain>java:/jaas/other</security-domain> -->
<!-- </jboss-web> -->
<jboss-web>
<security-domain>java:/jaas/encryptme</security-domain>
</jboss-web>
```

3. Modify the `login-config.xml` file

```
<application-policy name="encryptme">
    <!--this is used to demonstrate DIGEST Authentication
    -->
    <authentication>
      <login-module code="org.jboss.security.auth.
        spi.UsersRolesLoginModule"
        flag="required"/>
    <module-option name="usersProperties">encrypt-
      users.properties</module-option>
    <module-option name="rolesProperties">encrypt-
      roles.properties</module-option>
    <module-option name="hashAlgorithm">MD5</module-option>
    <module-option name="hashEncoding">rfc2617</module-
      option>
    <module-option name="hashUserPassword">false</module-
      option>
    <module-option name="hashStorePassword">true</module-
      option>
    <module-option name="passwordIsA1Hash">true</module-
      option>
   <module-option name="storeDigestCallback">
                org.jboss.security.auth.spi.RFC2617Digest
    </module-option>
    </authentication>
  </application-policy>
```

4. Now, we need to tell JBoss to encrypt the user's password. To do that perform the following steps:
   - Go to `E:\JBOSS5.1\jboss-5.1.0.GA\common\lib`
   - Open `jbosssx-server.jar`
   - Go to the folder where JBoss is installed. I have installed JBoss on my `E:`
   - Now on the command line, write `cd E:\JBOSS5.1\jboss-5.1.0.GA>`
   - And then paste the following command: `java -cp client/jboss-logging-spi.jar;common/lib/jbosssx-server.jar org.jboss.security.auth.spi.RFC2617Digest anjana "PACKTSecurity" role1`


C:\WINDOWS\system32\cmd.exe

```
    -disableassertions[:<packagename>...|:<classname>]
                  disable assertions with specified granularity
    -esa | -enablesystemassertions
                  enable system assertions
    -dsa | -disablesystemassertions
                  disable system assertions
    -agentlib:<libname>[=<options>]
                  load native agent library <libname>, e.g. -agentlib:hprof
                  see also, -agentlib:jdwp=help and -agentlib:hprof=help
    -agentpath:<pathname>[=<options>]
                  load native agent library by full pathname
    -javaagent:<jarpath>[=<options>]
                  load Java programming language agent, see java.lang.instrument

    -splash:<imagepath>
                  show splash screen with specified image
See http://www.oracle.com/technetwork/java/javase/documentation/index.html for m
ore details.

E:\JBOSS5.1\jboss-5.1.0.GA>java -cp client/jboss-logging-spi.jar;common/lib/jbos
ssx-server.jar org.jboss.security.auth.spi.RFC2617Digest anjana "PACKTSecurity"
anjana123
RFC2617 A1 hash: e3b6b01ec4b0bdd3fc1ff24d0ccabf1f

E:\JBOSS5.1\jboss-5.1.0.GA>
```

   - Now edit `Encrypt-users. properties`:

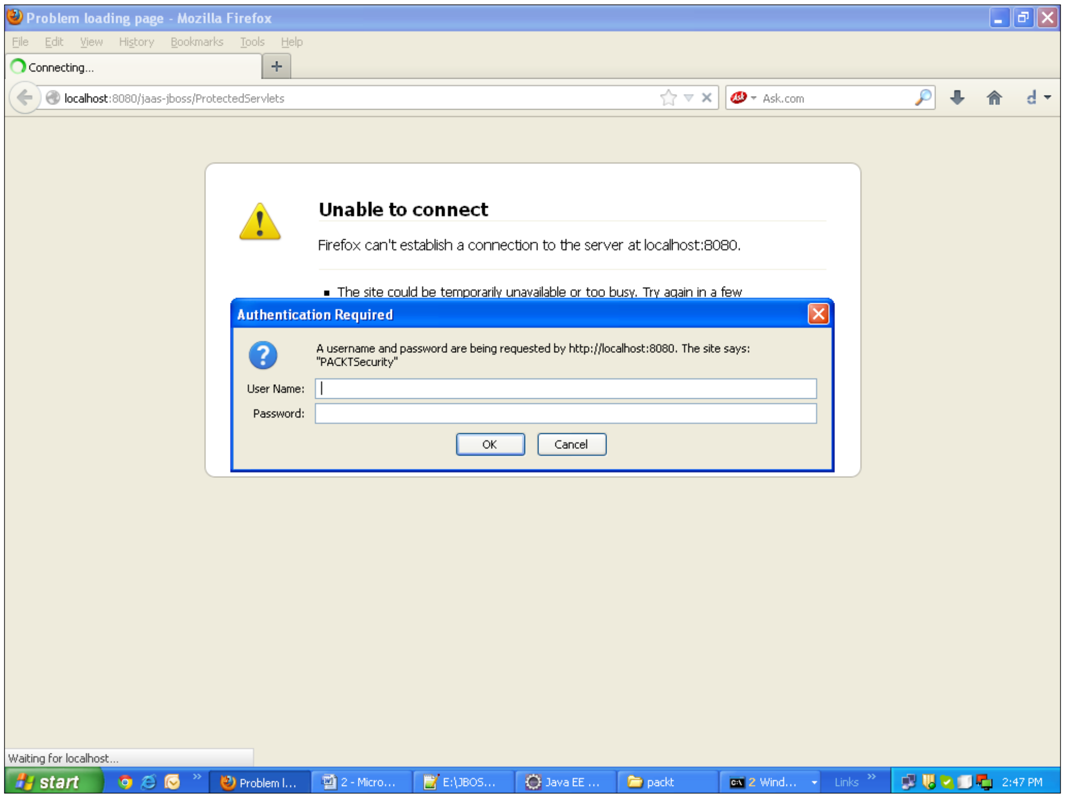
     `anjana=e3b6b01ec4b0bdd3fc1ff24d0ccabf1f`

   - Encrypt roles and update `roles.properties`

How it works...

The previous example demonstrates the digest authentication mechanism. The password given in the J2EE container is encrypted using the MD5 algorithm. The container decrypts it and verifies the user credentials against the decrypted password. The authentication mechanism is `digest` and the container pops up a login dialog box for the digest mechanism similar to the basic authentication mechanism.

The following screenshot shows the workflow:


Problem loading page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Connecting...
localhost:8080/jaas-jboss/ProtectedServlets
Ask.com
Waiting for localhost...
start
Problem I... 2 - Micro... E:\JBOS... Java EE ... packt 2 Wind... Links
2:47 PM

Unable to connect

Firefox can't establish a connection to the server at localhost:8080.

- The site could be temporarily unavailable or too busy. Try again in a few

Authentication Required

A username and password are being requested by http://localhost:8080. The site says: "PACKTSecurity"

User Name:

Password:

OK Cancel

It behaves like basic authentication, but uses the encrypted password along with the realm name to decrypt.

See also

- The *Basic authentication for JAX-WS and JAX-RS* recipe
- The *Enabling and disabling the file listing* recipe

Basic authentication for JAX-WS and JAX-RS

The authentication configuration remains the same for JAX-WS and JAX-RS.

We need to give the JAX-WS or JAX-RS URL in `<web-resource collection>`.

`Auth_type` can be basic. The container would come with a form for the user to enter the username and password.

Authentication handled by container

We will first create a web service and then make the container handle the security on it.

Let's create an interface which will expose the `service` method and then declare an `implementation` class.

Let's use Tomcat 6.0 to demonstrate this.

Getting ready

- In Eclipse-Indigo, create a dynamic web project
- Server: Tomcat 6
- JARs to be added to Tomcat `lib` folder: `https://jax-ws.java.net/2.2.7/`
- Download the project and copy the `lib` folder

How to do it...

1. Create an `interface` and an `implementation` class. Add the `@WebService` annotations to it. Create a package named `com.packt.ws`. Create an interface named `EmployeeProfile` and an `implementation` Class:

   Interface:

   ```
   package com.packt.ws;
   import javax.jws.WebMethod;
   import javax.jws.WebService;
   import javax.jws.soap.SOAPBinding;
   import javax.jws.soap.SOAPBinding.Style;
   @WebService
   @SOAPBinding(style = Style.RPC)
   public interface EmployeeProfile {
     @WebMethod
     String getSalary();
   }
   ```

   Implementation:

   ```
   package com.packt.ws;
   import javax.jws.WebService;
   import javax.jws.WebMethod;
   import javax.jws.WebService;
   @WebService(endpointInterface = "com.packt.ws.EmployeeProfile")
   public class EmployeeProfileImpl implements EmployeeProfile {
            @Override
   public String getSalary() {
   ```

```
        return "no salary for the month";
    }
    }
```

2. Also add the `sun-jaxws.xml` file under `WEB-INF`

```
<?xml version="1.0" encoding="UTF-8"?>
<endpoints
  xmlns="http://java.sun.com/xml/ns/jax-ws/ri/runtime"
  version="2.0">
  <endpoint
      name="EmployeeProfile"
      implementation="com.packt.EmployeeProfileImpl"
      url-pattern="/employee"/>
</endpoints>
```

3. Modify the `web.xml` file as shown:

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:web="http://java.sun.com/xml/ns/javaee/web-
app_2_5.xsd"
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
id="WebApp_ID" version="2.5">
  <display-name>JAX-WS-Authentication-Tomcat</display-name>
   <listener>
        <listener-class>
           com.sun.xml.ws.transport.http.servlet.
WSServletContextListener
        </listener-class>
    </listener>
    <servlet>
        <servlet-name>employee</servlet-name>
        <servlet-class>
        com.sun.xml.ws.transport.http.servlet.WSServlet
        </servlet-class>
        <load-on-startup>1</load-on-startup>
    </servlet>
    <servlet-mapping>
        <servlet-name>employee</servlet-name>
        <url-pattern>/employee</url-pattern>
    </servlet-mapping>
   <security-role>
     <description>Normal operator user</description>
     <role-name>operator</role-name>
```

```
      </security-role>

  <security-constraint>
        <web-resource-collection>
          <web-resource-name>Operator Roles Security</web-
resource-name>
          <url-pattern>/employee</url-pattern>
        </web-resource-collection>

        <auth-constraint>
          <role-name>operator</role-name>
        </auth-constraint>
        <user-data-constraint>
            <transport-guarantee>NONE</transport-guarantee>
        </user-data-constraint>
     </security-constraint>

  <login-config>
        <auth-method>BASIC</auth-method>
     </login-config>

  </web-app>
```

4. Authenticate the web services. Edit the `tomcat-users.xml` file and add this to `server.xml`:

```
<Realm className="org.apache.catalina.realm.UserDatabaseRealm"
             resourceName="UserDatabase"/>
```

How it works...

By accessing the following URL, you should be prompted for a login.

Each web service URL is authenticated.

You will be prompted with a login page (`http://localhost:8080/EmployeeProfile/employee`)

See also

- The *Enabling and disabling the file listing* recipe

Enabling and disabling the file listing

It's generally not advisable to enable directory listing in your application. By default directory listing will be disabled on JBoss.

If it is enabled, go to your JBoss installation folder.

How to do it...

The following steps will help to disable and enable file listing in the application server:

1. Browse to the path `\server\default\deployers\jbossweb.deployer`.
2. Open `web.xml` in the `WEB-INF` folder.
3. Set the listing to `false`.

```
<servlet>
      <servlet-name>default</servlet-name>
      <servlet-class>org.apache.catalina.servlets.DefaultServlet</
servlet-class>
      <init-param>
         <param-name>debug</param-name>
         <param-value>0</param-value>
      </init-param>
      <init-param>
         <param-name>listings</param-name>
         <param-value>false</param-value>
      </init-param>
      <load-on-startup>1</load-on-startup>
   </servlet>
```

See also

- The *Spring Security with Struts2* recipe

2
Spring Security with Struts 2

In this chapter we will cover:

- Integrating Struts 2 with Spring Security
- Struts 2 application with basic Spring Security
- Using Struts 2 with digest/hashing-based Spring Security
- Using Spring Security logout with Struts 2
- Authenticating databases with Struts 2 and Spring Security
- Getting the logged-in user info in Struts 2 with Spring Security
- Displaying custom error messages in Struts 2 for authentication failure
- Authenticating with ApacheDS with Spring Security and Struts 2 application

Introduction

We learned the basics of security in *Chapter 1*, *Basic Security*, which helped us to understand Spring Security better and also the origin of the Spring Security component in the Spring Framework.

In this chapter, let's see how Spring Security can be used to authenticate users in a Struts 2 framework-based web application.

Apache Struts 2 can be integrated with JSF and Spring. It is a very flexible POJO Action-based MVC framework. POJO itself performs the role of an action class to fulfill the requests. Struts 2 is derived from another framework called WebWork and it works with servlet filters, which intercept the request and response.

Exploring the Spring package

You can download the JARs from MAVEN directly or add the dependency in your POM file.

We prefer to use the latest JARs 3.1.4 from `http://mvnrepository.com/artifact/org.springframework.security/spring-security-core/`:

```
<dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-core</artifactId>
    <version>3.1.4.RELEASE</version>
 </dependency>
 <dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-web</artifactId>
    <version>3.1.4.RELEASE</version>
  </dependency>
  <dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-config</artifactId>
    <version>3.1.4.RELEASE</version>
  </dependency>
```

Main packages in Spring Security

- `org.springframework.security.authentication`: This is our area of interest
- `org.springframework.security.crypto`: This is used for encryption and decryption
- `org.springframework.security.util`: This is a general utility class used by the Spring Security API
- `org.springframework.security.core`: This contains security core classes related to authentication and authorizations
- `org.springframework.security.access`: This contains voter-based security access control annotations and decision making interfaces
- `org.springframework.security.provisioning`: This contains user and group provisioning interfaces

Key Spring Security features

- Supports JAAS.
- Supports database.
- Supports MongoDB authentication.
- Provides authentication with OpenID.

- Demonstrates multitenancy.
- Provides basic authentication.
- Provides digest authentication.
- Spring Security works like an independent module. Authentication code is handled independently by the Spring Security framework.
- Supports authentication with ApacheDS.
- Supports authentication with Open LDAP.

Authentication mechanism

1. User submits their credentials to the system; that is, a username and password.
2. `org.springframework.security.authentication.UsernamePasswordAuthenticationToken` accepts the credentials and passes them to `org.springframework.security.authentication.AuthenticationManager` for validation.
3. System authenticates the user.
4. Credential flows as follows: `UsernamePasswordAuthenticationToken` | `AuthenticationManager` | `Authentication`.
5. Finally a fully loaded authentication instance is returned.
6. `SecurityContextHolder` accepts the authentication instance.
7. The system also checks for authorization of roles or groups.
8. Finally, the user is allowed to access the system based on his authorization.

Integrating Struts 2 with Spring Security

Let's first set up a Struts 2 application and integrate Spring Security with it.

Getting ready

- Eclipse Indigo or higher version
- JBoss as server
- Struts 2 JARs: 2.1.x
- Spring-core JARs 3.1.4. Release and Spring-Security 3.1.4.Release
- Struts 2 Spring plugin jar

How to do it...

In this section, we will learn how to set up the Struts 2 application with form-based Spring Security:

1. In your Eclipse IDE, create a dynamic web project and name it `Spring_Security_Struts2`.
2. Create a source folder at `src/main/java`.
3. Create a `struts.xml` file under the source folder `src/main/java`.
4. To integrate Struts 2 with the Spring application, add the `application-context.xml` file reference here.
5. Add the Struts filter mapping in `web.xml`. Spring listener also needs to be added to the `web.xml` file. The listener entry should be above the Struts 2 filter entry.
6. The `contextLoaderListener` will tell the `servletcontainer` about the `springcontextLoader` and it will track events. This also allows the developers to create `BeanListeners`, which allow it to track events in the Bean.
7. In the `web.xml` file, add the following code:

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:web="http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
xsi:schemaLocation=
"http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
id="WebApp_ID" version="2.5">
<display-name>Struts2x</display-name>
<listener>
<listener-class>org.springframework.web.
context.ContextLoaderListener</listener-class>
</listener>
<!—to integrate spring with struts2->
<context-param>
<param-name>contextConfigLocation</param-name>
<param-value>/WEB-INF/applicationContext.xml</param-value>
</context-param>
<filter>
<filter-name>struts2</filter-name>
<filter-class>org.apache.struts2.dispatcher.FilterDispatcher</
filter-class>
</filter>
```

```
<filter-mapping>
<filter-name>struts2</filter-name>
<url-pattern>/*</url-pattern>
</filter-mapping>

</web-app>
```

8. To set up form-based security, we need to create `login.jsp`. The form action is `j_spring_security_check`:

```
<%@ taglib prefix="c" url="http://java.sun.com/jsp/jstl/core"%>
<html>
  <head>
  <title>Login Page</title>
  <style>
    .errorblock {
      color: #ff0000;
      background-color: #ffEEEE;
      border: 3px solid #ff0000;
      padding: 8px;
      margin: 16px;
    }
  </style>
  </head>
  <body onload='document.f.j_username.focus();'>
    <h3>Login with Username and Password (Custom Page)</h3>
    <% String error=request.getParameter("error");

    if(error!=null){
      %>

      <div class="errorblock">
      Your login attempt was not successful, try again.
        <br /> Caused :

      </div>

    <%} %>
    <form name='f' action="<c:url
      value='/j_spring_security_check'/>"
    method='POST'>

    <table>
      <tr>
        <td>User:</td>
        <td><input type='text' name='j_username' value=''>
        </td>
```

```
            </tr>
            <tr>
              <td>Password:</td>
              <td><input type='password' name='j_password' />
              </td>
            </tr>
            <tr>
              <td colspan='2'><input name="submit" type="submit"
              value="submit" />
              </td>
            </tr>
            <tr>
              <td colspan='2'><input name="reset" type="reset" />
              </td>
            </tr>
          </table>

          </form>
        </body>
      </html>
```

9. Create a folder and name it `secure/hello.jsp`.
10. Map the `login` action with `login.jsp`.
11. Map the `loginfailed` action with `login.jsp?error=true`.
12. Map the `welcome` action with `secure/hello.jsp` with the action class-`HelloWorld`:

    `struts.xml`:

```
<!DOCTYPE struts PUBLIC
"-//Apache Software Foundation//DTD Struts Configuration 2.0//EN"
"http://struts.apache.org/dtds/struts-2.0.dtd">
<struts>
  <package name="default" namespace="/" extends="struts-
    default">
  <action name="helloWorld">
    <result>success.jsp</result>
  </action>

  <action name="login">
    <result>login.jsp</result>
  </action>

  <action name="loginfailed">
    <result>login.jsp?error=true</result>
  </action>
```

```
    <action name="welcome" >
      <result>secure/hello.jsp</result>
    </action>

    </package>
  </struts>
```

13. The `login page` URL is mapped with the Struts 2 action `'/login'`.
14. Security is applied on the Struts 2 action `'/welcome'`.
15. The user will be prompted to login.
16. The user with `role_user` will be authorized to access the pages

`Applicationcontext-security.xml`:

```
<beans:beans xmlns="http://www.springframework.org
/schema/security"
   xmlns:beans="http://www.springframework.org
/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org
/schema/beans
   http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
   http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">
        <!-- AspectJ pointcut expression that locates our "post"
method and applies security that way
        <protect-pointcut expression="execution(*
bigbank.*Service.post*(..))" access="ROLE_TELLER"/>
        -->
    </global-method-security>
   <http auto-config="true" use-expressions="true" >
          <intercept-url pattern="/welcome"
access="hasRole('ROLE_USER')"/>
          <form-login login-page="/login" default-target-
url="/welcome" authentication-failure-
url="/loginfailed?error=true" />
          <logout/>
   </http>
    <authentication-manager>
     <authentication-provider>
       <user-service>
```

```
            <user name="anjana" password="packt123"
authorities="ROLE_USER" />
        </user-service>
      </authentication-provider>
    </authentication-manager>

</beans:beans>
```

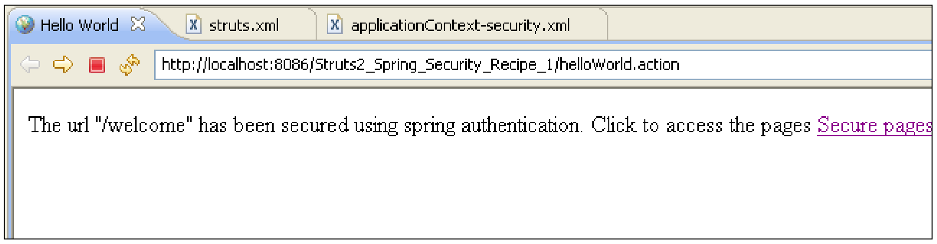
How it works...

Just run the application. You will be provided with a link to access the secured page. On clicking on the link you will be prompted to log in. This is actually a form-based login.

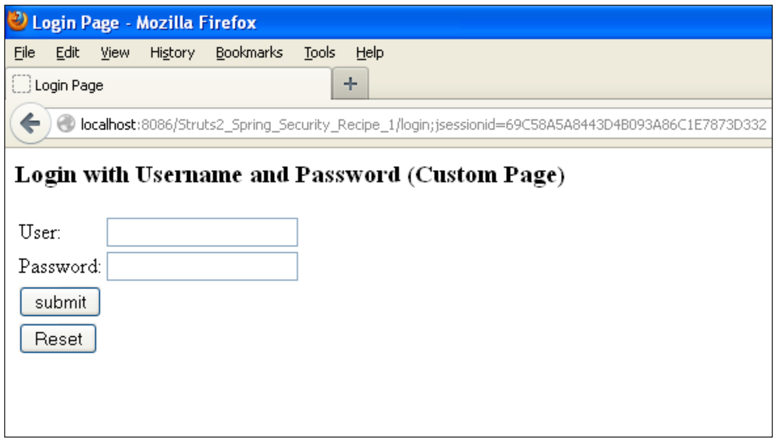
Here on submit, the action is sent to the Spring Framework which authenticates the user.

On success, the user will see the authenticated page.

The Struts 2 framework easily gels with the Spring Framework and its modules with very minor modification.


Hello World
struts.xml
applicationContext-security.xml
http://localhost:8086/Struts2_Spring_Security_Recipe_1/helloWorld.action

The url "/welcome" has been secured using spring authentication. Click to access the pages Secure pages


Login Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Login Page
localhost:8086/Struts2_Spring_Security_Recipe_1/login;jsessionid=69C58A5A8443D4B093A86C1E7873D332

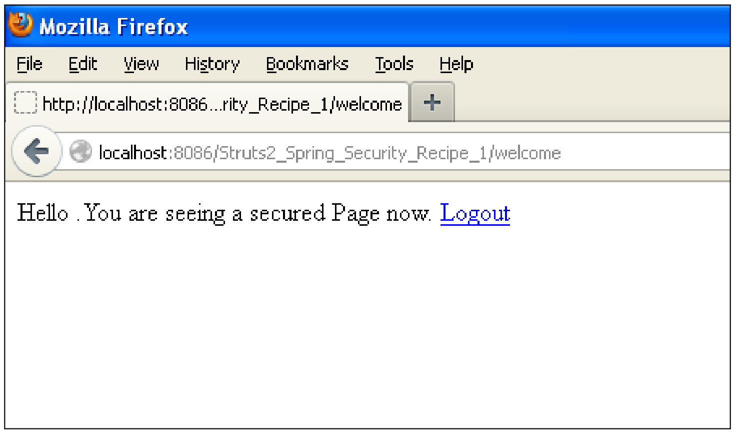
Login with Username and Password (Custom Page)

User:

Password:

submit

Reset


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:8086...rity_Recipe_1/welcome
localhost:8086/Struts2_Spring_Security_Recipe_1/welcome

Hello . You are seeing a secured Page now. Logout

See also

- The *Struts 2 application with basic Spring Security* recipe
- The *Using Struts 2 with digest/hashing-based Spring Security* recipe
- The *Displaying custom error messages in Struts 2 for authentication failure* recipe
- The *Authenticating databases with Struts 2 and Spring Security* recipe
- The *Authenticating with ApacheDS with Spring Security and Struts 2 application* recipe
- The *Using Spring Security logout with Struts 2* recipe
- The *Getting the logged-in user info in Struts 2 with Spring Security* recipe

Struts 2 application with basic Spring Security

In this section we will demonstrate basic Spring Security authentication with Struts 2. We will create a sample Struts 2 application and add Spring Security features to the action to make it secured. Only authenticated authorized users can access it.

Getting ready

- Update the `Applicationcontext-security.xml` file
- Create a new dynamic project in Eclipse: `Struts2_Spring_BASIC_Security_Recipe2`

How to do it...

Perform the following steps for integrating the Struts 2 application with Spring Security to implement basic authentication:

1. Modify the `applicationcontext-security.xml` file to support basic security:

   `Applicationcontext-security.xml`:

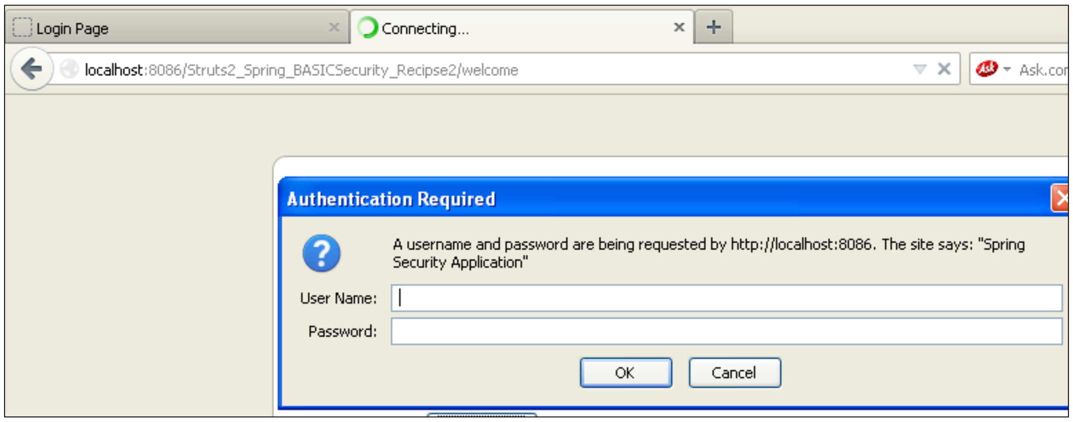
```
<beans:beans xmlns="http://www.springframework.org
/schema/security"
   xmlns:beans="http://www.springframework.org
/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org
/schema/beans
   http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
   http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-security-
3.1.xsd">

 <global-method-security pre-post-annotations="enabled">
        <!-- AspectJ pointcut expression that locates our "post"
method and applies security that way
        <protect-pointcut expression="execution(*
bigbank.*Service.post*(..))" access="ROLE_TELLER"/>
        -->
    </global-method-security>

  <http>
   <intercept-url pattern="/welcome" access="ROLE_TELLER"
/>
   <http-basic />
  </http>
   <authentication-manager>
     <authentication-provider>
       <user-service>
         <user name="anjana" password="123456"
authorities="ROLE_TELLER" />
       </user-service>
     </authentication-provider>
   </authentication-manager>
</beans:beans>
```

How it works...

When the user runs the Struts 2 application and tries to access the secured resource, the Spring Security context is initialized and the Struts 2 action is interrupted with Spring's login dialog box, which will request the username and password. On successful authentication, the user will be redirected to the Struts 2 action page.

The following is the workflow of the application:

Struts 2 and Spring basic security on browser:



A username and password are being requested by http://localhost:8086. The site says: "Spring Security Application"

See also

- The *Using Struts 2 with digest/hashing-based Spring Security* recipe

Using Struts 2 with digest/hashing-based Spring Security

Using the form-based or basic authentication doesn't make the Struts 2-based application secure since the passwords are exposed to the user as plain text. There is a crypto package available in Spring Security JAR. The package can decrypt the encrypted password, but we need to tell the Spring Security API about the algorithm used for encryption.

Getting ready

- Create a dynamic web project in Eclipse
- Add the Struts 2 JARs

- Add Spring Security related JARs
- The `web.xml`, `struts2.xml`, and JSP settings remain the same as the previous application

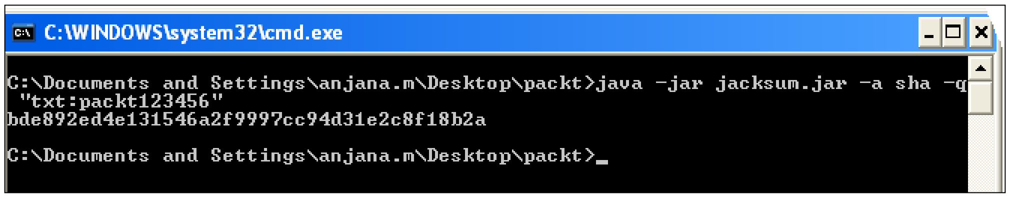
How to do it...

Let's encrypt the password: `packt123456`.

We need to use an external JAR, `JACKSUM`, which means Java checksum. It supports both MD5 and SHA1 encryption.

Download the `jacksum.zip` file (`http://www.jonelo.de/java/jacksum/#Download`) and extract the ZIP folder.

```
packt>java -jar jacksum.jar -a sha -q"txt:packt123456"
```



```
C:\Documents and Settings\anjana.m\Desktop\packt>java -jar jacksum.jar -a sha -q
 "txt:packt123456"
bde892ed4e131546a2f9997cc94d31e2c8f18b2a

C:\Documents and Settings\anjana.m\Desktop\packt>_
```

Update the `applicationcontext-security.xml` file:

```
<beans:beans xmlns="http://www.springframework.org
/schema/security"
   xmlns:beans="http://www.springframework.org/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org/schema/beans
   http://www.springframework.org/schema/beans/spring-beans-
3.0.xsd
   http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-security-
3.1.xsd">

 <global-method-security pre-post-annotations="enabled">
        <!-- AspectJ pointcut expression that locates our "post"
method and applies security that way
        <protect-pointcut expression="execution(* bigbank.*Service.
post*(..))" access="ROLE_TELLER"/>
        -->
    </global-method-security>
  <http>
   <intercept-url pattern="/welcome" access="ROLE_TELLER" />
```

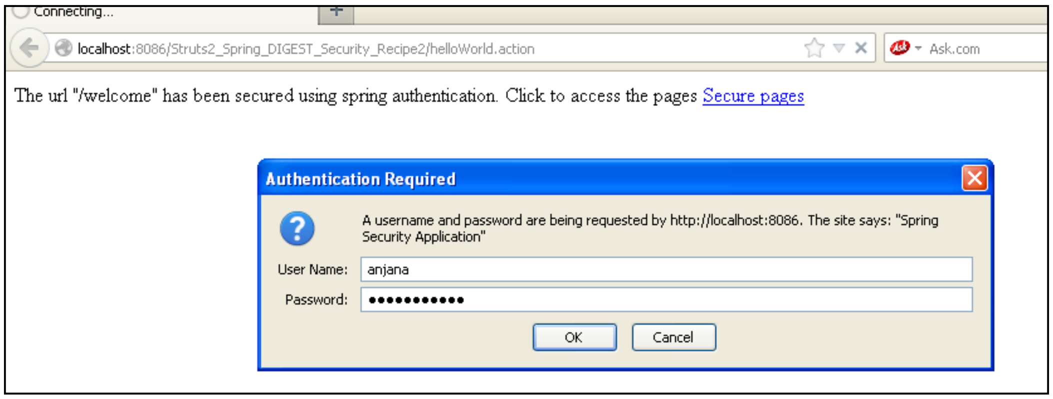
```
      <http-basic />
     </http>
      <authentication-manager>
         <authentication-provider>
      <password-encoder hash="sha" />
         <user-service>
            <user name="anjana" password="bde892ed4e131546a2f9997cc94d31
e2c8f18b2a"
             authorities="ROLE_TELLER" />
         </user-service>
      </authentication-provider>
      </authentication-manager>
   </beans:beans>
```

How it works...

We need to update the `Applicationcontext-security.xml` file. Observe that the type of authentication is basic but the password is hashed using the algorithm. We want the Spring Security to decrypt it using the SHA algorithm and authenticate the user.

Spring Security is very flexible in handling digest authentication. You can also see that there is no container-based dependency.

Basic authentication from the browser can be seen in the following screenshot:


Connecting...
localhost:8086/Struts2_Spring_DIGEST_Security_Recipe2/helloWorld.action
Ask.com

The url "/welcome" has been secured using spring authentication. Click to access the pages Secure pages

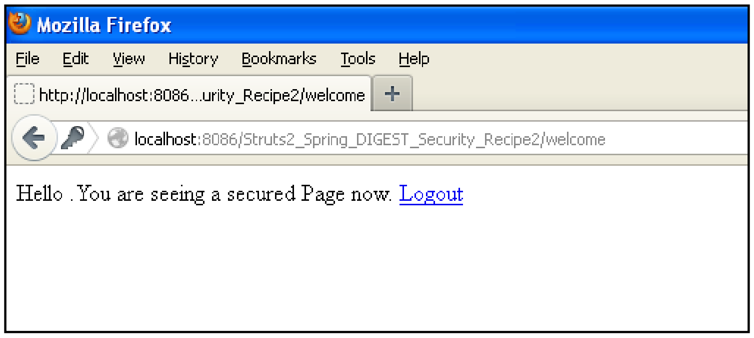
Authentication Required

A username and password are being requested by http://localhost:8086. The site says: "Spring Security Application"

User Name: anjana

Password: ●●●●●●●●●●●●

Spring has authenticated the user by decrypting the password:


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:8086...urity_Recipe2/welcome
localhost:8086/Struts2_Spring_DIGEST_Security_Recipe2/welcome

Hello . You are seeing a secured Page now. Logout

See also

- The *Displaying custom error messages in Struts 2 for authentication failure* recipe
- The *Authenticating databases with Struts 2 and Spring Security* recipe
- The *Authenticating with ApacheDS with Spring Security and Struts 2 application* recipe
- The *Using Spring Security logout with Struts 2* recipe
- The *Getting the logged-in user info in Struts 2 with Spring Security* recipe

Using Spring Security logout with Struts 2

In this section let us implement a logout scenario, where the logged-in user will be logged out of the application. The logout action will be handled by the Spring Security framework. We need to configure the `struts.xml` file to handle the `j_spring_security_logout` action.

Getting ready

- Create a dynamic web project in Eclipse
- Add the Struts 2 related JARs
- Add Spring Security-related JARs
- The `web.xml`, `struts2.xml`, and JSP settings remain the same as the previous application

How to do it...

1. Let's update the secure page, `hello.jsp`:

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>
<%@page import="java.security.Principal" %>
<html>
<body>
Hello .You are seeing a secured Page now.

   <a href="<c:url value="/j_spring_security_logout" />" >
Logout</a>
 </body>
</html>
```

2. Let's map the `j_spring_security_logout` with the `struts.xml` file:

   When the user clicks on **logout**, the user will be logged out and will be redirected to `index.jsp`.

```
<!DOCTYPE struts PUBLIC
"-//Apache Software Foundation//DTD Struts Configuration 2.0//EN"
"http://struts.apache.org/dtds/struts-2.0.dtd">
<struts>
   <package name="default" namespace="/" extends="struts-default">
        <action name="helloWorld">
            <result>success.jsp</result>
        </action>

      <action name="login">
                <result>login.jsp</result>
         </action>

         <action name="loginfailed">
                <result>login.jsp?error=true</result>
         </action>

         <action name="welcome" >
         <result>secure/hello.jsp</result>
         </action>

   <action name="j_spring_security_logout">
   <result>index.jsp</result>
         </action>
    </package>
</struts>
```

3. Update the `applicationcontext-security.xml` file:

```
<beans:beans xmlns="http://www.springframework.org/schema/
security"
   xmlns:beans="http://www.springframework.org
/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org
/schema/beans
   http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
   http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">
    </global-method-security>
  <http>
   <intercept-url pattern="/welcome" access="ROLE_TELLER"
/>
   <logout logout-success-url="/helloWorld" />
   <http-basic />
  </http>
   <authentication-manager>
      <authentication-provider>
   <password-encoder hash="sha" />
      <user-service>
         <user name="anjana" password="bde892ed4e131546a2f9997cc94
d31e2c8f18b2a"
             authorities="ROLE_TELLER" />
      </user-service>
   </authentication-provider>
   </authentication-manager>
</beans:beans>
```

How it works...

Spring Security also provides options to handle logout. When the user clicks on **logout**, the user is directed to the assigned page.

`j_spring_secuurity_logout` provides the logout option for the Struts 2 application.

The Struts 2 application has the map and the URL with its action.

The logout option is usually given in the secured pages.

There's more...

Till now we have stored the authentication information in the `.xml` file. We have also hashed the password. How about storing the information on the external system and getting it? Let's see how Struts 2 works with this database authentication in the following section.

See also

- The *Displaying custom error messages in Struts 2 for authentication failure* recipe
- The *Authenticating databases with Struts 2 and Spring Security* recipe
- The *Authenticating with ApacheDS with Spring Security and Struts 2 application* recipe
- The *Getting the logged-in user info in Struts 2 with Spring Security* recipe

Authenticating databases with Struts 2 and Spring Security

In this section, let us authorize the user who logs into the Struts 2 application using the information stored in the database. Spring Security needs to be configured in Struts 2 application such that it gets to know the location of the database and SQL that needs to be executed to authenticate the user using Spring Security.

Getting ready

- Create a dynamic web project in Eclipse: `Struts2_Spring_DBAuthentication_Recipe4`
- Copy the `struts.xml` file to `src/main/java`
- Add the `db-beans.xml` file to `WEB-INF`
- Copy the `webContent` folder from the previous recipe
- Add the following JARs into the `lib` folder or update your POM file if you are using maven:
    - spring-jdbc-3.0.7.RELEASE
    - mysql-connector-java-5.1.17
    - commons-dbcp
    - commons-pool-1.5.4

How to do it...

1. To perform database authentication with Struts 2 and Spring, we need to create a `db-beans.xml` file. The `db-beans.xml` file will have database information:

```
<beans xmlns="http://www.springframework.org/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org/schema/beans
   http://www.springframework.org/schema/beans/spring-beans-
3.0.xsd">
    <bean id="MySqlDatasource" class="org.springframework.jdbc.
datasource.DriverManagerDataSource">
   <property name="driverClassName" value="com.mysql.jdbc.Driver"
/>
   <property name="url" value="jdbc:mysql://localhost:3306/test1"
/>
   <property name="username" value="root" />
   <property name="password" value="prdc123" />
   </bean>
 </beans>
```

2. Add the `db-beans.xml` file in the same place as `applicationcontext-security.xml`. Update the `web.xml` file to read the `db-beans.xml` file:

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://java.sun.com/xml/ns/javaee" xmlns:web="http://java.
sun.com/xml/ns/javaee/web-app_2_5.xsd" xsi:schemaLocation=
"http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
id="WebApp_ID" version="2.5">
  <display-name>SpringStruts2Security</display-name>
 <context-param>
         <param-name>contextConfigLocation</param-name>
         <param-value>
               /WEB-INF/db-beans.xml,
               /WEB-INF/applicationContext-security.xml
         </param-value>
   </context-param>

  <filter>
    <filter-name>springSecurityFilterChain</filter-name>
    <filter-class>
                 org.springframework.web.filter.
DelegatingFilterProxy
                </filter-class>
  </filter>
  <filter-mapping>
    <filter-name>springSecurityFilterChain</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <filter>
    <filter-name>struts2</filter-name>
    <filter-class>org.apache.struts2.dispatcher.ng.filter.
StrutsPrepareAndExecuteFilter</filter-class>
  </filter>
  <listener>
    <listener-class>org.springframework.web.context.
ContextLoaderListener</listener-class>
  </listener>
  <filter-mapping>
    <filter-name>struts2</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <error-page>
          <error-code>403</error-code>
          <location>/secure/denied.jsp</location>
   </error-page>

  <welcome-file-list>
    <welcome-file>index.jsp</welcome-file>
  </welcome-file-list>
</web-app>
```

3. Run the following SQL script in your database:

```
CREATE TABLE `users1` (  `USER_ID` INT(10) UNSIGNED NOT NULL,
  `USERNAME` VARCHAR(45) NOT NULL,
  `PASSWORD` VARCHAR(45) NOT NULL,
  `ENABLED` tinyint(1) NOT NULL,
  PRIMARY KEY (`USER_ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
CREATE TABLE `user_roles` (
  `USER_ROLE_ID` INT(10) UNSIGNED NOT NULL,
  `USER_ID` INT(10) UNSIGNED NOT NULL,
  `ROLE` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`USER_ROLE_ID`),
  KEY `FK_user_roles` (`USER_ID`),
  CONSTRAINT `FK_user_roles` FOREIGN KEY (`USER_ID`) REFERENCES
`users` (`USER_ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
INSERT INTO test1.users (USER_ID, USERNAME,PASSWORD, ENABLED)
VALUES (100, 'anjana', 'packt123456', TRUE);

INSERT INTO test1.user_roles (USER_ROLE_ID, USER_ID,AUTHORITY)
VALUES (1, 100, 'ROLE_TELLER');
```

4. Update the `applicationContext-security.xml` file to read the database configuration:

```
<beans:beans xmlns="http://www.springframework.org/schema/
security"
   xmlns:beans="http://www.springframework.org
/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org
/schema/beans
   http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
   http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">
        <!-- AspectJ pointcut expression that locates our "post"
method and applies security that way
        <protect-pointcut expression="execution(*
bigbank.*Service.post*(..))" access="ROLE_TELLER"/>
        -->
    </global-method-security>

  <http>
   <intercept-url pattern="/welcome" access="ROLE_TELLER"
/>
   <logout logout-success-url="/helloWorld" />
   <http-basic />
  </http>

   <authentication-manager>
      <authentication-provider>
         <jdbc-user-service data-source-ref="MySqlDS"

            users-by-username-query="
                select username,password, enabled
               from users1 where username=?"

            authorities-by-username-query="
               select u.username, ur.role from users1 u,
user_roles ur
```

```
                where u.user_id = ur.user_id and u.username =?  "
                />
            </authentication-provider>
        </authentication-manager>
    </beans:beans>
```

How it works...

Struts 2 Framework gives a link to access the secured page. But the Spring Security framework interrupts and gives an authentication dialog box .The authentication is done by Spring Security Framework by querying the database. The authentication manager is configured with the datasource ref, which will load information for the security framework to authenticate the user based on the query.

There's more...

So far we applied security with just a JSP file, which is mapped without action in `struts2.xml`. Let's see how we can map an action class with JSP, and then integrate with Spring Security. Ideally it should work in the same way. Let's get the logged-in user information in the action class and display it on the browser.

See also

- The *Displaying custom error messages in Struts 2 for authentication failure* recipe
- The *Authenticating with ApacheDS with Spring Security and Struts 2 application* recipe
- The *Getting the logged-in user info in Struts 2 with Spring Security* recipe

Getting the logged-in user info in Struts 2 with Spring Security

So far in our examples we have not used any Struts 2 action class.

Let's create an action class and see how Security behaves with this action class. We will use form-based authentication with this recipe.

Getting ready

So far in our examples we have not used any Struts 2 action class.

Let's create an action class and see how security behaves with this action class. We will use form-based authentication with this recipe:

- Create a dynamic web project: `Struts2_Spring_Security_Recipe5`
- Create a package: `com.packt.action`
- Copy the `struts.xml` file from the previous recipe in `src/main/java`
- Also copy the `WebContent` folder
- We need to add an action class to the package
- Update the `struts.xml` file

How to do it...

1. The `HelloAction` file is as follows:

```
package com.packt.action;
public class HelloAction {
         public String execute(){
         return "SUCCESS";
   }
}
```

2. Update the `Struts.xml` file with `HelloAction`. So when the user is authenticated, it will pass the request to the action class which will execute the `execute()` method, and then will be redirected to `hello.jsp`:

```
<!DOCTYPE struts PUBLIC
"-//Apache Software Foundation//DTD Struts Configuration 2.0//EN"
"http://struts.apache.org/dtds/struts-2.0.dtd">
<struts>
   <package name="default" namespace="/" extends="struts-default">
        <action name="helloWorld">
            <result>success.jsp</result>
        </action>

      <action name="login">
               <result>login.jsp</result>
         </action>

         <action name="loginfailed">
               <result>login.jsp?error=true</result>
         </action>

         <action name="welcome"
           class="com.packt.action.HelloAction">
```

```
            <result name="SUCCESS">secure/hello.jsp</result>
            </action>

        </package>
    </struts>
```

3. Getting the logged in user:

   We can get the logged in username in the action class and we can display it on the page or use it further in our application.

   We can use `request.getUserPrincipal` in our action class to get the logged in user information.

4. For the project setup:
   - Create a dynamic web project in Eclipse: `Struts2_Spring_Security_Recipe6`
   - Copy the `src/main/java` folder from the previous recipe
   - Copy the `Web content` folder from the previous recipe
   - Modify the `HelloAction.java` file

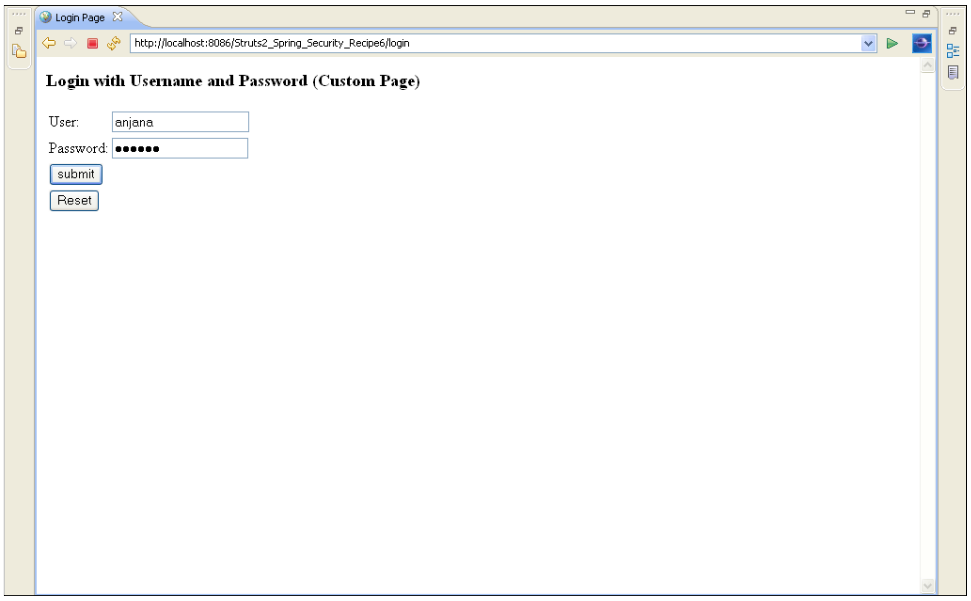
```
package com.packt.action;
import javax.servlet.http.HttpServletRequest;
import org.apache.struts2.ServletActionContext;
public class HelloAction {
   private String name;
               public String execute(){
               HttpServletRequest request = ServletActionContext.
getRequest();
               String logged_in_user=request.getUserPrincipal().
getName();
               setName(logged_in_user);
               return "SUCCESS";
         }

         public String getName() {
               return name;
         }

         public void setName(String name) {
               this.name = name;
         }
}
```

- Modify the `secure/Hello.jsp` file:

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>
<%@taglib uri="/struts-tags" prefix="s" %>
<%@page import="java.security.Principal" %>
<html>
  <body>
    Hello <h1><s:property value="name" /></h1>.You are
      seeing a secured Page now.
    <a href="<c:url value="/j_spring_security_logout" />" >
      Logout</a>
  </body>
</html>
```

How it works...

The user information is stored in principal:

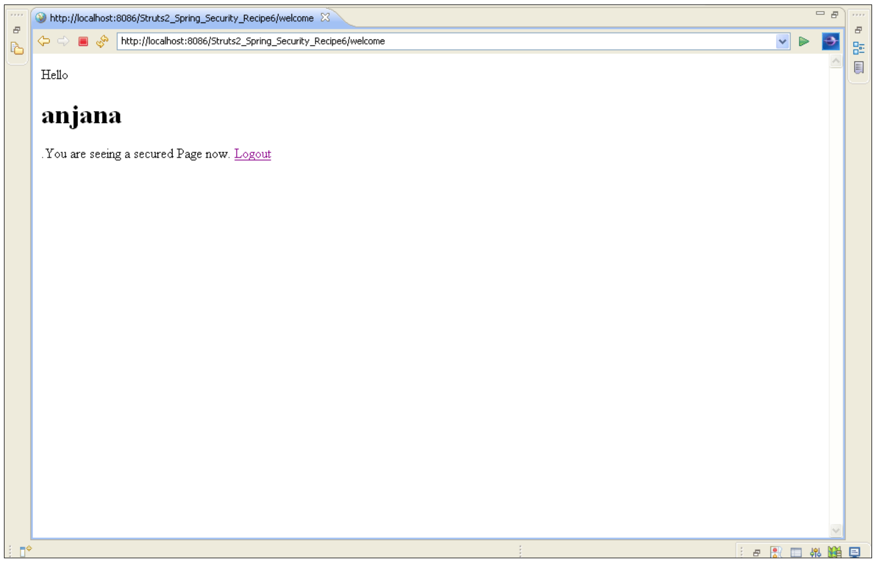


Login with Username and Password (Custom Page)

User: anjana

Password: ●●●●●●

Displaying the logged in user on the browser:


http://localhost:8086/Struts2_Spring_Security_Recipe6/welcome

Hello

anjana

.You are seeing a secured Page now. Logout

There's more...

After displaying the user information, we can display the custom error message to the user on authentication failure.

See also

- The *Displaying custom error messages in Struts 2 for authentication failure* recipe
- The *Authenticating with ApacheDS with Spring Security and Struts 2 application* recipe

Displaying custom error messages in Struts 2 for authentication failure

In this section, we will capture the authentication failure message from Spring Security in our Struts 2 application and see how this can be displayed to the user.

Getting ready

- Redirect to failure action on authentication failure
- Display a custom message to the user

How to do it...

Perform the following steps for capturing Spring Security's authentication failure messages in the JSP application:

1. In the `applicationcontext.xml` file, we can redirect the URL to another action: `Authentication-failure-url="/loginfailed? error=true"`.

   ```
   <http auto-config="true" use-expressions="true" >
            <intercept-url pattern="/welcome" access="hasRole('ROLE_
   TELLER')"/>
            <form-login login-page="/login" default-target-url="/
   welcome" authentication-failure-url="/loginfailed?error=true" />
            <logout/>
      </http>
   ```

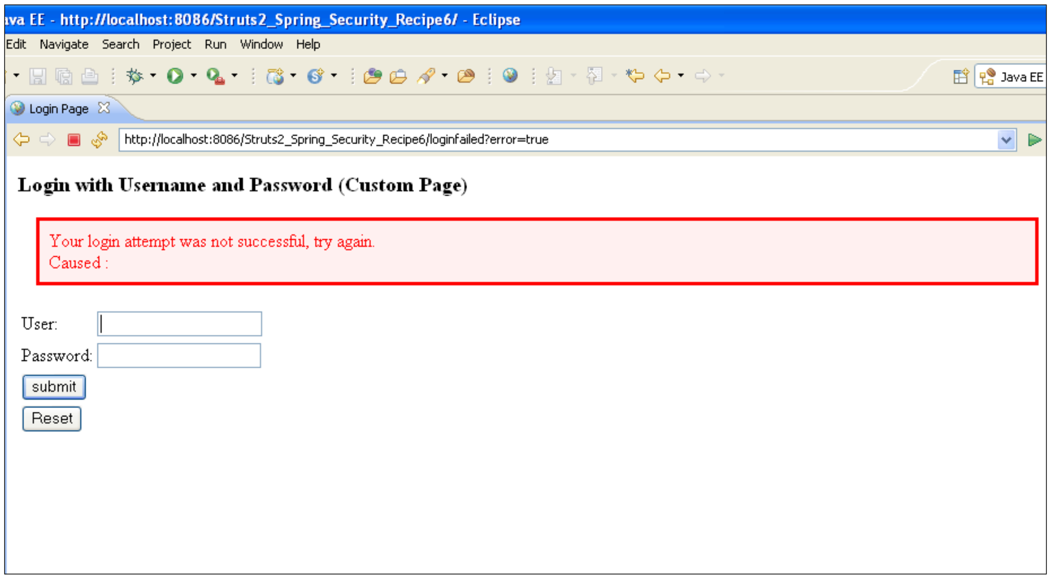
2. Update the `login.jsp` page with the following code:

   ```
   <% String error=request.getParameter("error");

    if(error!=null){
    %>

             <div class="errorblock">
                   Your login attempt was not successful, try
                     again.<br /> Caused :

             </div>

    <%} %>
   ```

How it works...

Login failed action is mapped with the `login.jsp` file in `struts2.xml`. The `authentication-failure-url` is added in the `application-context.xml`. When the user enters the wrong credentials, authentication fails and the user is redirected to the login page with an error message.

The error message configuration is done in the JSP file.


ava EE - http://localhost:8086/Struts2_Spring_Security_Recipe6/ - Eclipse
Edit Navigate Search Project Run Window Help
Java EE
Login Page
http://localhost:8086/Struts2_Spring_Security_Recipe6/loginfailed?error=true

Login with Username and Password (Custom Page)

Your login attempt was not successful, try again.
Caused :

User:
Password:

See also

- The *Authenticating with ApacheDS with Spring Security and Struts 2 application* recipe

Authenticating with ApacheDS with Spring Security and Struts 2 application

In this section, we will be storing the user credentials and role information in the Apache directory server. Spring Security has to locate the server and log in to the server. It should authenticate the user by comparing the credentials submitted by the user and the credentials and role information present in the Apache directory server.

Getting ready

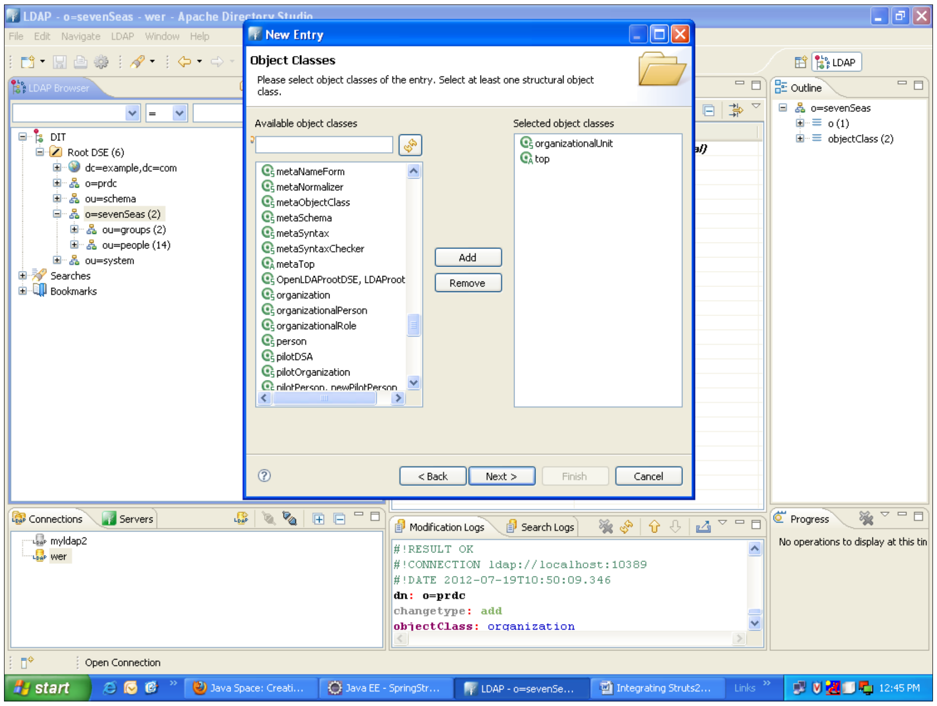
- Create a dynamic web project in Eclipse
- The `src/main/java` folder and the `WebContent` Folder remain the same
- Install Apache directory studio: 1.5.3

- Install Apache directory server: 2.0
- 10389 is the apache-ds port
- Add LDAP-related security JARs to the `WebContent Lib` folder
- spring-ldap-core-tiger-1.3.X release
- spring-ldap-odm-1.3.X release
- spring-security-ldap-1.3.X release
- spring-ldap-ldif-batch-1.3.X release
- spring-ldap-test-1.3.X release
- spring-ldap-core-1.3.X release
- spring-ldap-ldif-core-1.3.X release

How to do it...

Perform the following steps to set up Apache directory to authenticate users in the Struts 2 application using Spring Security:

1. Configure the Apache DS Server after installing the mentioned prerequisites.
2. Create a partition using the following steps:
   - Open the `server.xml` file: `C:\Program Files\Apache Directory Server\instances\default\conf\server.xml`.
   - Add JDM partition: `<jdbmPartition id="packt" suffix="o=packt"/>`.
   - You can restart the Apache DS Server to see the changes. Then connect to Apache DS using the Apache Directory Studio. Right Click on **DIT**. Create **Entry** from **Scratch**. Select **Organization**, select **o** and in the **Value** enter `packt`. Select **Finish** and refresh the **DIT** to see the updates.
3. Configure Apache Directory studio.
4. Connect to the Apache directory server.
5. Apache DS runs on 10389.
6. Create two groups `ou=groups` and `ou=user`.

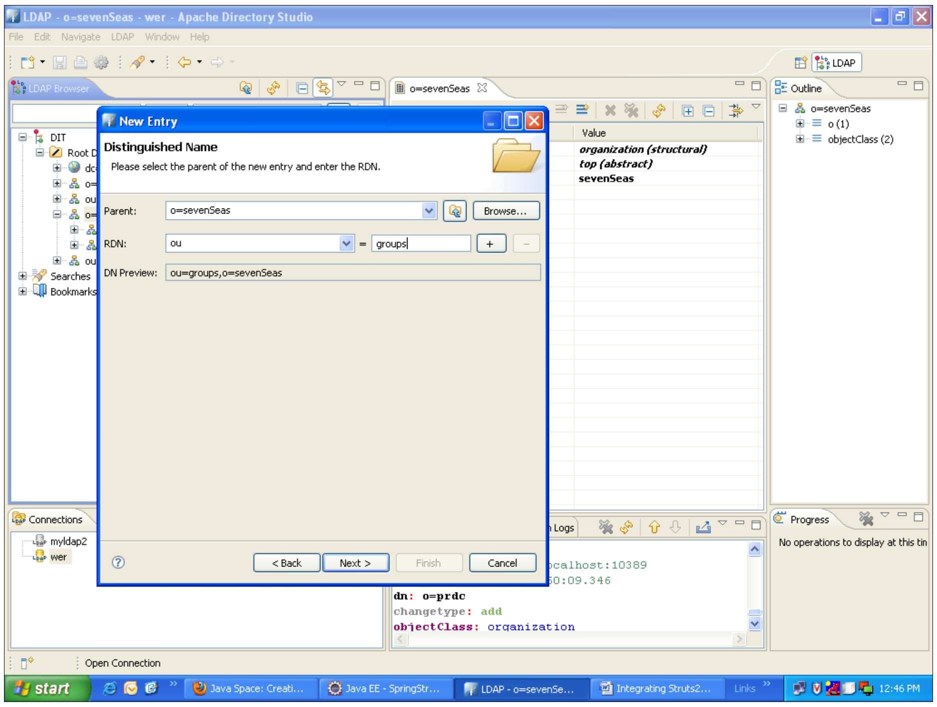


Object Classes

Please select object classes of the entry. Select at least one structural object class.

Available object classes	Selected object classes
metaNameForm	organizationalUnit
metaNormalizer	top
metaObjectClass	
metaSchema	
metaSyntax	
metaSyntaxChecker	
metaTop	
OpenLDAProotDSE, LDAProot	
organization	
organizationalPerson	
organizationalRole	
person	
pilotDSA	
pilotOrganization	
pilotPerson, newPilotPerson	

```
#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2012-07-19T10:50:09.346
dn: o=prdc
changetype: add
objectClass: organization
```



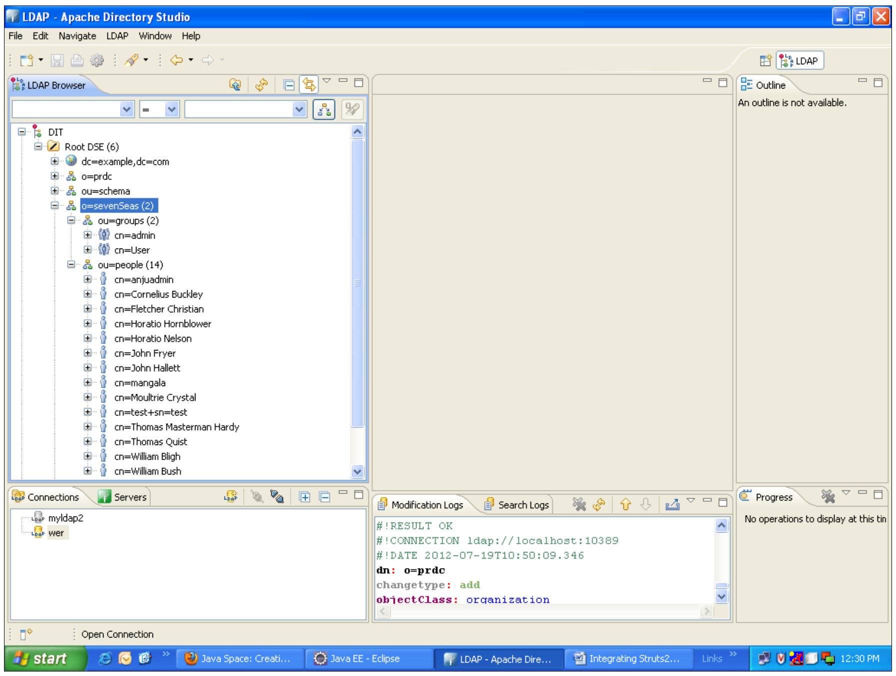
Distinguished Name

Please select the parent of the new entry and enter the RDN.

Parent: o=sevenSeas

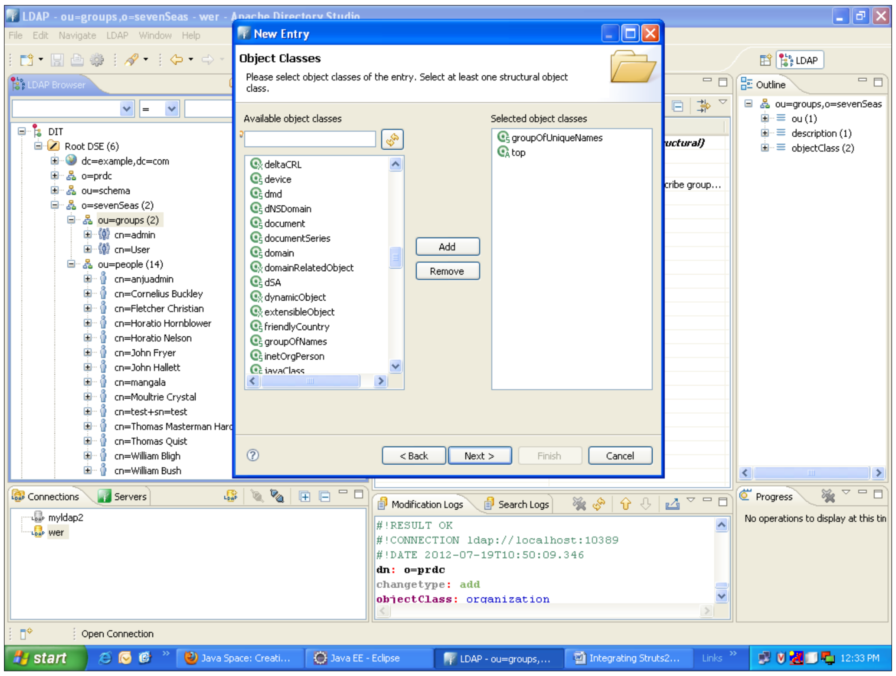
RDN: ou = groups

DN Preview: ou=groups,o=sevenSeas



```
#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2012-07-19T10:50:09.346
dn: o=prdc
changetype: add
objectClass: organization
```

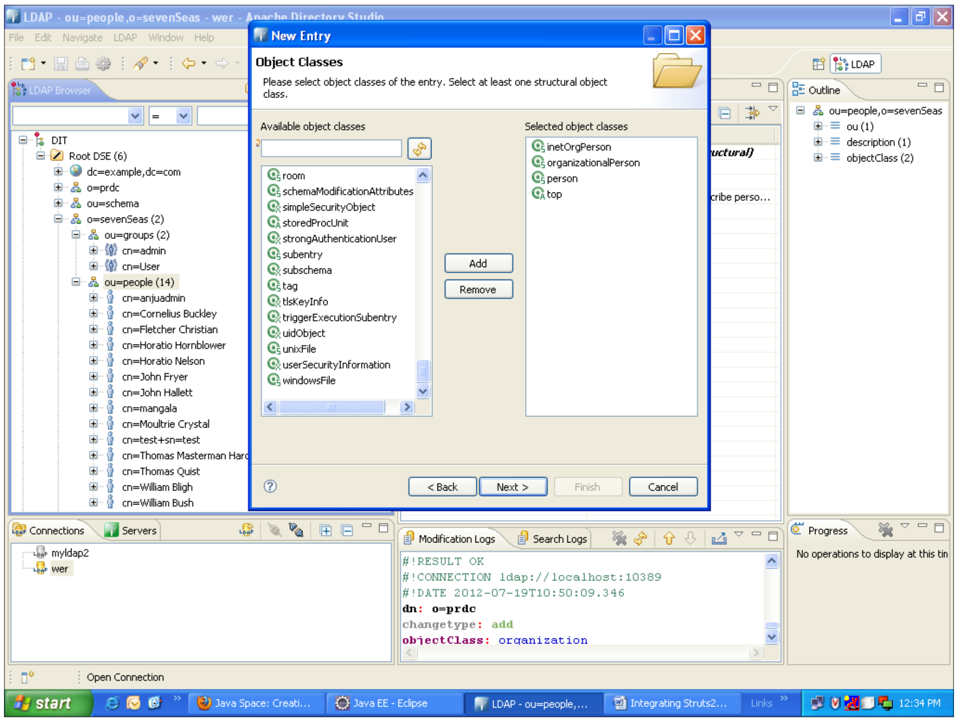
7. Here, object class is for adding entries to `ou=groups`, since this maintains the role:



Please select object classes of the entry. Select at least one structural object class.

```
#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2012-07-19T10:50:09.346
dn: o=prdc
changetype: add
objectClass: organization
```

8. Here, object class is to add entries to `ou=people`:



Please select object classes of the entry. Select at least one structural object class.

Available object classes	Selected object classes
room	inetOrgPerson
schemaModificationAttributes	organizationalPerson
simpleSecurityObject	person
storedProcUnit	top
strongAuthenticationUser	
subentry	
subschema	
tag	
tlsKeyInfo	
triggerExecutionSubentry	
uidObject	
unixFile	
userSecurityInformation	
windowsFile	

```
DIT
  Root DSE (6)
    dc=example,dc=com
    o=prdc
    ou=schema
    o=sevenSeas (2)
      ou=groups (2)
        cn=admin
        cn=User
      ou=people (14)
        cn=anjuadmin
        cn=Cornelius Buckley
        cn=Fletcher Christian
        cn=Horatio Hornblower
        cn=Horatio Nelson
        cn=John Fryer
        cn=John Hallett
        cn=mangala
        cn=Moultrie Crystal
        cn=test+sn=test
        cn=Thomas Masterman Hard
        cn=Thomas Quist
        cn=William Bligh
        cn=William Bush
```

```
#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2012-07-19T10:50:09.346
dn: o=prdc
changetype: add
objectClass: organization
```

9. Assign roles to users by adding `UniqueMember` to `cn=admin`.

`Spring-security-ldap.xml`:

```
<beans:beans xmlns="http://www.springframework.org/schema/
security"
   xmlns:beans="http://www.springframework.org
/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org
/schema/beans
   http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
   http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">
        <!-- AspectJ pointcut expression that locates our "post"
method and applies security that way
```

```
        <protect-pointcut expression="execution(*
bigbank.*Service.post*(..))" access="ROLE_TELLER"/>
        -->
    </global-method-security>
   <http auto-config="true" use-expressions="true" >
          <intercept-url pattern="/welcome" access="hasRole('ROLE_
ADMIN')"/>
<!--            <intercept-url pattern="/admin"
access="hasRole('ROLE_admin')"/> -->


         <form-login login-page="/login" default-target-
url="/secure/common.jsp" authentication-failure-url="/
loginfailed?error=true" />

<authentication-manager>
           <ldap-authentication-provider
                            user-search-filter="(mail={0})"
                            user-search-base="ou=people"
                            group-search-
filter="(uniqueMember={0})"
                      group-search-base="ou=groups"
                      group-role-attribute="cn"
                      role-prefix="ROLE_">
           </ldap-authentication-provider>
   </authentication-manager>

   <ldap-server url="ldap://localhost:10389/o=sevenSeas"
manager-dn="uid=admin,ou=system" manager-password="secret"
/>
</beans:beans>
```

How it works...

`Spring Security-ldap.xml` will contain details on the server location and the domain. It should connect to retrieve the user information. The domain is `sevenSeas`. 1039 is the port number for the LDAP server. Spring Security uses the `ldap-server` tag to give the information on LDAP. It also gives the password and the domain on which it will connect. The Struts 2 request will be interrupted by Spring Security and, for authentication, the user information will be received from the login page. Spring Security requires the LDAP for the username; on success, the user is given access to the secured resources.

See also

- *Chapter 3*, *Spring Security with JSF*

3
Spring Security with JSF

In this chapter we will cover:

- Integrating JSF with Spring Security
- JSF with form-based Spring Security
- JSF and form-based authentication using Spring Security to display logged-in user
- Using JSF with digest/hashing-based Spring Security
- Logging out with JSF using Spring Security
- Authenticating database with Spring Security and JSF
- ApacheDS authentication with JSF and Spring Security
- Authentication error message with JSF and Spring Security

Introduction

There are many applications developed in Apache Faces/JSF. It's not an action oriented framework like Struts 2, but purely meant for the view layer. To implement Spring Security with JSF, we need to figure out some work around. Let's see some recipes with respect to JSF and Spring Security.

I have used the latest stable version of Spring Security and Spring-core. If you want to do an update with your libraries, you can read the following section. For Maven users, it's all about updating the dependencies and for the normal Eclipse users, it's about adding the `.jar` files to the `lib` folder.

Setting up JSF application on Eclipse

1. Use Eclipse Java EE developer tools and set up a dynamic web project.
2. Give project name: `JSf_Spring_Security_Chapter_3_Recipe1`.
3. Select a dynamic web module Version 2.5.
4. Configurations: JavaServer Faces v1.2 project.
5. In the next **New Dynamic Web Project** window, click on **Download library**.
6. Select the Apache MyFaces lib.

Spring Security MAJOR/MINOR/PATCH versions

When I was setting up security for my applications, I faced a lot of errors with the schema versioning.

Spring source gives a good description about which version to download. It suggests that the PATCH version is the safest and will not affect the existing code, since it will use backward compatibility. The MINOR version comes with the design changes and MAJOR version comes with major API changes. For the JSF recipe I have been using 3.1.4 security version and I have downloaded Spring-3.1.4 related JARs.

You can download spring-security-3.1.4.RELEASE-dist, which comes with all the latest JARs.

JARs:

- `spring-security-config` does the namespace parsing and will read the `spring-security.xml` file
- Spring Security web interacts with the web application filters
- Spring Security core

Save these JARs in your `WEB-INF/lib` folder of your web application.

Integrating JSF with Spring Security

Let's create a simple Apache MyFaces application in Eclipse. Also let's integrate Spring Security to JSF, and then demonstrate basic authentication.

Getting ready

- You will need Eclipse Indigo or a higher version
- Create a dynamic web project JSF
- In your Eclipse IDE, create a dynamic web project: `JSf_Spring_Security_Chapter_3_Recipe1`

- Create a source folder: `src/main/java`
- Create a package: `com.packt.jsf.bean`
- Create a Managed Bean: `User.java`
- Use Tomcat server to deploy the application

How to do it...

Perform the following steps to implement a basic authentication mechanism with JSF and Spring Security:

1. `User.java` is the Managed Bean of the application. It has two methods: `sayHello()` and `reset()`:

   `User.java class`:

```
package com.packt.jsf.bean;
public class User {
   private String name;
   private boolean flag= true;
   public String getName() {
         return this.name;
   }
   public void setName(String name) {
         this.name = name;
   }
    public String  sayHello(){
          flag= false;
          name="Hello "+ name;
         return this.name;

    }
    public String  reset(){
          flag= true;
          name=null;
         return "reset";

    }
   public boolean isFlag() {
         return flag;
   }

   public void setFlag(boolean flag) {
         this.flag = flag;
   }
}
```

2. Let's create a JSP file, which is based on the `ApacheMyFaces` tags. It expects a mandatory `<f:view>` tag. It's a convention to create a JSP file with the same name as its bean. It has a form which accepts the name and says **"hello"** on clicking the button:

   `User.jsp`:

```
<%@ page language="java" contentType="text/html;
charset=ISO-8859-1" pageEncoding="ISO-8859-1"%>
<%@ taglib prefix="f"  uri="http://java.sun.com/jsf/core"%>
<%@ taglib prefix="h"  uri="http://java.sun.com/jsf/html"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html;
charset=ISO-8859-1">
<title>User</title>
</head>
<body>
<f:view>
  <h:form>
    <h:panelGrid columns="2">
      <h:outputLabel value="Name"></h:outputLabel>
      <h:inputText  value="#{user.name}"></h:inputText>
    </h:panelGrid>
    <h:commandButton action="#{user.sayHello}"
value="sayHello"></h:commandButton>
    <h:commandButton action="#{user.reset}"
value="Reset"></h:commandButton>
     <h:messages layout="table"></h:messages>
  </h:form>


  <h:panelGroup rendered="#{user.flag!=true}">
  <h3> Result </h3>
  <h:outputLabel value="Welcome "></h:outputLabel>
  <h:outputLabel value="#{user.name}"></h:outputLabel>
  </h:panelGroup>
</f:view>
</body>
</html>
```

3. Update the `faces-config.xml` file with the Managed Bean:

```
<?xml version="1.0" encoding="UTF-8"?>
<faces-config
    xmlns="http://java.sun.com/xml/ns/javaee"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-facesconfig_1_2.xsd"
    version="1.2">
    <application>

         <el-resolver>org.springframework.web.jsf
.el.SpringBeanFacesELResolver</el-resolver>
          <!--
          <variable-resolver>org.springframework.web.jsf.
SpringBeanVariableResolver</variable-resolver>
          -->
   </application>
   <managed-bean>
          <managed-bean-name>user</managed-bean-name>
          <managed-bean-
class>com.packt.jsf.bean.User</managed-bean-class>
          <managed-bean-scope>session</managed-bean-scope>
   </managed-bean>

</faces-config>
```

4. The `Spring-security.xml` file remains the same but I have used the latest jar- 3.1.4 security jars:

```
<beans:beans xmlns="http://www.springframework.org/schema/
security" xmlns:beans="http://www.springframework.org/schema/
beans" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans-3.0.xsd
 http://www.springframework.org/schema/security
 http://www.springframework.org/schema/security/spring-security-
3.1.xsd">

 <global-method-security pre-post-annotations="enabled">

    </global-method-security>
    <http auto-config="true" use-expressions="true" >
          <intercept-url pattern="/faces/User.jsp"
access="hasRole('ROLE_DIRECTOR')"/>
          <http-basic />
    </http>
    <authentication-manager>
      <authentication-provider>
        <user-service>
```

```
          <user name="packt" password="123456" authorities="ROLE_
DIRECTOR" />
        </user-service>
      </authentication-provider>
    </authentication-manager>
</beans:beans>
```

5. The `web.xml` file should be updated with Spring filters and listeners. It also has configurations of MyFaces:

   `Spring-security.xml`:

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:web="http://java.sun.com/xml/ns/javaee/web-
app_2_5.xsd"
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd"
id="WebApp_ID" version="2.5">
  <display-name>JSf_Spring_Security_Chapter_3_Recipe1
</display-name>
  <welcome-file-list>
    <welcome-file>index.jsp</welcome-file>
  </welcome-file-list>

  <context-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>
          /WEB-INF/spring-security.xml

          </param-value>
  </context-param>
 <filter>
    <filter-name>springSecurityFilterChain</filter-name>
    <filter-class>
  org.springframework.web.filter.DelegatingFilterProxy
              </filter-class>
  </filter>
  <filter-mapping>
    <filter-name>springSecurityFilterChain</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <listener>
    <listener-class>org.springframework.web.
context.ContextLoaderListener</listener-class>
```

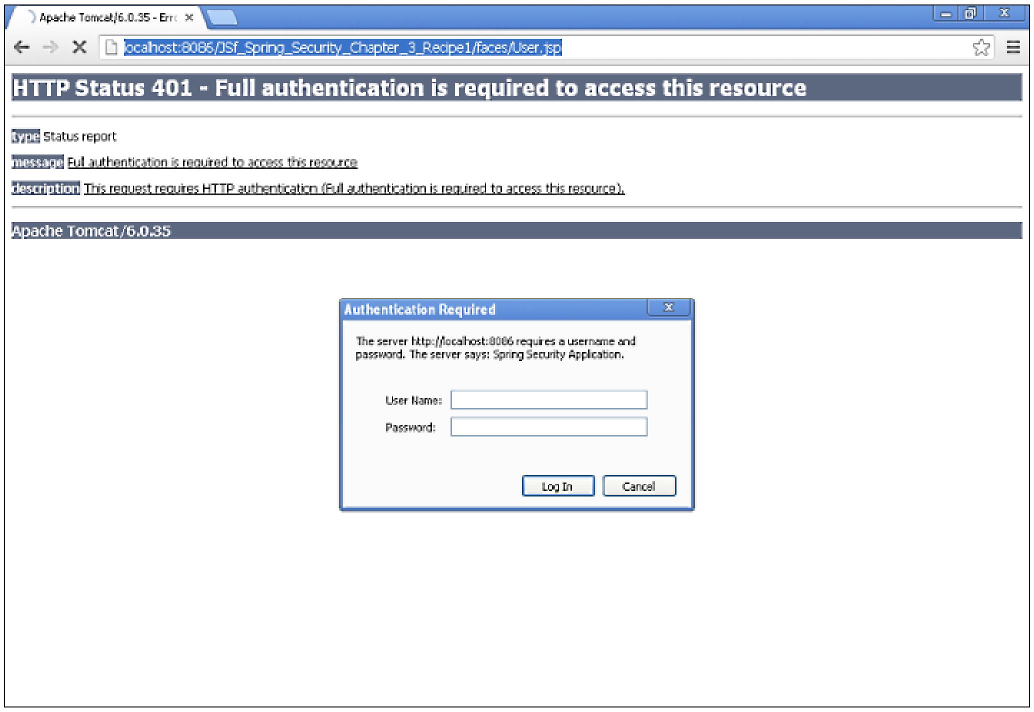
```
  </listener>
  <servlet>
    <servlet-name>Faces Servlet</servlet-name>
    <servlet-class>javax.faces.webapp.FacesServlet
</servlet-class>
    <load-on-startup>1</load-on-startup>
  </servlet>
  <servlet-mapping>
    <servlet-name>Faces Servlet</servlet-name>
    <url-pattern>/faces/*</url-pattern>
  </servlet-mapping>
  <context-param>
    <param-name>javax.servlet.jsp.jstl.fmt.
localizationContext</param-name>
    <param-value>resources.application</param-value>
  </context-param>
  <context-param>
    <description>State saving method: 'client' or 'server'
(=default). See JSF Specification 2.5.2</description>
    <param-name>javax.faces.STATE_SAVING_METHOD
</param-name>
    <param-value>client</param-value>
  </context-param>
  <context-param>
    <description>
   This parameter tells MyFaces if javascript code should be
allowed in
   the rendered HTML output.
   If javascript is allowed, command_link anchors will
have javascript code
   that submits the corresponding form.
   If javascript is not allowed, the state saving info and
nested parameters
   will be added as url parameters.
   Default is 'true'</description>
    <param-name>org.apache.myfaces.ALLOW_JAVASCRIPT</param-name>
    <param-value>true</param-value>
  </context-param>
  <context-param>
    <description>
   If true, rendered HTML code will be formatted, so that it is
'human-readable'
   i.e. additional line separators and whitespace will be written,
that do not
   influence the HTML code.
   Default is 'true'</description>
    <param-name>org.apache.myfaces.PRETTY_HTML</param-name>
    <param-value>true</param-value>
  </context-param>
  <context-param>
    <param-name>org.apache.myfaces.DETECT_JAVASCRIPT</param-name>
    <param-value>false</param-value>
  </context-param>
  <context-param>
    <description>
   If true, a javascript function will be rendered that is able to 
restore the
   former vertical scroll on every request. Convenient feature if 
you have pages
   with long lists and you do not want the browser page to always 
jump to the top
   if you trigger a link or button action that stays on the same 
page.
   Default is 'false'
</description>
    <param-name>org.apache.myfaces.AUTO_SCROLL</param-name>
    <param-value>true</param-value>
  </context-param>
  <listener>
    <listener-class>org.apache.myfaces.webapp.
StartupServletContextListener</listener-class>
  </listener>
</web-app>:beans>
```

How it works...

When the user tries to access the secured `user.jsp` page, Spring Security intercepts the URL and redirects the user to the login page. On successful authentication, the user is redirected to the success `url` mentioned in the `spring-security.xml` file. The following screenshots show the workflow of implementing basic authentication with JSF and Spring Security.

Now access the following URL: `http://localhost:8086/JSf_Spring_Security_Chapter_3_Recipe1/faces/User.jsp`.

You should see a basic authentication dialog box asking you to log in as shown in the following screenshot:


Apache Tomcat/6.0.35 - Err
localhost:8086/JSf_Spring_Security_Chapter_3_Recipe1/faces/User.jsp

HTTP Status 401 - Full authentication is required to access this resource

type Status report

message Full authentication is required to access this resource

description This request requires HTTP authentication (Full authentication is required to access this resource).

Apache Tomcat/6.0.35

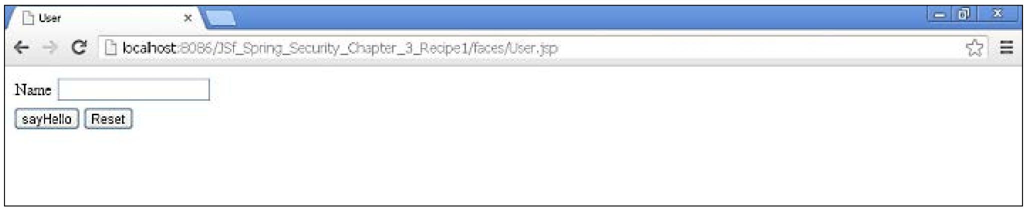
Authentication Required

The server http://localhost:8086 requires a username and password. The server says: Spring Security Application.

User Name:

Password:

The following screenshot is the secured page of JSF, which can be accessed after successful authentication:


User
localhost:8086/JSf_Spring_Security_Chapter_3_Recipe1/faces/User.jsp
Name
sayHello
Reset

See also

- The *JSF with form-based Spring Security* recipe
- The *JSF and form-based authentication using Spring Security to display logged-in user* recipe
- The *Using JSF with digest/hashing-based Spring Security* recipe
- The *Logging out with JSF using Spring Security* recipe
- The *Authenticating database with Spring Security and JSF* recipe
- The *ApacheDS authentication with JSF and Spring Security* recipe
- The *Authentication error message with JSF and Spring Security* recipe

JSF with form-based Spring Security

In this section we will implement the form-based authentication with JSF and Spring Security. Integrating Apache MyFaces with Spring Security is not as simple as Struts 2 integration.

It needs a work around. The `/j_spring_security` method can't be understood by ApacheMyfaces. The work around is to create a custom login method in our Managed Bean class. We will use the JSF external context class to pass the authentication request to the Spring Security Framework.

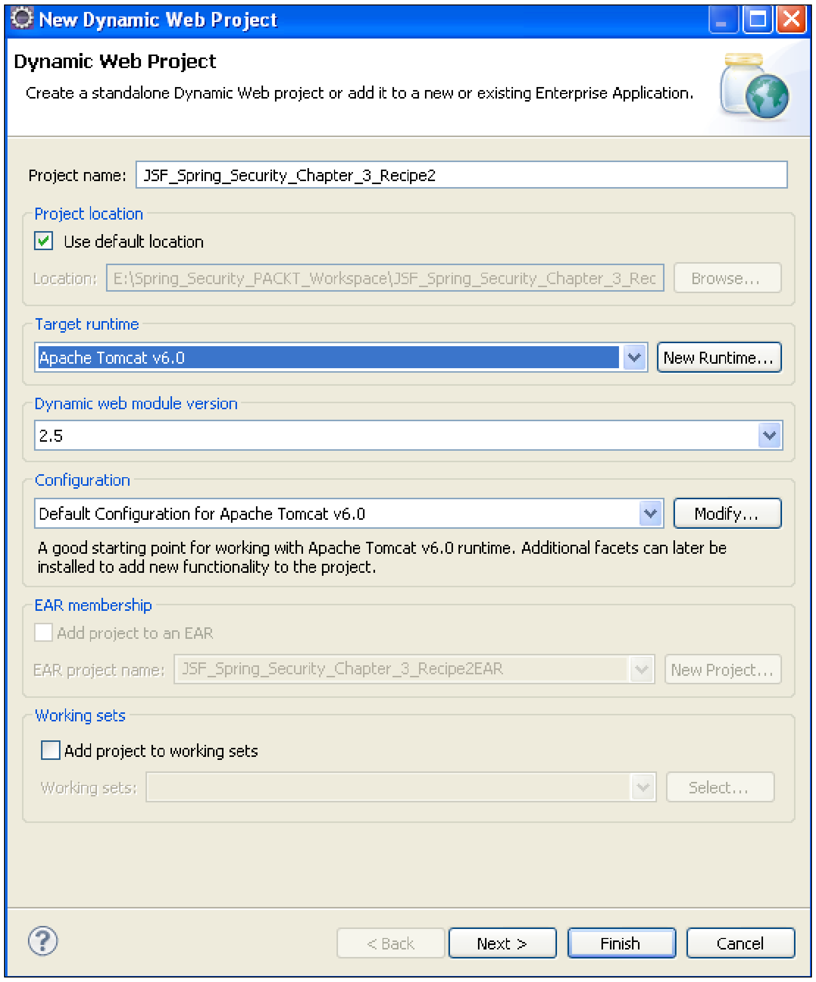
Getting ready

- Create a new project in you Eclipse IDE: `JSF_Spring_Security_Chapter_3_Recipe2`
- Do the configurations as shown in the following screenshot
- Create a package: `com.packt.jsf.beans`

How to do it...

Perform the following steps to integrate JSF with Spring Security to implement form-based authentication:

1. Create a web project in Eclipse:



New Dynamic Web Project

Dynamic Web Project

Create a standalone Dynamic Web project or add it to a new or existing Enterprise Application.

Project name: JSF_Spring_Security_Chapter_3_Recipe2

Project location

[✓] Use default location

Location: E:\Spring_Security_PACKT_Workspace\JSF_Spring_Security_Chapter_3_Rec Browse...

Target runtime

Apache Tomcat v6.0 New Runtime...

Dynamic web module version

2.5

Configuration

Default Configuration for Apache Tomcat v6.0 Modify...

A good starting point for working with Apache Tomcat v6.0 runtime. Additional facets can later be installed to add new functionality to the project.

EAR membership

[ ] Add project to an EAR

EAR project name: JSF_Spring_Security_Chapter_3_Recipe2EAR New Project...

Working sets

[ ] Add project to working sets

Working sets: Select...

< Back Next > Finish Cancel

2. Create a Credential Manager Bean:

   This bean has all the properties of a form-based authentication bean and customized login method ();

   The `j_username` and `j_password` values will be set and the user is displayed in the secured page.

The `doSpringSecurityLogin()` bean: Just like we access `ServletContext` and we bind it with the request dispatcher, we can use `ExternalContext` with request dispatcher to execute the `/j_spring_security_check`.

The `phaseListener` implementation is meant to capture the authentication exceptions.

`CredentialManager.java`:

```
public class CredentialManager implements PhaseListener{
   private String j_username;
   private String j_password;

    public String getJ_password() {
         return j_password;
   }
   public void setJ_password(String j_password) {
         this.j_password = j_password;
   }
   public String doSpringSecurityLogin() throws
     IOException, ServletException
       {
           ExternalContext context = FacesContext.
             getCurrentInstance().getExternalContext();
           RequestDispatcher dispatcher = ((ServletRequest)
             context.getRequest()).getRequestDispatcher
             ("/j_spring_security_check");
           dispatcher.forward((ServletRequest)
             context.getRequest(),(ServletResponse)
             context.getResponse());
           FacesContext.getCurrentInstance().
             responseComplete();
           return null;
       }
   public String getJ_username() {
         return j_username;
   }
   public void setJ_username(String j_username) {
         this.j_username = j_username;
   }
   @Override
   public void afterPhase(PhaseEvent arg0) {
         // TODO Auto-generated method stub

   }
   @Override
```

```
    public void beforePhase(PhaseEvent event) {
          Exception e = (Exception) FacesContext.
            getCurrentInstance().getExternalContext()
            .getSessionMap().get(
           WebAttributes.AUTHENTICATION_EXCEPTION);

           if (e instanceof BadCredentialsException) {
               System.out.println("error block"+e);
                FacesContext.getCurrentInstance()
                  .getExternalContext().getSessionMap().put(
                    WebAttributes.AUTHENTICATION_EXCEPTION,
                      null);
                FacesContext.getCurrentInstance()
                  .addMessage(null, new FacesMessage
                  (FacesMessage.SEVERITY_ERROR,"Username or
                  password not valid.", "Username or
                  password not valid"));
            }
    }

    @Override
    public PhaseId getPhaseId() {
           return PhaseId.RENDER_RESPONSE;
    }
 }
```

3. Let's update the `Spring-security.xml` file. The `login-processing-url` is mapped to `j_security_check`:

```
<beans:beans xmlns="http://www.springframework.org
/schema/security" xmlns:beans="http://www.springframework
.org/schema/beans" xmlns:xsi="http://www.w3.org/2001/
XMLSchema-instance" xsi:schemaLocation="http:
//www.springframework.org/schema/beans http://
www.springframework.org/schema/beans/spring-beans-3.0.xsd
 http://www.springframework.org/schema/security
  http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">

    </global-method-security>
   <http auto-config="true" use-expressions="true" >

          <intercept-url pattern="/faces/Supplier.jsp"
            access="hasRole('ROLE_USER')"/>
            <form-login login-processing-
              url="/j_spring_security_check" login-
              page="/faces/login.jsp" default-target-
              url="/faces/Supplier.jsp" authentication-
              failure-url="/faces/login.jsp" />
            <logout/>
      </http>

      <authentication-manager>
        <authentication-provider>
          <user-service>
            <user name="anjana" password="anju123456"
              authorities="ROLE_USER"/>
          </user-service>
        </authentication-provider>
      </authentication-manager>
   </beans: beans>
```

4. Add the Managed Bean into the `faces-config.xml` file:

```
<?xml version="1.0" encoding="UTF-8"?>

<faces-config
    xmlns="http://java.sun.com/xml/ns/javaee"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
      http://java.sun.com/xml/ns/javaee/web-
      facesconfig_1_2.xsd"
    version="1.2">
    <lifecycle>
         <phase-listener>com.packt.jsf.beans.
           CredentialManager</phase-listener>
   </lifecycle>
    <application>

          <el-resolver>org.springframework.web.
            jsf.el.SpringBeanFacesELResolver</el-resolver>
          <!--
          <variable-resolver>org.springframework.web.
            jsf.SpringBeanVariableResolver</variable-
            resolver>
           -->
   </application>

         <managed-bean>
         <managed-bean-name>credentialmanager</managed-
           bean-name>
```

```
            <managed-bean-class>com.packt.jsf.beans.
              CredentialManager</managed-bean-class>
            <managed-bean-scope>session</managed-bean-scope>
      </managed-bean>


</faces-config>
```

5. Now comes the `login.jsp` file for Apache MyFaces.

   The `login.jsp` file should have the following:

      `prependID=false`

      It should submit to the custom login method defined in the `ManagedBean`

```
<%@ page language="java" contentType="text/html;
charset=ISO-8859-1" pageEncoding="ISO-8859-1"%>
<%@ taglib prefix="f" uri="http://java.sun.com/jsf/core"%>
<%@ taglib prefix="h" uri="http://java.sun.com/jsf/html"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html;
charset=ISO-8859-1">
<title>Spring Security Login</title>
</head>
<body>
<f:view>
<h:form prependId="false">
<h:panelGrid columns="2">
<h:outputLabel value="j_username"></h:outputLabel>
<h:inputText   id="j_username" required="true"
value="#{credentialmanager.j_username}"></h:inputText>
<h:outputLabel value="j_password"></h:outputLabel>
<h:inputSecret  id ="j_password" required="true"
value="#{credentialmanager.j_password}"></h:inputSecret>
</h:panelGrid>
<h:commandButton action="#{credentialmanager.
doSpringSecurityLogin}" value="SpringSecurityLogin"/>
 </h:form>
</f:view>
</body>
</html>
```

How it works...

Access the following URL: `localhost:8086/JSF_Spring_Security_Chapter_3_Recipe2/faces/Supplier.jsp`.

When the user accesses the URL, they will be redirected to the login page. The user then enters their credentials and clicks on **Submit**. The `ExternalContext` object is instantiated using the `FacesContext` object using the `PhaseListener` implementation. The `context` object is passed to the request object with `'j_spring_security_check'` URL. The Spring Security will do the authentication and authorization. On authentication failure, an exception is thrown.

See also

- The *JSF and form-based authentication using Spring Security to display logged-in user* recipe
- The *Using JSF with digest/hashing-based Spring Security* recipe
- The *Logging out with JSF using Spring Security* recipe
- The *Authenticating database with Spring Security and JSF* recipe
- The *ApacheDS authentication with JSF and Spring Security* recipe
- The *Authentication error message with JSF and Spring Security* recipe

JSF and form-based authentication using Spring Security to display logged-in user

In the previous recipe, we demonstrated the implementation of form-based authentication using Spring Security and JSF `phaseListener`. In this section we will display the logged in user.

Getting ready

You have to perform some minor changes in the `Supplier.jsp` file.

How do it...

Perform the following steps to display the logged in user details on the browser:

1. To display the logged in user, access the managed bean object in your secured page.
2. In the `Supplier.jsp` file, edit the following:

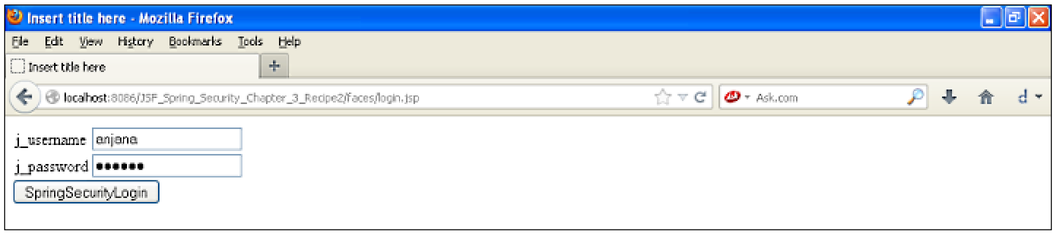
```
<%@ page language="java" contentType="text/html;
charset=ISO-8859-1" pageEncoding="ISO-8859-1"%>
```

```
<%@ taglib prefix="f" uri="http://java.sun.com/jsf/core"%>
<%@ taglib prefix="h" uri="http://java.sun.com/jsf/html"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html;
charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<f:view>
<h:panelGroup>
  <h3> Result </h3>
  <h:outputLabel value="Welcome "></h:outputLabel>
  <h:outputLabel value="#{credentialmanager.j_username}">
    </h:outputLabel>
  </h:panelGroup>
</f:view>
</body>
</html>
```

How it works...

When the user is redirected to the login page the faces context object submits the user information to Spring Security. On success the user POJO's getters and setters sets the user information, which is used to display the user information on the JSP page.

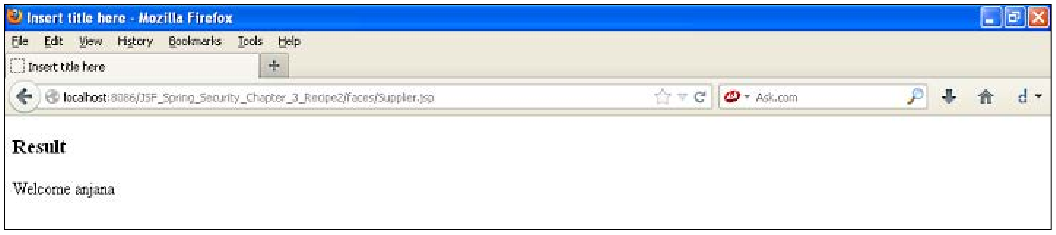
The following screenshot shows the workflow for displaying the user information in the browser using JSF and Spring Security with form-based authentication:


Insert title here - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Insert title here
Ask.com
SpringSecurityLogin

localhost:8086/JSF_Spring_Security_Chapter_3_Recipe2/faces/login.jsp

j_username anjana
j_password ••••••

On successful authentication, the user will be directed to the following page:


Insert title here - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Insert title here
localhost:8086/JSF_Spring_Security_Chapter_3_Recipe2/faces/Supplier.jsp
Ask.com

Result

Welcome anjana

See also

- The *Using JSF with digest/hashing-based Spring Security* recipe
- The *Logging out with JSF using Spring Security* recipe
- The *Authenticating database with Spring Security and JSF* recipe
- The *ApacheDS authentication with JSF and Spring Security* recipe
- The *Authentication error message with JSF and Spring Security* recipe

Using JSF with digest/hashing-based Spring Security

In this section we will implement digest authentication with JSF and Spring Security. The user's password is hashed using one of the encryption algorithms and configured in the `.xml` file. The algorithm used to hash the password is also mentioned in the configuration file.

Getting ready

Spring digest authentication works fine with JSF as well. We need to hash the password using `jacksum.jar`. Provide the hashed password in the configuration file. Also mention the algorithm used for hashing in the configuration file.

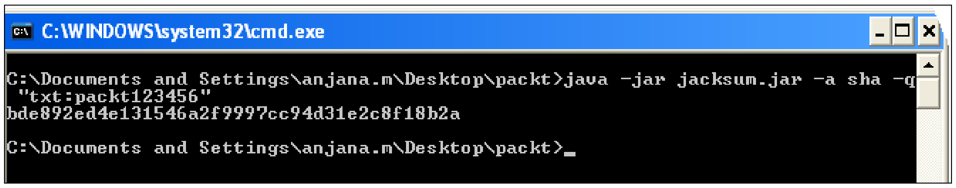
How to do it...

Perform the following steps for implementing the digest authentication mechanism with JSF and Spring Security:

1. Let's encrypt the password: `packt123456`.
2. We need to use an external jar, Jacksum, which means Java checksum.
3. It supports both MD5 and SHA1 encryption.

4. Download the `jacksum.zip` file and extract the ZIP folder.

   ```
   packt>java -jar jacksum.jar -a sha -q"txt:packt123456"
   ```



C:\WINDOWS\system32\cmd.exe

```
C:\Documents and Settings\anjana.m\Desktop\packt>java -jar jacksum.jar -a sha -q
 "txt:packt123456"
bde892ed4e131546a2f9997cc94d31e2c8f18b2a

C:\Documents and Settings\anjana.m\Desktop\packt>_
```

5. Let's create a new project to demonstrate this and we will use basic authentication. Create a dynamic web project in Eclipse and name it `JSF_Spring_Security_DIGEST_Recipe3`.

6. The `web.xml`, `face-config.xml`, and JSP settings remain the same as the `JSF_Spring_Security_Chapter3_Recipe1`. We need to update the `Spring-security.xml` file to authenticate using the SHA encryption and decryption:

   `Spring-security.xml`:

```
<beans:beans
xmlns="http://www.springframework.org/schema/security"
xmlns:beans="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.springframework.org/schema/b
eans http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
 http://www.springframework.org/schema/security
 http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">

    </global-method-security>
   <http auto-config="true" use-expressions="true" >
         <intercept-url pattern="/faces/User.jsp"
           access="hasRole('ROLE_DIRECTOR')"/>
         <http-basic />
   </http>

   <authentication-manager>
      <authentication-provider>
   <password-encoder hash="sha" />
      <user-service>
         <user name="anjana" password=
           "bde892ed4e131546a2f9997cc94d31e2c8f18b2a"
             authorities="ROLE_DIRECTOR" />
      </user-service>
   </authentication-provider>
   </authentication-manager>
</beans:beans>
```

How it works...

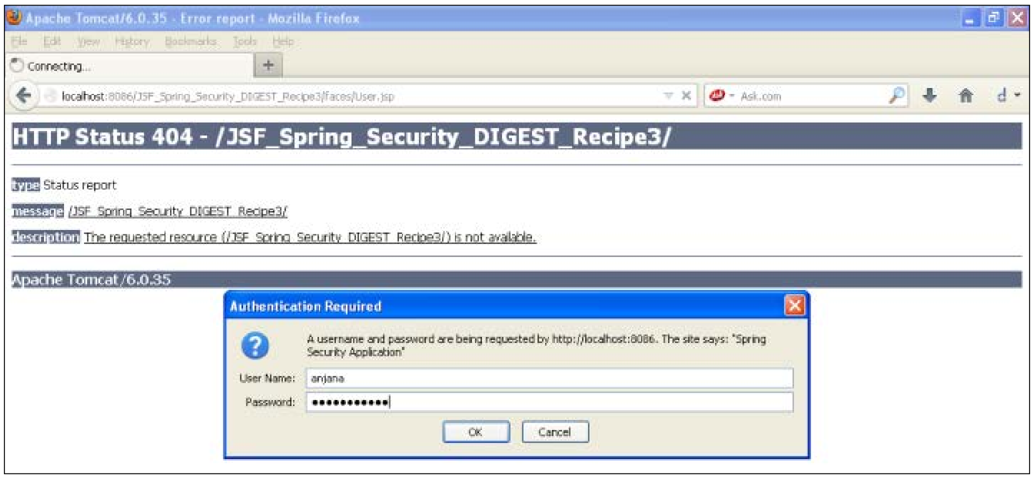
When you run the application, you will be prompted with a dialog box.

On entering the username and password, the Spring Framework will decrypt the password and will compare it with the user's entered details. When they match, it flags an authentication success message, which will make the context object redirect the user to the success URL.

The following screenshots show the workflow of digest authentication with JSF and Spring.

It is a basic form but the authentication mechanism is digest.

Spring has authenticated the user by decrypting the password:



Apache Tomcat/6.0.35 - Error report - Mozilla Firefox

localhost:8086/JSF_Spring_Security_DIGEST_Recipe3/faces/User.jsp

HTTP Status 404 - /JSF_Spring_Security_DIGEST_Recipe3/

type Status report

message /JSF_Spring_Security_DIGEST_Recipe3/

description The requested resource (/JSF_Spring_Security_DIGEST_Recipe3/) is not available.

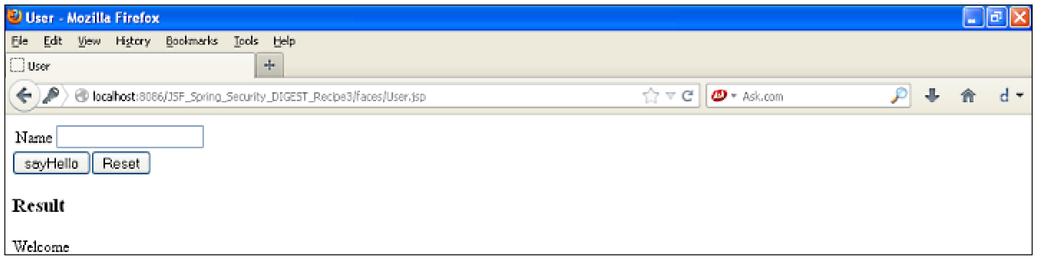
Apache Tomcat/6.0.35

Authentication Required

A username and password are being requested by http://localhost:8086. The site says: "Spring Security Application"

User Name: anjana

Password: ••••••••••••



User - Mozilla Firefox

localhost:8086/JSF_Spring_Security_DIGEST_Recipe3/faces/User.jsp

Name

Result

Welcome

See also

- The *Logging out with JSF using Spring Security* recipe
- The *Authenticating database with Spring Security and JSF* recipe
- The *ApacheDS authentication with JSF and Spring Security* recipe
- The *Authentication error message with JSF and Spring Security* recipe

Logging out with JSF using Spring Security

In this section, we will implement the logging out scenario using Spring Security in a JSF application.

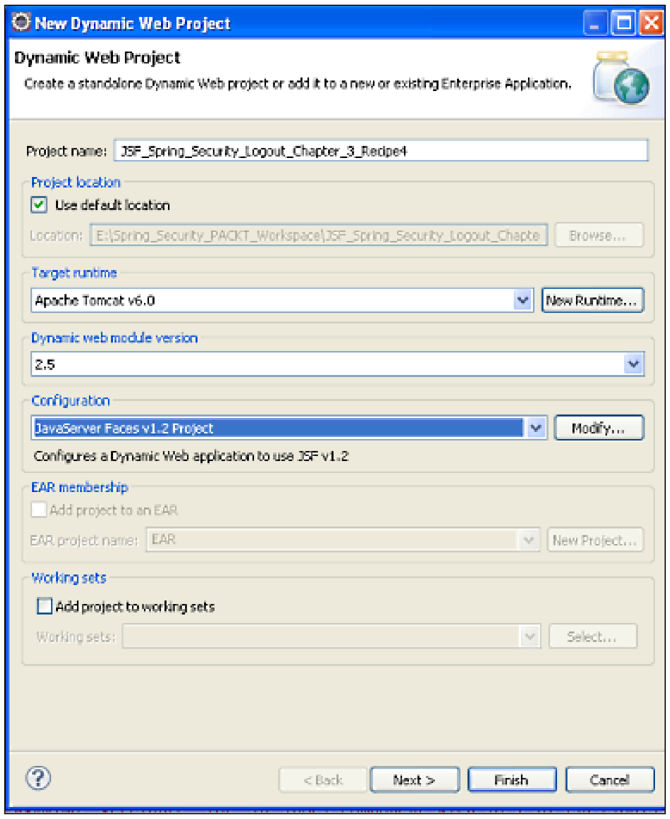
Getting ready

- Implement the `PhaseListener` class
- Add a `commandButton` on the JSF page

How to do it...

Perform the following steps for implementing Spring Security logout in a JSF application:

1. Create a **New Dynamic Web Project** in your Eclipse:



New Dynamic Web Project

Dynamic Web Project

Create a standalone Dynamic Web project or add it to a new or existing Enterprise Application.

Project name: JSF_Spring_Security_Logout_Chapter_3_Recipe4

Project location

☑ Use default location

Location: E:\Spring_Security_PACKT_Workspace\JSF_Spring_Security_Logout_Chapte

Target runtime: Apache Tomcat v6.0

Dynamic web module version: 2.5

Configuration: JavaServer Faces v1.2 Project

Configures a Dynamic Web application to use JSF v1.2

EAR membership

☐ Add project to an EAR

EAR project name: EAR

Working sets

☐ Add project to working sets

Working sets:

2. We will create a `CredentialManager` bean again. It will have another custom logout method. `Login.jsp` remains the same as the previous example. Do not forget to copy it into the new project. We will use form-based authentication here:

```
package com.packt.jsf.beans;

import java.io.IOException;

import javax.faces.context.ExternalContext;
import javax.faces.context.FacesContext;
import javax.faces.event.PhaseEvent;
import javax.faces.event.PhaseId;
import javax.faces.event.PhaseListener;
import org.springframework.security.
  authentication.BadCredentialsException;
import javax.faces.application.FacesMessage;

import org.springframework.security.web.WebAttributes;

public class CredentialManager implements PhaseListener{
   /**
    *
    */
   private static final long serialVersionUID = 1L;
   private String j_username;
   private String j_password;

    public String getJ_password() {
         return j_password;
   }
   public void setJ_password(String j_password) {
         this.j_password = j_password;
   }
   public String doSpringSecurityLogin() throws IOException,
     ServletException
       {
           ExternalContext context = FacesContext.
             getCurrentInstance().getExternalContext();
           RequestDispatcher dispatcher = ((ServletRequest)
             context.getRequest()).getRequestDispatcher
             ("/j_spring_security_check");
           dispatcher.forward((ServletRequest)
             context.getRequest(),(ServletResponse)
             context.getResponse());
           FacesContext.getCurrentInstance()
             .responseComplete();
```

```
        return null;
    }
public String doSpringSecurityLogout() throws IOException,
  ServletException
 {
     ExternalContext context = FacesContext.
       getCurrentInstance().getExternalContext();
     RequestDispatcher dispatcher = ((ServletRequest)
       context.getRequest()).getRequestDispatcher
       ("/j_spring_security_logout");
     dispatcher.forward((ServletRequest)
       context.getRequest(),(ServletResponse)
       context.getResponse());
     FacesContext.getCurrentInstance().responseComplete();
     return null;
 }
public String getJ_username() {
      return j_username;
}
public void setJ_username(String j_username) {
      this.j_username = j_username;
}
public void afterPhase(PhaseEvent arg0) {
      // TODO Auto-generated method stub

}
public void beforePhase(PhaseEvent arg0) {
      Exception e = (Exception) FacesContext.
        getCurrentInstance().getExternalContext()
        .getSessionMap().get(
         WebAttributes.AUTHENTICATION_EXCEPTION);

       if (e instanceof BadCredentialsException) {
           System.out.println("error block"+e);
            FacesContext.getCurrentInstance()
              .getExternalContext().getSessionMap().put(
                WebAttributes.AUTHENTICATION_EXCEPTION,
                  null);
            FacesContext.getCurrentInstance().
              addMessage(null, new FacesMessage
              (FacesMessage.SEVERITY_ERROR,"Username or
              password not valid.", "Username or
              password not valid"));
        }
}
```

```
        public PhaseId getPhaseId() {
                return PhaseId.RENDER_RESPONSE;
        }

}
```

3. Let's provide a **Logout** button in our secured page:

   `Supplier.jsp`:

```
<%@ page language="java" contentType="text/html;
charset=ISO-8859-1" pageEncoding="ISO-8859-1"%>
<%@ taglib prefix="f"  uri="http://java.sun.com/jsf/core"%>
<%@ taglib prefix="h"  uri="http://java.sun.com/jsf/html"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html;
charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<f:view>
  <h:form prependId="false">
<h:panelGroup>
  <h:outputLabel value="Welcome "></h:outputLabel>
  <h:outputLabel value="#{credentialmanager.j_username}"></
h:outputLabel>
  </h:panelGroup>

  <h:commandButton action="#{credentialmanager.
doSpringSecurityLogout}" value="SpringSecurityLogout" />
  </h:form>
</f:view>
</body>
</html>
```

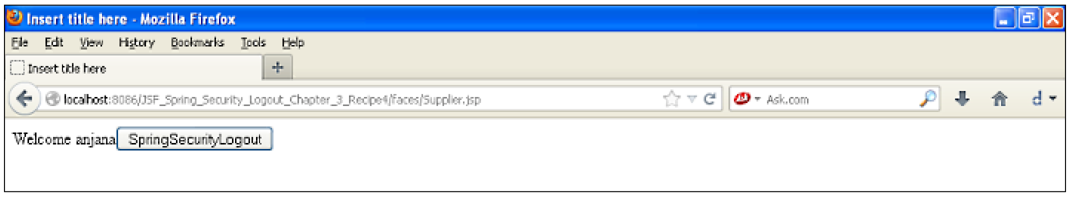
4. Update the `Spring-security.xml` file:

```
<beans:beans
xmlns="http://www.springframework.org/schema/security"
xmlns:beans="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.springframework.org/schema/b
eans http://www.springframework.org/schema/beans/spring-
beans-3.0.xsd
```

```
  http://www.springframework.org/schema/security
   http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

  <global-method-security pre-post-annotations="enabled">

     </global-method-security>
    <http auto-config="true" use-expressions="true" >

           <intercept-url pattern="/faces/Supplier.jsp"
             access="hasRole('ROLE_USER')"/>
          <form-login login-processing-
            url="/j_spring_security_check" login-
            page="/faces/login.jsp" default-target-
            url="/faces/Supplier.jsp" authentication-
            failure-url="/faces/login.jsp" />
          <logout  logout-success-url="/faces/login.jsp" />
    </http>

    <authentication-manager>
      <authentication-provider>
        <user-service>
          <user name="anjana" password="123456"
            authorities="ROLE_USER"/>
        </user-service>
      </authentication-provider>
    </authentication-manager>
</beans:beans>
```

How it works...

The `CredentialManager` class implements the `phaseListener interface`. The `doSpringSecurityLogout` method handles the Spring logout by creating a context object using `ExternalContext`. The context then submits the logout request that is `"/j_spring_security_logout"` to the Spring Security Framework, which logs out the user.


Insert title here - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Insert title here
localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/faces/Supplier.jsp
Ask.com
Welcome anjana
SpringSecurityLogout

On clicking on logout, the user is redirected to the login page.

See also

- The *Authenticating database with Spring Security and JSF* recipe
- The *ApacheDS authentication with JSF and Spring Security* recipe
- The *Authentication error message with JSF and Spring Security* recipe

Authenticating database with Spring Security and JSF

In this section, we will use the database to authenticate users with Spring Security in a JSF application. We have referred to the logout example and have used the database for authentication.

Getting ready

- Create a dynamic web project in Eclipse: `JSF_Spring_DBAuthentication_Recipe6`
- All the files and folders remain the same as the logout application
- Update the `security.xml` file and the `web.xml` file
- Add the following JARs into the `lib` folder or update your POM file if you are using Maven:
    - spring-jdbc-3.1.4RELEASE
    - mysql-connector-java-5.1.17-bin
    - commons-dbcp
    - commons-pool-1.5.4

How to do it...

The following steps will help us to authenticate the user information by retrieving data from the database:

1. Update the `Spring-security.xml` file to read the database configuration:

   `applicationContext-security.xml`:

   ```
   <beans: beans
   xmlns="http://www.springframework.org/schema/security"
   xmlns:beans="http://www.springframework.org/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org/schema/b
   eans http://www.springframework.org/schema/beans/spring-
   beans-3.0.xsd
   ```

```
 http://www.springframework.org/schema/security
  http://www.springframework.org/schema/security/spring-
security-3.1.xsd">

 <global-method-security pre-post-annotations="enabled">

    </global-method-security>
   <http auto-config="true" use-expressions="true" >

           <intercept-url pattern="/faces/Supplier.jsp"
             access="hasRole('ROLE_USER')"/>
         <form-login login-processing-
           url="/j_spring_security_check" login-
           page="/faces/login.jsp" default-target-
           url="/faces/Supplier.jsp" authentication-
           failure-url="/faces/login.jsp" />
         <logout  logout-success-url="/faces/login.jsp" />

   </http>

   <authentication-manager>
      <authentication-provider>
          <jdbc-user-service data-source-ref="MySqlDS"
            users-by-username-query="
              select username,password, enabled
              from users1 where username=?"

            authorities-by-username-query="
               select u.username, ur.role from users1 u,
               user_roles ur
         where u.user_id = ur.user_id and u.username =?  " />
      </authentication-provider>
         </authentication-manager>
</beans: beans>
```

How it works...

The data source reference is given in the `Sping-security.xml` file. When the user clicks on **Login**, the Spring Security filter will invoke the database authentication related classes, which will read the `db-beans.xml` file to establish the connection. The `<jdbc-user-service>` tag implements the database authentication by executing the query and retrieving the user information from the database based on the parameter submitted by the user in the browser.

See also

- The *ApacheDS authentication with JSF and Spring Security* recipe
- The *Authentication error message with JSF and Spring Security* recipe

ApacheDS authentication with JSF and Spring Security

In this section, we will authenticate users in the JSF application using ApacheDS and Spring Security.

Getting ready

ApacheDS authentication is similar to Struts 2 ApacheDS authentication:

- Create a dynamic web project in Eclipse: `JSF_Spring_ApacheDSAuthentication_Recipe7`
- All the files and folders remain the same as the logout application
- Update the `security.xml` file
- Add `spring-security-ldap.jar` to your `web-inf/lib` folder

How to do it...

Perform the following steps for configuring LDAP with Spring and the JSF application:

1. Update the `Spring-security.xml` file to read the LDAP configuration:

   ```
   <beans:beans
   xmlns="http://www.springframework.org/schema/security"
   xmlns:beans="http://www.springframework.org/schema/beans"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.springframework.org/schema/b
   eans http://www.springframework.org/schema/beans/spring-
   beans-3.0.xsd
    http://www.springframework.org/schema/security
     http://www.springframework.org/schema/security/spring-
   security-3.1.xsd">

    <global-method-security pre-post-annotations="enabled">

       </global-method-security>
      <http auto-config="true" use-expressions="true" >
   ```

```
            <intercept-url pattern="/faces/Supplier.jsp"
              access="hasRole('ROLE_USER')"/>
          <form-login login-processing-
url="/j_spring_security_check" login-
page="/faces/login.jsp" default-target-
url="/faces/Supplier.jsp" authentication-failure-
url="/faces/login.jsp" />
          <logout  logout-success-url="/faces/login.jsp" />
                </http>
          <authentication-manager>
            <ldap-authentication-provider
                             user-search-filter="(mail={0})"
                             user-search-base="ou=people"
                             group-search-
                               filter="(uniqueMember={0})"
                       group-search-base="ou=groups"
                       group-role-attribute="cn"
                       role-prefix="ROLE_">
            </ldap-authentication-provider>
   </authentication-manager>

   <ldap-server url="ldap://localhost:389/o=example"
manager-dn="uid=admin,ou=system" manager-password="secret"
/></beans:beans>
```

How it works...

The JSF filters are used for delegation. Spring filters are used for authentication. We have used ldap-authentication-provider for setting the LDAP parameters to the Spring Security engine. When the application receives a request for authentication and authorization, spring-security-ldap provider sets the LDAP parameters and connects with the LDAP using the ldap-server-url parameter. It then retrieves the user details and gives it to the Spring authentication manager and filter to handle the response of the authentication.

See also

- The *Authentication error message with JSF and Spring Security* recipe

Authentication error message with JSF and Spring Security

In this section, we will see how we can capture the authentication error message and display it to the user on the browser. The `credentialmanager` bean as displayed in the previous example will capture the authentication failure exceptions. We will see how to capture it in JSP.

Getting ready

The `credentialmanager` bean has captured the bad credential exception.

We need to display it to the user. This can be done by using the `<h: messages>` tag in our JSP file. This should be given inside the grid tag. The very purpose of implementing the `phaselistener` in Managed Bean is to capture the message and display it to the user. This is the updated `login.jsp`.

How to do it...

Perform the following steps to capture the authentication failure message in JSP:

- Edit the `login.jsp` file:

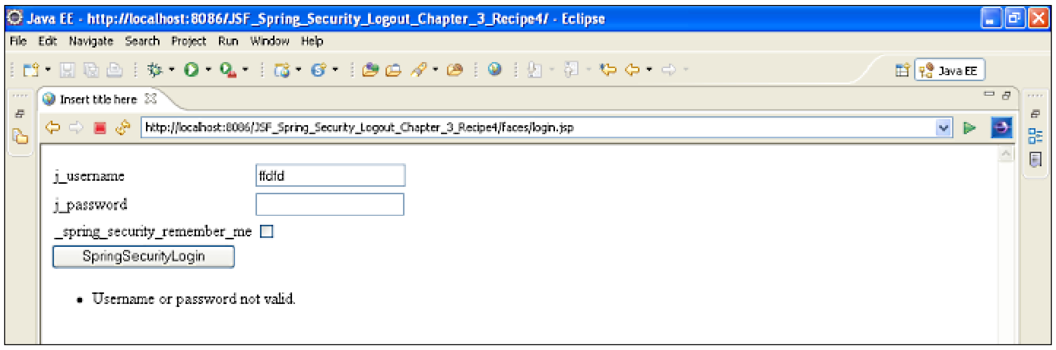
```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<%@ page language="java" contentType="text/html;
charset=ISO-8859-1" pageEncoding="ISO-8859-1"%>
<%@ taglib prefix="f"  uri="http://java.sun.com/jsf/core"%>
<%@ taglib prefix="h"  uri="http://java.sun.com/jsf/html"%>

<html>
<head>
<meta http-equiv="Content-Type" content="text/html;
charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<f:view>
<h:form prependId="false">
                <h:panelGrid columns="2">

                 <h:outputLabel
                   value="j_username"></h:outputLabel>
            <h:inputText    id="j_username" required="true"
              value="#{credentialmanager.j_username}">
              </h:inputText>
               <h:outputLabel value="j_password">
                 </h:outputLabel>
            <h:inputSecret    id ="j_password"
              required="true" value="#{credentialmanager
              .j_password}"></h:inputSecret>
             <h:outputLabel value="_spring_security_remember_
me"></h:outputLabel>
               <h:selectBooleanCheckbox
                      id="_spring_security_remember_me" />

              </h:panelGrid>
              <h:commandButton action="#{credentialmanager.
doSpringSecurityLogin}" value="SpringSecurityLogin" />
 <h:messages />

         </h:form>
         </f:view>
</body>
</html>
```

How it works...

The `beforePhase()` method in the `credentialmanager` captures the authentication exceptions message. The exception is added to `FacesMessage`, which is captured in the JSP file.

```
FacesContext.getCurrentInstance().addMessage(null, new
FacesMessage(FacesMessage.SEVERITY_ERROR,"Username or password not
valid.", "Username or password not valid."));
```

The following screenshot shows the implementation:

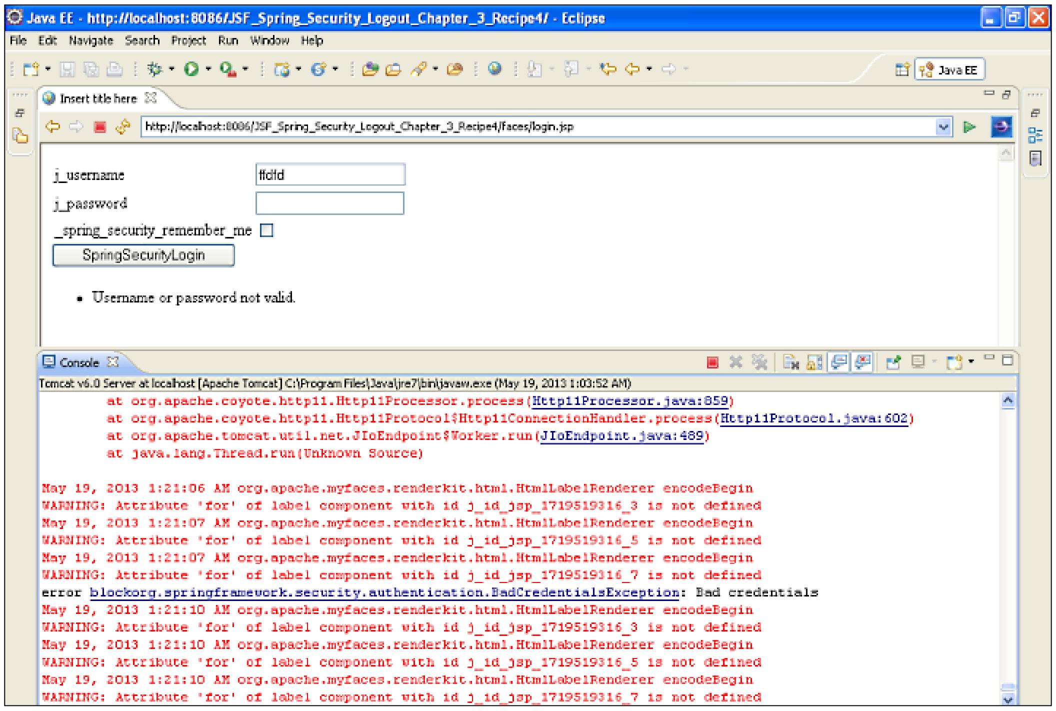

Java EE - http://localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/ - Eclipse
File Edit Navigate Search Project Run Window Help
Java EE
Insert title here

http://localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/faces/login.jsp

j_username ffdfd
j_password
_spring_security_remember_me ☐
SpringSecurityLogin

- Username or password not valid.

The following screenshot shows the screen on authentication failure:


Java EE - http://localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/ - Eclipse
File Edit Navigate Search Project Run Window Help
Java EE
Insert title here
http://localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/faces/login.jsp
SpringSecurityLogin
Console

j_username ffdfd

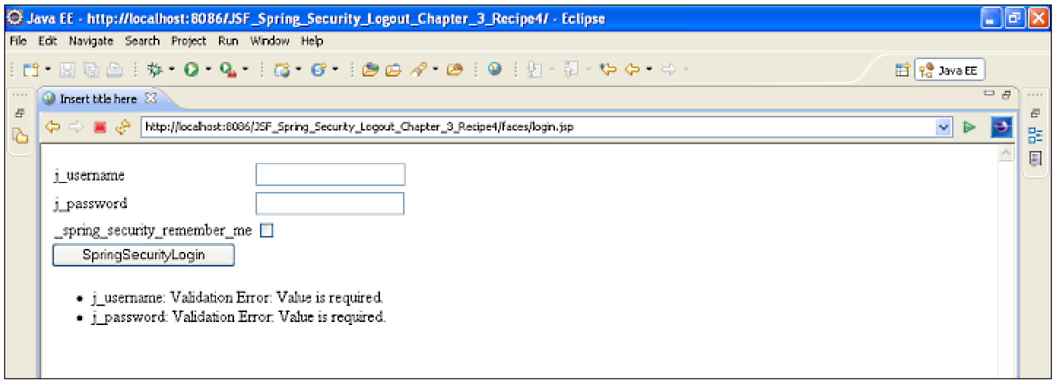
j_password

_spring_security_remember_me ☐

- Username or password not valid.

```
Tomcat v6.0 Server at localhost [Apache Tomcat] C:\Program Files\Java\jre7\bin\javaw.exe (May 19, 2013 1:03:52 AM)
        at org.apache.coyote.http11.Http11Processor.process(Http11Processor.java:859)
        at org.apache.coyote.http11.Http11Protocol$Http11ConnectionHandler.process(Http11Protocol.java:602)
        at org.apache.tomcat.util.net.JIoEndpoint$Worker.run(JIoEndpoint.java:489)
        at java.lang.Thread.run(Unknown Source)

May 19, 2013 1:21:06 AM org.apache.myfaces.renderkit.html.HtmlLabelRenderer encodeBegin
WARNING: Attribute 'for' of label component with id j_id_jsp_1719519316_3 is not defined
May 19, 2013 1:21:07 AM org.apache.myfaces.renderkit.html.HtmlLabelRenderer encodeBegin
WARNING: Attribute 'for' of label component with id j_id_jsp_1719519316_5 is not defined
May 19, 2013 1:21:07 AM org.apache.myfaces.renderkit.html.HtmlLabelRenderer encodeBegin
WARNING: Attribute 'for' of label component with id j_id_jsp_1719519316_7 is not defined
error blockorg.springframework.security.authentication.BadCredentialsException: Bad credentials
May 19, 2013 1:21:10 AM org.apache.myfaces.renderkit.html.HtmlLabelRenderer encodeBegin
WARNING: Attribute 'for' of label component with id j_id_jsp_1719519316_3 is not defined
May 19, 2013 1:21:10 AM org.apache.myfaces.renderkit.html.HtmlLabelRenderer encodeBegin
WARNING: Attribute 'for' of label component with id j_id_jsp_1719519316_5 is not defined
May 19, 2013 1:21:10 AM org.apache.myfaces.renderkit.html.HtmlLabelRenderer encodeBegin
WARNING: Attribute 'for' of label component with id j_id_jsp_1719519316_7 is not defined
```

The following screenshot shows the screen when empty credentials are entered in the username and password fields:


Java EE - http://localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/ - Eclipse
File Edit Navigate Search Project Run Window Help
Java EE
Insert title here
http://localhost:8086/JSF_Spring_Security_Logout_Chapter_3_Recipe4/faces/login.jsp
SpringSecurityLogin

j_username

j_password

_spring_security_remember_me ☐

- j_username: Validation Error: Value is required.
- j_password: Validation Error: Value is required.

See also

- *Chapter 4, Spring Security with Grails*

4 Spring Security with Grails

In this chapter we will cover:

- Spring Security authentication with Groovy Grails setup
- Spring Security with Grails to Secure Grails controller
- Spring Security with Groovy Grails logout scenario
- Spring Security with Groovy Grails Basic authentication
- Spring Security with Groovy Grails Digest authentication
- Spring Security with Groovy Grails multiple authentication
- Spring Security with Groovy Grails LDAP authentication

Introduction

Grails is a plugin based framework and all it needs to work is a few intuitive commands on the command prompt.

In this chapter, we shall see how easily we can integrate Spring Security with Groovy on Grails with less coding.

Spring Security authentication with Groovy Grails setup

In this recipe we shall first set up Groovy and Grails. We shall then show how to integrate Spring Security with Grails.

Getting ready

- Get Groovy installed from `http://groovy.codehaus.org/Download`
- Download Grails 2.3 from `http://groovy.codehaus.org/Download` and unzip it to a folder
- Set environment variable: `GRAILS_HOME`
- Check for `Groovy_HOME`
- Check Grails installation by typing `grails-version`

How to do it...

The following steps are taken to integrate Spring Security with Groovy Grails:

1. Create a directory: `Grails Project`.

   ```
   cd Grails_Project
   grails create-app myfirstapp
   cd myfirstapp
   grails create-controller MyFirstController
   ```

   This will create a controller which will be available inside the controller package.

2. You can open the generated controller file and view it. It will have package name `myfirstapp` which Grails has auto generated.

   ```
   package myfirstapp
   class MyFirstController {
       def index() { }
   }
   ```

3. Update the generated controller file.

   ```
   package myfirstapp
   class MyFirstController {
     def index() {
       render "Hello PACKT"
     }
   }
   ```

4. Test the Grails Setup by accessing this URL `http://localhost:8080/myfirstapp/`.

   ```
   cd myfirstapp
   ```

5. Download the security jars for Grails.

   ```
   grails install-plugin spring-security-core
   grails  s2-quickstart org.packt SecuredUser SecuredRole
   ```

   If the installer is not supported in your version of Grails you can add a dependency to `BuildConfig.groovy` file:

   ```
   plugins {

       compile ':spring-security-core:2.0-RC2'

   }
   ```

6. Update the `Bootstrap.groovy` file:

   ```
   import org.packt.SecuredUser;
   import org.packt.SecuredRole;
   import org.packt.SecuredUserSecuredRole
   class BootStrap {

     def springSecurityService

       def init = { servletContext ->

       if(!SecuredUser.count()){
         /*The default password is 'password'*/
         def password = 'password'
         def user = new SecuredUser(username : 'anjana',
           password:'anjana123',enabled:true,
             accountExpired : false , accountLocked : false
               ,passwordExpired : false).save(flush:
                 true, insert: true)
         def role = new SecuredUser(authority :
           'ROLE_USER').save(flush: true, insert: true)
         /*create the first user role map*/
         SecuredUserSecuredRole.create user , role , true
       }

       }
       def destroy = {
       }
   }
   ```

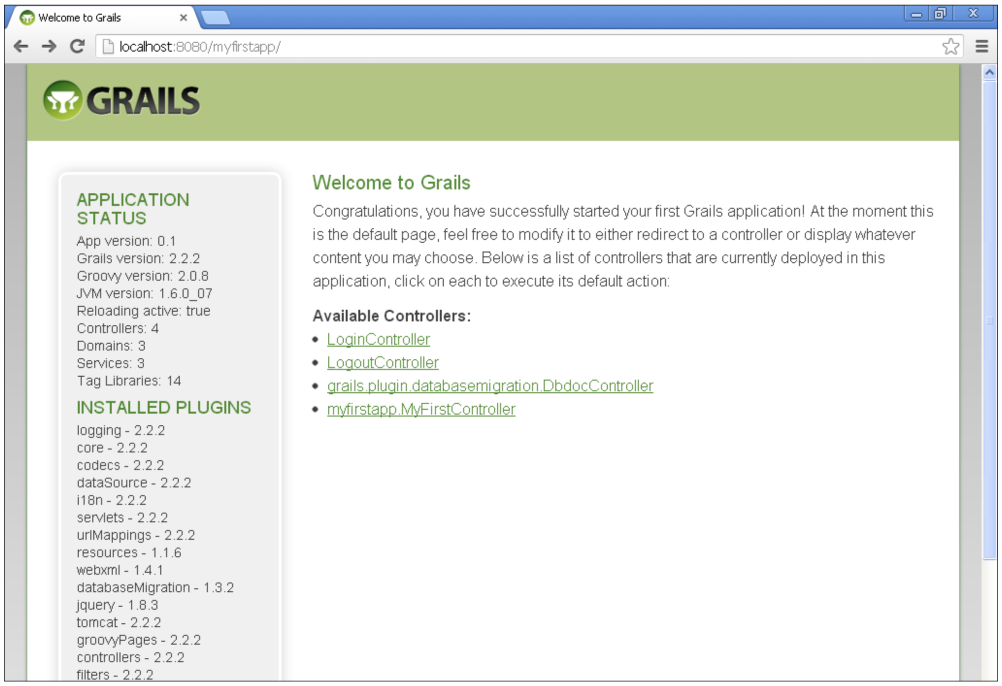
   In the preceding file we have populated users with username as `anjana` and password as `anjana123`.

Just by doing this we can authenticate the user.

You can see that we have not updated any XML file. We have just installed the plugin and have modified the file.

How it works...

Let's see what kind of output we get when we run Grails: `grails run-app`.



APPLICATION STATUS

App version: 0.1
Grails version: 2.2.2
Groovy version: 2.0.8
JVM version: 1.6.0_07
Reloading active: true
Controllers: 4
Domains: 3
Services: 3
Tag Libraries: 14

INSTALLED PLUGINS

logging - 2.2.2
core - 2.2.2
codecs - 2.2.2
dataSource - 2.2.2
i18n - 2.2.2
servlets - 2.2.2
urlMappings - 2.2.2
resources - 1.1.6
webxml - 1.4.1
databaseMigration - 1.3.2
jquery - 1.8.3
tomcat - 2.2.2
groovyPages - 2.2.2
controllers - 2.2.2
filters - 2.2.2

Welcome to Grails

Congratulations, you have successfully started your first Grails application! At the moment this is the default page, feel free to modify it to either redirect to a controller or display whatever content you may choose. Below is a list of controllers that are currently deployed in this application, click on each to execute its default action:

Available Controllers:

- LoginController
- LogoutController
- grails.plugin.databasemigration.DbdocController
- myfirstapp.MyFirstController

Update the `Messages.properties` file in the `i18n` folder:

```
springSecurity.login.header=Spring Security login
springSecurity.login.username.label=UserName
springSecurity.login.password.label=Password
springSecurity.login.remember.me.label=remember me
springSecurity.login.button=Login
springSecurity.errors.login.fail=Authentication failed
```

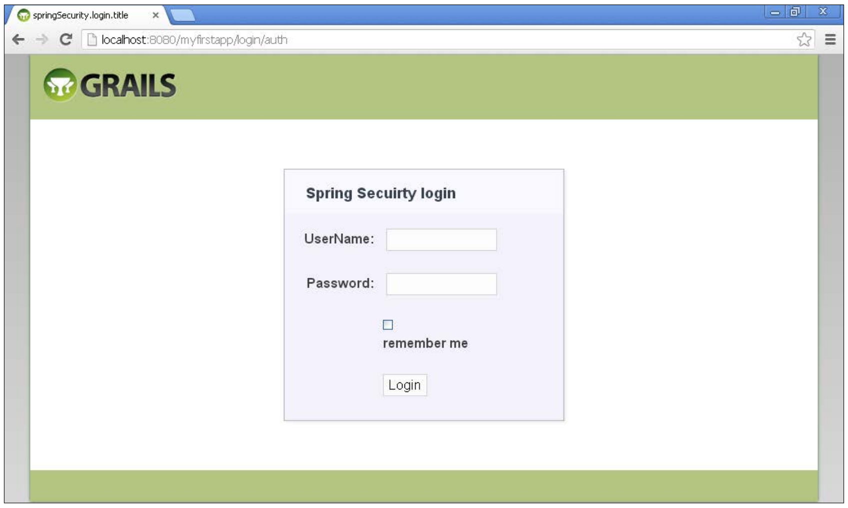
Click on the **LoginController** link at `http://localhost:8080/myfirstapp/login/auth`.

You should be able to see the login screen which is generated by the Grails framework when we installed the security plugin. The pages are available in the views folder. Now you can login with the username and password: `anjana`, `anjana123`. You will be redirected to the Grails home page. On failure of authentication you will get an authentication failure message.

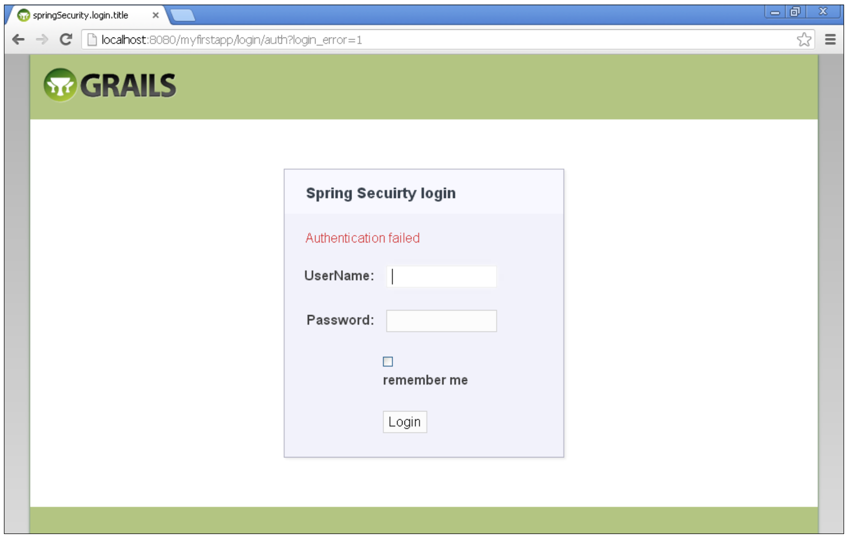
When you click on the **LogoutController** link, you will be logged out. When you again click on the controller you will be asked to log in again.

Below is the workflow of the application:

This is the Grails login screen—on the clicking on **Login** button, after entering the username and password, this submits the credentials to the Spring Security framework:


springSecurity.login.title
localhost:8080/myfirstapp/login/auth
GRAILS
Spring Secuirty login
UserName:
Password:
remember me
Login

On failure of authentication, the user is redirected to the login screen with **Authentication failed** message.



See also

- The *Spring Security with Grails to Secure Grails controller* recipe
- The *Spring Security with Groovy Grails logout scenario* recipe
- The *Spring Security with Groovy Grails Basic authentication* recipe
- The *Spring Security with Groovy Grails Digest authentication* recipe
- The *Spring Security with Groovy Grails multilevel authentication* recipe
- The *Spring Security with Groovy Grails LDAP authentication* recipe

Spring Security with Grails to secure Grails controller

Let's apply Spring Security to Grails controller. The scenario is that the user will access the Grails application and will be provided with a link to log in. On successful authentication, the user will be provided with links which he can access. The links are visible only to the logged in user.

Getting ready

For demonstration purposes we will create the following:

- A simple Grails controller: `myfirstapp`
- A `MyFirstController` controller which will be secured with Spring Security
- Modify `index.gsp`

How to do it...

The following steps are taken for integrating Spring Security with Grails to secure Grails Controller:

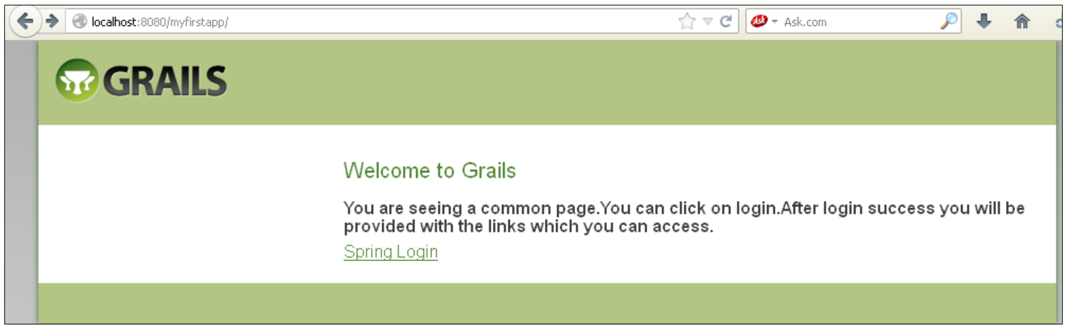
1. Go to `myfirstapp\grails-app\views`.
2. You will see the `index.gsp` file, rename it to `index.gsp_backup`. I have copied the styles from `index.gsp_backup`.
3. Create a new `index.gsp` file, edit the file as shown:

```
<!DOCTYPE html>
<html>
  <head>
  </head>
  <body>
```

```
        <h1>Welcome to Grails</h1>
        <sec:ifLoggedIn>
          Access the
            <g:link controller='myFirst' action=''>Secured
              Controller</g:link><br/>
            <g:link controller='logout' action=''>Spring
              Logout</g:link>
        </sec:ifLoggedIn>

        <sec:ifNotLoggedIn>
        <h2>You are seeing a common page.You can click on
          login.After login success you will be provided with
            the links which you can access.</h2>
        <g:link controller='login' action='auth'>Spring
          Login</g:link>
        </sec:ifNotLoggedIn>

      </body>
    </html>
```

How it works...

Access the URL: `http://localhost:8080/myfirstapp/`.

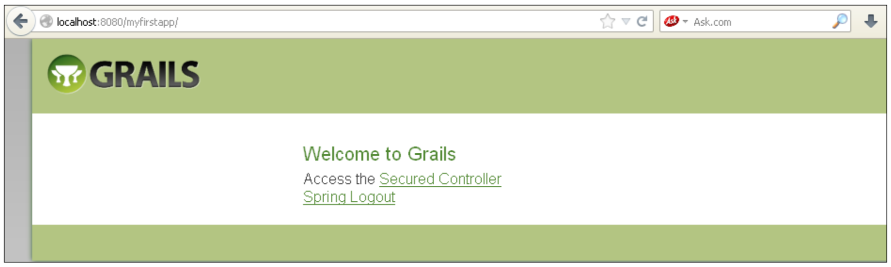


Welcome to Grails

You are seeing a common page.You can click on login.After login success you will be provided with the links which you can access.

Spring Login

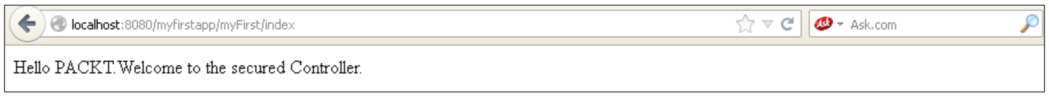
Now click on the **Spring Login** link, you will be redirected to a login page. Spring Security handles the authentication mechanism, where on successful login, the user will be provided with a link to access the secured controller.



Welcome to Grails
Access the Secured Controller
Spring Logout

The links are provided in the `index.gsp` page which will show and hide links based on the logged in or logged out status. This is provided using the security tags in the `index.gsp` pages.

Click on the link **Secured Controller**. You should be able to see the output message of the secured controller on the browser.



```
Hello PACKT.Welcome to the secured Controller.
```

See also

- The *Spring Security with Groovy Grails logout scenario* recipe
- The *Spring Security with Groovy Grails Basic authentication* recipe
- The *Spring Security with Groovy Grails Digest authentication* recipe
- The *Spring Security with Groovy Grails multilevel authentication* recipe
- The *Spring Security with Groovy Grails LDAP authentication* recipe

Spring Security authentication with Groovy Grails logout scenario

In this recipe, let's look at the logout implementation with Spring Security in the Grails application.

Getting ready

When we install the Spring Security plugin with Grails, the `Login Controller` and `Logout Controller` class will be created automatically. `Login Controller` will handle the authentication. The `Logout Controller` will handle the logout process, it will redirect the user to the common page.

How to do it...

The following steps are taken to implement the logout action in the Groovy on Grails application:

1. In the `index.jsp` file we add the following:

```
<g:link controller='logout' action=''>Spring
  Logout</g:link>
```

2. The `Logout Controller` class to redirect the request to `j_spring_security`:

```
import
  org.codehaus.groovy.grails.plugins.
    springsecurity.SpringSecurityUtils

class LogoutController {

  /**
   * Index action. Redirects to the Spring security logout uri.
   */
  def index = {
    // TODO put any pre-logout code here
    redirect uri:
      SpringSecurityUtils.securityConfig.logout.
        filterProcessesUrl // '/j_spring_security_logout'
  }
}
```

How it works...

Click on the logout link. The user is redirected the home page. `SpringSecurityUtils.securityConfig.logout.filterProcessesUrl` is set to `/j_spring_security_logout` by default. So when the user clicks on logout, they are redirected to `/j_spring_security_logout action`. This will logout the user from the accessible page and the user has to again login to the Grails application.

See also

- The *Spring Security with Groovy Grails Basic authentication* recipe
- The *Spring Security with Groovy Grails Digest authentication* recipe
- The *Spring Security with Groovy Grails multilevel authentication* recipe
- The *Spring Security with Groovy Grails LDAP authentication* recipe

Spring Security with Groovy Grails Basic authentication

In this recipe, we shall demonstrate Security with Groovy on Grails using the Basic authentication mechanism.

Getting ready

- We need to create a Grails application: `grailsbasicauthexample`
- Install the Spring Security plugin to the new application
- Create `User` and `Role` classes
- Edit the `Config.groovy` file
- Edit `BootStrap.groovy` file
- Create a controller: `GreetingsController`

How to do it...

The following steps are taken for demonstrating Basic authentication with Groovy on Grails using Spring Security:

1. Run the following commands in the command prompt:
   - `Grails create-app grailsbasicauthexample`
   - `cd grailsbasicauthexample`
   - `grails install-plugin spring-security-core`
   - `grails s2-quickstart com.packt SecuredUser SecuredRole`
2. Edit the `config.groovy` file and set the following values:

   ```
   grails.plugins.springsecurity.useBasicAuth = true
   grails.plugins.springsecurity.basic.realmName =
     "HTTP Basic Auth Demo"
   ```

3. Edit the `Bootstrap.groovy` file:

   ```
   import com.packt.*;
   class BootStrap {
     def init = { servletContext ->
       def userRole =
         SecuredRole.findByAuthority("ROLE_USER") ?:
           new SecuredRole(authority: "ROLE_USER").
             save(flush: true)
       def user = SecuredUser.findByUsername("anjana") ?:
         new SecuredUser(username: "anjana", password:
   ```

```
          "anjana123", enabled: true).save(flush: true)
        SecuredUserSecuredRole.create(user, userRole, true)
      }
      def destroy = {
      }
    }
```

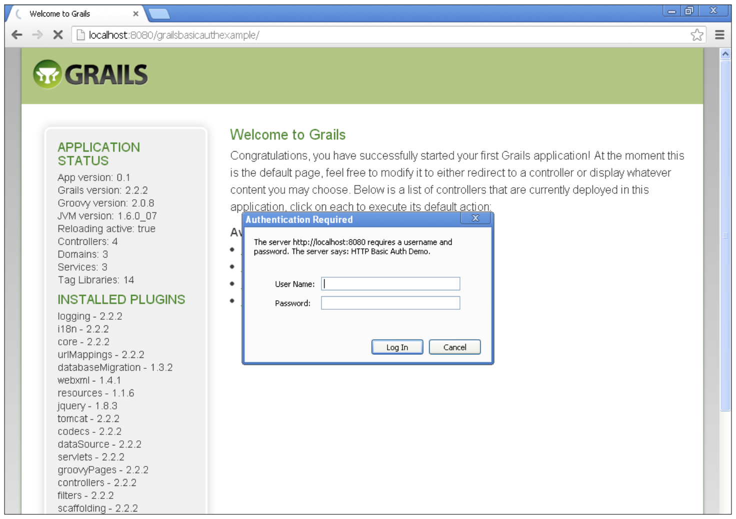
4. Run the command `$grails create-controller Greetings` and add annotations:

```
package grailsbasicauthexample
import grails.plugins.springsecurity.Secured
class GreetingsController {
  @Secured(['ROLE_USER'])
  def index() {
    render "Hello PACKT"
  }
}
```

How it works...

Access the URL: `http://localhost:8080/grailsbasicauthexample/`.

Click on the **Greetings Controller** link. This is a secured link which has been restricted using Spring Security. When the user clicks on the link, the Basic authentication mechanism triggers a login dialog box to be filled. The user has to enter username/password: `anjana/anjana123`, then on authentication, the user gets redirected to an authorized page, that is, you will be prompted with the **Greetings Controller** link.



Welcome to Grails

Congratulations, you have successfully started your first Grails application! At the moment this is the default page, feel free to modify it to either redirect to a controller or display whatever content you may choose. Below is a list of controllers that are currently deployed in this application, click on each to execute its default action:

APPLICATION STATUS
App version: 0.1
Grails version: 2.2.2
Groovy version: 2.0.8
JVM version: 1.6.0_07
Reloading active: true
Controllers: 4
Domains: 3
Services: 3
Tag Libraries: 14

INSTALLED PLUGINS
logging - 2.2.2
i18n - 2.2.2
core - 2.2.2
urlMappings - 2.2.2
databaseMigration - 1.3.2
webxml - 1.4.1
resources - 1.1.6
jquery - 1.8.3
tomcat - 2.2.2
codecs - 2.2.2
dataSource - 2.2.2
servlets - 2.2.2
groovyPages - 2.2.2
controllers - 2.2.2
filters - 2.2.2
scaffolding - 2.2.2

Authentication Required

The server http://localhost:8080 requires a username and password. The server says: HTTP Basic Auth Demo.

User Name:
Password:

On successful authentication, the user is provided access to the greetings controller.

See also

- The *Spring Security with Groovy Grails Digest authentication* recipe
- The *Spring Security with Groovy Grails multilevel authentication* recipe
- The *Spring Security with Groovy Grails LDAP authentication* recipe

Spring Security with Groovy Grails Digest authentication

In this recipe, let's look at the Digest authentication mechanism in which the password will be hashed. Let's integrate this with the Grails application and see how it does authentication and authorization with it.

Getting ready

- We need to create a Grails application: `grailsdigestauthexample`
- Install Spring Security plugin to the new application
- Create `User` and `Role` classes
- Edit the `Config.groovy` file
- Edit the `BootStrap.groovy` file
- Create a controller: `SecuredPackt`

How to do it...

The following steps are taken for demonstrating the implementation of Digest authentication with Groovy on Grails using Spring Security:

1. In the command prompt run the following commands:

   ```
   $grails create-app grailsdigestauthexample
   $cd grailsdigestauthexample
   $grails install-plug-in spring-security-core
   $grails s2-quickstart com.packt SecuredUser SecuredRole
   $grails create-controller SecuredPackt
   ```

2. Add the following to the `config.groovy` file and edit the `Bootstrap.groovy` file:

   ```
   import com.packt.*;
   class BootStrap {
     def init = { servletContext ->
   ```

```
      def userRole = SecuredRole.findByAuthority("ROLE_USER")
        ?: new SecuredRole(authority:
          "ROLE_USER").save(flush: true)
      def user = SecuredUser.findByUsername("anjana") ?:
        new SecuredUser(username: "anjana", password:
          "anjana123", enabled: true).save(flush: true)
      SecuredUserSecuredRole.create(user, userRole, true)
    }
    def destroy = {
    }
  }
```

3. Edit the `SecuredPacktController` file and add the annotations:

```
package grailsdigestauthexample
import grails.plugins.springsecurity.Secured
class SecuredPacktController {
  @Secured(['ROLE_USER'])
  def index() {
  render "Hello PACKT"
  }
}
```

   Grails with Spring Security plugin requires a username to be passed as a salt value.

   We need to do a little tweaking with the generated `SecuredUser.groovy` file.

4. Update the `SecuredUser.groovy` file, as shown in the following code:

```
package com.packt
class SecuredUser {
  transient passwordEncoder

  String username
  String password
  boolean enabled
  boolean accountExpired
  boolean accountLocked
  boolean passwordExpired

  static constraints = {
    username blank: false, unique: true
    password blank: false
  }

  static mapping = {
    password column: '`password`'
  }
  Set<SecuredRole> getAuthorities() {
    SecuredUserSecuredRole.findAllBySecuredUser(this).
      collect { it.securedRole } as Set
  }

  def beforeInsert() {
    encodePassword()
  }

  def beforeUpdate() {
    if (isDirty('password')) {
      encodePassword()
    }
  }

  protected void encodePassword() {
    password = passwordEncoder.encodePassword(password,
      username)
  }
}
```

Display the logged in user:

```
<!DOCTYPE html>
<html>
  <head>
    <meta name="layout" content="main"/>
    <title>Welcome to Grails</title>

  </head>
  <body>

    <div id="page-body" role="main">
      <h1>Welcome to Grails</h1>


        <sec:ifLoggedIn>
        Hello <sec:username/>
        Access the
        <g:link controller='securedPackt' action=''>
          Secured Controller</g:link><br/>
        <g:link controller='logout' action=''>Spring
          Logout</g:link>
        </sec:ifLoggedIn>
```

```
                <sec:ifNotLoggedIn>
                  <h2>You are seeing a common page.You can click
                    on login. After login success you will be
                      provided with the links which you can
                        access.</h2>
                <g:link controller='securedPackt' action=''>
                  Secured Controller</g:link><br/>

                </sec:ifNotLoggedIn>
            </div>
            </div>
          </body>
        </html>
```

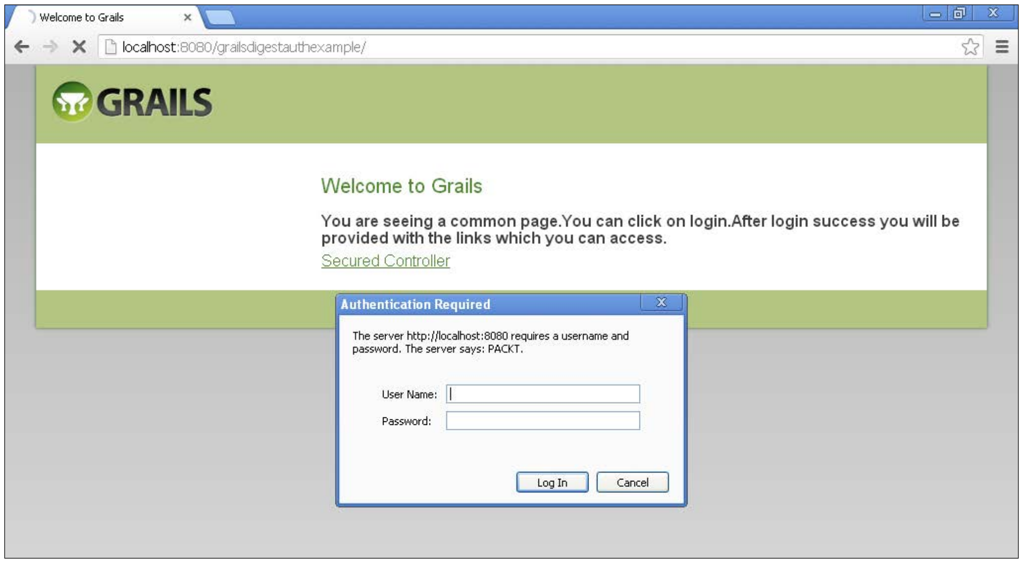
How it works...

When the user accesses the URL `http://localhost:8080/grailsdigestauthexample/`, Spring Security will prompt the user with a login dialog box asking for the username and password. When the user enters the username and password, Spring Security authenticates it and redirects the user to the secured page.

The work flow of the application is as follows:

`http://localhost:8080/grailsdigestauthexample/`

The following screenshot depicts the login dialog box that pops up when trying to access the secured resource:



Welcome to Grails

You are seeing a common page.You can click on login.After login success you will be provided with the links which you can access.

Secured Controller

Authentication Required

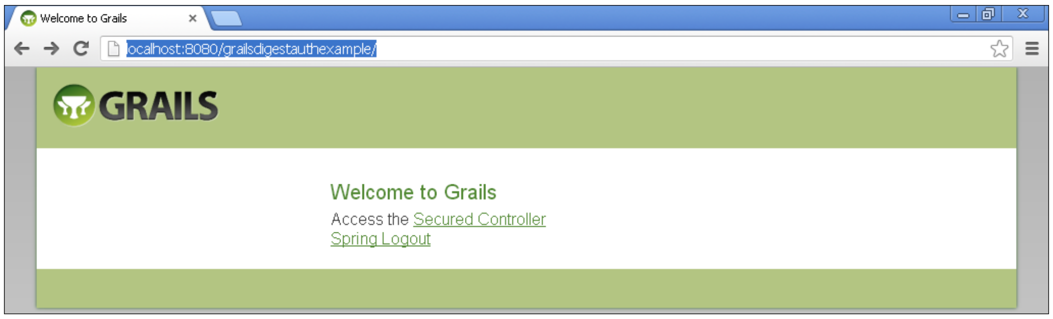
The server http://localhost:8080 requires a username and password. The server says: PACKT.

User Name:

Password:

It works in a similar way to Basic authentication.

On successful login, you will get a logout link. The user has now got access to the secured controller:

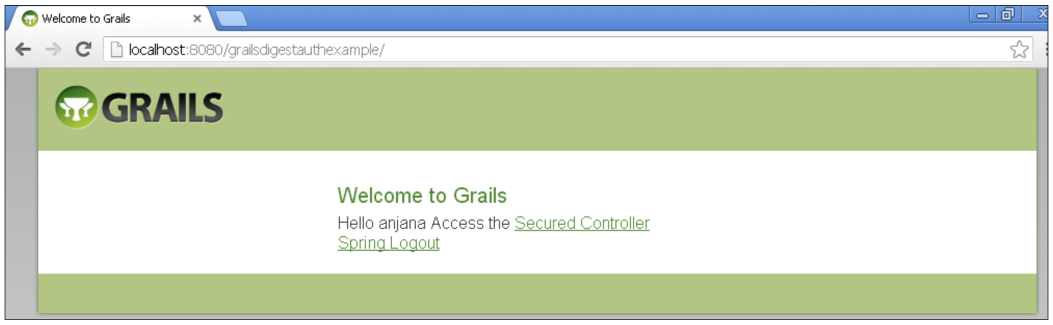


Welcome to Grails

Access the Secured Controller

Spring Logout

Displaying the logged in user:



Welcome to Grails

Hello anjana Access the Secured Controller

Spring Logout

See also

- The *Spring Security with Groovy Grails multilevel authentication* recipe
- The *Spring Security with Groovy Grails LDAP authentication* recipe

Spring Security with Groovy Grails multiple authentication

So far we have seen single-role authentication. Let's see a demonstration of multiple roles. The recipe uses another plugin called `spring-security-ui`.

It has many controllers which provide user management screens for the user.

This saves developer time in coding these screens. It also provides a search option with autocomplete.

The `spring-security-ui` plugin also requires additional plugins to be installed which will be prompted at the console. There is an alternative to installing the plugin, that is, you can give the dependency directly in the `BuildConfig.groovy` file.

```
grails.project.dependency.resolution = {
  ...
  plugins {
    compile ":spring-security-ui:0.2""
  }
}
```

Getting ready

We need to do the following for achieving a multilevel authentication:

- Create a Grails app
- Install the `spring-security-core` plugin
- Install the `spring-security-ui` plugin
- Use the `quickstart` command to create the `Role` and `User` domain classes
- Create the `Sample` controller
- Edit the `BootStrap.groovy` file
- Edit the `SampleController` class for roles
- Update the `.gsp` files

How to do it...

The following steps are taken for implementing multiple authentication with Groovy on Grails and Spring Security:

1. Go to the Grails workspace and run the following commands:
   - `grails create-app multilevelroledemo`
   - `cd multilevelroledemo`
   - `grails install-plugin spring-security-core`
   - `grails install-plugin spring-security-ui`
   - `grails s2-quickstart com.packt.security SecuredUser SecuredRole`
   - `grails create-controller Sample`

2. Edit the `SampleController` file:

```
package multilevelroledemo
import grails.plugins.springsecurity.Secured
class SampleController {

  def index = {}

  @Secured(['ROLE_USER'])
  def user = {
    render 'Secured for ROLE_USER'
  }

  @Secured(['ROLE_ADMIN'])
  def admin = {
    render 'Secured for ROLE_ADMIN'
  }

  @Secured(['ROLE_SUPERADMIN'])
  def superadmin = {
    render 'Secured for ROLE_SUPERADMIN'
  }
}
```

3. Edit the `BootStrap.groovy` file. I have added multiple roles. These roles and users will be created from the domain groovy files that are generated:

```
import com.packt.security.SecuredRole
import com.packt.security.SecuredUser
import com.packt.security.SecuredUserSecuredRole
class BootStrap {
  def init = { servletContext ->
    def userRole =
      SecuredRole.findByAuthority("ROLE_USER") ?: new
        SecuredRole(authority: "ROLE_USER").save(flush:
          true)
    def user = SecuredUser.findByUsername("anjana") ?: new
      SecuredUser(username: "anjana", password:
        "anjana123", enabled: true).save(flush: true)
    SecuredUserSecuredRole.create(user, userRole, true)

    def userRole_admin = SecuredRole.findByAuthority
      ("ROLE_ADMIN") ?: new SecuredRole(authority:
        "ROLE_ADMIN").save(flush: true)
    def user_admin = SecuredUser.findByUsername("raghu") ?:
      new SecuredUser(username: "raghu", password:
        "raghu123", enabled: true).save(flush: true)
    SecuredUserSecuredRole.create(user_admin,
      userRole_admin, true)

    def userRole_superadmin = SecuredRole.findByAuthority
      ("ROLE_SUPERADMIN") ?: new SecuredRole(authority:
        "ROLE_SUPERADMIN").save(flush: true)
    def user_superadmin = SecuredUser.findByUsername
      ("packt") ?: new SecuredUser(username: "packt",
        password: "packt123", enabled: true).save(flush:
          true)
    SecuredUserSecuredRole.create(user_superadmin,
      userRole_superadmin, true)
  }
  def destroy = {
  }
}
```

4. Modify the `.gsp` files. Add an `index.gsp` file inside `views/sample`:

```
<head>
  <meta name='layout' content='main' />
  <title>Multi level  Roles in Grails</title>
</head>

<body>
  <div class='nav'>
    <span class='menuButton'><a class='home' href='${createLinkTo(
dir:'')}'>Home</a></span>
  </div>
  <div class='body'>
    <g:link action='user'> ROLE_USER</g:link><br/>
    <g:link action='admin'>ROLE_ADMIN</g:link><br/>
    <g: link action='superadmin'>
      ROLE_SUPERADMIN</g:link><br/>
  </div>
</body>
```

5. Add the `SecurityConfig.groovy` file inside the `config` folder:

```
security {
  active = true
  loginUserDomainClass = 'com.packt.security.SecuredUser'
  authorityDomainClass = 'com.packt.security.SecuredPackt'
  useRequestMapDomainClass = false
  useControllerAnnotations = true
}
```

How it works...

Let's see how it works. Also we get to see the controllers provided by `spring-security-ui` and its functions.

We have three users here with different roles. They are created in the `Bootstrap.groovy` file using the domain classes:

- `anjana/anjana123` as `ROLE_USER`
- `raghu/raghu123` as `ROLE_ADMIN`
- `packt/packt123` as `ROLE_SUPERADMIN`

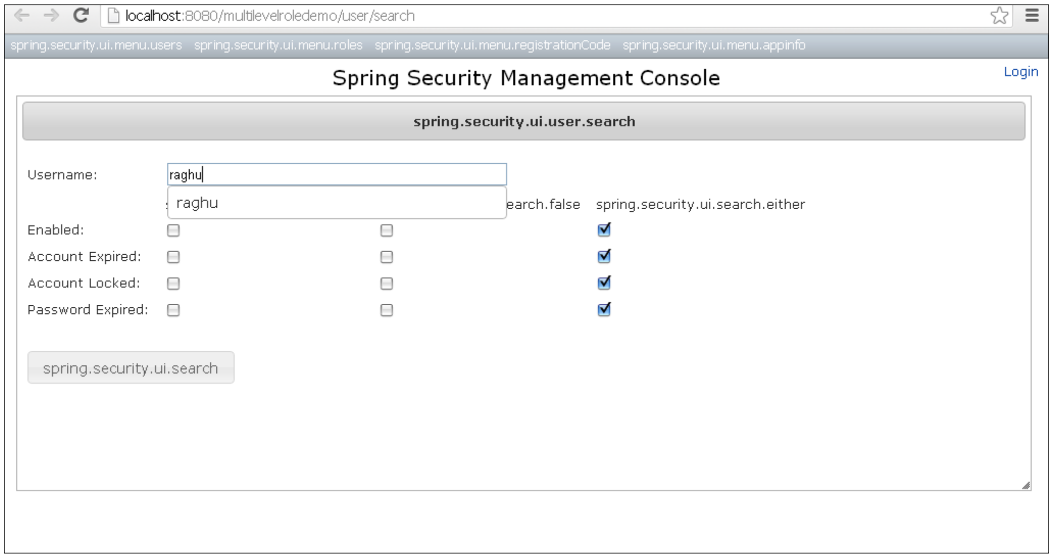
Access the URL: `http://localhost:8080/multilevelroledemo/`.

You will see the Grails home page with the list of controllers.

Click on the **spring.security.ui.usercontroller** link. This controller belongs to the `spring-security-ui` plugin. This controller provides a user management screen. This controller provides the search functionality for the user. It's a wonderful UI, it has even got an autocomplete option with search filters. You can go to the link:

`http://localhost:8080/multilevelroledemo/user/search`

The following screenshot shows the Spring user management console where you can see an option to search users:



localhost:8080/multilevelroledemo/user/search

spring.security.ui.menu.users spring.security.ui.menu.roles spring.security.ui.menu.registrationCode spring.security.ui.menu.appinfo

Login

Spring Security Management Console

spring.security.ui.user.search

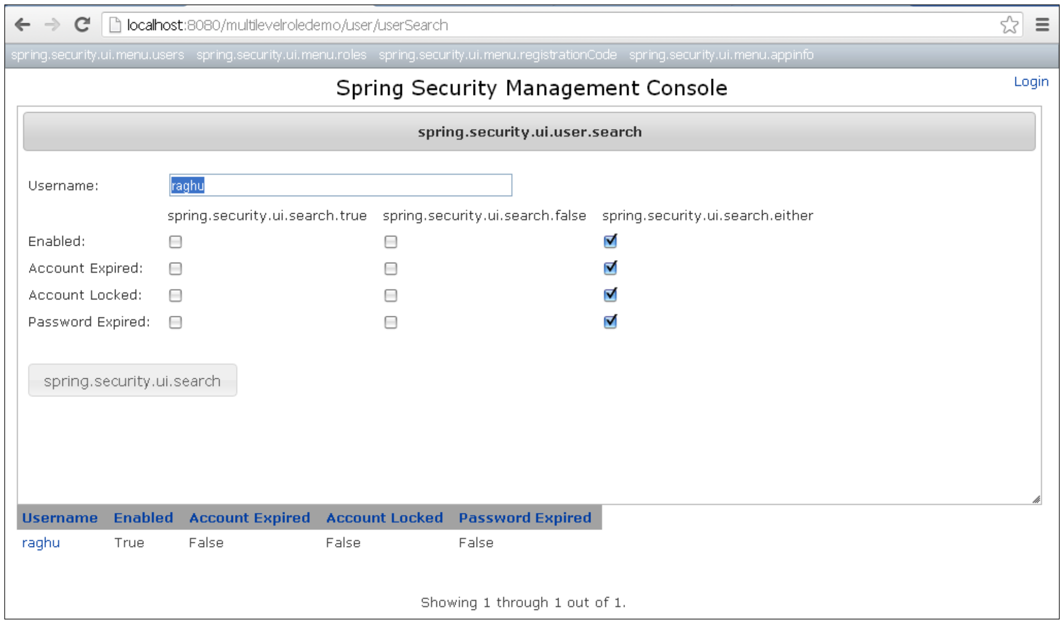
Username: raghu

raghu

		earch.false	spring.security.ui.search.either
Enabled:	☐	☐	✓
Account Expired:	☐	☐	✓
Account Locked:	☐	☐	✓
Password Expired:	☐	☐	✓

spring.security.ui.search

Let's look at the search result, as shown in the following screenshot:



localhost:8080/multilevelroledemo/user/userSearch
spring.security.ui.menu.users spring.security.ui.menu.roles spring.security.ui.menu.registrationCode spring.security.ui.menu.appinfo
Login
Spring Security Management Console
spring.security.ui.user.search
spring.security.ui.search

Username: raghu

	spring.security.ui.search.true	spring.security.ui.search.false	spring.security.ui.search.either
Enabled:	☐	☐	✓
Account Expired:	☐	☐	✓
Account Locked:	☐	☐	✓
Password Expired:	☐	☐	✓

Username	Enabled	Account Expired	Account Locked	Password Expired
raghu	True	False	False	False

Showing 1 through 1 out of 1.

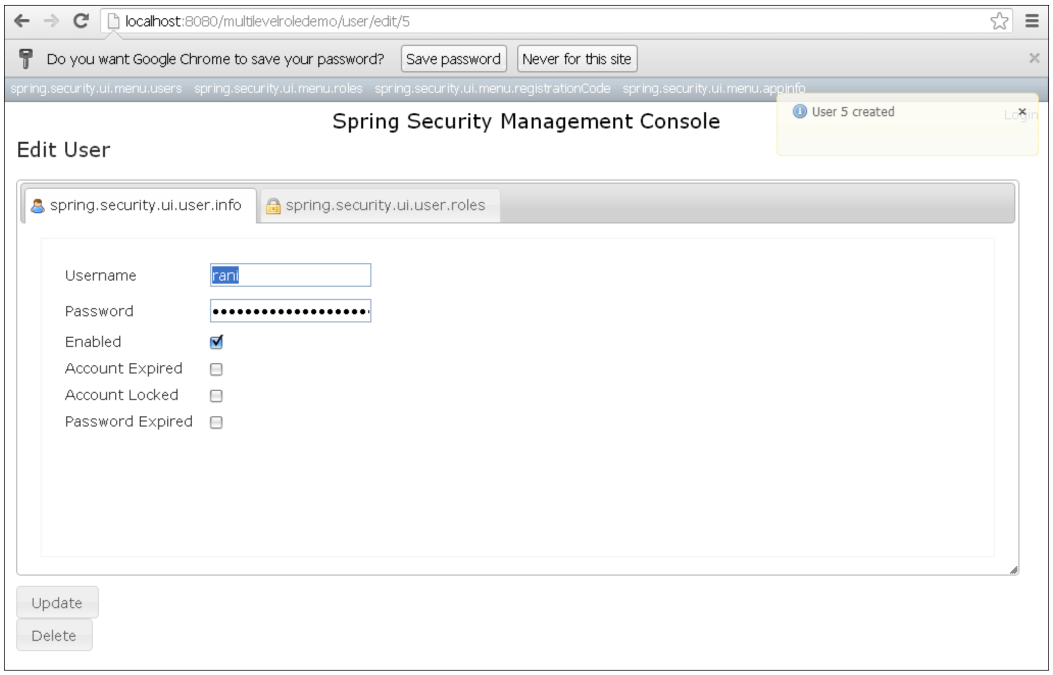
Let's now check the role controller provided in the `spring-security-ui` plugin. This controller gives an option to search for roles and also provides roles with user mapping. It provides an option to update the roles as well:

```
http://localhost:8080/multilevelroledemo/role/roleSearch
```

You can also create a user, the option is available with menus. Access the following link to create a user:

```
http://localhost:8080/multilevelroledemo/user/create
```

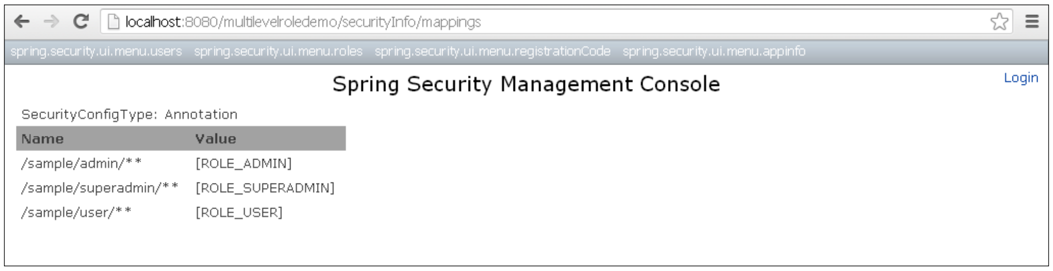
Let's look at the sample controller that we have created for the application:


localhost:8080/multilevelroledemo/user/edit/5
Do you want Google Chrome to save your password?
Save password
Never for this site
spring.security.ui.menu.users
spring.security.ui.menu.roles
spring.security.ui.menu.registrationCode
spring.security.ui.menu.appinfo
User 5 created
Spring Security Management Console
Edit User
spring.security.ui.user.info
spring.security.ui.user.roles
Update
Delete

Username	rani
Password	••••••••••••••••••••
Enabled	✓
Account Expired	☐
Account Locked	☐
Password Expired	☐

The following URL shows the sample controller mappings with various roles. This is also provided with the `spring-security-ui` plugin:

`http://localhost:8080/multilevelroledemo/securityInfo/mappings`


localhost:8080/multilevelroledemo/securityInfo/mappings
spring.security.ui.menu.users
spring.security.ui.menu.roles
spring.security.ui.menu.registrationCode
spring.security.ui.menu.appinfo
Spring Security Management Console
Login

SecurityConfigType: Annotation

Name	Value
/sample/admin/**	[ROLE_ADMIN]
/sample/superadmin/**	[ROLE_SUPERADMIN]
/sample/user/**	[ROLE_USER]

Let's access the sample controller at `http://localhost:8080/multilevelroledemo/sample/index`.

It displays the three roles. Click on the links and you will be prompted to log in.

Log in with the appropriate username and password, and your role information will be displayed.

The `spring-security-ui` plugin itself provides an option to log in and log out which is applicable throughout the application.

We can only use annotations, that is, `@Secured` annotations to authenticate and authorize the user for certain actions.

We can also omit the creation of users in `Bootstrap.groovy`.

See also

- The *Spring Security with Groovy Grails LDAP authentication* recipe

Spring Security with Groovy Grails LDAP authentication

Let's further explore the `spring-security` plugin with Groovy on Grails with LDAP authentication. In this recipe, I have used **Apache DS** with Apache Studio installed on my machine. I would be using this for authentication.

Burt Beckwith has written very nice blogs on it. You can view them at: `http://burtbeckwith.com/blog/`

Getting ready

- Create a Grails app: `grailssecurityldapexamplex`.
- Let's create a controller: `SampleController`.
- Install the following plugins:
  - `spring-security-core`
  - `spring-security-ldap`
- Edit the `Config.groovy` file.
- We shall display the role and user details after successful authentication. In this recipe we are authenticating users against the email address and password.
- We need to provide the Apache DS details and port number in `Config.groovy`.
- I am using a separate partition `sevenseas`. You can create your own domain by adding a separate `jdmpartition`.

- There are two kinds of roles: User and admin. The roles mapped with the users in Apache DS. I have created two "Organizational Units" in Apache DS:
    - **people**: This will have users
    - **groups**: This will have roles with users mapped to it
- I am getting `username`, `role`, and `email` from the Apache DS.

How to do it...

The following steps are taken for implementing `spring-security` with Grails to authenticate with LDAP:

1. Install the below commands to install plug-in:
    - `create-app  grailssecurityldapexample`
    - `cd grailssecurityldapexample`
    - `grails install-plugin spring-security-core`
    - `grails install-plugin spring-security-ldap`
    - `grails create-controller Sample`
2. Let's first update the `message.properties` file for clean UI:

```
springSecurity.login.header=Spring Security login
springSecurity.login.username.label=UserName
springSecurity.login.password.label=Password
springSecurity.login.remember.me.label=remember me
springSecurity.login.button=Login
springSecurity.errors.login.fail=Authentication failed
```

   Let's then configure the Apache DS properties in the `Config.groovy` file.

3. This configuration will tell Grails to authenticate the user against their e-mail ID:

```
grails.plugins.springsecurity.ldap.search.filter =
  '(mail={0})'
grails.plugins.springsecurity.ldap.context.server =
  'ldap://localhost:10389/o=sevenSeas'
grails.plugins.springsecurity.ldap.context.managerDn =
  'uid=admin,ou=system'
grails.plugins.springsecurity.ldap.context.managerPassword
  = 'secret'
grails.plugins.springsecurity.ldap.authorities.
  groupSearchBase ='ou=groups'
grails.plugins.springsecurity.ldap.authorities.
  groupSearchFilter = '(uniqueMember={0})'
```

```
grails.plugins.springsecurity.ldap.authorities.
  retrieveDatabaseRoles = false
grails.plugins.springsecurity.ldap.authorities.
  ignorePartialResultException= true
grails.plugins.springsecurity.ldap.search.
  base = 'ou=people'
grails.plugins.springsecurity.ldap.search.
  filter = '(mail={0})'
grails.plugins.springsecurity.ldap.search.
  attributesToReturn = ['cn', 'sn','mail']
grails.plugins.springsecurity.ldap.authenticator.
  attributesToReturn = ['cn', 'sn','mail']
```

4. Edit the controller:

```
package grailssecurityldapexample
class SampleController {
  def index() {
    render "Hello PACKT"
    }
}
```

5. Edit the `resource.groovy` file with Bean mapping.

```
beans = {
ldapUserDetailsMapper(MyUserDetailsContextMapper) {
}
}
```

6. Replace the existing `body` tag of `index,gsp` with the following code:

```
<body>
  <a href="#page-body" class="skip"><g:message
    code="default.link.skip.label" default="Skip to
      content&hellip;"/></a>

  <div id="page-body" role="main">
      <h1>Welcome to Grails</h1>
      <sec:ifLoggedIn>
Your Details<br/>
      Name:<sec:loggedInUserInfo field="fullname"/> <br/>
      Email:<sec:loggedInUserInfo field="email"/> <br/>
      Role:<sec:loggedInUserInfo field="title"/> <br/>
      <g:link controller='sample' action=''>Sample
        Controller</g:link><br/>
      (<g:link controller="logout">Logout</g:link>)
     </sec:ifLoggedIn>
     <sec:ifNotLoggedIn>
```

```
        <h2>You are seeing a common page. You can click on
          login. After login success you will be provided with
            the links which you can access.</h2>
        <g:link controller='login' action='auth'>Spring
          Login</g:link>
        </sec:ifNotLoggedIn>


      </div>
    </body>
```

7. Create `MyUserDetails.groovy` under `src/groovy`:

```
import org.springframework.security.core.GrantedAuthority
import org.springframework.security.core.userdetails.User

class MyUserDetails extends User {
 String fullname
 String email
 String title

MyUserDetails(String username, String password, boolean
  enabled, boolean accountNonExpired, boolean
    credentialsNonExpired, boolean accountNonLocked,
      Collection authorities, String fullname,
String email, String title) {
  super(username, password, enabled, accountNonExpired,
    credentialsNonExpired, accountNonLocked, authorities)
this.fullname = fullname
this.email = email
this.title = title
}
}
```

8. Let's create a `ContextMapper` for LDAP.

   We are getting the LDAP attributes here:

```
import org.springframework.ldap.core.DirContextAdapter
import org.springframework.ldap.core.DirContextOperations
import org.springframework.security.core.
  userdetails.UserDetails
import org.springframework.security.ldap.
  userdetails.UserDetailsContextMapper
class MyUserDetailsContextMapper implements
  UserDetailsContextMapper {
    UserDetails mapUserFromContext(DirContextOperations
      ctx, String username, Collection authorities) {
      String fullname = ctx.originalAttrs.
        attrs['cn'].values[0]
      String email = ctx.originalAttrs.attrs['mail'].
        values[0].toString().toLowerCase()
      def title = ctx.originalAttrs.attrs['sn']
      def userDetails = new MyUserDetails(username, '',
        true, true, true, true,
          authorities, fullname,email,  title == null ? ''
            : title.values[0])
      return userDetails
    }
    void mapUserToContext(UserDetails user,
      DirContextAdapter ctx) {
        throw new IllegalStateException("Only retrieving
          data from LDAP is currently supported")
    }

}
```

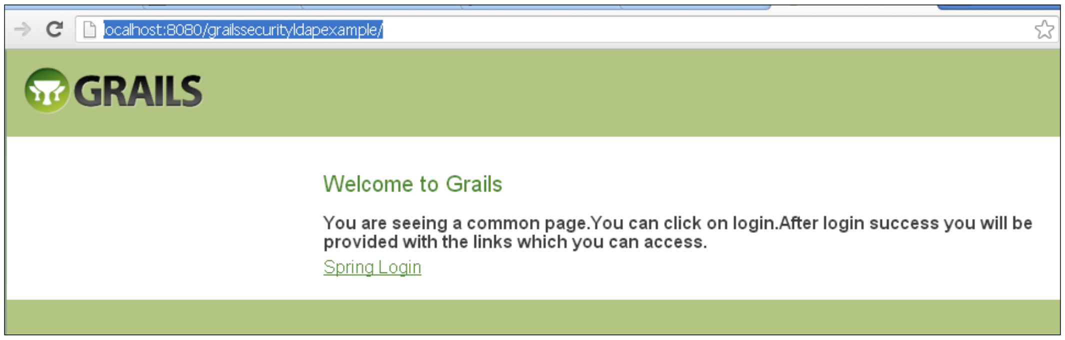
Execute the following command for the app:

```
grails run-app
```

How it works...

When the user accesses the URL: `http://localhost:8080/grailssecurityldapexample/`, they will see a common page with a link. In the login form enter the username and password. Clicking on **submit**, the Grails will submit the URL to Spring Security. Spring Security connects with the LDAP details provided and queries the LDAP with the username. On success, the user is directed to the success URL.

Access the URL: `http://localhost:8080/grailssecurityldapexample/`.



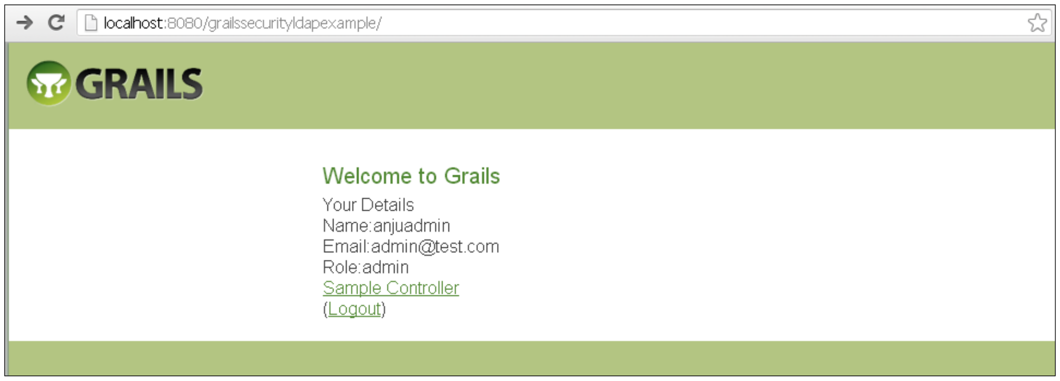
localhost:8080/grailssecurityldapexample/

Welcome to Grails

You are seeing a common page.You can click on login.After login success you will be provided with the links which you can access.

Spring Login

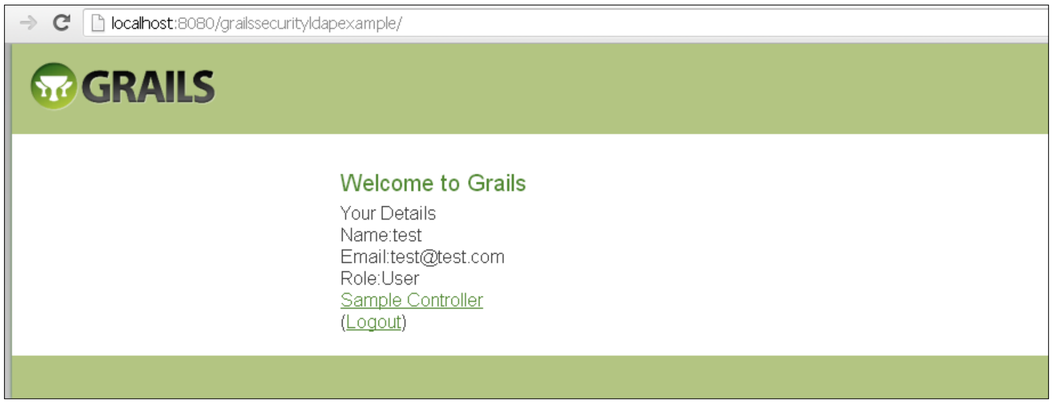
Click on the **Spring Login** link and enter the username: `admin@test.com` and password: `123456`.


localhost:8080/grailssecurityldapexample/

Welcome to Grails
Your Details
Name:anjuadmin
Email:admin@test.com
Role:admin
Sample Controller
(Logout)

Click on **Logout**.

Click on **Spring Login** link and enter the username: `test@test.com` and password: `pass`. The Grails application submits the credentials to the Spring Security framework which queries the LDAP and retrieves the user details and displays it on the secured page:


localhost:8080/grailssecurityldapexample/

Welcome to Grails
Your Details
Name:test
Email:test@test.com
Role:User
Sample Controller
(Logout)

See also

- *Chapter 6, Spring Security with Vaadin*
- *Chapter 5, Spring Security with GWT*

5
Spring Security with GWT

In this chapter we will cover:

- Spring Security with GWT authentication using Spring Security Beans
- Form-based authentication with GWT and Spring Security
- Basic authentication with GWT and Spring Security
- Digest authentication with GWT and Spring Security
- Database authentication with GWT and Spring Security
- LDAP authentication with GWT and Spring Security

Introduction

Google web development tool kit (**GWT**) provides a standard framework for developing java web applications. GWT was developed to create rich Internet applications and will be a good option if you want to go for cross-browser compatibility. Modern browsers, for example, Mozilla and Chrome, provide GWT plugins which can be installed on all browsers. There are various plugins available for different IDEs including Eclipse, NetBeans, and many others. These plugins have increased the speed of development. The GWT plugin for Eclipse comes with an internal Jetty server on which applications are automatically deployed. GWT also reduces dependency on javascript developers since the GWT code is converted into all browser compatible javascript and HTML by the GWT compiler which comes with the GWT-SDK.

In this chapter we will demonstrate Spring Security with GWT integration using various approaches. Let's first do a basic setup for it. It's all about downloading the plugin and creating a sample GWT project.

Spring Security with GWT authentication using Spring Security Beans

So far in all our previous demonstrations we have been giving the configurations in the `applicationContext.xml` file. In the following recipe we will take a different approach. In this approach we will see how we can use the authentication provider interface and the authentication interface available in the Spring Security API to do the authentication.

GWT plugin by default will create a greetings application which will greet the user by accepting the user name. Our goal is to apply security on top of this. We would like to prompt the user with Spring Security login page on startup and then take the user into the application.

Getting ready

- Download Eclipse Indigo from: `http://dl.google.com/eclipse/plugin/3.7`.
- If you are using a different one go for: `https://developers.google.com/eclipse/docs/download`.
- Create a GWT web project in Eclipse—this will generate a default GWT application that will greet the user.
- In any GWT application you can see the following modules:
    - **Configuration module**: This will have the `gwt.xml` file
    - **Client**: This will have two interfaces-async interface and another interface that extends *RemoteService* interface
    - **Server**: Will have the `Implementation` class which implements the client interface and extends the remote Service Servlet
    - **Shared**: This will have classes to check for data validation
    - **Test**: You can add your junit test cases here
    - **War**: This will have the `web-inf` folder
- Run the application on the internal server. You will get a URL.
- Open the URL in the Mozilla Firefox browser; you will get a prompt to download the GWT plugin and install it.
- You will be prompted to input a user name and, when entered, you will get a dialog box which will give the user details.
- Our aim is to apply security on startup of the application, that is, we would like to identify the user who is accessing the GWT application.
- Create an `applicationContext.xml` file. It's mandatory to name it as `applicationContext` or else we will get error messages in the console.
- Edit the `web.xml` file with spring listeners.

- Make `sure` the `war/web-inf/lib` folder has the following JAR files:
    - `gwt-servlet`
    - `spring-security-config-3.1.4.Release`
    - `spring-security-core-3.1.4.Release`
    - `spring-security-web-3.1.4.Release`
    - `org.spring-framework.core-3.1.4.Release`
    - `org.spring-framework.context.support-3.1.4.Release`
    - `org.springframework.context-3.1.4.Release`
    - `org.springframework.expression-3.1.4.Release`
    - `org.springframework.aop-3.1.4.Release`
    - `org.springframework.aspects-3.1.4.Release`
    - `org.springframework.asm-3.1.4.Release`
    - `org.springframework.web-3.1.4.Release`
    - `org.springframework.web.servelet-3.1.4.Release`
    - `org.springframework.instrument-3.1.4.Release`
    - `org.springframework.instrument-tomcat-3.1.4.Release`

How to do it...

1. Update the `Web.xml` file with Spring Listener and Spring Filter:

```
<filter>
  <filter-name>springSecurityFilterChain</filter-name>
  <filter-class>org.springframework.web.filter.
    DelegatingFilterProxy</filter-class>
</filter>

<filter-mapping>
  <filter-name>springSecurityFilterChain</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>

<listener>
  <listener-class>
  org.springframework.web.context.ContextLoaderListener
  </listener-class>
</listener>
```

You can observe that we haven't configured the `<context-param>` as in our previous applications. Spring will automatically look out for the `applicationContext.xml` file.

2. Edit the `applicationContext.xml` file:

```
<http auto-config="true">
  <intercept-url pattern="/xyz/**" access="ROLE_AUTHOR"/>
  <intercept-url pattern="/xyz/**" access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**/*.html" access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**"
    access="IS_AUTHENTICATED_ANONYMOUSLY" />
</http>
<beans:bean id="packtAuthenticationListener"
  class="com.demo.xyz.server.PacktAuthenticationListener"/>
<beans:bean id="packtGWTAuthenticator"
  class="com.demo.xyz.server.PacktGWTAuthenticator" />
<authentication-manager alias="authenticationManager">
  <authentication-provider ref="packtGWTAuthenticator"/>
</authentication-manager>
</beans:beans>
```

This configuration will also give hints to the next steps. You can observe that we have not configured any `<login-page>` or its URL. We have only given URLs that need security. The `<authentication-provider>` is mapped with a custom class.

We have also configured two Beans that are the listener and authenticator.

Spring's context API allows us to create listeners to track events in the application. If you recall, we had also used listeners phase listener in our JSF application to track the security-related events and errors.

The `PacktGWTAuthenticator` implements the authentication provider interfaces.

3. Create an authenticator using the Spring authentication provider:

```
Package com.demo.xyz.server
public class PacktGWTAuthenticator implements
AuthenticationProvider{
  static Users users=new Users();
  private static Map<String, String> usersMap =users.loadUsers();

  @Override
  public Authentication authenticate
    (Authentication authentication)
  throws AuthenticationException {

    String mylogin_name = (String) authentication.getPrincipal();
    String mypassword = (String)authentication.getCredentials();
    //check username
```

```
        if (usersMap.get(mylogin_name)==null)
        throw new UsernameNotFoundException
          (mylogin_name+"credential not found in the UsersMap");
    //get password
        String password = usersMap.get(mylogin_name);

        if (!password.equals(mypassword))
          throw new BadCredentialsException("Incorrect password-
            or credential not found in the UsersMap");

          Authentication packtauthenticator =  new
            PacktGWTAuthentication("ROLE_AUTHOR", authentication);
          packtauthenticator .setAuthenticated(true);

          return packtauthenticator;

        }

        @Override
        public boolean supports(Class<? extends Object>
           authentication) {
        return UsernamePasswordAuthenticationToken.class
          .isAssignableFrom(authentication);
      }
    }
```

Here, `authenticate ()` and `supports ()` are the authentication provider-interface methods. The User class will load the users.

4. Create a `User` class to load the users:

```
package com.demo.xyz.server;
import java.util.HashMap;
import java.util.Map;
public class Users {
  public Map<String, String> getUsersMap() {
    return usersMap;
  }

  public void setUsersMap(Map<String, String> usersMap) {

    this.usersMap = usersMap;
  }

  private Map<String, String> usersMap = new HashMap
    <String, String>();
  public Map<String, String> loadUsers(){
    usersMap.put("rashmi", "rashmi123");
    usersMap.put("shami", "shami123");
    usersMap.put("ravi", "ravi123");
    usersMap.put("ratty", "ratty123");
    return usersMap;
  }

}
```

The above class has few getters and setters. And a method to load users.

5. Implementing the Spring authentication class to get the user information:

```
public class **PacktGWTAuthentication** implements
  Authentication{

  private static final long serialVersionUID =
    -3091441742758356129L;

  private boolean authenticated;

  private GrantedAuthority grantedAuthority;
  private Authentication authentication;


  public PacktGWTAuthentication(String role,
    Authentication authentication) {
    this.grantedAuthority = new GrantedAuthorityImpl(role);
    this.authentication = authentication;
  }

  @Override
  public Object getCredentials() {
    return authentication.getCredentials();
  }

  @Override
  public Object getDetails() {
    return authentication.getDetails();
  }

  @Override
  public Object getPrincipal() {
    return authentication.getPrincipal();
  }
  @Override
  public boolean isAuthenticated() {
    return authenticated;
  }

  @Override
  public void setAuthenticated(boolean authenticated)
     throws IllegalArgumentException {
    this.authenticated = authenticated;
  }

  @Override
  public String getName() {
    return this.getClass().getSimpleName();
  }
  @Override
  public Collection<GrantedAuthority> getAuthorities() {
    Collection<GrantedAuthority> authorities =
      new ArrayList<GrantedAuthority>();
    authorities.add(granted Authority);
    return authorities;
  }

}
```

Authentication interface handles the user details, principal, and credentials. The authentication provider uses this class to pass the role information.

6. Implement the interfaces declared in the GWT client package:

```
package com.demo.xyz.server;
public class PacktAuthenticatorServiceImpl extends
  RemoteServiceServlet  implements PacktAuthenticatorService
  {

  @Override
  public String authenticateServer() {
  Authentication authentication =SecurityContextHolder.
    getContext().getAuthentication();
  if (authentication==null){
    System.out.println("looks like you have not
      logged in.");
    return null;
  }
  else {
    System.out.println
```

```
          (authentication.getPrincipal().toString());
        System.out.println
          (authentication.getName().toString());
        System.out.println
          (authentication.getDetails().toString());
        return (String) authentication.getPrincipal();
        }

    }

}
```

The `authenticate Server` method implementation is found in this class. This will print the debug statements to check whether the user has logged in or not. If logged in, then we will have to get the principal and user details.

7. Use the Spring listeners to track events:

```
package com.demo.xyz.server;
public class PacktAuthenticationListener implements
  ApplicationListener<AbstractAuthenticationEvent>{
  @Override
  public void onApplicationEvent
    (AbstractAuthenticationEvent event) {

    final StringBuilder mybuilder = new StringBuilder();
    mybuilder.append("AN AUHTHENTICATION EVENT ");
    mybuilder.append(event.getClass().getSimpleName());
    mybuilder.append("*** ");
    mybuilder.append(event.getAuthentication().getName());
    mybuilder.append("$$$DETAILS OF THE EVENT: ");
    mybuilder.append(event.getAuthentication().getDetails());

    if (event instanceof
      AbstractAuthenticationFailureEvent) {
      mybuilder.append("$$$ EXCEPTION HAS OCCURED: ");
      mybuilder.append(((AbstractAuthenticationFailureEvent)
       event).getException().getMessage());
    }
    System.out.println(mybuilder.toString());
  }
}
```

This class implements the Springs application listener which is of the type `AbstractAuthenticationEvent`. We are capturing the authentication event and printing it out in the console; you can also use logger to track such events.

8. Update the GWT class on `ModuleLoad()`:

```
package com.demo.xyz.client;

/**
 * Entry point classes define <code>onModuleLoad()</code>.
 */
public class Xyz implements EntryPoint {
/**
 * The message displayed to the user when the server cannot be
reached or
 * returns an error.
 */
private static final String SERVER_ERROR =
  "An error occurred while "+ "attempting to contact
   the server. Please check your network "
  + "connection and try again.";

/**
 * Create a remote service proxy to talk to the server-side
Greeting service.
 */
private final GreetingServiceAsync greetingService =
  GWT.create(GreetingService.class);
private final PacktAuthenticatorServiceAsync
  packtAuthenticatorService =
  GWT.create(PacktAuthenticatorService.class);
/**
 * This is the entry point method.
 */
public void onModuleLoad() {
  final Button sendButton = new Button("Send");
  final TextBox nameField = new TextBox();
  nameField.setText("GWT User");
  final Label errorLabel = new Label();
  sendButton.addStyleName("sendButton");
  RootPanel.get("nameFieldContainer").add(nameField);
  RootPanel.get("sendButtonContainer").add(sendButton);
  RootPanel.get("errorLabelContainer").add(errorLabel);

// Focus the cursor on the name field when the app loads
  nameField.setFocus(true);
  nameField.selectAll();

  // Create the popup dialog box
```

```
    final DialogBox dialogBox = new DialogBox();
    dialogBox.setText("Remote Procedure Call");
    dialogBox.setAnimationEnabled(true);
    final Button closeButton = new Button("Close");
  // We can set the id of a widget by accessing its Element
    closeButton.getElement().setId("closeButton");
    final Label textToServerLabel = new Label();
    final HTML serverResponseLabel = new HTML();
    VerticalPanel dialogVPanel = new VerticalPanel();
    dialogVPanel.addStyleName("dialogVPanel");
    dialogVPanel.add(new HTML
      ("<b>Sending name to the server:</b>"));
    dialogVPanel.add(textToServerLabel);
    dialogVPanel.add(new HTML("<br><b>Server replies:</b>"));
    dialogVPanel.add(serverResponseLabel);
    dialogVPanel.setHorizontalAlignment
      (VerticalPanel.ALIGN_RIGHT);
  dialogVPanel.add(closeButton);
  dialogBox.setWidget(dialogVPanel);

    // Add a handler to close the DialogBox
    closeButton.addClickHandler(new ClickHandler() {
      public void onClick(ClickEvent event) {
        dialogBox.hide();
        sendButton.setEnabled(true);
        sendButton.setFocus(true);
      }
    });

    // Create a handler for the sendButton and nameField
    class MyHandler implements ClickHandler, KeyUpHandler {

    public void onClick(ClickEvent event) {
      sendNameToServer();
    }

    public void onKeyUp(KeyUpEvent event) {
      if (event.getNativeKeyCode() == KeyCodes.KEY_ENTER) {
        sendNameToServer();
      }
    }

    /**
     * Send the name from the nameField to the server and wait for a
```

```
response.
   */
  private void sendNameToServer() {
  // First, we validate the input.
  errorLabel.setText("");
  String textToServer = nameField.getText();
  if (!FieldVerifier.isValidName(textToServer)) {
    errorLabel.setText("Please enter at least four
      characters");
    return;
    }

// Then, we send the input to the server.
    sendButton.setEnabled(false);
    textToServerLabel.setText(textToServer);
    serverResponseLabel.setText("");
    greetingService.greetServer(textToServer,
    new AsyncCallback<String>() {
      public void onFailure(Throwable caught) {
        // Show the RPC error message to the user dialogBox
        setText("Remote Procedure Call - Failure");
        serverResponseLabel.addStyleName
          ("serverResponseLabelError");
        serverResponseLabel.setHTML(SERVER_ERROR);
        dialogBox.center();
        closeButton.setFocus(true);
      }

      public void onSuccess(String result) {
        dialogBox.setText("Remote Procedure Call");
        serverResponseLabel.removeStyleName
          ("serverResponseLabelError");
        serverResponseLabel.setHTML(result);
        dialogBox.center();
        closeButton.setFocus(true);
      }
    });
  }
}

// Add a handler to send the name to the server
MyHandler handler = new MyHandler();
sendButton.addClickHandler(handler);
nameField.addKeyUpHandler(handler);
```

```
packtAuthenticatorService.authenticateServer(new
AsyncCallback<String>() {
  public void onFailure(Throwable caught) {
    dialogBox.setText("Remote Procedure Call - Failure");
  }
  public void onSuccess(String result) {
    nameField.setText(result);
  }
}
);
}
}
```

Add this code in the end of the `onModuleLoad` method. This is similar to registering our service on load.

9. Edit the `PacktAuthenticationService` class:

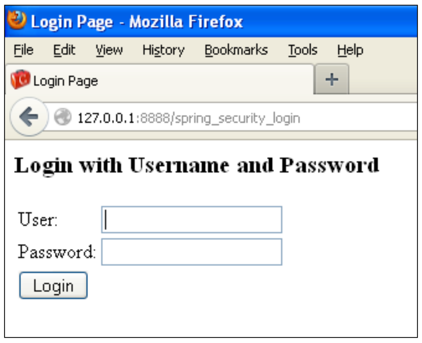
```
package com.demo.xyz.client;

/**
* Entry point classes define <code>onModuleLoad()</code>.
*/
public class Xyz implements EntryPoint {
  /**
   * The message displayed to the user when the server cannot be
reached or
   * returns an error.
   */
  private static final String SERVER_ERROR =
    "An error occurred while "+ "attempting to contact
     the server. Please check your network "
    + "connection and try again.";

  /**
   * Create a remote service proxy to talk to the server-side
Greeting service.
   */
  private final GreetingServiceAsync greetingService
     = GWT.create(GreetingService.class);
  private final PacktAuthenticatorServiceAsync
    packtAuthenticatorService =
    GWT.create(PacktAuthenticatorService.class);
  /**
   * This is the entry point method.
   */
  public void onModuleLoad() {
    final Button sendButton = new Button("Send");
    final TextBox nameField = new TextBox();
    nameField.setText("GWT User");
    final Label errorLabel = new Label();

    // We can add style names to widgets
    sendButton.addStyleName("sendButton");

    // Add the nameField and sendButton to the RootPanel
    // Use RootPanel.get() to get the entire body element
    RootPanel.get("nameFieldContainer").add(nameField);
    RootPanel.get("sendButtonContainer").add(sendButton);
    RootPanel.get("errorLabelContainer").add(errorLabel);

    // Focus the cursor on the name field when the app loads
nameField.setFocus(true);
    nameField.selectAll();

    // Create the popup dialog box
    final DialogBox dialogBox = new DialogBox();
    dialogBox.setText("Remote Procedure Call");
    dialogBox.setAnimationEnabled(true);
    final Button closeButton = new Button("Close");
    //We can set the id of a widget by accessing its Element
    closeButton.getElement().setId("closeButton");
    final Label textToServerLabel = new Label();
    final HTML serverResponseLabel = new HTML();
    VerticalPanel dialogVPanel = new VerticalPanel();
    dialogVPanel.addStyleName("dialogVPanel");
    dialogVPanel.add(new HTML
      ("<b>Sending name to the server:</b>"));
    dialogVPanel.add(textToServerLabel);
    dialogVPanel.add(new HTML
      ("<br><b>Server replies:</b>"));
    dialogVPanel.add(serverResponseLabel);
    dialogVPanel.setHorizontalAlignment
      (VerticalPanel.ALIGN_RIGHT);
    dialogVPanel.add(closeButton);
    dialogBox.setWidget(dialogVPanel);

    // Add a handler to close the DialogBox
    closeButton.addClickHandler(new ClickHandler() {
      public void onClick(ClickEvent event) {
          dialogBox.hide();
          sendButton.setEnabled(true);
          sendButton.setFocus(true);
        }
      });

      // Create a handler for the sendButton and nameField
      class MyHandler implements ClickHandler, KeyUpHandler {
        /**
         * Fired when the user clicks on the sendButton.
         */
        public void onClick(ClickEvent event) {
          sendNameToServer();
        }

        /**
         * Fired when the user types in the nameField.
         */
        public void onKeyUp(KeyUpEvent event) {
          if (event.getNativeKeyCode() == KeyCodes.KEY_ENTER) {
            sendNameToServer();
          }
        }

          /**
           * Send the name from the nameField to the server and wait
  for a response.
           */
          private void sendNameToServer() {
          // First, we validate the input.
          errorLabel.setText("");
          String textToServer = nameField.getText();
          if (!FieldVerifier.isValidName(textToServer)) {
            errorLabel.setText("Please enter at least
               four characters");
            return;
          }

          // Then, we send the input to the server.
          sendButton.setEnabled(false);
          textToServerLabel.setText(textToServer);
          serverResponseLabel.setText("");
          greetingService.greetServer(textToServer,
        new AsyncCallback<String>() {
          public void onFailure(Throwable caught) {
            // Show the RPC error message to the user
          dialogBox.setText("Remote Procedure Call
              - Failure");
          serverResponseLabel.addStyleName
            ("serverResponseLabelError");
          serverResponseLabel.setHTML(SERVER_ERROR);
          dialogBox.center();
          closeButton.setFocus(true);
        }

        public void onSuccess(String result) {
        dialogBox.setText("Remote Procedure Call");
        serverResponseLabel.removeStyleName
          ("serverResponseLabelError");
        serverResponseLabel.setHTML(result);
        dialogBox.center();
        closeButton.setFocus(true);
      }
    });
  }
}

// Add a handler to send the name to the server
MyHandler handler = new MyHandler();
sendButton.addClickHandler(handler);
nameField.addKeyUpHandler(handler);
packtAuthenticatorService.authenticateServer(new
AsyncCallback<String>() {
  public void onFailure(Throwable caught) {
  dialogBox.setText("Remote Procedure Call - Failure");
}
public void onSuccess(String result) {
  nameField.setText(result);
}
}
);
}
}
```

How it works...

Now access the following URL:

```
http://127.0.0.1:8888/Xyz.html?gwt.codesvr=127.0.0.1:9997
```

The user will be redirected to the Spring Security internal login page. When the user enters the **User** and **Password** input and hits submit, the `PacktGWTAuthenticator` class loads the users from the `Users` class and the inputs are compared. If the map has the same credentials as the one the user has provided, authorization is initiated and, on success, the user is directed to the GWT application. The example has used Spring Security's `Authentication Provider` and `Authenticator Bean` classes explicitly by implementing the interfaces and the `application-context.xml` invokes the `PacktGWTAuthenticator` and `PacktGWTAuthentication implementation` classes to do authentication and authorization.

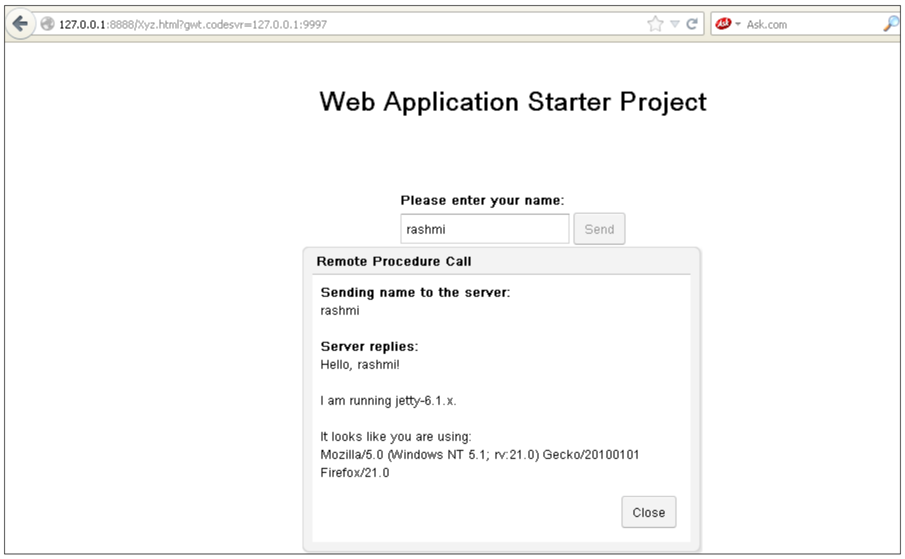

Login Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Login Page
127.0.0.1:8888/spring_security_login

Login with Username and Password

User:

Password:

Login



Web Application Starter Project

Please enter your name:

rashmi Send

Remote Procedure Call

Sending name to the server:
rashmi

Server replies:
Hello, rashmi!

I am running jetty-6.1.x.

It looks like you are using:
Mozilla/5.0 (Windows NT 5.1; rv:21.0) Gecko/20100101 Firefox/21.0

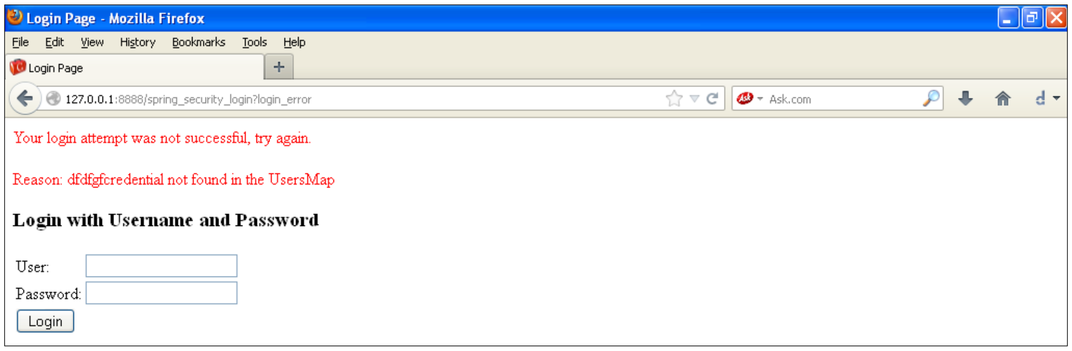
Close

You will see the previous image on a successful login.

Listener generated output in the Eclipse console:

```
PacktGWTAuthentication

org.springframework.security.web.authentication.WebAuthenticationDetails@
fffdaa08: RemoteIpAddress: 127.0.0.1; SessionId: 1cdb5kk395o29
```

On a login failure the following image is displayed:


Login Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Login Page
127.0.0.1:8888/spring_security_login?login_error
Ask.com

Your login attempt was not successful, try again.

Reason: dfdfgfcredential not found in the UsersMap

Login with Username and Password

User:
Password:
Login

See also

- The *Form-based authentication with GWT and Spring Security* recipe
- The *Basic authentication with GWT and Spring Security* recipe
- The *Digest authentication with GWT and Spring Security* recipe
- The *Database authentication with GWT and Spring Security* recipe
- The *LDAP authentication with GWT and Spring Security* recipe

Form-based authentication with GWT and Spring Security

We will demonstrate Form-based authentication in GWT. It's very similar to the authentication that we have done in our previous recipes. We will be editing the `applicationContext.xml`.

Getting ready

- Create a sample GWT project.
- Add the spring-related JARs in the build path.
- Add the Spring Security-related JARs.
- Add the `applicationContext.xml` file.
- Edit the `web.xml` file as shown in the previous section.
- Also add the spring-related JARs in the `web-inf lib` folder.

How to do it...

Edit the `applicationContext.xml` file:

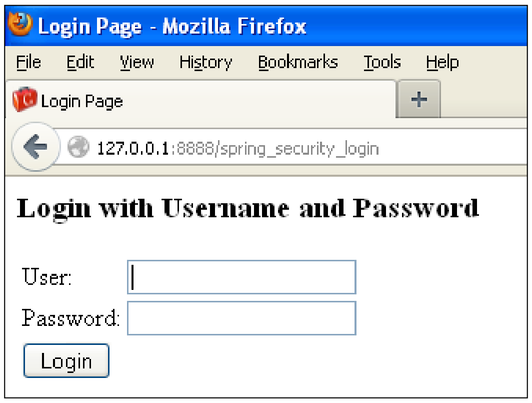
```
<http auto-config="true" >
  <intercept-url pattern="/basicgwtauth/**"
     access="ROLE_AUTHOR"/>
        <intercept-url pattern="/basicgwtauth/**" access="ROLE_
AUTHOR"/>
        <intercept-url pattern="/**/*.html" access="ROLE_AUTHOR"/>
        <intercept-url pattern="/**" access="IS_AUTHENTICATED_
ANONYMOUSLY" />

</http>
<authentication-manager>
  <authentication-provider>
    <user-service>
      <user name="anjana" password="123456"
      authorities="ROLE_AUTHOR" />
    </user-service>
  </authentication-provider>
</authentication-manager>
```

This configuration invokes the internal Spring Security login form. The idea is to show another scenario where we don't specify an authentication mechanism and spring, by default, uses its login form page to authenticate the user.

How it works...

Now access the following URL:

`http://127.0.0.1:8888/Basicgwtauth.html?gwt.codesvr=127.0.0.1:9997`


Login Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Login Page
127.0.0.1:8888/spring_security_login

Login with Username and Password

User:

Password:

Login

Enter the login username and password; you will be taken to the GWT page. This is also a mechanism to invoke spring's internal login jsp page if the developer doesn't want to create their own customized jsp. It still reads the authentication provider details provided to authenticate and authorize the user.

In a similar way you can authenticate using database and LDAP as well as just by editing the authentication manager configurations.

See also

- The *Basic authentication with GWT and Spring Security* recipe
- The *Digest authentication with GWT and Spring Security* recipe
- The *Database authentication with GWT and Spring Security* recipe
- The *LDAP authentication with GWT and Spring Security* recipe

Basic authentication with GWT and Spring Security

We will demonstrate Basic authentication in GWT. It's very similar to the basic authentication that we are going doing in later recipes. We will be editing the `applicationContext.xml`.

Getting ready

- Create a sample GWT project
- Add the spring related JARs in the build path
- Add the Spring Security related JARs
- Add the `applicationContext.xml` file
- Edit the `web.xml` file as shown in the previous section
- Also add the spring related JARs in the `web-inf lib` folder

How to do it...

Edit the `applicationContext.xml` file:

```
<http auto-config="true" >
  <intercept-url pattern="/basicgwtauth/**"
     access="ROLE_AUTHOR"/>
  <intercept-url pattern="/basicgwtauth/**"
     access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**/*.html" access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**"
     access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <http-basic />
</http>
<authentication-manager>
  <authentication-provider>
    <user-service>
      <user name="anjana" password="123456"
        authorities="ROLE_AUTHOR" />
    </user-service>
  </authentication-provider>
</authentication-manager>
```

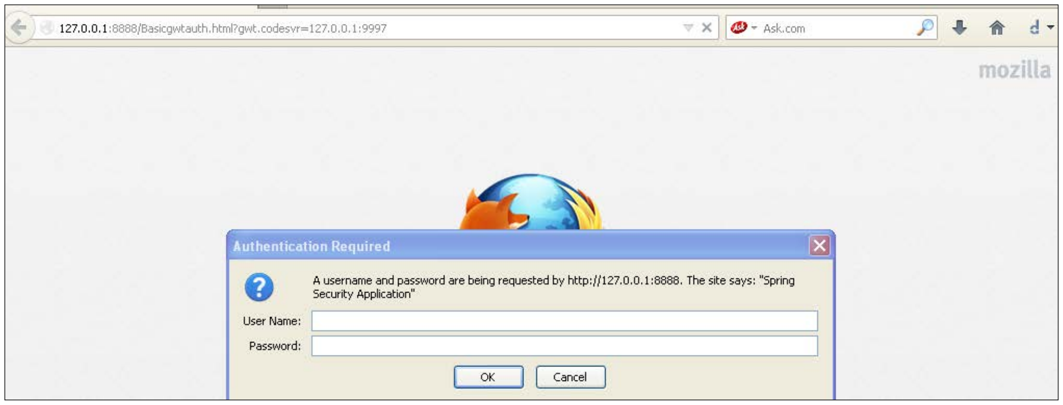
Here we are specifying the authentication mechanism as basic.

How it works...

Now access the URL:

```
http://127.0.0.1:8888/Basicgwtauth.html?gwt.codesvr=127.0.0.1:9997
```

Spring security will interrupt the user from accessing the GWT application. The security mechanism will be read from the `application-context.xml` file. For this application the security mechanism is basic. Spring Security will pop up a dialogue box asking for user name and password. The login username and password that the user enters will be authenticated and authorized and the user will be taken to the GWT page.



A username and password are being requested by http://127.0.0.1:8888. The site says: "Spring Security Application"

Enter the login username and password and you will be taken to the GWT page.

See also

- The *Digest authentication with GWT and Spring Security* recipe
- The *Database authentication with GWT and Spring Security* recipe
- The *LDAP authentication with GWT and Spring Security* recipe

Digest authentication with GWT and Spring Security

We will now demonstrate Digest authentication in GWT. It's very similar to the basic authentication that we are doing in our previous recipes. We will be editing the `applicationContext.xml`. We will be hashing the password. The setup remains the same, the only change is the `applicationcontext.xml`.

Getting ready

- Create a sample GWT project
- Add the spring-related JARs in the build path

- Add the Spring Security-related JARs
- Add the `applicationContext.xml` file
- Edit the `web.xml` file as shown in the previous section
- Also add the spring-related JARs in the `web-inf lib` folder

How to do it...

Edit the `applicationContext.xml` file:

```
<http auto-config="true" >
  <intercept-url pattern="/basicgwtauth/**" access="
     ROLE_EDITOR "/>
  <intercept-url pattern="/basicgwtauth/**" access="
     ROLE_EDITOR "/>
  <intercept-url pattern="/**/*.html" access=
    " ROLE_EDITOR "/>
  <intercept-url pattern="/**" access
    ="IS_AUTHENTICATED_ANONYMOUSLY" />
  <http-basic />
</http>
<authentication-manager>
  <authentication-provider>
    <password-encoder hash="sha" />
    <user-service>
      <user name="anjana"
        password="bde892ed4e131546a2f9997cc94d31e2c8f18b2a"
      authorities="ROLE_EDITOR" />
    </user-service>
  </authentication-provider>
</authentication-manager>
```

Here we are specifying the authentication mechanism as basic and have given the hashed password here. To hash the password, use the `jacksum jar`. This has already been demonstrated in *Chapter 2*, *Spring Security with Sturts2*.

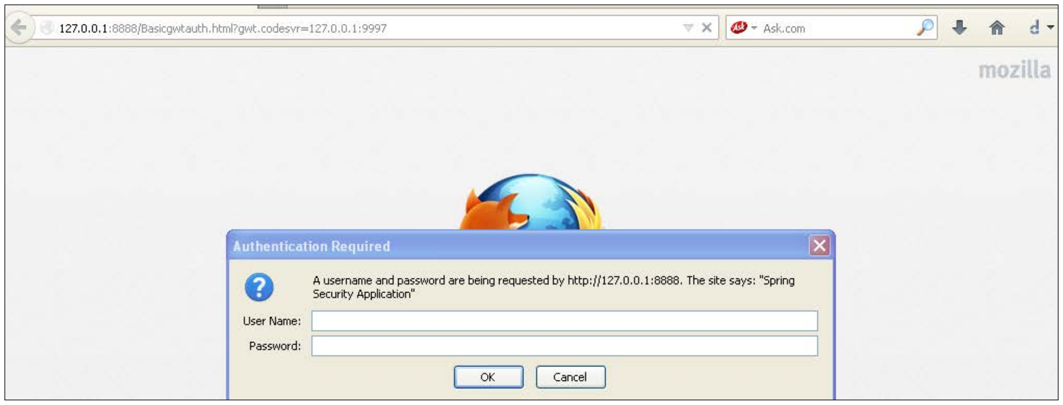
How it works...

Now access the following URL:

`http://127.0.0.1:8888/Basicgwtauth.html?gwt.codesvr=127.0.0.1:9997`

The user should be redirected to the GWT application by accessing this URL. But the Spring framework interrupts this to check if the user is authorized to see the application. It pops up a login screen. Enter the login username and password and you will be taken to the GWT page.

Your password will be decoded for authentication based on the algorithm mentioned in the configuration file. The algorithm mentioned here is *Sha*. So the password will be encrypted and decrypted using *Sha algorithm*.


127.0.0.1:8888/Basicgwtauth.html?gwt.codesvr=127.0.0.1:9997
Ask.com
mozilla
Authentication Required
A username and password are being requested by http://127.0.0.1:8888. The site says: "Spring Security Application"
User Name:
Password:
OK
Cancel

Enter the login username and password and you will be taken to the GWT page. Your password will be decoded for authentication based on the algorithm mentioned in the configuration file.

See also

- The *Database authentication with GWT and Spring Security* recipe
- The *LDAP authentication with GWT and Spring Security* recipe

Database authentication with GWT and Spring Security

We will demonstrate database authentication in GWT. The setup remains the same. In all our previous examples we were using `applicationContext.xml` which was easily recognized by the Spring framework since it has the default file name. In this current example we will give a new file name to this and see how the application responds. Also, we need to add the `spring-jdbc.xml`.

Getting ready

- Create a sample GWT project
- Add the spring-related JARs in the build path
- Add the Spring Security-related JARs
- Add the `spring-security.xml` file

- Add the spring-jdbc-related JARs
- Edit the `web.xml` file as shown in the previous section
- Also add the spring-related JARs in the `web-inf lib` folder

How to do it...

Edit the `spring-security.xml` file:

```
<http auto-config="true" >
  <intercept-url pattern="/springgwtdbsecurity/**"
     access="ROLE_AUTHOR"/>
  <intercept-url pattern="/springgwtdbsecurity/**"
     access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**/*.html" access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**"
     access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <http-basic />
</http>
<authentication-manager alias="authenticationManager">
  <authentication-provider>
  <jdbc-user-service data-source-ref="dataSource"
  users-by-username-query="
  select username,password, enabled
  from users where username=?"

  authorities-by-username-query="
  select u.username, ur.authority from users u,
     user_roles ur
        where u.user_id = ur.user_id and u.username =?"/>
  </authentication-provider>
</authentication-manager>
```

Add this above in the beans tag of the `xml` file. Here we are specifying the authentication mechanism as basic and the user information is stored the database.

Edit the `spring-jdbc.xml` file:

```
<beans xmlns="http://www.springframework.org/schema/beans"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.springframework.org/
    schema/beans
  http://www.springframework.org/schema/beans/
    spring-beans-3.0.xsd">
  <bean id="MySqlDatasource" class="org.springframework.
    jdbc.datasource.DriverManagerDataSource">
    <property name="driverClassName" value=
      "com.mysql.jdbc.Driver" />
    <property name="url" value=
      "jdbc:mysql://localhost:3306/packtdb" />
    <property name="username" value="root" />
  <property name="password" value="packt123" />
  </bean>
</beans>
```

We are giving the database information.

Edit the `web.xml` file:

```
  <context-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>
      /WEB-INF/spring-security.xml,
      /WEB-INF/spring-jdbc.xml
    </param-value>
  </context-param>

  <listener>
    <listener-class>
      org.springframework.web.context.ContextLoaderListener
    </listener-class>
  </listener>
```

We have to configure the `springsecurityFilterchain`, as shown in the previous examples, and under that, add the above section.

How it works...

Now access the following URL:

`http://127.0.0.1:8888/springgwtdbsecurity.html?gwt.codesvr=127.0.0.1:9997`

Enter the login username and password and you will be taken to the GWT page. A database connection will be created and a query will be executed. The user-entered values will be checked with retrieved values for authentication. With this we can see that GWT seamlessly integrates with Spring Security.

See also

- The *LDAP authentication with GWT and Spring Security* recipe

LDAP authentication with GWT and Spring Security

We will demonstrate LDAP authentication in GWT. The setup remains the same: The user has to create groups and users.

Getting ready

- Create a sample GWT project
- Add the spring-related JARs in the build path
- Add the Spring Security-related JARs
- Add the `spring-security.xml` file
- Add the spring-LDAP-related JARs
- Edit the `web.xml` file as shown in the previous section
- Also add the spring-related JARs in the `web-inf lib` folder

How to do it...

Edit the `spring-security.xml` file:

```
<http auto-config="true" >
  <intercept-url pattern="/springgwtldapsecurity/**"
     access="ROLE_AUTHOR"/>
  <intercept-url pattern="/springgwtldapsecurity/**"
     access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**/*.html" access="ROLE_AUTHOR"/>
  <intercept-url pattern="/**"
     access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <http-basic />
</http>
<authentication-manager>
  <ldap-authentication-provider
    user-search-filter="(mail={0})"
    user-search-base="ou=people"
    group-search-filter="(uniqueMember={0})"
    group-search-base="ou=groups"
```

```
      group-role-attribute="cn"
      role-prefix="ROLE_">
      </ldap-authentication-provider>
    </authentication-manager>

  <ldap-server url="ldap://localhost:389/o=example"
     manager-dn="uid=admin,ou=system"
     manager-password="secret" />
```

Add this code in the `beans` tag of the xml. Here we are specifying the authentication mechanism as basic and the user information is stored the LDAP server.

Edit the `web.xml` file:

```
<context-param>
  <param-name>contextConfigLocation</param-name>
  <param-value>
    /WEB-INF/spring-security.xml
  </param-value>
</context-param>

<listener>
  <listener-class>
    org.springframework.web.context.ContextLoaderListener
  </listener-class>
</listener>
```

We have to configure `springsecurityFilterchain` as shown in the previous examples.

How it works...

Now access the following URL:

```
http://127.0.0.1:8888/springgwtldapsecurity.html?gwt.
codesvr=127.0.0.1:9997
```

Enter the login username and password and you will be taken to the GWT page. Spring will use the details provided in `<ldap-server>` tag to gain access to open LDAP. Spring Security LDAP will talk to open LDAP and the user-entered values will be checked with retrieved values for authentication. On success, the user is redirected to the application. With this, we can see that GWT seamlessly integrates with Spring Security.

There's more...

There is an active project on google `code-gwtsecurity` package, which is meant for Spring Security integration with the GWT application. It offers login via GWT pop-up window. On authentication failure, it gives the error message to the user on the GWT window. The file `Spring4GWT jar` works by intercepting the error message in the RPC.

Let's see how Spring integrates with Vaadin in the next chapter.

6 Spring Security with Vaadin

In this chapter we will cover:

- Spring Security with Vaadin – basic authentication
- Spring Security with Vaadin – Spring form-based authentication
- Spring Security with Vaadin – customized JSP form-based authentication
- Spring Security with Vaadin – using Vaadin form

Introduction

Vaadin has emerged as a popular framework in current projects. It offers RIA just like GWT-rich Internet applications. It doesn't have the RPC calls and those async service classes. It works similar to GWT widgets. Vaadin also integrates easily with portlets. In GWT we had to install browser compatible GWT plugin but in Vaadin we don't need to do that. The application developed in Vaadin is compatible on all modern browsers. Vaadin can be written as server side and client side applications. The Vaadin UI component is actually a JavaServlet component which easily runs on web servers such as Tomcat and also application servers like JBOSS and Glassfish. For the current demonstration I am using Tomcat and Eclipse Indigo.

In this chapter we will demonstrate Spring Security with Vaadin integration using various approaches. Let's first do a basic setup for this. It's all about downloading the plugin and creating a sample Vaadin project.

Spring Security with Vaadin – basic authentication

Our aim is to do a simple basic authentication on the Vaadin application. I want a login dialog to pop up when we access the URL of the Vaadin application. I have created a simple product catalog application which looks very similar to the address book.

Getting ready

- Set up Vaadin application on Eclipse:
    - Download Vaadin `http://vaadin.com/eclipse` for Eclipse Indigo.

  For this chapter we will demonstrate Spring Security integration with both the Vaadin versions (Vaadin 6 and Vaadin 7).

    - Create a Vaadin web project in Eclipse with Vaadin 7—this will generate a default application with a click button which we will modify.
    - Run the application on the Tomcat server.
- Create an `applicationContext.xml` file. It is mandatory to name it as `applicationContext`, or else we will get error messages in the console.
- Edit the `web.xml` file with spring listeners.
- Add all the jars in the class-path.

How to do it...

The following steps are for integrating Spring Security with Vaadin to demonstrate basic authentication:

1. Update the `web.xml` file with spring listener and spring filter, with Vaadin servlet:

```
<display-name>Vaadin_Project1</display-name>
<filter>
  <filter-name>springSecurityFilterChain</filter-name>
  <filter-class>org.springframework.web.filter.
    DelegatingFilterProxy</filter-class>
</filter>

<filter-mapping>
  <filter-name>springSecurityFilterChain</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
```

```
<listener>
  <listener-class>
    org.springframework.web.context.ContextLoaderListener
  </listener-class>
</listener>

  <context-param>
    <description>
    Vaadin production mode</description>
    <param-name>productionMode</param-name>
    <param-value>false</param-value>
  </context-param>

  <servlet>
    <servlet-name>Vaadin_Project1</servlet-name>
    <servlet-class>com.vaadin.server.VaadinServlet
      </servlet-class>
  <init-param>
    <description>
      Vaadin UI class to use</description>
    <param-name>UI</param-name>
    <param-value>com.example.vaadin_project1
      .Vaadin_project1UI</param-value>
  </init-param>
  <init-param>
    <description>
    Legacy mode to return the value of
       the property as a string from
      AbstractProperty.toString()</description>
    <param-name>legacyPropertyToString</param-name>
    <param-value>false</param-value>
  </init-param>
</servlet>
<servlet-mapping>
  <servlet-name>Vaadin_Project1</servlet-name>
  <url-pattern>/*</url-pattern>
</servlet-mapping>
```

2. You can observe that we haven't configured `<context-param>` as we did in our previous applications. Spring will automatically look for the `applicationContext.xml` file. For setting up Vaadin we need to configure the Vaadin servlet class with two parameters `PropertyToString` and a UI class named `com.example.vaadin_project1`. Edit the `applicationContext.xml` file using the following code:

```
<http auto-config="true">
  <intercept-url pattern="/Vaadin_Project1/**"
     access="ROLE_EDITOR"/>
  <intercept-url pattern="/Vaadin_Project1/*.*"
     access="ROLE_EDITOR"/>
  <intercept-url pattern="/**" access="ROLE_EDITOR" />
  <http-basic />
</http>

<authentication-manager>
  <authentication-provider>
    <user-service>
      <user name="anjana" password="123456"
         authorities="ROLE_EDITOR" />
    </user-service>
  </authentication-provider>
</authentication-manager>
</beans:beans>
```

This is a simple configuration for basic authentication. With this configuration we expect a login dialog box before showing the Vaadin application. I have created a new role editor.

Here we have created a `ProductList` component to display a list of products.

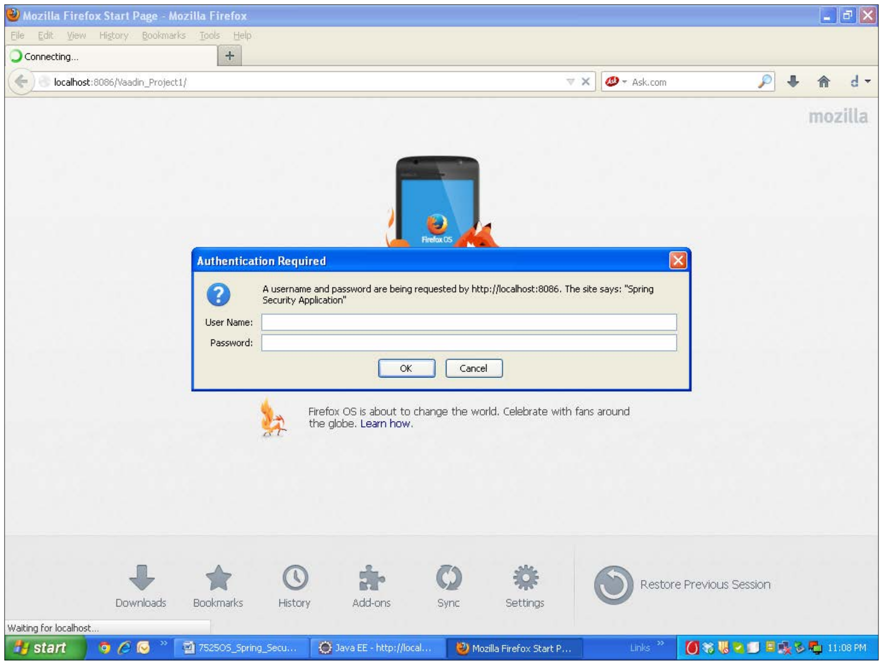
How it works...

In this example we are demonstrating a basic authentication mechanism with the Vaadin application. Sometimes we do not need to display a jsp page or a Vaadin login form for the user, in such cases we go for basic authentication in which a dialog box pops up requesting the user to enter their credentials. On success, the user is given access to the Vaadin application. Workflow of the application is given as follows:

Now access the following URL:

```
http://localhost:8086/Vaadin_Project1/
```

You should see pages as shown in the following screenshots:

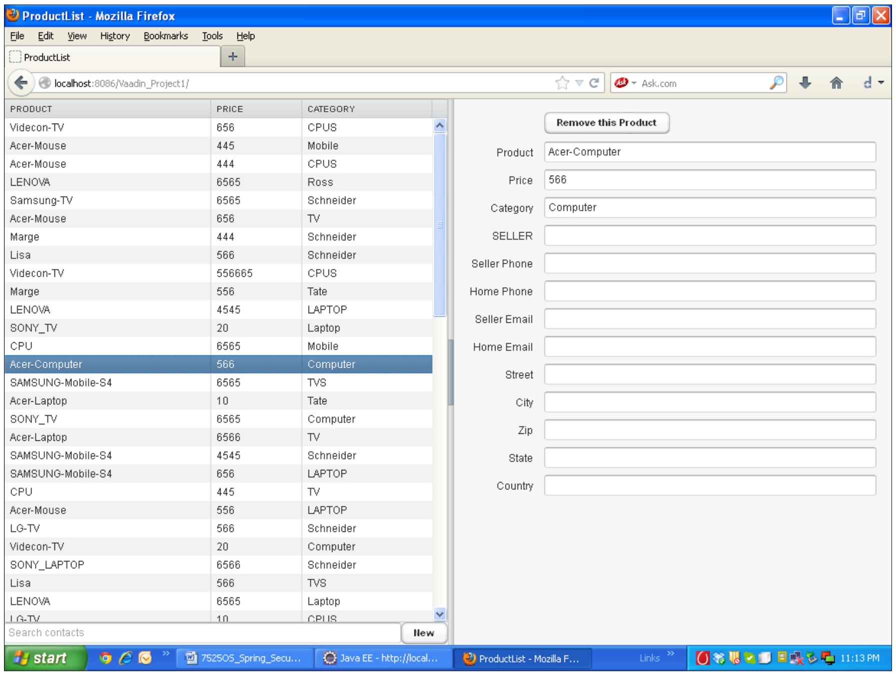


A username and password are being requested by http://localhost:8086. The site says: "Spring Security Application"

User Name:

Password:

Firefox OS is about to change the world. Celebrate with fans around the globe. Learn how.


ProductList - Mozilla Firefox
File Edit View History Bookmarks Tools Help
ProductList
localhost:8086/Vaadin_Project1/
Ask.com
Remove this Product
Search contacts
New
start
75250S_Spring_Secu...
Java EE - http://local...
ProductList - Mozilla F...
Links
11:13 PM

PRODUCT	PRICE	CATEGORY
Videcon-TV	656	CPUS
Acer-Mouse	445	Mobile
Acer-Mouse	444	CPUS
LENOVA	6565	Ross
Samsung-TV	6565	Schneider
Acer-Mouse	656	TV
Marge	444	Schneider
Lisa	566	Schneider
Videcon-TV	556665	CPUS
Marge	556	Tate
LENOVA	4545	LAPTOP
SONY_TV	20	Laptop
CPU	6565	Mobile
Acer-Computer	566	Computer
SAMSUNG-Mobile-S4	6565	TVS
Acer-Laptop	10	Tate
SONY_TV	6565	Computer
Acer-Laptop	6566	TV
SAMSUNG-Mobile-S4	4545	Schneider
SAMSUNG-Mobile-S4	656	LAPTOP
CPU	445	TV
Acer-Mouse	556	LAPTOP
LG-TV	566	Schneider
Videcon-TV	20	Computer
SONY_LAPTOP	6566	Schneider
Lisa	566	TVS
LENOVA	6565	Laptop
LG-TV	10	CPUS

Product	Acer-Computer
Price	566
Category	Computer
SELLER	
Seller Phone	
Home Phone	
Seller Email	
Home Email	
Street	
City	
Zip	
State	
Country	

See also

- The *Spring Security with Vaadin – Spring form-based authentication* recipe
- The *Spring Security with Vaadin – customized JSP form-based authentication* recipe
- The *Spring Security with Vaadin – using Vaadin form* recipe

Spring Security with Vaadin – Spring form-based authentication

We will demonstrate form-based authentication in Vaadin. It's very similar to the authentication that we used in our previous recipes. We will be editing the `applicationContext.xml` file. We are not creating any customized login form, we would like to use spring internal login form.

Getting ready

You have to comment the `<http-basic/>` tag from the `application-Context.xml` file.

How to do it...

Edit the `applicationContext.xml` file as shown in the following code:

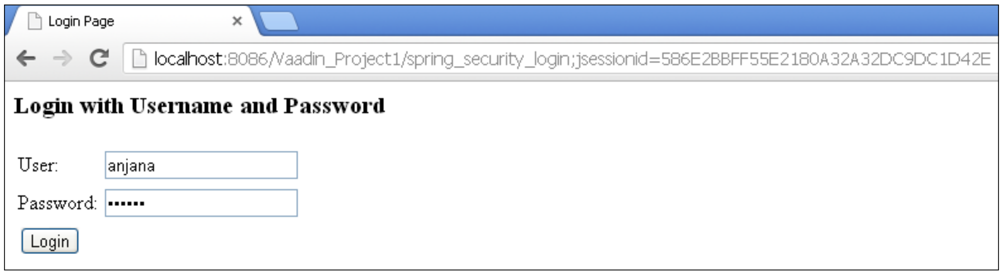
```
<http auto-config="true">
  <intercept-url pattern="/Vaadin_Project1/**"
     access="ROLE_EDITOR"/>
  <intercept-url pattern="/Vaadin_Project1/*.*"
     access="ROLE_EDITOR"/>
  <intercept-url pattern="/**" access="ROLE_EDITOR" />
</http>
<authentication-manager>
  <authentication-provider>
    <user-service>
       <user name="anjana" password="123456"
       authorities="ROLE_EDITOR" />
    </user-service>
  </authentication-provider>
</authentication-manager>
```

How it works...

In this example spring's internal login form is invoked for authenticating the Vaadin application. This configuration is done in the `applicationConext.xml` file. The Spring framework pops up its own internal jsp file for the user. When the user enters the credentials and clicks on **Submit** they are redirected to the Vaadin application. Run the Tomcat server.

Now access the following URL:

```
http://localhost:8086/Vaadin_Project1/
```


Login Page
localhost:8086/Vaadin_Project1/spring_security_login;jsessionid=586E2BBFF55E2180A32A32DC9DC1D42E
Login with Username and Password
User:
anjana
Password:
••••••
Login

This is a Spring provided inbuilt login form.

Enter the login username and password and you will be taken to the Vaadin product list.

Similarly you can authenticate using the database and LDAP just by editing the authentication-manager configurations.

See also

- The *Spring Security with Vaadin – customized JSP form-based authentication* recipe
- The *Spring Security with Vaadin – using Vaadin form* recipe

Spring Security with Vaadin – customized JSP form-based authentication

So far we have demonstrated the Vaadin 7 application with the Spring Security API login form and login pop up dialog box. All that we did was create users in the application context file.

This time we will give a different name to the application context and give it a customized login form and use the Vaadin 6 project.

Getting ready

- Create a sample Vaadin 6 project
- Add the Spring related jars in the build path
- Add the Spring Security related jars
- Add the `vaadin-spring-security.xml` file
- Add the `mybeans.xml` file
- Edit the `web.xml` file as shown in the previous section
- Also add the Spring related jars in the `web-inf lib` folder

How to do it...

The following steps are for implementing a form-based authentication using a customized JSP with the Vaadin application.

Since the entry point is `AbstractApplicationServlet` for the Vaadin 6 application, we will create a class that extends `AbstractApplicationServlet`. This will give us an option to override the methods of the class.

We will also create a class that extends the `Application` class. In this class we will create a window. For example, we will just add some text after login.

We will also add jsp file mapping in the `web.xml` file.

We need to map the `MyAbstractApplicationServlet` class as a Servlet in the file `web.xml`.

We also need to configure the Spring context listeners and Spring filters.

1. Edit the `web.xml` file:

```
<display-name>Vaadin_Project3</display-name>
  <context-param>
    <description>Vaadin production mode</description>
    <param-name>productionMode</param-name>
    <param-value>true</param-value>
  </context-param>
  <context-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>
      /WEB-INF/vaadin-spring-security.xml
      /WEB-INF/mybeans.xml
    </param-value>
```

```
</context-param>

<servlet>
  <servlet-name>login</servlet-name>
  <jsp-file>/jsp/login.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>login_error</servlet-name>
  <jsp-file>/jsp/login_error.jsp</jsp-file>
</servlet>

<servlet-mapping>
  <servlet-name>login</servlet-name>
  <url-pattern>/jsp/login</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>login_error</servlet-name>
  <url-pattern>/jsp/login_error</url-pattern>
</servlet-mapping>

<servlet>
  <servlet-name>Vaadin Application Servlet</servlet-name>
  <servlet-class>packt.vaadin.
    MyAbstractApplicationServlet</servlet-class>
</servlet>

<servlet-mapping>
  <servlet-name>Vaadin Application Servlet</servlet-name>
  <url-pattern>/*</url-pattern>

</servlet-mapping>
```

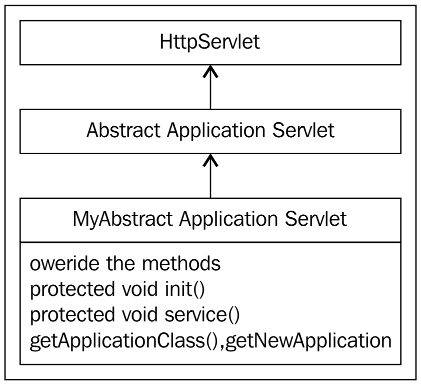
2. Edit the `vaadin-spring-security.xml` file:

```
<global-method-security pre-post-annotations="enabled" />

<http auto-config='true'>
  <intercept-url pattern="/jsp/login*"
     access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <intercept-url pattern="/jsp/login_error*"
     access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <intercept-url pattern="/**" access="ROLE_USER" />
  <form-login login-page='/jsp/login'
     authentication-failure-url="/jsp/login_error" />
</http>
```

```
<authentication-manager>
  <authentication-provider>
    <user-service>
      <user name="raghu" password="anju"
         authorities="ROLE_USER,ROLE_ADMIN" />
      <user name="onju" password="bonju"
         authorities="ROLE_USER" />
    </user-service>
  </authentication-provider>
</authentication-manager>
```

3. Subclass and override the method `AbstractApplicationServlet`.

   The `AbstractApplicationServlet` class is an abstract class that extends `HttpServlet` and implements an interface called *Constants*. `The Service()` and `init()` methods are the servlet methods which are used by the servlet container. We have created an `appContext` object and have initialized it in the `init ()` method. The `getNewApplication()` method has been overridden to get the class that extends the application. The `getApplication()` method has been overridden.


HttpServlet
Abstract Application Servlet
MyAbstract Application Servlet
oweride the methods
protected void init()
protected void service()
getApplicationClass(),getNewApplication

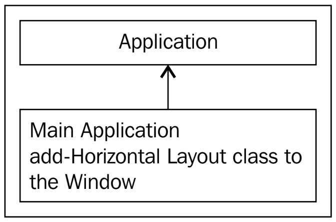
4. The implementation is given as follows:

   `MyAbstractApplicationServlet`

```
public class MyAbstractApplicationServlet extends
  AbstractApplicationServlet
{
  private WebApplicationContext appContext;
  private Class<? extends Application> applicationClass;

  @Override
  protected Application getNewApplication
    (HttpServletRequest httpServletRequest) throws
      ServletException {
          MainApplication mainApplication = (MainApplication)
            appContext.getBean("applicationBean");
          mainApplication.setWebApplicationContext(appContext);
          return  mainApplication;
        }

        @Override
        protected void service(HttpServletRequest request
          , HttpServletResponse response)
           throws ServletException, IOException {
          super.service(request, response);
        }

        @Override
        public void init(ServletConfig servletConfig)
           throws ServletException {
          super.init(servletConfig);
          appContext = WebApplicationContextUtils
            .getWebApplicationContext
            (servletConfig.getServletContext());
        }

        @Override
        protected Class<? extends Application>
           getApplicationClass() throws ClassNotFoundException {
        return MainApplication.class;
      }
    }
```

5. Subclass and override the method `ApplicationClass`.

   `ApplicationClass` is an abstract class which implements some interfaces. We have overridden the `init()` method of the abstract class. You have to create the `HeaderHorizontalLayout` classes and add them as components to the window.



MainApplication

```
@Component("applicationBean")
@Scope("prototype")
```

```
public class MainApplication extends Application {

  public WebApplicationContext webappContext;

  @Override
  public void init() {
    Window window;
    window = new Window("My Vaadin Application");
    window.addComponent(new HeaderHorizontalLayout(this));
    window.addComponent(new BodyHorizontalLayout(this));
    window.addComponent(new FooterHorizontalLayout(this));
    setMainWindow(window);
  }


  public void setWebApplicationContext
    (WebApplicationContext appContext){
  this.webappContext = webappContext;
  }

}
```

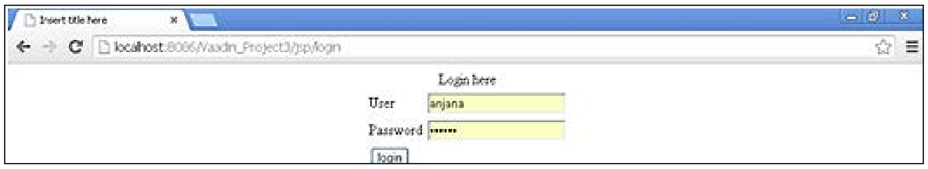
How it works...

In this example we are using the customized jsp page to handle the access to the Vaadin application. The customized jsp is displayed to the user when user tries to access the Vaadin application. The user enters the username and password which is then authenticated by the Spring framework. On successful authentication the Vaadin page is displayed.

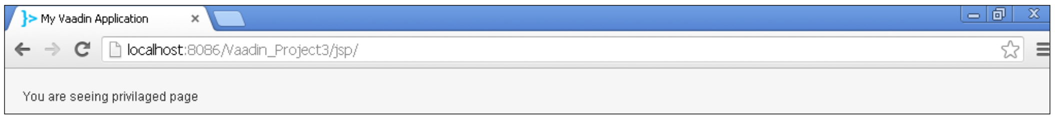
The workflow is given as follows:

Now access the URL:

`http://localhost:8086/Vaadin_Project3/`



Enter the login username and password you will be taken to the Vaadin page.



You are seeing privilaged page

See also

- The *Spring Security with Vaadin – using Vaadin form* recipe

Spring Security with Vaadin – using Vaadin form

So far we have used the customized JSP page or the Spring-provided login pop up box or the jsp file. We have also demonstrated Spring Security integration with both Vaadin 6 and Vaadin 7. So I was tempted to provide a complete Vaadin with Spring Security implementation. Let's create a Vaadin form and we will integrate it with Spring Security.

Getting ready

- Create a Vaadin 7 project in your Eclipse IDE
- Create a `MyLoginView` class that extends the panel
- Create a `SecuredView` class that extends the panel
- Create a `MyVaadinServlet` class that extends `VaadinServlet`
- Create a `VaadinRequestHolder` class
- Configure the `web.xml` file
- Edit the `applicationContext.xml` file
- Implement the `View` interface for the panel classes

How to do it...

The steps given as follows are for creating a Vaadin login form and using it for authenticating the user with Spring Security:

1. `MyLoginView` for the login form will be loaded on application start up.

```
public class MyLoginView extends Panel implements View {
  private Layout mainLayout;
  Navigator navigator;
```

```
protected static final String CountView = "SecuredView";
public MyLoginView() {
  final FormLayout loginlayout=new FormLayout();
  final TextField nameField=new TextField("name");
  final PasswordField passwordField=
    new PasswordField("password");
  loginlayout.addComponent(nameField);
  loginlayout.addComponent(passwordField);
  Button loginButton = new Button("Login");
  loginlayout.addComponent(loginButton);
  mainLayout = new VerticalLayout();
  mainLayout.addComponent(loginlayout);
  setContent(mainLayout);

  loginButton.addClickListener(new Button.ClickListener() {
    public void buttonClick(ClickEvent event) {
      try{
        ServletContext servletContext =
        VaadinRequestHolder.getRequest()
        .getSession().getServletContext();
        UsernamePasswordAuthenticationToken token =
          new UsernamePasswordAuthenticationToken(
          nameField.getValue(),passwordField.getValue());
          token.setDetails( new WebAuthenticationDetails
           (VaadinRequestHolder.getRequest()));
          WebApplicationContext wac =
            WebApplicationContextUtils.getRequired
            WebApplicationContext(servletContext);
          AuthenticationManager authManager =
            wac.getBean(AuthenticationManager.class);
          Authentication authentication =
            authManager.authenticate(token);
          SecurityContextHolder.getContext()
            .setAuthentication(authentication);
          if(authentication.isAuthenticated()){
            Notification.show("You are authenticated");
          navigator = new Navigator(getUI().getCurrent()
            , mainLayout);
          navigator.addView(CountView, new SecuredView());
          navigator.navigateTo(CountView);
        }

  } catch (BadCredentialsException e) {
      Notification.show("Bad credentials");
    }
  }
});

}
@Override
public void enter(ViewChangeEvent event) {
}
```

We have used the form layout and have added the username and password fields. We have added a button. On a button click we are doing authentication.

We are capturing the `VaadinRequest` object in the `requestHolder. UserNamePasswords`. The authentication token receives the input from the username and password fields. The token is then passed to the `AuthenticationManger` to authenticate the fields. If authentication is successful it will navigate to the secured page. It will also give notification to the user.

2. `Secured View` is to be used after authentication and to provide logout functionality.

```
public class SecuredView extends Panel implements View {
  public static final String NAME = "count";
  private Layout mainLayout;
  Navigator navigator;
  protected static final String MainView = "LoginView";
  public SecuredView() {
    mainLayout = new VerticalLayout();
    mainLayout.addComponent(new Label
      ("You are seeing a secured page"));
    Button logoutButton = new Button("Logout");
    mainLayout.addComponent(logoutButton);
    setContent(mainLayout);
    logoutButton.addClickListener(new Button.
      ClickListener() {
    public void buttonClick(ClickEvent event) {
    try{
      ServletContext servletContext = VaadinRequestHolder
        .getRequest().getSession().getServletContext();
      WebApplicationContext wac =
        WebApplicationContextUtils
        .getRequiredWebApplicationContext(servletContext);
      LogoutHandler logoutHandler = wac.getBean
        (LogoutHandler.class);
```

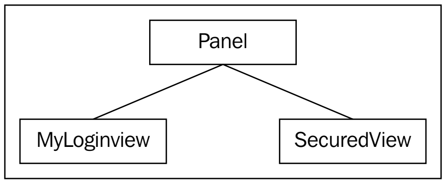
```
            Authentication authentication =
              SecurityContextHolder.
              getContext().getAuthentication();
            logoutHandler.logout(VaadinRequestHolder.getRequest()
              , null, authentication);

            Notification.show("You are logged out");
            navigator = new Navigator
              (getUI().getCurrent(), mainLayout);
            navigator.addView(MainView, new MyLoginView());
            navigator.navigateTo(MainView);
          } catch (BadCredentialsException e) {

          Notification.show("Bad credentials");
          }
    }
  });
  }

  public void enter(ViewChangeEvent event) {

  }

  }
```

The secured view has a label and a logout button. The logout button click event handles the `springlogout`. On logout the user is re-directed to the login page. The `LogoutHandler` class has a `logout ()` method that handles the authentication. I have used the navigator class. You can create an instance of navigator with UI class `getUI.Current` that gives a UI object.

This approach can be used in your panel classes. I have also passed the layout object to the constructor.

```
navigator = new Navigator(getUI().getCurrent(),
   mainLayout);
navigator.addView(MainView, new MyLoginView());
navigator.navigateTo(MainView);
```

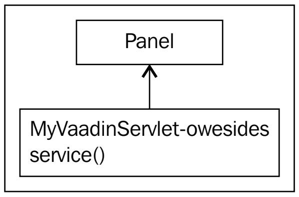
A pictorial representation of the two classes is given as follows:



3. Extend the Vaadin servlet to capture the request object.

```
MyVaadinServlet

public class MyVaadinServlet extends VaadinServlet {
  @Override
  protected void service(HttpServletRequest request,
    HttpServletResponse response) throws ServletException,
     IOException {
  SecurityContextHolder.setContext
    (SecurityContextHolder.createEmptyContext());
  VaadinRequestHolder.setRequest(request);
  super.service(request, response);
  VaadinRequestHolder.clean();
  SecurityContextHolder.clearContext();
  }
}
```

The Vaadin servlet is configured in the `web.xml` file. It accepts the UI class as a parameter. In the previous code we have extended the Vaadin servlet and have overridden the `service ()` method, in which we are passing the request to the `VaadinRequestHolder` class. By doing this we will be passing the context object to `SecurityContextHolder` to start with the authentication.



4. Register the views in the UI class.

```
Vaadin_project5UI

@SuppressWarnings("serial")
@Theme("vaadin_project5")
public class Vaadin_project5UI extends UI{
  private Layout mainLayout;
  Navigator navigator;
  protected static final String CountView = "main";
  @Override
  protected void init(VaadinRequest request) {
    getPage().setTitle("Navigation Example");
    // Create a navigator to control the views
    navigator = new Navigator(this, this);
    // Create and register the views
    navigator.addView("", new MyLoginView());
    navigator.addView(CountView, new SecuredView());
  }
}
```

In this code we are registering the `LoginView` and the `SecuredView` and the default login view will be called.

5. Configuring the `web.xml` file:

```
<display-name>Vaadin_Project5</display-name>
<context-param>
  <description>
  Vaadin production mode</description>
  <param-name>productionMode</param-name>
  <param-value>false</param-value>
</context-param>
<servlet>
  <servlet-name>Vaadin_project5 Application</servlet-name>
  <servlet-class>com.example.vaadin_project5.MyVaadinServlet
    </servlet-class>
  <init-param>
    <description>
  Vaadin UI class to use</description>
  <param-name>UI</param-name>
  <param-value>com.example.vaadin_project5.
    Vaadin_project5UI</param-value>
  </init-param>
  <init-param>
    <description>
    Legacy mode to return the value of the property
       as a string from AbstractProperty.toString()
      </description>
    <param-name>legacyPropertyToString</param-name>
    <param-value>false</param-value>
  </init-param>
</servlet>
<servlet-mapping>
  <servlet-name>Vaadin_project5 Application</servlet-name>
  <url-pattern>/*</url-pattern>
</servlet-mapping>
<listener>
  <listener-class>org.springframework.
    web.context.ContextLoaderListener</listener-class>
</listener>
</web-app>
```

We have configured `MyVaadinServlet` in `web.xml`.

6. Edit the `application-Context.xml` file.

```
<global-method-security pre-post-annotations="enabled" />
<authentication-manager>
  <authentication-provider>
    <user-service>
    <user name="anjana" password="123456"
       authorities="ROLE_EDITOR" />
    </user-service>
  </authentication-provider>
</authentication-manager>
<beans:bean class="org.springframework.security
  .web.authentication.logout.
  SecurityContextLogoutHandler">
  <beans:property name="invalidateHttpSession"
     value="false" />
</beans:bean>
</beans:beans>
```

How it works...

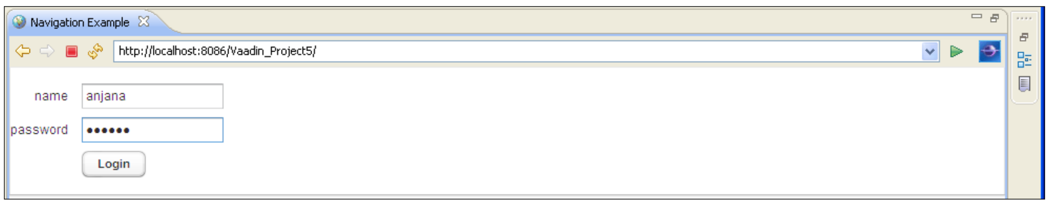
In this example we have created a Vaadin login form. This is another option for creating a login form using the Vaadin framework classes if the developer doesn't want to use external jsp. This will make it a pure Vaadin application with a Spring Security application. The user is authenticated and authorized by Spring Security before showing the actual product catalog page. The Vaadin form submits the users' credentials to the Spring Security framework which does the authentication and authorization. The `MyVaadinServlet` class communicates with the Spring Security context to set the security context with the Vaadin application.

The workflow of Spring Security with Vaadin is given as follows:

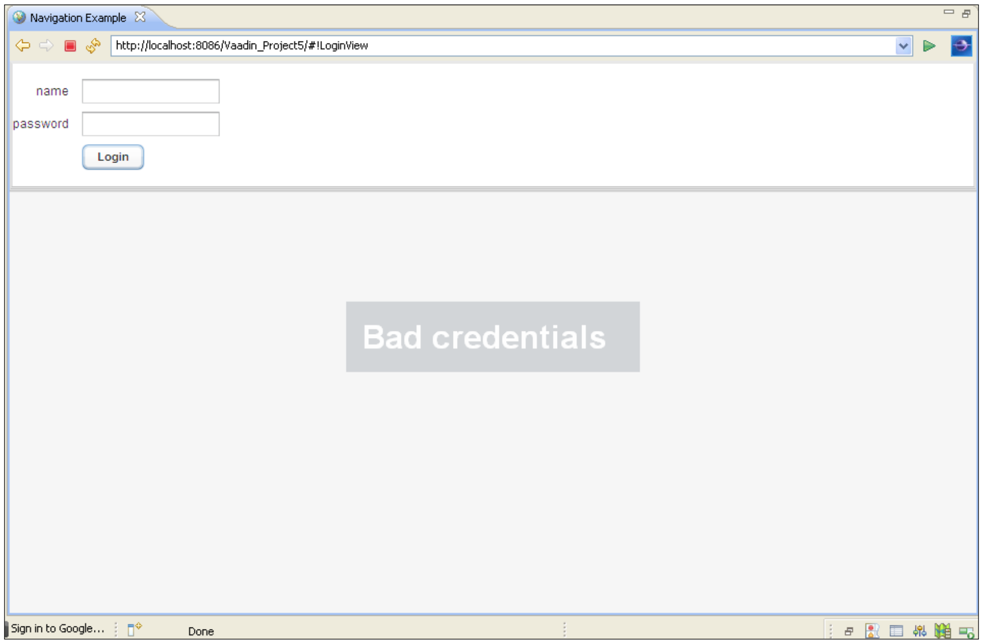
- Run the Tomcat server.
- Now access the URL:

  `http://localhost:8086/Vaadin_Project5/`

The following screenshot shows the Vaadin login form:

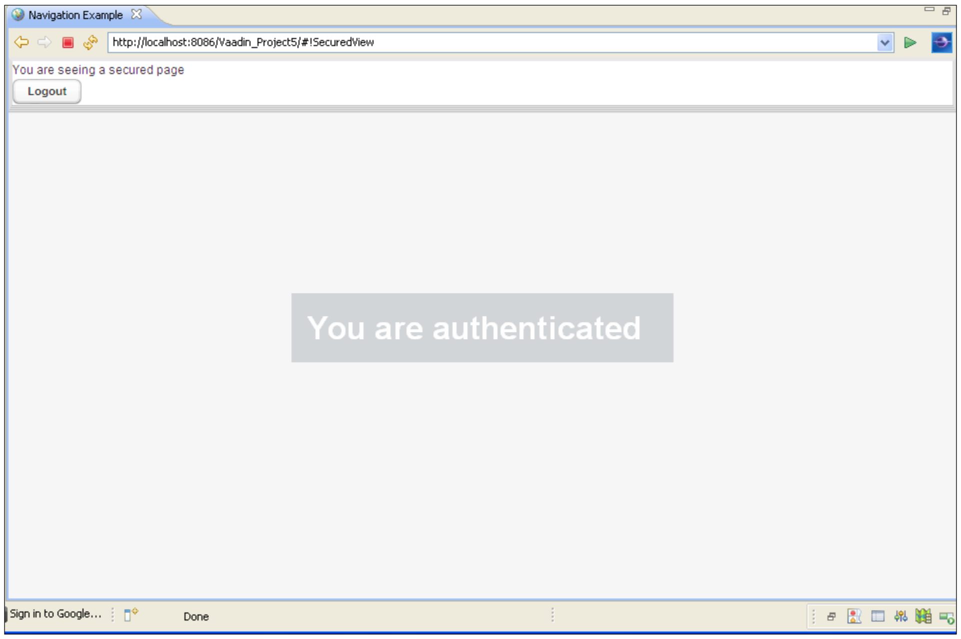


It also displays a message for bad credentials:



Bad credentials

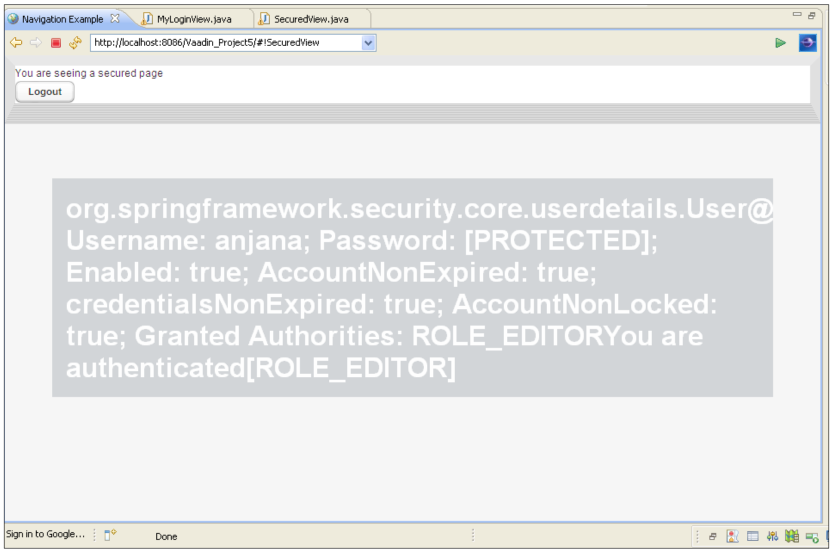
After authentication you will be navigated to the secured page:



You are seeing a secured page

You are authenticated

Clicking on **Logout** you will be taken back to login view. The following screenshot displays the information:



You are seeing a secured page

```
org.springframework.security.core.userdetails.User@
Username: anjana; Password: [PROTECTED];
Enabled: true; AccountNonExpired: true;
credentialsNonExpired: true; AccountNonLocked:
true; Granted Authorities: ROLE_EDITORYou are
authenticated[ROLE_EDITOR]
```

7
Spring Security with Wicket

In this chapter we will cover:

- Spring Security with Wicket – basic database authentication
- Spring Security with Wicket – Spring form-based database authentication
- Spring Security with Wicket – customized JSP form-based database authentication
- Spring authentication with Wicket authorization
- Multitenancy using Wicket and Spring Security

Introduction

Before starting up Wicket, we were checking the available versions. The latest one is 6.9. It is clearly mentioned in the Apache Wicket site that the latest projects should use Version 6.9 as the base. We have NetBeans 7.1 after downloading the Wicket plugin for net beans. We found that the net beans Wicket plugin supports Version 1.5 of Wicket.

We prefer using the latest stable version; it will have many bug fixes and upgrades and will make it easier to develop.

Wicket also uses the *Wicket filter* to dispatch requests and responses. Just as with GWT and Vaadin applications, which had servlet, which expected some parameters such as UI class to get initialized, we need to provide a class name of the class that extends the `Web Application` class as a parameter to the filter. Then there are classes, which extend the `WebPage` class. It's a good convention and practice to create an HTML page with the same name as the class that extends the `WebPage` class.

Wicket uses the multilevel inheritance approach. We have to extend the `Wicket` class to achieve various scenarios. It also has a built-in authentication and authorization API.

Setting up a database

The following code will set up a database:

```
CREATE TABLE `users1` (
  `USER_ID` INT(10) UNSIGNED NOT NULL,
  `USERNAME` VARCHAR(45) NOT NULL,
  `PASSWORD` VARCHAR(45) NOT NULL,
  `ENABLED` tinyint(1) NOT NULL,
  PRIMARY KEY (`USER_ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
CREATE TABLE `user_roles` (
  `USER_ROLE_ID` INT(10) UNSIGNED NOT NULL,
  `USER_ID` INT(10) UNSIGNED NOT NULL,
  `AUTHORITY` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`USER_ROLE_ID`),
  KEY `FK_user_roles` (`USER_ID`),
  CONSTRAINT `FK_user_roles` FOREIGN KEY (`USER_ID`)
    REFERENCES `users` (`USER_ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Setting up the Wicket application

The following statement is the Maven command that needs to be executed. You should have Maven installed on your machine and should have a local repository. By default, it is in `.m2\repository`. After running the command, you should get build success that gives us a green signal to start with Wicket implementation:

```
mvn archetype:generate -DarchetypeGroupId=org.apache.
wicket -DarchetypeArtifactId=wicket-archetype-quickstart
-DarchetypeVersion=6.9.1 -DgroupId=com.packt -DartifactId=spring-
security-wicket -DarchetypeRepository=https://repository.apache.org/
-DinteractiveMode=false
```

The following output is visible on the command prompt:

```
[INFO] Parameter: groupId, Value: com.packt
[INFO] Parameter: artifactId, Value: spring-security-wicket
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.packt
[INFO] Parameter: packageInPathFormat, Value: com/packt
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] Parameter: package, Value: com.packt
```

```
[INFO] Parameter: groupId, Value: com.packt
[INFO] Parameter: artifactId, Value: spring-security-wicket
[INFO] project created from Archetype in dir: E:\spring-security-wicket
[INFO] ----------------------------------------------------------------
------
[INFO] BUILD SUCCESS
[INFO] ----------------------------------------------------------------
------
[INFO] Total time: 1:22.610s
[INFO] Finished at: Mon Jul 15 21:17:24 IST 2013
[INFO] Final Memory: 7M/13M
[INFO] ----------------------------------------------------------------
------
```

The following commands will finish the complete set up of Wicket. They will also download the Wicket framework source files into the repository.

```
Spring-security-wicket>mvn clean compile install
Spring-security-wicket>mvn tomcat:run
Spring-security-wicket>mvn eclipse: eclipse
```

Access the following URL:

```
http://localhost:8080/spring-security-wicket/
```

The URL will display the welcome page of the Wicket application. Wicket application setup is ready.

Wicket also comes with its own authentication and authorization API. Let's see how we can use it.

Spring Security with Wicket – basic database authentication

Our aim is to do a simple basic authentication on the Wicket application. I want a login dialog to pop-up when we access the URL of the Wicket application. On success it should get redirected to the home page. We need to add Spring Security dependencies to the `pom.xml` file and rebuild the Wicket application. The next step will be configuring the spring listener in the `web.xml` file. We also need to add the `applicationContext.xml` file.

Getting ready

- Update the `pom.xml` file with Spring dependency.
- Create an `applicationContext.xml` file. It's mandatory to name it as `applicationContext` or else we will get error messages in the console.
- Edit the `web.xml` with Spring listeners.
- Create a `database-details.xml` file and add the database details.
- Add the `db-details.xml` file as `context-param` to the spring listener.

How to do it...

The following are the steps for implementing Spring Security with Wicket to demonstrate basic authentication where credentials are stored in the database:

1. Add dependency to the `POM.xml` file:

```
<!-- Spring dependecncies -->
  <dependency>
    <groupId>org.springframework</groupId>
    <artifactId>spring-core</artifactId>
    <version>${spring.version}</version>
  </dependency>

  <dependency>
    <groupId>org.springframework</groupId>
    <artifactId>spring-web</artifactId>
    <version>${spring.version}</version>
  </dependency>

  <dependency>
    <groupId>org.springframework</groupId>
    <artifactId>spring-webmvc</artifactId>
    <version>${spring.version}</version>
  </dependency>

  <!-- Spring Security -->
  <dependency>
    <groupId>org.springframework.security</groupId>
    <artifactId>spring-security-core</artifactId>
    <version>${spring.version}</version>
  </dependency>
```

```
    <dependency>
      <groupId>org.springframework.security</groupId>
      <artifactId>spring-security-web</artifactId>
      <version>${spring.version}</version>
    </dependency>

    <dependency>
      <groupId>org.springframework.security</groupId>
      <artifactId>spring-security-config</artifactId>
      <version>${spring.version}</version>
    </dependency>
    <!-- WICKET DEPENDENCIES -->
    <dependency>
      <groupId>org.apache.wicket</groupId>
      <artifactId>wicket-core</artifactId>
      <version>${wicket.version}</version>
    </dependency>
    <!-- WICKET Authentication-DEPENDENCIES -->
    <dependency>
      <groupId>org.apache.wicket</groupId>
      <artifactId>wicket-auth-roles</artifactId>
      <version>6.9.1</version>
    </dependency>
```

2. Update the `Web.xml` file with Spring listener and the Spring filter with Wicket filter:

```
<filter>
  <filter-name>springSecurityFilterChain</filter-name>
  <filter-class>
    org.springframework.web.filter.DelegatingFilterProxy
    </filter-class>
</filter>

<filter-mapping>
  <filter-name>springSecurityFilterChain</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>

<listener>
  <listener-class>
    org.springframework.web.context.ContextLoaderListener
    </listener-class>
</listener>
```

```
<filter>
  <filter-name>wicket.spring-security-wicket</filter-name>
<filter-class>
  org.apache.wicket.protocol.http.WicketFilter
    </filter-class>
  <init-param>
    <param-name>applicationClassName</param-name>
    <param-value>com.packt.WicketApplication</param-value>
  </init-param>
</filter>

<filter-mapping>
  <filter-name>wicket.spring-security-wicket</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
```

3. Edit the `applicationContext.xml` file:

```
<global-method-security pre-post-annotations="enabled" />

<http auto-config="true">
  <intercept-url pattern="/spring-security-wicket/**"
    access="ROLE_SELLER"/>
  <intercept-url pattern="/spring-security-wicket/*.*"
    access="ROLE_SELLER"/>
  <intercept-url pattern="/**"access="ROLE_SELLER" />
  <http-basic />
</http>

<authentication-manager>
  <authentication-provider>
    <jdbc-user-service data-source-ref="MySqlDS"
      users-by-username-query="
      select username,password, enabled
      from users1 where username=?"
      authorities-by-username-query="
      select u.username, ur.role from users1 u,
         user_roles ur
    where u.user_id = ur.user_id and u.username =?  " />
  </authentication-provider>
</authentication-manager>
```

This is a simple configuration for basic authentication. With this configuration we expect a login dialog box before showing the Wicket application. I have created a new role, seller.

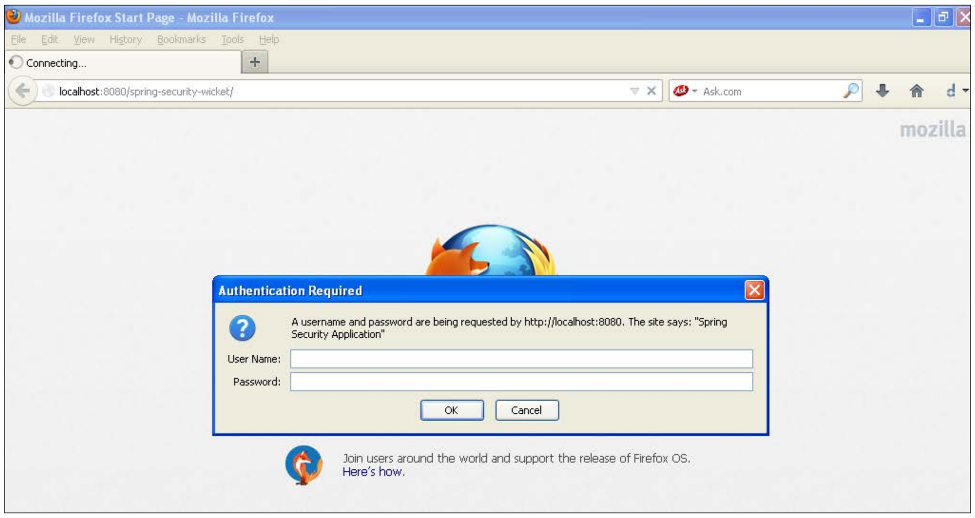
How it works...

Now access the following URL:

```
http://localhost:8080/spring-security-wicket/
```

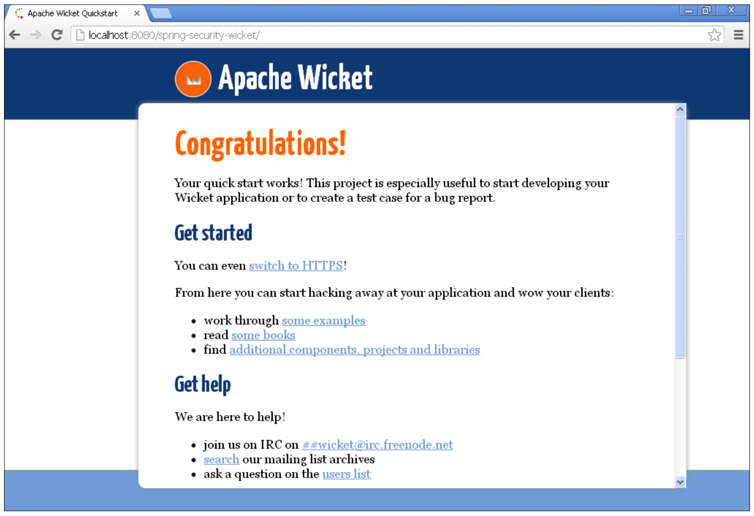
This is the initial setup example of integrating Spring Security with Wicket. We have demonstrated the basic authentication mechanism. Access to the Wicket application is interrupted with Spring Security by the Login form. On successful authentication, the user gains access to the wicket application.

The page displayed is shown in the following screenshot:


Mozilla Firefox Start Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Connecting...
localhost:8080/spring-security-wicket/
Ask.com
mozilla
Authentication Required
User Name:
Password:
OK
Cancel

A username and password are being requested by http://localhost:8080. The site says: "Spring Security Application"

Join users around the world and support the release of Firefox OS.
Here's how.



Congratulations!

Your quick start works! This project is especially useful to start developing your Wicket application or to create a test case for a bug report.

Get started

You can even switch to HTTPS!

From here you can start hacking away at your application and wow your clients:

- work through some examples
- read some books
- find additional components, projects and libraries

Get help

We are here to help!

- join us on IRC on ##wicket@irc.freenode.net
- search our mailing list archives
- ask a question on the users list

See also

- The *Spring Security with Wicket – spring form-based authentication* recipe
- The *Spring Security with Wicket – customized JSP form-based authentication* recipe
- The *Spring authentication with Wicket authorization* recipe
- The *Multitenancy using Wicket and Spring Security* recipe

Spring Security with Wicket – Spring form-based database authentication

In our previous recipe we found the Wicket 6.9 is very much compatible with Spring Security and it was very easy to integrate. All we did was to add spring dependency and we configured the `applicationContext.xml` file.

In this section we shall use the Spring form to do authentication. We expect the Spring form to show up in place of the dialog box and do the authentication for us.

Getting ready

- Create a Maven Wicket project: `spring-security-wicket_springform`.
- Update the `pom.xml` file with Spring dependency.
- Create an `applicationContext.xml` file. It's mandatory to name it as `applicationContext` or else we will get error messages in the console.
- Edit the `web.xml` with Spring listeners.
- Create a database `details.xml` file and add the database details.
- Add the file as a context parameter to the Spring listener.

How to do it...

Edit the `applicationContext.xml` file using the following code:

```
<global-method-security pre-post-annotations="enabled" />

<http auto-config="true">
  <intercept-url pattern="/spring-security-wicket/**"
    access="ROLE_SELLER"/>
  <intercept-url pattern="/spring-security-wicket/*.*"
    access="ROLE_SELLER"/>
  <intercept-url pattern="/**" access="ROLE_SELLER" />
</http>

<authentication-manager>
  <authentication-provider>
    <jdbc-user-service data-source-ref="MySqlDS"
    users-by-username-query="
    select username,password, enabled
    from users1 where username=?"

    authorities-by-username-query="
    select u.username, ur.role from users1 u, user_roles ur
    where u.user_id = ur.user_id and u.username =?  " />
  </authentication-provider>
</authentication-manager>
```

This is a simple configuration for form authentication. With this configuration we expect a **Login Page** before showing the Wicket application. The only change is that we have removed the `<http-basic>` tag for the previous application. Also observe the URL, which will have a session ID.

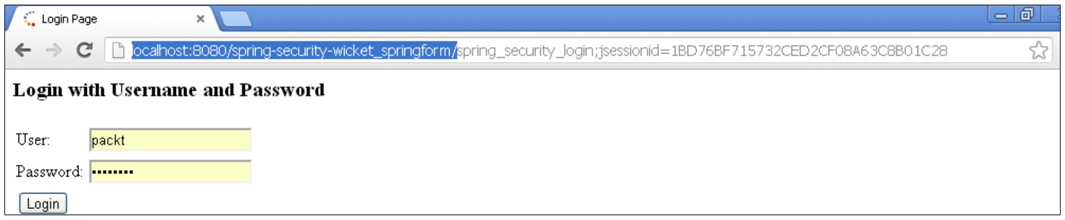
How it works...

Now access the following URL:

`http://localhost:8080/spring-security-wicket_springform/`

In this example we are showing how to invoke Spring's internal login form in a Wicket application. When we access the Wicket application, we will be redirected to Spring's own login page. The user enters their username and password which will be authenticated and authorized by the Spring's authentication provider. On success, the user gains access to the Wicket application.

You should see the following screen when you access the above URL:



Login Page
localhost:8080/spring-security-wicket_springform/spring_security_login;jsessionid=1BD76BF715732CED2CF08A63C8B01C28

Login with Username and Password

User: packt

Password: ••••••••

See also

- The *Spring Security with Wicket – customized JSP form-based authentication* recipe
- The *Spring authentication with Wicket authorization* recipe
- The *Multitenancy using Wicket and Spring Security* recipe

Spring Security with Wicket – customized JSP form-based database authentication

The previous two recipes were to test the compatibility of Wicket with Spring Security. It also demonstrates how easy it is to integrate spring with Wicket. We learned from our two Wicket recipes that we can easily use Spring-basic and Spring-form-based authentication with a database and the same can be extended to LDAP as well.

In this recipe we are going to add a customized JSP form. We expect the Wicket application to call our JSP form for login. If the developer doesn't want to create a Wicket form, they can use this approach. This approach also holds good for GWT and Vaadin.

You also need to give anonymous access to the login page.

Getting ready

- Create a Maven Wicket project: `spring-security-wicket_customized_jsp`.
- Update the `pom.xml` file with Spring dependency.
- Create an `applicationContext.xml` file. It's mandatory to name it as `applicationContext` or else we will get error messages in the console.
- Edit the `web.xml` with Spring listeners.
- Also add the `login.jsp` configuration as a servlet to `web.xml`.
- Create a database, `details.xml` file, and add the database details.
- Add the file as a context parameter to the Spring listener.
- Also, you need to add a `login.jsp`; you can use the `login.jsp` file used in the previous chapter.

How to do it...

The following steps are for integrating Spring Security with the Wicket framework to demonstrate form-based authentication with a customized JSP:

1. Edit the `applicationContext.xml` file:

```
<global-method-security pre-post-annotations="enabled" />

<http auto-config='true'>
  <intercept-url pattern="/jsp/login*"
    access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <intercept-url pattern="/jsp/login_error*"
    access="IS_AUTHENTICATED_ANONYMOUSLY" />
  <intercept-url pattern="/**" access="ROLE_SELLER" />
  <form-login login-page='/jsp/login'
    authentication-failure-url="/jsp/login_error" />
</http>
<authentication-manager>
  <authentication-provider>
    <jdbc-user-service data-source-ref="MySqlDS"
    users-by-username-query="
    select username,password, enabled
    from users1 where username=?"

    authorities-by-username-query="
    select u.username, ur.role from users1 u, user_roles ur
    where u.user_id = ur.user_id and u.username =?  " />
  </authentication-provider>
</authentication-manager>
```

   The customized `login.jsp` has been configured as an anonymous user in the `applicationContext.xml` file.

2. Edit the `web.xml` file:

```
<servlet>
  <servlet-name>login</servlet-name>
  <jsp-file>/jsp/login.jsp</jsp-file>
</servlet>

<servlet>
  <servlet-name>login_error</servlet-name>
  <jsp-file>/jsp/login_error.jsp</jsp-file>
</servlet>
```

```
<servlet-mapping>
  <servlet-name>login</servlet-name>
  <url-pattern>/jsp/login</url-pattern>
</servlet-mapping>

<servlet-mapping>
  <servlet-name>login_error</servlet-name>
  <url-pattern>/jsp/login_error</url-pattern>
</servlet-mapping>
```

The `login.jsp` has been configured as a servlet.

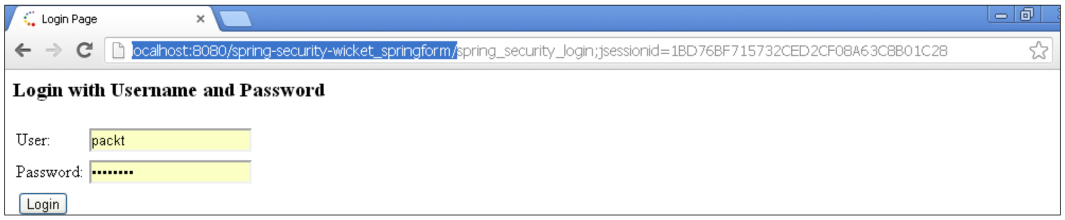
How it works...

Now access the following URL:

`http://localhost:8080/spring-security-wicket_springform/`

In this example we are integrating the Wicket application with our own `login.jsp` file to do the authentication and authorization. When the user tries to access the Wicket application, Spring Security interrupts the user from accessing the application that provides the jsp page created and configured in the `applicationContext.xml`. On submit, the Spring Security authentication action is triggered, which does the authentication and authorization. On success, the user gains access to the Wicket application.

You should see the following screenshot when you access this URL:



Login Page
localhost:8080/spring-security-wicket_springform/spring_security_login;jsessionid=1BD76BF715732CED2CF08A63C8B01C28

Login with Username and Password

User: packt

Password: ••••••••

See also

- The *Spring authentication with Wicket authorization* recipe
- The *Multitenancy using Wicket and Spring Security* recipe

Spring authentication with Wicket authorization

So far we have seen various options to use Spring Security outside the Wicket application. We shall now see how we can create a security form in the wicket framework and use it with the Spring framework with two different roles. The recipe also demonstrates how we can use Spring beans in the Wicket application.

Getting ready

- Create a Maven Wicket project: `spring-security-wicket`.
- Update the `pom.xml` file with Spring dependency.
- Create an `applicationContext.xml` file. It's mandatory to name it as `applicationContext` or else we will get error messages in the console.
- Add a `spring-wicket-security` dependency.
- Edit the `web.xml` with Spring listeners.
- Create `EditorPage.html` and `AuthorPage.html` and corresponding `EditorPage.java` and `AuthorPage.java` respectively. The author page and the editor page are similar pages but invoked based on roles.
- Create a `HomePage.java` and `HomePage.html`.
- Create `SignInPage.html` and `SignInPage.java`.
- Subclass the `AuthenticatedWebSession` class and override the methods in the super class. By default it uses Wicket authentication, so override it to use Spring authentication.

How to do it...

1. The following step is for implementing authentication with Spring security and authorization with spring Wicket editing the `application-Context.xml`.

```
<!-- Enable annotation scanning -->
<context:component-scan base-package="com.packt.wicket" />

</beans>
```

2. Edit the `spring-wicket-security.xml` file:

```
<security:authentication-manager alias=
  "springauthenticationManager">
  <security:authentication-provider>
<!--  TODO change this to reference a real production environment
user service -->
```

```
      <security:user-service>
        <security:user name="jimmy" password=
          "jimmy" authorities="ROLE_EDITOR, ROLE_AUTHOR"/>
        <security:user name="tommy" password=
          "tommy" authorities="ROLE_EDITOR"/>
      </security:user-service>
    </security:authentication-provider>
  </security:authentication-manager>

  <security:global-method-security secured-annotations=
    "enabled" />
```

3. Edit the `AuthorPage.java` file:

```
@AuthorizeInstantiation("ROLE_AUTHOR")
public class AuthorPage extends WebPage {

  @SpringBean
  private SomeInterfaceImpl someInterfaceImpl;

  public AuthorPage(final PageParameters parameters) {
    super(parameters);
    add(new Label("msg", someInterfaceImpl.method1()));
    add(new Link("Editor"){
      @Override
      public void onClick() {
        Page next = new EditorPage();
        setResponsePage(next);
      }
    });
    add(new Link("Logout"){
      @Override
      public void onClick() {
        getSession().invalidate();
        Page next = new HomePage(parameters);
        setResponsePage(next);
      }
    });
  }
}
```

4. Edit the `SigInPage.java` file:

```
public final class SignInPage extends WebPage
{
  /**
  * Constructor
```

```
    */
    public SignInPage()
    {
      final SignInForm form = new SignInForm("signinForm");
      add(form);
    }

    /**
    * Sign in form
    */
    public final class SignInForm extends Form<Void>
    {
      private String username;
      private String password;


      public SignInForm(final String id)
      {
        super(id);
        setModel(new CompoundPropertyModel(this));
        add(new RequiredTextField("username"));
        add(new PasswordTextField("password"));
        add(new FeedbackPanel("feedback"));
      }

      @Override
      public final void onSubmit()
      {
        MyWebSession session = getMySession();
        if (session.signIn(username,password))
        {

          setResponsePage(getApplication().getHomePage());

        }
        else
        {
          String errmsg = getString("loginError", null,
             "Unable to sign you in");


        }
      }
      private MyWebSession getMySession()
      {
        return (MyWebSession)getSession();
      }
    }
  }
```

5. Edit the `HomePage.java` file:

```
public class HomePage extends WebPage {
  private static final long serialVersionUID = 1L;
  @SpringBean
  private SomeInterfaceImpl someInterfaceImpl;
  public HomePage(final PageParameters parameters) {
    super(parameters);
    add(new Label("version", getApplication()
      .getFrameworkSettings().getVersion()));
    add(new Label("msg", someInterfaceImpl.method1()));
    add(new Link("click if you are Editor"){
      @Override
      public void onClick() {
        Page next = new EditorPage();
        setResponsePage(next);
      }
    });

    add(new Link("Click if You are Author"){
      @Override
      public void onClick() {
        Page next = new AuthorPage(parameters);
        setResponsePage(next);
      }
    });

  }

}
```

6. Editing the `MyWebSession.java` file:

```
public class HomePage extends WebPage {
  private static final long serialVersionUID = 1L;
  @SpringBean
  private SomeInterfaceImpl someInterfaceImpl;
  public HomePage(final PageParameters parameters) {
    super(parameters);
    add(new Label("version", getApplication()
      .getFrameworkSettings().getVersion()));
    add(new Label("msg", someInterfaceImpl.method1()));
    add(new Link("click if you are Editor"){
      @Override
      public void onClick() {
        Page next = new EditorPage();
```

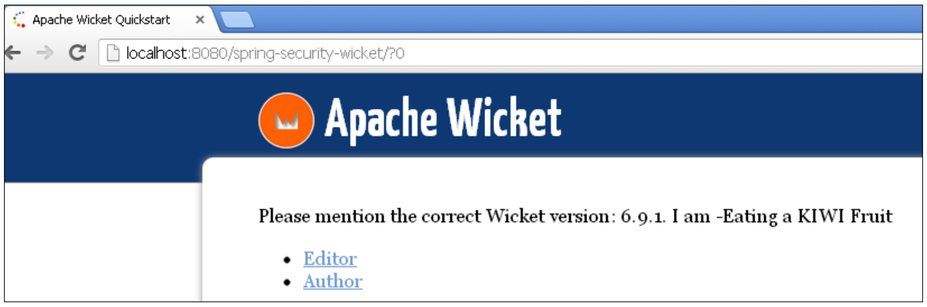
```
            setResponsePage(next);
          }
        });

        add(new Link("Click if You are Author"){
          @Override
          public void onClick() {
            Page next = new AuthorPage(parameters);
            setResponsePage(next);
          }
        });

      }

    }
```

How it works...

The implementation is very simple; all that we need to do is to have a Wicket sign-in form. After clicking on **submit** we need to get an authenticated session, and this approach will give us an option to integrate Spring security with the Wicket application where we have created a login form using the Wicket application. Spring authenticates the user credentials on success and communicates with the Wicket framework to show the respective authorized pages.

The work flow of the Wicket application with Spring security integration is explained as follows.

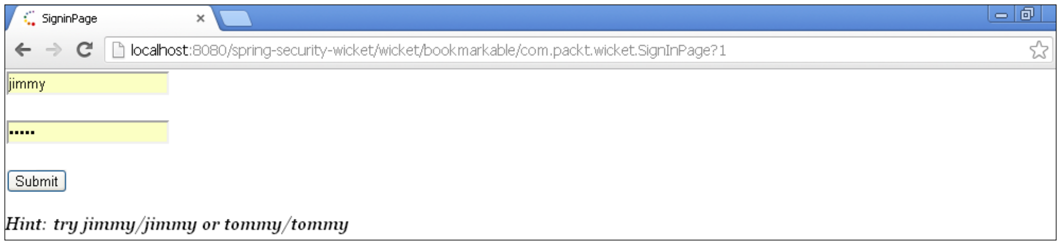
When the user clicks on the URL: `http://localhost:8080/spring-security-wicket/`, the user is allowed to access the home page. The home page shows two links, which indicates two different roles and users. After successful authentication the user will be authorized to use respective pages based on the roles. These pages are shown in the following screenshot:



Please mention the correct Wicket version: 6.9.1. I am -Eating a KIWI Fruit

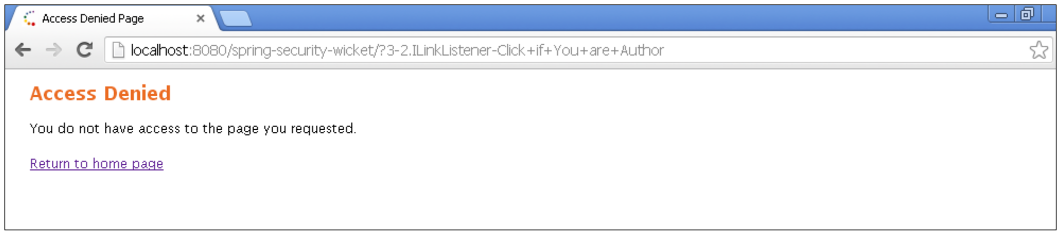
- Editor
- Author

The home page on application startup


SigninPage
localhost:8080/spring-security-wicket/wicket/bookmarkable/com.packt.wicket.SignInPage?1
jimmy
•••••
Submit

Hint: try jimmy/jimmy or tommy/tommy

Signin Page

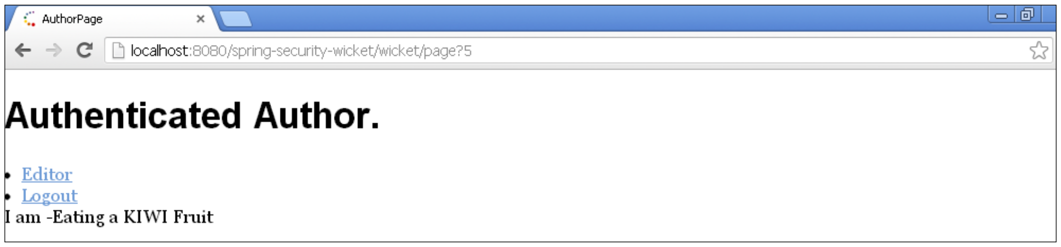

Access Denied Page
localhost:8080/spring-security-wicket/?3-2.ILinkListener-Click+if+You+are+Author

Access Denied

You do not have access to the page you requested.

Return to home page

Author page



Authenticated Author.

- Editor
- Logout

I am -Eating a KIWI Fruit

See also

- The *Multitenancy using Wicket and Spring Security* recipe

Multitenancy using Wicket and Spring Security

Multitenancy has become a popular word with cloud. In a multitenancy setup, each tenant will have a separate datasource. We need to create two different data sources and look ups for the datasource. Let's use a simple Wicket application with a customized JSP, which will have a tenant drop down menu. The user selects a tenant from the drop down menu and a datasource corresponding to the tenant will be set.

I am using NetBeans IDE, which will recognize the Maven projects easily. NetBeans also comes with a glassfish application server and derby database.

Getting ready

- Update the `login.jsp` file
- Update the `pom.xml` file with derby database dependency
- Edit the `applicationContext.xml`
- Edit the `spring-security.xml`
- Edit the `web.xml` file
- Create a filter to capture the tenant ID
- Also create two databases in derby
- Create two tables `USERS` and `USER_ROLES` in both databases
- Add columns in `USERS` (`USER_ID`, `USERNAME`, and `PASSWORD`)
- Add columns in `USER_ROLES` (`USER_ID`, `USER_ROLE_ID`, and `AUTHORITY`)

How to do it...

The following steps are for implementing multitenancy in a Wicket application with Spring Security API:

1. Edit the `application-Context.xml` file with two data sources:

```
<!-- Enable annotation scanning -->
<context:component-scan base-package="com.packt.wicket" />

  <bean id="derbydataSource" class=
    "com.packt.wicket.TenantRoutingDataSource ">
    <property name="targetDataSources">
      <map>
        <entry key="Tenant1" value-ref="tenant1DataSource"/>
        <entry key="Tenant2" value-ref="tenant2DataSource"/>
      </map>
    </property>
  </bean>
  <bean id="tenant1DataSource" class="org.springframework.
    jdbc.datasource.DriverManagerDataSource">
  <property name="driverClassName" value=
    "org.apache.derby.jdbc.EmbeddedDriver" />
  <property name="url" value=
    "jdbc:derby://localhost:1527/client1" />
  <property name="username" value="client1" />
  <property name="password" value="client1" />
  </bean>
<bean id="tenant2DataSource" class=
  "org.springframework.jdbc.datasource.
  DriverManagerDataSource">
  <property name="driverClassName" value=
    "org.apache.derby.jdbc.EmbeddedDriver" />
  <property name="url" value=
    "jdbc:derby://localhost:1527/client2" />
  <property name="username" value="client2" />
  <property name="password" value="client2" />

</bean>
```

2. Edit the `spring-wicket-security.xml` file and also add `ExceptionMappingAuthenticationFailureHandler` bean to capture SQL exceptions:

```
<bean id="authenticationFailureHandler"
  class="org.springframework.security.web.authentication.
  ExceptionMappingAuthenticationFailureHandler">
  <property name="exceptionMappings">
    <props>
      <prop key="org.springframework.security.
        authentication.BadCredentialsException">
        /jsp/login?error='badCredentials'</prop>
      <prop key="org.springframework.security.
        authentication.CredentialsExpiredException">
        /jsp/login?error='credentialsExpired'</prop>
      <prop key="org.springframework.security.
        authentication.LockedException">
        /jsp/login?error='accountLocked'</prop>
      <prop key="org.springframework.security.
        authentication.DisabledException">
        /jsp/login?error='accountDisabled'</prop>
      </props>
    </property>
  </bean>
  <security:http auto-config='true'>
    <security:intercept-url pattern="/jsp/login*"
      access="IS_AUTHENTICATED_ANONYMOUSLY" />
    <security:intercept-url pattern="/jsp/login_error*"
       access="IS_AUTHENTICATED_ANONYMOUSLY" />
    <security:intercept-url pattern="/**"
      access="ROLE_SELLER" />
    <security:form-login login-page='/jsp/login'
      authentication-failure-handler-
      ref="authenticationFailureHandler" />
  </security:http>
  <security:authentication-manager>
    <security:authentication-provider>
      <security:jdbc-user-service
        data-source-ref="derbydataSource"
          users-by-username-query=" select
          username,password,'true'
          as enabled from users where username=?"

          authorities-by-username-query="
          select u.username as username, ur.authority as
          authority from users u, user_roles ur
          where u.user_id = ur.user_id and u.username =?"
      />
    </security:authentication-provider>
  </security:authentication-manager>

<security:global-method-security secured-
  annotations="enabled" />
```

3. Edit the `login.jsp` file:

```
Login here--customized---login page
<form action="/ /Multitenant-spring-security-
  wicket//j_spring_security_check" method="post">
  <table>
    <tr>
      <td>
        User
      </td>
      <td>
        <input name="j_username">
      </td>
    </tr>
    <tr>
      <td>
        Password
      </td>
      <td>
        <input type="password" name="j_password"/>
      </td>
    </tr>

    <tr><td><label>Tenant:&nbsp;</label></td><td>
      <select style="width:146px" id="tenant"
        name="tenant">
      <option value="">Choose Tenant</option>
      <option value="Tenant1">Tenant 1</option>
      <option value="Tenant2">Tenant
        2</option></select></td>
    </tr>
    <tr>
      <td>
        <input type="submit" value="login">
      </td>
    </tr>
  </table>
</form>
</div>
```

4. Edit the `TenantRoutingDataSource.java` file to route the tenant to a different datasource. The class is a subclass of spring's `AbstractRoutingDataSource`. It is used to set the datasource.

   The URL: `http://docs.spring.io/spring/docs/3.1.x/javadoc-api/org/springframework/jdbc/datasource/lookup/AbstractRoutingDataSource.html`.

```
public class TenantRoutingDataSource extends
  AbstractRoutingDataSource {
  protected final Log logger = LogFactory.getLog
    (this.getClass());

  protected Object determineCurrentLookupKey() {

    String lookupKey = (String)
       ThreadLocalContextUtil.getTenantId();
    System.out.println(lookupKey+"------lookupKey");

    return lookupKey;
  }
}
```

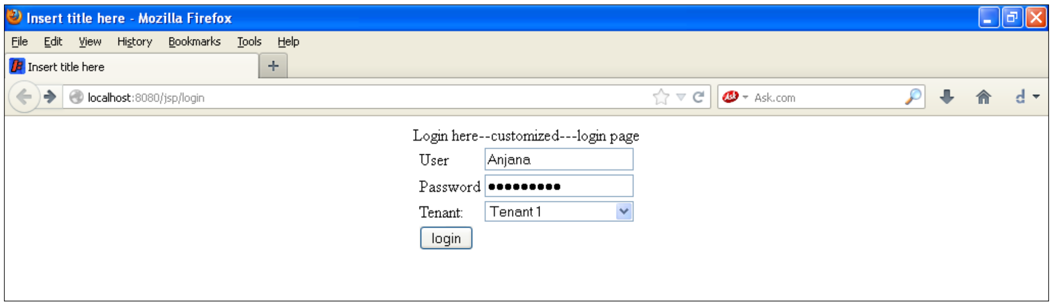
5. Edit `MultitenantFilter` to capture the tenant type and to set the datasource:

```
public void doFilter(ServletRequest request,
   ServletResponse response,FilterChain chain)
   throws IOException, ServletException {
  if (null == filterConfig) {
    return;
  }
  HttpServletRequest httpRequest = (HttpServletRequest)
     request;
  ThreadLocalContextUtil.clearTenant();
  if (httpRequest.getRequestURI()
    .endsWith(SPRING_SECURITY_LOGOUT_MAPPING)) {
    httpRequest.getSession()
      .removeAttribute(TENANT_HTTP_KEY);
  }

  String tenantID = null;
  if (httpRequest.getRequestURI()
    .endsWith(SPRING_SECURITY_CHECK_MAPPING)) {
    tenantID = request.getParameter(TENANT_HTTP_KEY);
    httpRequest.getSession().setAttribute
      (TENANT_HTTP_KEY, tenantID);
  } else {
    tenantID = (String) httpRequest.getSession()
      .getAttribute(TENANT_HTTP_KEY);
  }

  if (null != tenantID) {
    ThreadLocalContextUtil.setTenantId(tenantID);
    if (logger.isInfoEnabled()) logger.info
      ("Tenant context set with Tenant ID: " + tenantID);
    }

  chain.doFilter(request, response);
}
```

How it works...

When the user tries to access the application, they will be redirected to the login form in which the user enters their user name and password and selects the tenant. This can also be a company name or location based on business needs. Based on the tenant selected, Spring sets the authentication provider. The `MultitenantFilter` with `TenantRoutingDataSource` class sets the tenant information in the `threadLocalUtil`. The user is authenticated with the tenant data source and is taken to the home page.

Login page on application start up will look as shown in the following screenshots:


Insert title here - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Insert title here
localhost:8080/jsp/login
Ask.com

Login here--customized---login page

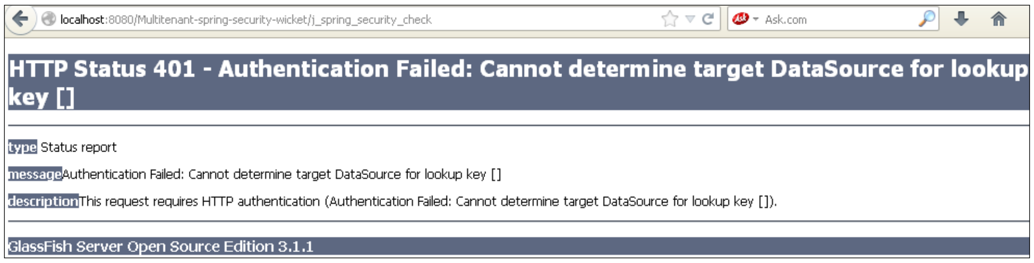
User Anjana

Password ●●●●●●●●●

Tenant: Tenant 1

login

Login.page


localhost:8080/Multitenant-spring-security-wicket/j_spring_security_check
Ask.com

HTTP Status 401 - Authentication Failed: Cannot determine target DataSource for lookup key []

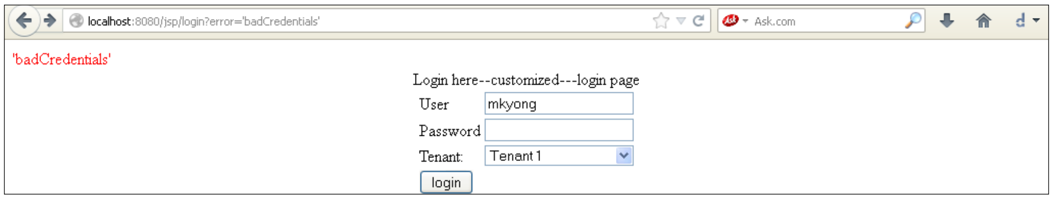
type Status report

message Authentication Failed: Cannot determine target DataSource for lookup key []

description This request requires HTTP authentication (Authentication Failed: Cannot determine target DataSource for lookup key []).

GlassFish Server Open Source Edition 3.1.1

Exception if tenant not



'badCredentials'

Login here--customized---login page

User mkyong

Password

Tenant: Tenant 1

login

Selected bad credential exception displayed

8
Spring Security with ORM and NoSQL DB

In this chapter we will cover:

- Spring Security with Hibernate using @preAuthorize annotation
- Spring Security with Hibernate using authentication provider with @preAuthorize annotation
- Spring Security with Hibernate using user details service with Derby database
- Spring Security with MongoDB

Introduction

Spring framework has been designed to easily integrate with ORM frameworks similar to Mybatis, Hibernate, and so on. Hibernate tutorials are very well documented and are available on the JBoss website. Hibernate gives us data persistence.

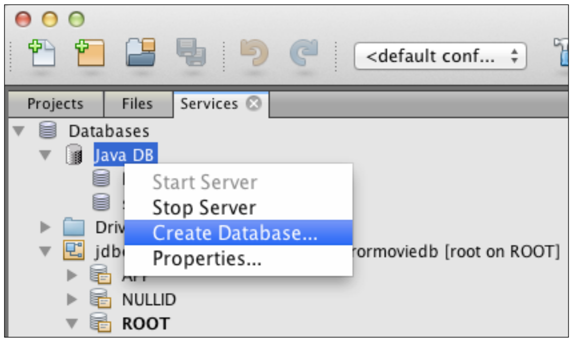
In this chapter we will see how we can integrate Spring Security with ORM frameworks. We will also integrate Spring Security with the latest MongoDB.

We will first do some basic setup with Hibernate and Spring. Since this chapter has database related stuff we need to create a database for all the recipes used in the chapter. I am using NetBeans IDE with maven. I feel NetBeans IDE is very advanced compared to others.

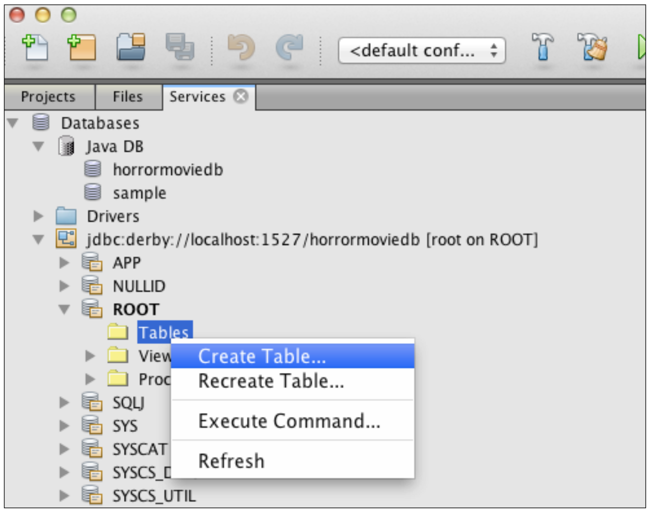
Setting up the Spring Hibernate application

We will create a simple horror movie application, which will display a list of horror movies with some **CRUD** (**create, read, update, and delete**) functions in the UI. The following steps are involved in setting up a *Spring Hibernate* application:

1. Create a `horrormoviedb` database in Derby. You can use NetBeans.
2. Click on the **Services** tab and you will see **Databases**.
3. Right click to **JavaDB** to see the **Create Database...** option. Select the **Create Database...** option.



4. Create a table in the database `horrormovie`.



5. Create columns in the table and name the columns as `horrormovie_id`, `horrormovie_name`, and `horrormovie_director`.
6. Create a maven project, update the POM with Spring, Hibernate, Derby and Spring Security dependency, and open it in NetBeans IDE.
7. Create an entity class using `@table` and `@column` annotations.
8. Create a `DAO` and `DAOImpl` class to Handle hibernate operations.
9. Create a `Service` and `ServiceImpl` class to behave like a middle manager between the `DAO` and the UI.
10. Create a controller to handle the UI part.

Spring Security with Hibernate using @preAuthorize annotation

In the current demonstration we are using two different databases. The authentication manager is configured with `tenant1DataSource` which connects to a Derby database which holds the user and role information. Using this data source we will do that authentication and authorization.

For displaying the `horrormovie` list we have created another datasource in Derby which is used with the Hibernate configuration file.

In the `DAOImpl` class methods we are using `@preAuthorize` annotations.

Let's use the GlassFish application server to run the application.

Getting ready

- Edit the `application-security.xml`.
- Edit the `horrormovie-servlet.xml`.
- Use the `@preAuthorize` annotation in `DAOImpl`. Spring Security authorizes the user when the method is invoked.

How to do it...

The following steps will do authentication and authorization with a Hibernate application:

1. Edit the `application-security.xml` file with data source details and Bean information.

```
<global-method-security pre-post-annotations="enabled" />

  <http auto-config="false"  use-expressions="true">
```

```
    <intercept-url pattern="/login" access="permitAll" />
    <intercept-url pattern="/logout" access="permitAll" />
    <intercept-url pattern="/
      accessdenied" access="permitAll" />
    <intercept-url pattern="/**"
       access="hasRole('ROLE_EDITOR')" />
    <form-login login-page="/login" default-target-url=
      "/list" authentication-failure-url="/accessdenied" />
    <logout logout-success-url="/logout" />
  </http>

  <authentication-manager alias="authenticationManager">
    <authentication-provider>
      <jdbc-user-service data-source-ref="tenant1DataSource"
        users-by-username-query=" select username,password
        ,'true' as enabled from users where username=?"
        authorities-by-username-query="
        select u.username as username, ur.authority as
        authority from users u, user_roles ur
        where u.user_id = ur.user_id and u.username =?"
        />
    </authentication-provider>
  </authentication-manager>

  <beans:bean id="horrorMovieDAO" class=
    "com.packt.springsecurity.dao.HorrorMovieDaoImpl" />
  <beans:bean id="horrorMovieManager" class="com.packt.
    springsecurity.service.HorrorMovieManagerImpl" />
  <beans:bean id="tenant1DataSource" class=
    "org.springframework.jdbc.datasource.
    DriverManagerDataSource">
  <beans:property name="driverClassName" value=
    "org.apache.derby.jdbc.EmbeddedDriver" />
  <beans:property name="url" value=
    "jdbc:derby://localhost:1527/client1" />
  <beans:property name="username" value="client1" />
  <beans:property name="password" value="client1" />

</beans:bean>
```

2. Edit the `horrormovie-servlet.xml` file with the controller information.

```
<global-method-security pre-post-annotations="enabled" />

  <http auto-config="true">
    <intercept-url pattern=
      "/spring-security-wicket/**" access="ROLE_SELLER"/>
    <intercept-url pattern="/spring-security-wicket/*.*"
      access="ROLE_SELLER"/>
    <intercept-url pattern="/**" access="ROLE_SELLER" />
  <http-basic />
</http>
<authentication-manager>
  <authentication-provider>
    <jdbc-user-service data-source-ref="MySqlDS"
      users-by-username-query="
      select username,password, enabled
      from users1 where username=?"
      authorities-by-username-query="
      select u.username, ur.role from users1 u, user_roles ur
      where u.user_id = ur.user_id and u.username =?  " />
  </authentication-provider>
</authentication-manager>
```

It is using JDBC for authentication service.

3. Using the annotations when you execute the `addHorrorMovie` method Spring checks the security context object for credentials and does the authentication and authorization; this is given in the following code:

```
@Repository
public class HorrorMovieDaoImpl implements HorrorMovieDAO  {

  @Autowired
  private SessionFactory sessionFactory;

  @PreAuthorize("hasRole('ROLE_AUTHOR')")
  @Override
  public void addHorrorMovie(HorrorMovieEntity horrormovie)
  {
    this.sessionFactory.getCurrentSession()
      .save(horrormovie);
  }

  @SuppressWarnings("unchecked")
  @Override
  public List<HorrorMovieEntity> getAllHorrorMovies() {
    return this.sessionFactory.getCurrentSession()
      .createQuery("from HORRORMOVIE").list();
  }

  @Override
  public void deleteHorrorMovie(Integer horrorMovieId) {
    HorrorMovieEntity horrorMovie = (HorrorMovieEntity)
       sessionFactory.getCurrentSession()
      .load(HorrorMovieEntity.class, horrorMovieId);
    if (null != horrorMovie) {
      this.sessionFactory.getCurrentSession()
        .delete(horrorMovie);
    }
  }
}
```

4. Some SQL commands are given as follows:

```
create table HORRORMOVIE
  (HORRORMOVIE_ID int generated by default as identity
    (START WITH 2, INCREMENT BY 1),
  HORRORMOVIE_NAME char(50),HORRORMOVIE_DIRECTOR char(50));

insert into HORRORMOVIE values
  (1, 'EVILDEAD','Fede Alvarez');
insert into HORRORMOVIE values
  (DEFAULT, 'EVILDEAD2','Fede Alvarez');
```

How it works...

In this example we have created a Hibernate application and used the JDBC service for authentication. The Spring framework interrupts the request to access the application and requests the user to enter the credentials. The credentials are authenticated using the JDBC details provided in the `application-security.xml` file.

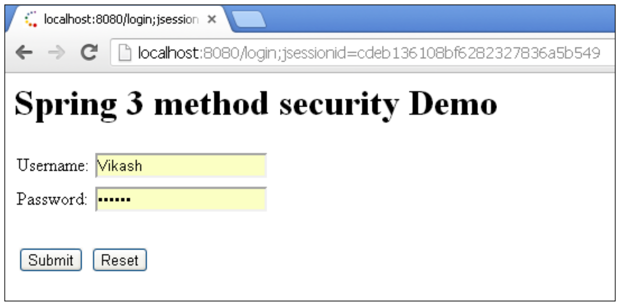
On success the user is redirected to the application which displays a list of movies.

Now access the following URL:

`http://localhost:8080/login`

The screenshots for authenticating and authorizing using JDBC service and applying Spring Security on using annotation on methods are as follows:

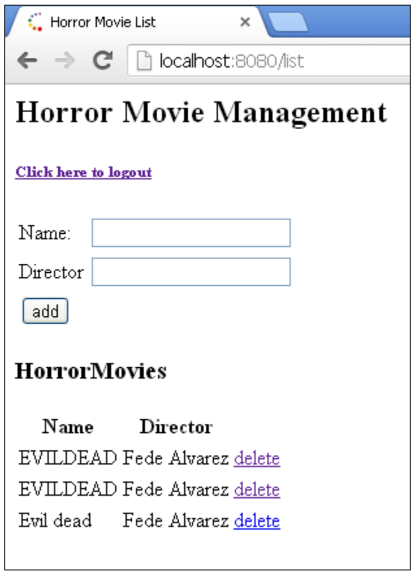
The workflow of the example is shown in the following screenshots:


localhost:8080/login;jsession
localhost:8080/login;jsessionid=cdeb136108bf6282327836a5b549

Spring 3 method security Demo

Username: Vikash

Password: ••••••



Horror Movie Management

Click here to logout

Name:

Director

HorrorMovies

Name	Director	
EVILDEAD	Fede Alvarez	delete
EVILDEAD	Fede Alvarez	delete
Evil dead	Fede Alvarez	delete

See also

- The *Spring Security with Hibernate using authentication provider* recipe
- The *Spring Security with Hibernate using user details service with Derby database* recipe
- The *Spring Security with MongoDB* recipe

Spring Security with Hibernate using authentication provider with @preAuthorize annotation

We are using the sample `horrormovie` application to demonstrate Spring Security with Hibernate using custom authentication provider and `@preAuthorize` annotation.

In this recipe we will create our own custom authentication provider and implement the interface authentication provider. We will apply the annotation on the `controller` method instead of the `hibernate` method.

Getting ready

- Create a new class which implements the `AuthenticationProvider` interface and add the Bean definition to the `application-security.xml` file
- Edit the `application-security.xml` file
- Use the `@preAuthorize` annotation in controller

How to do it...

The following steps are used to implement Spring Security by using the `AuthenticationProvider` interface:

1. Edit the `application-security.xml` file with data source details and Bean information.

```
<global-method-security pre-post-annotations="enabled" />

<http auto-config="false"  use-expressions="true">
  <intercept-url pattern="/login" access="permitAll" />
  <intercept-url pattern="/logout" access="permitAll" />
  <intercept-url pattern="/accessdenied" access="permitAll"
     />
  <intercept-url pattern="/list" access=
    "hasRole('ROLE_EDITOR')" />
  <intercept-url pattern="/add" access=
    "hasRole('ROLE_EDITOR')" />
  <form-login login-page="/login" default-target-url
    ="/list" authentication-failure-url="/accessdenied" />
  <logout logout-success-url="/logout" />
</http>
```

```
    <authentication-manager alias="authenticationManager">
    <authentication-provider ref=
      "MyCustomAuthenticationProvider" />
    </authentication-manager>

    <beans:bean id="horrorMovieDAO" class=
      "com.packt.springsecurity.dao.HorrorMovieDaoImpl" />
    <beans:bean id="horrorMovieManager" class=
      "com.packt.springsecurity.service.HorrorMovieManagerImpl"
       />

    <beans:bean id="MyCustomAuthenticationProvider" class=
      "com.packt.springsecurity.controller" />
  </beans:beans>
```

2. Edit the `MyCustomAuthenticationProvider` file.

```
public class MyCustomAuthenticationProvider
  implements AuthenticationProvider {
  @Override
  public boolean supports(Class<? extends Object>
     authentication)
{
    return (UsernamePasswordAuthenticationToken.
      class.isAssignableFrom(authentication));
    }

  private static Map<String, String> APP_USERS
     = new HashMap<String, String>(2);
  private static List<GrantedAuthority> APP_ROLES
     = new ArrayList<GrantedAuthority>();
  static
  {
    APP_USERS.put("ravi", "ravi123");
    APP_USERS.put("chitra", "chitra123");
    APP_ROLES.add(new SimpleGrantedAuthority("ROLE_EDITOR"));
  }

  @Override
  public Authentication authenticate(Authentication auth)
  {
    if (APP_USERS.containsKey(auth.getPrincipal())
    && APP_ROLES.get(auth.getPrincipal())
      .equals(auth.getCredentials()))
    {
      return new UsernamePasswordAuthenticationToken
        (auth.getName(), auth.getCredentials(),
        AUTHORITIES);
    }
    throw new BadCredentialsException("Username/Password
       does not match for "
      + auth.getPrincipal());
    }
  }
}
```

3. Use the annotations in controller.

```
AddHorrorMovieController
@PreAuthorize("hasRole('ROLE_EDITOR')")
@RequestMapping(value = "/add", method = RequestMethod.POST)
public String addHorrorMovie(
  @ModelAttribute(value = "horrorMovie") HorrorMovieEntity
    horrorMovie,
    BindingResult result) {
    horrorMovieManager.addHorrorMovie(horrorMovie);
    return "redirect:/list";
  }
```

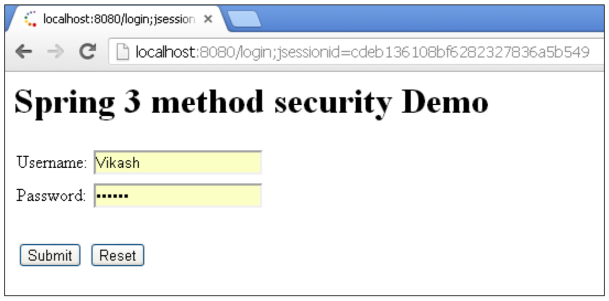
How it works...

Now access the following URL:

`http://localhost:8080/login`

After interrupting the request, Spring Security invokes `MyCustomAuthenticationProvider`, which has the overridden authenticate method for authentication and also the user information. The user credentials are authenticated and authorized with the credentials in `APP_Users` map on successful authentication and authorization the user will be redirected to the success URL configured in the `spring-security.xml` file.

The screenshots for authenticating and authorizing using the custom authentication provider and applying Spring Security on using annotation on methods in the controller are as follows:



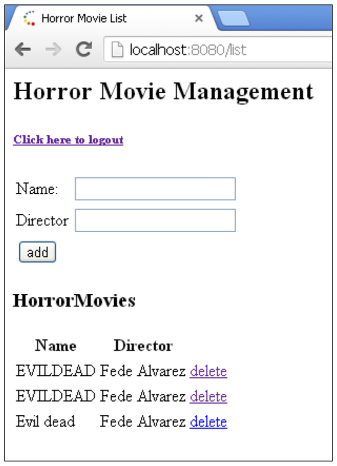
localhost:8080/login;jsessionid=cdeb136108bf6282327836a5b549

Spring 3 method security Demo

Username: Vikash

Password: ••••••

Submit Reset



localhost:8080/list

Horror Movie Management

Click here to logout

Name:

Director

add

HorrorMovies

Name	Director	
EVILDEAD	Fede Alvarez	delete
EVILDEAD	Fede Alvarez	delete
Evil dead	Fede Alvarez	delete

See also

- The *Spring Security with Hibernate using @preAuthorize annotation* recipe
- The *Spring Security with Hibernate using custom authentication provider with @preAuthorize annotation* recipe
- The *Spring Security with Hibernate using user details service with Derby database* recipe
- The *Spring Security with MongoDB* recipe

Spring Security with Hibernate using UserDetailsService with Derby database

So far we have seen Hibernate and Spring security with various authentication providers. In this section we will use Hibernate to retrieve users and authorities from the database.

For that we are going to implement the `UserDetailsService` interface and implement a method in the interface. To begin we need to create entity classes for users and roles.

We also moved the `@preAuthorize` annotation to the `controller` class.

Getting ready

- Create a new class which implements the `UserDetailsService` interface and add the Bean definition to the `application-security.xml` file
- Edit the `application-security.xml` file
- Use the `@preAuthorize` annotation in controller
- In the horror database add the tables `USERS` and `USER_ROLE`
- Insert role `ROLE_EDITOR` and users named `ravi` and `ravi123`

How to do it...

The following steps are used to integrate Spring Security authentication with Hibernate by implementing the `UserDetailsService` interface that interacts with Hibernate methods:

1. Create a class `MyUserDetailsService` which implements the `UserDetailsService` interface.

```
public class MyUserDetails implements UserDetailsService {
  @Autowired
  private UsersDAO UsersDAO;
  public UserDetails loadUserByUsername(String userName)
  throws UsernameNotFoundException {

    Users users= UsersDAO.findByUserName(userName);
    boolean enabled = true;
    boolean accountNonExpired = true;
    boolean credentialsNonExpired = true;
    boolean accountNonLocked = true;
    return new User(
      users.getUserName(),
      users.getUserPassword(),
      enabled,
      accountNonExpired,
      credentialsNonExpired,
      accountNonLocked,
      getAuthorities(users.getRole()
        .getRoleId().intValue()));
    }

    public Collection<? extends GrantedAuthority>
       getAuthorities(Integer role) {
    List<GrantedAuthority> authList =
       getGrantedAuthorities(getRoles(role));
    System.out.println("authList----------->"+authList);
    return authList;
  }

  public List<String> getRoles(Integer role) {

    List<String> roles = new ArrayList<String>();

    if (role.intValue() == 1) {
      roles.add("ROLE_EDITOR");
    } else if (role.intValue() == 2) {
      roles.add("ROLE_AUTHOR");
    }
    return roles;
  }

  public static List<GrantedAuthority>
    getGrantedAuthorities(List<String> roles) {
  List<GrantedAuthority> authorities = new
    ArrayList<GrantedAuthority>();
  for (String role : roles) {
    System.out.println("role----------->"+role);
    authorities.add(new SimpleGrantedAuthority(role));
  }
  return authorities;
  }

}
```

2. Edit the `application-security.xml` file.

```
<authentication-manager alias="authenticationManager">
  <authentication-provider user-service-ref="MyUserDetails">
    <password-encoder hash="plaintext" />
  </authentication-provider>
</authentication-manager>


<beans:bean id="horrorMovieDAO" class=
  "com.packt.springsecurity.dao.HorrorMovieDaoImpl" />
<beans:bean id="horrorMovieManager" class="com.
  packt.springsecurity.service.HorrorMovieManagerImpl" />
<beans:bean id="UsersDAO" class=
  "com.packt.springsecurity.dao.UsersDAOImpl" />
<beans:bean id="UsersManager" class=
  "com.packt.springsecurity.service.UsersManagerImpl" />
<beans:bean id="UserRoleDAO" class=
  "com.packt.springsecurity.dao.UserRoleDAOImpl" />
<beans:bean id="UserRoleManager" class=
  "com.packt.springsecurity.service.UserRoleManagerImpl" />


<beans:bean id="MyUserDetails" class=
  "com.packt.springsecurity.service.MyUserDetails" />
</beans:beans>
```

3. Use annotations in controller.

```
@PreAuthorize("hasRole('ROLE_EDITOR')")
@RequestMapping(value = "/add", method = RequestMethod.POST)
public String addHorrorMovie(
  @ModelAttribute(value = "horrorMovie")
     HorrorMovieEntity horrorMovie,
  BindingResult result) {
    horrorMovieManager.addHorrorMovie(horrorMovie);
    return "redirect:/list";
  }
```

How it works...

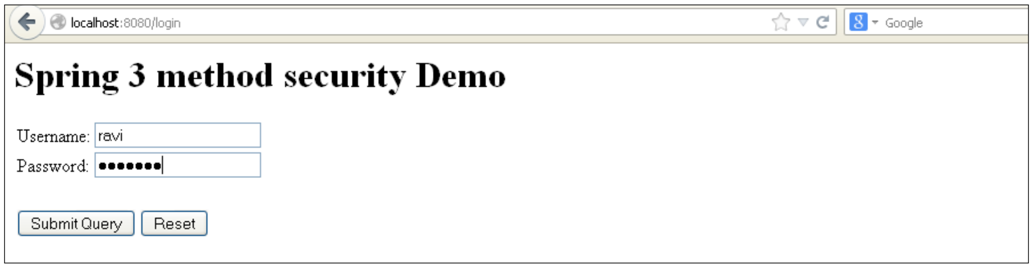
Now access the following URL:

`http://localhost:8080/login`

First we authenticate and authorize using `UserDetailsService` and Hibernate. `UserDetailsService` is a Spring Security interface which is implemented by `MyUserDetailsService` class. This class is configured in the `application-security.xml` file so that Spring Security invokes this implementation class to load the user details using Hibernate. `UsersDAO.findByUserName(userName)` is a method to invoke Hibernate to get the user information based on the username that is passed.

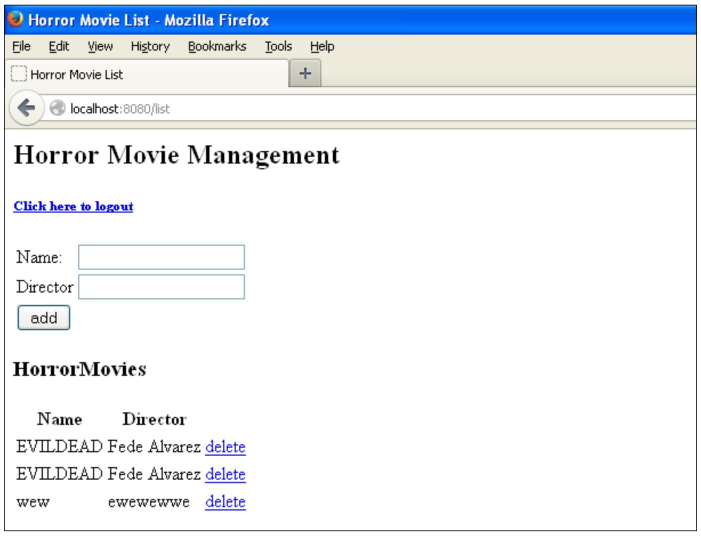
After applying Spring Security to the controller using annotations, we should be able to login with the username and password (ravi and ravi123). The `<password-encoder hash="plaintext" />` is a hashing algorithm supported by Spring Security. On successful authentication the user will be redirected to the authorized page.

The workflow of the application is demonstrated in the following screenshots:



Spring 3 method security Demo

Username:	ravi
Password:	●●●●●●●



Horror Movie Management

Click here to logout

Name:	
Director	

HorrorMovies

Name	Director	
EVILDEAD	Fede Alvarez	delete
EVILDEAD	Fede Alvarez	delete
wew	ewewewwe	delete

See also

- The *Spring Security with Hibernate using @preAuthorize annotation* recipe
- The *Spring Security with Hibernate using custom authentication provider with @preAuthorize annotation* recipe
- The *Spring Security with Hibernate using user details service with Derby database* recipe
- The *Spring Security with MongoDB* recipe

Spring Security with MongoDB

In this section let's see how Spring Security works with MongoDB. MongoDB is a popular NOSQL database. It is a document based database. MongoDB is written in the popular C++ database which makes it an object oriented document based database. In MongoDB queries are also document based, and it also provides indexing using JSON style to store and retrieve data. The latest Spring version available is Version 3.2 has been included in the POC.

Getting ready

- Download the MongoDB database
- Configure the data folder
- Start MongoDB in command prompt
- Start MongoDB in another command prompt
- Create `horrordb` database by inserting data into it
- Execute the command `use horrordb`
- Add MongoDB dependency to the **POM** (**Project Object Model**) file
- Add JSON dependency to the POM file
- Upgrade the Spring Version to 3.2.0 and Spring Security to 1.4
- Create a `MongoUserDetails` class
- Edit the `horror-movie` servlet
- Edit the `Application-security.xml` file

How to do it...

The following steps use Mongo with Spring Security to authenticate and authorize users by implementing the `UserDetailsService` interface:

1. Database operations in command prompt is shown as follows:

```
db.horrormovie.insert({horrormovie_id:1,horrormovie_name:
  "omen",horrormovie_director:"Richard Donner"})

db.horrormovie.insert({horrormovie_id:2,horrormovie_name:
  "the conjuring",horrormovie_director:"James Wan"})

db.horrormovie.insert({horrormovie_id:3,horrormovie_name:
  "The Lords of Salem",horrormovie_director:"Rob Zombie"})
```

```
db.horrormovie.insert({horrormovie_id:4,horrormovie_name:
  "Evil Dead",horrormovie_director: "Fede Alvarez"})

db.users.insert({id:1,username:"anjana",password:
  "123456",role:1})

db.users.insert({id:2,username:"raghu",password:
  "123456",role:2})

db.users.insert({id:3,username:"shami",password:
  "123456",role:3})
```

2. Create a class `MongoUserDetailsService` which implements the `UserDetailsService` interface.

```
@Service
public class MongoUserDetailsService implements
  UserDetailsService {

  @Autowired
  private UserManager userManager;
  private static final Logger logger =
    Logger.getLogger(MongoUserDetailsService.class);
  private org.springframework.security.
    core.userdetails.User userdetails;
  public UserDetails loadUserByUsername(String username)
  throws UsernameNotFoundException {
    boolean enabled = true;
    boolean accountNonExpired = true;
    boolean credentialsNonExpired = true;
    boolean accountNonLocked = true;
    Users users = getUserDetail(username);
    System.out.println(username);
    System.out.println(users.getPassword());
    System.out.println(users.getUsername());
    System.out.println(users.getRole());

    return new User(users.getUsername(),
      users.getPassword()
      ,enabled,accountNonExpired,credentialsNonExpired,
      accountNonLocked,getAuthorities(users.getRole()));
  }
```

```
    public List<GrantedAuthority> getAuthorities(Integer
      role) {
      List<GrantedAuthority> authList =
        new ArrayList<GrantedAuthority>();
        if (role.intValue() == 1) {
          authList.add(new SimpleGrantedAuthority
            ("ROLE_EDITOR"));

        } else if (role.intValue() == 2) {
          authList.add(new SimpleGrantedAuthority
            ("ROLE_AUTHOR"));
      }
      return authList;
    }

    public Users getUserDetail(String username) {
    Users users = userManager.findByUserName(username);
    System.out.println(users.toString());
    return users;
  }
```

3. Edit the `application-security.xml`.

```
<global-method-security pre-post-annotations="enabled" />

<http auto-config="false"  use-expressions="true">
  <intercept-url pattern="/login" access="permitAll" />
  <intercept-url pattern="/logout" access="permitAll" />
  <intercept-url pattern="/accessdenied" access=
    "permitAll" />
  <intercept-url pattern="/list"
    access="hasRole('ROLE_EDITOR')" />
<!--                <http-basic/>-->
  <form-login login-page="/login" default-target-url=
    "/list" authentication-failure-url="/accessdenied" />
  <logout logout-success-url="/logout" />
</http>

<authentication-manager alias="authenticationManager">
<authentication-provider user-service-ref=
  "mongoUserDetailsService">
<password-encoder hash="plaintext" />
</authentication-provider>
</authentication-manager>
```

4. Edit the `horrormovie-servlet.xml`.

```
<context:annotation-config />
<context:component-scan base-package=
  "com.packt.springsecurity.mongodb.controller" />
<context:component-scan base-package=
  "com.packt.springsecurity.mongodb.manager" />
<context:component-scan base-package=
  "com.packt.springsecurity.mongodb.dao" />
<context:component-scan base-package=
  "com.packt.springsecurity.mongodb.documententity" />

<bean id="jspViewResolver"
  class="org.springframework.web.servlet
  .view.InternalResourceViewResolver">
  <property name="viewClass"
  value="org.springframework.web.servlet.view.JstlView" />
  <property name="prefix" value="/WEB-INF/view/" />
  <property name="suffix" value=".jsp" />
</bean>
<mongo:mongo host="127.0.0.1" port="27017" />
<mongo:db-factory dbname="horrordb" />

<bean id="mongoTemplate" class=
  "org.springframework.data.mongodb.core.MongoTemplate">
<constructor-arg name="mongoDbFactory" ref=
  "mongoDbFactory" />
</bean>

<bean id="horrorMovieDAO" class="com.packt.
  springsecurity.mongodb.dao.HorrorMovieDaoImpl" />
<bean id="horrorMovieManager" class="com.packt.
  springsecurity.mongodb.manager.HorrorMovieManagerImpl" />
<bean id="UsersDAO" class="com.packt.
  springsecurity.mongodb.dao.UsersDAOImpl" />
<bean id="userManager" class="com.packt.
  springsecurity.mongodb.manager.UserManagerImpl" />
<bean id="mongoUserDetailsService" class="com.
  packt.springsecurity.mongodb.controller.
  MongoUserDetailsService" />

<bean id="HorroMovieController" class="com.packt.
  springsecurity.mongodb.controller.HorrorMovieController"
  />
```

5. Use the annotations in controller.

```
@PreAuthorize("hasRole('ROLE_EDITOR')")
@RequestMapping(value = "/add", method = RequestMethod.POST)
public String addHorrorMovie(
@ModelAttribute(value = "horrorMovie")
   HorrorMovieEntity horrorMovie,
  BindingResult result) {
  horrorMovieManager.addHorrorMovie(horrorMovie);
  return "redirect:/list";
}
```

How it works...

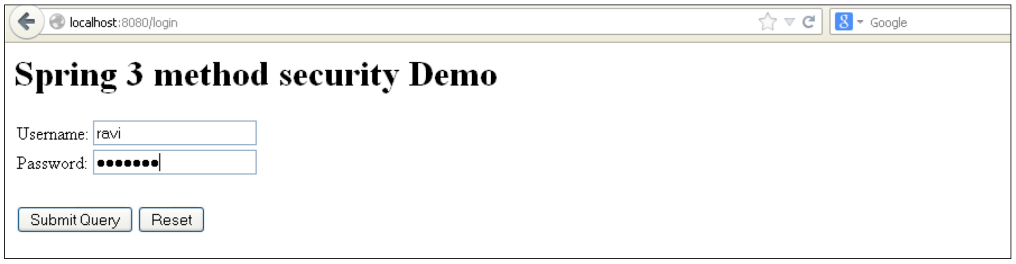
First we authenticate and authorize using `MongoDetailsService` and Spring data. `MongoDetailsService` is the implementation of `UserDetailsService`, `getUserDetail`(string username) invokes the `springdata` classes to get user credentials from the Mongo database based on the username passed. If the data is present based on the username, it implies that the authentication is successful. We then apply Spring Security on the controller methods using annotation.

Now we should be able to login with the username and password (ravi and 123456).

Now access the following URL:

`http://localhost:8080/login`

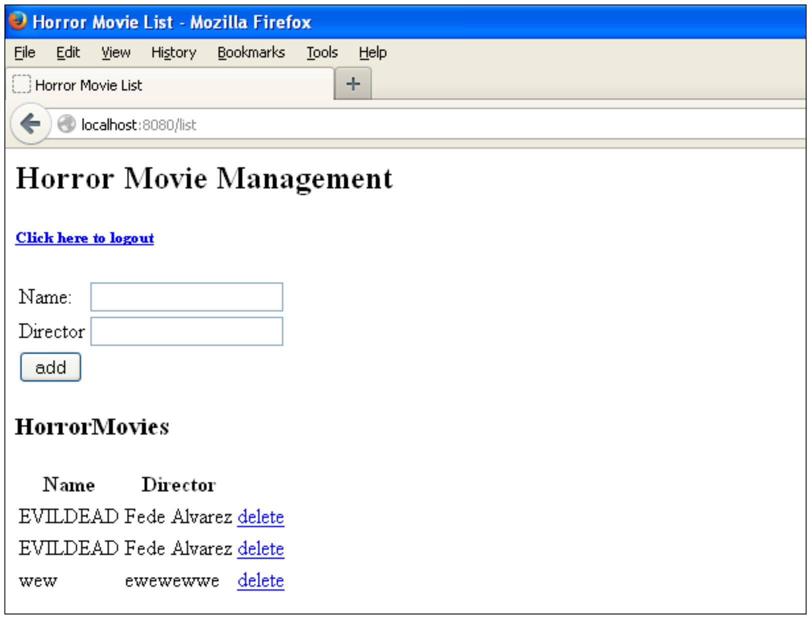
The workflow is demonstrated in the following screenshots:


localhost:8080/login

Spring 3 method security Demo

Username: ravi

Password: •••••••


Horror Movie List - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Horror Movie List
localhost:8080/list

Horror Movie Management

Click here to logout

Name:

Director

add

HorrorMovies

Name	Director	
EVILDEAD	Fede Alvarez	delete
EVILDEAD	Fede Alvarez	delete
wew	ewewewwe	delete

See also

- The *Spring Security with Hibernate using @preAuthorize annotation* recipe
- The *Spring Security with Hibernate using custom authentication provider with @preAuthorize annotation* recipe
- The *Spring Security with Hibernate using user details service with Derby database* recipe
- The *Spring Security with MongoDB* recipe

9
Spring Security with Spring Social

In this chapter we will cover:

- Spring Security with Spring Social to access Facebook
- Spring Security with Spring Social to access Twitter
- Spring Security with multiple authentication providers
- Spring Security with OAuth

Introduction

Spring Social is a famous API. Most web applications want to give users an option to post to social networking sites such as Facebook and Twitter from their application. Spring Social is built to meet this requirement.

In this chapter, we shall integrate Spring Security with Spring Social to connect to Facebook and Twitter accounts.

Spring Security with Spring Social to access Facebook

For authentication, Spring Social uses the `spring-security` API. We need to add the spring-social dependency in the `pom.xml` along with with the `spring-core` and `spring-security` packages. In this section we shall demonstrate how Spring Social can bridge our java application to Facebook. We can log in to the Facebook application in our java application.

Once the connection is established to the social networking site, the user can post and retrieve messages from it.

We have used the same hibernate horror movie application. I have used derby database and have deployed the application on the glassfish server. Spring Social internally uses Spring's `jdbctemplate` class to retrieve database information.

Getting ready

You will need to perform the following tasks to access Facebook using Spring Security with Spring Social:

- Register as a Facebook developer and create an app. You will get an appID and secret key which can be used for integration
- Add request mapping to the controller to handle the Facebook created `jsp` pages to post messages onto Facebook
- Create the `UserConnection` table
- Add Jackson dependency into your `pom.xml` file. The demo project will be available for download with this book
- Add the Spring Social dependencies such as:
  - `Spring-social-core`
  - `Spring-social-web`
  - `Spring-social-facebook`
  - `Spring-social-twitter`
  - `Spring-social-linkedin`
  - `Spring-social-github`
- Create the `.jsp` pages for the user to sign in and sign out
- Provide the database connection properties in the `spring.properties` file
- Provide Facebook's apps- secret key and appID in the `jdbc.properties` file

How to do it...

The following are the steps for implementing an application that allow users to sign in to the Facebook app with Spring Social and Spring Security:

1. Create a controller named `MyController` to handle the Facebook pages.

```
@RequestMapping(value = "/fbprofile", method =
  RequestMethod.GET)
public String getfbProfile(ModelMap model,
  HttpServletRequest request,
    HttpServletResponse response) {
  model.addAttribute("request.userPrincipal.name",
    request.getUserPrincipal().getName());
  Facebook facebook = connectionRepository.
    getPrimaryConnection(Facebook.class).getApi();
  model.addAttribute("profileLink", facebook.
    userOperations().getUserProfile().getLink());
  model.addAttribute("Gender", facebook.userOperations().
    getUserProfile().getGender());
  model.addAttribute("profileInfo", facebook.
    userOperations().getUserProfile());
  model.addAttribute("userpermissions", facebook.
    userOperations().getUserPermissions());
  List<Reference> friends = facebook.
    friendOperations().getFriends();
  model.addAttribute("friends", friends);
  model.addAttribute("friendlist", facebook.
    friendOperations().getFriendLists());
  return "facebookprofile";
}
```

2. Provide the connection factories in the `Spring-social.xml` file:

```
<bean id="connectionFactoryLocator"
  class="org.springframework.social.connect.support.
  ConnectionFactoryRegistry">
  <property name="connectionFactories">
    <list>
      <bean class="org.springframework.social.
        facebook.connect.FacebookConnectionFactory">
        <constructor-arg value="${facebook.clientId}" />
        <constructor-arg value="${facebook.clientSecret}"
          />
      </bean>
    </list>
  </property>
</bean>
```

The `ConnectionFactory` locator creates the Facebook bean. Here you can add other social networking providers such as Digg and Flickr. `UsersConnectionRepository` uses the JDBC template to execute queries for connecting with various social networking providers.

3. Use the connection factory in the `spring-social.xml` file:

```
<bean id="textEncryptor" class="org.springframework.
  security.crypto.encrypt.Encryptors"
    factory-method="noOpText" />
<bean id="usersConnectionRepository" class="org.
  springframework.social.connect.jdbc.
    JdbcUsersConnectionRepository">
  <constructor-arg ref="mydataSource" />
  <constructor-arg ref="connectionFactoryLocator" />
  <constructor-arg ref="textEncryptor" />
</bean>
<bean id="connectionRepository" factory-
  method="createConnectionRepository"
    factory-bean="usersConnectionRepository"
      scope="request">
    <constructor-arg
      value="#{request.userPrincipal.name}" />
    <aop:scoped-proxy proxy-target-class="false"/>
</bean>
```

4. Configure the `ConnectController` class in the `spring-social` file. The `ConnectController` class plays an important role in connecting to the provider. It is mapped with the (`/connect`) URL. To make best use of the `ConnectController` class, create separate folders for Facebook and Twitter.

```
<bean class="org.springframework.
  social.connect.web.ConnectController"
  p:applicationUrl="${application.url}"/>
```

5. Run a SQL command in your derby database.

```
create table UserConnection (userId varchar(255) not null,
  providerId varchar(255) not null,
  providerUserId varchar(255),
  rank int not null,
  displayName varchar(255),
  profileUrl varchar(512),
  imageUrl varchar(512),
  accessToken varchar(255) not null,
  secret varchar(255),
  refreshToken varchar(255),
  expireTime bigint,
  primary key (userId, providerId, providerUserId));

create unique index UserConnectionRank on
  UserConnection(userId, providerId, rank);
```

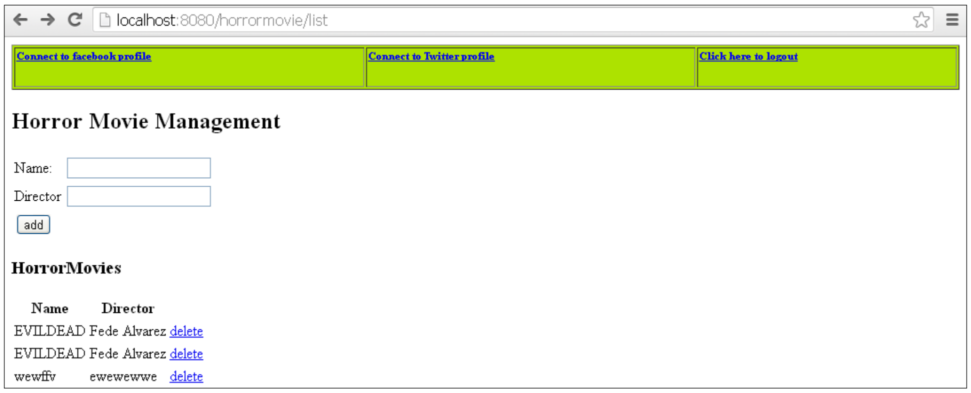
How it works...

Spring Social uses the `UserConnection` table to store the networking site provider information along with the user information. Spring Social uses Spring Security along with the appID and secret key to authenticate the user.

Access the URL: `http://localhost:8080/horrormovie/list`

You will be redirected to `http://localhost:8080/horrormovie/login;jsessionid=581813e14c1752d2260521830d3d`.

Log in with the username and password. You will be connected to the `horromovie` database, as shown in the following screenshot:

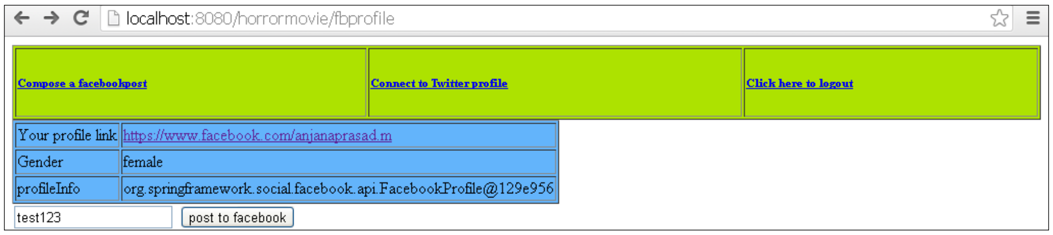

localhost:8080/horrormovie/list
Connect to facebook profile
Connect to Twitter profile
Click here to logout
Name:
Director
add

Horror Movie Management

HorrorMovies

Name	Director	
EVILDEAD	Fede Alvarez	delete
EVILDEAD	Fede Alvarez	delete
wewffv	ewewewwe	delete

Click on the **Connect to Facebook profile** link, and the user will be redirected to the following web page:



Your profile link	https://www.facebook.com/anjanaprasad.m
Gender	female
profileInfo	org.springframework.social.facebook.api.FacebookProfile@129e956

The page displays the following fields:

- Profile link
- Gender
- Profile info
- Textbox to post messages to Facebook

You can post messages from this application and then open the Facebook profile to see the posted messages. The message will be posted in the name of the Facebook app that you have created.

See also

- The *Spring Security with Spring Social to access Twitter* recipe
- The *Spring Security with multiple authentication providers* recipe
- The *Spring Security with OAuth* recipe

Spring Security with Spring Social to access Twitter

We just now connected with Facebook and were able to post messages. In this section, we will see how to connect to Twitter. Let's use the same application that we used for Facebook with derby database and hibernate the authentication service.

Getting ready

You will need to perform the following tasks to access Twitter with Spring Social using Spring Security:

- Create a Twitter app: `https://dev.twitter.com/apps/new`
- Add the consumer ID and key to the `.properties` file.
- Update the controller to handle Twitter requests
- Create JSP files to access and display Twitter objects

How to do it...

The following is the step for implementing Twitter sign-in options in the application demonstrated in the previous section:

1. Update the controller named `HorrorMovie Controller` to handle Twitter requests.

```
< @RequestMapping(value = "/posttofb", method =
  RequestMethod.GET)
  public String posttofb(String message, ModelMap model) {
    try {
      Facebook facebook = connectionRepository.
        getPrimaryConnection(Facebook.class).getApi();
      facebook.feedOperations().updateStatus(message);
      model.addAttribute("status", "success");
```

```
        model.addAttribute("message", message);
        return "redirect:/list";
      } catch (Exception e) {
        model.addAttribute("status", "failure");
        return "/facebook/fbconnect";
      }
    }
    @RequestMapping(value = "/twprofile", method =
      RequestMethod.GET)
    public String gettwProfile(ModelMap model) {
      try{
        Twitter twitter = connectionRepository.
          getPrimaryConnection(Twitter.class).getApi();
        model.addAttribute("twprofileLink",
          twitter.userOperations().
            getUserProfile().getUrl());
        model.addAttribute("twprofileInfo",
          twitter.userOperations().getUserProfile());
        model.addAttribute("twfollowers",
          twitter.friendOperations().getFollowers());
        model.addAttribute("twfriends",
          twitter.friendOperations().getFriends());
        return "/twitter/twitterprofile";
      } catch (Exception e) {
        model.addAttribute("status", "failure");
        return "/twitter/twconnect";
      }
    }
    @RequestMapping(value = "/posttotw", method =
      RequestMethod.GET)
    public String posttotw(String message, ModelMap model) {
      try {
        Twitter twitter = connectionRepository.
          getPrimaryConnection(Twitter.class).getApi();
        twitter.timelineOperations().updateStatus(message);
        model.addAttribute("status", "success");
        model.addAttribute("message", message);
        return "redirect:/list";
      } catch (Exception e) {
        model.addAttribute("status", "failure");
        return "/twitter/twconnect";
      }
    }
```

How it works...

Access the URL: `http://localhost:8080/horrormovie/list.`

Spring Social will check if the user is already connected to Twitter. If the user is already connected, the user is redirected to Twitter page and will be asked to log in. Spring Social uses the Twitter consumer ID and key with Spring Security to log in to Twitter account from the application. This is the basis on which most of the mobile phone applications allow us to log in to Twitter and Facebook.

See also

- The *Spring Security with Spring Social to access Facebook* recipe
- The *Spring Security with multiple authentication providers* recipe
- The *Spring Security with OAuth* recipe

Spring Security with multiple authentication providers

In this section, we will demonstrate multiple authentications with Spring Social and database. In our previous recipe, we used the `ConnectController` class which handled the Facebook and Twitter connections. Access to Facebook and Twitter was restricted to the Spring Security URL, that is, only `ROLE_EDITOR` had access to Facebook and Twitter. The user had to be authenticated and authorized to use Facebook and Twitter. In this example, we shall allow the users to log in to the application with Facebook and Twitter or normal user ID.

Craig Walls is a lead on Spring Social API and has provided various samples on gitHub, which uses Spring Social with Spring Security. This is one of the samples provided by *Craig Walls*.

Getting ready

You will need to perform the following tasks:

1. Create a common page to sign in as a user or sign up using Twitter, Facebook, or linked-in profiles.
2. Spring Social API has a `ConnectController` class, which automatically looks out for a connect folder. Create a connect folder, add `${provider}Connect.jsp` and `${provider} Connected.jsp. $provider{twitter,facebook,linked-in,github}`

3. Spring Social internally uses `spring-security`. It has its own user details class – `SocialUserDetailsService`. Create a class that implements `SocialUserDetailsService` and override the method.
4. Configure the social authentication provider in the `social-security.xml` file. The `SocialAuthenticationProvider` class accepts two inputs such as:
    - `usersConnectionRepository`
    - `socialuserDetailsService` – the class that implements `SocialUserDetailsService`
5. Configure the multiple authentication providers in `security-xml`:
    - `SocialAuthenticationProvider`
    - `UserDetailsService`, the jdbc interface giving user details service
6. Configuring the filter, `SocialAuthenticationFilter`, for handling the provider sign-in flow within the Spring Security filter chain. It should be added into the chain at or before the `PRE_AUTH_FILTER` location.

How to do it...

The following are the steps to implement authentication with multiple providers using Spring Security:

1. Use the `SocialUsersDetailServiceImpl` class to implement the `SocialUserDetailsService` class:

```
public class SocialUsersDetailServiceImpl implements
SocialUserDetailsService {
  private UserDetailsService userDetailsService;
  public SocialUsersDetailServiceImpl(UserDetailsService
    userDetailsService) {
    this.userDetailsService = userDetailsService;
  }
  @Override
    public SocialUserDetails loadUserByUserId(String
      userId) throws UsernameNotFoundException,
        DataAccessException {
    UserDetails userDetails = userDetailsService.
      loadUserByUsername(userId);
    return new SocialUser(userDetails.getUsername(),
      userDetails.getPassword(),
        userDetails.getAuthorities());
  }}
```

2. Configure the class, `SocialAuthenticationProvider` in the `Security.xml` file:

```
<bean id="socialAuthenticationProvider"
  class="org.springframework.social.
  security.SocialAuthenticationProvider"
  c:_0-ref="usersConnectionRepository"
  c:_1-ref="socialUsersDetailService" />
<bean id="socialUsersDetailService"
  class="org.springframework.social.
  showcase.security.SocialUsersDetailServiceImpl"
  c:_-ref="userDetailsService" />
```

3. Configure multiple authentication providers in the `Security.xml` file:

```
<authentication-manager alias="authenticationManager">
  <authentication-provider user-service-
    ref="userDetailsService">
    <password-encoder ref="passwordEncoder" />
  </authentication-provider>
  <!-- Spring Social Security authentication provider -->
  <authentication-provider
    ref="socialAuthenticationProvider" />
</authentication-manager>
<jdbc-user-service id="userDetailsService"
  data-source-ref="dataSource"
    users-by-username-query="select username, password,
      true from Account where username = ?"
    authorities-by-username-query="select username,
      'ROLE_USER' from Account where username = ?"/>
<beans:bean id="textEncryptor"
  class="org.springframework.security.
    crypto.encrypt.Encryptors"
  factory-method="noOpText" />
<beans:bean id="passwordEncoder"
  class="org.springframework.security.
    crypto.password.NoOpPasswordEncoder"
  factory-method="getInstance" />
```

4. Configure the `SocialAuthenticationFilter` class in the `Social-security.xml` file:

```
<bean id="socialAuthenticationFilter" class="org.springframework.
social.security.SocialAuthenticationFilter"
    c:_0-ref="authenticationManager"
    c:_1-ref="userIdSource"
    c:_2-ref="usersConnectionRepository"
    c:_3-ref="connectionFactoryLocator"
    p:signupUrl="/spring-social-showcase/signup"
    p:rememberMeServices-ref="org.springframework.
      security.web.authentication.rememberme.
        TokenBasedRememberMeServices#0" />
```

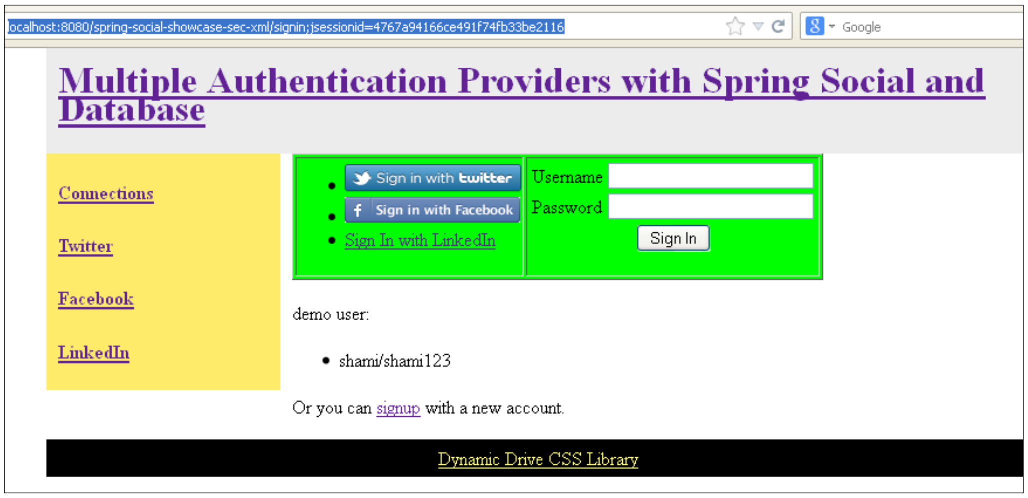
5. Configure the `SocialAuthenticationFilter` class with Security in the `security.xml` file:

```
<http use-expressions="true">
    <!-- Authentication policy -->
    <form-login login-page="/signin" login-processing-
      url="/signin/authenticate" authentication-failure-
        url="/signin?param.error=bad_credentials" />
    <logout logout-url="/signout" delete-
      cookies="JSESSIONID" />
    <intercept-url pattern="/favicon.ico"
      access="permitAll" />
    <intercept-url pattern="/resources/**"
      access="permitAll" />
    <intercept-url pattern="/auth/**" access="permitAll" />
    <intercept-url pattern="/signin/**" access="permitAll"
      />
    <intercept-url pattern="/signup/**" access="permitAll"
      />
    <intercept-url pattern="/disconnect/facebook"
      access="permitAll" />
    <intercept-url pattern="/**" access="isAuthenticated()"
      />
    <remember-me />
    <!--  Spring Social Security authentication filter -->
    <custom-filter ref="socialAuthenticationFilter"
      before="PRE_AUTH_FILTER" />
  </http>
```

How it works...

In this implementation, the user can log in to the application either by using some credentials in the database or by using the social networking site ID and password. The `SocialAuthenticationProvider` class along with `SocialAuthenticationFilter` handles the authentication to social networking sites and `UserDetailsService` manages the database authentication. These two classes are configured in the `security.xml` file.

The following is the workflow of the implementation. Access the URL: `http://localhost:8080/spring-social-showcase-sec-xml/signin`. You will be directed to the following web page:



localhost:8080/spring-social-showcase-sec-xml/signin;jsessionid=4767a94166ce491f74fb33be2116

Multiple Authentication Providers with Spring Social and Database

Connections

Twitter

Facebook

LinkedIn

- Sign in with twitter
- Sign in with Facebook
- Sign In with LinkedIn

Username

Password

Sign In

demo user:

- shami/shami123

Or you can signup with a new account.

Dynamic Drive CSS Library

See also

- The *Spring Security with Spring Social to access Facebook* recipe
- The *Spring Security with Spring Social to access Twitter* recipe
- The *Spring Security with OAuth* recipe

Spring Security with OAuth

OAuth authentication has been used widely by many applications. OAuth is a protocol through which applications can share the data in a secured manner. For example, consider a simple scenario in which one photo-sharing application allows the user to upload photos and the second application integrates with all photo-storing applications such as Flickr, Dropbox, and similar sites. When a second application wants to access the first application to print the photos that are uploaded, it uses the OAuth authentication to get confirmation from the user to access the photos. Ideally, it does exchange some security tokens between the applications, that is, the private key of the consumer and the public key of the server should match for the authorization to be successful.

The first application acts likes a server and the second application acts like a consumer who wants to access certain authenticated data.

Some of the parameters that are exchanged between the client and server applications are as follows:

- `Oauth_consumerKey`: We can generate an OAuth request using the application
- `Oauth_token`: This token gets encoded and is passed to the URL
- `Oauth_timestamp`: This parameter is added to each request with nonce to prevent the serviced request being used again called as replay attacks
- `Oauth_version`: This defines the version of OAuth protocol being used
- `Oauth_signaturemethod`: This parameter is used to sign and verify the request
- `Oauth_nonce`: This parameter is used with timestamp
- `Size`: This parameter defines the size of the file
- `File`: This parameter defines the name of the file

Let's develop a sample client-server application to demonstrate OAuth with Spring Security:

- The server application: Let's think of a movie story application. The application accepts stories from the users. The users can upload their stories to the application. This application behaves like a service provider. A user writes some horror stories and submits them to movie making companies.
- The client application: Think of another movie making company application that accepts stories to be uploaded from the server application. The movie making company has to get authorization from the movie story application to download the stories.

Getting ready

Perform the following tasks to integrate Spring Security with OAuth:

- Create a server application with the `ConfirmAccessController` and `StoryController` classes
- Create a client-side application to access server data
- Add `spring-security-oauth` dependency to the `pom.xml` file

How to do it...

The following are the steps to integrate `spring-security` with `spring-oauth`:

1. Create the `CreateStoryController` class for stories.

```
@Controller
public class CreateStoryController {
  @RequestMapping(value="/stories",
    method=RequestMethod.GET)
  @ResponseBody
  public String loadStory() {
    StringBuilder horrorStory = new StringBuilder();
    horrorStory.append("Story Name -- Conjuring:
      Author").append(getAuthorName()).append(" Story:She
      and that girl and occasionally another girl went out
      several times a week, and the rest of the time Connie
      spent around the house—it was summer vacation—getting
      in her mother's way and thinking, dreaming about the
      boys she met. But all the boys fell back and
      dissolved into a single face that was not even a face
      but an idea, a feeling, mixed up with the urgent
      insistent pounding of the music and the humid night
      air of July. Connie's mother kept dragging her back
      to the daylight by finding things for her to do or
      saying suddenly, 'What's this about the Pettinger
      girl?");
    return horrorStory.toString();
  }
  private String getAuthorName() {
    Object principal = SecurityContextHolder.
      getContext().getAuthentication().getPrincipal();
    String author;
    if (principal instanceof UserDetails) {
      author = ((UserDetails)principal).getUsername();
    } else {
      author = principal.toString();
    }
    return author;
  }
}
```

2. Create the `ConfirmAccessController` class.

```
@Controller
public class ConfirmAccessController {
  private ClientAuthenticationCache
    clientauthenticationCache = new
      DefaultClientAuthenticationCache();
  private ClientDetailsService clientDetailsService;
  public ClientAuthenticationCache getAuthenticationCache() {
    return clientauthenticationCache;
  }
  @RequestMapping(value="/oauth/confirm_access")
  public ModelAndView accessConfirmation(HttpServletRequest
    request, HttpServletResponse response) {
```

```
    ClientAuthenticationToken clientAuthtoken =
getAuthenticationCache().getAuthentication(request, response);
    if (clientAuthtoken == null) {
      throw new IllegalStateException("We did not recive
        any client authentication to authorize");
    }
    ClientDetails client = getClientDetailsService().
      loadClientByClientId(clientAuthtoken.getClientId());
    TreeMap<String, Object> model = new TreeMap<String,
      Object>();
    model.put("auth_request", clientAuthtoken);
    model.put("client", client);
    return new ModelAndView("access_confirmation", model);
  }
  public ClientDetailsService getClientDetailsService() {
    return clientDetailsService;
  }
  @Autowired
  public void setClientDetailsService(
      ClientDetailsService clientDetailsService) {
    this.clientDetailsService = clientDetailsService;
  }
}
```

3. Configure Spring Security with OAuth.

```
<!-- Root Context: defines shared resources visible to all other
web components -->
  <http auto-config='true'>
  <intercept-url pattern="/**" access="ROLE_EDITOR" />
  </http>
  <authentication-manager>
    <authentication-provider>
      <user-service>
        <user name="anju" password="anju123"
          authorities="ROLE_EDITOR" />
      </user-service>
    </authentication-provider>
  </authentication-manager>
  <!--apply the oauth client context -->
  <oauth:client token-services-ref="oauth2TokenServices" />
  <beans:bean id="oauth2TokenServices"
  class="org.springframework.security.oauth2.
    consumer.token.InMemoryOAuth2ClientTokenServices" />
  <oauth:resource id="story" type="authorization_code"
```

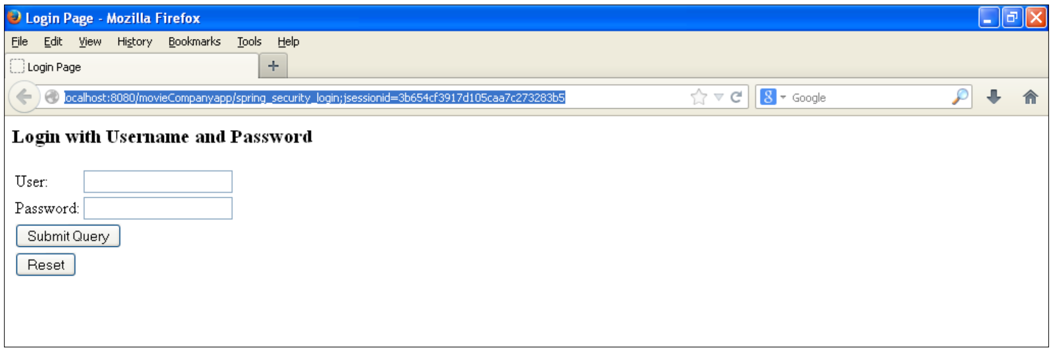
```
            clientId="movie" accessTokenUri="
              http://localhost:8080/story/oauth/authorize"
            userAuthorizationUri="
              http://localhost:8080/story/oauth/user/authorize" />
            <beans:bean id="storyService"
              class="org.springsource.oauth.StoryServiceImpl">
            <beans:property name="storyURL" value="
              http://localhost:8080/story/stories"></beans:property>
            <beans:property name="storyRestTemplate">
              <beans:bean class="org.springframework.
                security.oauth2.consumer.OAuth2RestTemplate">
              <beans:constructor-arg ref="story"/>
              </beans:bean>
            </beans:property>
            <beans:property name="tokenServices"
              ref="oauth2TokenServices"></beans:property>
          </beans:bean>
        </beans:beans>
```

How it works...

You have to first access the `movieCompanyapp` site. The `movieCompanyapp` in turn gets stories from the `storyapp` site. So we have to deploy both the applications in the same port.

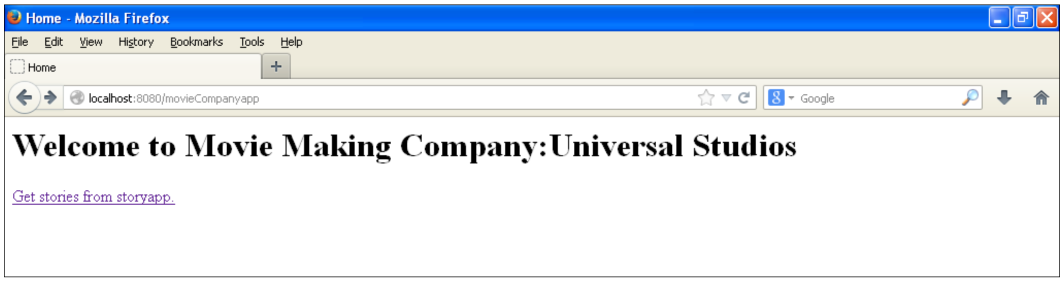
We created two users (`raghu/raghu123` for `movieCompanyapp` and `anju/anju123` for `storyapp`). When the user clicks on the **Get stories from storyapp** link, the user will be asked to log in again. This time the user has to enter their credentials, and then they will get to read the story.

Access the URL: `http://localhost:8080/movieCompanyapp/spring_security_login;jsessionid=3b654cf3917d105caa7c273283b5`


Login Page - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Login Page
localhost:8080/movieCompanyapp/spring_security_login;jsessionid=3b654cf3917d105caa7c273283b5
Google

Login with Username and Password

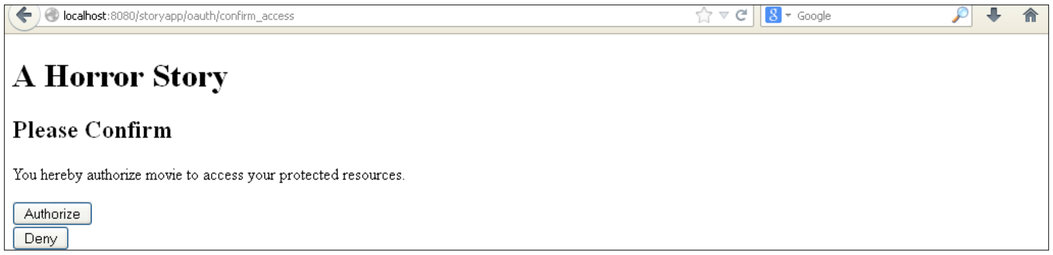
User:
Password:
Submit Query
Reset


Home - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Home
localhost:8080/movieCompanyapp
Google

Welcome to Movie Making Company:Universal Studios

Get stories from storyapp.

You will be asked to authorize in order to show the story to the company. This happens in the `storyapp` application.

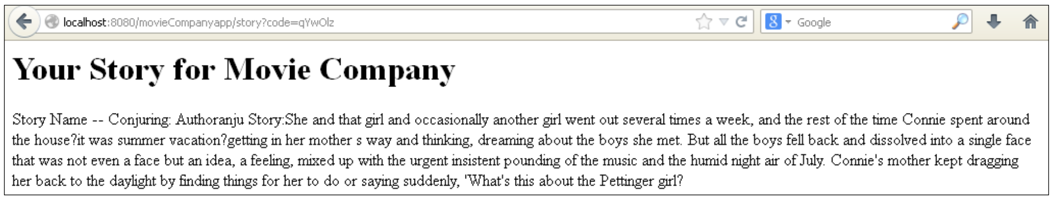


A Horror Story

Please Confirm

You hereby authorize movie to access your protected resources.

After authorizing, the story will be available in `movieCompanyapp`.



Your Story for Movie Company

Story Name -- Conjuring: Authoranju Story:She and that girl and occasionally another girl went out several times a week, and the rest of the time Connie spent around the house?it was summer vacation?getting in her mother s way and thinking, dreaming about the boys she met. But all the boys fell back and dissolved into a single face that was not even a face but an idea, a feeling, mixed up with the urgent insistent pounding of the music and the humid night air of July. Connie's mother kept dragging her back to the daylight by finding things for her to do or saying suddenly, 'What's this about the Pettinger girl?

See also

- The *Spring Security with Spring Social to access Facebook* recipe
- The *Spring Security with Spring Social to access Twitter* recipe
- The *Spring Security with multiple authentication providers* recipe

10
Spring Security with Spring Web Services

In this chapter we will cover:

- Applying Spring Security on RESTful web services
- Spring Security for Spring RESTful web service using the cURL tool
- Integrating Spring Security with Apache CXF RESTful service
- Integrating Spring Security with Apache CXF SOAP based web service
- Integrating Spring Security with Apache Camel

Introduction

SOAP (**Simple Object Access Protocol**) is an XML-based web service. It is used to transfer the request and response messages between web services.

REST (**Representational State Transfer**) is a means of sending data as XML, text, or JSON files over the HTTP protocol.

In this section we will apply Spring Security to web services. The normal flow of any web service is that the service WSDL or URL will be exposed to the end user. On application of Spring Security, the end users can be authenticated and authorized to use the services.

Applying Spring Security on RESTful web services

REST has become another means of providing web services.

The data can be shared across applications using XML, text, or in JSON format. REST web services are considered as lightweight web services.

Let's apply Spring Security for accessing the REST web service, so that only authorized users can access the RESTful web service. Since the RESTful web service is accessed with a URL and uses HTTP protocol we can easily apply the URL level security. This example demonstrates form-based authentication. But the user can also use BASIC and Digest Authentication.

The following are the annotations used with Spring to generate RESTful web services:

- `@PathVariable`
- `@RequestMapping`
- `@RequestMethod`

Getting ready

- Create a RESTful web service using Spring web service API
- Add Spring Security dependencies
- Add Spring filter configuration to the `Web.xml` file
- Configure the `application-security.xml` file
- Create an `AccessController` class to handle the login and logout actions
- Configure Spring Security in the application to authenticate the users

How to do it...

The following are the steps for integrating RESTful web services with Spring Security:

1. Let's create a `BookController` class with `@PathVariable`, as shown in the following code snippet:

```
package org.springframework.rest;
@Controller
public class BookController {
  private static final Map<Integer, Books> books = new
    HashMap<Integer, Books>();
  static {
    try {
      books.put(1, new Books(1, "Someone Like You",
        "Penguin", "Durjoy Datta-Nikita Singh"));
      books.put(2, new Books(2, "The Secret Wish List",
        "Westland", " Preeti Shenoy"));
      books.put(3, new Books(3, "Love Stories That Touched
        My Heart ", "Metro Reads", " Preeti Shenoy"));
    } catch (Exception e) {
      e.printStackTrace();
    }
  }
  @RequestMapping(value = "/books/{book_id}", method =
    RequestMethod.GET)
  @ResponseBody
  public Books findCharacter(@PathVariable int book_id) {
    return books.get(book_id);
  }
}
```

2. Create a `Books` POJO class with the `@JsonAutoDetect` annotation, as shown in the following code snippet:

```
@JsonAutoDetect
public class Books {
    private int book_id;
    private String book_name;
    private String book_publication;
    private String book_author;
    public Books(int book_id, String book_name, String
      book_publication, String book_author) {
      this.book_id = book_id;
      this.book_name = book_name;
      this.book_publication = book_publication;
      this.book_author = book_author;
    }
    public String getBook_author() {
      return book_author;
    }
    public void setBook_author(String book_author) {
      this.book_author = book_author;
    }
    public int getBook_id() {
      return book_id;
    }
    public void setBook_id(int book_id) {
      this.book_id = book_id;
    }
```

```
        public String getBook_name() {
          return book_name;
        }
        public void setBook_name(String book_name) {
          this.book_name = book_name;
        }
        public String getBook_publication() {
          return book_publication;
        }
        public void setBook_publication
          (String book_publication) {
          this.book_publication = book_publication;
        }
    }
```

3. Create an `AccessController` class to handle login and logout actions:

```
package org.springframework.booksservice;
@Controller
public class AccessController {
  @RequestMapping(value = "/", method =
    RequestMethod.GET)
  public String defaultPage(ModelMap map) {
    return "redirect:/login";
  }
  @RequestMapping(value = "/login", method =
    RequestMethod.GET)
  public String login(ModelMap model) {
    return "login";
  }
  @RequestMapping(value = "/accessdenied", method =
    RequestMethod.GET)
  public String loginerror(ModelMap model) {
    model.addAttribute("error", "true");
    return "denied";
  }
  @RequestMapping(value = "/logout", method =
    RequestMethod.GET)
  public String logout(ModelMap model) {
    return "logout";
  }
}
```

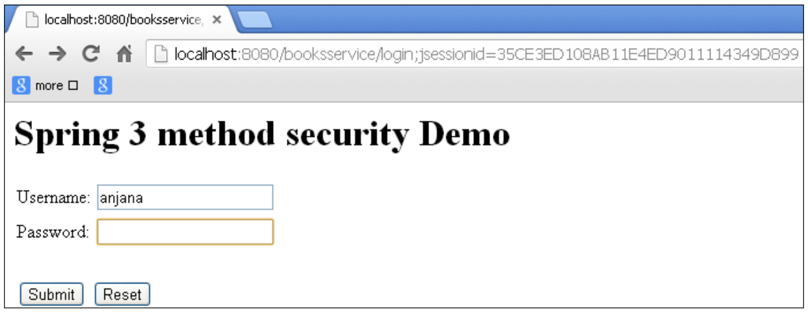
4. Configure the `Application-security.xml` file, as shown in the following code snippet:

```
<http auto-config="false"  use-expressions="true">
  <intercept-url pattern="/login" access="permitAll" />
  <intercept-url pattern="/logout" access="permitAll" />
  <intercept-url pattern="/accessdenied"
    access="permitAll" />
  <intercept-url pattern="/**"
    access="hasRole('ROLE_EDITOR')" />
  <form-login login-page="/login" default-target-
    url="/books" authentication-
    failure-url="/accessdenied" />
  <logout logout-success-url="/logout" />
</http>
<authentication-manager>
  <authentication-provider>
  <user-service>
    <user name="anjana" password="packt123"
      authorities="ROLE_EDITOR" />
  </user-service>
</authentication-provider>
</authentication-manager>
```

How it works...

Access the URL: `http://localhost:8080/booksservice/books/1`. This is the REST-based URL, which is restricted from access using Spring Security. When the user calls the REST-based web service URL, Spring Security redirects the user to the login page. On successful authentication, the user is redirected to the authorized REST-based web service page.

The following is the workflow of the REST-based application with Spring Security. You will be redirected to the login page, as shown in the following screenshot:

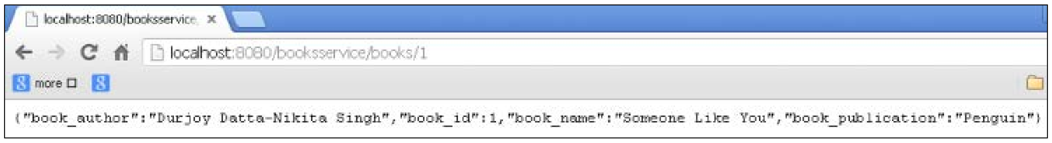

localhost:8080/booksservice,
localhost:8080/booksservice/login;jsessionid=35CE3ED108AB11E4ED9011114349D899
more

Spring 3 method security Demo

Username: anjana

Password:

On authentication and authorization, you will be able to access the RESTful web service, as shown in the following screenshot:


localhost:8080/booksservice
localhost:8080/booksservice/books/1
more

```
{"book_author":"Durjoy Datta-Nikita Singh","book_id":1,"book_name":"Someone Like You","book_publication":"Penguin"}
```

See also

- The *Integrating Spring Security with Apache CXF RESTful web service* recipe
- The *Integrating Spring Security with Apache CXF SOAP based web service* recipe
- The *Integrating Spring Security with Apache Camel* recipe

Spring Security for Spring RESTful web service using the cURL tool

In this example we are using the Spring Security API classes and interfaces explicitly. We will authenticate the RESTful web service using the `curl` command. With the cURL tool, you can transfer data with the URL. It can be used to test the authentication. It's the same book service example which has some explicit Spring Security related API classes such as `AuthenticationEntryPoint` and `SimpleURLAuthenticationSuccessHandler`. Here, the goal is to demonstrate their internal usage in Spring Security.

Getting ready

- Implement the `AuthenticationEntryPoint` interface and configure in the XML file
- Extend `SimpleUrlAuthenticationSuccessHandler` and configure in the XML file
- Configure the `Application-security.xml` file
- Add security related filters to the `Web.xml` file
- Download the cURL tool for your operating system

How to do it...

The following are the steps for applying the Spring Security authentication and authorization mechanism by using `AuthenticationEntryPoint` interface and `SimpleURLAuthenticationSuccessHandler` class:

1. The `AuthenticationEntryPoint` class is an entry class for authentication and it implements the `AuthenticationEntryPointImpl` class.

    ```
    public final class AuthenticationEntryPointImpl implements
      AuthenticationEntryPoint {
      @Override
      public void commence(final HttpServletRequest request,
        final HttpServletResponse response, final
          AuthenticationException authException) throws
            IOException {
        response.sendError(HttpServletResponse.SC_UNAUTHORIZED,
          "Unauthorized");
      }
    }
    ```

2. Extend the `SimpleURLAuthenticationSuccessHandler` class, as shown in the following code snippet:

    ```
      public class MySimpleUrlAuthenticationSuccessHandler
        extends SimpleUrlAuthenticationSuccessHandler {
        private RequestCache requestCache = new
          HttpSessionRequestCache();
        @Override
        public void onAuthenticationSuccess(final
          HttpServletRequest request, final HttpServletResponse
          response, final Authentication authentication) throws
          ServletException, IOException {
          final SavedRequest savedRequest =
            requestCache.getRequest(request, response);
          if (savedRequest == null) {
            clearAuthenticationAttributes(request);
            return;
          }
          final String targetUrlParameter =
            getTargetUrlParameter();
          if (isAlwaysUseDefaultTargetUrl() ||
            (targetUrlParameter != null &&
            StringUtils.hasText(request.getParameter
            (targetUrlParameter)))) {
            requestCache.removeRequest(request, response);
            clearAuthenticationAttributes(request);
    ```

```
            return;
          }
          clearAuthenticationAttributes(request);
        }
        public void setRequestCache(final RequestCache
          requestCache) {
          this.requestCache = requestCache;
        }
      }
```

3. Configure the `Application-security.xml` file.

```
  <http entry-point-ref="authenticationEntryPoint">
    <intercept-url pattern="/**" access="ROLE_EDITOR"/>
    <form-login authentication-success-handler-
ref="mySuccessHandler" />
    <logout />
  </http>
  <beans:bean id="mySuccessHandler"
    class="org.springframework.booksservice.
      MySimpleUrlAuthenticationSuccessHandler"/>
  <beans:bean id="authenticationEntryPoint"
    class="org.springframework.booksservice.
AuthenticationEntryPointImpl"/>
  <authentication-manager>
    <authentication-provider>
      <user-service>
        <user name="anjana" password="packt123" authorities="ROLE_
EDITOR" />
      </user-service>
    </authentication-provider>
  </authentication-manager>
  </beans:beans>
```

How it works...

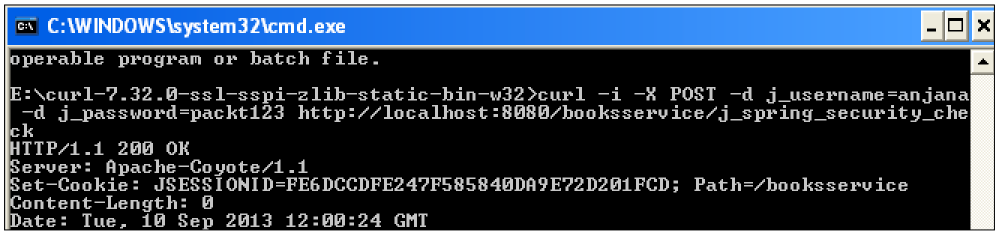
Now access the URL: `http://localhost:8080/booksservice/books/1`

You will see a page which says that you are not authorized to view the pages.

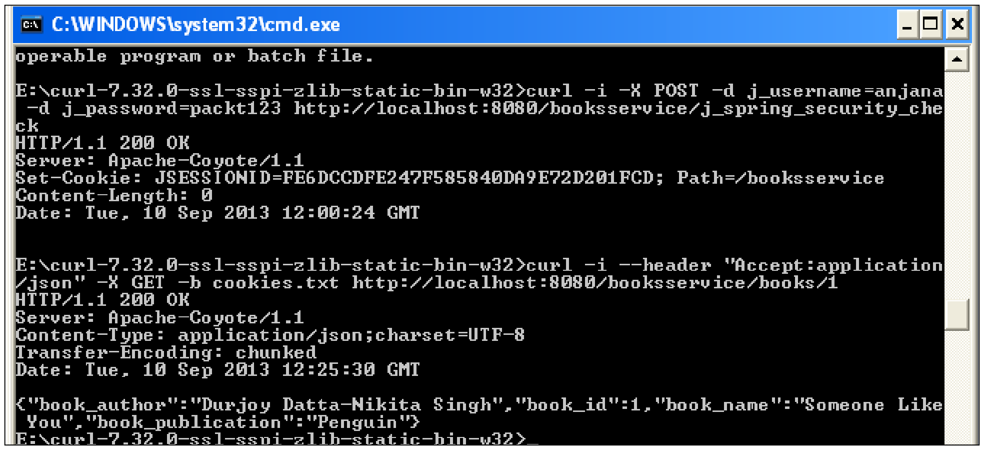
Let's use the cURL tool which gives us a cookie. The `200 OK` message implies that we are authenticated.

```
Command: curl -i -X POST -d j_username=anjana -d j_password=packt123
http://localhost:8080/booksservice/j_spring_security_check

curl -i --header "Accept:application/json" -X GET -b cookies.txt http://
localhost:8080/booksservice/books/1
```

The cookies are stored in a file named `mycookies.txt`.



```
operable program or batch file.

E:\curl-7.32.0-ssl-sspi-zlib-static-bin-w32>curl -i -X POST -d j_username=anjana
 -d j_password=packt123 http://localhost:8080/booksservice/j_spring_security_che
ck
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Set-Cookie: JSESSIONID=FE6DCCDFE247F585840DA9E72D201FCD; Path=/booksservice
Content-Length: 0
Date: Tue, 10 Sep 2013 12:00:24 GMT
```



```
operable program or batch file.

E:\curl-7.32.0-ssl-sspi-zlib-static-bin-w32>curl -i -X POST -d j_username=anjana
 -d j_password=packt123 http://localhost:8080/booksservice/j_spring_security_che
ck
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Set-Cookie: JSESSIONID=FE6DCCDFE247F585840DA9E72D201FCD; Path=/booksservice
Content-Length: 0
Date: Tue, 10 Sep 2013 12:00:24 GMT


E:\curl-7.32.0-ssl-sspi-zlib-static-bin-w32>curl -i --header "Accept:application
/json" -X GET -b cookies.txt http://localhost:8080/booksservice/books/1
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Content-Type: application/json;charset=UTF-8
Transfer-Encoding: chunked
Date: Tue, 10 Sep 2013 12:25:30 GMT

{"book_author":"Durjoy Datta-Nikita Singh","book_id":1,"book_name":"Someone Like
 You","book_publication":"Penguin"}
E:\curl-7.32.0-ssl-sspi-zlib-static-bin-w32>_
```

See also

- The *Integrating Spring Security with Apache CXF RESTful web service* recipe
- The *Integrating Spring Security with Apache CXF SOAP based web service* recipe
- The *Integrating Spring Security with Apache Camel* recipe

Integrating Spring Security with Apache CXF RESTful web service

In this section let us create an Apache CXF RESTful web service. It is an open source web service framework. Let's use BASIC authentication for this demonstration.

CXF supports contract-first and contract-last web services. It also supports RESTful web services.

Let us integrate Spring Security with CXF and authorize a RESTful web service.

Getting ready

- Add the cxf dependency to the pom file
- Set up the RESTful web service with CXF
- Configure the spring-security.xml file

How to do it...

The following are the steps to integrate Spring Security with Apache CXF RESTful web services:

1. Configure the Book POJO class.

```
@XmlRootElement(name = "book")
public class Book {
    private int book_id;
    private String book_name;
    private String book_publication;
    private String book_author;
    public Book(int book_id, String book_name, String
      book_publication, String book_author) {
      this.book_id = book_id;
      this.book_name = book_name;
      this.book_publication = book_publication;
      this.book_author = book_author;
    }
    public String getBook_author() {
      return book_author;
    }
    public void setBook_author(String book_author) {
      this.book_author = book_author;
    }
    public int getBook_id() {
      return book_id;
    }
    public void setBook_id(int book_id) {
      this.book_id = book_id;
    }
    public String getBook_name() {
      return book_name;
    }
    public void setBook_name(String book_name) {
      this.book_name = book_name;
    }
    public String getBook_publication() {
      return book_publication;
    }
    public void setBook_publication(String
      book_publication) {
      this.book_publication = book_publication;
    }
}
```

2. Configure the `BookCollection` POJO class.

```
  @XmlType(name = "BookCollection")
  @XmlRootElement
  public class BookCollection {
    private Collection books;
    public BookCollection() {
    }
    public BookCollection(Collection books) {
      this.books = books;
    }
    @XmlElement(name="books")
    @XmlElementWrapper(name="books")
    public Collection getUsers() {
      return books;
    }

  }
```

3. Configure the `BookService` interface.

```
public interface BookService {
    BookCollection getBooks();
    Book getBook(Integer id);
    Response add(Book book);
}
```

4. Configure the `BookServiceImpl` class.

```
  @Path ("/services/")
  public class BookServiceImpl implements BookService {
    private static final Map<Integer, Book> books = new
      HashMap<Integer, Book>();
    private static int index = 4;
    static {
      try {
        books.put(1, new Book(1, "Someone Like You",
        "Penguin", "Durjoy Datta-Nikita Singh"));
```

```
                books.put(2, new Book(2, "The Secret Wish List",
                "Westland", " Preeti Shenoy"));
                books.put(3, new Book(3, "Love Stories That
                Touched My Heart ", "Metro Reads", " Preeti
                Shenoy"));
              } catch (Exception e) {
                e.printStackTrace();
              }
          }
          @Override
          @POST
          @Path("/book")
          @Consumes("application/json")
          public Response add(Book book) {
            System.out.println("Adding :" + book.getBook_name());
            book.setBook_id(index++);
            return Response.status(Response.Status.OK).build();
          }
          @Override
          @GET
          @Path("/book/{book_id}")
          @Produces("application/json")
          public Book getBook(@PathParam("book_id") Integer
            book_id) {
            return books.get(book_id);
          }
          @Override
          @GET
          @Path("/books")
          @Produces("application/json")
          public BookCollection getBooks() {
            return new BookCollection(books.values());
          }
      }
```

5. Configuring the `application-security.xml` file:

```
<sec:global-method-security pre-post-
  annotations="enabled" />
<sec:http auto-config="true"  use-expressions="true">
  <sec:intercept-url pattern="/**"
    access="hasRole('ROLE_EDITOR')"/>
  <sec:http-basic></sec:http-basic>
  <sec:logout logout-success-url="/logout" />
</sec:http>
```

```
    <import resource="classpath:META-INF/cxf/cxf.xml" />
    <import resource="classpath:META-INF/cxf/cxf-
      servlet.xml"/>
    <jaxrs:server address="/" id="myService">
      <jaxrs:serviceBeans>
        <ref bean="bookserviceImpl"/>
      </jaxrs:serviceBeans>
      <jaxrs:providers>
        <ref bean="jacksonProvider"/>
      </jaxrs:providers>
    </jaxrs:server>
    <bean id="jacksonProvider"
    class="org.codehaus.jackson.jaxrs.
      JacksonJaxbJsonProvider"/>
    <bean id="bookserviceImpl"
    class="org.springframework.booksservice.
      BookServiceImpl"/>
    <sec:authentication-manager>
      <sec:authentication-provider>
        <sec:user-service>
          <sec:user name="anjana" password="packt123"
            authorities="ROLE_EDITOR" />
        </sec:user-service>
      </sec:authentication-provider>
    </sec:authentication-manager>
  </beans>
```

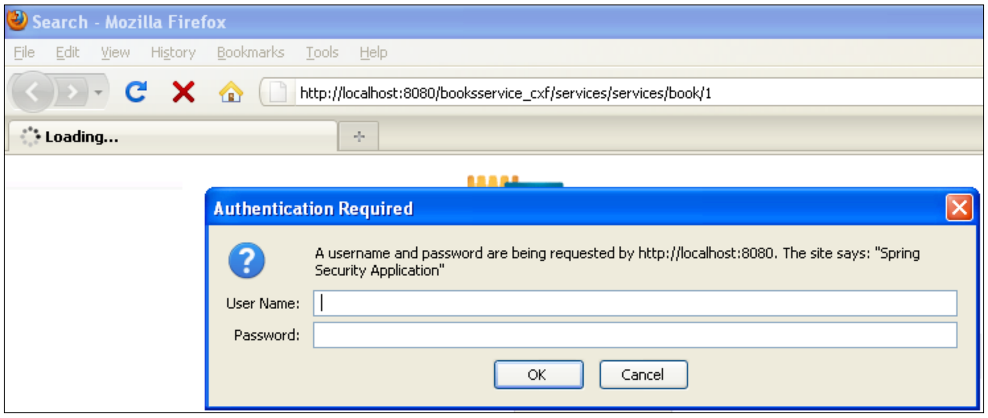
6. Configure the `Web.xml` file.

```
      <!-- The definition of the Root Spring Container shared
        by all Servlets and Filters -->
    <context-param>
      <param-name>contextConfigLocation</param-name>
      <param-value>/WEB-INF/spring/application-
        security.xml</param-value>
    </context-param>
    <!-- Creates the Spring Container shared by all Servlets
      and Filters -->
    <listener>
    <listener-class>org.springframework.web.context.
      ContextLoaderListener</listener-class>
    </listener>
    <!-- Processes application requests -->
    <servlet>
      <servlet-name>cxf</servlet-name>
```

```
        <servlet-class>org.apache.cxf.transport.
          servlet.CXFServlet</servlet-class>
        <load-on-startup>1</load-on-startup>
      </servlet>
      <servlet-mapping>
        <servlet-name>cxf</servlet-name>
        <url-pattern>/services/*</url-pattern>
      </servlet-mapping>
      <!-- Spring child -->
      <!-- <servlet>
      <servlet-name>bookservice_cxf</servlet-name>
        <servlet-class>org.springframework.web.servlet.
          DispatcherServlet</servlet-class>
        <load-on-startup>1</load-on-startup>
      </servlet>
      <servlet-mapping>
        <servlet-name>bookservice_cxf</servlet-name>
        <url-pattern>/bookservice_cxf/*</url-pattern>
      </servlet-mapping>-->
      <filter>
        <filter-name>springSecurityFilterChain</filter-name>
        <filter-class>org.springframework.web.filter.
          DelegatingFilterProxy</filter-class>
      </filter>
      <filter-mapping>
        <filter-name>springSecurityFilterChain</filter-name>
        <url-pattern>/*</url-pattern>
      </filter-mapping>
    </web-app>
```

How it works...

The RESTful service is provided by the CXF framework in this example. Then the application is integrated with Spring Security in order to provide secured authentication and authorization module to RESTful web service. Spring Security filter chain manages the authentication and authorization process. When you access the service, you will be prompted to log in, as shown in the following screenshot. After login, you can view the RESTful data. The Mozilla Firefox browser will prompt the user to download the data in a file format.

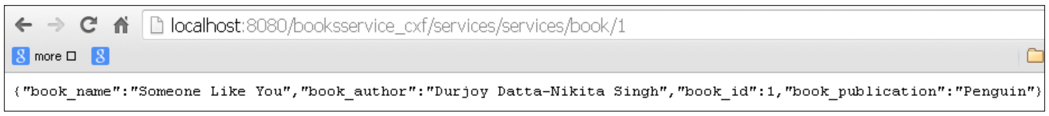

Search - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:8080/booksservice_cxf/services/services/book/1
Loading...
Authentication Required
OK
Cancel

A username and password are being requested by http://localhost:8080. The site says: "Spring Security Application"

User Name:

Password:

Now access the URL: `http://localhost:8080/booksservice_cxf/services/services/book/1`



```
{"book_name":"Someone Like You","book_author":"Durjoy Datta-Nikita Singh","book_id":1,"book_publication":"Penguin"}
```

See also

- The *Integrating Spring Security with Apache CXF RESTful web service* recipe
- The *Integrating Spring Security with Apache Camel* recipe

Integrating Spring Security with Apache CXF SOAP based web service

In this section, let's create a SOAP-based web service. We will demonstrate the integration of Spring Security with Apache CXF SOAP-based web service.

Creation of SOAP-based web service has become a simple process with Apache CXF.

Getting ready

- Add the CXF-SOAP dependency to the `pom` file.
- Add Spring Security-based dependency to the `pom` file.
- Set up a SOAP-based web service with `interface` and an `Impl` class.
- Configure the `spring-security.xml` file.

- Add jars to the `Tomcat_7.0/lib` folder as a part of setup. Tomcat requires the following jar files in its `lib` folder to work with CXF web services. Absence of these jars can cause some errors:
    - `streambuffer.jar`
    - `stax-ex`
    - `jaxws-ap-2.1`
    - `jaxws-rt`

How to do it...

The following are the steps to integrate Apache CXF SOAP-based web service with Spring Security:

1. The `Book` POJO has getter and setter methods. It also has a parameterized constructor. The `Book` POJO is used in the `BookService` interface, to give details on `Book` that is requested from the client application.

```
package org.packt.cxf.domain;
public class Book {
  private int book_id;
  private String book_name;
  private String book_publication;
  private String book_author;
  public Book() {
  }
  public Book(int book_id, String book_name, String
    book_publication, String book_author) {
    this.book_id = book_id;
    this.book_name = book_name;
    this.book_publication = book_publication;
    this.book_author = book_author;
  }
  public String getBook_author() {
    return book_author;
    }
    public void setBook_author(String book_author) {
        this.book_author = book_author;
  }
  public int getBook_id() {
    return book_id;
  }
  public void setBook_id(int book_id) {
    this.book_id = book_id;
  }
  public String getBook_name() {
    return book_name;
  }
  public void setBook_name(String book_name) {
    this.book_name = book_name;
  }
  public String getBook_publication() {
    return book_publication;
  }
  public void setBook_publication(String book_publication)
    {
    this.book_publication = book_publication;
  }
}
```

2. The `BookService` interface is created with the `@WebService` annotation, in which `getBookDetails` is the service method in the WSDL.

```
package org.packt.cxf.service;
import javax.jws.WebService;
import org.packt.cxf.domain.Book;
@WebService
public interface BookService {
  public Book getBookDetails(int book_id);
}
```

3. The `BookServiceImpl` class is the implementation class of the `BookService` interface, and it is configured as an end point interface using `@webservice` annotation package `org.packt.cxf.service`.

```
import java.util.HashMap;
import java.util.Map;
import javax.jws.WebService;
import org.packt.cxf.domain.Book;
@WebService(endpointInterface =
  "org.packt.cxf.service.BookService")
public class BookServiceImpl implements BookService{
    private static final Map<Integer, Book> books = new
      HashMap<Integer, Book>();
    private static int index = 4;
    static {
      try {
        books.put(1, new Book(1, "Someone Like You",
          "Penguin", "Durjoy Datta-Nikita Singh"));
```

```
            books.put(2, new Book(2, "The Secret Wish List",
              "Westland", " Preeti Shenoy"));
            books.put(3, new Book(3, "Love Stories That Touched
              My Heart ", "Metro Reads", " Preeti Shenoy"));
          } catch (Exception e) {
            e.printStackTrace();
          }
        }
        @Override
        public Book getBookDetails(int book_id) {
          return books.get(book_id);
        }}
```

4. In the `Cxf-servlet.xml` file, we register the web service interface and the implementation class.

```
      <beans xmlns="http://www.springframework.org/schema/beans"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xmlns:jaxws="http://cxf.apache.org/jaxws"
      xsi:schemaLocation="
        http://www.springframework.org/schema/beans
        http://www.springframework.org/schema/beans/spring-
          beans.xsd
        http://cxf.apache.org/jaxws
        http://cxf.apache.org/schemas/jaxws.xsd">
      <import resource="classpath:META-INF/cxf/cxf.xml" />
      <import resource="classpath:META-INF/cxf/cxf-servlet.xml"
        />
      <import resource="classpath:META-INF/cxf/cxf-extension-
        http.xml" />
      <import resource="classpath:META-INF/cxf/cxf-extension-
        soap.xml" />
      <jaxws:endpoint id="bookService"implementor="org.
        packt.cxf.service.BookServiceImpl"
        address="/BookService" />
      </beans>
```

5. In the `Web.xml` file, we give reference to the location of `cxf-servlet.xml` and configure `CXFSservlet`.

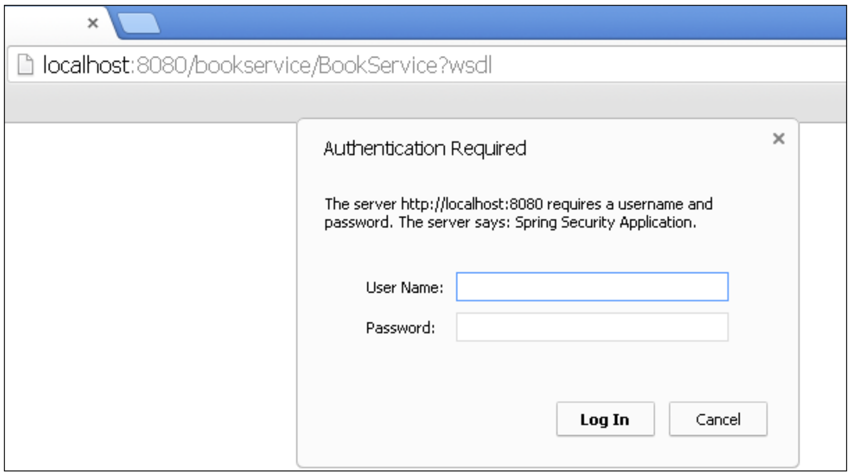
```
      <web-app version="2.5"
        xmlns="http://java.sun.com/xml/ns/javaee"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
        http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd">
        <display-name>SampleWSCxf</display-name>
        <listener>
```

```
    <listener-class>org.springframework.web.context.
      ContextLoaderListener</listener-class>
  </listener>
  <context-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>WEB-INF/cxf-servlet.xml</param-value>
  </context-param>
  <servlet>
    <servlet-name>CXFServlet</servlet-name>
    <servlet-class>org.apache.cxf.transport.servlet.
      CXFServlet</servlet-class>
    <load-on-startup>1</load-on-startup>
  </servlet>
  <servlet-mapping>
    <servlet-name>CXFServlet</servlet-name>
    <url-pattern>/*</url-pattern>
  </servlet-mapping>
</web-app>
```

How it works...

In this section we demonstrate basic authentication on web service. Access the URL: `http://localhost:8080/bookservice/`

We have used the CXF framework to create a SOAP-based web service. When the URL is accessed by the user, the expected behavior is to give access to the WSDL and its services. But the Spring Security interrupts the request and pops up a login dialog box for the user. On successful authentication, the user gets to access the WSDL.

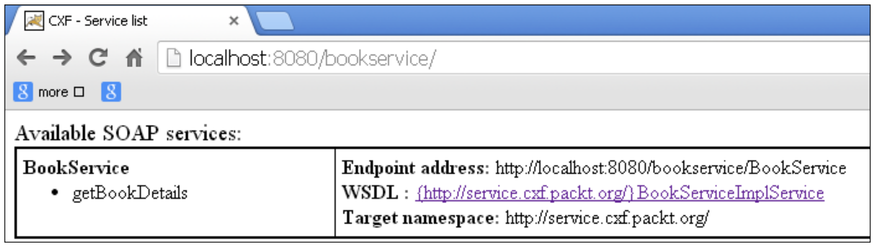

localhost:8080/bookservice/BookService?wsdl

Authentication Required

The server http://localhost:8080 requires a username and password. The server says: Spring Security Application.

User Name:

Password:



Available SOAP services:

BookService • getBookDetails	**Endpoint address:** http://localhost:8080/bookservice/BookService **WSDL :** {http://service.cxf.packt.org/}BookServiceImplService **Target namespace:** http://service.cxf.packt.org/

Generated WSDL is available at the following URL: `http://localhost:8080/bookservice/BookService?wsdl`

```
<wsdl:definitions
  xmlns:ns1="http://cxf.apache.org/bindings/xformat"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:tns="http://service.cxf.packt.org/"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  name="BookServiceImplService"
  targetNamespace="http://service.cxf.packt.org/">
  <wsdl:types>
  <xs:schema xmlns:tns="http://service.cxf.packt.org/"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    elementFormDefault="unqualified"
    targetNamespace="http://service.cxf.packt.org/"
    version="1.0">
  <xs:element name="getBookDetails"
    type="tns:getBookDetails"/>
  <xs:element name="getBookDetailsResponse"
    type="tns:getBookDetailsResponse"/>
  <xs:complexType name="getBookDetails">
    <xs:sequence>
      <xs:element name="arg0" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="getBookDetailsResponse">
    <xs:sequence>
      <xs:element minOccurs="0" name="return"
        type="tns:book"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="book">
    <xs:sequence>
      <xs:element minOccurs="0" name="book_author"
        type="xs:string"/>
      <xs:element name="book_id" type="xs:int"/>
      <xs:element minOccurs="0" name="book_name"
        type="xs:string"/>
      <xs:element minOccurs="0" name="book_publication"
        type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
  </xs:schema>
  </wsdl:types>
  <wsdl:message name="getBookDetails">
    <wsdl:part element="tns:getBookDetails"
      name="parameters"></wsdl:part>
  </wsdl:message>
  <wsdl:message name="getBookDetailsResponse">
    <wsdl:part element="tns:getBookDetailsResponse"
      name="parameters"></wsdl:part>
    </wsdl:message>
  <wsdl:portType name="BookService">
    <wsdl:operation name="getBookDetails">
      <wsdl:input message="tns:getBookDetails"
        name="getBookDetails"></wsdl:input>
      <wsdl:outputmessage="tns:getBookDetailsResponse"
        name="getBookDetailsResponse"></wsdl:output>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:bindingname="BookServiceImplServiceSoapBinding"
    type="tns:BookService">
    <soap:bindingstyle="document"
     transport="http://schemas.xmlsoap.org/soap/http"/>
      <wsdl:operationname="getBookDetails">
        <soap:operationsoapAction=""style="document"/>
      <wsdl:inputname="getBookDetails">
        <soap:bodyuse="literal"/>
      </wsdl:input>
      <wsdl:outputname="getBookDetailsResponse">
        <soap:bodyuse="literal"/>
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:servicename="BookServiceImplService">
    <wsdl:portbinding="tns:BookServiceImplServiceSoap
      Binding"name="BookServiceImplPort">
      <soap:addresslocation="http://localhost:8080
        /bookservice/BookService"/>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

See also

- The *Integrating Spring Security with Apache CXF RESTful web service* recipe
- The *Integrating Spring Security with Apache Camel* recipe

Integrating Spring Security with Apache Camel

Apache Camel can be used to define rules for routing and mediating applications. Spring Security can be used with Apache Camel to authenticate the router. Spring Security authentication policy object controls the access to the router. The Spring Security authentication policy object contains the role information and has reference to the Spring authentication manager. You can download the source code from the website.

Getting ready

- Create Camel context
- Add routing rules using the XML configurations
- In Spring XML file configure the following:
    - Access decision manager
    - Role voter
    - Authentication manager
    - User details service
- Configure the authentication policy object with authorities
- Add the `camel-spring-security` dependency

How to do it...

The following are the steps to integrate Apache Camel with Spring Security:

1. Create the `Camel–context.xml` file and also define the routing rules with Spring Security.

```
<spring-security:http realm="User Access Realm">
  <spring-security:intercept-url
    pattern="/apachecamel/**"     access="ROLE_EDITOR"/>
  <spring-security:http-basic/>
  <spring-security:remember-me/>
</spring-security:http>
```

```
<spring-security:authentication-manager
  alias="authenticationManager">
  <spring-security:authentication-provider user-service-
    ref="userDetailsService"/>
</spring-security:authentication-manager>
<spring-security:user-service id="userDetailsService">
  <spring-security:user name="anju" password="anju123"
    authorities="ROLE_EDITOR,ROLE_AUTHOR"/>
  <spring-security:user name="shami" password="shami123"
    authorities="ROLE_EDITOR"/>
</spring-security:user-service>
<bean id="accessDecisionManager"
  class="org.springframework.security.access.
    vote.AffirmativeBased">
  <property name="allowIfAllAbstainDecisions"
    value="true"/>
  <property name="decisionVoters">
    <list>
      <bean class="org.springframework.security
        .access.vote.RoleVoter"/>
    </list>
  </property>
</bean>
<!-- The Policy for checking the authentication role of
  AUTHOR -->
<authorizationPolicy id="author" access="ROLE_AUTHOR"
  authenticationManager="authenticationManager"
  accessDecisionManager="accessDecisionManager"
  xmlns="http://camel.apache.org/schema/spring-
    security"/>
<!-- The Policy for checking the authentication role of
  EDITOR -->
<authorizationPolicy id="editor" access="ROLE_EDITOR"
  xmlns="http://camel.apache.org/schema/spring-
    security"/>
<camelContext id="myCamelContext"
  xmlns="http://camel.apache.org/schema/spring">
  <!-- Catch the authorization exception and set the
    Access Denied message back -->
  <onException>
  <exception>org.apache.camel.
    CamelAuthorizationException</exception>
  <handled>
    <constant>true</constant>
  </handled>
  <transform>
```

```
        <simple>Access Denied with the Policy of
          ${exception.policyId} !</simple>
        </transform>
      </onException>
      <route>
        <from uri="servlet:///editor"/>
        <!-- wrap the route in the policy which enforces
          security check -->
        <policy ref="editor">
          <transform>
            <simple>Normal user can access this
              service</simple>
          </transform>
        </policy>
      </route>
      <route>
        <from uri="servlet:///author"/>
        <!-- wrap the route in the policy which enforces
          security check -->
        <policy ref="author">
          <transform>
            <simple>Call the admin operation OK</simple>
          </transform>
        </policy>
      </route>
    </camelContext>
  </beans>
```

2. Configure Camel servlet in `Web.xml`.

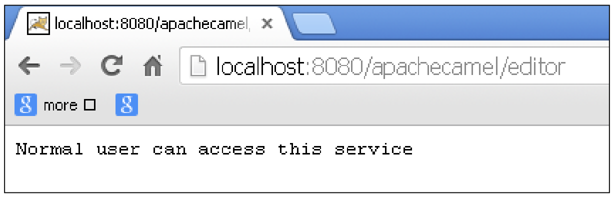
```
<!-- location of spring xml files -->
  <context-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>classpath:camel-context.xml</param-value>
  </context-param>
  <!-- the listener that kick-starts Spring -->
  <listener>
    <listener-class>org.springframework.web.
      context.ContextLoaderListener</listener-class>
  </listener>
  <filter>
    <filter-name>springSecurityFilterChain</filter-name>
    <filter-class>org.springframework.web.
      filter.DelegatingFilterProxy</filter-class>
  </filter>
```

```
    <filter-mapping>
      <filter-name>springSecurityFilterChain</filter-name>
      <url-pattern>/*</url-pattern>
    </filter-mapping>
    <servlet>
      <servlet-name>CamelServlet</servlet-name>
      <servlet-class>org.apache.camel.component.
        servlet.CamelHttpTransportServlet</servlet-class>
      <load-on-startup>1</load-on-startup>
    </servlet>
    <servlet-mapping>
      <servlet-name>CamelServlet</servlet-name>
      <url-pattern>/apachecamel/*</url-pattern>
    </servlet-mapping>
  </web-app>
```

How it works...

Now access the URL: `http://localhost:8080/apachecamel/editor`

The `camel-context.xml` file has routing rules; the location of the `camel-context.xml` file is configured in `Web.xml` along with `CamelServlet` to handle the routing mechanism. The `<authorizationpolicy>` tag handles the authentication and authorization of the resources configured in the `spring-security.xml` file. The `<spring-security:user-service>` tag has details of the users and roles to whom the access can be given before routing the requests. The following is the workflow of Apache Camel interrupting the routing process using Spring Security. The user is authorized on either of the two roles: `EDITOR` or `AUTHOR`.


localhost:8080/apachecamel,
localhost:8080/apachecamel/editor
more

```
Normal user can access this service
```

See also

- The *Integrating Spring Security with Apache CXF RESTful web service* recipe
- The *Integrating Spring Security with Apache Camel* recipe

11
More on Spring Security

In this chapter we will cover:

- Spring Security with multiple authentication providers
- Spring Security with multiple input authentications
- Spring Security with Captcha integration
- Spring Security with JAAS

Introduction

In this chapter we will see some more examples of Spring Security. Let's see how we can integrate Spring Security with multiple authentication providers. We will also see an example of authentication using Spring with multiple inputs.

Spring Security with multiple authentication providers

Spring Security provides an option to add many authentication providers. The filter chain checks with each and every authentication provider until it gets authenticated successfully.

In this section, let's see how to configure multiple authentication providers and how Spring does the authentication with multiple authentication providers.

For example, we are using the `horrormovie` application in which authentication and authorization is handled by Spring Security with database.

Getting ready

- Create a maven web project
- Add the `spring-security` dependency
- Add the spring-core related dependency
- Configure the Spring context listener in the `Web.xml` file
- Create the `AddHorroMovieController.java` controller and add the request mapping methods for addition, deletion, and listing
- Edit the `application-security.xml` file with another authentication provider

How to do it...

The following are the steps to integrate multiple authentication providers with Spring Security:

1. Edit the `application-security.xml` file.

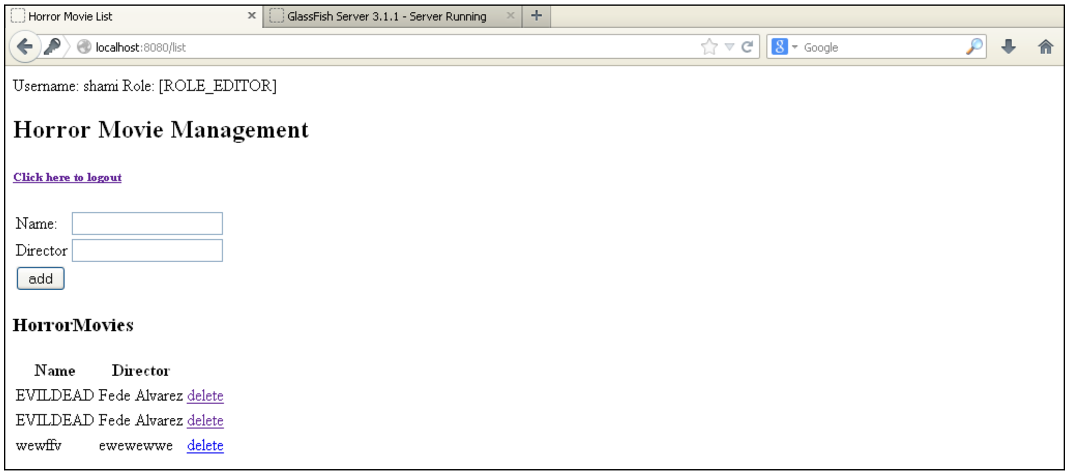
```
<authentication-manager alias="authentication Manager">
  <authentication-provider>
    <jdbc-user-service data-source-ref="tenant1DataSource"
      users-by-username-query=" select username, password
      ,'true' as enabled from users where username=?"
      authorities-by-username-query=" select u.username
      as username, ur.authority as authority from users
      u, user_roles ur where u.user_id = ur.user_id and
      u.username =?" />
  </authentication-provider>
  <authentication-provider>
    <user-service>
    <user name="anjana" password="anjana123"
      authorities="ROLE_EDITOR"/>
    <user name="raghu" password="raghu123"
      authorities="ROLE_AUTHOR"/>
    <user name="shami" password="shami123"
      authorities="ROLE_EDITOR"/>
    </user-service>
  </authentication-provider>
</authentication-manager>
```

How it works...

Deploy the application on a GlassFish application server; access the following URL: `http://localhost:8080/list` and log in with username/password (`Vikash/Vikash123`).

This is the user created in the derby database with access (`ROLE_EDITOR`).

Then log out and log in again with username as `shami` and password as `shami123`. Here the user is authenticated by both the authentication providers in a sequential manner.



Horror Movie List | GlassFish Server 3.1.1 - Server Running

localhost:8080/list

Username: shami Role: [ROLE_EDITOR]

Horror Movie Management

Click here to logout

Name:
Director
add

HorrorMovies

Name	Director	
EVILDEAD	Fede Alvarez	delete
EVILDEAD	Fede Alvarez	delete
wewffv	ewewewwe	delete

See also

- The *Spring Security with multiple input authentications* recipe
- The *Spring Security with Captcha integration* recipe
- The *Spring Security with JAAS* recipe

Spring Security with multiple input authentications

In this section, we will demonstrate multiple input authentications. This is also called two factor authentications. So far, in all our examples, we are authenticating against username and password. In this example, we will provide another field for phone number along with username. It is the same `horrormovie` application with hibernate and derby database.

Getting ready

- Create a custom filter to handle the new login form
- Configure the custom filter in your `Springsecurity.xml` file
- Update the `UserDetailsService` implementation class to handle the additional input
- Add an extra column named `MOBILE_NO` in your database
- Update the `login.jsp` file to take `MOBILE_NO` as input

How to do it...

The following are the steps to implement multiple input authentications with Spring Security:

1. Create a custom filter named `MultipleInputAuthenticationFilter` to extract the extra mobile number parameter.

```
public class MultipleInputAuthenticationFilter extends
  UsernamePasswordAuthenticationFilter{
  private String extraParameter = "mobile_no";

  public String getExtraParameter() {
      return extraParameter;
  }

  public void setExtraParameter(String extraParameter) {
    this.extraParameter = extraParameter;
  }
  private String delimiter = ":";

  @Override
  protected String obtainUsername(HttpServletRequest
    request)
    {
      String username =
        request.getParameter(getUsernameParameter());
      String mobile_no =
        request.getParameter(getExtraParameter());
      String combinedUsername = username + getDelimiter()
        + mobile_no;
      System.out.println("Combined username = " +
        combinedUsername);
      return combinedUsername;
    }

  public String getDelimiter()
  {
    return this.delimiter;
  }
  /**
    * @param delimiter The delimiter string used to
      separate the username and extra input values in the
      * string returned by <code>obtainUsername()</code>
  */
  public void setDelimiter(String delimiter) {
    this.delimiter = delimiter;
  }
```

2. Update the `application-security.xml` file to handle the custom filter.

```
<global-method-security pre-post-annotations="enabled" />
  <http auto-config="false"  use-expressions="true"
    entry-point-ref="loginUrlAuthenticationEntryPoint">
    <intercept-url pattern="/login" access="permitAll" />
    <intercept-url pattern="/logout" access="permitAll"
      />
    <intercept-url pattern="/accessdenied"
      access="permitAll" />
    <intercept-url pattern="/list"
      access="hasRole('ROLE_EDITOR')" />
    <intercept-url pattern="/add"
      access="hasRole('ROLE_EDITOR')" />
    <custom-filter position="FORM_LOGIN_FILTER"
      ref="multipleInputAuthenticationFilter" />
    <!--<form-login login-page="/login" default-target-
      url="/list" authentication-failure-
      url="/accessdenied" />-->
    <logout logout-success-url="/logout" />
  </http>
  <authentication-manager alias="authenticationManager">
    <authentication-provider user-service-
      ref="MyUserDetails">
      <password-encoder hash="plaintext" />
    </authentication-provider>
  </authentication-manager>
  <beans:bean id="multipleInputAuthenticationFilter"
    class="com.packt.springsecurity.controller.
      MultipleInputAuthenticationFilter">
    <beans:property name="authenticationManager"
      ref="authenticationManager" />
    <beans:property name="authenticationFailureHandler"
      ref="failureHandler" />
    <beans:property name="authenticationSuccessHandler"
      ref="successHandler" />
    <beans:property name="filterProcessesUrl"
      value="/j_spring_security_check" />
    <beans:property name="postOnly" value="true" />
    <beans:property name="extraParameter" value="mobile_no"
      />
  </beans:bean>
  <beans:bean id="horrorMovieDAO"
    class="com.packt.springsecurity.dao.
      HorrorMovieDaoImpl" />
  <beans:bean id="horrorMovieManager"
    class="com.packt.springsecurity.
```

```
        service.HorrorMovieManagerImpl" />
    <beans:bean id="UsersDAO"
      class="com.packt.springsecurity.dao.UsersDAOImpl" />
    <beans:bean id="UsersManager"
    class="com.packt.springsecurity.
      service.UsersManagerImpl" />
    <beans:bean id="UserRoleDAO"
      class="com.packt.springsecurity.dao.
        UserRoleDAOImpl" />
    <beans:bean id="UserRoleManager"
      class="com.packt.springsecurity.
        service.UserRoleManagerImpl" />
    <beans:bean id="loginUrlAuthenticationEntryPoint"
      class="org.springframework.security.web.
        authentication.LoginUrlAuthenticationEntryPoint">
      <beans:property name="loginFormUrl" value="/login" />
    </beans:bean>
    <beans:bean id="successHandler"
      class="org.springframework.security.web.
      authentication.SavedRequestAwareAuthentication
      SuccessHandler">
      <beans:property name="defaultTargetUrl" value="/list"
        />
    </beans:bean>

    <beans:bean id="failureHandler"
      class="org.springframework.security.web.
      authentication.SimpleUrlAuthentication
      FailureHandler">
      <beans:property name="defaultFailureUrl"
        value="/accessdenied" />
    </beans:bean>
    <beans:bean id="MyUserDetails"
      class="com.packt.springsecurity.service.MyUserDetails" />
    </beans:beans>
```

3. Update `UsersDAOImpl` to handle the extra input.

```
@Override
    @Transactional
    public Users findByUserNameMobile(String userName, String
      mobile_no) {
      List<Users> userList = new ArrayList<Users>();
      Query query = (Query) sessionFactory.
      getCurrentSession().createQuery
      ("from Users u where u.userName = :userName and
      u.mobile_no=:mobile_no");
      query.setParameter("userName", userName);
    query.setInteger("mobile_no",
      Integer.parseInt(mobile_no));
    userList = query.list();
    if (userList.size() > 0) {
      return userList.get(0);
    } else {
      return null;
    }
  }
```

4. Implement the methods in the `MyUserDetails` class, which implements the `UserDetailsService` interface to handle the extra inputs.

```
public UserDetails loadUserByUsername(String str)
  throws UsernameNotFoundException {
  String[] splitstring = str.split(":");
  if (splitstring.length < 2) {
    System.out.println("User did not enter both
      username and mobile number.");
    throw new UsernameNotFoundException("Must specify both
      username and mobile number");
  }
  String username = splitstring[0];
  String mobile = splitstring[1];

  System.out.println("Username = " + username);
  System.out.println("Mobile = " + mobile);

  Users users = UsersDAO.findByUserNameMobile(username,
    mobile);
  boolean enabled = true;
  boolean accountNonExpired = true;
  boolean credentialsNonExpired = true;
  boolean accountNonLocked = true;
  return new User(
    users.getUserName(),
    users.getUserPassword(),
    enabled,
    accountNonExpired,
    credentialsNonExpired,
    accountNonLocked,
    getAuthorities(users.getRole().getRoleId().intValue()));
}
```

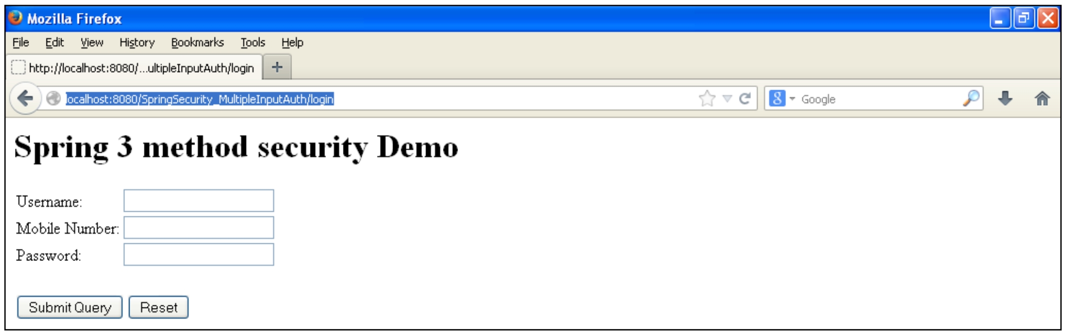
How it works...

Access the following URL: `http://localhost:8080/SpringSecurity_MultipleInputAuth/login`

The user is authenticated not just with the username and password as demonstrated in all the applications used in the book, but also with the mobile number parameter.

When the user submits the information in the login page and hits on **SubmitQuery**, the username and mobile number gets clubbed with a delimiter and Spring Security will invoke the `MyUserDetails` class, which will again split the parameter and authenticate the user based on the inputs provided by the user using hibernate.

On successful authentication, the user is redirected to the authorized page.


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost:8080/...ultipleInputAuth/login
localhost:8080/SpringSecurity_MultipleInputAuth/login
Google

Spring 3 method security Demo

Username:
Mobile Number:
Password:

Submit Query Reset

See also

- The *Spring Security with multiple authentication providers* recipe
- The *Spring Security with Captcha integration* recipe
- The *Spring Security with JAAS* recipe

Spring Security with Captcha integration

Let us demonstrate the integration of Spring Security with Captcha. We have downloaded a `Kaptcha.jar` Captcha provider for this purpose. We need to install the jar file into the maven local repository for the application to work.

The example is an extension of the previous recipe where an additional input, mobile number, was considered for authorization and authentication by Spring Security. In this example, we will get the code for username and password from the user along with the Captcha code. The username is authenticated against the database, and the requested Captcha and the Captcha entered by the user are also compared.

When the entire conditions match, the user is said to be authenticated or else the authentication is a failure.

Getting ready

- Add the `Kaptcha` servlet to the `Web.xml` file
- Configure the custom filter in your `Springsecurity.xml` file
- Update the `UserDetailsService` implementation class to handle `Kaptcha`
- Update the `login.jsp` file to take `Kaptcha` as an input
- Extend `UsernamePasswordAuthenticationFilter`

How to do it...

The following are the steps to integrate Spring Security with Captcha:

1. Add the `Kaptcha` servlet to the `Web.xml` file.

```
<servlet>
  <servlet-name>Kaptcha</servlet-name>
  <servlet-class>
    com.google.code.kaptcha.servlet.KaptchaServlet
  </servlet-class>
</servlet>
<servlet-mapping>
  <servlet-name>Kaptcha</servlet-name>
  <url-pattern>/kaptcha.jpg</url-pattern>
</servlet-mapping>
```

2. Update the `application-security.xml` to handle the custom filter.

```
<beans:bean id="multipleInputAuthenticationFilter"
  class="com.packt.springsecurity.controller.
    MultipleInputAuthenticationFilter">
  <beans:property name="authenticationManager"
    ref="authenticationManager" />
  <beans:property name="authenticationFailureHandler"
    ref="failureHandler" />
  <beans:property name="authenticationSuccessHandler"
    ref="successHandler" />
  <beans:property name="filterProcessesUrl"
    value="/j_spring_security_check" />
  <beans:property name="postOnly" value="true" />
  <beans:property name="extraParameter" value="kaptcha"
    />
</beans:bean>
```

3. Update `UsersDAOImpl` to handle the extra input.

```
@Override
  @Transactional
  public Users findByUserNameCaptcha(String userName, String
    kaptchaReceived, String kaptchaExpected) {
      List<Users> userList = new ArrayList<Users>();
      Query query = (Query) sessionFactory.
        getCurrentSession().createQuery("from Users u where
          u.userName = :userName");
      query.setParameter("userName", userName);
      userList = query.list();
      if (userList.size()>0 &&
        kaptchaReceived.equalsIgnoreCase(kaptchaExpected)) {
          return (Users)userList.get(0);
      }  else {
          return null;
      }
  }
```

4. Update the `UserDetailsService` class to handle the extra input.

```
public UserDetails loadUserByUsername(String str)
  throws UsernameNotFoundException {
  String[] splitstring = str.split(":");
  if (splitstring.length < 2) {
    System.out.println("User did not enter both username
      and captcha code.");
    throw new UsernameNotFoundException("Must specify
      both username captcha code");
  }
  String username = splitstring[0];
  String kaptchaReceived = splitstring[1];
  String kaptchaExpected = splitstring[2];
  Users users = UsersDAO.findByUserNameCaptcha(username,
    kaptchaReceived,kaptchaExpected);
  boolean enabled = true;
  boolean accountNonExpired = true;
  boolean credentialsNonExpired = true;
  boolean accountNonLocked = true;
  return new User(
    users.getUserName(),
    users.getUserPassword(),
    enabled,
    accountNonExpired,
    credentialsNonExpired,
    accountNonLocked,
    getAuthorities(users.getRole().
      getRoleId().intValue())
  );
}
```

5. Extend `UsernamePasswordAuthenticationFilter` and override the `obtainUsername` (`HttpServletRequest` request) method in the `MultipleInputAuthenticationFilter` class.

```
@Override
  protected String obtainUsername(HttpServletRequest
    request) {
  String username =
    request.getParameter(getUsernameParameter());
  String kaptcha =
    request.getParameter(getExtraParameter());
  String kaptchaExpected = (String)
    request.getSession().getAttribute
    (com.google.code.kaptcha.Constants.
    KAPTCHA_SESSION_KEY);
  String combinedUsername = username + getDelimiter() +
    kaptcha + getDelimiter() + kaptchaExpected;
  System.out.println("Combined username = " +
    combinedUsername);
  return combinedUsername;
  }
```

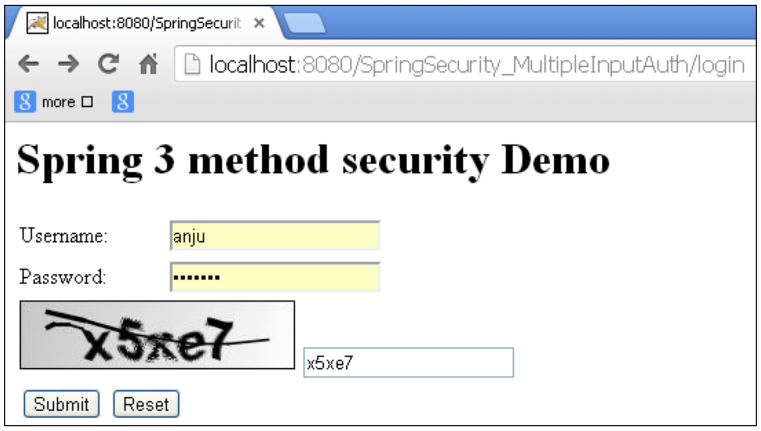
How it works...

Access the following URL:

`http://localhost:8080/SpringSecurity_MultipleInputAuth/login`

The `Kaptcha` servlet displays different diagrams for the user on the browser.

The value entered by the user and the value generated by `Kaptcha` are compared in the `UsersDAOImpl.java` class along with the `Username` field from the database. When entire conditions match, that is, `Kaptcha` entered by the user should be the same as `Kaptcha` displayed by the browser and the username should be present in the database, then the user is said to be authenticated. The user is redirected to the authenticated and authorized page.


localhost:8080/SpringSecurit
localhost:8080/SpringSecurity_MultipleInputAuth/login
more

Spring 3 method security Demo

Username: anju
Password: •••••••
x5xe7

See also

- The *Spring Security with multiple authentication providers* recipe
- The *Spring Security with multiple input authentications* recipe
- The *Spring Security with JAAS* recipe

Spring Security with JAAS

In *Chapter 1*, *Basic Security*, we have already demonstrated how to use JAAS configuration in JBOSS for authentication and authorization. Spring Security also provides a full support to implement JAAS-based authentication. We need to configure `DefaultJaasAuthenticationProvider` as the authentication provider. In this section, we will demonstrate integration of Spring Security with JAAS.

Let us see some of the JAAS-based classes and interfaces offered by Spring Security APIs:

- `org.springframework.security.authentication.jaas`
- `AbstractJaasAuthenticationProvider`
- `AuthorityGranter`

- `DefaultJaasAuthenticationProvider`
- `DefaultLoginExceptionResolver`
- `JaasAuthenticationCallbackHandler`
- `JaasAuthenticationToken`
- `JaasGrantedAuthority`
- `JaasNameCallbackHandler`
- `LoginExceptionResolver`
- `SecurityContextLoginModule`

Getting ready

- Implement the `AuthorityGranter` interface by `org.springframework.security.authentication.jaas.AuthorityGranter`
- Implement the `LoginModule` interface by `javax.security.auth.spi.LoginModule`
- Configure the `DefaultJaasAuthenticationProvider` class in the `context.xml` file. Implement the `AuthorityGranter` interface and its configurations.

How to do it...

The following are the steps for implementing JAAS with Spring Security:

1. Implement the `AuthorityGranter` class using the `AuthorityGranterImpl` class.

```
public class AuthorityGranterImpl implements
  AuthorityGranter {
  public Set<String> grant(Principal principal) {
    if (principal.getName().equals("publisher"))
      return Collections.singleton("PUBLISHER");
    else
      return Collections.singleton("EDITOR");
  }
}
```

2. Implement the `LoginModule` class, which is available in the `javax.security.auth.spi` package, using the `LoginModuleImpl` class.

```
public class LoginModuleImpl implements LoginModule {
  private String password;
  private String username;
  private Subject subject;
```

```
public boolean login() throws LoginException {
  // Check the password against the username "publisher"
    or "editor"
  if (username == null || (!username.equals("publisher")
    && !username.equals("editor"))) {
    throw new LoginException("User not valid");
  }
  if (password == null ||
    (!password.equals("publisher123") &&
      !password.equals("editor123"))) {
    throw new LoginException("Password not valid");
  } else {
    subject.getPrincipals().add(new
      UserPrincipal(username));
    return true;
  }
}

@Override
public boolean abort() throws LoginException {
  // TODO Auto-generated method stub
  return false;
}

@Override
public boolean commit() throws LoginException {
  // TODO Auto-generated method stub
  return true;
}

@Override
public boolean logout() throws LoginException {
  // TODO Auto-generated method stub
  return false;
}

public void initialize(Subject subject, CallbackHandler
  callbackHandler,
  Map<String, ?> state, Map<String, ?> options) {
  this.subject = subject;
  try {
    NameCallback nameCallback = new
    NameCallback("prompt");
    PasswordCallback passwordCallback = new
      PasswordCallback("prompt", false);
    callbackHandler.handle(new Callback[]{nameCallback,
      passwordCallback});
    password = new
      String(passwordCallback.getPassword());
    username = nameCallback.getName();
```

```
        } catch (Exception e) {
          throw new RuntimeException(e);
        }
      }
    }
```

3. Configure Spring Security with JAAS.

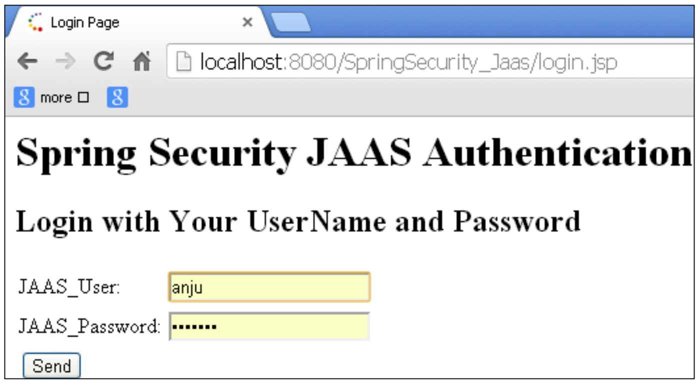
```
      <sec:authentication-manager>
        <sec:authentication-provider ref="jaasAuthProvider" />
      </sec:authentication-manager>
      <bean id="jaasAuthProvider" class="org.springframework.
        security.authentication.jaas.
        DefaultJaasAuthenticationProvider">
        <property name="configuration">
          <bean class="org.springframework.security.
            authentication.jaas.memory.InMemoryConfiguration">
            <constructor-arg>
              <map><entry key="SPRINGSECURITY">
                <array>
                  <bean class="javax.security.auth.
                    login.AppConfigurationEntry">
                    <constructor-arg value="org.packt.
                      springsecurityjaas.LoginModuleImpl" />
                    <constructor-arg>
                      <util:constant static-field="javax.
                      security.auth.login.AppConfigurationEntry
                        $LoginModuleControlFlag.REQUIRED" />
                    </constructor-arg>
                    <constructor-arg>
                      <map></map>
                    </constructor-arg>
                  </bean>
                </array>
              </entry>
              </map>
            </constructor-arg>
          </bean>
        </property>
        <property name="authorityGranters">
          <list>
            <bean class="org.packt.springsecurityjaas.
              AuthorityGranterImpl" />
          </list>
        </property>
      </bean>
    </beans>
```

How it works...

Access the URL: `http://localhost:8080/SpringSecurity_Jaas/`

Log in using the following credentials: `publisher/publisher123` and `editor/editor123`.

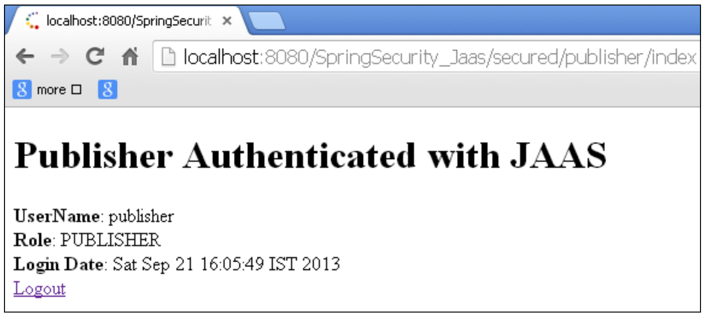
The authentication is handled by `DefaultJaasAuthenticationProvider`. The user information and authentication is handled by `InMemoryConfiguration`, which implies that the `LoginModule` class of JAAS does the authentication and authorization using `callbackhandlers`. On successful authentication, user is redirected to the authorized page. The following screenshots show the workflow of the application:



Spring Security JAAS Authentication

Login with Your UserName and Password

JAAS_User: anju
JAAS_Password: •••••••
Send


localhost:8080/SpringSecurit
localhost:8080/SpringSecurity_Jaas/secured/publisher/index
more

Publisher Authenticated with JAAS

UserName: publisher
Role: PUBLISHER
Login Date: Sat Sep 21 16:05:49 IST 2013
Logout

See also

- The *Spring Security with multiple authentication providers* recipe
- The *Spring Security with multiple input authentications* recipe
- The *Spring Security with JAAS* recipe

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