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IBM

Learning Management System R1

Customization Guide

June 2003

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Chapter 1
Customizing the IBM Lotus Learning Management System User interface

There are several ways you can tailor the IBM® Lotus® Learning Management System (LMS) interface to control the product's look and feel and the user's access to its features. Depending on the nature of the changes you want to make, customization can involve one or more of the following:

- Changing default settings that affect what the user can see and do. You can do this either through the Administrator interface or by editing XML files.
- Editing properties, template, graphics, and style sheet files.
- Editing the HTML files that constitute the Help system.
- Editing the application's JavaServer Pages™ (JSPs)—changing the HTML content, adding or removing custom tags or overriding the default settings of their attributes, adding or changing functionality by including Java™ code or JavaScript™, adding or removing *include* statements, inserting or changing *forward* statements—or writing your own.
- Copying and renaming portions of the directory tree on the Learning Management Module server (LMMS) and Delivery server (DS) and editing the copied files to create a new interface. (The aggregation of such copied and edited files, together with the information necessary to locate the files and identify the set of users to whom they apply, is known as a *customization set.*)
- Creating custom reports. (This process is described in the *Administrator's Guide.*)
- Writing directly to the LMS database.

This document describes the aspects of the Student interface that you can customize without having to write directly to the LMS database or program in Java. The LMS database schema is described in the *Administrator's Guide.*

Note: If you are upgrading to the LMS from a version of LearningSpace® that you have customized, changes that you made to the LearningSpace interface will be lost because the implementations of the two applications are radically different. Changes that you make in the LMS interface may be lost when you upgrade to subsequent versions of the product or reinstall the current version. It is therefore advisable to save backup copies of all files that you customize.

The user interface consists of a number of JSPs whose visual attributes you can modify. These visual attributes include the following:

- static text
- colors and fonts
- graphical images
- background colors
- frame dimensions

Static text is resourced in .properties and .txt files in the properties (and, in the case of the LMM server, templates) directories for the LMM and Delivery servers and the Offline Learning Client (under source\resources). These directories contain resource bundles for the various languages that the LMS supports.

Colors and fonts are typically specified in a Cascading Style Sheet (CSS) file. CSS files are grouped by browser type (under Web\<server>\css\<language>\<browser>, for example, Web\LMM\css\en\styInternetExplorer5).

Graphical images—GIF and JPEG files—reside in the images directory for the LMM and Delivery servers and the Offline Learning Client in the web directory (for example, web\LMM\images).

As suggested earlier, you can modify a JSP's functionality as well as its display attributes, by editing the JSP itself. The JSP files for the web\LMM server, Delivery server, and Offline Learning Client reside in the web\LMM, web\ds, and web\duc directories, respectively.

A disclaimer and a word about conventions

This document is not an exhaustive description of all the ways in which you can customize the LMS. Rather, it covers a broad range of changes that customers typically want to make to the application to customize its look and feel and control users' access to features.

Some changes that you can make to the application are specific to a particular window, while others are system wide. For example, if you change the text of the aboutLMM.title property in the ApplicationResources.properties for the LMM, this will affect only one JSP (aboutLMM.jsp). However, if you change the text of, say, the button.cancel property in the ApplicationResources.properties for the LMM, this change will be realized in all the LMM JSPs that have a Cancel button. Examples in this document remark on this distinction only where it might not be obvious.

As mentioned previously, the application's CSS files are browser-specific, one set being for use with Internet Explorer™ and another for use with Netscape®. These two sets of style sheets do not differ significantly from each other; they differ in their details. Rather than show changes for both style sheets, the examples in this document refer to the style sheets for Internet Explorer, with the understanding that the examples could, with minor adjustments, apply equally well to the style sheets for Netscape.

Note: When you edit a CSS file, your changes should appear in the interface the next time the user logs on. (If not, emptying the user's browser's cache should remedy the situation.) When you edit a .properties file, however, you need to stop and restart the Web Publishing Service for your changes to take effect. The reason for this difference is that CSS files are processed immediately by the client, while .properties files are processed by Java code on the server.

Acronyms and abbreviations

The following table contains a list of possible unfamiliar acronyms and abbreviations used in this document or appearing in the directory tree, or both:

Acronyms and abbreviations

Acronym or Abbreviation	***What it stands for***
CSS	Cascading Style Sheet
DS	Delivery Server
DUC	Offline Learning Client (Disconnected Use Client)
EAR (file)	Enterprise Archive (file)
JSP	JavaServer Page
LDAP	Lightweight Directory Access Protocol
LMM	Learning Management Module
LMMS	Learning Management Module Server
LMS	Learning Management System (can refer either to the application or just to the LMM)
LMSS	Learning Management System Server (same as LMMS)
SSO	Single Sign-on
TLD (file)	Tag Library Descriptor (file)
WAR (file)	Web Application Archive (file)
WAS	WebSphere Application Server
WPS	WebSphere Portal Server

Chapter 2
Changing settings through the user interface or XML

You can customize the application by changing various of the settings that are established when you first install and configure the system. There are three ways to do this:

- Edit one or more of the XML files in which initial system values are stored.
- Enter or change values in the Settings module of the Administrator interface.
- Edit the application database directly, changing the appropriate record in the application_setting table.

When you install and configure the application, a number of XML files receive values that determine such things as where the application looks for Help files, what the initial settings are for user preferences (such as time zone, language locale, and whether to display hover Help), the maximum number of entries to include in an LDAP search result set, and so on. You can change these initial settings by editing these files, which reside in the classes directory.

The three XML files of most interest are settings.xml, ds-settings.xml, and duc-settings.html. The first of these controls settings on the LMM server; the second controls settings on the Content Delivery server; and the last applies to the Offline Learning Client.

Here is what the preferences settings section of settings.xml looks like:

```
================================================================
            PreferenceSettings
            default user preference settings component

      ================================================================
  -->
  <preferences component="com.lotus.elearn.settings.PreferenceSettings"
timezone="EST" language="en" locale="en_US" tooltips="yes"
recordPerPage="10" calendarState="viewMonth" primaryCalendar="gregorian"
secondaryCalendar="gregorian" datepickerCalendar="gregorian"
firstDayOfWeek="1" />
- <!--
================================================================
```

ds-settings.xml looks much the same as settings.xml in this example. There is no comparable entry in duc-settings.html (because in this case the client gets its settings from settings.xml).

In any case, you can change the attribute values in these XML files by editing the files with a text editor and then stopping and restarting the server. If you change settings.xml, you should change ds-settings.xml and, where relevant, duc-settings.xml as well.

However, editing the XML files is not the preferred way to change system settings. Where possible, using the Administrator interface to make changes is both simpler and less apt to result in unwanted inconsistencies between server settings. (Not all settings that you might want to change are exposed through the Administrator interface, but most of them are.)

So, for example, to make global changes in preferences, you can click the Settings tab in the Administrator interface, click LMM Server, General Settings, and then User Defaults and enter the desired new values. These will override the settings in the XML files.

Changes that you make through the Administrator interface are written to the application_setting table in the application database and take precedence over settings in the XML files. If you want to revert to the values in the XML files, you need to delete the relevant record(s) in the application_setting table.

Note: users can have the last word on preferences settings by making changes through the Preferences dialog box, which they can invoke from the Navigation bar. Thus, the settings that a user specifies in the Preferences dialog box override settings that an administrator has made in the Settings module (which in turn override the defaults specified in settings.xml).

Chapter 3
Controlling access to features through permissions

You can limit or expand users' access to the application's features and functionality by setting the permissions that define the roles that you assign to those users. These roles can either be ones that come prepackaged with the application (Anonymous, Student, Administrator, Instructor, and Manager) or ones that you create yourself. The Course Administrator Help system and *the System Administrator Guide* explain how to create, modify, and assign roles to users.

There are two ways to assign a role to a user:

- You can assign a role automatically, by matching string. That is, the role is automatically assigned to all the Learning Management System users who are identified in the LDAP directory by the matching string you specify. The assignment automatically applies to current Learning Management System users and to new users when they are added to the Learning Management System database.
- You can assign one or more roles to existing the Learning Management System users interactively.

Both of these methods are described below.

When you assign multiple roles to a user, the user enjoys the union of the privileges for those roles. For example, by default, a user assigned the Student role doesn't have permission to run reports. By default, a user assigned the Instructor role does have permission to run reports. Assuming that you don't change the default settings, if a user is assigned both roles, he or she has permission to run reports.

The Anonymous role is a special case. When users initialize the application, they are assigned the Anonymous role until such time as they log in or exit. When users log in, the Anonymous role no longer applies to them. So, for example, if you were to change the permissions for the Anonymous role to allow anonymous users to run reports (not that you probably would), users whose sole role is Student who ran the application could run reports until they logged in, after which they couldn't because their privileges as Anonymous had been discarded when they logged in.

Automatically assigned roles are a somewhat different special case. If you automatically associate a role with the set of users in the LDAP directory that are identified by a matching string, you can't override this assignment for a user by running the application, locating the user, and changing his or her role assignments. For example, if everybody in your LDAP directory identified by the string *,ou=Cambridge,o=IBM is automatically assigned the role of Student and you want to remove this role assignment from user John Doe who is identified by that matching string and assign him the role of Instructor instead, you need to either change the user's LDAP record so that the user is no longer identified by the matching string or change the matching string that identifies the users to whom you want to automatically assign the role.

That being said, the following sections are a reminder for how to add a role to the system, change the permissions for an existing role, and assign a role to a user.

To add a role to the system

1. Open the Administrator interface.
2. Click the Users tab.
3. Click Manage Roles.
4. Click Add Role.

5. Enter the name of the new role and a description, and then click Save. This adds the role to the role list.
6. Click the name of the new role in the list. This displays the Role Details page.
7. Check the permissions you want to grant to users assigned this role in the various categories you can select from the category drop-down box.

To modify permissions settings for an existing role

1. Open the Administrator interface.
2. Click the Users tab.
3. Click Manage Roles.
4. Click the name of the role whose permissions you want to reset.
5. Check the permissions you want to grant to users assigned this role in the various categories you can select from the category drop-down box.

To assign a role to a user

As mentioned previously, there are two ways to assign roles to users: explicitly or automatically. The first method involves searching for users in the system, selecting the ones to whom you want to assign a role, and assigning them that role. The latter method involves specifying a matching string and letting the application assign the users identified by that string the role you specify.

To automatically assign a role to a user

1. Open the Administrator interface.
2. Click the Users tab.
3. Click Manage Automatic Assignments. The application displays a list of existing roles.
4. Click the role that you want the application to automatically assign to users in the LDAP directory.
5. Click Add Automatic Assignment, select a match type (Name, Attribute, or Group), and enter the matching string to be used in identifying users in the LDAP directory to whom you want to assign the selected role.
6. Click Add.

To explicitly assign a role to a user

1. Open the Administrator interface.
2. Click the Users tab.
3. Click Manage Users. The application displays the user search dialog box.
4. Enter the search criteria that identify the users to whom you want to assign a role and then click Search.
5. Select the users you want from the result set by checking the box next to their names.
6. Click Add Selected.

7. Click Continue. The application displays a dialog box from which you can assign roles by clicking Assign Roles. When you click Assign Roles, the application displays a list of the roles defined in the system. Select one or more of these to assign to the selected user(s).
8. Click Save to complete the role assignment(s).

Chapter 4
Customizing Help

Every Help topic consists of four files, all of which are editable:

- The file that defines the layout of the graphical bar displayed at the top of every Help window. Student and Course Administrator Help topics have slightly different headers.
- The file that defines the navigation bar containing a list of links at the left of every Help window.
- The file containing the topic content. Topic content files are all named <prefix>_<topic>_b.html, where <prefix> identifies the topic as being a Student or Course Administrator Help topic. By convention, the prefix sh_ identifies a Student Help topic; ch_ identifies a Course Administrator Help topic.
- The map file that defines the frameset in which the header, navigation bar, and topic content are displayed. Map files are all named <prefix>_<topic>.html where <prefix>_<topic> matches the <prefix>_<topic> of the corresponding content file.

All of these files reside in a single directory on a server. Student and Course Administrator Help topics reside in separate subdirectories. Depending on how you configure the application after installation, there may be copies of the Help system on multiple servers. Users of the Offline Learning Client download (Student) Help to their workstations. If Help is installed on multiple servers, you should make any changes on all of them. Users of the Offline Learning Client should be advised to download a new version incorporating your changes.

Users access topics in the Help system in either of two ways:

- From the Student or Course Administrator Help table of contents or index.
- By clicking the **?** icon on the current page. When the user clicks this icon, the application displays the Help topic relevant to that page. This is known as context-sensitive Help.

The following sections look at the construction of a sample of a Help topic and describe the various ways in which you can customize a Help window's display attributes and content, redirect context-sensitive Help, and add a new Help topic to the system.

The Anatomy of a Help topic

The following example shows the component parts of the Help topic for the Student Preferences dialog box.

The map file sh_preferences.html looks like this:

```
<html>

<head>

<title>IBM Lotus Learning Management System Student Help</title>

</head>

<frameset rows=33,* border=0 frameborder=no framespacing=0>

<frame name=header title="Help Header"
src="sh_help_header_h.html"scrolling=no framespacing=0 frameborder=no
border=0 marginwidth=0 marginheight=0 noresize>

<frameset cols=150,* border=0 frameborder=no framespacing=0>

<frame name=navigation title="Help Navigation"
src="sh_help_navigation_l.html" scrolling="auto" framespacing="0"
frameborder="No" border="0" marginwidth="0" marginheight="0" noresize>
```

```
<frame name=content title="Help Topic" src="sh_preferences_b.html"
scrolling=auto framespacing=0 frameborder=no border=0 marginwidth=0
marginheight=0 noresize>
</frameset>
</frameset>
</html>
```

The file sh_help_header_h.html defines the layout of the graphical bar that appears at the top of all Student interface Help topics, sh_help_navigation_l.html defines the navigation bar that appears on the left of each Student help topic containing links to other parts of the Help system, and sh_preferences_b.html is the file containing the topic text in this example.

You could edit sh_preferences.html the content of the title attribute in the frame name tags, adjust the dimensions of the frameset and its components, and specify different links for the header, navigation bar, and topic. The title attribute is included for the benefit of users using text-to-speech software.

The header file sh_help_header_h.html looks like this:

```
<head>
<title>Help Header</title>
<SCRIPT LANGUAGE="JavaScript">
<!—
if (navigator.appName.indexOf('Netscape') > -1) {
document.write('<LINK HREF="ns_style.css" REL="styleSheet"
TYPE="text/css">');
} else {
document.write('<LINK HREF="ie_style.css" REL="styleSheet"
TYPE="text/css">');
}
// -->
</SCRIPT>
</head>
<html>
<body class="h-page-bg" marginheight="0" marginwidth="0">
<!-- Top Table -->
<table cellpadding="0" cellspacing="0" border="0" width="100%">
      <tr class="logo-bg">
            <td width="3"><img src="transparent.gif" width="3"
height="1" alt="" border="0"></td>
            <!-- Lotus Brand -->
            <td class="logo-text" nowrap valign="middle"><img src="lvc-
helplotus.gif" width="50" height="33" alt="Lotus" border="0"></td>
            <td class="logo-text" nowrap valign="middle">&nbsp;Learning
Management System Student Help<br><img src="transparent.gif"
width="137" height="1" alt="" border="0"></td>
            <!-- Gutter -->
            <td width="46" class="logo-textbg"><a
href="#PageContent"><img src="transparent.gif" width="2" height="20"
alt="skip to page content" border="0"></a><img src="transparent.gif"
width="44" height="1" alt="" border="0"></td>
            <!-- IBM logo -->
            <td class="mosaic-bg" width="100%" align="right"><img
src="lvc-helpibm.gif" width="59" height="33" alt="IBM logo"
border="0"></td>
      </tr>
</table>
</body>
</html>
```

The <SCRIPT>…</SCRIPT> block tests for which browser you're using and points to the appropriate Cascading Style Sheet (CSS) in the Help directory to manage display attributes, such as font and background color, of the Help header and navigation bar. You can change these display attributes by editing ns_style.css or ie_style.css (or both) or by pointing to a different Cascading Style Sheet of your own devising. If you edit the CSS files rather than point to one of your own, these changes will ripple through the whole Student Help system.

You can alter the ALT tag text, and change the banner text—Learning Management System Student Help. You can edit, replace, or remove the lvc-help-*.gif files. You can change the banner graphic in either of two ways:

- Edit or replace the file lvc-helpmosaic.gif.
- Edit ns_style.css or ie_style.css (or both), replacing the background-image URL with one that locates the banner graphic you want:

  ```
  .mosaic-bg {
  background-image: url(lvc-helpmosaic.gif);
  background-repeat: repeat-x;
  ```

You can use transparent.gif to adjust the spacing of elements in the header.

The file that defines the navigation bar, sh_help_navigation_l.html, looks like this:

```
<html>
<head>
      <title>Help Navigation</title>
<SCRIPT LANGUAGE="JavaScript">
      <!--
if (navigator.appName.indexOf('Netscape') > -1) {
document.write('<LINK HREF="ns_style.css" REL="styleSheet"
TYPE="text/css">');

} else {
document.write('<LINK HREF="ie_style.css" REL="styleSheet"
TYPE="text/css">');
```

```
}
// -->
</SCRIPT>
</head>
<BODY TEXT="#000000" LINK="#0066cc" VLINK="#666600" ALINK="#993300"
CLASS="nav-bg" TOPMARGIN=0 MARGINLEFT=10>
<table width="100%" cellpadding="0" cellspacing="0" border="0">
      <!-- vertical spacing -->
      <tr><td colspan="2"><img src="transparent.gif" width="1"
height="16" alt="" border="0"></td></tr>
      <tr>
            <td><img src="transparent.gif" width="10" height="1" alt=""
border="0"></td>
            <td width="100%"><a href="sh_contents.html" class="nav-
text" target="_top">Contents</a></td>
      </tr>
      <!-- vertical spacing -->
      <tr><td colspan="2"><img src="transparent.gif" width="1"
height="8" alt="" border="0"></td></tr>
      <tr>
            <td><img src="transparent.gif" width="1" height="1" alt=""
border="0"></td>
            <td><a href="sh_index.html" class="nav-text"
target="_top">Index</a></td>
      </tr>
      <!-- vertical spacing -->
      <tr><td colspan="2"><img src="transparent.gif" width="1"
height="8" alt="" border="0"></td></tr>
      <tr>
            <td><img src="transparent.gif" width="1" height="1" alt=""
border="0"></td>
            <td><a href="sh_glossary.html" class="nav-text"
target="_top">Glossary</a></td>
      </tr>
      <!-- vertical spacing -->
      <tr><td colspan="2"><img src="transparent.gif" width="1"
height="8" alt="" border="0"></td></tr>
      <tr>
            <td><img src="transparent.gif" width="1" height="1" alt=""
border="0"></td>
            <td><a href="sh_faq.html" class="nav-text"
target="_top">Frequently Asked Questions</a></td>
      </tr>
      <!-- vertical spacing -->
      <tr><td colspan="2"><img src="transparent.gif" width="1"
height="8"></td></tr>
```

```
      <tr>
            <td><img src="transparent.gif" width="1" height="1" alt=""
border="0"></td>
            <td><a
href="http://doc.notes.net/cct/LearningSpace.nsf/LSCore?OpenForm"
class="nav-text" target="_ ">Feedback on Help?</a></td>
      </tr>
</table>
</body>
</html>
```

You can change the navigation bar’s display attributes by editing ns_style.css or ie_style.css (or both) or by pointing to a different Cascading Style Sheet of your own devising. (Again, if you edit the CSS files rather than point to one of your own, these changes will ripple through the user interface.)

You can alter the contents of the navigation bar by rearranging, adding, or removing rows in the <table>…</table> block.

Finally, the content file sh_preferences_b.html looks like this:

```
<HTML>
<HEAD>
<META NAME="searchterms" CONTENT="changing your
preferences,preferences&#044; changing,ToolTips,pop-up Help,hover
Help,records per page,mouse-over Help,display settings">
<META NAME="topic" CONTENT="Changing your display preferences">
<TITLE>Changing your display preferences</TITLE>
</HEAD>
<BODY TEXT="#000000" LINK="#0066cc" VLINK="#666600" ALINK="#993300"
BGCOLOR="#ffffff" BACKGROUND="background_b.gif" MARGINHEIGHT=0
TOPMARGIN=0 MARGINWIDTH=25 LEFTMARGIN=25>
<H2>Changing display preferences</H2>
<p>By clicking Preferences in the Navigation bar, you can see and
change your personal display preferences. To close the window without
changing your preferences, click Cancel.</P>
…
<P>&nbsp;</P>
<P>&nbsp;</P>
<P>&nbsp;</P>
<P>&nbsp;</P>
<P>&nbsp;</P>
<P>&nbsp;</P>
<P>&nbsp;</P>
<P>&nbsp;</P>
</body>
</html>
```

```
You can ignore or remove the <META> tags at the beginning of the file.
These are used in generating the Index. Otherwise, you can edit this
file as you would any other standard HTML file.
```

Editing an existing Help topic

Open the _b.html, edit it, and save your work.

Replacing a context-sensitive Help topic

You can replace a context-sensitive Help topic by linking to a different topic, which can be either another topic in the existing Help system or one that you write yourself. The mechanism for replacing the link varies, depending on whether the associated JSP is a pop-up or not. For a pop-up, edit the jsp:param name "helpPage" attribute in the JSP. For example, if you want to change the link for context-sensitive Help for the Preferences dialog box, change sh_preferences.html to some other HTML file in the directory identified by the relative path student/ in preferences.jsp:

```
<%--
 preference.jsp
Description:
 Allows users to modify their preferences
--%>
<%@ taglib uri="/WEB-INF/tld/Struts-html.tld"       prefix="html" %>
<%@ taglib uri="/WEB-INF/tld/lms.tld"                 prefix="lms" %>

<jsp:include page="popupHeader.jsp" flush="true">
  <jsp:param name="messageKey" value="toolbar.preferences"/>
  <jsp:param name="header" value="toolbar.preferences"/>
  <jsp:param name="helpPage" value="student/sh_preferences.html"/>
</jsp:include>

<lms:form action="/prefSubmit.do">
<%--
```

For JSPs that aren't pop-ups, edit the <helpPage> attribute of the description of the JSP in Navigation.xml. For example, you might replace the context-sensitive help topic for the Student Home page, sh_usinghome.html with some other HTML file in the directory identified by the relative path student/:

```
- <module>
   <name>studenthome</name>
   <target>/studentHome.do</target>
   <content>studentHomeWelcome.jsp</content>
   <label>navigationTab.studentHome</label>
   <title>navigationTab.studentHome</title>
   <permissions>Home_Module</permissions>
   <helpPage>student/sh_usinghome.html</helpPage>
```

Note: You can replace a Help file with one in another directory by specifying the appropriate relative path and file name. For example, you might change the helpPage parameter in preferences.jsp to

<jsp:param name="helpPage" value="courseadmin/ch_mypreferences.html"/>

or, assuming that you had created and populated a myhelp directory at the same level as the student and course administrator Help directories, you might change the <helpPage> tag in the student home entry in Navigation.xml to

<helpPage>/myhelp/welcome.html</helpPage>

or the like.

Adding your own Help topic

You can add your own Help topics to the system and create Index entries and links in the Table of Contents for them. The following procedure assumes that you want to add a topic to the Student Help system. The procedure for adding a topic to the Administrator Help system is essentially the same, the only significant differences being the prefix to the file names—ch_ instead of sh_— and the subdirectory in which you store the files.

1. Create a map file like the one described above in "Anatomy of a Help topic" (sh_preferences.html). For example, you might create a file named sh_my_topic.html to which the corresponding content file will be named sh_my_topic_b.html:

```
<html>
<head>
<title>IBM Lotus Learning Management System Student Help</title>
</head>
<frameset rows=33,* border=0 frameborder=no framespacing=0>
<frame name=header title="Help Header"
src="sh_help_header_h.html"scrolling=no framespacing=0
frameborder=no border=0 marginwidth=0 marginheight=0 noresize>
<frameset cols=150,* border=0 frameborder=no framespacing=0>
<frame name=navigation title="Help Navigation"
src="sh_help_navigation_l.html" scrolling="auto" framespacing="0"
frameborder="No" border="0" marginwidth="0" marginheight="0"
noresize>
<frame name=content title="Help Topic" src="sh_my_topic_b.html"
scrolling=auto framespacing=0 frameborder=no border=0
marginwidth=0 marginheight=0 noresize>
</frameset>
</frameset>
</html>
```

2. Create the content file (sh_my_topic_b.html). Since you'll need to enter Index entries by hand if you want the topic to be available through the Index, you don't need to include <META> tags:

```
<HTML>
<HEAD>
```

```
<TITLE>Your title goes here (for example, My Topic)</TITLE>
</HEAD>
<BODY TEXT="#000000" LINK="#0066cc" VLINK="#666600"
ALINK="#993300" BGCOLOR="#ffffff" BACKGROUND="background_b.gif"
MARGINHEIGHT=0 TOPMARGIN=0 MARGINWIDTH=25 LEFTMARGIN=25>
<H2>Your title goes here (for example, My Topic)</H2>
<p>Your topic text goes here.</P>
</BODY>
</HTML>
```

3. If you want to link to this topic from the Table of Contents, open sh_contents_b.html, enter the appropriate text, and save your work. For example:

```
<A HREF="sh_notifications.html"
target="_top">Notifications</A><br>
<A HREF="sh_my_topic.html" target="_top">My topic</A><br>
<A HREF="sh_enrolled.html" target="_top">Enrolled courses</A><br>
```

4. If you want to link to this topic from the Index, open sh_index_b.html in the .war file, enter the appropriate text, and save your work. For example:

```
<dt>ToolTips <dd><a href="sh_preferences.html" target="_top"
title="Link to topic">Changing your display preferences</a>
<dt>topic details <dd><a href="sh_coursedetails.html"
target="_top" title="Link to topic">Course and activity details
</a>
<dt>topic, my <dd><a href="sh_my_topic.html" target="_top"
title="Link to topic">My topic</a>
```

Chapter 5 Customizing JavaServer Pages

You can customize the Learning Management System application by customizing its JavaServer Pages. This chapter contains the following information:

Overview

- LMS JSP tag libraries
- The Anatomy of a JSP

Making global changes

- Applying customization sets
- Changing application style
- Updating page text
- Replacing graphics

Changing individual JSPs

- Changing a JSP's style
- Altering a JSP's functionality

Overview

The architecture of the Learning Management System application is based on Struts 1.1, beta 2, which is part of The Jakarta Project, sponsored by Apache Software Foundation. The Struts architecture helps to separate logic from presentation in a JavaServer Page application using the MVC (Model-View-Controller) design pattern. In this design pattern, the Model component represents the business logic of the application, the View represents the display mechanism, and the Controller passes control from the request to the model and from the model to the view.

In the Learning Management System application, a user request triggers the initialization of a controller servlet that parses a configuration file. The configuration file, named Struts-config.xml, maps the request to the appropriate action class to handle it. Action classes on the Learning Management System server have a .do extension and those on the Delivery server have a .ds extension. Once the handler performs the action, it calls a form class to structure the result. It also determines which JavaServer Page the response should be forwarded to for display in the browser. The Struts-config.xml file contains action mappings that map the forwards returned by the actions to specific JavaServer Pages. The Struts-config.xml file contains both global forwards and one or more additional forwards for specific actions. You can find documentation defining the Struts architecture at http://jakarta.apache.org/Struts/.

The view component of the MVC model is handled by JavaServer Pages in the Learning Management System. The JavaServer Pages reside on each server hosting the application. JavaServer Pages (JSPs) are pages comprised of standard HTML, JavaScript, Java scriptlets, and JSP tags. JSP tags are similar to HTML tags; both define display characteristics for elements on a page. However, JSP tags differ in that they also serve as references to Java code. Each JSP tag triggers the execution of a piece of Java code written and stored elsewhere in the application. The attributes of a JSP tag serve as the parameters to pass to the Java class.

A JSP is served to a browser client from the server of the hosting application. It works like this: when a JSP-based application is deployed, the server pre-compiles the JavaServer Pages into a servlet, which executes any code triggered by the JSP tags on the page and dynamically generates the response page content. These pre-compiled JSPs are stored in the server's file directory. When a user makes a request or performs an action, the server handles the action, and then retrieves the appropriate JSP to display the response in HTML. You can find documentation defining the JSP 1.2 specification, on which the LMS JSPs are based, at http://java.sun.com/products/jsp/.

The servers in the LMS application display their responses to requests differently. The Learning Management System server displays its responses using either a popup JSP or a template JSP that provides additional formatting to the page, called the adminTemplate.jsp. The Delivery server displays its responses using a framing JSP called delivery.jsp. To step through the source code for these pages, see "The Anatomy of a JSP."

LMS JSP tag libraries

The servers that host the LMS application support custom JSP tags from multiple JSP tag libraries. Each library has a tag library descriptor (TLD) file, which is an XML-formatted file that defines the attributes of the JSP tags in the library and the Java classes to call when each tag is encountered on a page.

The tag library descriptor files in the IBM Lotus LMS are named as follows:

IBM Lotus Learning Management System tag library descriptor files

Tag Library Name	*Purpose:*
lms.tld	Executes the basic functionality of the LMS application. Used by the JSPs in every component of the LMS application.
Struts-bean.tld	Calls JavaBeans™ from a JSP. Based on the Struts architecture.
Struts-html.tld	Defines the basic HTML content of a JSP, such as button and checkbox elements. Based on the Struts architecture.
Struts-logic.tld	Incorporates common programmatic logic into a JSP. Based on the Struts architecture.

The Delivery and Offline Learning Client servers contain the following TLD files in addition to those listed above:

Tag Library Name	*Purpose:*
chat.tld	Executes the functionality used in conducting a live chat from within the application.
delivery.tld	Defines the functionality specific to the delivery and offline servers, such as the activity and course tools.
delivery-js.tld	Customizes the frames used to format the delivery and offline client applications.

These TLD files are stored in the following directory:

```
[serverName]>WEB-INF>tld
```

where [serverName] is one of the following directory names:

- "LMM": Represents the Learning Management System server
- "DS": Represents the Delivery server
- "DUC": Represents the Offline Learning Client server

The anatomy of a TLD file

The tag library descriptor (TLD) file is a text file in XML format that defines the JSP tags used in an application. In this section we will look at one such JSP tag. The url tag is a tag that references a Uniform Resource Locator (URL). It belongs to the lms tag library and is defined in the lms.tld file.

This section illustrates how to:

- Reference a tag in a JSP
- Define a tag in the TLD file

Referencing the url tag in a JSP

The following code is excerpted from the catalogManageCurriculumEntryManage.jsp:

```
<script language="javascript">
function openUserSearchPopup()
{
  var href = "<lms:url>/searchUserPopup.do?formName=<%= formName
%></lms:url>";
  <lms:window href="href" title="UserSearch" width="600" height="700"
scrollbars="true" resizable="true" />
}
</script>
```

When called, the openUserSearchPopup() script opens a popup window and populates it with the searchUserPopup JSP, which displays a standard search form. The searchUser.jsp file, which is included in the searchUserPopup.jsp file contains the following code:

```
String formName = request.getParameter("formName");
```

This code sets a new variable called formName equal to the formName variable passed to it from the lms:url tag. Essentially, the lms:url tag is formatting the text in its body as a valid URL, which is passed to the lms:window tag as the content of its href attribute. The lms:window tag does the work of opening a window and displaying the content referenced by the URL.

Defining the url tag in the TLD file

The following XML-formatted text is an excerpt from the lms.tld:

```
<tag>
  <name>url</name>
  <tagclass>com.lotus.elearn.taglib.UrlTag</tagclass>
  <bodycontent>Jsp</bodycontent>
  <attribute>
   <name>encodeURL</name>
   <required>false</required>
   <rtexprvalue>false</rtexprvalue>
  </attribute>
  <attribute>
   <name>useCustomDsPath</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>useCustomLmmPath</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>id</name>
   <required>false</required>
```

```
    <rtexprvalue>true</rtexprvalue>
  </attribute>
 </tag>
```

The tag name is defined in the <name> tag:

```
<name>url</name>
```

The next line identifies the location of the Java source code to execute when this url tag is encountered on a JSP:

```
<tagclass>com.lotus.elearn.taglib.UrlTag</tagclass>
```

The source code for all of the Java classes specified in the LMS custom TLD files is stored in the following directory:

```
[serverName]>WEB-INF>classes>com>lotus>elearn>taglib
```

The url tag source is no exception; the UrlTag.java file is stored in the lmm>WEB-INF>classes>com>lotus>elearn>taglib directory.

The bodycontent tag provides information on the content of the body of the JSP tag and is intended for use by page composition tools:

```
<bodycontent>Jsp</bodycontent>
```

"Jsp" indicates that the body of the tag contains nested JSP syntax. Page composition tools know how to handle Jsp syntax. Some JSP tags have bodycontent tags that contain "Empty." This specifies that no text can display in this tag when it is executed.

Once the properties of the JSP tag are defined, any attributes associated with the JSP tag are then defined before the closing JSP tag (</tag>) is reached. Each attribute has a name tag and two more informational tags, the "required" and "rtexpvalue" tags. If the required tag is set to "true," any time you include the JSP tag in a page, you must provide a value for this attribute for the tag to be evaluated properly. The rtexpvalue tag indicates whether or not the value of the attribute may be dynamically calculated at request time, as opposed to being a static value determined at translation time.

The first attribute of the url tag, named encodeURL, is not required and its value cannot be dynamically calculated at request time. This attribute takes a Boolean value that indicates whether or not to call the HTTPResponse.encodeURL() method to encode the URL included in the body of the tag into a browser-readable format. This attribute should be set to true for URLs that target other pages in the application, since it encodes the URL with the session ID, if necessary. (For browser clients that do not accept cookies, this is the only way to pass the session ID and maintain the session state information for the application.)

```
 <attribute>
   <name>encodeURL</name>
   <required>false</required>
   <rtexprvalue>false</rtexprvalue>
 </attribute>
```

The next two attributes, the useCustomDsPath and useCustomLmmPath attributes, are also not required. The values of these attributes can be dynamically calculated at request time. These attributes take Boolean values and indicate whether or not the customization set paths provided for the Delivery(DS directory) and Learning Management System (LMM directory) servers should be used in locating the URL included in the body of the tag. The default value for these tags is "true," which indicates to apply the customization set path to the supplied URL, if a customization set exists. Setting these to false forces the retrieval of a resource from a specific URL regardless of whether customization sets are in effect for an application.

```
 <attribute>
   <name>useCustomDsPath</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
 </attribute>
 <attribute>
   <name>useCustomLmmPath</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
 </attribute>
```

The fourth attribute, the id attribute, is not required and can be dynamically calculated at request time. By including this attribute in a url tag and setting it equal to a string, you are creating a PageContext variable named with the string you supply.

```
 <attribute>
   <name>id</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
```

The end of the url tag is indicated by a closing tag tag that follows the last attribute's closing tag:

```
</tag>
```

The Anatomy of a JSP

This section defines the JSPs that structure the display of the content of the Learning Management System and Delivery servers.

Learning Management System server

The JSPs that reside on the Learning Management System server are displayed in two ways. They either display as popups, which have little or no header and navigation information, or they display in the adminContentPage section of the adminTemplate.jsp, which functions as a template that formats the page content. Stepping through the source code of the adminTemplate JSP illustrates how to perform standard JSP tasks, such as:

- Defining a page as a JSP
- Including tag library descriptor files
- Referencing Struts tags and standard JSP actions
- Including JavaScript source code

Looking at the adminTemplate.jsp source code also illustrates how the following tasks are handled by the Learning Management System server in particular:

- Localizing page text
- Determining the user's browser type and language preference
- Including the JSPs that comprise the main template

You can find the full source code for the adminTemplate.jsp file in the WEB-INF>classes>resources>lmm directory. The code below is an excerpt from this file.

Defining a page as a JSP

The first block of executable code is a page directive that applies to the entire page and specifies the language of the page as Java and sets the MIME type and character encoding to use for the response:

```
<%@ page language="java" contentType="text/html;charset=UTF-8" %>
```

Including tag library descriptor files

The next block of code is made up of taglib directives. These identify the names of the tag libraries associated with the page. They also identify the prefixes to use before tags from each library.

```
<%@ taglib uri="/WEB-INF/tld/Struts-bean.tld"   prefix="bean" %>
<%@ taglib uri="/WEB-INF/tld/Struts-html.tld"   prefix="html" %>
<%@ taglib uri="/WEB-INF/tld/Struts-logic.tld"  prefix="logic" %>
<%@ taglib uri="/WEB-INF/tld/lms.tld"           prefix="lms" %>
```

Referencing Struts tags

The next line of code is an html tag from the Struts-html tag library. The "html" before the colon is the prefix representing the Struts-html tag library and the "html" after the colon represents the tag in that library named html:

```
<html:html locale="true">
```

The value "true" in the locale attribute indicates to set the current locale for the user if needed. This prompts the servlet to retrieve the locale from the requesting browser. The value returned determines which language-version resources to use for the rest of the session.

Localizing page content

The next group of tags makes up the head HTML tag. The META tag defines the character set to use for the HTTP response message header. In the next line, we see another JSP tag at work. The message tag in the lms tag library is programmed to retrieve the resource key specified in the key attribute from the .properties resource file and display it on the page. Since the content of the application.title resource key in the ApplicationResource.properties file for the LMM application contains the text, "IBM Lotus Learning Management System," this is text that displays as the title on the adminTemplate page. See "Updating page text."

```
<head>
<META http-equiv="Content-Type" content="text/html;charset=UTF-8">
<title><lms:message key="application.title" /></title>
```

Including standard JSP actions

The next line of code is a standard JSP action called the getProperty tag. This tag and any others that have a jsp prefix are standard JSP actions and are available for use in all JSPs. See the JavaServer Pages 1.2 Specification downloadable from http://www.jcp.org/aboutJava/communityprocess/final/jsr053/for more details. The getProperty tag initializes a JavaBean, which is a reusable Java component, and retrieves a property from it.

Determining the user's browser type and language preference

The property being requested, the "styleSheetLink" property, contains the name of the appropriate CSS file to apply to the page based on the type of browser that is submitting the user request.

```
<jsp:getProperty name="BrowserSniffer" property="styleSheetLink"/>
```

Including JavaScript source code

The next two script tags incorporate the JavaScript source files tree.js and script.js into the page so that functions contained in these JS files can be called from the page.

```
<script language="JavaScript" src="js/tree.js"></script>
<script language="JavaScript" src="js/scripts.js"></script>
```

The chunk of JavaScript code between the <script> and </script> tags refreshes the window to apply the styles of the CSS file specified by the Bean to the page, then adds functionality to determine the number of results to return when searches are performed.

Including the JSPs that comprise the main template

The body of the page includes several other JSP pages that constitute the sections making up the adminTemplate page. The first two pages included are the adminHeader and adminNavItems JSPs. Another standard JSP action, the include tag, is used to incorporate the adminHeader.jsp and adminNavItems.jsp files. The HTML table, tr, and td tags help to structure the layout of the content.

```
<body leftmargin="0" topmargin="0" marginwidth="0" marginheight="0"
onUnload="unload();" onLoad="<%= onLoad %>" >
<%--------------------------------------------------------------------
--------------
 The first jsp page to include is adminHeader, which contains the logo
image and
 preferences buttons.
 After that, the adminNavItems page includes all of the main tabs
 -------------------------------------------------------------------
------------%>
<table width="100%" border="0" cellspacing="0" cellpadding="0"
background="">
 <tr>
  <td background="images/bckPrimHeader.jpg">
   <table width="100%" border="0" cellspacing="0" cellpadding="0">
    <tr>
     <td><jsp:include page="adminHeader.jsp" flush="true"/></td>
    </tr>
    <tr>
     <td valign="bottom" background=""><br><jsp:include
page="adminNavItems.jsp"
      flush="true"/></td>
    </tr>
   </table>
  </td>
 </tr>
</table>
```

In the following piece of code, the JSP uses a JavaBean to query the request to determine if the current navigation mode is the student home page. If it is, the studentHomeNavigation.jsp is included in the page also. This piece of code demonstrates how Struts-logic.tld tags work. The logic:match tag checks if the value of the navKey variable, which checks the request for the current navigation mode, is equal to “studenthome.” If it is, the jsp:include tag within the logic:match tag is executed.

```
<bean:define id="navKey"

value="<%=com.lotus.elearn.navigation.NavigationUtil.getNavKey(request)
%>"/>
<logic:match name="navKey" value="studenthome" location="start">
  <td width="190" valign="top">
     <jsp:include page="studentHomeNavigation.jsp" flush="true"/>
  </td>
<%----------------------------------------------------------------------
--------------
 This table cell controls the margin between the student navigation and
the content
 area.
 ----------------------------------------------------------------------
------------%>
  <td width="3"><lms:spacer width="3" height="1" /></td>
</logic:match>
```

Otherwise, the next table row included in the page contains the adminTask.jsp. This table row is followed by some empty rows to add space between frames.

```
<tr>
  <td class="formBoxTitleBg" colspan="3" valign="middle" nowrap>
  <jsp:include page="adminTask.jsp" flush="true"/>
  </td>
</tr>
```

The next table row checks again to make sure the current navigation mode is not studenthome. If it is not, it then checks to make sure the current navigation mode is not invalidForm. If it is not, it includes the adminLocation.jsp.

```
       <tr><td class="formBoxBg" width="15"><lms:spacer width="15"
height="1" /></td>
        <td class="formBoxBg">
        <logic:notMatch name="navKey" value="studenthome"
location="start">
          <logic:notPresent name="invalidForm">
             <jsp:include page="adminLocation.jsp" flush="true"/>
          </logic:notPresent>
        </logic:notMatch>
```

The final section of code includes the adminContentPage.jsp:

```
         <div class="formBoxPositionInner">
           <jsp:include page="adminContentPage.jsp" flush="true"/>
         </div>
        </td>
        <td class="formBoxBg" width="15"><lms:spacer width="15"
height="1" /></td>
       </tr>
      </table>
     </td>
    </tr>
   </table>
  </td>
 </tr>
</table>
</body>
</html:html>
```

The content of the adminContentPage.jsp is determined by the navKey value in the request.

This is the source code for the adminContentPage:

```
<%----------------------------------------------------------------------
--------------
adminContentPage.jsp

This is the page that includes the appropriate content page based on
the current nav  param
-----------------------------------------------------------------------
------------%>
<%@ taglib uri="/WEB-INF/tld/Struts-bean.tld"   prefix="bean" %>
<%@ taglib uri="/WEB-INF/tld/Struts-logic.tld"  prefix="logic" %>
<%@ taglib uri="/WEB-INF/tld/lms.tld"           prefix="lms" %>
<%----------------------------------------------------------------------
--------------
If there is no nav param, then we are in an invalid state, probably
because of the back button, or a bookmark.  In that case, simply
forward to the invalid form page
 ----------------------------------------------------------------------
------------%>
<logic:notPresent name="invalidForm">
 <lms:navUtil id="contentPage" property="contentPage"/>
 <%-- This anchor is here for accessibility. DO NOT REMOVE IT --%>
 <a name="#navskip"></a>
 <jsp:include page="<%=pageContext.getAttribute(\"contentPage\")%>"
flush="true" />
</logic:notPresent>
<logic:present name="invalidForm">
 <jsp:include page="invalidForm.jsp" flush="true" />
</logic:present>
```

Again, the taglib directives are used to include the lms and Struts tag libraries. Then the navUtil tag of the lms library is called. This tag looks at the page specified as the current page by the navigationControllerBean. Using the “property” attribute of the navUtil tag, it then requests the value of the “contentPage” property of the Bean. Since the id attribute of the navUtil tag is also specified with a value of “contentPage,” the returned value is stored in a pageContext object variable that can be referenced later in the page as a variable called “contentPage.” If no value is returned by the navigationControllerBean, the invalidForm.jsp page displays. Otherwise, the appropriate page for the current navigation mode in the application displays. The JSP include action determines which page to display by retrieving the contentPage attribute of the pageContext object variable, which was just set by the lms:navUtil tag.

Delivery server

The Delivery server has a framing JSP named delivery.jsp. This page contains resizable frames made up of the system.jsp, courseTree.jsp, courseTools.jsp, and activity.jsp files. Each JSP has a corresponding frameID value that is used by the doReloadFrame tag of the delivery-js tag library to determine how to populate a frame when it needs to be reloaded because of an action that occurred in another frame. The activity.jsp contains the activityTools.jsp and appropriate page content. Stepping through the source code of the delivery JSP illustrates how to perform standard JSP tasks, such as:

- Including tag library descriptor files
- Including JavaScript source code

Looking at the delivery.jsp source code also illustrates how the following tasks are handled by the Delivery server in particular:

- Localizing page text
- Populating a frameset in a JSP
- Displaying errors to the user
- Defining resizable frames

The source code for the delivery.jsp file is stored in the WEB-INF>classes>resources>ds directory.

Including tag library descriptor files

The page and taglib directives specify that the page contains Java code and that, like the adminTemplate.jsp, a Struts tag library is included, the Struts-bean.tld file. Unlike the adminTemplate, the delivery.tld and delivery-js.tld files are associated with the page, instead of the lms tag library.

```
<%@ page language="java" contentType="text/html;charset=UTF-8" %>
<%@ taglib uri="/WEB-INF/tld/delivery.tld" prefix="delivery" %>
<%@ taglib uri="/WEB-INF/tld/delivery-js.tld" prefix="js" %>
<%@ taglib uri="/WEB-INF/tld/Struts-bean.tld" prefix="bean" %>
```

Localizing page text

The title of the page is located in the DeliveryResources.properties file in the WEB-INF>classes>resources>ds>properties directory, which contains the following resource key:

```
ds.application.title= IBM Lotus Learning Management System
```

Note that the message tag that is being used to define the key to retrieve from the .properties file is using the “delivery” prefix. This indicates that the message tag resides in the delivery.tld file.

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title><delivery:message key="ds.application.title"/></title>
```

Including JavaScript source code

The next piece of code includes the JavaScript code from the ds>js>delivery.js file in the page so that the functions in the code can be called from the current page.

```
<script language="JavaScript" src="js/delivery.js"></script>
```

Populating a frameset in a JSP

The next chunk of code uses the doReloadFrame, frame, and action tags from the delivery-js.tld file to create a JavaScript function that correctly reloads the specified frame when an action occurs in another frame.

```
<js:doReloadFrame>
  <js:frame
name="system"><delivery:action>system</delivery:action></js:frame>
  <js:frame

name="courseTree"><delivery:action>courseTree</delivery:action></js:fra
me>
  <js:frame

name="courseTools"><delivery:action>courseTools</delivery:action></js:f
rame>
  <js:frame
name="activity"><delivery:action>activity</delivery:action></js:frame>
</js:doReloadFrame>
```

Displaying errors to the user

The next chunk of code uses the define tag of the Struts-bean tag library to retrieve the context parameter of the delivery_context JavaBean. The code inside the script opening and closing tags is JavaScript code that defines the load function which reports any errors generated by the context parameter. If errors are encountered, the code displays the errors in an alert box on the page.

```
<bean:define id="context" name="delivery_context" scope="request"
type="com.lotus.elearn.delivery.DeliveryContext"/>
<script language="Javascript">
var         mainDeliveryServerFrame = true;
var         contentWindow = null;
var         API = null;
function load()
{
<% if (context.getErrorMessageKey() != null) { %>
      alert("<delivery:errorMessage
key="<%=context.getErrorMessageKey()%>" filter="false"/>");
<% } %>
      API = window.frames['system'].document.applets['api-adapter'];
}
</script>
</head>
```

Defining resizable frames

The final chunk of code defines the sizes of the resizable frames on the page:

```
<frameset onload="load()" rows="44,*" frameborder="yes" border="4"
framespacing="4">
  <frame name="system" src="<delivery:action>system</delivery:action>"
   marginwidth="0" marginheight="0" scrolling="no" noresize>
  <frameset cols="199,*" frameborder="yes" border="4" framespacing="4">
    <frameset rows="*,187" frameborder="yes" border="4"
framespacing="4">
      <frame name="courseTree"
src="<delivery:action>courseTree</delivery:action>"
       marginwidth="0" marginheight="0" scrolling="auto">
      <frame name="courseTools"
src="<delivery:action>courseTools</delivery:action>"
       marginwidth="0" marginheight="0" scrolling="auto">
    </frameset>
    <frame name="activity"
src="<delivery:action>activity</delivery:action>"
     marginwidth="0" marginheight="0" scrolling="no">
  </frameset>
</frameset>
</html>
```

The activity.jsp contains a frameset for the activityTools.jsp and page content. The source code for the activity.jsp follows:

```
<%@ page language="java" contentType="text/html;charset=UTF-8" %>
<%@ taglib uri="/WEB-INF/tld/delivery.tld" prefix="delivery" %>
<%@ taglib uri="/WEB-INF/tld/delivery-js.tld" prefix="js" %>
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">]
<js:doReloadFrame>
  <js:frame
name="activityTools"><delivery:action>activityTools</delivery:action></
js:frame>
  <js:frame
name="content"><delivery:action>content</delivery:action></js:frame>
</js:doReloadFrame>
</head>
<frameset rows="26,*" frameborder="no" border="0" framespacing="0">
  <frame name="activityTools"
src="<delivery:action>activityTools</delivery:action>"
   marginwidth="0" marginheight="0" scrolling="no" noresize>
  <frame name="content"
src="<delivery:action>content</delivery:action>"
   marginwidth="0" marginheight="0" scrolling="auto">
```

```
</frameset>
</html>
```

The body of the delivery:action tag identifies the action used to display the frame. The body maps to the action path in the Struts-config.xml file on the Delivery server. The JSP defined in the path attribute of the forward tag is the JSP to display in the frame if the action results in that forward. For example, the activityTools delivery:action tag corresponds to the following action mapping:

```
<action path="/activityTools"
 type="com.lotus.elearn.action.delivery.FrameActivityToolsAction">
    <forward name="success" path="/activityTools.jsp" />
</action>
```

The type attribute of the action defines the FrameActivityToolsAction as the action handler. Once the action is handled, the handler returns a forward value. If the forward it returns is "success," the mapping identifies activityTools.jsp as the page to display in the frame.

The URL of the page to display in the content frame is either:

- If the action handler determines that there is content to display, the base URL supplied by the content package and any other parameters needed to track the content define the page to display.
- If there is no content to display, the frame displays a JSP that contains details of the activity currently selected in the activityTools frame. The frame determines which page to display based on the content action mapping in the Struts-config.xml file. The content action mapping entry follows:

```
<action path="/content"
type="com.lotus.elearn.action.delivery.FrameContentAction">
  <forward name="faceToFaceDetails"
path="/activityDetailsFaceToFace.jsp" />
  <forward name="genericDetails" path="/activityDetailsGeneral.jsp" />
  <forward name="lvcDetails" path="/activityDetailsLVC.jsp" />
  <forward name="topicDetails" path="/topicDetails.jsp" />
  <forward name="courseDetails" path="/courseDetails.jsp" />
</action>
```

This mapping instructs the content frame to display one of the following pages, depending on the current activity:

- If the activity is a course, courseDetails.jsp
- If the activity is a topic, topicDetails.jsp
- If the activity is a face-to-face exercise, activityDetailsFaceToFace.jsp
- If the activity is a live chat, activityDetailsLVC.jsp
- If it is any other activity, activityDetailsGeneral.jsp

Making global changes

You can make changes that apply to all the JSPs on a given server in the following areas:

- Application style
- Page text

- Images

Applying customization sets

When you create a customization set, you create a new branch in the application directory to house the files that contain alternative resources for the application, including graphics, style sheets, and .properties files. For details, see "Creating customization sets."

This chapter, which describes customizing JSPs, defines how to add and edit graphics, .properties, and CSS files. In the procedures that follow, steps are provided for adding and editing files in the standard directory. If you are adding or editing files in a customization set, complete the following steps in addition to those defined in the subsequent topics:

1. From the Settings module of the Administrator interface, click Manage Customization Sets.
2. From the list of customization sets, select the set you are editing and click the Edit button.

   The Edit Customization Set window displays.
3. Select one of the following checkboxes:

- Use CSS: Overrides the default CSS files with the CSS files in the customization set subdirectory.
- Use text: Overrides the default .properties files with the .properties files in the customization set subdirectory.
- Use custom images: Overrides the default image files with the image files in the customization set subdirectory.

4. Click the Save button at the bottom of the dialog box.

Changing the application style

The default global styles of the JSPs that make up the LMS application, their background colors and font styles, for example, are defined by a set of cascading style sheets (CSS files). To change the global style of the application, you can edit the existing CSS files or add your own to the application. To change the style of a single JSP, see "Changing the style of an individual JSP."

Note: Most of the existing pages in the LMS application contain HTML and custom JSP tags with class or id attributes that correspond to styles in existing CSS files. If you delete a class or id from an existing CSS file, you must remove the references to it from each JavaServer Page that uses it. For example, the table cell element tag, <td class="formBoxBg" width="15">, which displays in the adminTemplate.jsp, is an HTML tag that calls the formBoxBg class defined in the general.css file to set the table cell background color. If you delete the formBoxBg class from the general.css file or delete the general.css file and do not provide a replacement definition or file, this will result in unpredictable formatting for any elements referencing that class on the page.

Each server has a separate set of CSS files for the application it hosts. The Learning Management System server, Delivery server, and Offline Learning Client server each have their own set of CSS files. These are broken down into:

- Language-version: Based on the locale code specified in the browser request
- Browser-type: Based on the browser with which the user accesses the application

The BrowserSniffer Bean, which determines what type of browser the current request is coming from, is called from the initial pages in the application. This Bean also reads the locale attribute of the browser request. Based on this information, it applies the appropriate version of the CSS files to the current and subsequent pages. For example, the BrowserSniffer Bean is called from the adminTemplate.jsp page, which is the page that defines the format for most of the pages on the Learning Management System server. For more information on the adminTemplate.jsp, see "The Anatomy of an LMS JSP."

The file directory containing the CSS files is structured as follows:

```
[serverName]>css>[languageCode]>[browserType]
```

where [serverName] equals one of the following:

- lmm: Represents the Learning Management System server.
- ds: Represents the Delivery server.
- duc: Represents the Offline Learning Client server.

See the definitions of the [languageCode] and [browserType] directory names below.

Language-version

The LMS application directory contains CSS files for multiple languages. Having separate CSS file sets for each supported language enables you to design pages that are aesthetically familiar to different cultures. For example, you can change a background color that is considered offensive to one culture to a more appropriate color in the corresponding language-version CSS file. The only difference in the CSS files that are included by default with the LMS application is in the reading orders assigned to the INPUT and TEXTAREA elements. The Arabic CSS file (found in the "ar" directory) sets the reading order from right to left. All other CSS language files set the reading order from left to right.

The [languageCode] directory name is supplied as a two character language code. For example, English is represented by "en," Spanish is represented by "es," and German is represented by "de."

Browser-version

The IBM Lotus Learning Management System supports Microsoft Internet Explorer, version 5.5 and later and Netscape, version 6.0 and later. The application supports separate style sheets for each browser because a single format setting can often display differently in each browser. To keep a consistent look and feel, you can tweak the format settings in each browser-version CSS so that the page displays alike to the user regardless of which browser is accessing it.

The [browserType] directory name can be supplied as either of the following:

- styInternetExplorer5: Represents Internet Explorer, version 5.5 or later
- styNetscape6: Represents Netscape, version 6 or later

Note: To keep the application consistent, if you make a change that is not language- or browser-specific to one CSS file set, duplicate that change across all of the CSS file sets. You can also remove CSS files for languages you do not intend to support.

Editing existing CSS files

To edit a CSS file:

- Open the CSS file you want to change in a text editor, then make and save your changes.

Any changes you make to an existing style are reflected in any JSP that references that style. Before making changes, be sure to know where the styles you are updating are used and that no JSPs will be disrupted by the changes.

Adding your own CSS files

You can add your own CSS files for use in the application. You can reference styles from custom files in addition to the styles included in the CSS files that come with the LMS application by default.

To add a CSS file:

1. Copy your custom CSS file into the [serverName]>css>[languageCode]>[browserType] directory.

   If you are adding a CSS file to a customization set, copy your custom CSS file into the [serverName]>customSetName>css>languageCode>browserType directory. See "Applying customization sets."

   This directory also contains a general.css file.
2. Open the general.css file in a text editor.
3. Edit general.css to include the following directive:

   ```
   @import url(myStyles.css);
   ```

   where myStyle.css is the name of the CSS file you are adding to the directory.
4. Repeat this step for each CSS file you want to include. Remember to duplicate these changes in the CSS file sets in the corresponding directories of each language and browser the application supports.

Replacing CSS files

You can replace all existing CSS files with your own CSS files for use in the application.

To replace the CSS files:

1. Copy your custom CSS file into the [serverName]>css>[languageCode]>[browserType] directory.

   If you are replacing a CSS file in a customization set, copy your custom CSS file into the [serverName]>customSetName>css>languageCode>browserType directory instead. See "Applying customization sets."

   This directory also contains a general.css file.
2. Open the general.css file in a text editor.
3. Remove all content from the file. Add only the following statement:

   ```
   @import url(myStyles.css);
   ```

   where myStyle.css is the name of the CSS file you are adding to the directory.
4. Repeat this step for each CSS file you want to include. Remember to duplicate these changes in the CSS file sets in the corresponding directories of each language and browser the application supports.

Changing the font size or font style of the application

To apply a global change, such as increasing the default font size of the text in the application or changing the font style, you can edit the CSS files. The default font style and size are defined at the beginning of the CSS. For example, the English-version, IE5 general.css file for the lmm server contains the following entry:

```
*{
font-family:Verdana,Arial,Sans-Serif;
font-size:xx-small;
}
```

To increase the default font size, change the "font-size:" value from xx-small to small or medium. To change the font style, replace the values in the "font-family:" setting with the fonts you want the application to use.

Several of the classes in the CSS specify specific font sizes and styles that you have to change individually. These include the SPAN.hdrGeneral, DIV.hdrMainItem001, TD.hdrFolderDetails, and many other classes. If you want to change the font size of an item that has a class style assigned to it, search the CSS files for the class name to see if a specific font size has been assigned to that item and change it in the class definition of the CSS file.

Updating page text

The power of a JSP lies in its ability to supply dynamic content. The LMS application takes advantage of this ability by resourcing much of the text on the pages of the application in properties files (which are files named with a .properties extension). Instead of placing static text in the source HTML for the page, you can reference a resource key in a .properties file that contains the translated value. You can then set up the application to retrieve different .properties files based on the locale of the browser or user preferences. This way, you can cater the text to specific user types. Storing text strings in .properties files is especially useful for maintaining multiple language applications.

The LMS application uses .properties files to define static text for errors and resources in each of the servers hosting the application. The .properties files are stored in the following directory:

```
[serverName]>WEB-INF>classes>resources>[serverName]>properties
```

where [serverName] equals one of the following:

- lmm: Represents the Learning Management System server.
- ds: Represents the Delivery Server.
- duc: Represents the Offline Learning Client server.

Each properties directory contains the following two .properties files:

- ApplicationErrors.properties: Contains the resource keys for error messages.
- ApplicationResources.properties: Contains the resource keys for application resources.

A set of these files is available for each language supported by the application. The language of the .properties file is specified by an underscore followed by the language code after the file name. For example, the German ApplicationErrors .properties file is named ApplicationErrors_de.properties. This naming convention is followed for all the .properties files, except the English-language version .properties files, which are the default .properties files for the application. The English-language .properties files have no underscore and language code following the file names.

The .properties files in the IBM Lotus LMS application are located in the directories listed in the table below. The files listed are English-version files, so there are no language codes attached to the file names.

IBM Lotus Learning Management System application properties files

Server Name	*Directory*	*English-Language .properties Files*
Learning Management System	WEB-INF>classes>resources>lmm>properties	ApplicationErrors.properties ApplicationResources.properties
Delivery	WEB-INF>classes>resources>ds>properties	ApplicationErrors.properties ApplicationResources.properties
Offline Learning Client	WEB-INF>classes>resources>duc>properties	ApplicationErrors.properties ApplicationResources.properties

A number of the tags in the lms custom tag library, such as the button or img tags, contain attributes that reference .properties file entries to supply language-specific text on the page. One tag, the message tag, is specifically designed to retrieve .properties file entries. For example, the title of the adminTemplate.jsp is supplied using the message tag. Instead of defining its title as <title>IBM Lotus Learning Management System</title>, the adminTemplate.jsp specifies the content of the HTML title tag as follows:

```
<title><lms:message key="application.title" /></title>
```

<lms:message … /> contains the backend code that looks up the string value to display on the page. The key attribute of the message tag, key="application.title," defines the resource key in the .properties file to retrieve. In this example, the resource key to retrieve is the application.title resource key. At request time, the server executes the Java code specified in the message tag, it determines which .properties file to associate with the current browser, and then retrieves from it the resource key supplied by the key attribute. Since the ApplicationResource.properties file contains the following resource key:

```
application.title = IBM Lotus Learning Management System
```

the title that displays on the adminTemplate JSP is "IBM Lotus Learning Management System." Using the message tag, you enable the application to dictate which text to display. For example, the .properties file could supply the title in Spanish if the locale code specified by the browser request is the Spanish language code "es." In this case, the application retrieves the application.title resource key from the ApplicationResource_es.properties file which can be set up to contain a Spanish-language version of the title.

You can edit existing .properties file entries or add new entries to existing files. Any changes you make to .properties file entries are reflected in any JSPs that references those entries.

To edit page text:

1. Open the .properties file for the language code you want to edit from the WEB-INF>classes>resources>[serverName]>properties directory in a text editor.

   If you are editing .properties files in a customization set, open the .properties file from the [serverName]>WEB-INF>classes>resources>[serverName]>customSetName>properties instead. See "Applying customization sets."

2. Edit the resource key you want to change, then save and close the file.
3. Ask the server administrator to refresh the file on the server. Your changes are not visible until this step is completed.

Adding and replacing graphics

You can add or replace the default graphics that display in the LMS application with your own custom graphics files.

To add graphics:

1. Add a new image file by copying it into the [serverName]>images directory.

   If you are adding a graphics file to a customization set, copy it to the [serverName]>customSetName>images directory. See "Creating a customization set."

2. Rewrite any references to the old file name with the new graphic file name.

   For example, if the new graphic file is called userName.gif, you can replace the following tag:

   ```
   <lms:link><lms:img src="images/name.gif"… /></lms:link>
   ```

   with:

   ```
   <lms:link><lms:img src="images/userName.gif" … /></lms:link>
   ```

To replace graphics:

- Replace the existing image file in the [serverName]>images directory with the image you prefer to use. Retain the original image's file name.

Replacing the application logo

The standard IBM Lotus Learning Management System logo which displays in the header of the application pages is included using custom tags. This section defines how the following servers specify the graphic files and alternate text they use for their logos:

- Learning Management System server
- Delivery server

Learning Management System server

The graphic to use as the application logo for the Learning Management System server is defined in application source code that is not editable. You cannot access this code. The Java code triggered by the lms:logo tag retrieves the "lmsBrandingLogo.gif" graphic from either the standard lmm>graphics directory or the customization set subdirectory, if the application has been set up to use custom images.

The adminHeader JSP includes the lms:logo tag as follows:

```
<td width="93%" class="ancLogoPlacement" valign="top">
   <a href="#navskip">
      <lms:img src="images/px.gif" altKey="header.skipToMainContent"/>
   </a>
   <lms:logo altKey="image.alt.logo" />
</td>
```

To replace the graphic used for the logo on the Learning Management System server, follow these steps:

1. Rename the replacement graphic to "lmsBrandingLogo.gif."
2. Rename (or remove) the existing lmsBrandingLogo.gif file.
3. Add the graphic file by copying it to the [serverName]>images directory.

   If you are adding the logo graphic to a customization set, copy it to the [serverName]>customizationSetName>images directory. See "Applying customization sets."

The altKey attribute of the lms:logo tag defines the text to display as alternate text for accessibility compliance. The value for the key is the name of the .properties file resource key to retrieve and display as the alternate text for the image. The altKey attribute above contains image.alt.logo. The English-version ApplicationResources.properties file for the lmm server contains the following resource key:

```
image.alt.logo  = IBM Lotus Learning Management System
```

If you change the logo to display a custom company logo, you may also want to change the image.alt.logo resource key in the .properties file to contain a text string that is compatible with the change.

Delivery server

The Delivery server includes the logo using the delivery:logoURL tag. The Java code triggered by this tag takes a parameter that defines the graphic file to use as the logo. You can supply this parameter by editing the resource attribute of the logoURL tag.

The system.jsp file includes the delivery:logoURL tag as follows:

```
<td width="93%" class="systemLogoPlacement" valign="top">
        <img src="<delivery:logoURL
resource="images/lmsBrandingLogo.gif"/>"
         alt="<delivery:message key="ds.application.title"/>"
width="209"
         height="22">
</td>
```

To replace the graphic used for the logo on the Delivery server, follow these steps:

1. Add the graphic file by copying it to the [serverName]>images directory.

   If you are adding the logo graphic to a customization set, copy it to the [serverName]>customSetName>images directory. See "Applying customization sets."

2. Replace the resource attribute value with the name of the replacement graphic file.

   For example, if the logo graphic is called, "myCompanyLogo.gif," rewrite the logoURL tag to read:

   ```
   <delivery:logoURL resource="images/myCompanyLogo.gif"/>
   ```

To edit the alternate text for the logo image, follow these steps:

1. Add a text string to display as alternate text for the logo image to the appropriate .properties files.
2. Replace the value of the key attribute with the resource key for the text value you just added the .properties files.

Changing individual JSPs

You can make the following changes to individual JSPs:

- Changing a JSP's style
- Altering a JSP's functionality

Changing the style of an individual JSP

You can change the style of an individual JSP by replacing the references to CSS styles on an HTML or JSP tag with either static HTML or with references to custom styles defined in a new or edited CSS file.

Replacing a reference to a CSS style

In the adminTask.jsp, the following table cell element displays a Help icon that links to a context-sensitive Help document:

```
<td class="hdrHelpIcon">
   <a href="javascript:openContextHelp('<lms:getHelpPage/>')">
      <lms:img src="images/help_jc_16.gif" altKey="help.select"/>
   </a>
</td>
```

"hdrHelpIcon" corresponds to the TD.hdrHelpIcon entry in the general.css file for the Learning Management System server. The English-version, IE5-compatible CSS defines the TD.hdrHelpIcon entry as follows:

```
TD.hdrHelpIcon{
text-align:right;
```

```
}
```

To customize the Help icon to align left instead of right, either:

- Replace the class attribute with static HTML to define the alignment of the text as follows:

  ```
  <td align="left">
  ```

  This option works for quick fixes, but requires that you edit each individual setting any time you want to update an alignment style. Alternatively, if you reference a CSS class, by changing the setting in one place only -- the CSS class entry, you can update all references at once.

- Create a new entry to the general.css file or in a custom CSS file* included in the general.css file, called hdrHelpILeft and define it as follows:

  ```
  TD.hdrHelpILeft{
  text-align:left;
  }
  ```

  Reference the new entry in the page using the following syntax:

  ```
  <td class="hdrHelpILeft">
  ```

  (*For information on creating a custom CSS file, see "Adding your own CSS file.")

A third option is to edit the existing hdrHelpIcon class entry in the CSS to contain the following description:

```
TD.hdrHelpIcon{
text-align:left;
}
```

However, this option would change the definition of the class globally instead of changing it within the scope of a single JSP. For more information on global style changes, see "Changing the application style."

Changing the functionality of an individual JSP

You can change how an individual JavaServer Page functions by editing or removing its JSP tags.

Editing existing JSP tags

You can change how a JavaServer Page functions by editing its JSP tags. You can change the values set for a JSP's attributes, remove non-required attributes, or add attributes that are attributed to the tag in the TLD file, but are not included in the tag.

For example, editing the attributes of the lms:button tag drastically changes the behavior of the resulting button on a JSP. Depending on the attributes supplied, the lms:button tag can navigate through the application, submit forms or cancel form submission. Likewise, the attributes you supply with an lms:hidden tag can determine whether you are setting or getting values from the JSP's associated form Bean.

Specifying the next page to display

This code, for a Continue button on the catalogCreateCourseConfirm JSP, uses the nav attribute to define the next action to perform.

```
<lms:button captionKey="button.continue" nav="<%=setFolderKey%>"
 tooltipKey="button.alt.continue"/>
```

Once clicked, this button launches the page defined in the setFolderKey variable on the current page.

Submitting a form

If you remove the nav attribute and add an onClick attribute, you completely change the functionality of the button. This code, for the Login button on the loginForm JSP for the Learning Management System server, executes a JavaScript submitForm() function when the button is clicked. This effectively logs the user into the application.

```
<lms:button captionKey="button.login"
onClick="javascript:submitForm('loginForm');"
 tooltipKey="button.login"/>
```

The Login button on the deliveryLoginForm JSP for the Delivery server contains similar code:

```
<lms:button captionKey="ds.toolbar.login"
onClick="javascript:submitForm();"
 tooltipKey="ds.toolbar.login"/>
```

Canceling the submission of a form

If you remove the onClick attribute and add an isSubmit attribute set to false, the button now specifically prevents the entries on the current form from being saved. This code, for a Cancel button on the assignVendor JSP, sets the isSubmit attribute to false. It includes an href attribute that contains JavaScript code which instructs the current window to close when the button is clicked.

```
<lms:button captionKey="button.cancel" isSubmit="false"
tooltipKey="button.cancel"
 href="javascript:window.close()"/>
```

To edit a tag:

1. Look at the TLD file referenced by the prefix of the tag you want to edit.

   This contains a list of attributes associated with the tag.

2. Edit the JSP tag to add, remove, or change the values of the tag's attributes.

   Note: Do not remove required attributes. The TLD file identifies attributes that are required by specifying "true" in the body of the <required> tag.

For more information on looking at the TLD file to see a tag's attributes, see "The anatomy of a TLD file."

Editing form Bean values with the lms:hidden tag

The lms:hidden tag is a tag that produces an HTML input tag with a type attribute value set to "hidden." This tag enables you to get and set values in the form Bean (which is a Java component that, among other things, saves user input) associated with the current form.

The name attribute identifies the form Bean. The property attribute represents a property setting in the form Bean. The value attribute sets the input tag values, which can be later saved to the form bean. If you do not supply a value attribute, the HTML input tag gets values for specified properties from the form Bean.

The following code creates a hidden HTML input tag. Because a value attribute is supplied, the resulting input tag sets the "destination" property of the form Bean associated with the assignVendor.jsp to that value. The value is set using a JSP expression that gets the value of the destination parameter from the user request:

```
<lms:hidden property="destination"
value='<%=request.getParameter("destination")%>'
 />
```

If no value attribute were supplied, the hidden input tag would retrieve a value for the destination property from the form Bean.

The following lms:hidden tag, which is used in the catalogCourseMasterDetail.jsp keeps a copy of the current form's keywords in the form Bean by supplying values for the name and property attributes.

```
<lms:hidden name="<%=formName%>" property="unmodifiedKeywords" />
```

This is useful because, if a user encounters an error or otherwise leaves the form temporarily, the keywords can be repopulated with the values saved in the form Bean.

The following lms:hidden tag, which is used in the catalogCreateCourseConfirm.jsp, creates an HTML hidden input tag that captures the userEvent property.

```
<lms:hidden property="userEvent" />
```

This property can be modified by JavaScript triggered by user actions. For instance, JavaScript in the catalogTrailHeader.jsp, which is included in the catalogCreateCourseConfirm.jsp, can reassign a value to the userEvent property when a user clicks a button to initiate a new event.

Removing JSP tags

You can remove a JSP tag from a JavaServer Page by deleting the tag and its associated HTML formatting tags from the page. Removing JSP tags does not only remove elements like buttons and fields from the page, but also removes associated functionality. For example, if you want to remove the ability for users to add custom fields to a Course Details page, you can eliminate the labels, fields and buttons that support this functionality.

The JSP that represents the Course Catalog>Register Course Entry>Course>Course Master>Course Details page in the Administrator interface is the catalogCourseEntryDetails.jsp. This page contains code that displays a popup window in which you can add, delete, or edit custom fields. The source code resides in the WEB-INF>classes>resources>lmm> catalogCourseEntryDetails.jsp directory and begins at line 167 with the following commented out text:

```
<%--
/////////////////////////////////////
// custom fields
/////////////////////////////////////
--%>
```

The section of code that displays the Custom Fields section of the page ends with line 283, which contains the code:

```
</logic:iterate>
```

Removing the 115 lines of code between these two points removes the "Custom Fields" section header, the Edit button with its Custom Fields label, and the list of existing custom fields from the Course Details page.

The Custom Field Header section of the code uses an lms:message tag to reference the appropriate .properties file to supply the header label:

```
<lms:message key="catalog.createEntry.details.customFieldDetails"/>
```

The next section of code, Manage Custom Fields, uses the lms:message tag to supply the text in the customFields resource key of the appropriate .properties file and the lms:label tag to situate the label in the correct place on the page:

```
<lms:label for="customFields"><lms:message
key="catalog.attrib.course.customFields"/></lms:label>
```

It then includes an lms:button tag. This tag displays a button on the page. The "captionKey" attribute defines the text to display as a label on the button by retrieving the button.edit resource key from the appropriate .properties file. Similarly, the “tooltipKey” attribute defines the resource key to retrieve for display in the window status bar when the button is moused over to define the action the button performs. The “href” attribute defines the action to perform when the button is clicked. This href calls the customFieldsPopup() function, which is Javascript code that is defined in the page header. Setting the “secondary” attribute to true diminishes the visibility of the button by changing it to a duller color:

```
<lms:button captionKey="button.edit"
tooltipKey="button.alt.manageCustomProperties"
href="javascript:customFieldsPopup();"
secondary="true"/>
```

The last section of code displays a list of any existing custom fields stored in the application.

This piece of code iterates over the customField objects in the CustomFieldHelper class which accesses the previously created custom fields:

```
<logic:iterate id="customField" name="<%= formName %>"
property="customFields"

type="com.lotus.elearn.model.CustomFieldHelper">
```

This code retrieves from each returned custom field a value to use for the label:

```
<lms:label beanClass="com.lotus.elearn.model.CustomFieldHelper"

instance="<%=customField%>"
id="<%=customField.getValidationLabelId(cfName)%>">

     <lms:staticText name="customField" property="name" />

      </lms:label>
```

It then checks to see if it's a text box type field:

```
<logic:equal name="customField" property="type"

value="<%=Integer.toString(CustomFieldConst.TYPE_TEXTBOX)%>">
```

or a drop down box type field:

```
<logic:equal name="customField" property="type"

value="<%=Integer.toString(CustomFieldConst.TYPE_DROP_DOWN)%>">
```

This code, which follows the check for a text box field, defines how to display the content of the textbox field, if present, or the default value for the text box field, if available, or an empty text box field, if no other value is supplied:

```
      <%-- if a value for this entry is present, display that --%>
     <logic:present name="customField" property="val">
      <input type="text" size="20" name="<%=cfName%>"
       value="<%=customField.getVal()%>"/>
     </logic:present>
     <%-- if a value for this entry is NOT present, display the default
or a blank
     %>
     <logic:notPresent name="customField" property="val">


      <%-- default value if present --%>
      <logic:present name="customField" property="defaultValue">
       <input type="text" size="20" name="<%=cfName%>"
        value="<%=customField.getDefaultValue()%>"/>
      </logic:present>
      <%-- blank --%>
      <logic:notPresent name="customField" property="defaultValue">
       <input type="text" name="<%=cfName%>" size="20" value=""/>
      </logic:notPresent>
     </logic:notPresent>
    </logic:equal>
```

This code, which follows the check for drop-down box field, defines how to display the content of the drop-down box field, if present. Displaying the content of the drop down box requires denoting which of the available options is selected. If no option is selected, displays the default value as the selected option:

```
    <%-- ========== --%>
    <%-- select box --%>
    <%-- ========== --%>
    <logic:equal name="customField" property="type"
     value="<%=Integer.toString(CustomFieldConst.TYPE_DROP_DOWN)%>">
     <select name="<%=cfName%>" id="<%=customField.getName()%>">
      <%-- iterate over the options --%>
      <logic:iterate id="optionValue" name="customField"
property="optionValues"
       type="java.lang.String">
       <%
       //-- if the entry has a value, make it selected. --//
       if ( null != customField.getVal() ) {
             if ( optionValue.equals(customField.getVal()) ) {
       %>
         <option value="<%=optionValue%>"
selected><%=optionValue%></option>
             <%
             } else {
             %>
         <option value="<%=optionValue%>"><%=optionValue%></option>
             <%
             }
       //-- the entry has no default, make the default option selected.
--//
       } else {
         if ( optionValue.equals(customField.getDefaultValue()) ) {
         %>
         <option value="<%=optionValue%>"
selected><%=optionValue%></option>
         <%
         } else {
```

```
        %>
        <option value="<%=optionValue%>"><%=optionValue%></option>
        <%
        }
      } //end getVal
      %>
     </logic:iterate>
    </select>
   </logic:equal>
  </div>
 </td>
</tr>
</logic:iterate>
```

Removing JSP tags from the page source has a powerful effect on the resulting pages in the interface. Remove with care.

Chapter 6
Customizing Search

You can perform these types of searches in the user interface:

- User Search

  The User Search page appears when you roster or manage users in the Users module, when you enroll users or change their results in the Course Management module, when you supply contact information in the Course Catalog, and when you work with locations, rooms, or instructors in the Resources module.

- Offerings Catalog Search

  The Advanced Search page appears when you click Advanced Search from the Offerings Catalog search page.

- Course and Resources Searches

  The Course Management module has search pages for courses. The Resources module has search pages for Locations, Rooms, Vendors, and Instructors.

You can add and remove search criteria from User and Offering Catalog search pages. You can remove criteria from Course and Resources search pages.

Customizing user searches

Information about rostered users is contained in an LDAP directory used by the Learning Management System. The User Search page allows you to search for people by using attributes that are typically found in an LDAP directory, as well as some attributes that are specific to the Learning Management System.

Adding LDAP attributes to User Search pages

The default LDAP attributes supported are: First Name, Last Name, Common Name, User ID, E-mail Address, Department Number, and Organization. To add support for other attributes (including attributes custom to your LDAP directory), follow these steps:

1. Modify the <ldap> section of the LMS settings.xml file to:

- Add an entry in the <ldap> / <users> / <attributes> subsection for each attribute you want to include (if it is not there already). This subsection is already populated with a number of attributes that aren't shown on the User Search page (BusinessCategory, City, Employee Number, Employee Type, and so on).

  For example, to add the attribute HealthPlanChoice, the attribute line would look like this:

```
<attribute name="HealthPlanChoice" type="java.lang.String" />
```

- Make sure a mapping exists for the attribute in the appropriate object classes in the <ldap> / <users> subsection. This is especially important for attributes that are custom to your LDAP directory. For example, if the custom attribute is named planChoice in your LDAP directory, the mapping would look like this:

```
<mapping name="HealthPlanChoice"  ldapAttribute="planChoice" />
```

2. Modify the <user> / <customAttributes> subsection of the LMS settings.xml file to add an <attribute> entry for the attribute you added in Step 1. For example, for the

attribute HealthPlanChoice, the attribute link would look like this:

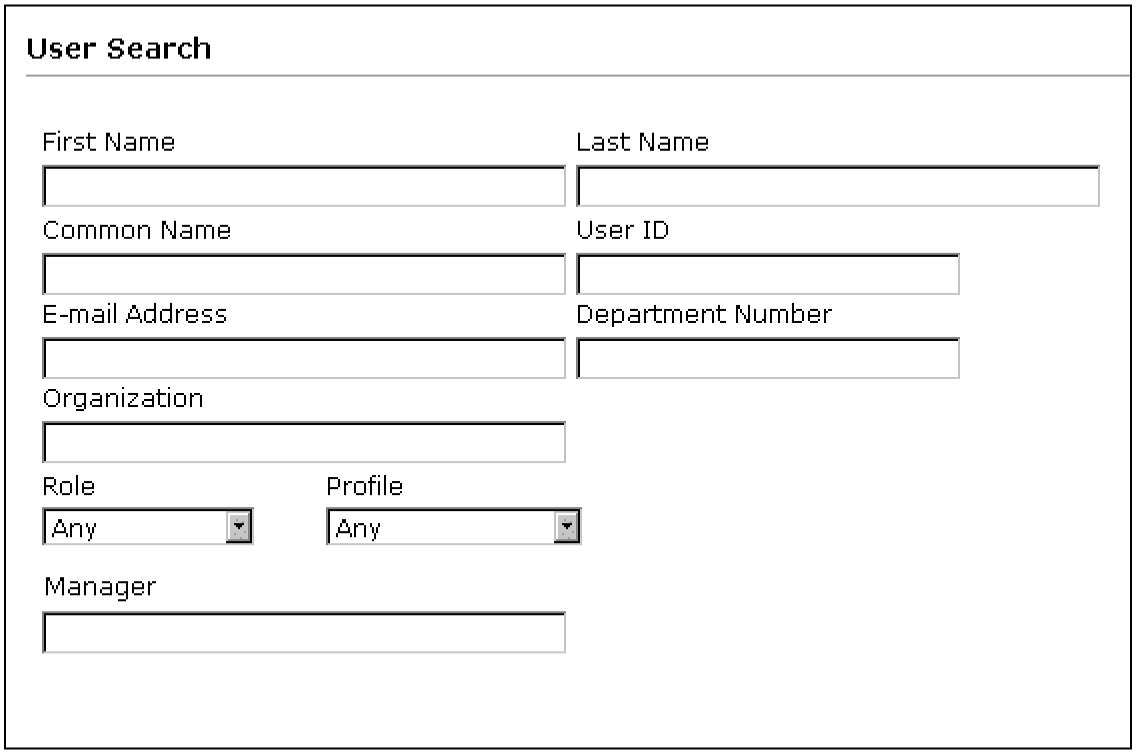
```
<!--=================================================================
User Settings
================================================================= -->
<user   component="com.lotus.elearn.user.UserMgrImpl"
               anonymousAccess="enabled"
               automaticRostering="enabled">
        <customAttributes>
               <attribute name="HealthPlanChoice" />
        </customAttributes>
</user>
```

3. Modify the LMS file, ApplicationResources.properties, by adding a line that converts the string to something user-friendly; for example:

```
HealthPlanChoice = Employee's Health Plan
```

The user-friendly text will appear in the User Search page as a description of the attribute. Do this for the ApplicationResources.properties file for each language.

All user searches automatically show the additional LDAP attributes; you don't need to edit the User Search page manually. The picture below shows a User Search page with the additional attribute "Manager."



Removing fields from User Search pages

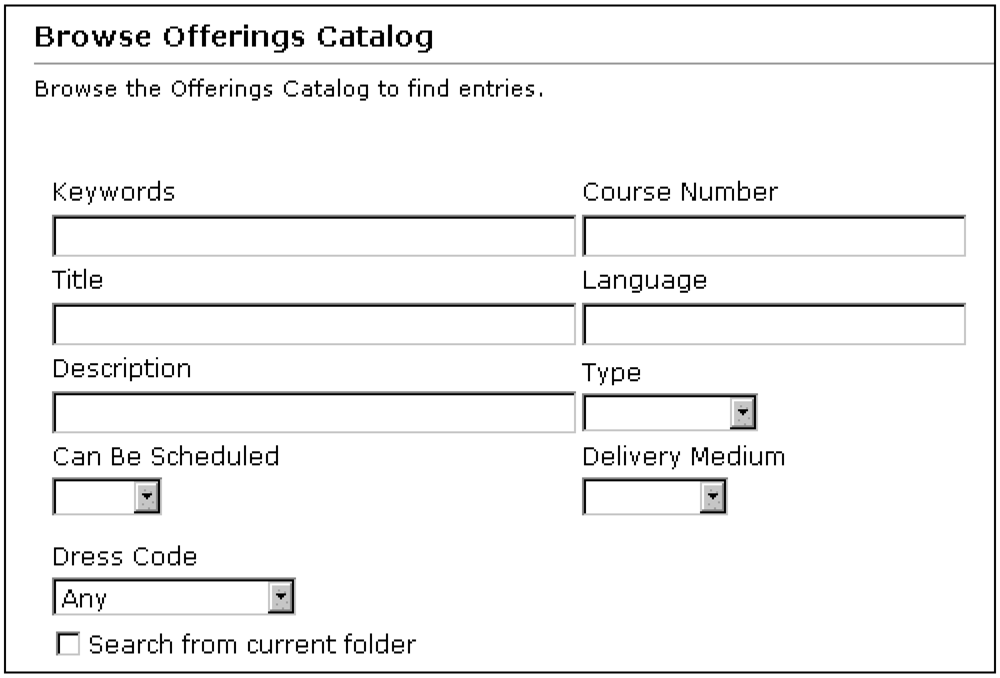
If you want to remove one of the default fields provided on the User Search pages, edit searchUser.jsp to delete the corresponding code and text.

Customizing Offerings Catalog searches

The Learning Management System allows you to create a pool of custom fields that can be applied to course offerings to add more details.

Adding custom fields to the Offerings Catalog

The custom field editor appears when you click Edit at the bottom of a Course Details page. Although you add a field in the context of a single Course Offering, custom fields are available to anyone who creates a Course Offering. If you designate a custom field as searchable, it appears in the Advanced Search page, which is launched from the Offerings Search page. The picture below shows the Offerings search page with a searchable custom field named "Dress Code."


Browse Offerings Catalog

Browse the Offerings Catalog to find entries.

Keywords	Course Number
Title	Language
Description	Type
Can Be Scheduled	Delivery Medium
Dress Code: Any	

☐ Search from current folder

Removing fields from Offerings Search pages

If you don't want to show all the fields provided on the Offerings Search page, edit searchCourseCatalogAdvanced.jsp to remove the code for the text and text box that you want to remove. To remove custom fields from the system, delete them by editing the custom field list from any Course Details page.

Customizing course management and resource searches

Searches in the Course Management and Resources module show fields that are defined in the Learning Management System database. These fields allow users to perform searches based on relevant criteria.

Removing fields from the Search pages

If you want to remove fields from the Search pages, edit the appropriate .jsp to remove the code for the text and text box that you want to remove.

- Course searches: searchCourses.jsp
- Location searches: searchLocation.jsp
- Room searches: searchRoom.jsp
- Instructor searches: searchInstructors.jsp
- Vendor searches: searchVendor.jsp

Chapter 7
Customization sets

You can create what are in effect alternative versions of the application and send specified users to one or another of these rather than to the default interface when they log in. To do this, you copy the directories containing the files you want to change (or replace) into a directory structure that mimics your original, make your changes, and then, in the Administrator interface, specify the location of the customized files and the users to whom the interface that they define is applicable. These alternative sets of files and the information concerning their location and use are called *customization sets.*

The advantage of customization sets is that you can tailor the application's look and feel and functionality for different sets of users rather than having to make global changes that affect all users. For example, you might want to create customization sets for different users based on their membership in one or the other of two different LDAP groups, providing one user interface and feature set for, say, users belonging to the Sales group and another for users in the Development group.

A customization set can include custom versions of any or all of the following:

- The branding logo. This is the graphic that the application displays in the upper left corner of each page.
- Images. These GIF files include icons, buttons, bullets, and the like, which you can edit or replace.
- Help. See "Customizing Help" for a description of the Help system, how it works, and how you can customize it.
- Cascading Style Sheets (CSSs). These control such display attributes as color and font.
- JavaServer Pages (JSPs). See "Customizing JavaServer Pages" for a description of the various ways in which you can customize the application's JSPs.
- E-mail and notification templates. These files contain the resourced static text that appears in e-mail and other messages in the application.
- Properties files. These files contain the resourced static text that appears elsewhere in the application—labels, button text, error message text, and so on.
- The logoff URL. This is URL of the page to which the user is sent when he or she logs out of the application.

The information that you specify in the Administrator interface when you create a customization set on the LMM server is automatically communicated to the Delivery server (or servers). However, if you create a directory structure to hold custom files on the LMM server, you need to create a comparable structure on the Delivery server (or servers) and populate it with custom files if you want your changes to be uniform across the application. Similarly, if you have deployed the application such that some of the files the application uses are stored on an HTTP server, you need to copy their customized counterparts to the appropriate location or locations on that server.

Creating a customization set

The following steps assume that you're creating a customization set on the LMM server for the users belonging to the LDAP group Sales and that, for simplicity, all the files of interest reside on the LMM server and that you want the customization set to use custom style sheets, images, resource strings and templates, and a customized Help system:

1. Copy the application's Web directory on the LMM server to a new Web directory and give it an appropriate name—for example, SalesCS—and then copy the application's resource files to a directory with the new name:

```
LMM
   CSS
   images
   etc.
   WEB-INF
        classes
                com
                resources
                        LMM
                                properties
                                templates
        lib
        etc.
```

Thus:

```
LMM
   CSS
   images
   etc.
   SalesCS
        CSS
        images
        etc.
   WEB-INF
        classes
                com
                resources
                        LMM
                                properties
                                templates
                                SalesCS
                                        properties
                                        templates

        lib
        etc.
```

Note: You only need to copy those directories containing files that you plan to customize for use by the customization set. So, for example, if SalesCS were not going to use custom Cascading Style Sheets instead of the defaults, you would not copy the LMM CSS directory into the SalesCS directory. On the other hand, if you wanted SalesCS to use a custom version of, say, the English language version of the LMM's general.css for Internet Explorer, you would need to copy the complete LMM\CSS directory tree with all its language versions and subdirectories.

2. Make whatever changes you want to the JavaServer Pages, Cascading Style Sheets, image files, properties files, and templates in the SalesCS directory hierarchy.
3. When you've finished, replicate your work (except for the templates folder) on the Delivery server (or servers).
4. Install your custom Help system. This is a three-step process:
   a. Install the default Help system, which means creating a directory on an HTTP server (in this example, myServer.myCompany.com/myDirectory) and unzipping the LMS Help WAR file there.
   b. Put the Help for your customization set in a subdirectory of the default Help system. Again, the directory tree for the customization set's Help system must exactly mirror that for the default Help system:

```
myServer.myCompany.com/myDirectory
    help
         da
            student
            authoring
            guides
            courseadmin
         de
         en
         etc.
        SalesCS
            da
                   student
                   authoring
                   guides
                   courseadmin
            de
            en
            etc.
```

   c. Make the application aware of the location of the default Help system. You can do this in either of two ways: by following the directions in "Configuring on-line help" in the *Installation Guide,* or by specifying the URL to the Help directory in the LMS Settings module (Settings - LMM - General Settings - General).
5. Log in to the Administrator interface and add the customization set that you've created to the system. To do this, click the Settings tab, then Manage Customization Sets, then Add. The application displays a dialog box with the following edit controls:
   - Title—a name that uniquely identifies the customization set you created in step 1.
   - LMM Resource Directory—the name of the directory in which the customization set's property and template files reside (in this case, SalesCS) on the LMM server.
   - LMM Web Directory— the name of the directory in which the customization set's JSPs, images, CSS, and (depending on your configuration) Help files reside (in this case, SalesCS) on the LMM server.
   - Delivery Server Resource Directory— the name of the directory in which the customization set's property files reside on the Delivery server(s). If you wanted the characteristics of SalesCS to propagate to the Delivery server(s), you can simply copy relevant portions of the LMM directory tree to the appropriate

locations in the Delivery server directory tree. In that case, the resource directory would again be named SalesCS.

- Delivery Server Web Directory— the name of the directory in which the customization set's JSPs, images, CSS, and (depending on your configuration) Help files reside (in this case, SalesCS) on the Delivery server(s).
- Matching Sting Type—the type of LDAP entity (user, group, or attribute) identified by the matching string you enter below. For testing purposes, you might choose Name and, in the Matching String edit control, enter a matching string that uniquely identifies you. Once satisfied that the customization set behaves the way you want, you can revisit the Matching String Type and Matching String edit controls and enter the appropriate values to assign the customization set to the intended users. In the present example, you would select Attribute as the string type and enter Sales as the matching string.
- Matching String—a string that identifies the LDAP users to whom the customization set is to be assigned. The following table gives some examples of matching strings:

Table of sample matching strings

Type	*Example*	*matches*
User	Fulano de Tal/Cambridge/IBM	A person (Fulano de Tal) at IBM in Cambridge
	cn=Fulano de Tal,ou=Cambridge,o=IBM	Same as above
	cn=Jan Doe,ou=West5,ou=Weston,o=IBM	A person (Jan Doe) at the West5 office of IBM in Weston
	*/Cambridge/IBM	Anyone at IBM in Cambridge
	*,ou=Cambridge,o=IBM	Anyone at IBM in Cambridge
	*	Anyone at all
Group	GroupCD/Groups/whatever	Everybody in this group
	cn=GroupCD,ou=Groups,o=whatever	Everybody in this group
Attribute	preferredLanguage=fr	Everybody with this attribute with a value fr
	preferredLanguage=*	Everybody with this attribute no matter what its value (if any)
	preferredLanguage	Same as the above
	preferredLanguage=	Everybody with this attribute to which no values or an empty value has been assigned
	preferredLanguage!=*	Everybody who doesn't have this attribute
	preferredLanguage!=	Everybody who doesn't have this attribute or has it with a non-empty value assigned to it
	preferredLanguage!=fr	Everybody who doesn't have this attribute or has it without the value fr assigned to it
	departmentNumber=1*	All users whose department number begins with 1.
	sn=Jones	All users whose surname is Jones.

- Logo URL—the branding logo to be displayed on each of the application's pages.
- Logoff URL—the URL of the page to be displayed when a user exits from the application.

The dialog box also contains a number of checkboxes:

- Use Custom Images—unchecked, the customization set uses the image files in the LMM Images directory; checked, the image files in the customization set's Images directory are to be used.
- Use Help— unchecked, the customization set uses the Help files in the LMM Help directory; checked, the files in the customization set's Help directory are to be used.
- Use CSS— unchecked, the customization set uses the CSS files in the LMM CSS directory; checked, the files in the customization set's CSS directory are to be used.
- Use JSP— unchecked, the customization set uses the JSPs in the LMM Web server directory; checked, the JSPs in the customization set's Web server directory are to be used.
- Use templates— unchecked, the customization set uses the templates for e-mail and notifications in the LMM server's resources directory; checked, the templates in the customization set's resources directory are used.

- Use text— unchecked, the customization set uses the files in the LMM properties directory; checked, the files in the customization set's properties directory are to be used.

6. Reboot the server(s) to complete the process of defining and assigning the customization.

Installing a customization set on the Offline Learning Client

You can create what are, in effect, customization sets for use on the Offline Learning Client. To do this:

1. Install the Offline Learning Client on the WebSphere Application Server.
2. Navigate to duc.war (in the installedApps\DefaultNode\duc.ear directory), and edit its contents as you like, altering or replacing files, adding new files to be referenced by those files, or both.

   For example, you might substitute a custom graphic for the one that appears at the top of the About box (lmsBrandingAbout.gif). You could do this in either of two ways:

   - Edit lmsBrandingAbout.gif.
   - Create a different graphic file (say, myAboutGraphic.gif) in the duc\images directory, and edit the file that refers to it (aboutDS.jsp, in the DUC root directory), replacing the reference to lmsBrandingAbout.gif with a reference to myAboutGraphic.gif.
3. Create a Zip file containing just the customized files, making sure to preserve the server directory structure (placing custom JSPs in the DUC root directory, custom images in the DUC\images directory, and so on):

```
DUC
   anonymous
   CSS
   images
   etc.
   WEB-INF
        classes
                com
                resources
                        DUC
                           properties
        lib
        etc.
```

   So, if all you did was change lmsBrandingAbout.gif, that's the only file you would include in the Zip file. If, on the other hand, you changed aboutDS.jsp and created a graphic for it (myAboutGraphic.gif), you would include both the edited aboutDS.jsp and myAboutGraphic.gif in the Zip file. The Zip file would then look like this:

Zip file

Name	*Type*	*Modified*	*Size*	*Path*
aboutDS.jsp	JavaServer Page	11/26/2002 …	5,659	
myAboutGraphic.gif	IrfanView GIF..	11/26/2002 …	47,923	Images\

4. When users install the Offline Learning Client, they can enter the path to this Zip file in the installation dialog box. As part of the installation process, the application unzips the

file, inserting the custom files in the appropriate locations, overwriting any files in the default installation that have custom counterparts.

Finally, if you changed lmsBrandingAbout.gif and included it in the Zip file (and the user entered the path to the Zip file at install time), the user will see the custom graphic file in the About box when he or she runs the Offline Learning Client. If you changed aboutDS.jsp and created a graphic for it (myAboutGraphic.gif), included these two files in the Zip file, and the user enters the Zip file path at install time, the customized JSP overwrites the one installed by default, the custom graphic which it references is displayed, and the default graphic (lmsBrandingAbout.gif) is ignored.

Chapter 8
Creating a tab

You can create a custom tabbed page to display along with the standard tabbed pages—Home, Student Catalog, Users, and so on. What you have to do to accomplish this depends on the sort of content you want the page to have.

At a minimum, you need to do the following:

1. Create a JavaServer Page with the content you want to display when the user selects the tab.
2. Add a permission to the PERMISSION database table to control access to the page. (See “Adding custom Permissions.”)
3. Add the permission description to ApplicationResources.properties and appropriate language versions if you plan to localize the application.
4. Edit the definition of those roles to which you want to assign permission to access the page.
5. Edit navigation.xml to include a definition of the page (and any JSPs to which the page provides links).

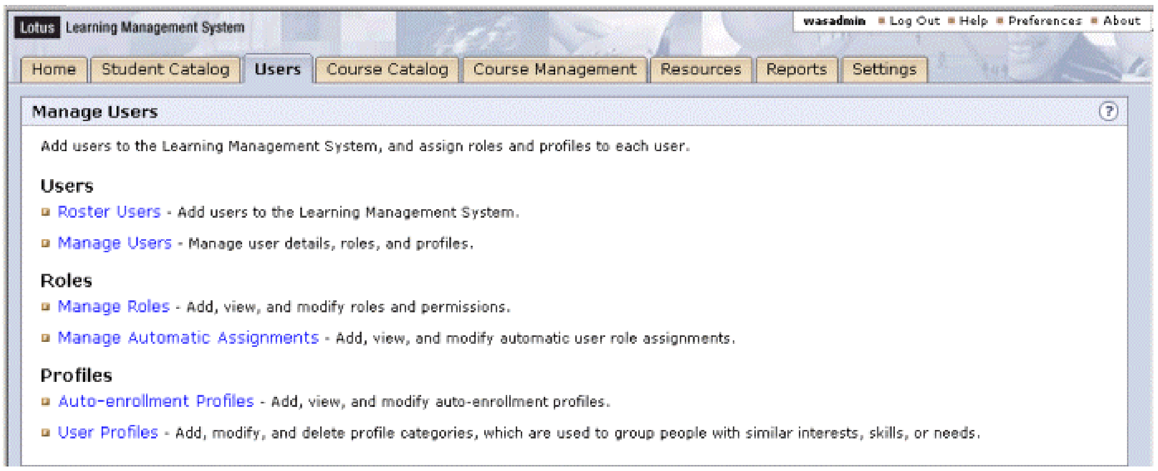
The following additional steps (which are beyond the scope of this document) are involved if the JSP contains server logic:

6. Create an action class to handle user input to the JSP.
7. Edit struts_config.xml to add action mapping for the JSP.

A look at what’s involved in displaying one of the standard tabbed pages—the Users page—should give you an idea of how you might create a custom tab and allow users to access it.

The Users page

The Users page looks like this:



Manage Users

Add users to the Learning Management System, and assign roles and profiles to each user.

Users
- Roster Users - Add users to the Learning Management System.
- Manage Users - Manage user details, roles, and profiles.

Roles
- Manage Roles - Add, view, and modify roles and permissions.
- Manage Automatic Assignments - Add, view, and modify automatic user role assignments.

Profiles
- Auto-enrollment Profiles - Add, view, and modify auto-enrollment profiles.
- User Profiles - Add, modify, and delete profile categories, which are used to group people with similar interests, skills, or needs.

The tab’s label (Users) and the page label (Manage Users) are specified in the resource file ...classes/resources/lmm/properties/ApplicationResources.properties:

```
navigationTab.users      = Users
users.manageUsers.task   = Manage Users
```

The navigationTab.users and users.manageUsers.task resources in turn are specified in the <label> and <title> attributes, respectively, in the definition of the Users module in ...classes/navigation.xml (which will be described in more detail later):

```
<!--
===/// users ///===
-->
<module>
  <name>users</name>
  <target>/userManagementInit.do</target>
  <content>users.jsp</content>
  <label>navigationTab.users</label>
  <title>users.manageUsers.task</title>
  <permissions>User_Management</permissions>
  <helpPage>courseadmin/ch_users_overview.html</helpPage>
```

users.jsp

The JSP that executes when a user selects the Users tab is users.jsp, which resides in the …classes/resources/lmm directory. The file consists of the following sections:

1. Copyright and brief description.
2. Identification of the tag library that the file will use:
   ```
   <%@ taglib uri="/WEB-INF/tld/lms.tld" prefix="lms"  %>
   ```
3. User instructions:
   ```
   <span class="idxIntro"><lms:message
   key="users.instructions"/></span>
   ```
4. A table:
   ```
   <table cellpadding="0" cellspacing="0" border="0"
   summary="<lms:message key="users.tableSummary"/>">
   ...
   </table>
   ```

The resource that defines the user instructions resides in ...classes/resources/lmm/properties/ApplicationResources.properties:

```
users.instructions = Add users to the Learning Management System, and
assign roles and profiles to each user.
```

The style that defines the font size in which the user instructions string is displayed resides in …lmm\css\en\styInternetExplorer5 (or styNetscape6)\sectionIndex.css.

The table, which takes up the bulk of the file, consists of three major sections, each of which consists of three table rows enclosed in a <lms:permissionCheck>…</lms:permissionCheck>

block. (The table's summary attribute refers to a resourced string that text-to-speech software can read, summarizing the contents of the table.)

The permissionCheck tag encapsulates Java code that looks to see if the current user has the permission (or permissions) specified in the tag's permissionName parameter. If the user doesn't have the specified permission or permissions, LMS does not display the contents of the block.

For example, the rows containing the code to display the Users label and the Roster Users and Manage Users links are enclosed in a <lms:permissionCheck>…</lms:permissionCheck> block that checks to see if the user has Roster_Users or Manage_Users permissions. If the user has neither of these permissions, LMS skips to the end of the block and does not display these rows. If the user has either or both of these permissions, LMS displays the Users label and then goes on to the code to display the Roster Users row, which is itself enclosed in a <lms:permissionCheck>…</lms:permissionCheck> block that checks to see if the user has the Roster_Users permission:

```
<%--
------------------------------------------------------------------------
 START User Group
------------------------------------------------------------------------
--%>
<lms:permissionCheck permissionName="Roster_Users, Manage_Users">
 <tr>
  <td colspan="2" class="idxTaskHeader">
   <span class="idxTaskHeader"><lms:message
key="users.users.title"/></span>
  </td>
 </tr>
<%--
------------------------------------------------------------------------
 START Roster Users
------------------------------------------------------------------------
--%>
 <lms:permissionCheck permissionName="Roster_Users">
 …
</lms:permissionCheck>
<%--
```

The row containing the section label (in this case, Users) consists of a style specification (idxTaskHeader), which is defined in … sectionIndex.css, and a resource string (users.users.title), which is defined in ApplicationResources.properties.

The subsequent rows of the table that appear as a bullet followed by a labeled link followed by some descriptive text each consist of two cells, Cell A and Cell B.

Cell A contains a table consisting of a single row whose two cells contain the bullet graphic and a non-breaking space, respectively. In the present example:

```
  <td width="1" valign="top">
```

```
   <table cellpadding="0" cellspacing="0" border="0">
    <tr>
     <td valign="middle"><lms:img src="images/bulletIndex.gif" 
width="9" height="8" altKey="image.alt.select"/></td>
     <td class="idxTaskItem" valign="middle">&nbsp;</td>
    </tr>
   </table>
  </td>
```

Cell B contains a <lms:link>…</lms:link> block followed by a non-breaking space followed by a resource string:

```
  <td width="100%" valign="middle" class="idxTaskPadding">
   <div class="idxTaskPadding">
    <lms:link styleClass="idxTaskItem" nav="users.rosterUsers" 
tooltipKey="users.rosterUsers.subtitle">
    <lms:message key="users.rosterUsers.subtitle"/></lms:link>&nbsp;-
    <span class="idxTaskDesc"><lms:message 
key="users.rosterUsers.description"/></span>
   </div>
  </td>
```

The link tag, which resides in ...web/lmm/WEB-INF/tld, is defined as follows:

```
<tag>
  <name>link</name>
  <tagclass>com.lotus.elearn.taglib.LMSLinkTag</tagclass>
  <bodycontent>JSP</bodycontent>
  <attribute>
   <name>nav</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>href</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>styleClass</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>id</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>tooltipKey</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
  <attribute>
   <name>permissionName</name>
   <required>false</required>
   <rtexprvalue>true</rtexprvalue>
  </attribute>
 </tag
```

In the present example, the tag is passed three parameters:

- styleClass – a reference to the style that defines the font size in which the link text is displayed. This style is defined in …lmm\css\en\styInternetExplorer5 (or styNetscape6)\sectionIndex.css.
- nav – a reference to the JSP to be displayed when the user clicks the Roster Users link. The value passed here (users.rosterUsers) is the value of the <title> attribute in the definition of the target JSP in navigation.xml, where the actual file to which it refers is specified in the <content> attribute:

  ```
  <name>rosterUsers</name>
   <target>/default.do</target>
   <content>usersRosterUsers.jsp</content>
   <label>users.rosterUsers.roster</label>
   <title>users.rosterUsers</title>
   <permissions>Roster_Users</permissions>
   <helpPage>courseadmin/ch_add_users.html</helpPage>
  ```

- tooltipKey - a reference to the resourced string to be displayed when the user mouses over (or otherwise navigates to) the link text. This string is defined in …ApplicationResources.properties and is required to ensure that the application meets the accessibility requirements of the US Rehabilitation Act (Section 508):

  ```
  users.rosterUsers.subtitle   = Roster Users
  ```

The resource string that constitutes the final element in the table row (users.rosterUsers.description) also resides in …ApplicationResources.properties:

```
users.rosterUsers.description     = Add users to the Learning
Management System.
```

The next row of the Manage Users table, which contains the Manage Users link, is essentially the same as the one just described, differing from it only in the particular permission checked, resource strings referenced, and link. The other sections on the page (Roles and Profiles) differ from the Users section only in their details.

navigation.xml

Navigation.xml provides the following information about each of the JSPs to which a user can navigate:

- Whether the JSP is a main page (such as the Users page) or a linked page (such as the Roster Users page).
- The page name used in referring to the JSP's resourced text in ApplicationResources.properties.
- The struts file that handles action mapping for the JSP.
- The JSP's file name.
- A reference to the resource that identifies the page when it appears as a "breadcrumb," that is, as an element in the navigation trail displayed in the upper right-hand corner of a linked page.
- A reference to the resource that appears in the page's title bar.
- A reference to the permission that the user needs to have been granted in order to display the page.
- The path to the Help topic to be displayed when the user clicks the context-sensitive Help icon (**?**) for the page.

For example, the section of navigation.xml that provides this information about the Users page and its links looks like this:

```
<!--
===/// users ///===
-->
<module>
      <name>users</name>
      <target>/userManagementInit.do</target>
      <content>users.jsp</content>
      <label>navigationTab.users</label>
      <title>users.manageUsers.task</title>
      <permissions>User_Management</permissions>
      <helpPage>courseadmin/ch_users_overview.html</helpPage>
      <!–
       Roster Users Trail
      -->
      <!--
      users.rosterUsers
      -->
      <trail>
            <name>rosterUsers</name>
            <target>/default.do</target>
            <content>usersRosterUsers.jsp</content>
```

```
                <label>users.rosterUsers.roster</label>
                <title>users.rosterUsers</title>
                <permissions>Roster_Users</permissions>
                <helpPage>courseadmin/ch_add_users.html</helpPage>
                <!--
                users.rosterUsers.search
                 -->
                <trail>
                      <name>search</name>
                      <target>/default.do</target>
                      <content>usersRosterUsersUserSearch.jsp</content>
                      <label>users.rosterUsers.search</label>
                       <title>users.rosterUsers.search</title>
                      <permissions>Roster_Users</permissions>
                  <helpPage>courseadmin/ch_users_ldapsearch.html</helpPage>

                      <!--
                      users.rosterUsers.search.confirm
                      -->
                      <trail>
                            <name>confirm</name>
                             <target>/default.do</target>
                            <content>usersRosterConfirm.jsp</content>
                            <label>users.rosterUsers.import.confirm</label>
                             <title>users.rosterUsers</title>
                       </trail>
                      <!--
                      users.rosterUsers.search.fail
                      -->
                      <trail>
                            <name>fail</name>
                             <target>/default.do</target>
                            <content>usersRosterUsersFailure.jsp</content>
                            <label>users.rosterUsers.import.confirm</label>
                             <title>users.rosterUsers</title>
                       </trail>
                </trail>
          </trail>
          etc.
    </module>
```

Schematically, the complete <module>…</module> block has the following structure:

<module>users [the page displayed when you click the Users tab]

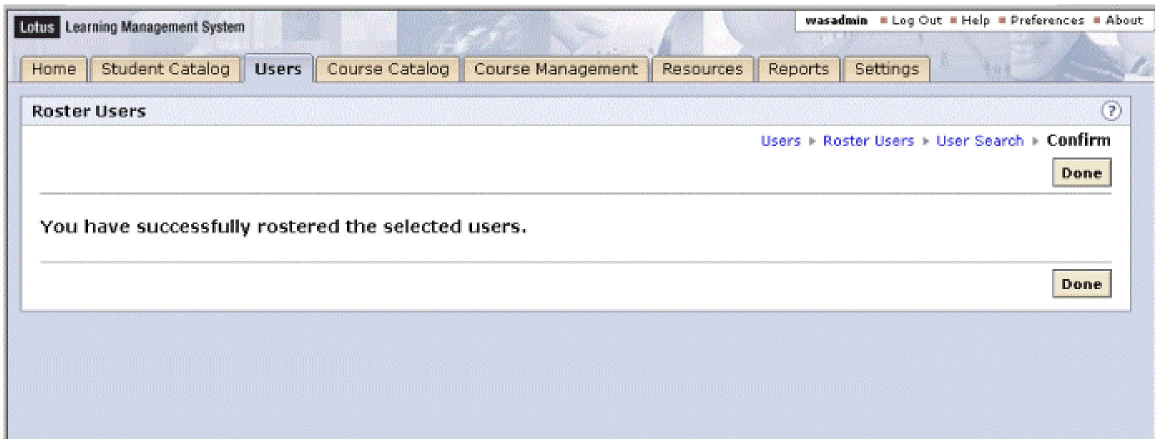
> **<trail>rosterUsers** [the page displayed when you click Roster Users on the Users main page]
>
> > **<trail>search** [the page displayed when you click Roster one or more users on the Roster Users page]
> >
> > > **<trail>confirm</trail>** [the confirmation box displayed when

```
                                  the user clicks Continue in the User search
                                  page and rostering has been successful]
                        <trail> fail</trail> [the message box displayed when
                                  the user clicks Continue in the User search
                                  page and rostering has been unsuccessful]

                </trail>
                 [group search, roster from file, auto-roster trails]
        </trail>
        <trail>ManageRoles
                etc.
        </trail>
        <trail>ManageProfiles
                etc.
        </trail>
        <trail>ManageUsers
                etc.
        </trail>
</module>
```

The <module>, <trail>, and <step> tags: main pages and linked pages

A <module>…</module> block consists of the definition of the tabbed page followed by one or more <trail>…</trail> blocks, which themselves may contain <trail>…</trail> (or <step>…</step>) blocks. A <trail>…</trail> block contains the definition of a page to which the previous page contains a link. (A <step>…</step> block contains the definition of a page, such as a confirmation box, that the application displays as the result of a user action that doesn't involve explicitly invoking a link. Navigation.xml is not consistent in its use of <step>…</step> blocks, sometimes benignly using <trail>…</trail> blocks instead.)

As an example of trails, the Users main page has a link to the Roster Users page, which in turn has a link to the User Search page, which (when rostering is successful) invokes a confirmation box:


Lotus Learning Management System
wasadmin Log Out Help Preferences About
Home Student Catalog Users Course Catalog Course Management Resources Reports Settings
Roster Users
Users ▸ Roster Users ▸ User Search ▸ Confirm
Done

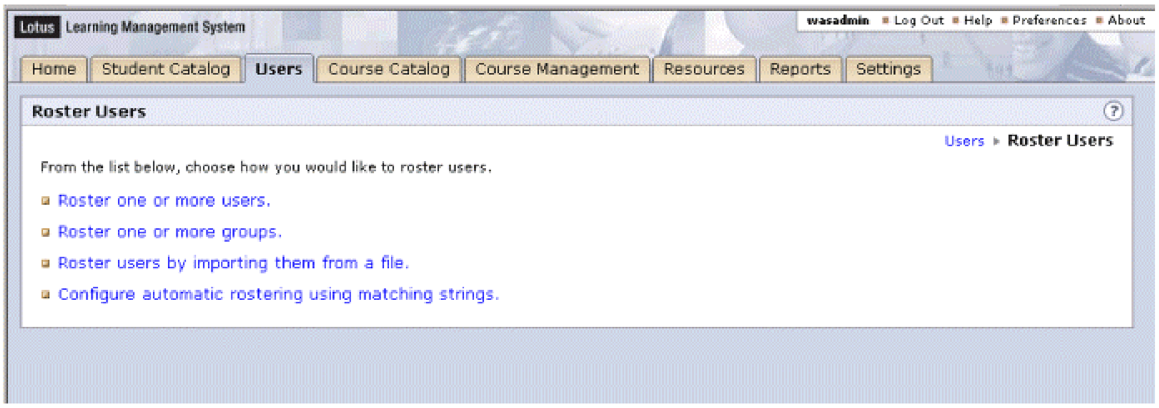
You have successfully rostered the selected users.

The relative location of the <module>…</module> blocks in navigation.xml determines the order in which the tabs are displayed: the studenthome module is defined first, then the studentCatalog module, then the users module and, as a result, the order in which the tabbed pages is displayed is Home, Student Catalog, Users. You can change the order in which tabbed pages are displayed by cutting and pasting <module>…</module> blocks.

The <name> tag: page names and resourced text

The <name> tag specifies the string to be used in the resource file ApplicationResources.properties when defining text elements displayed by a JSP.

By convention, if a JSP is a link in a trail, its name is qualified by the name of the JSP that invoked it. So, for example, **users** is the name of the page from which the page named **rosterUsers** is invoked, and **users.rosterUsers.desc** is the string that ApplicationResources.properties defines as the page description for the rosterUsers page ("From the list below, choose how you would like to roster users."):



From the list below, choose how you would like to roster users.

- Roster one or more users.
- Roster one or more groups.
- Roster users by importing them from a file.
- Configure automatic rostering using matching strings.

The <target> tag: struts action-mapping

The <target> tag specifies the struts action-mapping file for a JSP. The value **/default.do** tells the application to use the LMS default action handler. A JSP that involves server logic (for example, when the page contains a POST request) needs to have a custom action-mapping file associated with it.

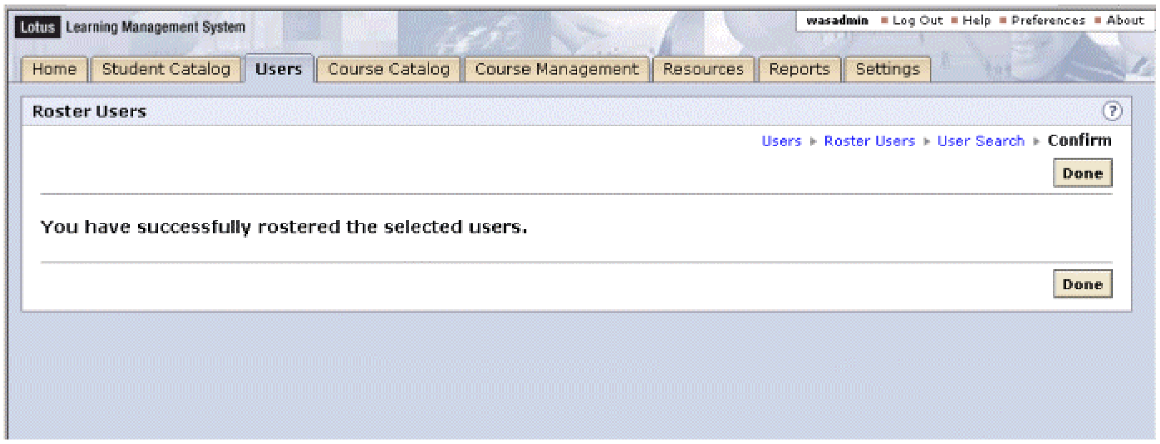
The <content> tag: JSP file names

The <content> tag identifies the JSP to be displayed.

The <label> tag: breadcrumbs

The <label> tag specifies the string in ApplicationResources.properties whose definition is displayed in the breadcrumb trail in the upper right of the page below the **?** icon. For example, the <label> tags for for the Users main page, the roster users page, the user search page, and the confirmation box for successful rostering are navigationTab.users, users.rosterUsers.roster, users.rosterUsers.search, and `users.rosterUsers.import.confirm.` These are defined in the resource file as follows:

navigationTab.users	= Users
users.rosterUsers.roster	= Roster Users
users.rosterUsers.search	= User Search
users.rosterUsers.import.confirm	= Confirm

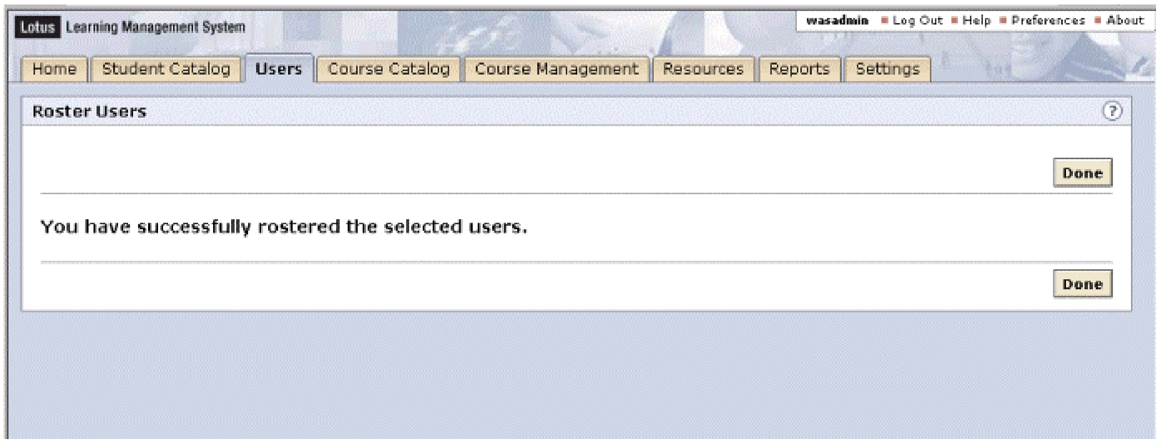

Lotus Learning Management System
wasadmin Log Out Help Preferences About
Home Student Catalog Users Course Catalog Course Management Resources Reports Settings
Roster Users
Users ▸ Roster Users ▸ User Search ▸ Confirm
Done
Done

You have successfully rostered the selected users.

If you don’t want to display the breadcrumbs for a given JSP, you can include the <breadCrumbsInvisible> tag in the <trail>…</trail> or <step>…</step> block and set it to **yes**.

For example, you could suppress the breadcrumbs in the roster users confirmation box shown above as follows:

```
<!--
  users.rosterUsers.search.confirm
-->
  <trail>
    <name>confirm</name>
    <target>/default.do</target>
    <content>usersRosterConfirm.jsp</content>
    <label>users.rosterUsers.import.confirm</label>
    <title>users.rosterUsers</title>
    <breadCrumbsInvisible>yes</breadCrumbsInvisible>
  </trail>
```


Lotus Learning Management System
wasadmin Log Out Help Preferences About
Home Student Catalog Users Course Catalog Course Management Resources Reports Settings
Roster Users
Done
Done

You have successfully rostered the selected users.

The <title> tag: title bar text

The <title> tag tag specifies the string in ApplicationResources.properties whose definition is displayed in the JSP's title bar.

The <permissions> tag: permission to display the page

The <permissions> tag specifies the name of the permission (as it appears in the PERMISSION table in the LMS database) that a user needs to have been granted in order to display the JSP. Permissions and how to create them are described in "Adding custom permissions."

The <helpPage> tag: context-sensitive Help

The <helpPage> tag specifies the Help page to be displayed when the user clicks the **?** icon to invoke context-sensitive Help for the JSP. The contents of the tag consist of the relative path to Student or Course Administrator Help (student/ or courseadmin/) followed by the file name.

See "Customizing Help" for more information on the Help system and how you can customize it.

Adding custom permissions

The LMS user roles you are assigned determine the elements of the user interface you can access and the actions you can perform. A **role** is a collection of permissions, some of which control access to **navigation items** (that is, pages to which you can navigate, such as the Users tab or the User Search dialog), while others control your ability to execute **checked methods** (that is, procedures that perform update operations on the LMS database, such as rostering users or creating customization sets).

Two database tables deal with permissions: the PERMISSION table and, in some cases, the CASCADED_PERMISSION table. Each record in the PERMISSION table defines a single permission, while each record in the CASCADED_PERMISSION table defines an inheritance relationship between two records in the PERMISSION table such that if a user is granted the so-called parent permission, he or she is automatically granted the associated child permission. The definition of these two tables in the current release of the LMS is described below.

Note: the LMS database schema may change in subsequent releases of the product.

The PERMISSION table consists of records with the following composition:

PERMISSION table

Field	*Datatype*	*Allow Nulls*	*Values*
oid	CHAR(20)	N	nnnnnnnnnnnnnn00PERM
name	VARCHAR(128)	N	X_Y
perm_id	INTN	N	n
description	VARCHAR(255)	Y	A description of what the permission allows a user to do
category	INTN	Y	-1 = checked method, 0 = Home, 1 = Student Catalog, 2 = Course Catalog, 3 = Users, 4 = Course Management, 5 = Resources, 6 = Reports, 7 = Settings
status	CHAR(1)	Y	A = active, I = inactive, D = delete
updatetime	DATETIME	Y	The application supplies the date and time the record was last changed.

oid

By convention, values for this field end in 00PERM. The value of the perm_id field precedes the 00PERM ending. The perm_id value is preceded by as many zeros as it takes to pad the value out to 20 characters.

name

A string, often with its component parts separated by underscores (see examples below), which the application removes when it displays the permission name on the Roles Details page in the user interface.

perm_id

An integer that uniquely identifies the permission.

description

Text describing what the permission allows the user to do. To make the description appear in a localized version of the application, you need create a name-value pair consisting of the permission name (with its underscores, if any) and this description in the appropriate language's ApplicationResources.properties file.

category

An integer. Avalue of –1 designates a permission for what is called a **checked method**. A checked method is a Java method belonging to the product's API that you need permission to execute. Checked method permissions can be contrasted with **navigation permissions**, that is, permissions that allow users to access different parts of the user interface. The values between 0 and 7 represent the permission categories listed in the drop-down box on the Role Details page.

status

Typically, records are Active. However, if you execute a SQL DELETE statement against the PERMISSION table, the records identified by the specified search criteria are not actually be deleted but, rather, marked as Deleted and still remain in the database.

updatetime

When a record in the PERMISSION table is changed, the LMS writes the date and time that the change occurred to the database.

The following table contains sample records from the PERMISSION table:

Sample PERMISSION records

OID	0000000000000000PERM
PERM_ID	0
NAME	Home_Module
DESCRIPTION	Permission to see Home module
CATEGORY	0
STATUS	A
UPDATETIME	
OID	0000000000000100PERM
PERM_ID	1
NAME	Home_Weeks_Activities
DESCRIPTION	View this week's activities
CATEGORY	0
STATUS	A
UPDATETIME	
OID	0000000000002700PERM
PERM_ID	27
NAME	User_Management
DESCRIPTION	Access User Management section
CATEGORY	3
STATUS	A
UPDATETIME	
OID	0000000000002800PERM
PERM_ID	28
NAME	Roster_Users
DESCRIPTION	Permission to add or delete users
CATEGORY	3
STATUS	A
UPDATETIME	
OID	0000000000003000PERM
PERM_ID	30
NAME	Manage_Roles
DESCRIPTION	Permission to create and modify roles
CATEGORY	3
STATUS	A
UPDATETIME	
OID	0000000000009300PERM
PERM_ID	93
NAME	com.lotus.elearn.permissions.RoleMgrImpl.addRole
DESCRIPTION	""
CATEGORY	-1
STATUS	A
UPDATETIME	

The CASCADED_PERMISSION table consists of records with the following composition:

CASCADED_PERMISSION table

Field	*Datatype*	*Allow Null*	*Values*
child_oid	CHAR(20)	N	nnnnnnnnnnnnnn00PERM
parent_oid	CHAR(20)	N	mmmmmmmmmmmmmm00PERM

As mentioned earlier, if a user has been granted the parent permission, he or she is automatically granted the child permission. For example, a user who has been granted permission to manage user roles is automatically given permission to add roles to the system, that is, to execute the addRole method.

The following record from the CASCADED_PERMISSION table specifies that a user with Manage_Roles permission is automatically given permission to execute the addRole method, that is, add roles to the system:

Sample CASCADED_PERMISSION record

PARENT_OID	0000000000003000PERM
CHILD_OID	0000000000009300PERM

You add a permission to the database by executing a SQL statement like the following (which, in this case, adds the permission that allows a user to access the User Management module):

```
INSERT INTO PERMISSION (OID, PERM_ID, NAME, DESCRIPTION, CATEGORY,
STATUS) VALUES ('0000000000002700PERM', 27,'User_Management', 'Access
User Management section',3, 'A');
```

The values for OID and PERM_ID should be unique and conform to the conventions described above. In other words, the value for PERM_ID should be 1 higher than the currently highest value in the database for this field (as it is a requirement that the values for PERM_ID in the table be consecutive), and the new value should be included in the value for the new OID (immediately before the final 00PERM). The value for the CATEGORY field should designate an existing category (because there is no currently exposed mechanism for adding new categories to the system).

After adding a permission to the database, you should add an entry to …classes\resources\lmm\properties\ApplicationResources.properties that contains the permission's description. For example,

```
User_Management = Access User Management section
```

The reason for doing this is to enable localization of the application: the permission description in the database is in English, but LMS looks in the appropriate language version of ApplicationResources.properties before it looks in the database when it comes to display permission descriptions on the Role Details page.

Finally, if a permission applies to a navigation item, you need to include a reference to it in navigation.xml in the <permissions>…</permissions> tag of the description of the JSP to which it applies. For example:

```
<module>
   <name>users</name>
   <target>/userManagementInit.do</target>
   <content>users.jsp</content>
   <label>navigationTab.users</label>
   <title>users.manageUsers.task</title>
   <permissions>User_Management</permissions>
   <helpPage>courseadmin/ch_users_overview.html</helpPage>
   …
</module>
```

Example

The following example describes the process of adding and granting access to a simple custom tabbed page (customTab.jsp) with links to two other pages (customHello.jsp and customGoodbye.jsp). The process involves the following steps:

1. Create the three JSPs and copy them to the …classes\resources\lmm directory.
2. Create a Help mapping file (ch_customtab.html) and corresponding content file (ch_customtab_b.html) to be displayed when the user clicks the context-sensitive Help icon **?** on any of these pages, and copy these files to the English-language course administrator Help directory (...Help\en\courseadmin).
3. Add the permissions to the LMS database necessary to display the tabbed page and links (Custom_Tab, Say_Hello, and Say_Goodbye).
4. Edit the (English-language) properties file that stores resource strings to include text to be displayed in the three JSPs and in the roles list to be populates with the new permissions.
5. Edit navigation.xml to include definitions for the three JSPs.
6. Grant the new permissions to users whom you want to be able to display the JSPs. You can do this either by modifying an existing role or roles or by creating a role with these permissions and then assigning that role to users of your choice.

1. Copy the JSPs

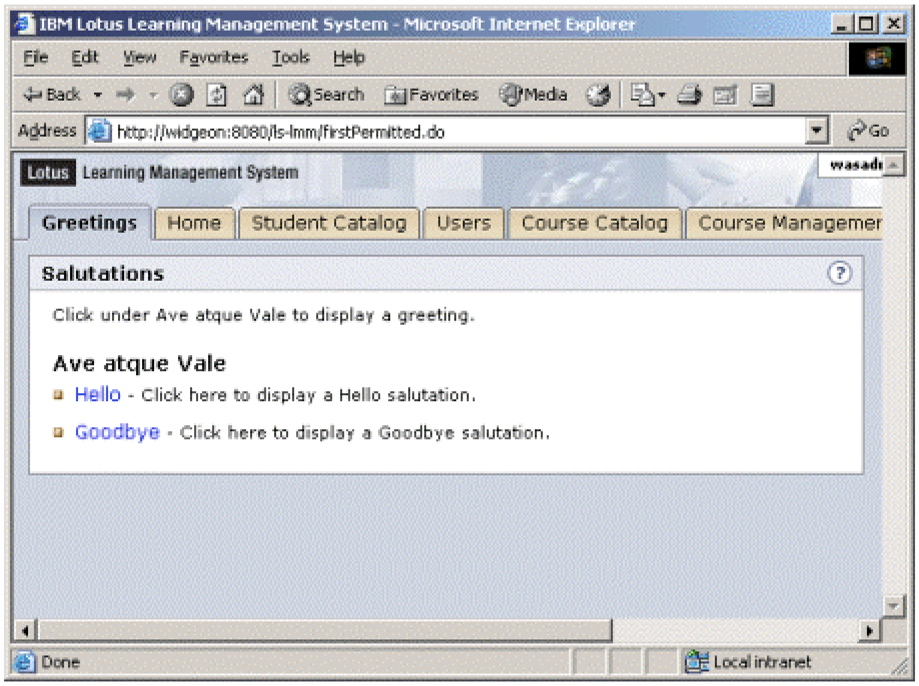
The main page (customTab.jsp) looks like this:

```
<%-----------------------------------------------------------------
 customTab.jsp
 Copyright (c) 2003, IBM Corporation. All rights reserved.
 Created: 03-15-02
 Main index page for custom module.  Links to two custom jsps.
-----------------------------------------------------------------%>
<%@ taglib uri="/WEB-INF/tld/lms.tld" prefix="lms"  %>
<%--
-----------------------------------------------------------------
 START Index Content Area
```

```
------------------------------------------------------------------------
--%>
<span class="idxIntro"><lms:message
key="customTab.instructions"/></span><br/><br/>
<table cellpadding="0" cellspacing="0" border="0" summary="<lms:message
key="customTab.tableSummary"/>">
<%--
----------------------------------------------------------------------------------------
 START Greetings Group
--------------------------------------------------
--%>
<lms:permissionCheck permissionName="Say_Hello, Say_Goodbye">
<tr>
  <td colspan="2" class="idxTaskHeader">
   <span class="idxTaskHeader"><lms:message
key="customTab.customTab.title"/></span>
  </td>
 </tr>
<%--
------------------------------------------------------------------------
 START Hello
------------------------------------------------------------------------
--%>
<lms:permissionCheck permissionName="Say_Hello">
<tr>
  <td width="1" valign="top">
   <table cellpadding="0" cellspacing="0" border="0">
    <tr>
     <td valign="middle"><lms:img src="images/bulletIndex.gif"
width="9" height="8" altKey="image.alt.select"/></td>
     <td class="idxTaskItem" valign="middle">&nbsp;</td>
    </tr>
   </table>
  </td>
  <td width="100%" valign="middle" class="idxTaskPadding">
   <div class="idxTaskPadding">
    <lms:link styleClass="idxTaskItem" nav="Greetings.hello"
tooltipKey="customTab.hello.linktext">
    <lms:message key="customTab.hello.subtitle"/></lms:link>&nbsp;-
    <span class="idxTaskDesc"><lms:message
key="customTab.hello.subtitle"/></span>
   </div>
  </td>
 </tr>
 </lms:permissionCheck>
<%--
-----------------------------------------------------------------------
 END Hello
-----------------------------------------------------------------------
--%>
<%--
-----------------------------------------------------------------------
 START Goodbye
-----------------------------------------------------------------------
--%>
<lms:permissionCheck permissionName="Say_Goodbye">
 <tr>
  <td width="1" valign="top">
   <table cellpadding="0" cellspacing="0" border="0">
    <tr>
     <td valign="middle"><lms:img src="images/bulletIndex.gif"
width="9" height="8" altKey="image.alt.select"/></td>
     <td class="idxTaskItem" valign="middle">&nbsp;</td>
    </tr>
   </table>
  </td>
  <td width="100%" valign="middle" class="idxTaskPadding">
   <div class="idxTaskPadding">
    <lms:link styleClass="idxTaskItem" nav="Greetings.goodbye"
tooltipKey="customTab.goodbye.linktext">
    <lms:message key="customTab.goodbye.subtitle"/></lms:link>&nbsp;-
    <span class="idxTaskDesc"><lms:message
key="customTab.goodbye.subtitle"/></span>
   </div>
  </td>
 </tr>
 </lms:permissionCheck>
</lms:permissionCheck> <%-- greetings section --%>
<%--
-----------------------------------------------------------------------
 End Goodbye
---------------------------------------------------------------------
--%>
<%--
-----------------------------------------------------------------------
 END greetings Group
----------------------------------------------------------------------
```

```
      </table>
<%--
----------------------------------------------------------------------
 END Index Content Area
-----------------------------------------------------------------------
--%>
```

When a user with the appropriate permissions displays customTab.jsp, the page will look like this:


IBM Lotus Learning Management System - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://widgeon:8080/ls-lmm/firstPermitted.do
Go
Lotus Learning Management System
wasadı
Greetings
Home
Student Catalog
Users
Course Catalog
Course Managemer
Done
Local intranet

Salutations

Click under Ave atque Vale to display a greeting.

Ave atque Vale

- Hello - Click here to display a Hello salutation.
- Goodbye - Click here to display a Goodbye salutation.

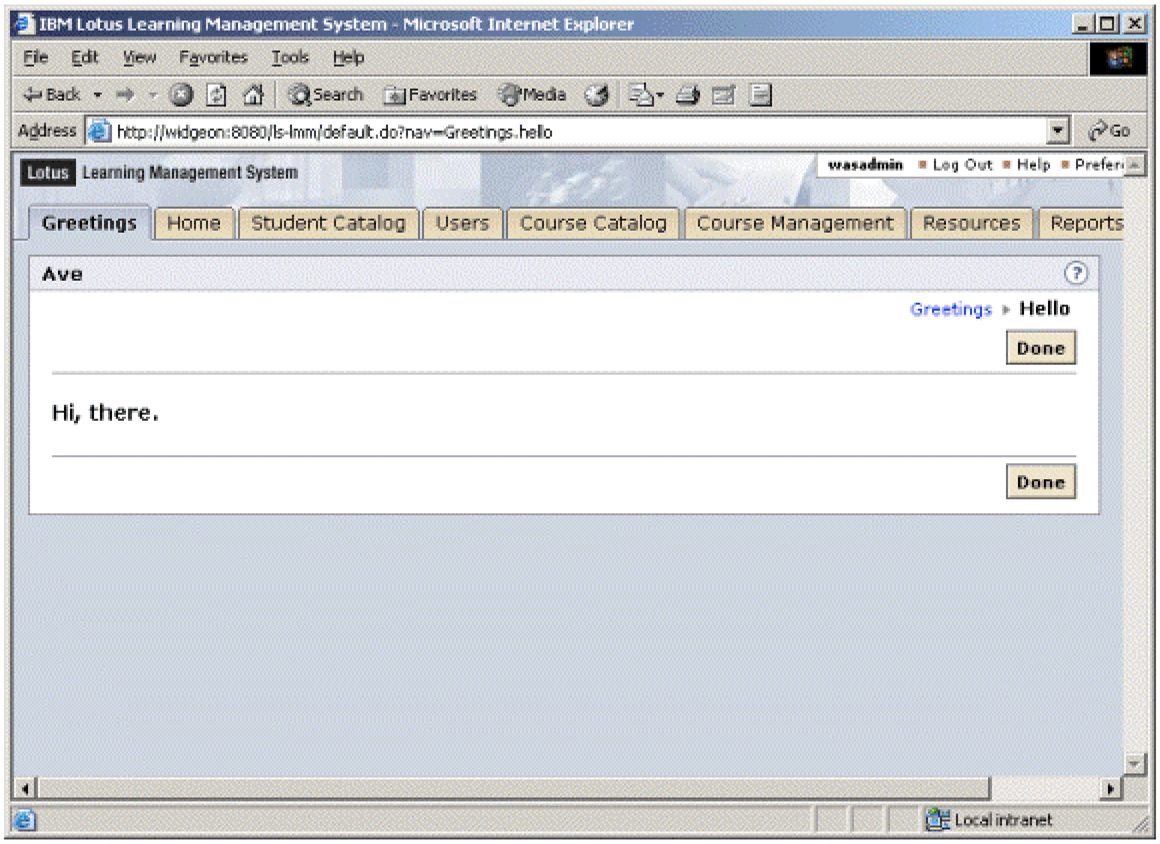
The first linked page (customHello.jsp) looks like this:

```
<%-------------------------------------------------------------------
customHello.jsp
 Copyright (c) 2003, IBM Corporation. All rights reserved.
 Created: 05-30-02
 The hello page for the greetings trail.
----------------------------------------------------------------------%>
<%@ taglib uri="/WEB-INF/tld/lms.tld"          prefix="lms" %>
<%--
 ----------------------------------------------------------------------
 BEGIN Done button
 ----------------------------------------------------------------------
--%>
<div class="frmButtonSetPaddingTop">
 <table border="0" cellpadding="0" cellspacing="0" border="0"
width="100%">
```

```
  <tr>
   <td width="95%"><lms:spacer type="standard" /></td>
   <td width="1">
    <div class="btnCommonPadding">
       <lms:button captionKey="button.done" tooltipKey="button.done"
nav="Greetings"/>
      </div>
   </td>
  </tr>
 </table>
</div>
<lms:hRule type="hRuleButtonSetTop" />
<%--
 ----------------------------------------------------------------------
 END Done button
 -----------------------------------------------------------------------
--%>
<lms:spacer type="standard" />
<%--
 -----------------------------------------------------------------------
 BEGIN hello message
 ----------------------------------------------------------------------
--%>

<table border="0" cellpadding="0" cellspacing="0" border="0"
width="100%">
 <tr>
  <td width="95%"><span class="hdrGeneral"><lms:message
key="customTab.hello.helloMessage"/></span></td>
  <td width="1"></td>
  <td width="1"></td>
 </tr>
</table>

<%--
 --------------------------------------------------------------------
 END hello message
 -----------------------------------------------------------------------
--%>

<lms:hRule type="hRuleButtonSetBottom" />

<%--
```

```
 ----------------------------------------------------------------------
 BEGIN Done button
 ----------------------------------------------------------------------
--%>
<div class="frmButtonSetPaddingBottom">
 <table border="0" cellpadding="0" cellspacing="0" border="0"
width="100%">
  <tr>
   <td width="95%"><lms:spacer type="standard" /></td>
   <td width="1">
    <div class="btnCommonPadding"><lms:button captionKey="button.done"
tooltipKey="button.done" nav="Greetings"/></div>
   </td>
  </tr>
 </table>
</div>
<%--
 ----------------------------------------------------------------------
 END Done button
 ---------------------------------------------------------------------
--%>
```

When customHello.jsp is displayed, it will look like this:


IBM Lotus Learning Management System - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://widgeon:8080/ls-lmm/default.do?nav=Greetings.hello
Go
Lotus Learning Management System
wasadmin Log Out Help Prefer
Greetings Home Student Catalog Users Course Catalog Course Management Resources Reports
Ave
Greetings Hello
Done
Done
Local intranet

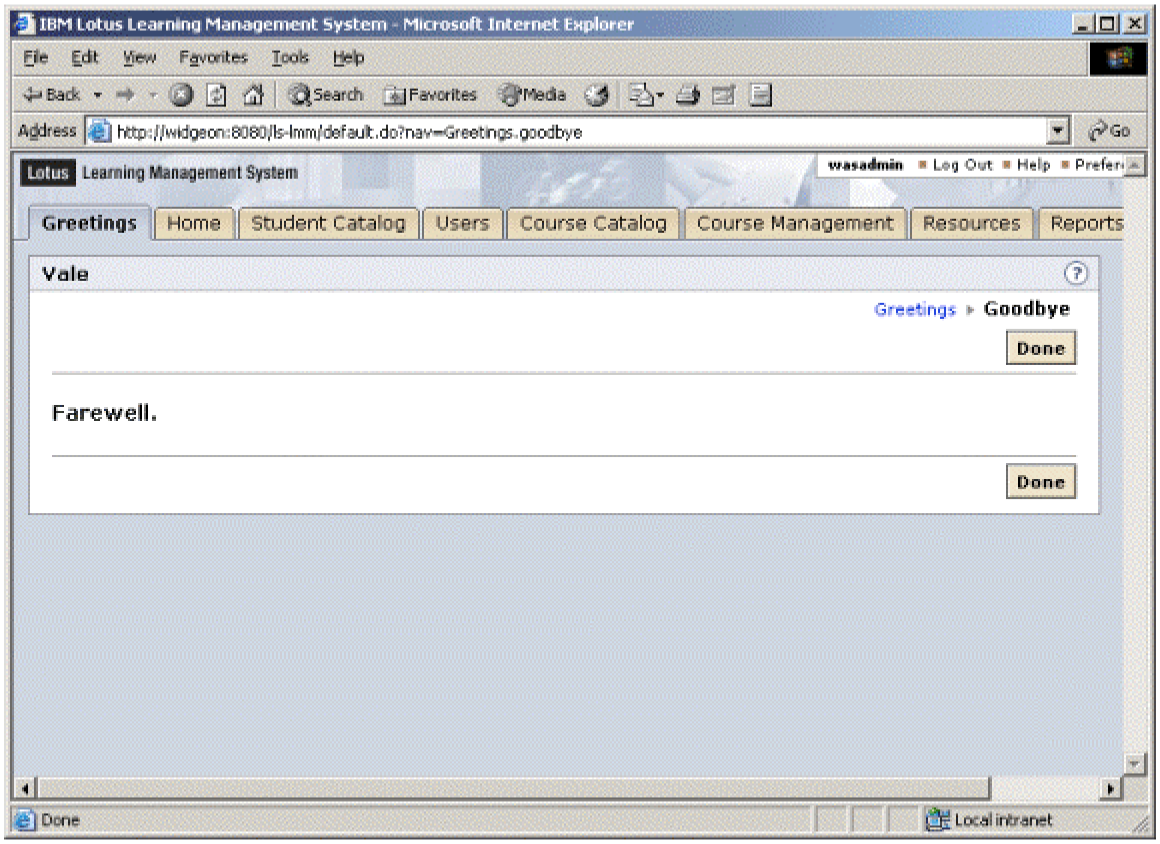
Hi, there.

The second linked page (customGoodbye.jsp) looks like this:

```
<%----------------------------------------------------------------------
 customGoodbye.jsp
 Copyright (c) 2003, IBM Corporation. All rights reserved.
 Created: 05-30-02
 The goodbye page for the auto greetings trail.
----------------------------------------------------------------------%>
<%@ taglib uri="/WEB-INF/tld/lms.tld"         prefix="lms" %>

<%--
 ----------------------------------------------------------------------
 BEGIN Done button
 ----------------------------------------------------------------------
--%>
<div class="frmButtonSetPaddingTop">
 <table border="0" cellpadding="0" cellspacing="0" border="0"
width="100%">
  <tr>
   <td width="95%"><lms:spacer type="standard" /></td>
   <td width="1">
    <div class="btnCommonPadding">
       <lms:button captionKey="button.done" tooltipKey="button.done"
nav="Greetings"/>
      </div>
   </td>
  </tr>
 </table>
</div>
<lms:hRule type="hRuleButtonSetTop" />
<%--
 ----------------------------------------------------------------------
 END Done button
 ----------------------------------------------------------------------
--%>

<lms:spacer type="standard" />

<%--
 ----------------------------------------------------------------------
 BEGIN goodbye message
 ----------------------------------------------------------------------
--%>
```

```
<table border="0" cellpadding="0" cellspacing="0" border="0"
width="100%">
 <tr>
  <td width="95%"><span class="hdrGeneral"><lms:message
key="customTab.goodbye.goodbyeMessage"/></span></td>
  <td width="1"></td>
  <td width="1"></td>
 </tr>
</table>

<%--
 ----------------------------------------------------------------------
 END goodbye message
 ----------------------------------------------------------------------
--%>

<lms:hRule type="hRuleButtonSetBottom" />

<%--
 ----------------------------------------------------------------------
 BEGIN Done button
 ----------------------------------------------------------------------
--%>
<div class="frmButtonSetPaddingBottom">
 <table border="0" cellpadding="0" cellspacing="0" border="0"
width="100%">
  <tr>
   <td width="95%"><lms:spacer type="standard" /></td>
   <td width="1">
    <div class="btnCommonPadding"><lms:button captionKey="button.done"
tooltipKey="button.done" nav="Greetings"/></div>
   </td>
  </tr>
 </table>
</div>
<%--
 ---------------------------------------------------------------------
 END Done button
 ---------------------------------------------------------------------
--%>
```

When this customGoodbye.jsp is displayed, it will look like this:



IBM Lotus Learning Management System - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://widgeon:8080/ls-lmm/default.do?nav=Greetings.goodbye
Go
Lotus Learning Management System
wasadmin Log Out Help Prefer
Greetings Home Student Catalog Users Course Catalog Course Management Resources Reports
Vale
Greetings Goodbye
Done
Farewell.
Done
Done
Local intranet

2. Create Help files

You need to associate a Help topic with each JSP so that when the user clicks **?** to display context-sensitive Help, the application will not display the Page Not Found screen. You could, of course, send the user to the index or table of contents or some other existing Help topic, but for the sake of illustration, assume that you would create a topic appropriate to the custom JSPs. You would then copy these files to the English-language course administrator Help directory (...Help\en\courseadmin).

In this example, the Help mapping file is ch_customtab.html, and the corresponding content file is ch_customtab_b.html:

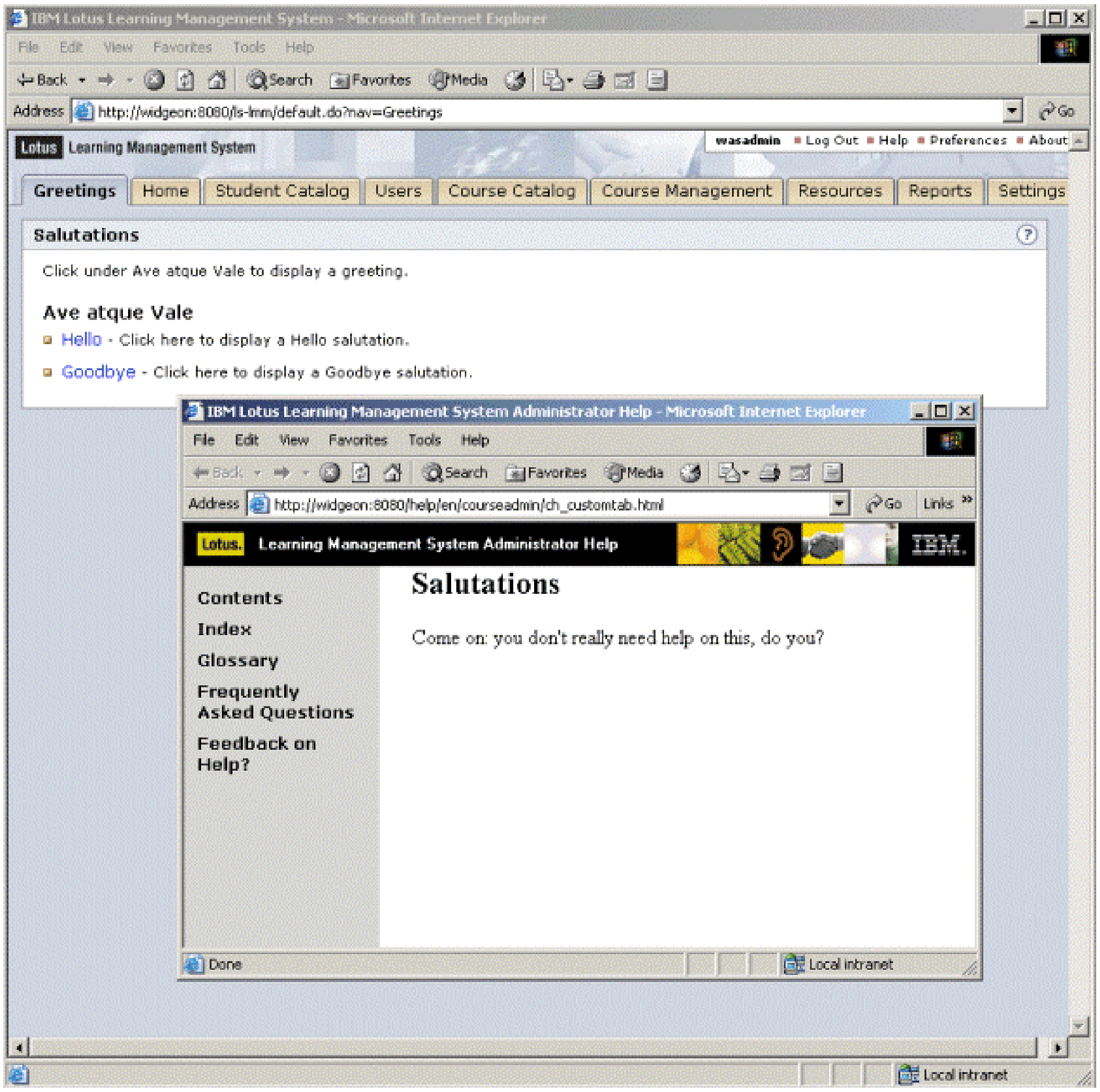
customtab.html

```
<html>
<head>
      <title>IBM Lotus Learning Management System Administrator
Help</title>
</head>
<frameset rows=33,* border=0 frameborder=no framespacing=0>
<frame name=header title="Help Header" src="ch_help_header_h.html"
scrolling=no framespacing=0 frameborder=no border=0 marginwidth=0
marginheight=0 noresize>
<frameset cols=150,* border=0 frameborder=no framespacing=0>
      <frame name=navigation title="Help Navigation"
src="ch_help_navigation_l.html" scrolling="auto" framespacing="0"
frameborder="No" border="0" marginwidth="0" marginheight="0" noresize>
```

```
<frame name=content title="Help Topic" src="ch_customtab_b.html"
scrolling=auto framespacing=0 frameborder=no border=0 marginwidth=0
marginheight=0 noresize>
</frameset>
</frameset>
</html
```

customtab_b.html

```
<html>
<head>
<META NAME="searchterms" CONTENT="custom tab">
<META NAME="topic" CONTENT="Greetings">
      <title>Greetings</title>
</head>

<BODY TEXT="#000000" LINK="#0066cc" VLINK="#666600" ALINK="#993300"
BGCOLOR="#ffffff" BACKGROUND="background_b.gif" MARGINHEIGHT=0
TOPMARGIN=0 MARGINWIDTH=25 LEFTMARGIN=25>
<H2>Salutations</h2>
<p>Come on: you don't really need help on this, do you?</p>
</body>
</html>
```


IBM Lotus Learning Management System - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://widgeon:8080/ls-lmm/default.do?nav=Greetings
Lotus Learning Management System
wasadmin Log Out Help Preferences About
Greetings Home Student Catalog Users Course Catalog Course Management Resources Reports Settings
IBM Lotus Learning Management System Administrator Help - Microsoft Internet Explorer
Address http://widgeon:8080/help/en/courseadmin/ch_customtab.html
Lotus. Learning Management System Administrator Help
Contents
Index
Glossary
Frequently Asked Questions
Feedback on Help?
Done
Local intranet

Salutations

Click under Ave atque Vale to display a greeting.

Ave atque Vale

- Hello - Click here to display a Hello salutation.
- Goodbye - Click here to display a Goodbye salutation.

Salutations

Come on: you don't really need help on this, do you?

See "Chapter 4: Customizing Help" for instructions on how to create custom Help topics.

3. Add permissions to the LMS database

A user needs permission to display the tabbed page and its two links. As in the case of Help, you could use existing permissions (making the appropriate changes in customTab.jsp's <lms:permissionCheck>…</lms:permissionCheck> blocks and in navigation.xml's <permissions> tag), but custom permissions give you more precise control over access. See "Adding custom permissions" earlier in this chapter for more information about permissions.

To add permissions to the database, first ascertain the currently highest value for the PERM_ID field in the PERMISSION table. You can do this by executing the following SQL query:

```
SELECT MAX(PERM_ID) FROM PERMISSION
```

(At this writing, the highest PERM_ID is 420.)

Execute the following SQL statements to add the custom permissions that this example uses:

```
INSERT INTO PERMISSION (OID, PERM_ID, NAME, DESCRIPTION, CATEGORY,
STATUS) VALUES ('000000000042100PERM', 421,'Custom_Tab', 'Access
Greetings page',7, 'A');
INSERT INTO PERMISSION (OID, PERM_ID, NAME, DESCRIPTION, CATEGORY,
STATUS) VALUES ('000000000042200PERM', 422,'Say_Hello', 'Display Hello
mesage',7, 'A');
INSERT INTO PERMISSION (OID, PERM_ID, NAME, DESCRIPTION, CATEGORY,
STATUS) VALUES ('000000000042300PERM', 423,'Say_Goodbye', 'Display
Goodbye message',7, 'A');
```

4. Edit ApplicationResources.properties

For a variety of reasons, you should resource the text that your JSPs will display rather than including that text as hard-wired HTML into those files. This takes a little more work, but it's good practice. Accordingly, this example refers to the following strings that have been added to ApplicationResources.properties, some of which are referenced in the JSPs, in navigation.xml, and in the code that populates the descriptions in the roles lists in the Administrator interface (under Users > Manage Roles > some role):

```
########
# customTab static text
########
navigationTab.customTab = Greetings
customTab.customTab.label = Salutations
customTab.instructions = Click under Ave atque Vale to display a
greeting.
customTab.tableSummary = There are two hot links on this page that you
can click to display a greeting.
customTab.customTab.title = Ave atque Vale
customTab.hello.linktext = Hello
customTab.hello.subtitle = Click here to display a Hello salutation.
CustomTab.goodbye.linktext = Goodbye
customTab.goodbye.subtitle = Click here to display a Goodbye
salutation.
customTab.hello.label = Hello
customTab.hello.title = Ave
customTab.hello.helloMessage = Hi, there.
customTab.goodbye.label = Goodbye
customTab.goodbye.title = Vale
customTab.goodbye.goodbyeMessage = Farewell.

########
# customTab permission descriptions
########
Custom_Tab = Access Greetings page
Custom_Tab.name = Custom Tab
Say_Hello = Display Hello message
```

```
Say_Hello.name = Say Hello
Say_Goodbye = Display Goodbye message
Say_Goodbye.name = Say Goodbye
```

5. Edit navigation.xml

You need to add a <module>…</module> block to navigation.xml to display the custom (Greetings) tab and the custom pages associated with it (customTab.jsp, customHello.jsp and customGoodbye.jsp). Where you place this block relative to the other <module>…</module> blocks in the file determines the order in which the tab appears with respect to the other tabs in the user interface.

For example, if the first <module>…</module> block in navigation.xml is the one that specifies the student Home page and its links, Home appears as the leftmost tab (assuming that the user has permission to display it). If you want to make your custom tab be the leftmost, insert the <module>…</module> block that defines it above the one for student Home.

Thus:

```
<navigation>
<!--
===/// Greetings ///===
-->
<module>
      <name>Greetings</name>
      <target>/default.do</target>
      <content>customTab.jsp</content>
      <label>navigationTab.customTab</label>
      <title>Salutations</title>
      <permissions>Custom_Tab</permissions>
      <helpPage>courseadmin/ch_customtab.html</helpPage>

<!-- Greetings.hello -->
      <trail>
            <name>hello</name>
            <target>/default.do</target>
            <content>customHello.jsp</content>
            <label>customTab.hello.label</label>
            <title>customTab.hello.title</title>
            <permissions>Say_Hello</permissions>
            <helpPage>courseadmin/ch_customtab.html</helpPage>
      </trail>

<!-- Greetings.goodbye -->
      <trail>
            <name>goodbye</name>
            <target>/default.do</target>
            <content>customGoodbye.jsp</content>
            <label>customTab.goodbye.label</label>
            <title>customTab.goodbye.title</title>
            <helpPage>courseadmin/ch_customtab.html</helpPage>
      </trail>
</module>
<!--
===/// studenthome ///===
 -->
<module>
  <name>studenthome</name>
   etc.
```

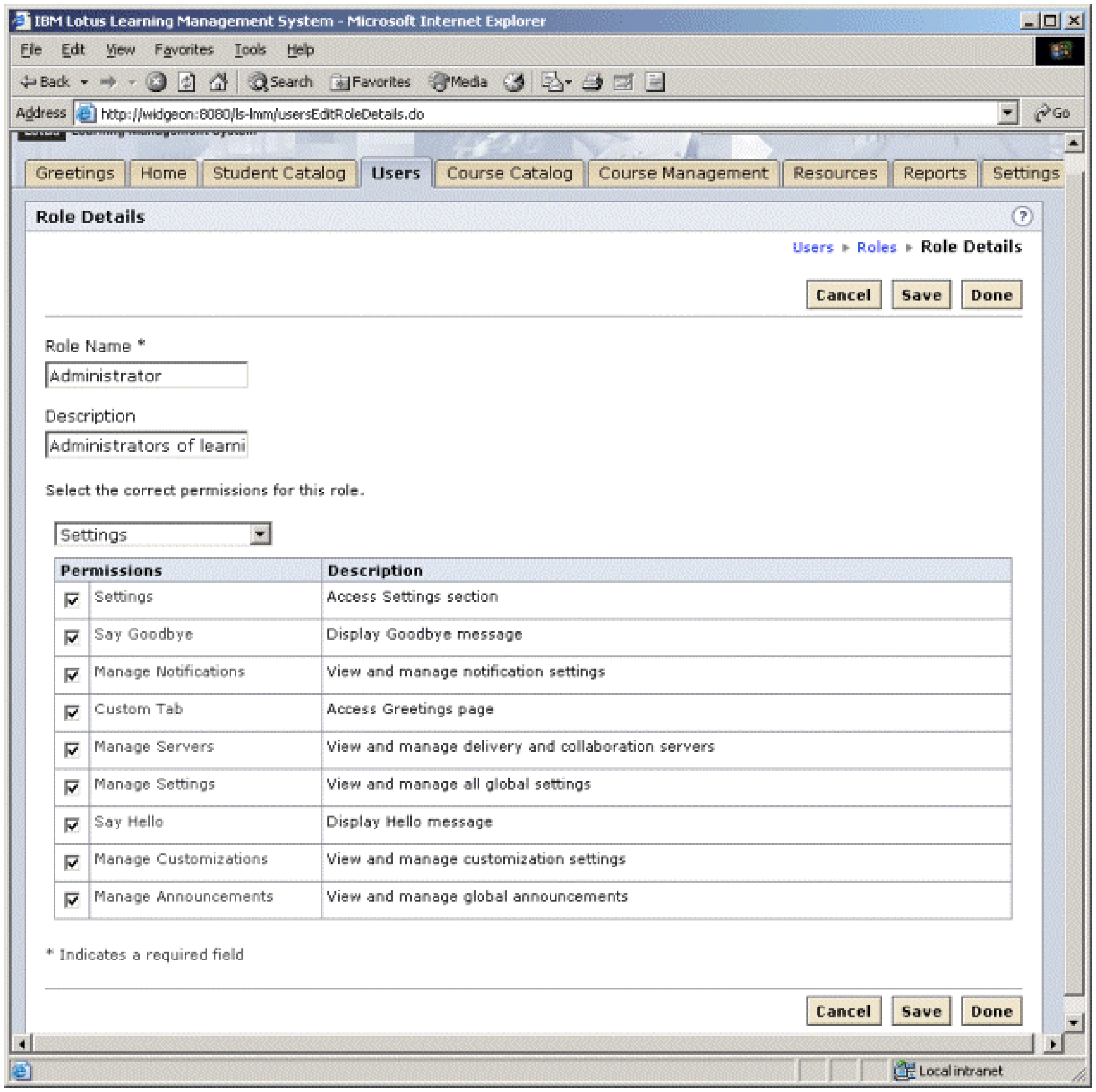
6. Assign permissions

Users need to be granted permission to display the tabbed page and either or both of the pages to which it offers links. You grant permissions through the LMS user interface. You can do this in either of two ways:

- Edit the definition of an existing role (or roles), granting the desired permissions to users who have been assigned that role (or roles).
- Define a new role with the appropriate permission(s), and assign that role to users. (The permissions for multiple roles assigned to a user are in an OR relationship: users assigned roles A and B have the union of the permissions for A and B.)

To edit the definition of an existing role:

1. Open the Users page and click Manage Roles.
2. Click the role to which you want to grant the new permissions.
3. Select the permission category in which the permissions are listed (in this case, Settings).
4. Check the appropriate boxes and save your work.



IBM Lotus Learning Management System - Microsoft Internet Explorer

http://widgeon:8080/ls-lmm/usersEditRoleDetails.do

Role Details

Users ▸ Roles ▸ Role Details

Role Name *

Administrator

Description

Administrators of learni

Select the correct permissions for this role.

Settings

Permissions	Description
✓ Settings	Access Settings section
✓ Say Goodbye	Display Goodbye message
✓ Manage Notifications	View and manage notification settings
✓ Custom Tab	Access Greetings page
✓ Manage Servers	View and manage delivery and collaboration servers
✓ Manage Settings	View and manage all global settings
✓ Say Hello	Display Hello message
✓ Manage Customizations	View and manage customization settings
✓ Manage Announcements	View and manage global announcements

* Indicates a required field

To create a role and assign it to users:

1. Open the Users page and click Manage Roles.
2. Click Add Role.
3. Enter the name of the new role (for example, Greetings) and a description of what users assigned that role can do.
4. Click on the name of the role when it appears in the Roles page.
5. Select the permission category in which the permissions are listed (in this case, Settings).
6. Check the appropriate boxes and save your work.
7. Back out to the Users main page and click Manage Users.
8. Locate and select the users to whom you want to assign the new role.
9. Click Assign Roles, check the appropriate box, and save your work.

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