Wicket + CDI + JPA
(with JBoss AS 7)

Web developer's dream

Ondřej Žižka

Feb 2012

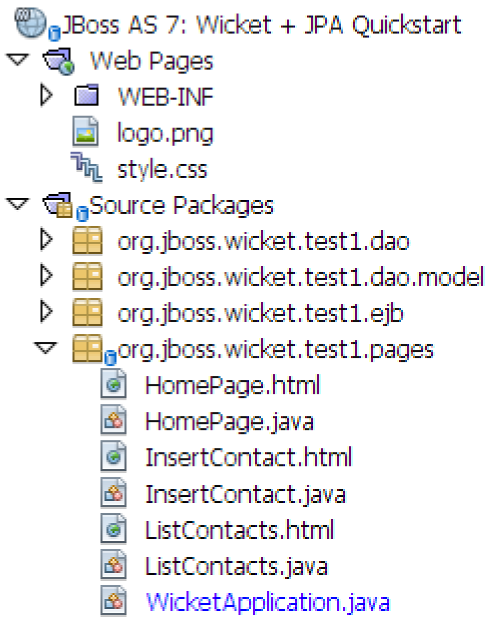
Quick survey

- Do you work with
  - Wicket?
  - Zend framework?
  - JSF?
  - Struts?
  - Spring framework?
  - EJB 3.x?
  - CDI / Weld?

Wicket characteristics

- Pros:
  - Component-oriented
  - Java-oriented
  - No XML configuration
  - Leightweight – small memory footprint
  - Easily modifiable
  - Clusterable
- Cons:
  - No spec
  - Different way of thinking
    - Need to undo brain damage done by JSF et al.

Wicket basic: Pages


JBoss AS 7: Wicket + JPA Quickstart
Web Pages
WEB-INF
logo.png
style.css
Source Packages
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org.jboss.wicket.test1.dao.model
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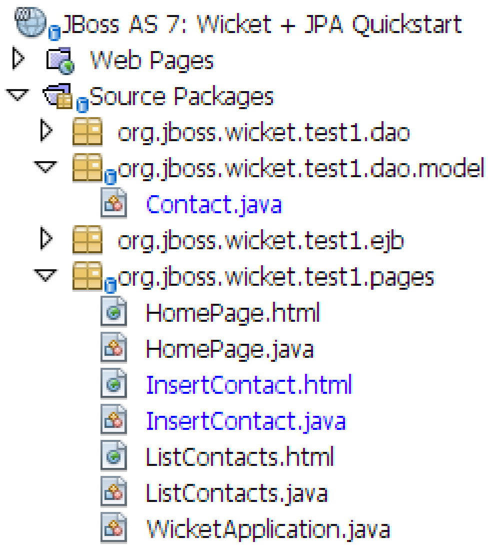
HomePage.html
HomePage.java
InsertContact.html
InsertContact.java
ListContacts.html
ListContacts.java
WicketApplication.java

```
public class HelloWorldPage extends WebPage {
  public HelloWorldPage() {
    add(new Label("label", "Hello world"));
  }
}
```

```
<html>
<body>
    <h1>Wicket example page</h1>
    <div wicket:id="label">Replaced text</div>
</body>
</html>
```

```
<html>
<body>
    <h1>Wicket example page</h1>
    <div>Hello world</div>
</body>
</html>
```

Wicket basic: Models & Binding to components



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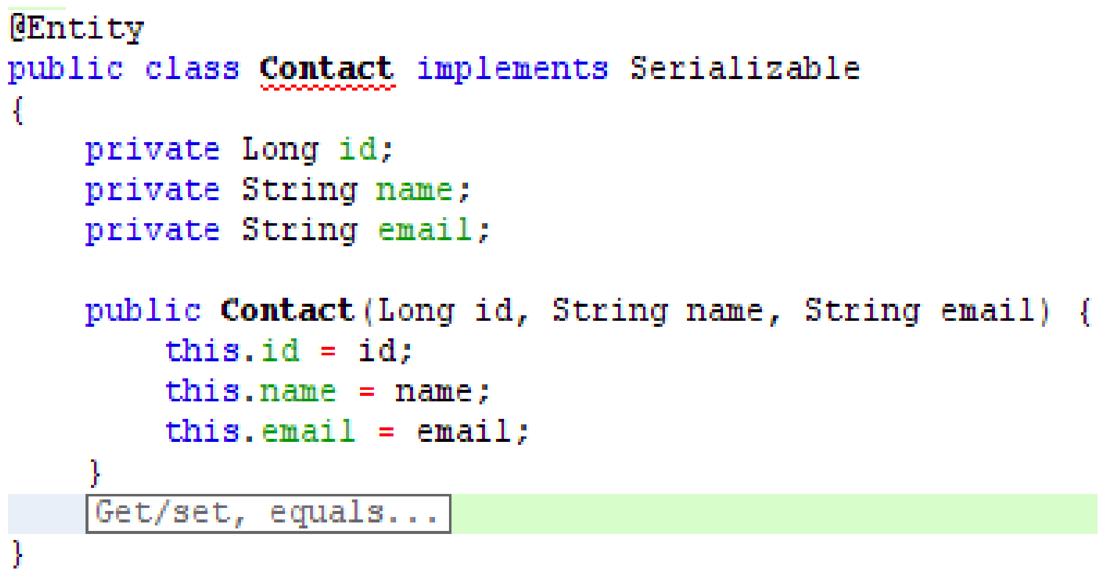
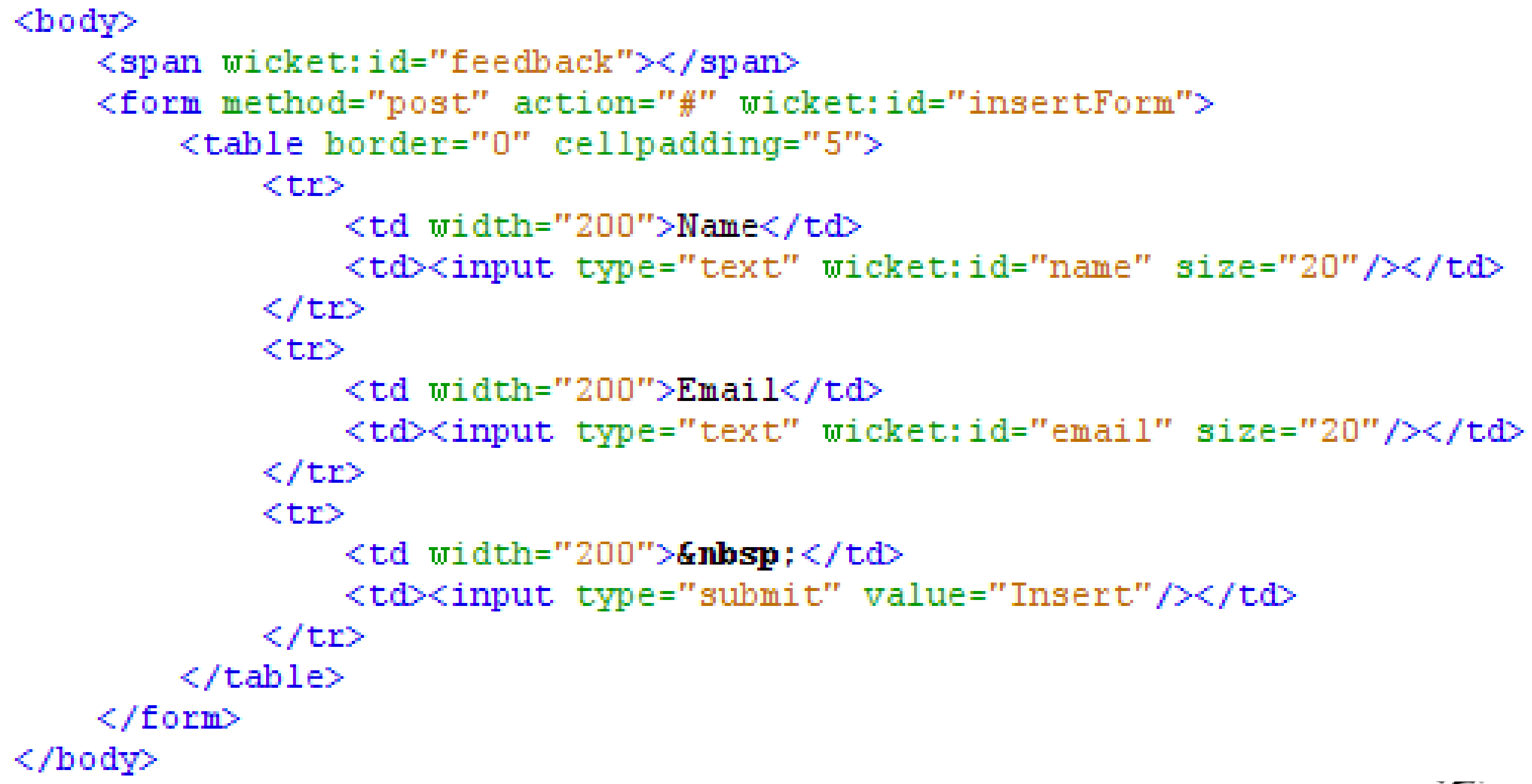


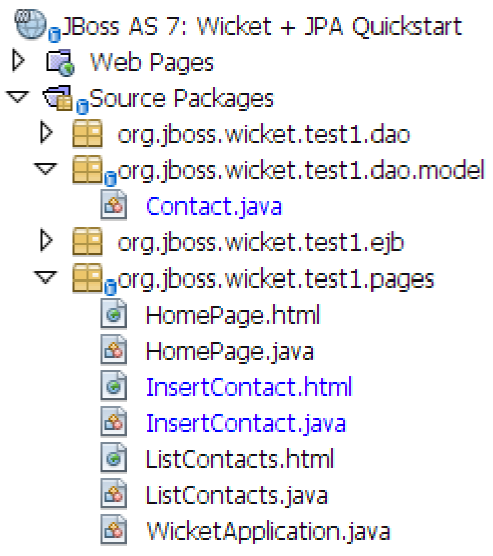
```
@Entity
public class Contact implements Serializable
{
    private Long id;
    private String name;
    private String email;

    public Contact(Long id, String name, String email) {
        this.id = id;
        this.name = name;
        this.email = email;
    }
    Get/set, equals...
}
```



```
<body>
    <span wicket:id="feedback"></span>
    <form method="post" action="#" wicket:id="insertForm">
        <table border="0" cellpadding="5">
            <tr>
                <td width="200">Name</td>
                <td><input type="text" wicket:id="name" size="20"/></td>
            </tr>
            <tr>
                <td width="200">Email</td>
                <td><input type="text" wicket:id="email" size="20"/></td>
            </tr>
            <tr>
                <td width="200">&nbsp;</td>
                <td><input type="submit" value="Insert"/></td>
            </tr>
        </table>
    </form>
</body>
```

Wicket basic: Models & Binding to components



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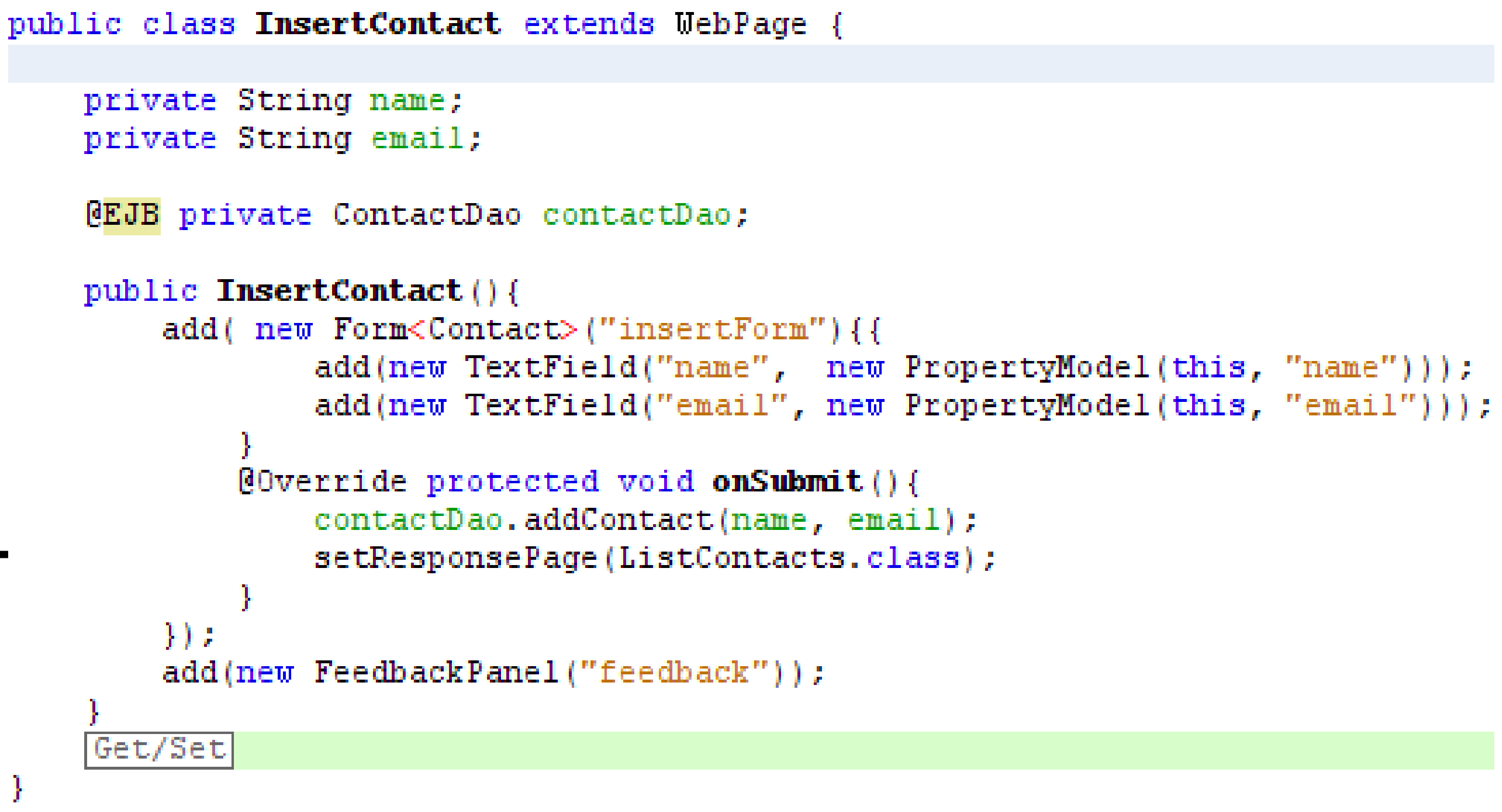


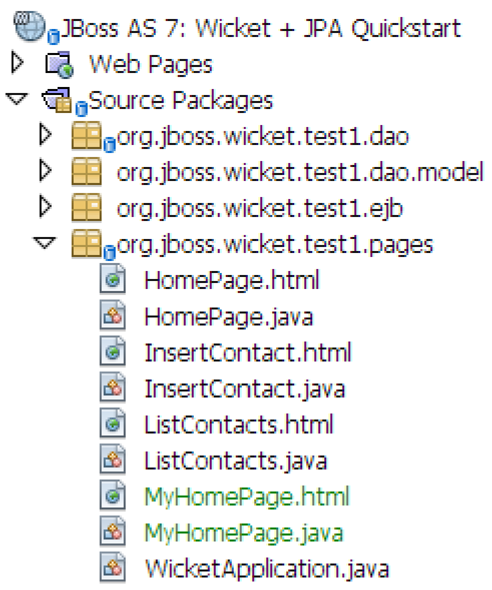
```
public class InsertContact extends WebPage {

    private String name;
    private String email;

    @EJB private ContactDao contactDao;

    public InsertContact(){
        add( new Form<Contact>("insertForm"){{
                add(new TextField("name",  new PropertyModel(this, "name")));
                add(new TextField("email", new PropertyModel(this, "email")));
            }
            @Override protected void onSubmit(){
                contactDao.addContact(name, email);
                setResponsePage(ListContacts.class);
            }
        });
        add(new FeedbackPanel("feedback"));
    }
    Get/Set
}
```

Wicket basic: Page update & navigation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InsertContact.java
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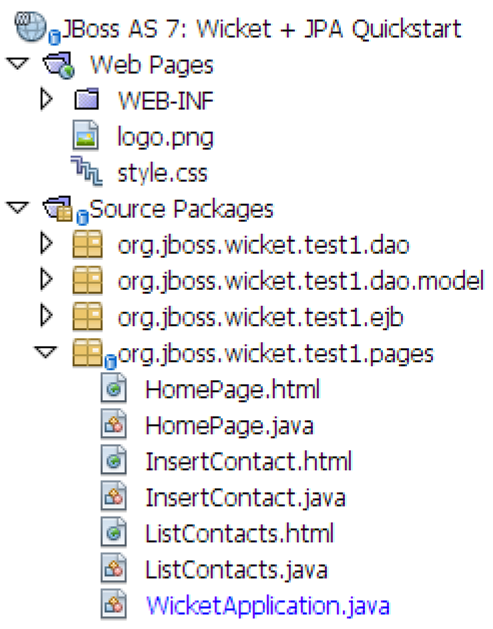
ListContacts.java
MyHomePage.html
MyHomePage.java
WicketApplication.java

```
class MyHomePage extends WebPage {

    public MyHomePage() {
        add(new Link("changeState", new Model()) {
            public void onClick() {
                // this changes link state and therefore page state
                this.setModelObject(new Random().nextInt());
            }
        });

        add(new Link("gotoNewPage") {
            public void onClick() {
                setResponsePage(new MyHomePage());
            }
        });
    }
}
```

Wicket basic: Application object



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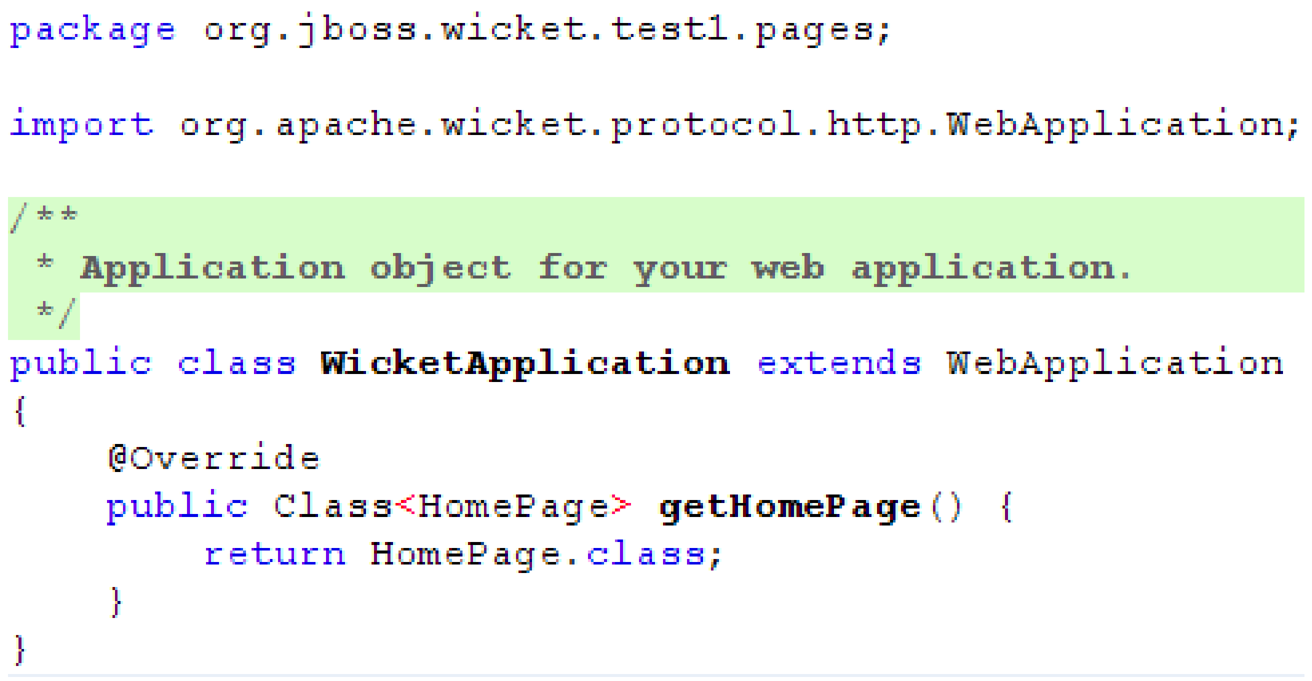
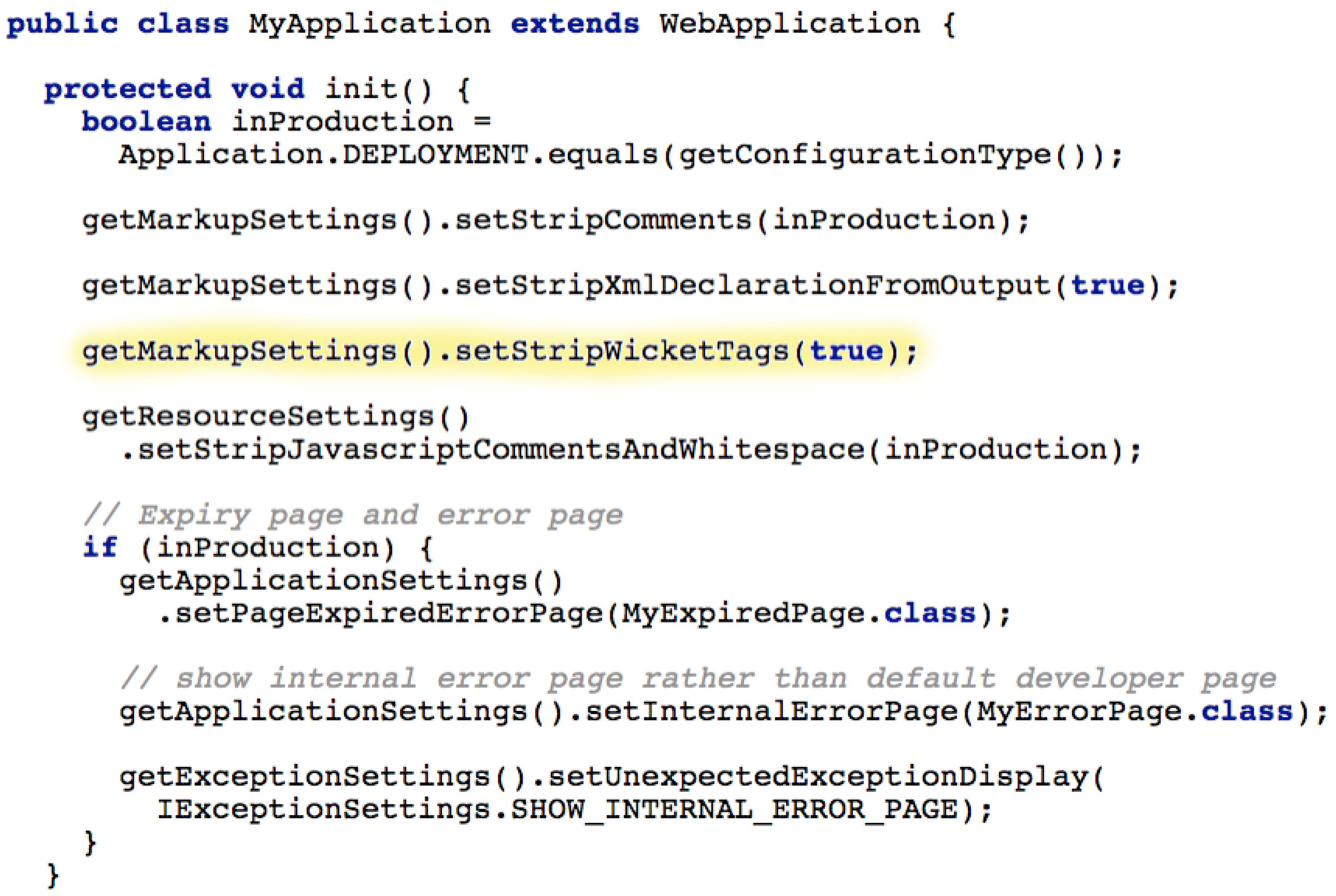


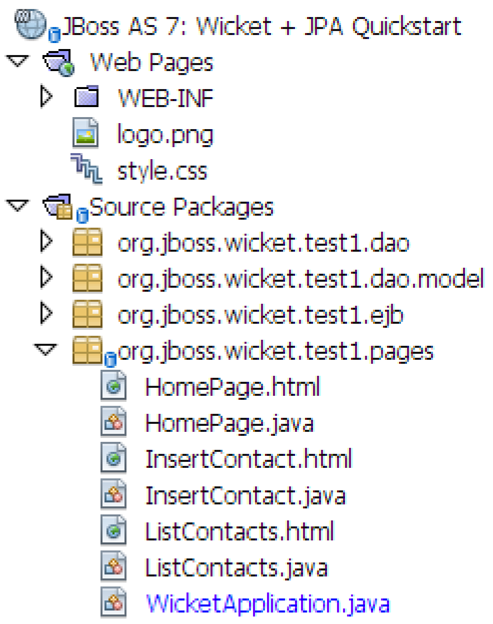
```java
package org.jboss.wicket.test1.pages;

import org.apache.wicket.protocol.http.WebApplication;

/**
 * Application object for your web application.
 */
public class WicketApplication extends WebApplication
{
    @Override
    public Class<HomePage> getHomePage() {
        return HomePage.class;
    }
}
```

Wicket basic: Application object



```
public class MyApplication extends WebApplication {

  protected void init() {
    boolean inProduction =
      Application.DEPLOYMENT.equals(getConfigurationType());

    getMarkupSettings().setStripComments(inProduction);

    getMarkupSettings().setStripXmlDeclarationFromOutput(true);

    getMarkupSettings().setStripWicketTags(true);

    getResourceSettings()
      .setStripJavascriptCommentsAndWhitespace(inProduction);

    // Expiry page and error page
    if (inProduction) {
      getApplicationSettings()
        .setPageExpiredErrorPage(MyExpiredPage.class);

      // show internal error page rather than default developer page
      getApplicationSettings().setInternalErrorPage(MyErrorPage.class);

      getExceptionSettings().setUnexpectedExceptionDisplay(
        IExceptionSettings.SHOW_INTERNAL_ERROR_PAGE);
    }
  }
```

Wicket basic: Reusable components



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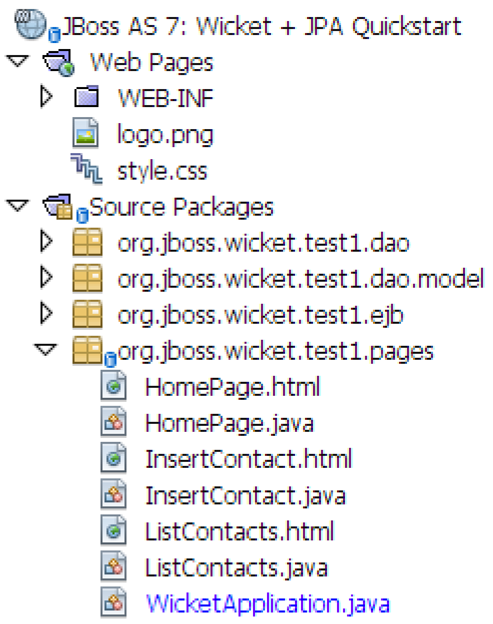
Wicket basic: Reusable components



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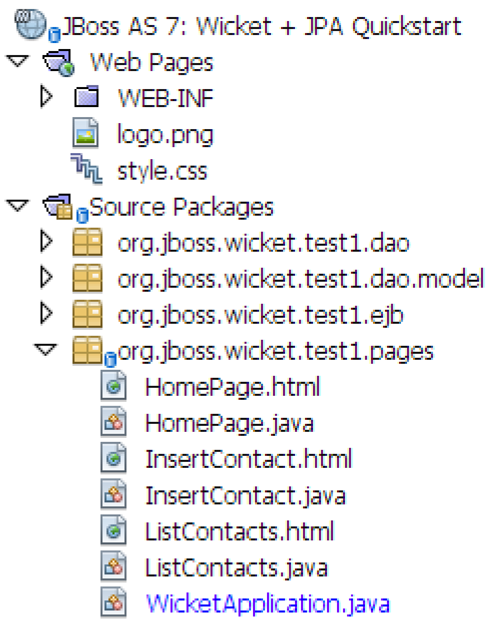
Wicket basic: Creating reusable components



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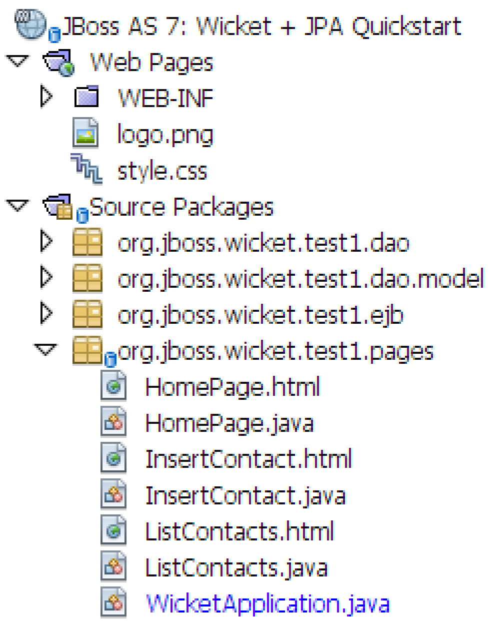
Navigation between pages

Wicket basic: Creating reusable components



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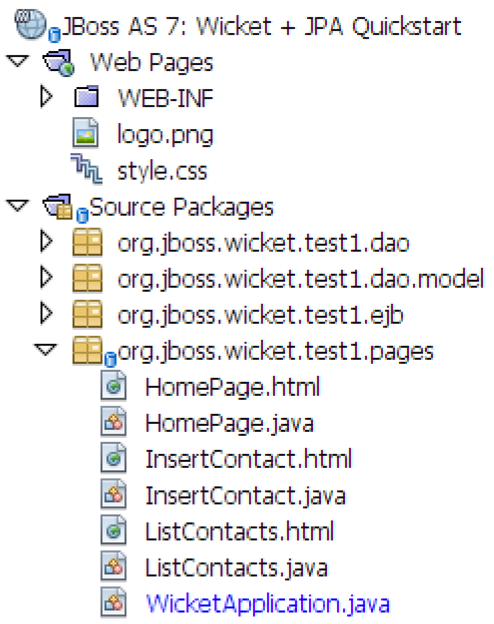
Navigation between pages

AJAX

?

Wicket basic: Creating reusable components



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Navigation between pages

AJAX

GWT-style AJAX-only apps

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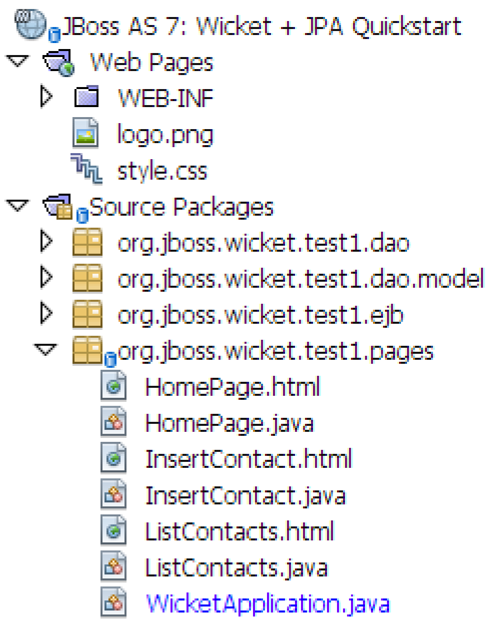

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Navigation between pages

AJAX

Validators

?

GWT-style AJAX-only apps

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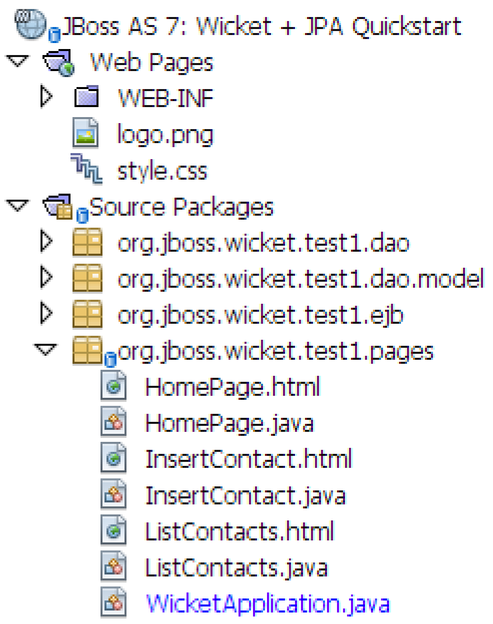

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Navigation between pages

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Validators

Resources
(images, icons)

GWT-style AJAX-only apps

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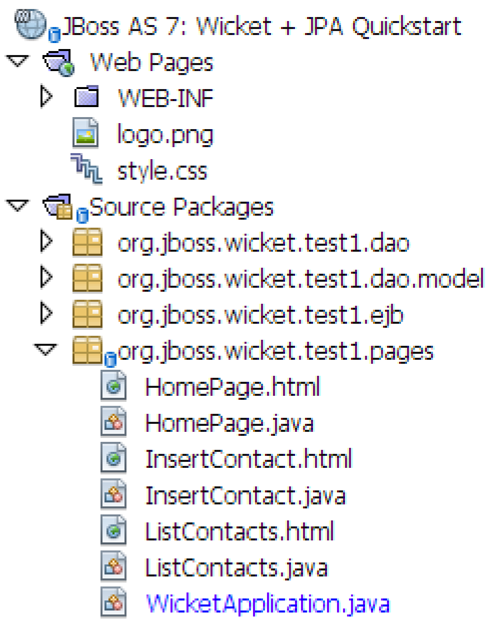
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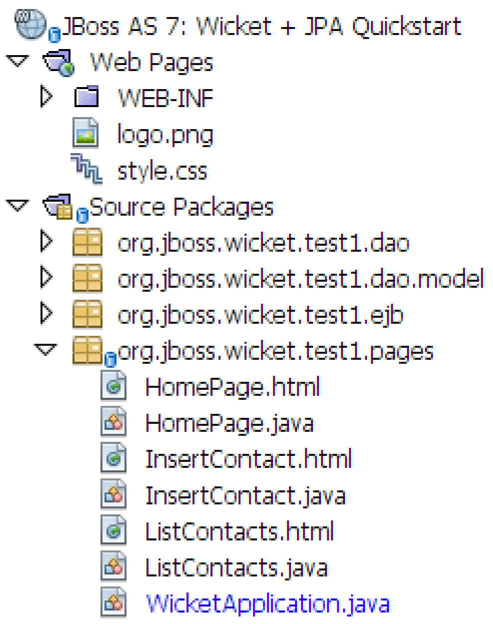
GWT-style AJAX-only apps

Components hierarchy

Wicket basic: Creating reusable components



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Navigation between pages

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Validators

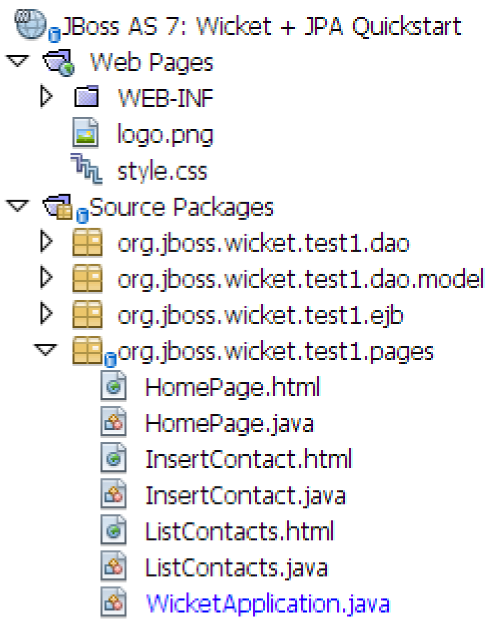
Resources
(images, icons)

Pre-existing rich components

GWT-style AJAX-only apps

Components hierarchy

Wicket basic: Creating reusable components



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Navigation between pages

CSS and JavaScript

AJAX

?

Resources
(images, icons)

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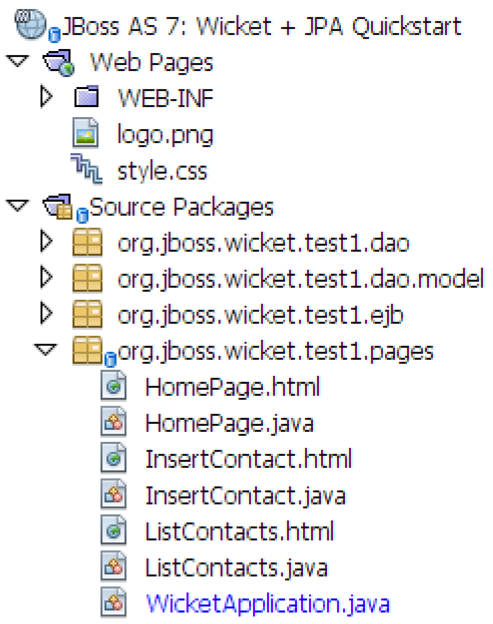
Pre-existing rich components

GWT-style AJAX-only apps

Components hierarchy

Wicket basic: Creating reusable components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Navigation between pages

CSS and JavaScript

Leveraging Java inheritance

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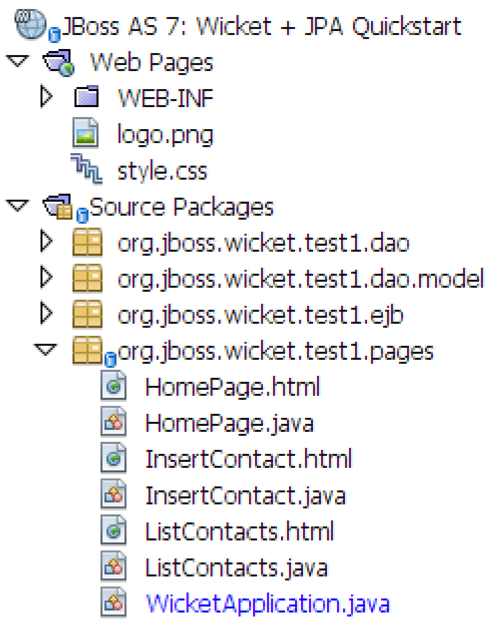

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Localization

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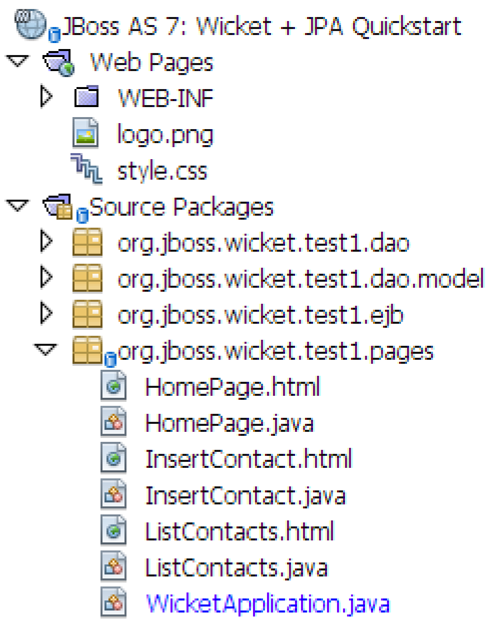

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Navigation between pages

Leveraging Java inh

Validato

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GWT-style AJAX-only apps

ation

Components hierarchy

Come to JBug Brno for more Wicket!

Wicket vs. JSF

- JSF:
  - Inspired in JSP taglibs and Struts
  - Bunch of XML configs
  - Tries to pretend there's no HTML
  - Logic and UI binding by “magic”
  - Intranet oriented
- Wicket:
  - Inspired by XUL, Swing
  - No XML (except Java EE's)
  - Tries to pretend there's no HTTP
  - Logic and UI binding next to each other
  - Doesn't need a container → easily testable
  - Modern web app oriented

(JSF page)

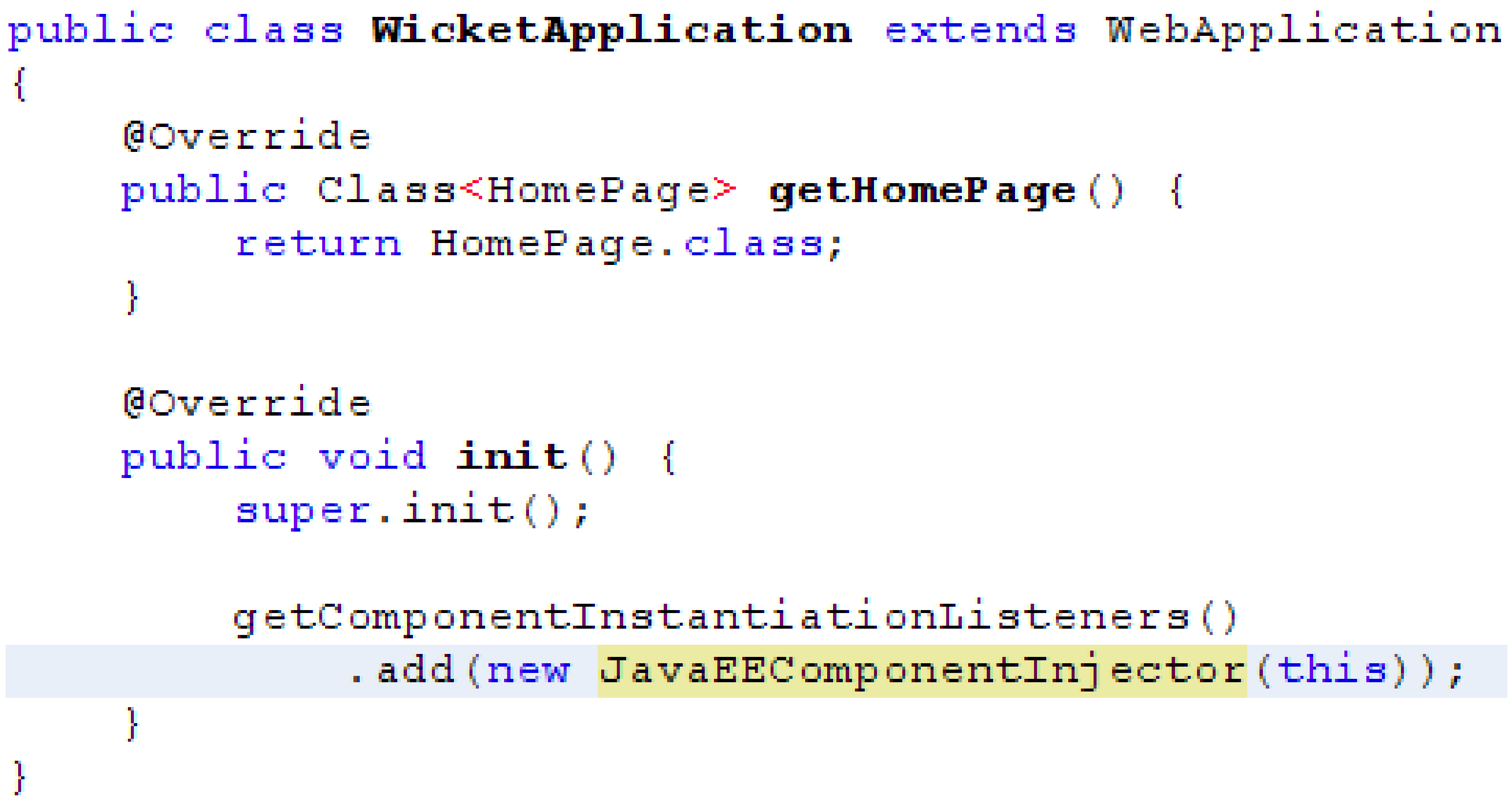
```
<f:view>
  <f:form formName="logonForm">
    <h:panel_grid columns="2">
      <h:output_text value="Username:"/>
      <h:input_text id="username" length="16"
              valueRef="logonBean.username"/>
      <h:output_text value="Password:"/>
      <h:input_secret id="password" length="16"
              valueRef="logonBean.password"/>
      <h:command_button type="submit"
                 label="Log On"
             actionRef="logonBean.logon"/>
      <h:command_button type="reset"
                 label="Reset"/>
    </h:panel_grid>
  </f:form>
</f:view>
```

Wicket + Java EE 6 (with JBoss AS 7.1)

- AS 7:
  - Java EE 6 container
  - Starts faster than Tomcat (in ~3 seconds)
  - Deploys faster than Tomcat
  - Small memory footprint
- Java EE 6:
  - Much simpler than Java EE 5
  - One class per component is enough – POJOs
  - CDI (similar to *Spring JavaConfig*)

Wicket + Java EE 6 (with JBoss AS 7.1)

- Make Wicket work with Java EE injection:



```
public class WicketApplication extends WebApplication
{
    @Override
    public Class<HomePage> getHomePage() {
        return HomePage.class;
    }

    @Override
    public void init() {
        super.init();

        getComponentInstantiationListeners()
            .add(new JavaEEComponentInjector(this));
    }
}
```

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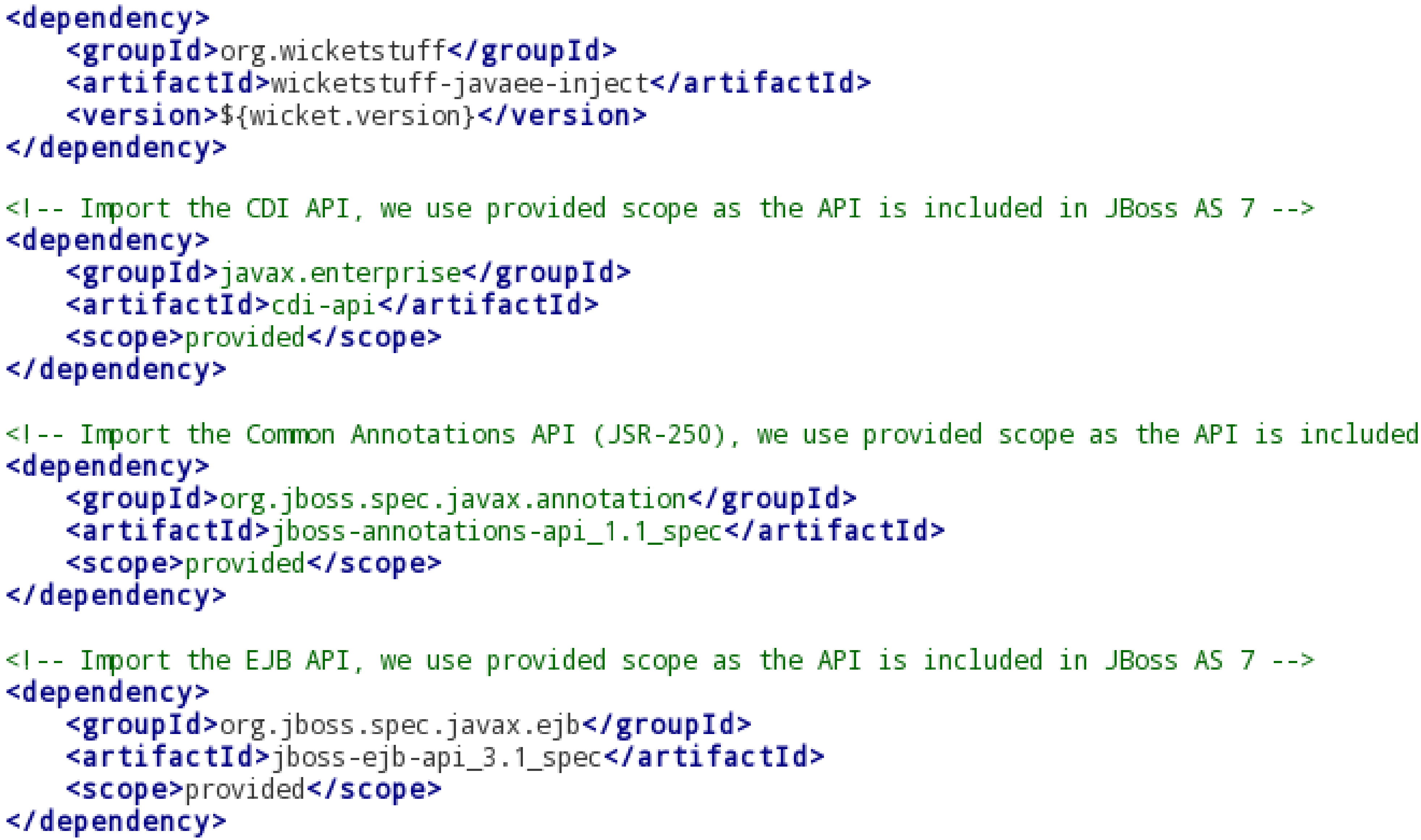
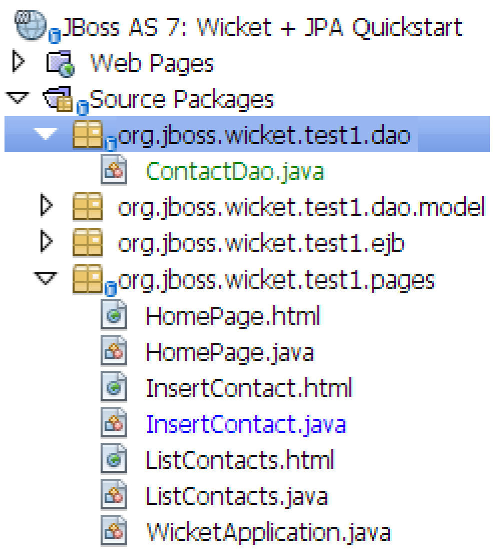
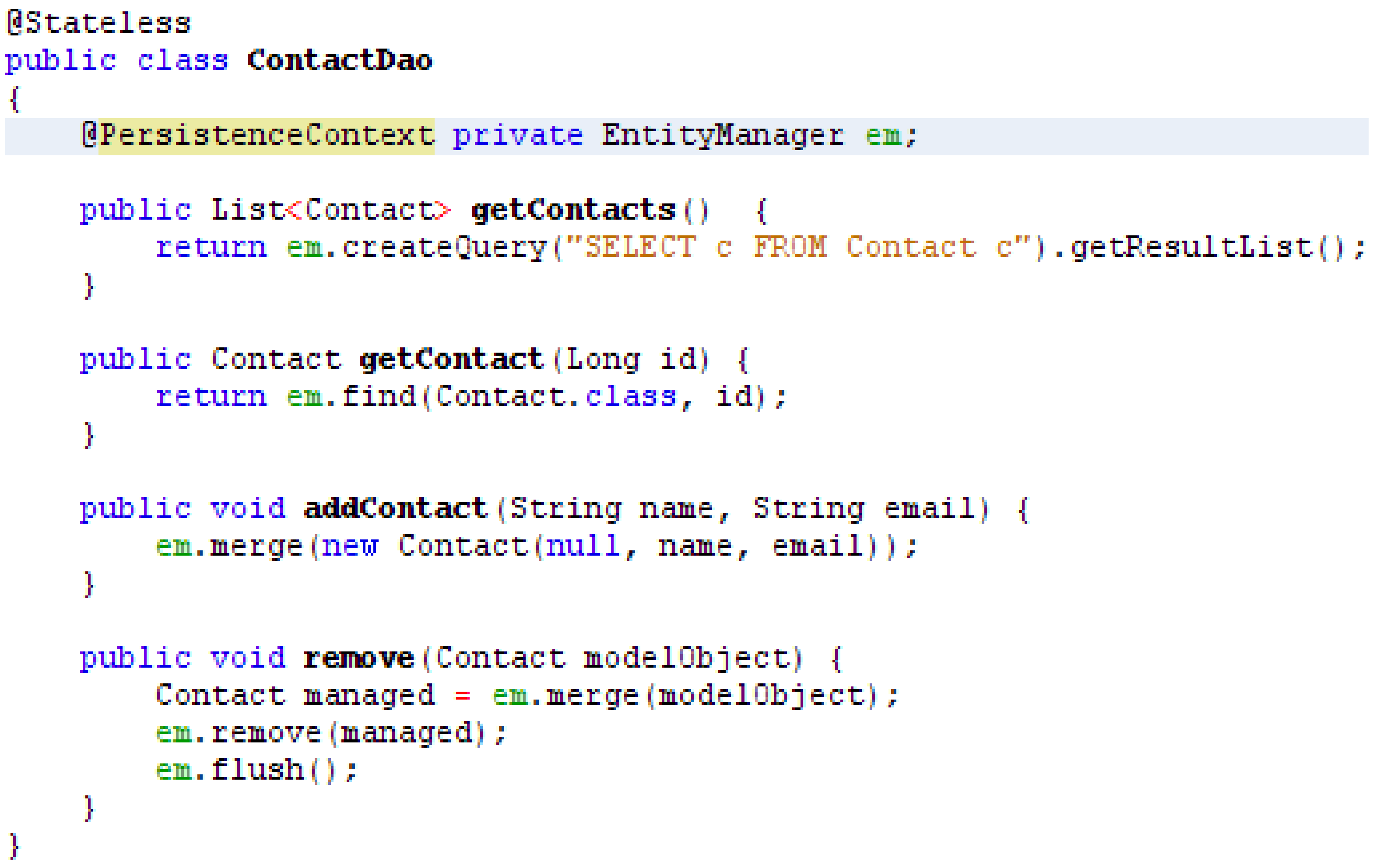


```xml
<dependency>
    <groupId>org.wicketstuff</groupId>
    <artifactId>wicketstuff-javaee-inject</artifactId>
    <version>${wicket.version}</version>
</dependency>

<!-- Import the CDI API, we use provided scope as the API is included in JBoss AS 7 -->
<dependency>
    <groupId>javax.enterprise</groupId>
    <artifactId>cdi-api</artifactId>
    <scope>provided</scope>
</dependency>

<!-- Import the Common Annotations API (JSR-250), we use provided scope as the API is included
<dependency>
    <groupId>org.jboss.spec.javax.annotation</groupId>
    <artifactId>jboss-annotations-api_1.1_spec</artifactId>
    <scope>provided</scope>
</dependency>

<!-- Import the EJB API, we use provided scope as the API is included in JBoss AS 7 -->
<dependency>
    <groupId>org.jboss.spec.javax.ejb</groupId>
    <artifactId>jboss-ejb-api_3.1_spec</artifactId>
    <scope>provided</scope>
</dependency>
```

Wicket + JPA (with JBoss AS 7.1)

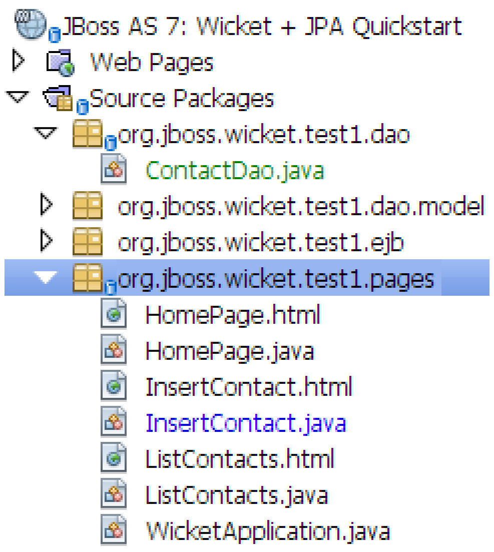


```
JBoss AS 7: Wicket + JPA Quickstart
  Web Pages
  Source Packages
    org.jboss.wicket.test1.dao
      ContactDao.java
    org.jboss.wicket.test1.dao.model
    org.jboss.wicket.test1.ejb
    org.jboss.wicket.test1.pages
      HomePage.html
      HomePage.java
      InsertContact.html
      InsertContact.java
      ListContacts.html
      ListContacts.java
      WicketApplication.java
```



```java
@Stateless
public class ContactDao
{
    @PersistenceContext private EntityManager em;

    public List<Contact> getContacts()  {
        return em.createQuery("SELECT c FROM Contact c").getResultList();
    }

    public Contact getContact(Long id) {
        return em.find(Contact.class, id);
    }

    public void addContact(String name, String email) {
        em.merge(new Contact(null, name, email));
    }

    public void remove(Contact modelObject) {
        Contact managed = em.merge(modelObject);
        em.remove(managed);
        em.flush();
    }
}
```

Wicket + EJB (with JBoss AS 7.1)



```
JBoss AS 7: Wicket + JPA Quickstart
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    org.jboss.wicket.test1.dao.model
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    org.jboss.wicket.test1.pages
      HomePage.html
      HomePage.java
      InsertContact.html
      InsertContact.java
      ListContacts.html
      ListContacts.java
      WicketApplication.java
```
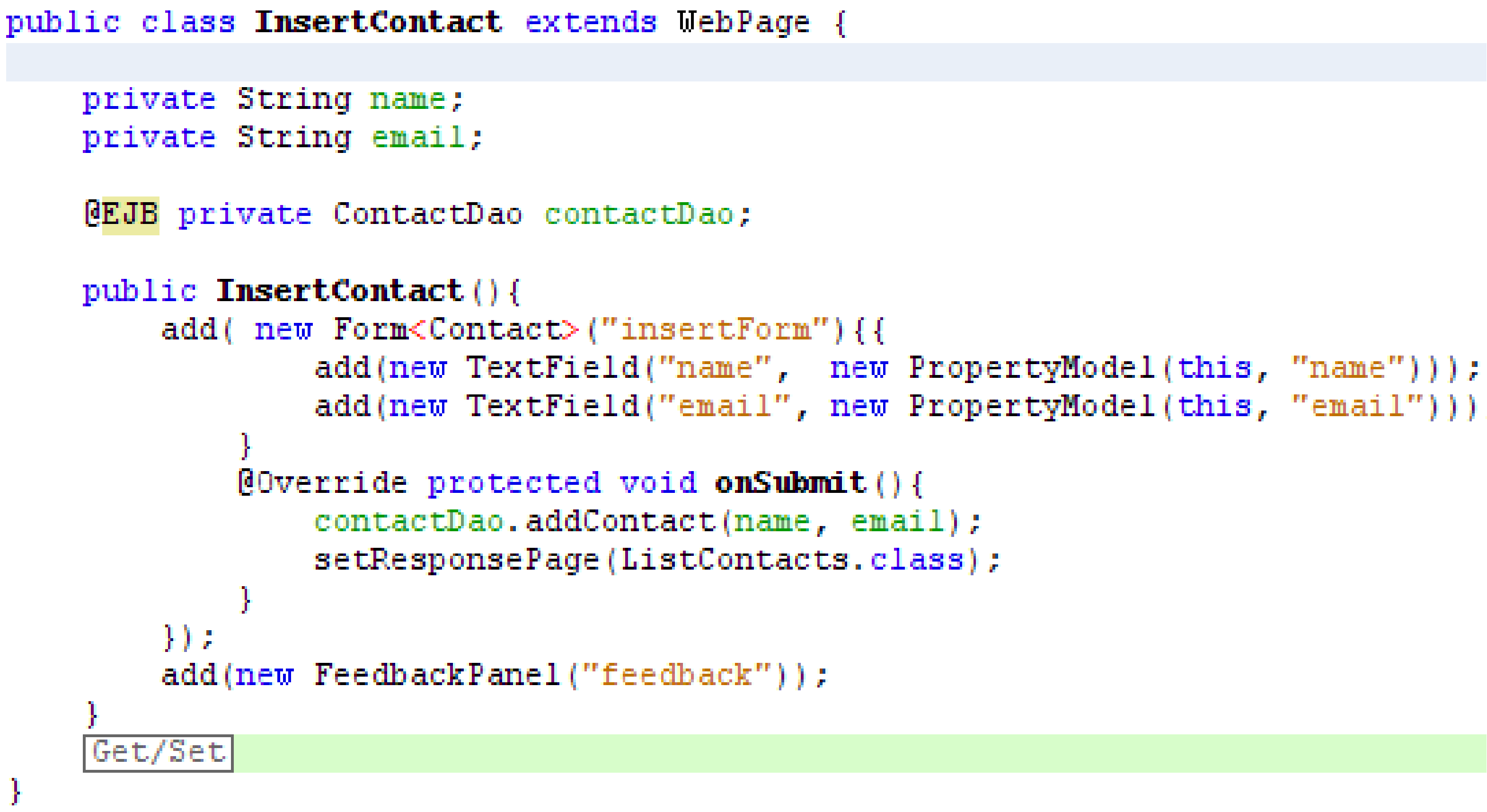
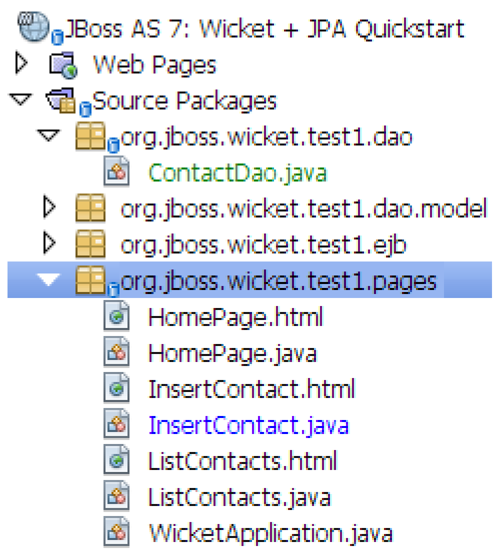



```java
public class InsertContact extends WebPage {

    private String name;
    private String email;

    @EJB private ContactDao contactDao;

    public InsertContact(){
        add( new Form<Contact>("insertForm"){{
                add(new TextField("name",  new PropertyModel(this, "name")));
                add(new TextField("email", new PropertyModel(this, "email"))
            }
            @Override protected void onSubmit(){
                contactDao.addContact(name, email);
                setResponsePage(ListContacts.class);
            }
        });
        add(new FeedbackPanel("feedback"));
    }
    Get/Set
}
```

Wicket page (expanded version)



```
JBoss AS 7: Wicket + JPA Quickstart
  Web Pages
  Source Packages
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      ContactDao.java
    org.jboss.wicket.test1.dao.model
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    org.jboss.wicket.test1.pages
      HomePage.html
      HomePage.java
      InsertContact.html
      InsertContact.java
      ListContacts.html
      ListContacts.java
      WicketApplication.java
```

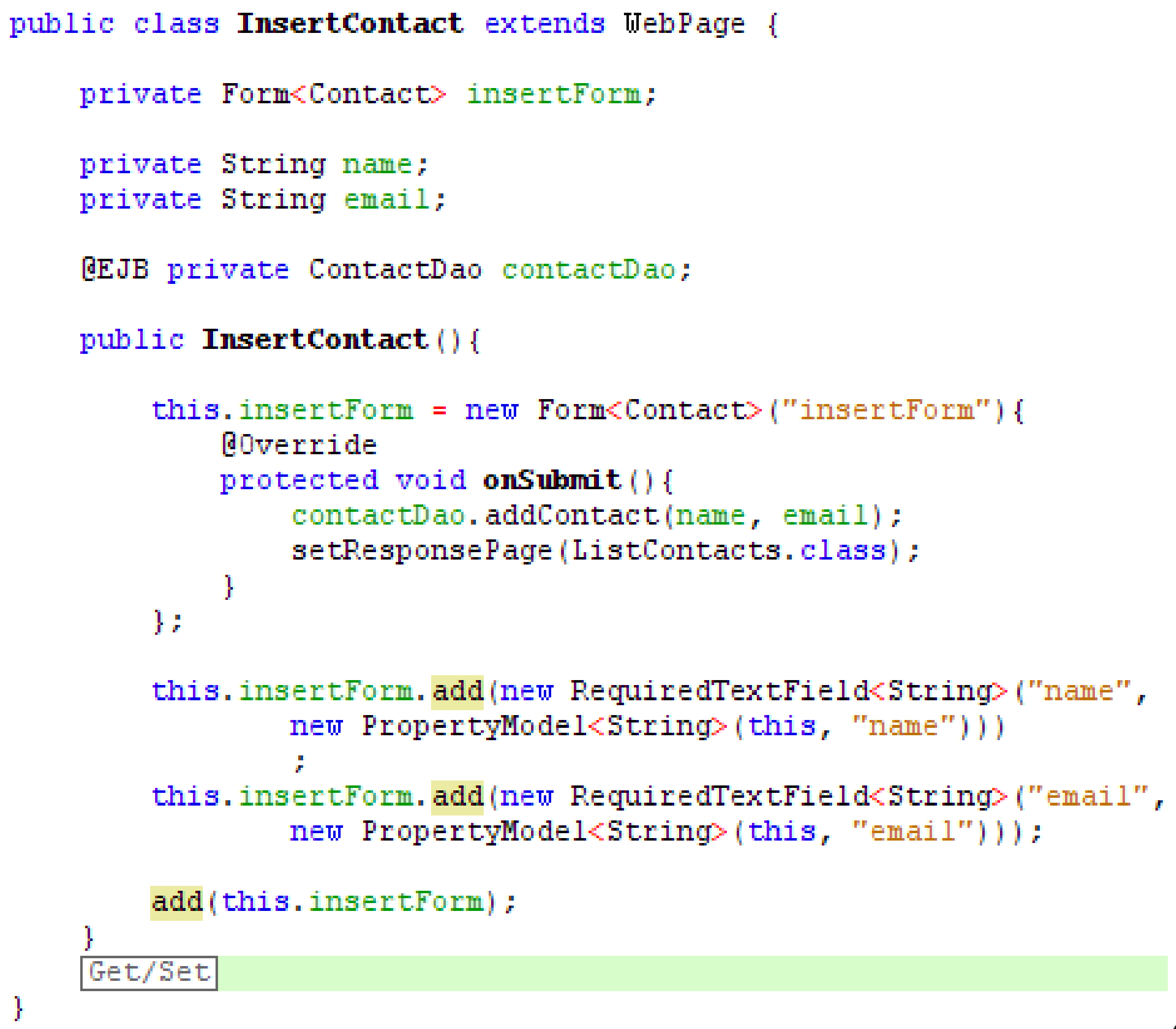

```java
public class InsertContact extends WebPage {

    private Form<Contact> insertForm;

    private String name;
    private String email;

    @EJB private ContactDao contactDao;

    public InsertContact(){

        this.insertForm = new Form<Contact>("insertForm"){
            @Override
            protected void onSubmit(){
                contactDao.addContact(name, email);
                setResponsePage(ListContacts.class);
            }
        };

        this.insertForm.add(new RequiredTextField<String>("name",
                new PropertyModel<String>(this, "name")))
                ;
        this.insertForm.add(new RequiredTextField<String>("email",
                new PropertyModel<String>(this, "email")));

        add(this.insertForm);
    }
    Get/Set
}
```

Questions?

ozizka@redhat.com

Thanks!

See you at JBug - monthly at FI MUNI.
Watch JBoss.cz for announcements.

Join *Czech & Slovak Wicket Users Group*
at LinkedIn.com

Wicket (slide template)