Struts Message Resources

Many programmers new to struts often encounters difficulties in handling the functionality of the struts message resources. This tutorial explain the usage of this functionality and show with a example how you can work with the message resources.

Generals

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http://www.laliluna.de/tutorials.html Tutorials for Struts, EJB, xdoclet and eclipse.
Date:
November, 11 2004

Source code:
http://www.laliluna.de/assets/tutorials/struts-message-resources-tutorial.zip

PDF Version des Tutorials:

http://www.laliluna.de/assets/tutorials/struts-message-resources-tutorial-en.pdf

Development Tools
Eclipse 3.x
MyEclipse plugin 3.8
(A cheap and quite powerful Extension to Eclipse to develop Web Applications and EJB (J2EE) Applications. I think that there is a test version availalable at MyEclipse.)
Database
PostgreSQL 8.0 Beta
Application Server
Jboss 3.2.5
You may use Tomcat here if you like.

What are message resources

The message resource class allows the developer internationalising his web application easy and fast. He can put labels of fields or discription textes in a central file and can access them later in the JSP File. The advantage is that you can reuse labels like error messages, titles in multiple JSP files and you can provide the ressource files in multiple languages.

Configuration

There are two ways to tell Struts the location of your resource bundle. In your web.xml or in your struts-config.xml.

web.xml

```
<servlet>
<servlet-name>action</servlet-name>
<servlet-class>
    org.apache.struts.action.ActionServlet
</servlet-class>
<init-param>
<param-name>
    application
</param-name>
<param-value>
    de.laliluna.tutorials.library.struts.ApplicationResources
</param-value>
</init-param>
</servlet>
```

With the configuration you set the name of the message resource bundle to

`ApplicationResources.properties` and the package, where the files are found `de.laliluna.tutorials.library.struts`. The extension „`.properties`“ will be added by struts. You don´t need to add the extension by your self, also there are more than one message resource files, for example `ApplicationResources_fr.properties` for frances. You only define the general name of the message resource bundle.

The second way to define the message resource bundle is the struts-confg.xml .

```
<message-resources
parameter="de.laliluna.tutorials.library.struts.ApplicationResources"/>
```

The statement is the same like in the web.xml.

Its required to use the second way to define the message resource bundle, because you have additional flexibility.

You can define more than one message resource file. Therefor you must add a parameter `key` to the tag `<message-resource>.` With this key struts knows which message resource file to access.

```
<message-resources key="myResources"
parameter="de.laliluna.tutorials.library.struts.ApplicationResources"/>

<message-resources key="moreResources"
parameter="de.laliluna.tutorials.library.struts.MoreApplicationResources"/>
```

Setting the `null` attribute to "false" will display missing resource values as *???key???* instead of displaying *null.* This string is easily found during automated testing of your JSPs.

```
<message-resources
parameter="de.laliluna.tutorials.library.struts.ApplicationResources"
null="false"/>
```

The message resource files

Inside the message resource files you can define the keys and their values.
A message resource file can look like the following

```
label.username=Username
label.password=Password
label.first.name=First Name
label.last.name=Last Name
label.email=Email Address
label.phone.number=Phone Number
label.welcome=Welcome back {0} {1}!

error.min.length=The input must be at least {0} characters in length.
error.max.length=The input cannot be longer than {0} characters in length.
```

You define a key (`label.username)` and assign a value (Username). Later you can print the label by using the key in your JSP oder action class.

Placeholder

It is possible using placeholder in a message key. So you can insert dynamic contents in your JSP file or action class, for example the actualy date or a username of a user. You can have up to four parameter fields per value string.

```
label.welcome=Welcome back {0} {1}!
```

In this example the first substitute symbol stands for the first name, second for the surname.

Later the message printed looks like the following:

```
Welcome back John Dilinger
```

Internationalising

If you want to internationalise your web application with the message resources, you have to add the Locale suffic. For France or Brazilian it looks like the following:

```
ApplicationResources_fr.properties
ApplicationResources_br.properties
```

Futhermore it is possible to combine more as one local in a message resource file.

```
ApplicationResources_fr_br.properties
```

How does it work ?

- The message is located with specific Locale. If the message cannot be found, more generic Locals are used. If the message cannot be found in `ApplicationResources_fr_br.properties` (France Brazilian), the file `ApplicationResources_pt.properties` (and therefor Locale) will searched. If this file does not exist or the message key cannot be found the global file `ApplicationResources.properties` will be used.
- If the message key is found, it is added to a Locale-specific cache and returned as a `java.lang.String`.
- If the message key is **not** found, `null` or `???key?` is returned, depending on which value (true / false) is assinged to the parameter `null` of the element `<messages-resources>`.

Usage of message resources in JSP files

You can use two tags to print out a message key in your JSP file.
The most used tag is `<bean:message>`

```
<bean:message key="label.password"/>
<bean:message key="error.min.length" arg0="6"/>
<bean:message key="label.welcome" arg0="John" arg1="Dilinger"/>
```

The parameter `Key` defines the message key. If the message key cannot be found, `null` is returned, if the parameter `null` is true, otherwise ???key? is returned. The parameter arg0 – arg3 are used to define the values of the placeholder, which you inserted in your message resource file.

If you use more than one resource file, you have to set a parameter `bundle`, which is the key of the message resource bundle. You set the key of the resource bundle in your struts-config.xml.

```
<bean:message bundle="moreResources" key="some.message.key"/>
```

Another way to use message keys is `<html:messages>`. This tag is used to show errors or messages, in a form input mask for example. The errors or message are taken from the request.

```
<logic:messagesPresent message="true">
  <html:messages id="msg" message="true">
      <bean:write name="msg"/> <br/>
  </html:messages>
</logic:messagesPresent>
```

The tag `<logic:messagesPresent>` checks if there are some errors or messages in the request. With the parameter `message` you can define if messages or errors will be displayed. Default are errors. The tag `<html:message>` loops over the messages or errors saved in the request. The parameter `id` defines one message or error, which is printed out with

`<bean:write>`.

Errors and messages will be added to the request in the action class, in order to print out these with the tag `<html:messages>` . You can use two methods `saveMessages()` and `saveErrors()`.

Usage of message resources in action classes

It is also possible to access a message resource in an action class. This is an advantage if you add ActionErrors or ActionMessages, which are printed out with tag `<html:messages>` in your JSP file. A simple example should illustrate this:

Message resource file

```
label.username=Username
label.password=Password
error.missing.key=The fields are missing: {0} and {1}
```

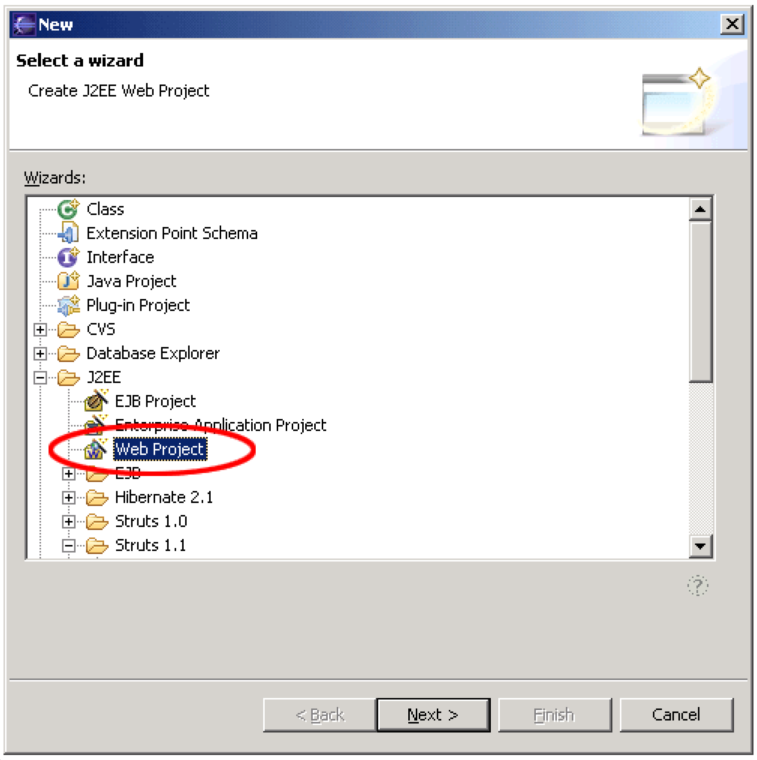
Action Class

```
MessageResources messageResources = getResources(request);

ActionErrors actionErrors = new ActionErrors();
actionErrors.add("error", new ActionMessage("error.missing.key",
messageResources.getMessage("label.username"), messageResources.getMessage
("label.password")));
saveErrors(request, actionErrors);
```

The methode `getResources(request)` get the message resource file by the Locale specify in the request. Now we create a intance of ActionErrors, which is later saved in the request. The method `add` insert a error into `actionErrors`. `SaveErrors()` save the erros in the request.. The method `new ActionMessage()` reads a message key. The two parameter of the method define the value of the placeholder. Its the same like the parameter `arg0-arg3` of `<bean:message>`. The method `getMessage("label.username")` read the value of the key `label.username` and replace it with the placeholder.

Create the example application

Create a new struts project with `File > New > Project` or use the shortcut `Strg + n`. Select the Wizard in J2EE `Web Project`



New

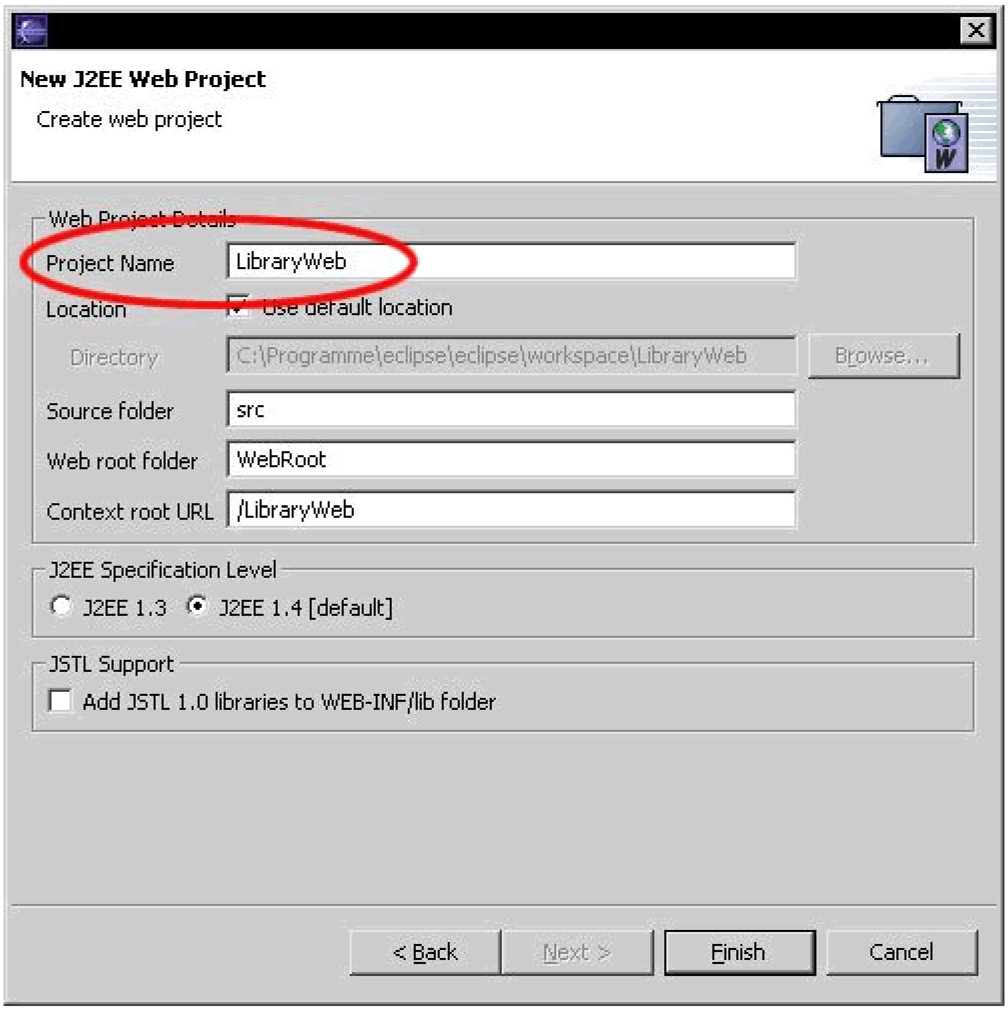
Select a wizard

Create J2EE Web Project

Wizards:

- Class
- Extension Point Schema
- Interface
- Java Project
- Plug-in Project
- CVS
- Database Explorer
- J2EE
  - EJB Project
  - Enterprise Application Project
  - Web Project
  - EJB
  - Hibernate 2.1
  - Struts 1.0
  - Struts 1.1

Create a nice name for your project



New J2EE Web Project

Create web project

Web Project Details

Project Name	LibraryWeb
Location	[✓] Use default location
Directory	C:\Programme\eclipse\eclipse\workspace\LibraryWeb
Source folder	src
Web root folder	WebRoot
Context root URL	/LibraryWeb

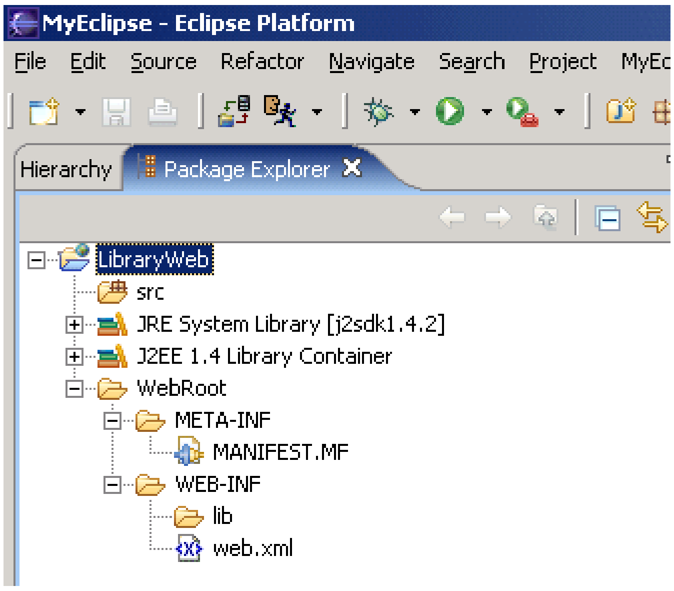
J2EE Specification Level

J2EE 1.3 [✓ J2EE 1.4 [default]]

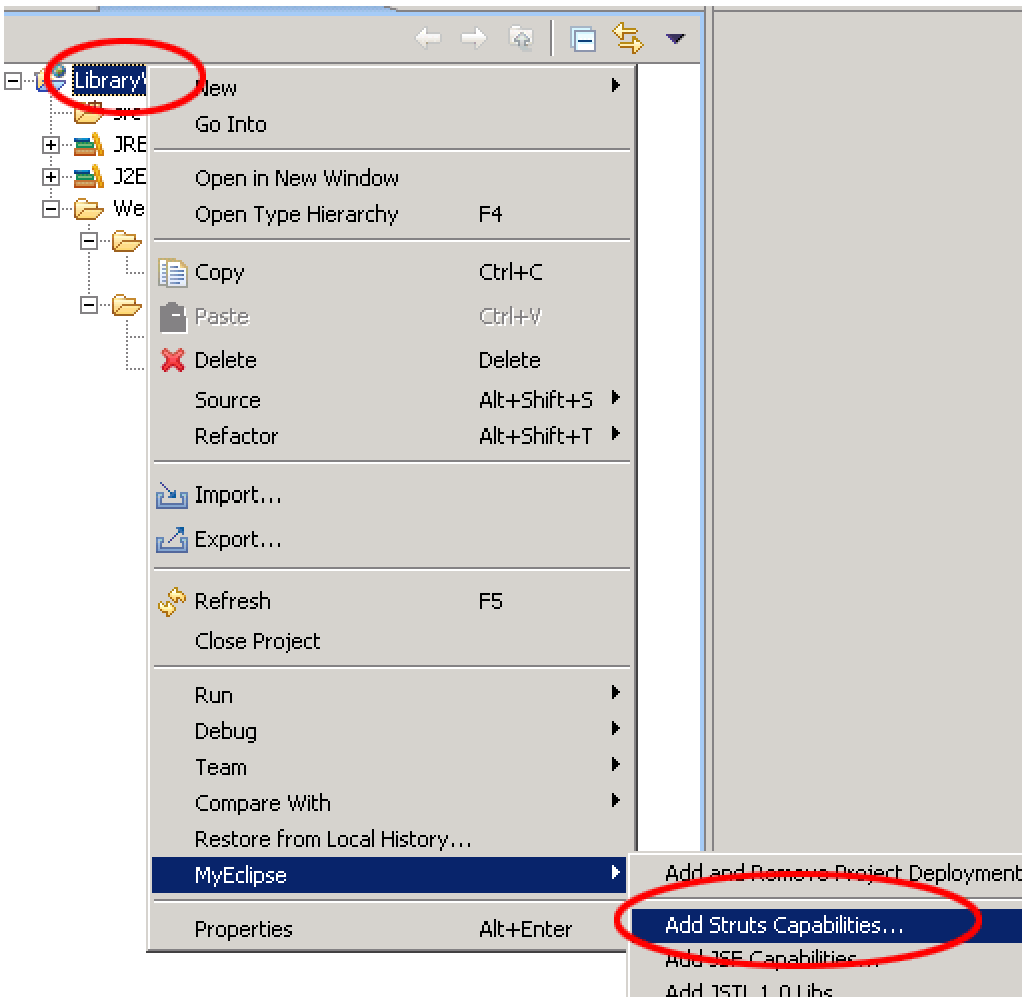
JSTL Support

[ ] Add JSTL 1.0 libraries to WEB-INF/lib folder

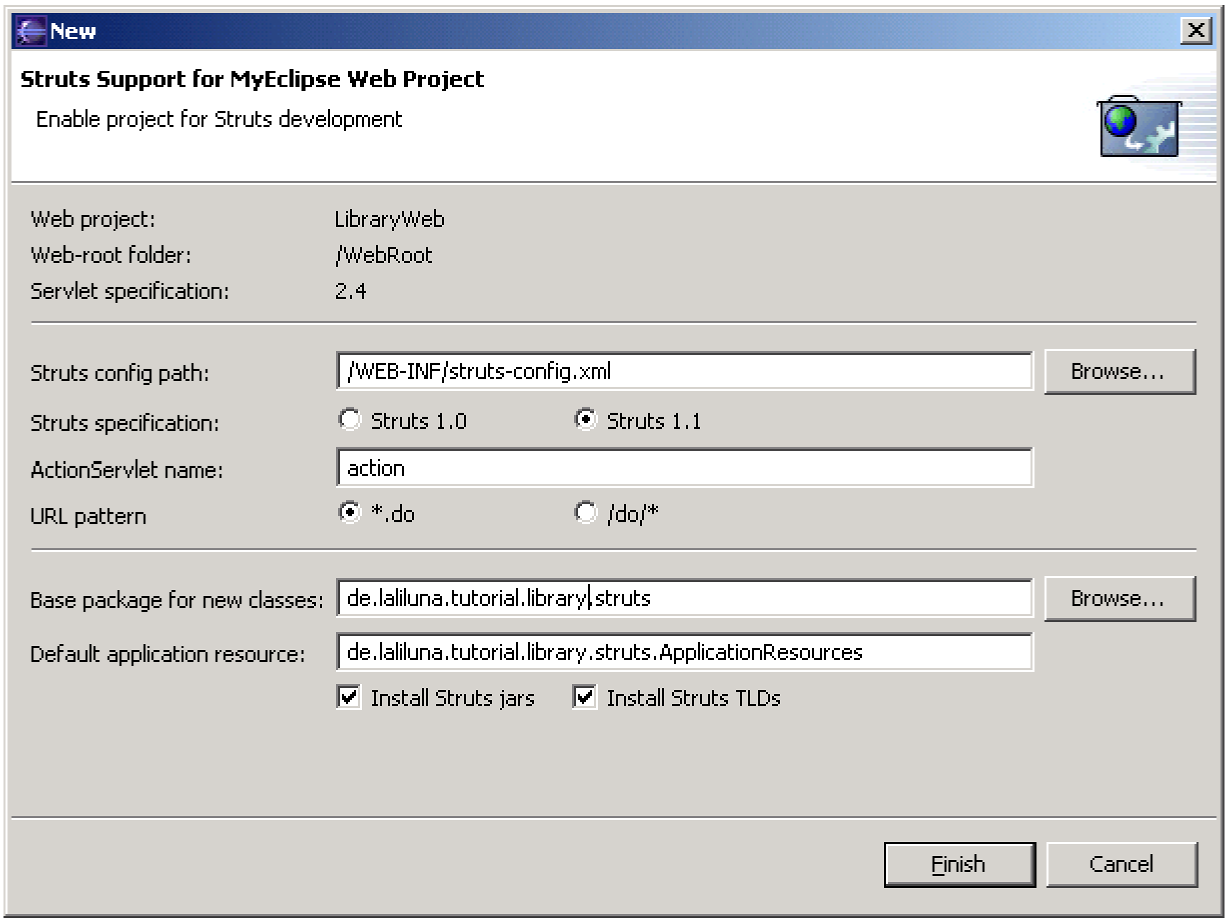
After creating the project, your Package Explorer looks like the picture below.


MyEclipse - Eclipse Platform
File Edit Source Refactor Navigate Search Project MyEc
Hierarchy
Package Explorer
LibraryWeb
src
JRE System Library [j2sdk1.4.2]
J2EE 1.4 Library Container
WebRoot
META-INF
MANIFEST.MF
WEB-INF
lib
web.xml

For now your project is a normal J2EE project, so we need to add the struts capabilityies. Right click on the project and add the capabilities for struts with `Add Struts Capabilityies.`



Change the properties `Base package for new classes` and `Default application resource`


New
Struts Support for MyEclipse Web Project
Enable project for Struts development

Web project: LibraryWeb
Web-root folder: /WebRoot
Servlet specification: 2.4
Struts config path: /WEB-INF/struts-config.xml
Struts specification: ( ) Struts 1.0 (•) Struts 1.1
ActionServlet name: action
URL pattern (•) *.do ( ) /do/*
Base package for new classes: de.laliluna.tutorial.library.struts
Default application resource: de.laliluna.tutorial.library.struts.ApplicationResources
[✓] Install Struts jars [✓] Install Struts TLDs

Edit the message resource files

Open the file `ApplicationResources.properties` in the package `de.laliluna.tutorials.library.struts` and add the following message keys.

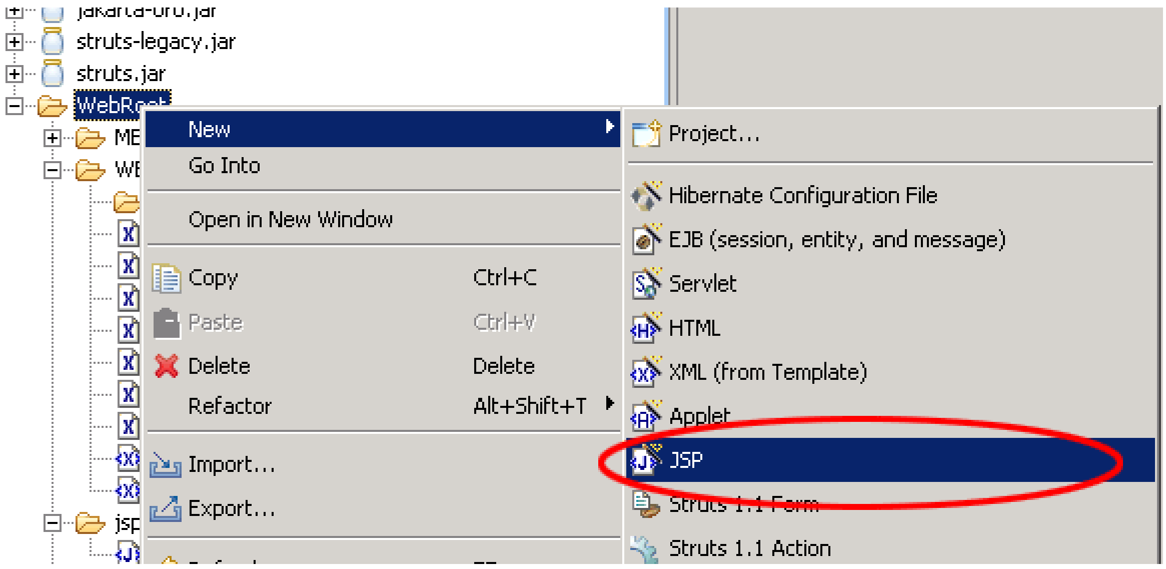
```
title.add=Add a new book
title.edit=Edit a book
title.list=Show book list

label.booklist=Show book list
label.author=Author
label.title=Title
label.available=Available
label.edit=Edit
label.delete=Delete
label.new=Add a new book

label.save=Save

error.field=The field {0} is empty.
```

We add another language (German). Create a new files with the Locale **de**, `ApplicationResources_de.properties`, and assign the german values to the message keys.

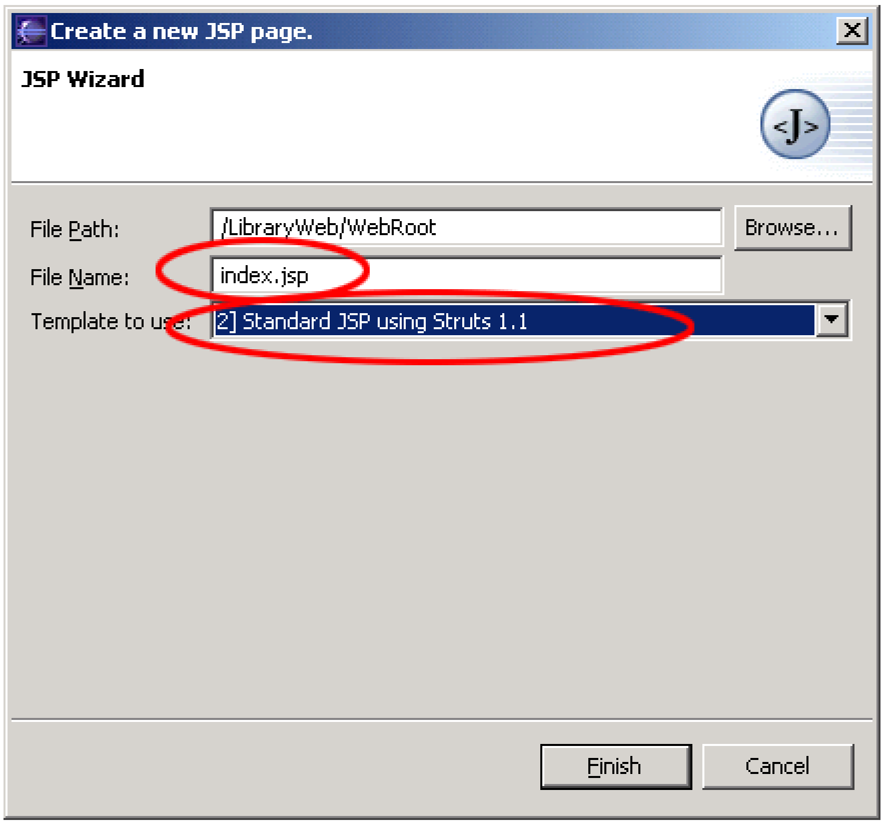
```
title.add=Neues Buch hinzufügen
title.edit=Buch editieren
title.list=Zeige Bücherliste

label.booklist=Zeige Bücherliste
label.author=Autor
label.title=Titel
label.available=Verfügbarkeit
label.edit=Bearbeiten
label.delete=Löschen
label.new=Neues Buch hinzufügen

label.save=Speichern

error.field=Das Feld {0} ist leer.
```

Create a default welcome page

Ok, now we want to create a default page. Right click (yes again) on the Folder `WebRoot` in the Project and choose `New > JSP`.



Set the name to `index.jsp` and choose on `template to use` > `Standard JSP using Struts 1.1` MyEcplise will use the template to create the JSP File.


Create a new JSP page.

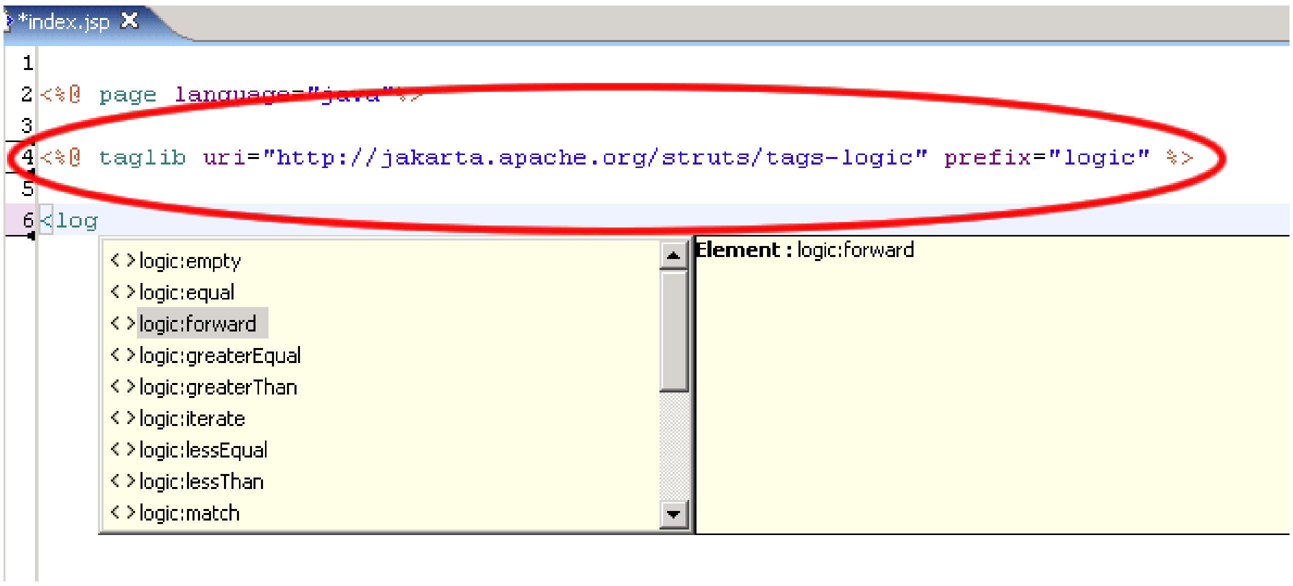
JSP Wizard

File Path: /LibraryWeb/WebRoot

File Name: index.jsp

Template to use: 2] Standard JSP using Struts 1.1

You will find the file `index.jsp` in the folder `WebRoot` of the project. On the top of the file you will find the struts tag libraries. These includes will be used to access the tags of struts. In your case we only need the logic tag library.


```
<%@ page language="java"%>

<%@ taglib uri="http://jakarta.apache.org/struts/tags-logic" prefix="logic" %>

<log
```

Insert the following line below the included logic tag.

```
<logic:forward name="welcome" />
```

This line instructs struts to forward to a forward named `welcome`. If the application doesn´t find this forward it will produce an error. In the next section I briefly explain the action forward.

Create a second `index.jsp` file in the folder `/WebRoot/jsp`
Change the body of the file to the following

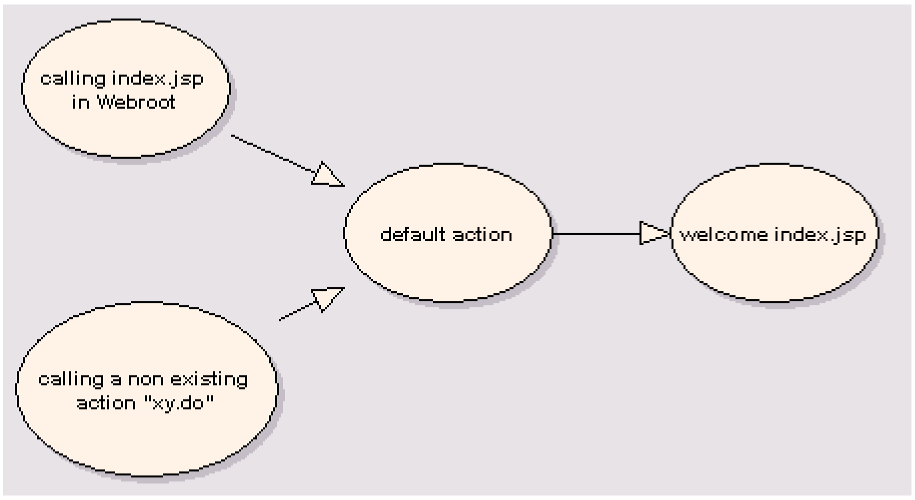
```
<body>
    <bean:message key="title.welcome" />
    <br>
    <html:link action="bookList">
      <bean:message key="label.booklist" />
    </html:link>
</body>
```

Global Action Forwards and Action Mappings

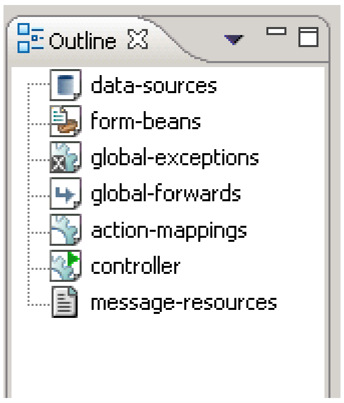
What is an action forward?
A action forward can be used to forward to a jsp or action mapping. There are two different action forwards. The global action forward and the local action forward. You can access a global action forward on each jsp or action class. A local action forward can only be accessed by the assigned action class.

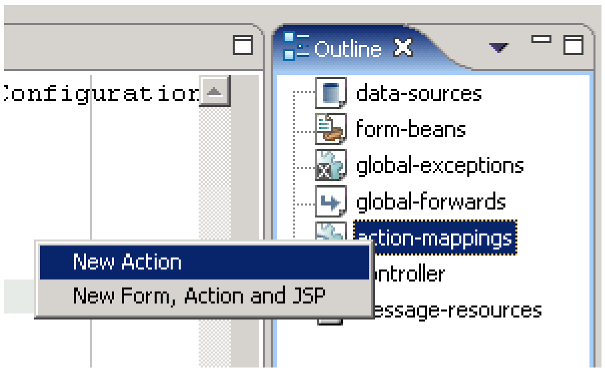
What is a action mapping?
The action mapping is the heart of struts. It managed all actions between the application and the user. You can define which action will be executed by creating a action mapping.

The diagram show you, how the application server manage the request of the `index.jsp` or a non existing action mapping.

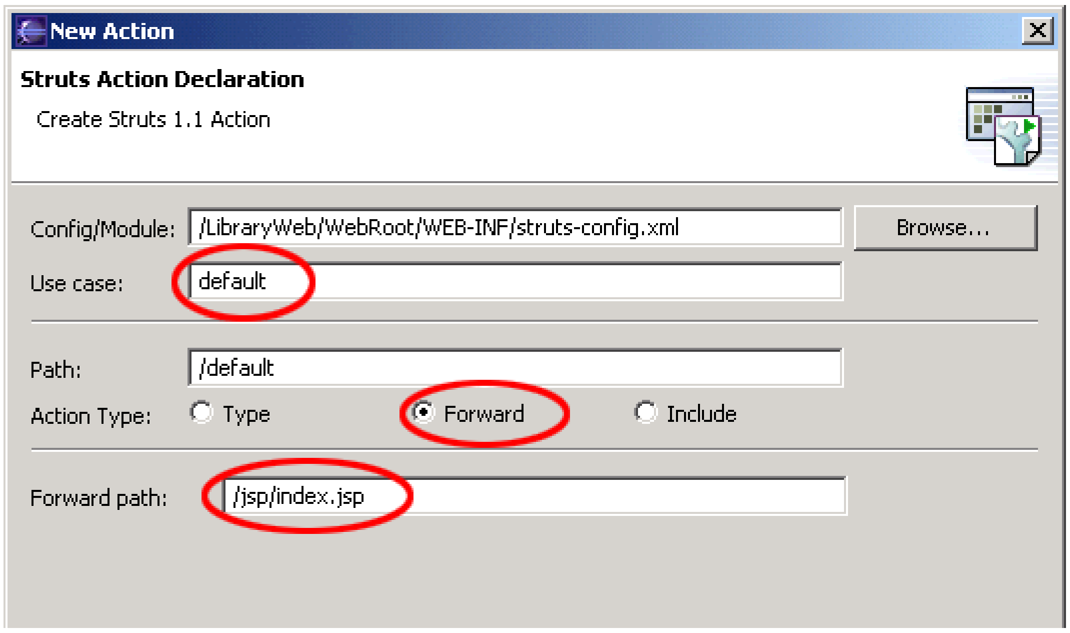

calling index.jsp in Webroot
default action
welcome index.jsp
calling a non existing action "xy.do"

In the first step we create a new action mapping. Open the `struts-config.xml`, you will find it in the folder `WebRoot/WEB-INF`. Right click in the outline window on `action-mapping`.





Choose `Use Case` default and `Action Type` Forward. The `Forward Path` is the welcome page `/jsp/index.jsp`



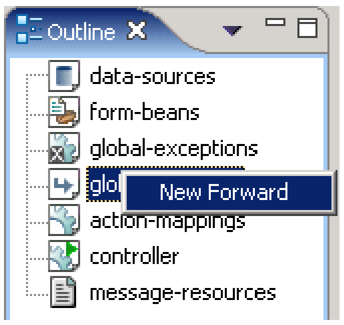
New Action

Struts Action Declaration

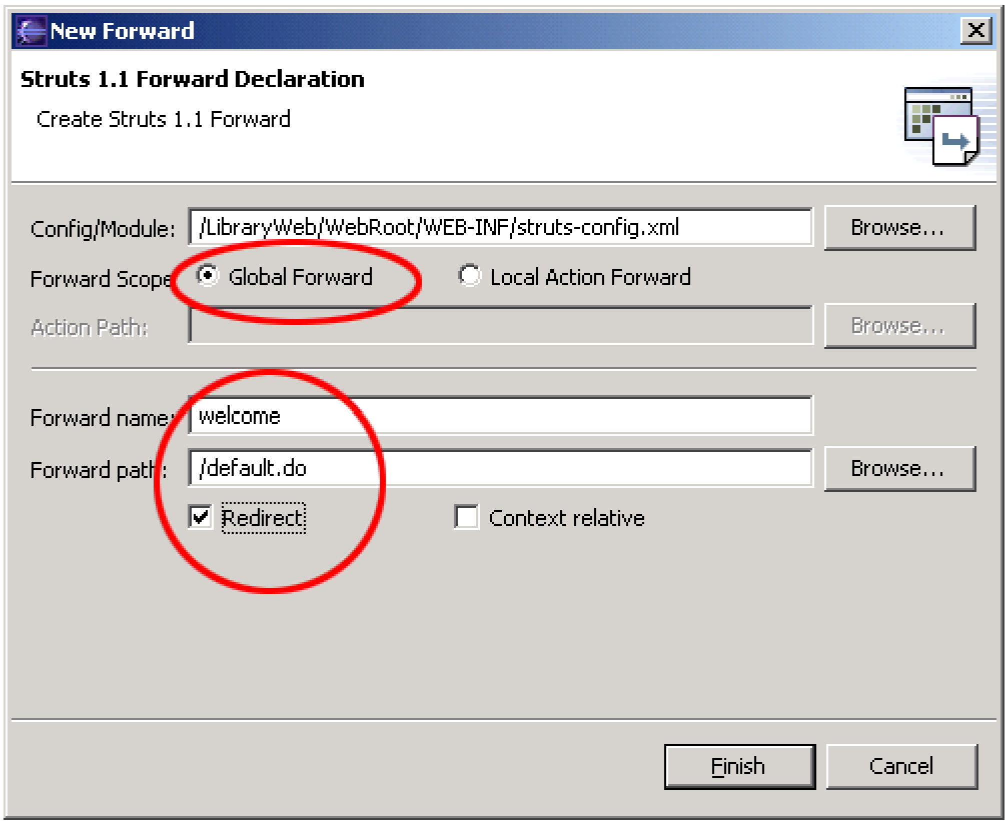
Create Struts 1.1 Action

Config/Module:	/LibraryWeb/WebRoot/WEB-INF/struts-config.xml	Browse...
Use case:	default	
Path:	/default	
Action Type:	○ Type [✓ ● Forward] ○ Include	
Forward path:	/jsp/index.jsp	

In the second step you create a global action forward. Go back to the outline window of MyEclipse and choose `Global Forward`



Choose the `Forward Scope` Global Forward. For name use the same you have set in your default page. The `Global Forward` refers to your action mapping.


New Forward

Struts 1.1 Forward Declaration

Create Struts 1.1 Forward

Config/Module: /LibraryWeb/WebRoot/WEB-INF/struts-config.xml

Forward Scope: [✓ Global Forward] Local Action Forward

Action Path:

Forward name: welcome

Forward path: /default.do

[✓ Redirect] Context relative

You will see the following in your editor window.

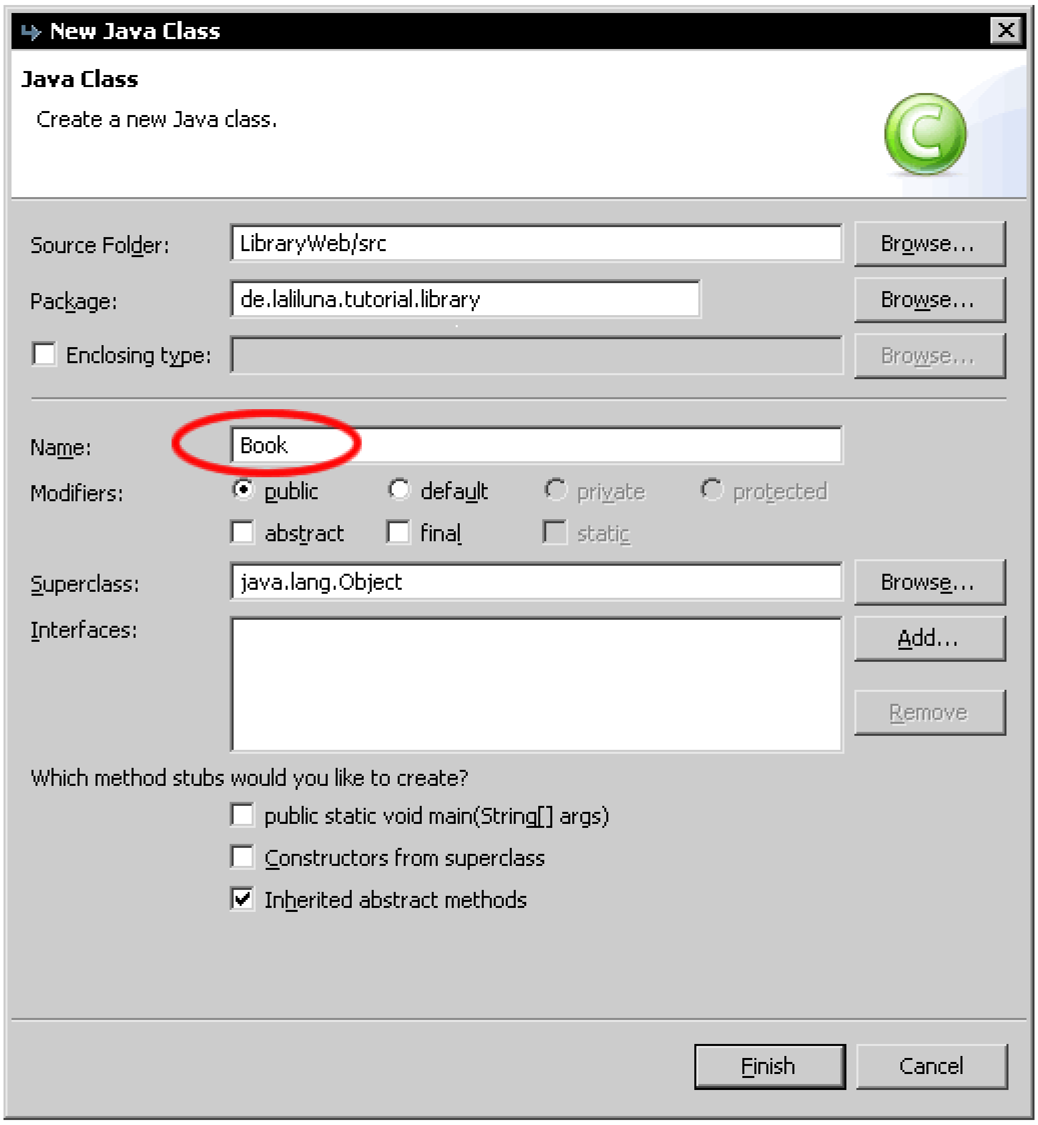
```
<global-forwards >
   <forward name="welcome" path="/default.do" redirect="true" />
</global-forwards>
<action-mappings >
   <action forward="/jsp/index.jsp" path="/default" />
</action-mappings>
```

To catch all requests of non existing action mappings, we have to add a parameter `unknow="true"` to the action forward.

```
<action-mappings >
   <action forward="/jsp/index.jsp" path="/default" unknown="true"/>
</action-mappings>
```

Create a object class „book“

Create a new class `Book` in the package `de.laliluna.tutorial.library`.



New Java Class

Java Class

Create a new Java class.

Source Folder: LibraryWeb/src Browse...

Package: de.laliluna.tutorial.library Browse...

[ ] Enclosing type: Browse...

Name: Book

Modifiers: [✓ public] default private protected

[ ] abstract [ ] final [ ] static

Superclass: java.lang.Object Browse...

Interfaces: Add... Remove

Which method stubs would you like to create?

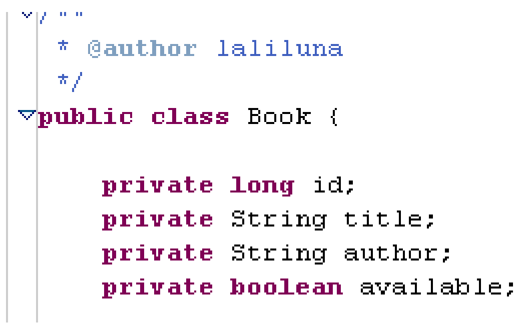
[ ] public static void main(String[] args)

[ ] Constructors from superclass

[✓] Inherited abstract methods

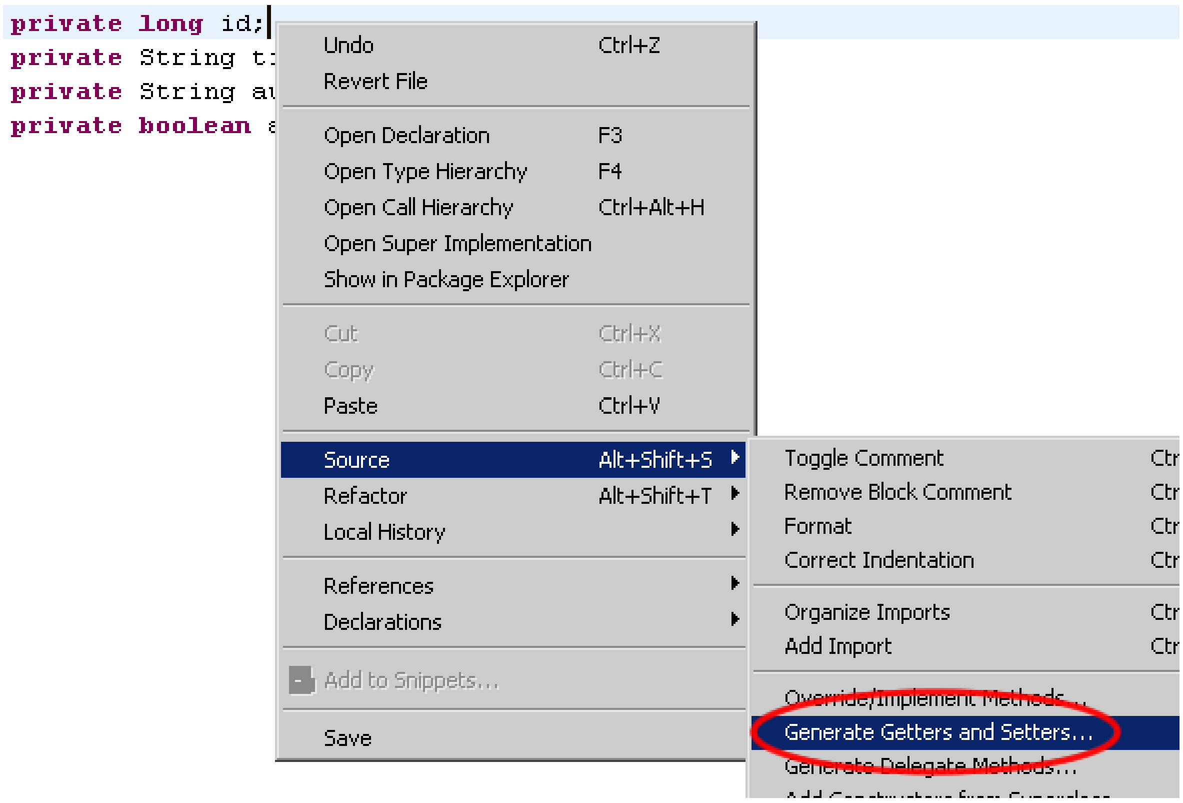
Finish Cancel

The Class `Book` represents a book with the properties id, author, title and available. Create four variables.



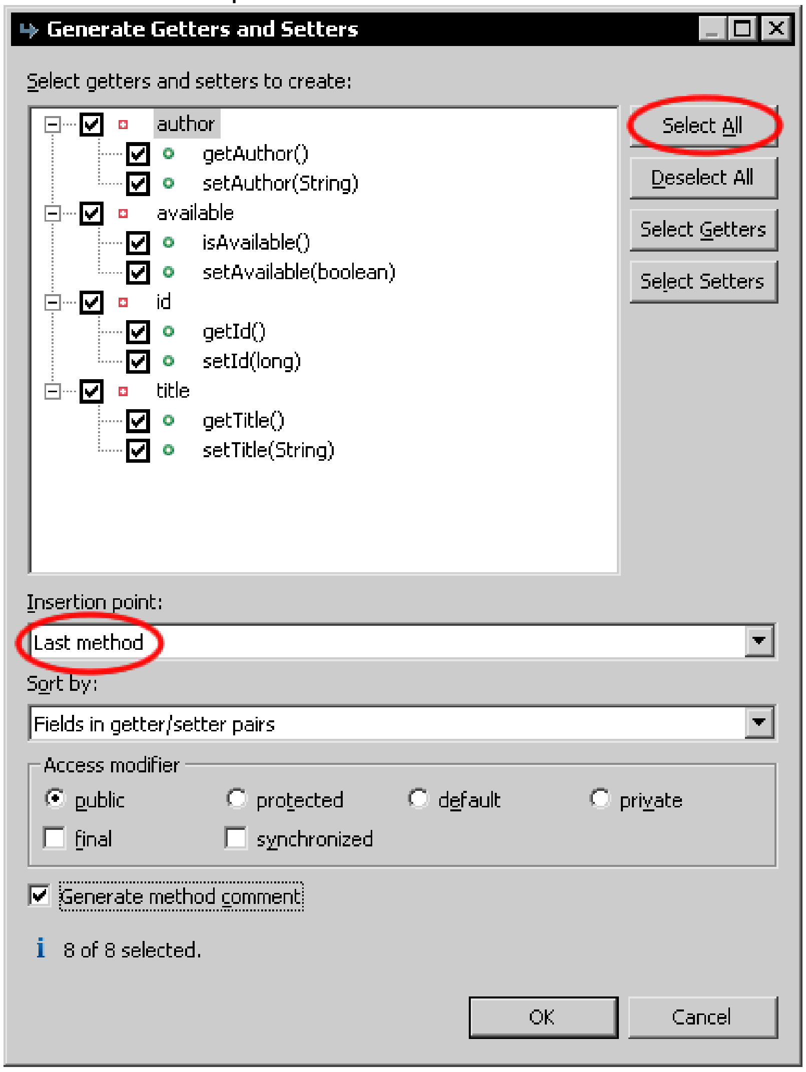
```
/**
 * @author laliluna
 */
public class Book {

    private long id;
    private String title;
    private String author;
    private boolean available;
```

Create a getter and setter for each variable. Right click in your class, `Source > Generate Getters and Setters`



```
private long id;
private String t
private String au
private boolean a
```

Choose `Select All` and insertion point `Last method`.



Generate Getters and Setters
Select getters and setters to create:
Select All
Deselect All
Select Getters
Select Setters
OK
Cancel

- [✓] author
  - [✓] getAuthor()
  - [✓] setAuthor(String)
- [✓] available
  - [✓] isAvailable()
  - [✓] setAvailable(boolean)
- [✓] id
  - [✓] getId()
  - [✓] setId(long)
- [✓] title
  - [✓] getTitle()
  - [✓] setTitle(String)

Insertion point: Last method

Sort by: Fields in getter/setter pairs

Access modifier: [✓ public] protected default private

final synchronized

[✓] Generate method comment

8 of 8 selected.

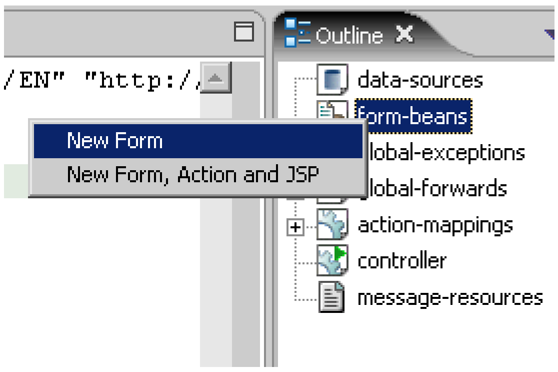
Add two constructors to the class to set the properties on initialisation of the class.

```
// Contructor
public Book(){}

//  Contructor to initial the properties
public Book(long id, String author, String title, boolean available) {
      this.id = id;
      this.author = author;
      this.title = title;
      this.available = available;
}
```

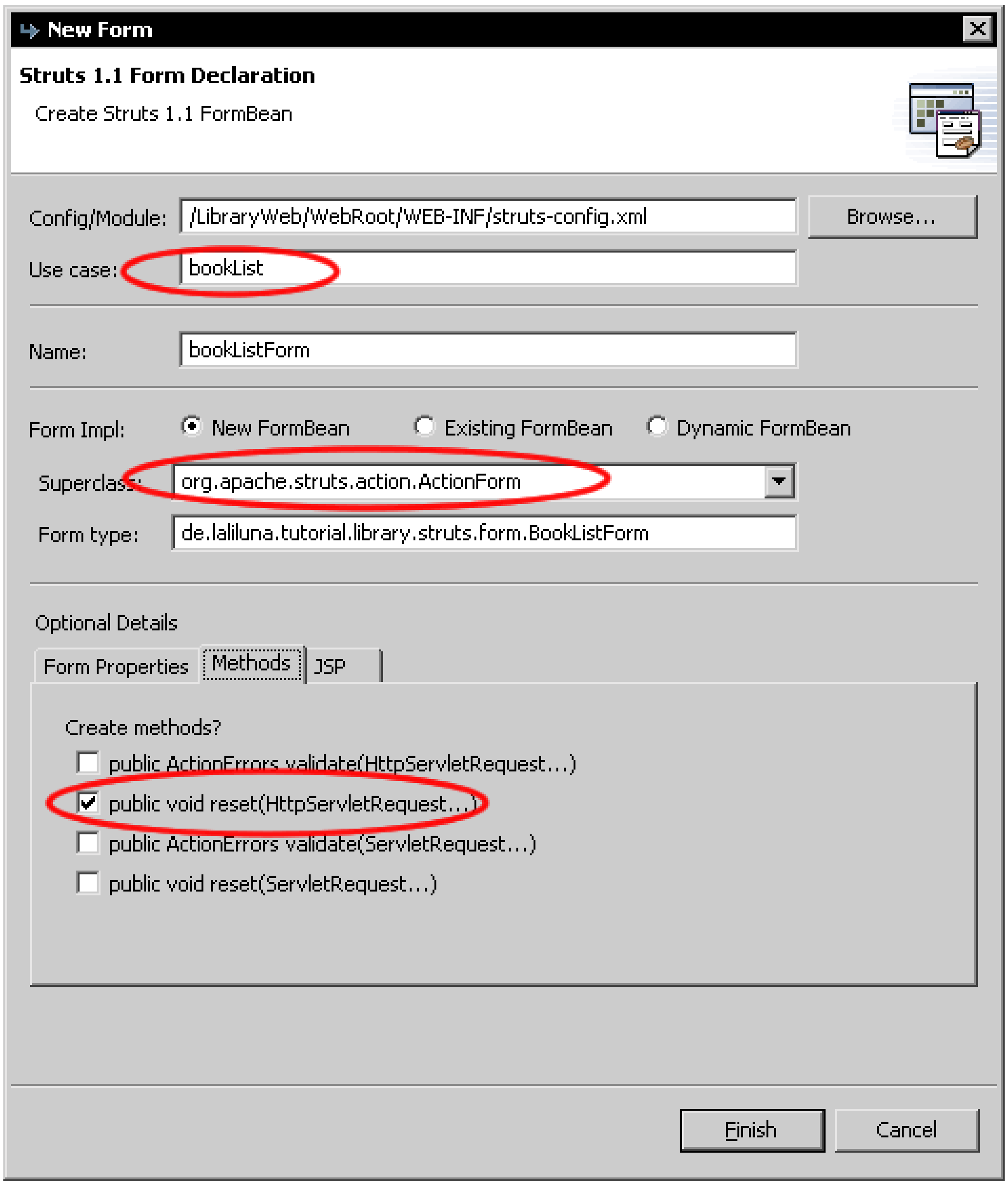
Thats all !

Create a form bean, action form and jsp

Open the `struts-config.xml`. Right click on `Form Bean` in the outline window.



Use Case is `bookList`, Superclass `org.apache.struts.ActionForm`. Select only `public void reset..` on methods. Set the name of the jsp file on JSP.



New Form

Struts 1.1 Form Declaration

Create Struts 1.1 FormBean

Config/Module: /LibraryWeb/WebRoot/WEB-INF/struts-config.xml

Use case: bookList

Name: bookListForm

Form Impl: [✓ New FormBean] Existing FormBean Dynamic FormBean

Superclass: org.apache.struts.action.ActionForm

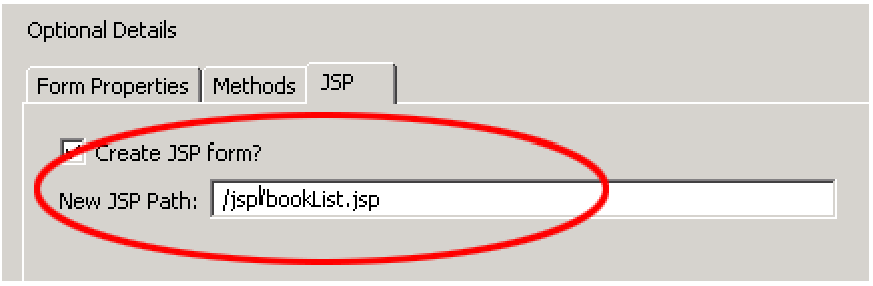
Form type: de.laliluna.tutorial.library.struts.form.BookListForm

Optional Details

Form Properties | Methods | JSP

Create methods?

- [ ] public ActionErrors validate(HttpServletRequest...)
- [x] public void reset(HttpServletRequest...)
- [ ] public ActionErrors validate(ServletRequest...)
- [ ] public void reset(ServletRequest...)



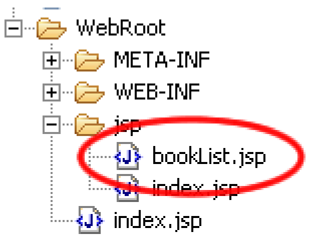
Optional Details

Form Properties | Methods | JSP

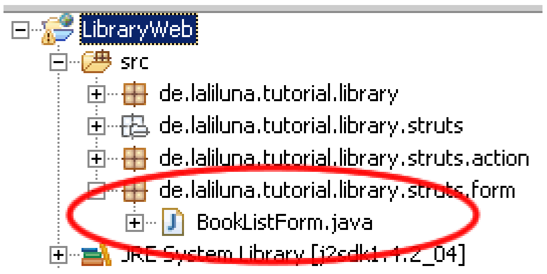
- [x] Create JSP form?

New JSP Path: /jsp/bookList.jsp

The package explorer looks like the pictures below.



```
WebRoot
  META-INF
  WEB-INF
  jsp
    bookList.jsp
    index.jsp
  index.jsp
```



```
LibraryWeb
  src
    de.laliluna.tutorial.library
    de.laliluna.tutorial.library.struts
    de.laliluna.tutorial.library.struts.action
    de.laliluna.tutorial.library.struts.form
      BookListForm.java
  JRE System Library [j2sdk1.4.2_04]
```

Edit the source code of the action form class

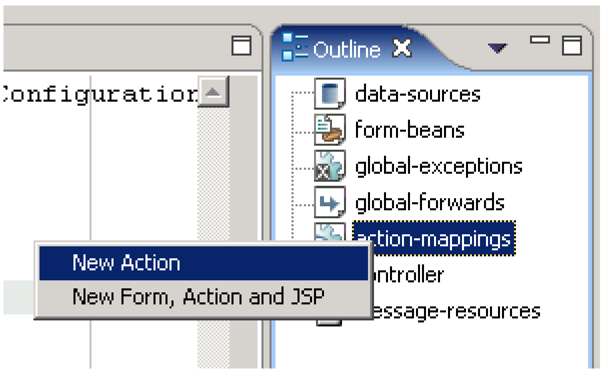
Open the file `BookListForm.java` and add the following soure code.

```
public class BookListForm extends ActionForm {

        private Collection books;

        /* lalinuna.de 02.11.2004
        * get the collection books
        */
        public Collection getBooks() {
                return books;
        }

        /* lalinuna.de 02.11.2004
        * set the collection books
        */
        public void setBooks(Collection books) {
                this.books = books;
        }

        /* lalinuna.de 02.11.2004
        * reset the collection books
        */
        public void reset(ActionMapping arg0, HttpServletRequest arg1) {
                books = new ArrayList();
        }
}
```

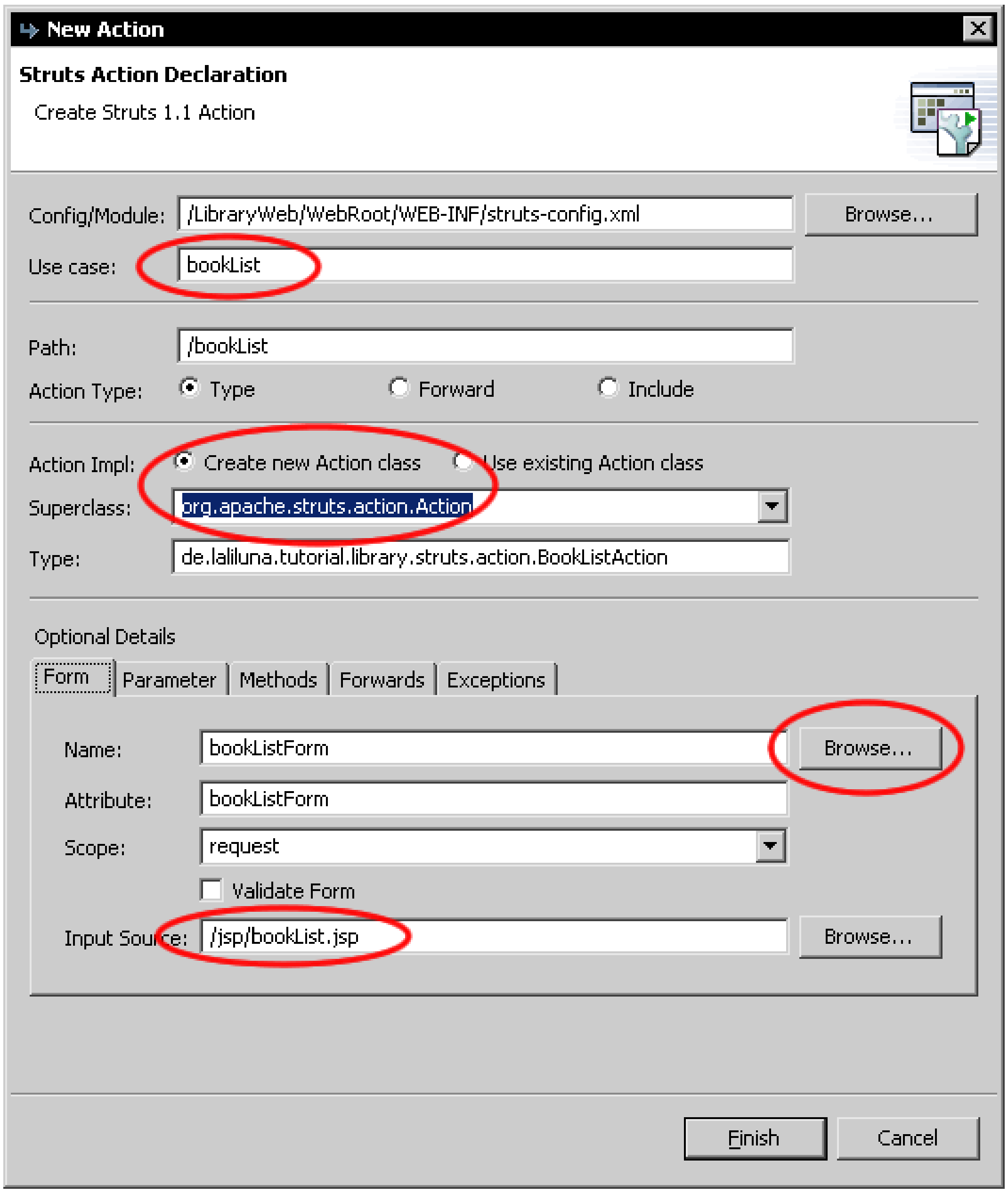
Define a collection `books` and generate a getter and setter. In your `reset` method initial the collection with an array list.

Create an action mapping and action class

Open the struts-config.xml and create a new action mapping.



Use Case is `bookList`, choose `Create new Action Class`
Superclass `org.apache.struts.Action`
On Optional Details choose the Form Bean `bookListForm`.
The input source is `/jsp/bookList.jsp`


New Action

Struts Action Declaration

Create Struts 1.1 Action

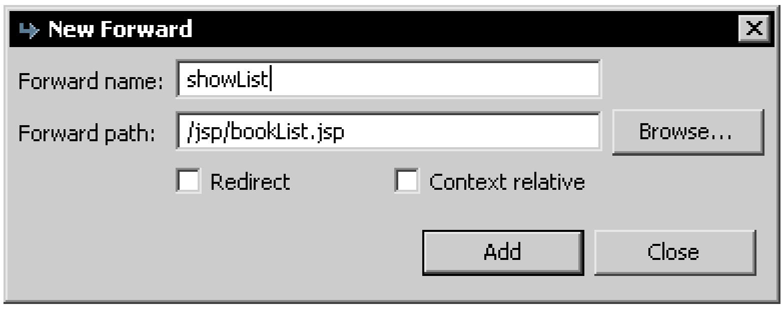
Config/Module:	/LibraryWeb/WebRoot/WEB-INF/struts-config.xml	Browse...
Use case:	bookList	
Path:	/bookList	
Action Type:	[✓ Type] Forward Include	
Action Impl:	[✓ Create new Action class] Use existing Action class	
Superclass:	org.apache.struts.action.Action	
Type:	de.laliluna.tutorial.library.struts.action.BookListAction	

Optional Details

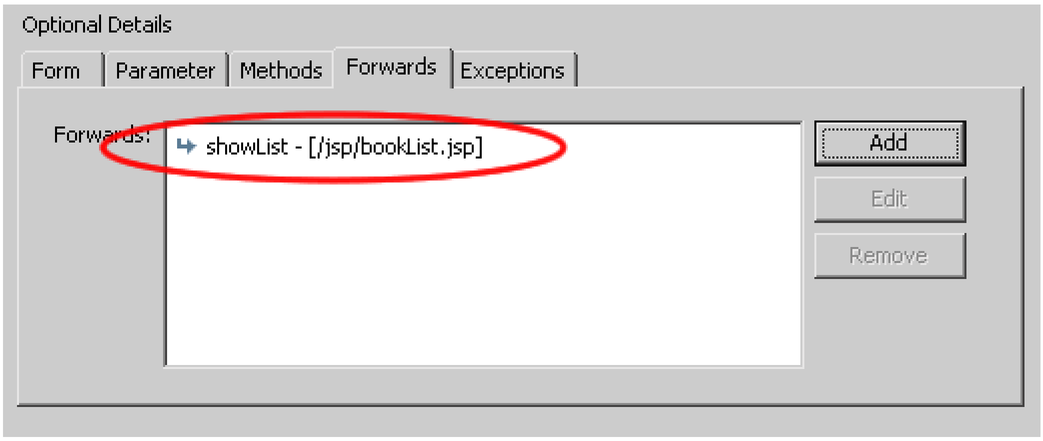
Form | Parameter | Methods | Forwards | Exceptions

Name:	bookListForm	Browse...
Attribute:	bookListForm	
Scope:	request	
	☐ Validate Form	
Input Source:	/jsp/bookList.jsp	Browse...

Now add a forward showList to the action mapping.


New Forward

Forward name:	showList	
Forward path:	/jsp/bookList.jsp	Browse...
	☐ Redirect	☐ Context relative

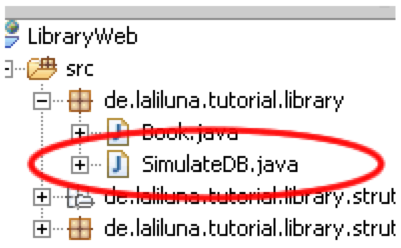


showList - [/jsp/bookList.jsp]

You will find the action class `bookListAction` in your package `de.laliluna.tutorial.library.action.`

Class to provide test data

We do not use a database in this tutorial and want some test data. Open the source application package you have downloaded and copy the class `simulateDB.java` in your package `de.laliluna.tutorial.library.`


LibraryWeb
src
de.laliluna.tutorial.library
Book.java
SimulateDB.java
de.laliluna.tutorial.library.strut
de.laliluna.tutorial.library.strut

Edit the source code of the action class

Open the class bookListAction and edit the method execute. The command `mapping.findForward(„showList“)` will search for a local forward with the name `showList`

```
/**
 * Method execute
 * @param mapping
 * @param form
 * @param request
 * @param response
 * @return ActionForward
 */
public ActionForward execute(
     ActionMapping mapping,
     ActionForm form,
     HttpServletRequest request,
     HttpServletResponse response) {
     BookListForm bookListForm = (BookListForm) form;


   /* lalinuna.de 03.11.2004
    * init SimulateDB class and set some dummy data
    */
    SimulateDB simulateDB = new SimulateDB();
    bookListForm.setBooks(simulateDB.getAllBooks(request.getSession()));


    return mapping.findForward("showList");
 }
```

Yeah thats all, you have now created your form bean with an action form class, an action mapping with an action class and the jsp to display something.

Output the test data on the jsp file

Open the file `bookList.jsp` and add the following source code

```
<%@ page language="java"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-bean" prefix="bean"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-html" prefix="html"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-logic" prefix="logic" %>

<html>
      <head>
            <title><bean:message key="title.list" /></title>
      </head>
      <body>

      <table border="1">
      <tbody>
      <%-- set the header --%>
      <tr>
            <td><bean:message key="label.author" /></td>
            <td><bean:message key="label.title" /></td>
            <td><bean:message key="label.available" /></td>
      </tr>
      <%-- start with an iterate over the collection books --%>
      <logic:iterate name="bookListForm" property="books" id="book">
      <tr>
            <%-- print out the book informations --%>
            <td><bean:write name="book" property="author" /></td>
            <td><bean:write name="book" property="title" /></td>
            <td><html:checkbox disabled="true"
                                           name="book"
                                           property="available"/>
            </td>
      </tr>
      </logic:iterate> <%-- end interate --%>
      </tbody>
      </table>
      </body>
</html>
```

The tag <logic:iterate> loops over the collection `books` of the form bean `bookListForm`
Within the tag `<logic:iterate>` you have access to the properties of the book. The tag `<bean:write>` prints out a property (author, title) on the current position.
`<html:checkbox>` creates a checkbox.

Add, edit and remove the data

In the next section we add the functionality to add, edit and remove the data.

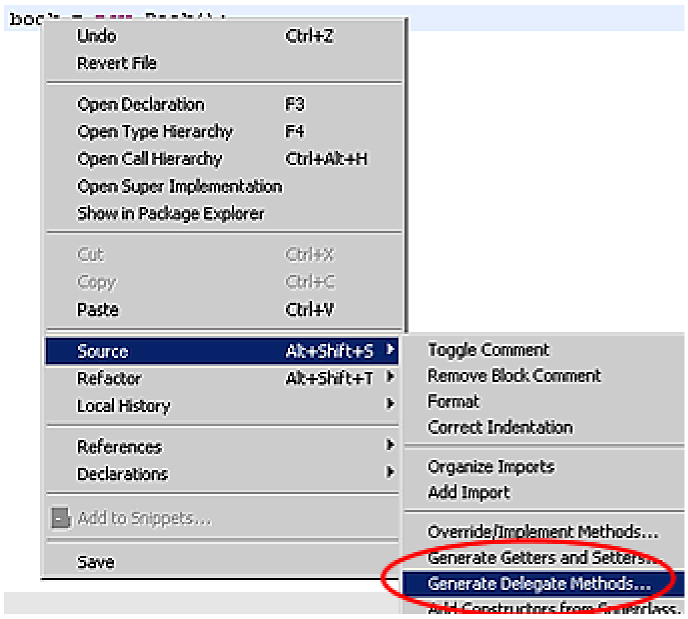
New form bean

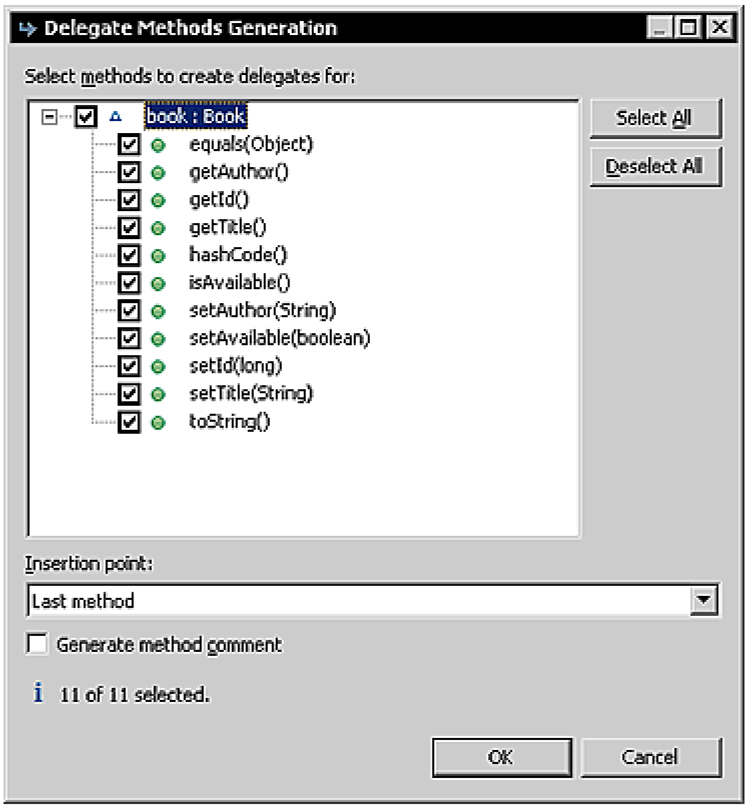
Create a new form bean and action form class. Set Use case to bookEdit and remove all methods on `Optional details - Methods`. Let MyEcplise create the jsp file for us.

Open the class `BookEditForm.java` in `de.laliluna.tutorial.library.form`.
Create a new instance `book` of the class `Book`

```
Book book = new Book();
```

Generate a getter and setter and delegate all methods of the class Book.





Select methods to create delegates for:

- [✓] book : Book
  - [✓] equals(Object)
  - [✓] getAuthor()
  - [✓] getId()
  - [✓] getTitle()
  - [✓] hashCode()
  - [✓] isAvailable()
  - [✓] setAuthor(String)
  - [✓] setAvailable(boolean)
  - [✓] setId(long)
  - [✓] setTitle(String)
  - [✓] toString()

Insertion point: Last method

[ ] Generate method comment

11 of 11 selected.

The source code looks like the following.

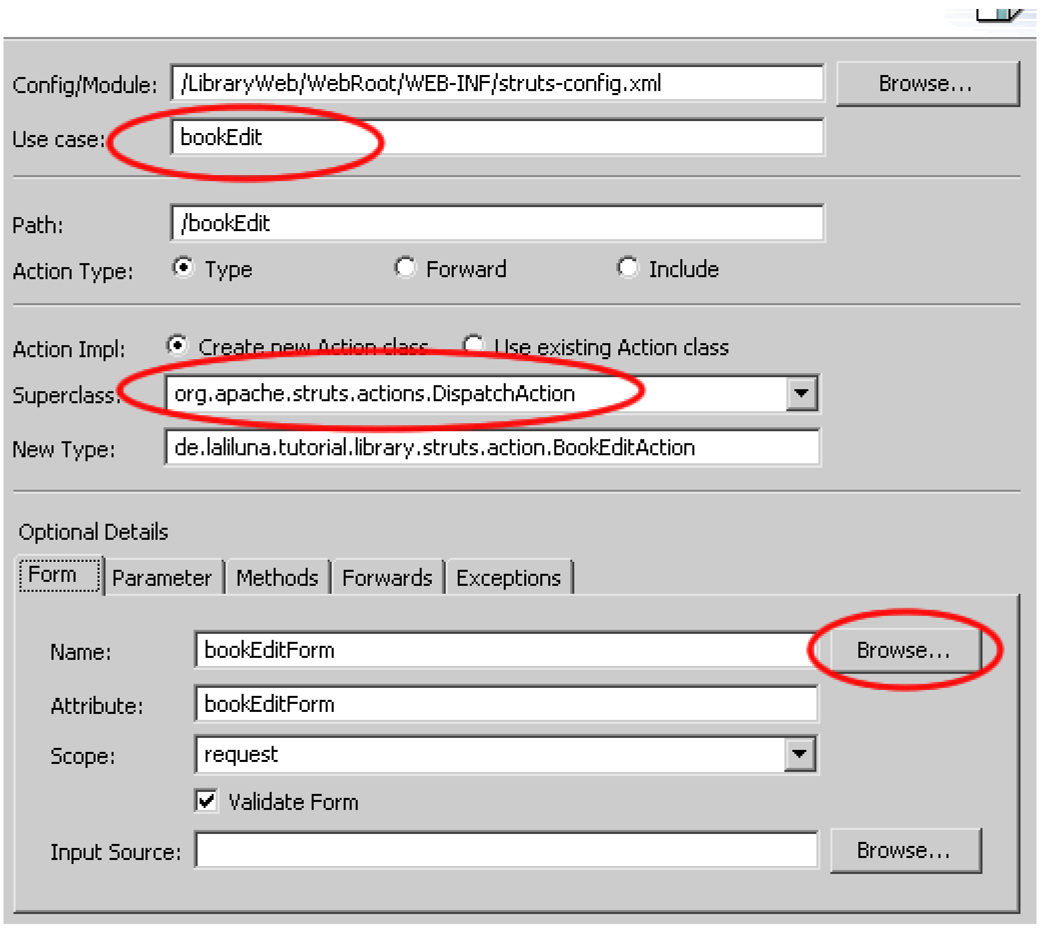
```
public class BookEditForm extends ActionForm {

      Book book = new Book();

      public Book getBook() {
            return book;
      }
      public void setBook(Book book) {
```

```
		this.book = book;
	}
	public boolean equals(Object arg0) {
		return book.equals(arg0);
	}
	public String getAuthor() {
		return book.getAuthor();
	}
	public long getId() {
		return book.getId();
	}
	public String getTitle() {
		return book.getTitle();
	}
	public int hashCode() {
		return book.hashCode();
	}
	public boolean isAvailable() {
		return book.isAvailable();
	}
	public void setAuthor(String author) {
		book.setAuthor(author);
	}
	public void setAvailable(boolean available) {
		book.setAvailable(available);
	}
	public void setId(long id) {
		book.setId(id);
	}
	public void setTitle(String title) {
		book.setTitle(title);
	}
	public String toString() {
		return book.toString();
	}
}
```

The class Book is set in the action form class and we have access to the properties.

Action mapping

Create a new action mapping. There is a different between our first action class. The new action class will extends to the superclass `org.apache.struts.DispatchAction`.


Config/Module: /LibraryWeb/WebRoot/WEB-INF/struts-config.xml

Use case: bookEdit

Path: /bookEdit

Action Type: [✓ Type] Forward Include

Action Impl: [✓ Create new Action class] Use existing Action class

Superclass: org.apache.struts.actions.DispatchAction

New Type: de.laliluna.tutorial.library.struts.action.BookEditAction

Optional Details: Form

Name: bookEditForm

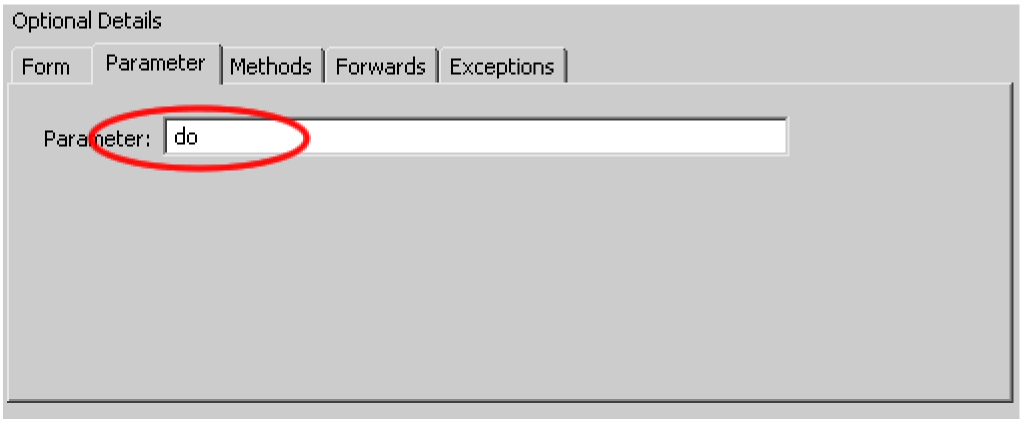
Attribute: bookEditForm

Scope: request

[✓] Validate Form

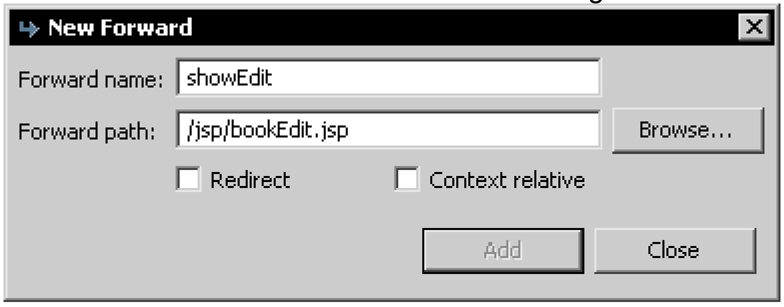
Input Source:

On Parameter we add a parameter `do`. These parameter is needed by the dispatch action class.


Optional Details: Parameter

Parameter: do

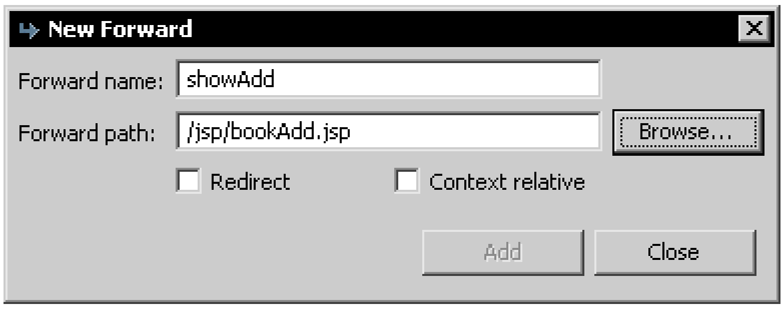
Add three new forwards. One is for the edit page, the second for the add page, where you can add the books and the last forward redirect the user to the book listing.


New Forward

Forward name: showEdit

Forward path: /jsp/bookEdit.jsp

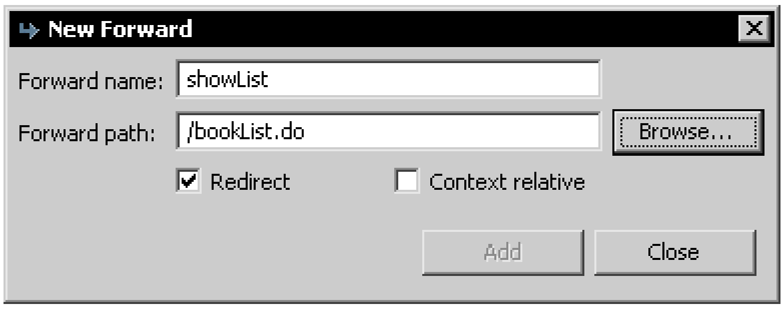
☐ Redirect ☐ Context relative


New Forward

Forward name: showAdd

Forward path: /jsp/bookAdd.jsp

[ ] Redirect [ ] Context relative


New Forward

Forward name: showList

Forward path: /bookList.do

[✓] Redirect [ ] Context relative

The last forward is different to the others. It refers to an existing action mapping and redirect the user.

Now create a new jsp file `bookAdd.jsp` in the folder `/WebRoot/jsp`. The forward `showAdd` refres to this page.

Add the source code to the jsp files

Open the file `bookAdd.jsp` and add the following source code.

```
<%@ page language="java"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-bean" prefix="bean"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-html" prefix="html"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-logic" prefix="logic" %>

<html>
	<head>
		<title><bean:message key="title.add"/></title>
	</head>
	<body>
		<%-- create a html form --%>
		<html:form action="bookEdit">
			<%-- print out the form data --%>
			<table border="1">
				<tbody>
				<tr>
					<td><bean:message key="label.author"/>:</td>
					<td><html:text property="author" /></td>
				</tr>
				<tr>
					<td><bean:message key="label.title"/>:</td>
					<td><html:text property="title" /></td>
				</tr>
				<tr>
					<td><bean:message key="label.available"/>:</td>
					<td><html:checkbox property="available" /></td>
				</tr>
				<tr>
					<td colspan="2">
						<html:submit>
							<bean:message key="label.save"/>
						</html:submit>
					</td>
				</tr>
```

```
                        </tbody>
                  </table>
                  <%-- set the parameter for the dispatch action --%>
                  <html:hidden property="do" value="saveBook" />
            </html:form>
      </body>
</html>
```

The tag `<html:form>` creates a new HTML form and refers with the parameter `action=“bookEdit“` to the action mapping. The Tag `<html:text>` creates a text field with the property author of the book.
`<html:hidden>` is a hidden form field with the name do. We need this hidden field, because it tells the dispatch action class which method will called.

Open the file `bookEdit.jsp`. You can use the source code of the of the file `bookAdd.jsp` and change the following lines.

```
<title><bean:message key="title.edit"/></title>
```

After the line

```
<html:form action="bookEdit">
```

add the error message output

```
<html:messages id="err" message="false">
      <font style="font-weight:bold; color=#FF0000">
            <bean:write name="err" />
      </font>
      <br>
</html:messages>
```

Add the following line above `<html:hidden property="do" value="saveBook" />`

```
<%-- hidden field that contains the id of the book --%>
<html:hidden property="id" />
```

Thats all.

Source code of the dispatch action class

Ope the file `bookEditAction.java` and add the following methods.

```
/**
 * Method editBook
 * @param mapping
 * @param form
 * @param request
 * @param response
 * @return ActionForward
 */
public ActionForward editBook(
 ActionMapping mapping,
 ActionForm form,
 HttpServletRequest request,
 HttpServletResponse response) {
 BookEditForm bookEditForm = (BookEditForm) form;

 /* lalinuna.de 04.11.2004
 * get id of the book from request
 */
 long id = Long.parseLong(request.getParameter("id"));

 /* lalinuna.de 04.11.2004
 * init SimulateDB class and get book by id
 */
 SimulateDB simulateDB = new SimulateDB();
 bookEditForm.setBook(simulateDB.loadBookById(id, request.getSession()));

 return mapping.findForward("showEdit");

}
```

The method `editBook` get the parameter `id` of the `request` and reads the book by id from the simulated database. The forward `showEdit` refres to the edit page `bookEdit.jsp`

```
/**
 * Method deleteBook
 * @param mapping
 * @param form
 * @param request
 * @param response
 * @return ActionForward
 */
public ActionForward deleteBook(
      ActionMapping mapping,
      ActionForm form,
      HttpServletRequest request,
      HttpServletResponse response) {
      BookEditForm bookEditForm = (BookEditForm) form;

      /* lalinuna.de 04.11.2004
      * get id of the book from request
      */
      long id = Long.parseLong(request.getParameter("id"));

      /* lalinuna.de 04.11.2004
      * init SimulateDB class and delete book by id
      */
      SimulateDB simulateDB = new SimulateDB();
      simulateDB.deleteBookById(id, request.getSession());

      return mapping.findForward("showList");

}
```

The method `deleteBook` get the parameter `id` of the `request` and remove the book by id from the simulated database. The forward `showList` refres to the book listing page `bookList.jsp`

```
/**
 * Method addBook
 * @param mapping
 * @param form
 * @param request
 * @param response
 * @return ActionForward
 */
public ActionForward addBook(
      ActionMapping mapping,
      ActionForm form,
      HttpServletRequest request,
      HttpServletResponse response) {
      BookEditForm bookEditForm = (BookEditForm) form;

      return mapping.findForward("showAdd");

}
```

The method `addBook` forwards on the add page `bookAdd.jsp`

```
public ActionForward saveBook(
 ActionMapping mapping,
 ActionForm form,
 HttpServletRequest request,
 HttpServletResponse response) {
 BookEditForm bookEditForm = (BookEditForm) form;
 /* lalinuna.de 22.11.2004
 * Define a new action errors
 */
 ActionErrors actionErrors = new ActionErrors();
 MessageResources messageResources = getResources(request);

 /* lalinuna.de 22.11.2004
 * check fields
 */
 if(bookEditForm.getAuthor().equals(""))
 actionErrors.add("author", new ActionError("error.field",
messageResources.getMessage("label.author", request)));
 if(bookEditForm.getTitle().equals(""))
 actionErrors.add("author", new ActionError("error.field",
messageResources.getMessage("label.title", request)));

 /* lalinuna.de 22.11.2004
 * check if an action error exists
 */
 if(!actionErrors.isEmpty()){
 saveErrors(request, actionErrors);
 return mapping.findForward("showEdit");
 }

 /* lalinuna.de 04.11.2004
 * init SimulateDB class and get data by id
 */
 SimulateDB simulateDB = new SimulateDB();
 simulateDB.saveToDB(bookEditForm.getBook(), request.getSession());

 return mapping.findForward("showList");
}
```
The last methode saveBook check if the fields author and title have valid values. If one of the field is empty an action error will filled with a message key value and saved to the request. The method forwards to the edit page, where the error is displayed. If no error occur the method forwards to the book list page.

Edit the book listing page

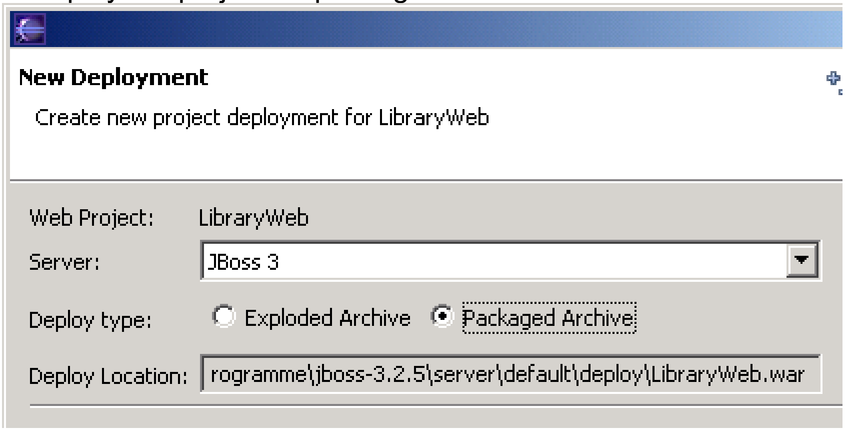
Open the file `bookList.jsp` and change the source code.

```
<%@ page language="java"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-bean" prefix="bean"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-html" prefix="html"%>
<%@ taglib uri="http://jakarta.apache.org/struts/tags-logic" prefix="logic" %>

<html>
      <head>
            <title><bean:message key="title.list" /></title>
      </head>
      <body>

      <table border="1">
      <tbody>
      <%-- set the header --%>
      <tr>
            <td><bean:message key="label.author" /></td>
            <td><bean:message key="label.title" /></td>
            <td><bean:message key="label.available" /></td>
            <td>&nbsp;</td>
            <td>&nbsp;</td>
      </tr>
      <%-- start with an iterate over the collection books --%>
      <logic:iterate name="bookListForm" property="books" id="book">
      <tr>
            <%-- print out the book informations --%>
            <td><bean:write name="book" property="author" /></td>
            <td><bean:write name="book" property="title" /></td>
            <td><html:checkbox disabled="true"
                                           name="book"
                                           property="available"/>
            </td>

            <%-- print out the edit and delete link for each book --%>
            <td><html:link action="bookEdit.do?do=editBook"
                                     paramName="book"
                                     paramProperty="id"
                                     paramId="id">
                                     <bean:message key="label.edit" />
                  </html:link>
            </td>
            <td><html:link action="bookEdit.do?do=deleteBook"
                                     paramName="book"
                                     paramProperty="id"
                                     paramId="id">
                                     <bean:message key="label.delete" />
                  </html:link>
            </td>
      </tr>
      </logic:iterate>
      <%-- end interate --%>

      <%-- print out the add link --%>
      <tr>
            <td colspan="5">
                  <html:link action="bookEdit.do?do=addBook"
                                     paramName="book"
                                     paramProperty="id"
                                     paramId="id">
                                     <bean:message key="label.new" />
                  </html:link>
            </td>
      </tr>

      </tbody>
      </table>
      </body>
</html>
```

Congratulation, you have finished a simple library application with message resource keys. Now you can test the library.

Test the application

Start the jboss and deploy the project as package archiv.



New Deployment

Create new project deployment for LibraryWeb

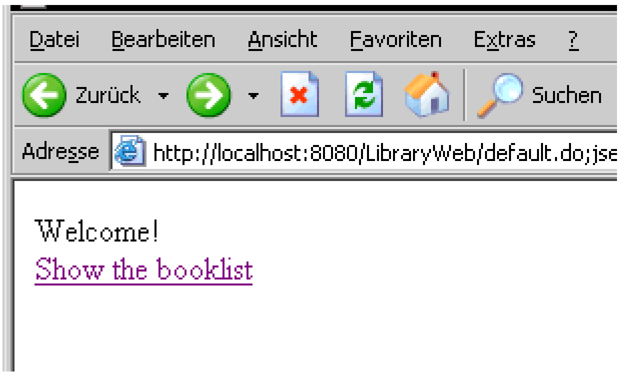
Web Project: LibraryWeb

Server: JBoss 3

Deploy type: ( ) Exploded Archive [✓ (•) Packaged Archive]

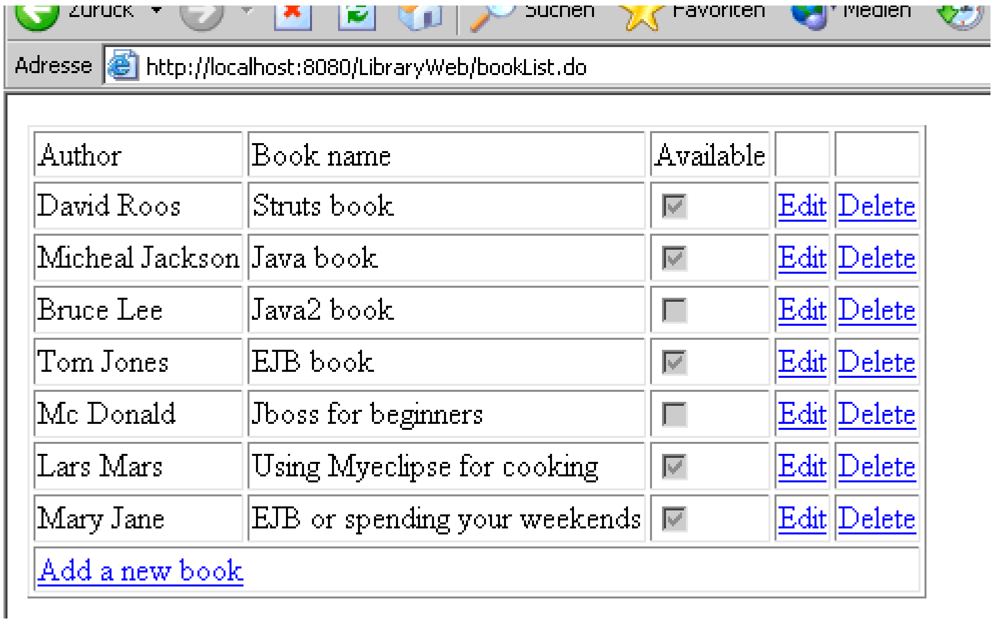
Deploy Location: rogramme\jboss-3.2.5\server\default\deploy\LibraryWeb.war

Call the project in your favorite web browser. http://localhost:8080/LibraryWeb/



http://localhost:8080/LibraryWeb/default.do;jse

Welcome!
Show the booklist



http://localhost:8080/LibraryWeb/bookList.do

Author	Book name	Available		
David Roos	Struts book	✓	Edit	Delete
Micheal Jackson	Java book	✓	Edit	Delete
Bruce Lee	Java2 book	☐	Edit	Delete
Tom Jones	EJB book	✓	Edit	Delete
Mc Donald	Jboss for beginners	☐	Edit	Delete
Lars Mars	Using Myeclipse for cooking	✓	Edit	Delete
Mary Jane	EJB or spending your weekends	✓	Edit	Delete
Add a new book				

Fine, thats all !!