# AssetCenter Web 4.4

# Tailoring Kit Guide

Peregrine
S Y S T E M S

Peregrine Systems, Inc.
3611 Valley Centre Drive San Diego, CA 92130
858.481.5000
Fax 858.481.1751
www.peregrine.com

# Contents

**PEREGRINE**

# Introducing the AssetCenter Web Tailoring Kit

The AssetCenter Web Tailoring Kit includes:

- Peregrine Studio
- Source files for AssetCenter Web

The AssetCenter Web is intended for Web application developers who are familiar with Extensible Markup Language (XML), ECMAScript, Structured Query Language (SQL), and the AssetCenter back-end database system.

Peregrine Studio is a graphical development tool that you can use to customize AssetCenter Web. AssetCenter Web consists of a series of Web-based interfaces that allow users to, for example, view and change reference data, assets, contracts, and work orders. The Peregrine Portal common interface determines what portions of AssetCenter Web the user sees.

The Web-based interfaces are the result of the following components:

- A collection of XML form definitions that provide the browser interfaces for AssetCenter Web. The AssetCenter Web XML form definitions are created with Peregrine Studio and then dynamically converted into HTML at runtime.
- A Web server to host the AssetCenter Web JSP content.
- A Java-enabled application server to run the Archway servlet and convert XML form definitions into HTML. The Archway servlet routes and formats data requests between AssetCenter Web and the back-end database.
- A collection of ECMAScripts that allow for dynamic parsing and formatting of AssetCenter Web data sent to and received from the client Web browser.

The AssetCenter Web files produced during a build are the result of the following Peregrine Studio components:

- A project file that describes AssetCenter Web. Each project file contains only the code necessary to produce and deploy AssetCenter Web.
- A collection of XML form definitions that define the functionality of AssetCenter Web. The AssetCenter Web XML form definitions are built in Peregrine Studio and deployed to the application server at runtime.
- A back-end database or application to store the data accessed by AssetCenter Web forms, track workflow tasks, and store personalization changes.
- Document schema definitions used to format message objects between the Archway servlet and the back-end database. All message objects are formatted as XML documents.
- ECMAScripts to generate and send message objects to the Archway servlet. The messenger objects can be used to query the back-end database for specific data and format the results for display in AssetCenter Web forms.

# About this guide

This guide is developers who tailor AssetCenter Web from the source code provided with the tailoring kit.

Use this guide in conjunction with the following:

- The AssetCenter Web installation and user guide.
- The back-end database documentation for your installation.
- The application server documentation for your installation.

# Conventions used in this guide

Screen shots in this guide are included as examples only. AssetCenter Web forms are shown using the Classic theme.

This guide uses the following documentation conventions.

| Text Formatting | Meaning |
| --- | --- |
| **Bold** | Information that you must type exactly as shown appears in bold. The names of buttons, menus, and menu options also appear in **bold**. |
| *Italics* | Variables and values that you must provide are in *italics*. New terms are in *italics*. |
| `Monospace` | Code or script examples, output, and system messages are in a `monospace` font.<br>`var msgTicket = new Message( "Problem" );`<br>`…`<br>`msgTicket.set( "_event", "epmc" );`<br><br>An ellipsis (…) indicates omitted portions of a script. Samples of code are not entire files, but they are representative of the information discussed in a particular section.<br>Filenames, such as `login.asp`, appear in a `monospace` font. |

# Need more information?

For further information and assistance with this release, you can download documentation or schedule training.

## Customer Support

For further information and assistance, contact Peregrine Systems' Customer Support at the Peregrine CenterPoint Web site.

To contact customer support:

**1**   In a browser, navigate to *http://support.peregrine.com*

**2**   Log in with your user name and password.

**3**   Follow the directions on the site to find your answer. The first place to search is the KnowledgeBase, which contains informational articles about all categories of Peregrine products.

**4**   If the KnowledgeBase does not contain an article that addresses your concerns, you can search for information by product; search discussion forums; and search for product downloads.

## Documentation Web site

For a complete listing of current AssetCenter Web documentation, see the Documentation pages on the Peregrine Customer Support Web.

To view the document listing:

**1**   In a browser, navigate to *http://support.peregrine.com*.

**2**   Log in with your login user name and password.

**3**   Click either Documentation or Release Notes at the top of the page.

**4**   Click the AssetCenter Web link.

**5** Click a product version link to display a list of documents that are available for that version of AssetCenter Web.

**6** Documents may be available in multiple languages. Click the Download button to download the PDF file in the language you prefer.

You can view PDF files using Acrobat Reader, which is available on the Customer Support Web site and through Adobe at *http://www.adobe.com*.

**Important:** Release Notes for this product are continually updated after each release of the product. Ensure that you have the most current version of the Release Notes.

# Education Services Web site

Peregrine Systems offers classroom training anywhere in the world, as well as "at-your-desk" training using the Internet. For a complete listing of Peregrine's training courses, refer to the following web site:

*http://www.peregrine.com/education*

You can also call Peregrine Education Services at +1 858.794.5009.

# 1
**CHAPTER**

# Installing on Windows

The AssetCenter Web Tailoring Kit installation allows you to install Peregrine Studio and the source files for AssetCenter Web.

Before you begin the installation, you should have already installed AssetCenter Web.

This chapter covers the following topics:

## Installing the AssetCenter Web Tailoring Kit

The following sections describe how to install the AssetCenter Web Tailoring Kit on a Windows system.

**Note:** The AssetCenter Web Tailoring Kit does not run on UNIX, although files built by the Tailoring Kit can be deployed to a UNIX system.

**Tip:** Do not install the AssetCenter Web Tailoring Kit on your production system. Instead, install the tailoring kit on a development environment and then deploy your changes to your production environment after you have had a chance to test them.

To install the AssetCenter Web Tailoring Kit:

**1**   Insert the AssetCenter Web installation CD into the CD-ROM drive.

If you are installing on a system that has autorun enabled, the CD browser starts automatically. If autorun is disabled, you can manually start the CD browser.

- Use Windows Explorer to navigate to the CD-ROM directory. Double-click **autorun.exe**.
- Start the AssetCenter Web installation from the Windows command prompt. Type **D:\>autorun.exe** where D identifies the CD-ROM drive. Substitute your CD-ROM drive identifier.

The AssetCenter Web Tailoring Kit splash screen opens displaying a list of installation options.

2   Install the required platform components for the AssetCenter Web Tailoring Kit.

| Component | Action |
|---|---|
| Install Studio | Click this button to install Peregrine Studio 2.2.0.1068 on your system. |
| Install AssetCenter Web Tailoring Kit | Click this button to install AssetCenter Web Tailoring Kit 4.4 on your system. |

**Note:** If you do not have Peregrine Studio, you must install it prior to installing the AssetCenter Web Tailoring Kit.
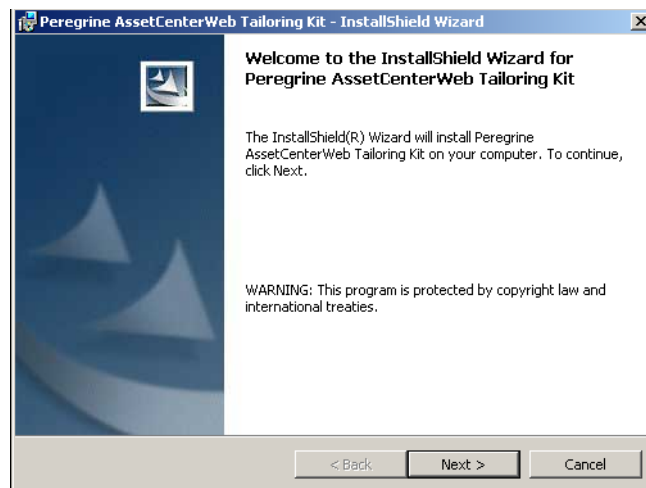
**3** Click **Next** to read and accept the licensing agreement.
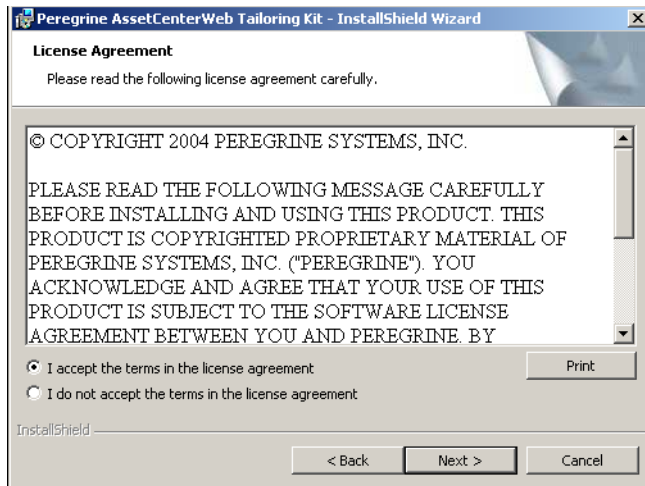


**4** Select **I accept the terms in the license agreement**.

**5** Click **Next** to select your destination folder.
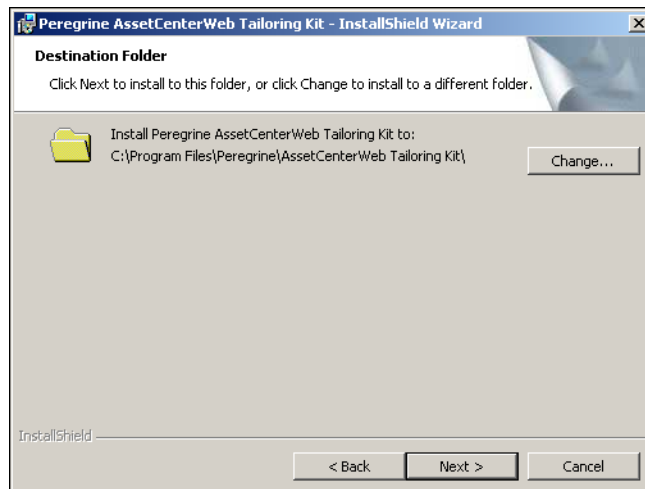
6   Click **Next** to accept the default installation location, or click **Change** to select another installation location, and then click **Next**.
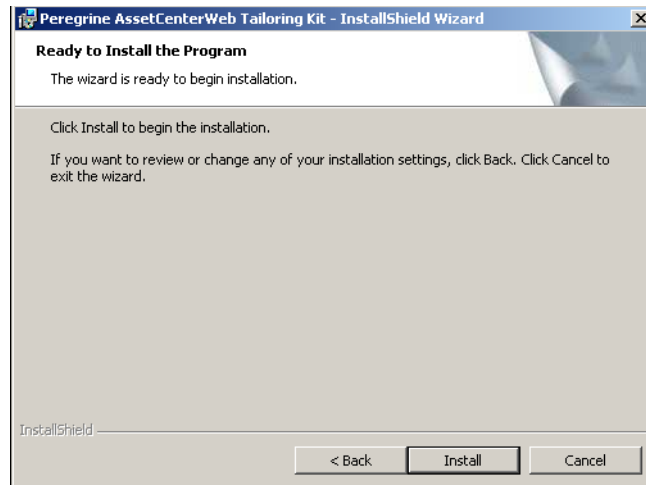


7   Click **Install**.

After the installer copies and deploys the files to your system, the InstallShield Wizard Complete page opens.
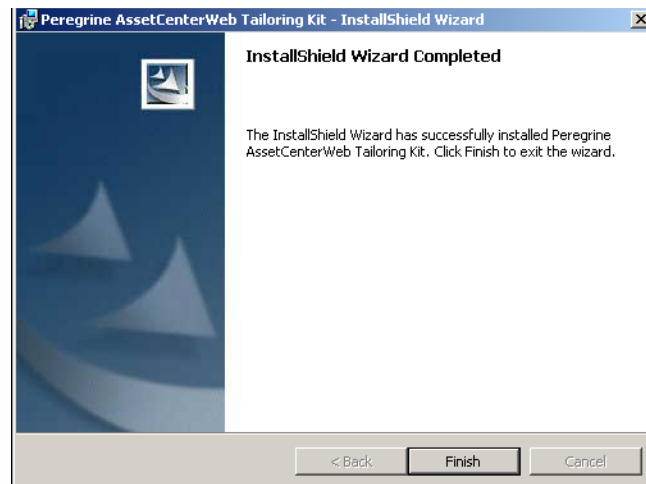


8   Click **Finish** to close the InstallShield Wizard.

# Upgrading the AssetCenter Web Tailoring Kit

During an upgrade installation, the customized changes are safe because studio stores the changes in a specific *package*, and all the corresponding files are stored in a folder that the upgrade does not touch.

After an upgrade, you can reload the customizations (patch package) into the new project, using the menu *File/Add package to project*.

The upgrade of tailored projects is always a challenge because the very same files that you patch with the tailoring kit are changed by the Peregrine product development team. Therefore, the following can occur:

| Scenario | Description |
| --- | --- |
| 1 | If an element changed in the product between the two releases, and you patched it, the product change is not accounted for in the resulting build. If the change was either a bug fix or a new feature, you would not benefit from the change, even though the new version is installed. The patched element masks the product changes. |
| 2 | If an element is removed between two releases of the product, and you patched it, the result is a partial definition of the element that might not work. |
| 3 | If a group of elements changes between two releases of the product, and you patched only one element, the result might be an inconsistent group of elements that do not work properly. |

As a result, there is always some work involved after upgrading a product to adapt the customization to the new product. To take care of the first scenario, you need to check what changed between two releases on every element that you patched, and merge in the changes you want to keep (bug fixes and new features). To solve the second scenario, you must verify if your patches still apply on an existing element. If not, the customization must be redone based on the new product.

Solving the third scenario is more complex. For every patch in your project, you need to assess if the changes are consistent with the way an element was patched. If the merge (as made by fixing scenario 1) is made properly, there should not be any problem.

# Opening the AssetCenter Web project

After the installation is complete, you can open the AssetCenter Web project in Peregrine Studio using the following procedure.

**Important:** If you did not receive a Peregrine Studio authorization file, contact Peregrine Customer Support. You need this file to edit your AssetCenter Web files.

To open the AssetCenter Web project in Peregrine Studio:

**1** Click **Start** > **Programs** > **Peregrine** > **Studio** > **Peregrine Studio**.

**2** Click **Tools** > **Authorization file**.

**3** In any text editor, open the authorization file provided for Peregrine Studio.

**4** Copy the contents of the authorization file into the Authorization file dialog box in Peregrine Studio.

**5** Click **OK**.

**6** Click **File** > **Open project**.

**7** Browse to the location of your AssetCenter Web project file (`.adw` file). For example:

```
C:\Program Files\Peregrine\AssetCenter Web Tailoring Kit\acw
```

**8** Select your AssetCenter Web project file:

```
 acw.adw
```

**9** Click **Open**.

# Setting up a tailoring environment

You can set up one or more development environments separately from your production environment. A development environment lets you modify and build AssetCenter Web on a separate computer system from your test or production environments.

## Setting up a development environment

You need the following minimum components for a AssetCenter Web Tailoring Kit development environment:

- Peregrine Studio.
- Java Runtime Environment 1.3 or later (necessary to run Studio), or the Java Development Kit provided with your Web application installation.
- AssetCenter Web Tailoring Kit (includes the AssetCenter Web source files).
- J2SDK 1.3 or later if you want to create or edit your own wizards for Peregrine Studio.

With this minimal development environment, you can modify AssetCenter Web using the built-in Peregrine Studio tools and wizards. You can then do one of the following:

- Build your AssetCenter Web projects on the development computer and copy the results to a production environment.

  or

- Enter the network path to the production environment in your Peregrine Studio Build Settings.

**Important:** If you are using source control software to store your project files, you will need to configure your Peregrine Studio to check out and check in the source files. You can add your source control settings from **Tools** > **Options** > **Source control**.

# Setting up a testing environment

You need the following components to test or debug your modifications:

- Peregrine Studio.
- Java Runtime Environment 1.3 or later (necessary to run Peregrine Studio).
- AssetCenter Web Tailoring Kit (includes the AssetCenter Web source files).
- If you want to create or edit your own wizards for Peregrine Studio, you will need to install J2SDK 1.3 or later.
- An installed instance of AssetCenter Web.
- A Web server.
- A Java-enabled application server.
- JavaScript-enabled Web browser (necessary to view changes to AssetCenter Web).

**Note:** See the latest compatibility matrix on the Peregrine support site for a list of supported Web servers, application servers, and Web browsers.

With this testing environment, you can build and view your changes from a single computer. To set up a testing environment, you must install both AssetCenter Web and the AssetCenter Web Tailoring Kit. Refer to the AssetCenter Web Installation and User's Guide for instructions and requirements for installing AssetCenter Web.

**Tip:** You can save multiple versions of AssetCenter Web in separate project files. When you are ready to test a particular tailored version, you can load the tailored project, build it, and deploy it to your test environment.

# 2 Using Studio

**CHAPTER**

This chapter provides an overview of the Peregrine Studio interface. For more information about configuring or using Peregrine Studio, refer to the Peregrine Studio online help.

This chapter covers the following topics:

## The Peregrine Studio interface

The Peregrine Studio interface includes:

- Project Explorer
- Properties window
- Edit toolbar
- General information display
- Contextual help
- Address
- Package selector
- Advanced information

You can hide all elements of the interface except the Project Explorer and the Properties Window by clearing them on the View menu.



Edit toolbar
Package selector
Address
Project Explorer
Properties window

General information    Contextual help    Advanced information
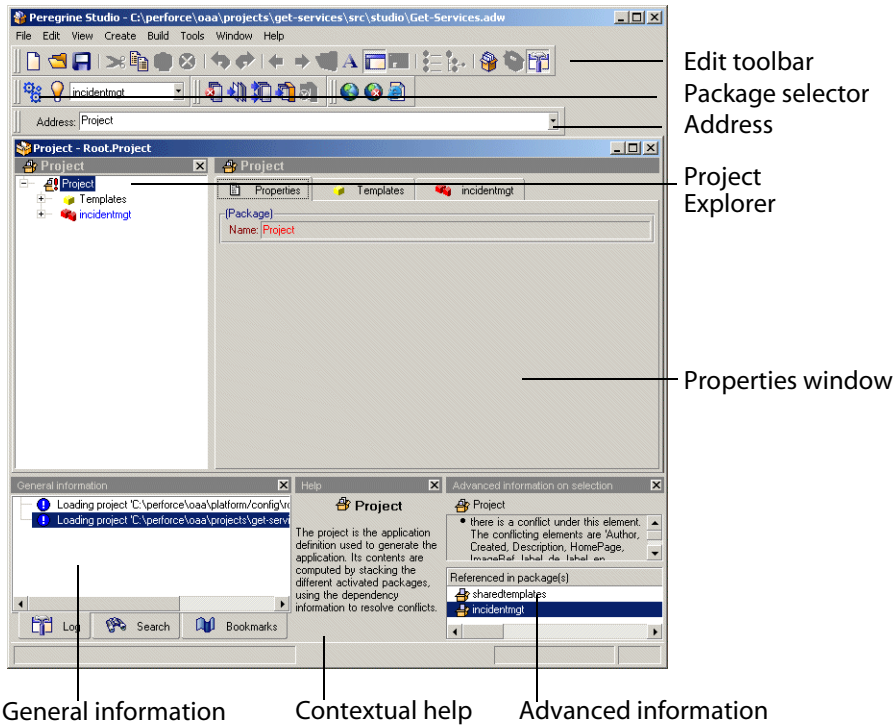
# Project Explorer

The Project Explorer provides a hierarchal view of all the components that comprise a Peregrine Studio project. The Project Explorer window displays each component as a separate node within the tree.

Group of Templates



Group of Modules

Module
Activity

Form
DocExplorer

Actions
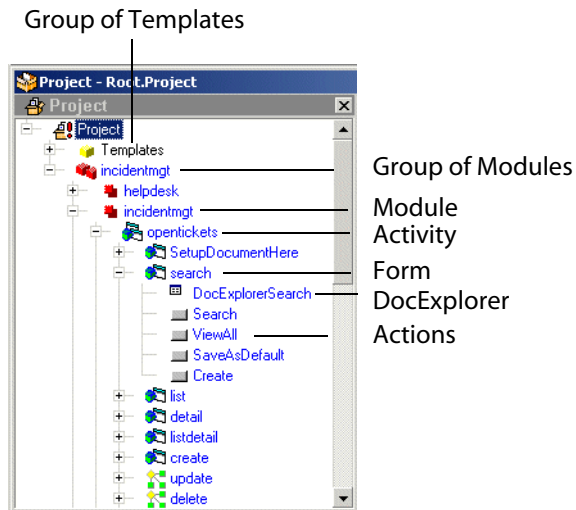
## Left-click a node

Click the node listing the component you want to change and the properties of the component display in a window of the Properties pane.

## Right-click a node

Right-click a node to display a list of context-sensitive options.

The options listed in the following table are available for all nodes.

| Menu item | Description |
|---|---|
| New | Provides a context-sensitive menu of allowed components that you can add from the current node. The list of components in this menu is dynamically updated for each node of the Project Explorer tree. |
| Open | Displays the properties of the selected component in a window of the Properties pane. |
| Open in New Window | Displays the properties of the selected component in a new window of the Properties pane. |

| Menu item | Description |
|---|---|
| Rename | Renames the selected node to the new name typed by the user. This option will only be available when a package extension has been activated as the save location for changes. |
| Cut | Removes the selected node, and all child nodes underneath, and places a copy in the Windows clipboard. |
| Copy | Copies the selected node, and all child nodes underneath, to the Windows clipboard. |
| Paste | Inserts the contents of the Windows clipboard. If the clipboard contains a Studio component, it will be automatically placed within the tree according to the type of component it is. |
| Delete | Deletes the selected node and all child nodes. This option will only be available when a package extension has been activated as the save location for changes. |
| Help | Displays the Studio help system. |
| Export node | Saves a copy of the selected node, and all child nodes underneath, as an XML file, which can be imported into a Studio project. |
| Import node | Opens a user-selected XML file describing Studio nodes and inserts it into the tree. The imported node will be inserted below the node you right-clicked. |
| Add Bookmark | Adds a bookmark link to the node you currently have open in Studio. If you browse to another location and then want to return to this node, click the Bookmarks tab in the General Information window and select the appropriate bookmark. |

The following image shows how some of the common Peregrine Studio components are displayed in a Peregrine Systems Web application interface.
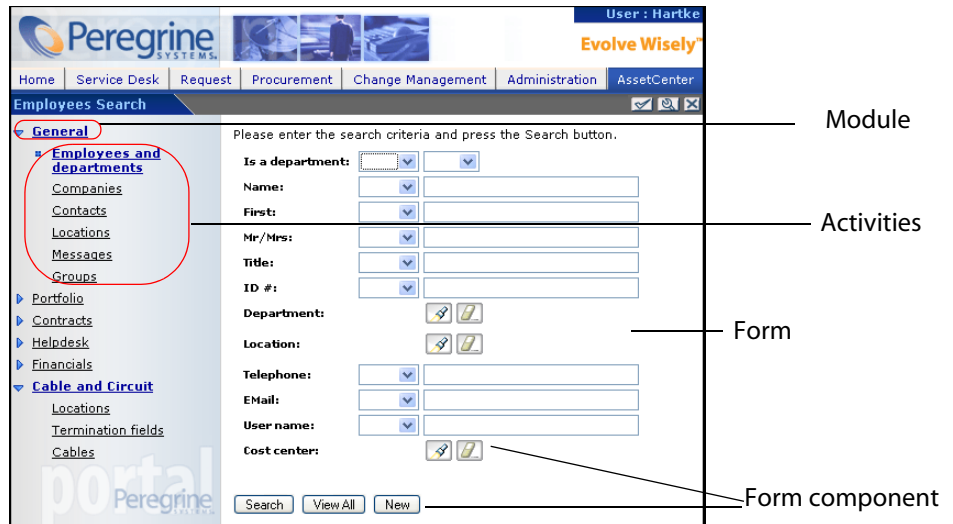


## The address bar

You can use the Address Bar to navigate directly to any Peregrine Studio project component. The address bar will display as a text box below the Edit Toolbar.

To display the address bar:

**1**   Open Peregrine Studio.

**2**   Click **View** > **Address**.

The Address Bar displays below the menus.

# Drag and drop

Peregrine Studio supports drag and drop movement of components within the Project Explorer. Changing the order of nodes in the Project Explorer will change how the items are presented in the Peregrine Studio build.

To move a component within the Project Explorer:

1   Click and hold the left mouse button over the name of the node you want to move.

2   Drag the node to the new location in the Project Explorer tree.

    The node appears underneath the component (of the same level) where you drop the node.

Note:  You cannot move components out of the order enforced by the DSD. For example, you cannot move a form out of an activity and place it at the same level as a module. You can, however, change the order of the forms listed under an activity.

# Best practices

The following recommendations will make tailoring projects easier and reduce the amount of troubleshooting you need to do.

## Do not change form definitions outside Peregrine Studio

Although AssetCenter Web form definitions are XML files, the XML grammar used to build them is specific to Peregrine Studio. If you make changes to the AssetCenter Web form definitions outside of Peregrine Studio you risk corrupting your project file and complicating your troubleshooting efforts. If you want to view the XML form definitions, you can safely enable the source view from within Peregrine Studio.

The source view does not support direct editing of the XML form definitions. All XML source views are listed with a grey background which indicates that the item is read-only.

To view the XML source code within Peregrine Studio:

1   Select the node of the Web application or component you want to view from the Project Explorer.

2   Click the Source view button (the blue capital A). 

    The XML source appears in the Properties window. The XML source code is color coded as you define in the project settings.

## Avoid enabling advanced options

The advanced options found in **Tools** > **Options** > **Advanced** change the way your project is protected and built. In general, Peregrine recommends that you avoid enabling all advanced options except the HTTP Listener. Enabling any other options may overwrite needed source files in your AssetCenter Web project and complicate your troubleshooting efforts. Furthermore, Peregrine cannot support any changes you make to the source packages delivered with AssetCenter Web.

## Avoid using the clean the target folders build option

The Clean the target folders build option deletes all files in your build folder. If you build directly into your application server's deployment folder, using this option will delete the files necessary to run AssetCenter Web and require you to reinstall AssetCenter Web. You should only consider using this option if you install the AssetCenter Web Tailoring Kit on a different machine than your AssetCenter Web installation.

## Clear application server cache

To ensure that you always see the latest changes in your test environment, Peregrine recommends that you clear your application server's cache. This is especially important if you use Tomcat 4.1.x as your application server.

## Use templates to apply global changes

Your AssetCenter Web project contains a Group of Templates node where you can store and change preconfigured form components. Each form that uses a template inherits the properties of the template. If you want to make global changes to AssetCenter Web, search for the relevant templates in the Group of

Templates node. If you want to create a re-usable collection of form components you can create a new template to store your changes. Any template you create appears as an option in the New context-sensitive menu.

To add a template to a form:

1    Click on the node that you want to add a template component.

2    Click **Create** and then select the template name from the list beneath the horizontal rule. You can also Right-click on the node and select New.

    The Create and New menus display only the templates that are valid for the location you selected.

**Important:** Do not drag and drop or copy and paste a template into a form. In order for Peregrine Studio to recognize the template you must add the template form components from the New menu.

# Enable the HTTP listener and form information options

Using the HTTP Listener, you can click on the Form Information address listed for a given form and the appropriate form properties will be displayed in Peregrine Studio. This debugging feature allows you to navigate through AssetCenter Web with a browser and quickly bring up any particular form that needs modification.

**Important:** The HTTP Listener cannot bring up the administration, home page forms, nor any AssetCenter Web forms that are built using DocExplorer. The source code for these three modules is no longer provided with the AssetCenter Web tailoring kit. You can tailor such forms directly using Personalization.

To enable the HTTP Listener:

1    Open Peregrine Studio.

2    Click **Tools** > **Options** > **Advanced**.

3    Select the Use listener check box from the HTTP Listener section.

**4** Select the port number you want the HTTP listener to use (the default port is 81), and then click OK.

**5** Save your Peregrine Studio project.

**6** Close and then re-open Peregrine Studio to initialize the HTTP listener.

**7** Open the project file containing the form you want to change in Peregrine Studio.

**Note:** Be sure to select or create a package extension in which to save any changes.

To enable the Form Information functionality:

**1** Log in to AssetCenter Web as an administrator, or access the Admin module directly from the Administrator login page (`admin.jsp`).

**2** Click **Admin** > **Settings** to display the Settings form.

**3** On the **Logging** tab, set the **Show form info** setting to *true*.

**4** Click **Save** at the bottom of the form to activate your new settings.

**5** On the Control Panel form of the Admin module, click **Reset Peregrine Portal** to commit your changes.

Click this link to open
the form in Studio.

**6**    Navigate to the form you want to tailor.

**7**    Click the Peregrine Studio address displayed in the Form Information banner of the Web application form.

Peregrine Studio will appear as the active window and display the current form's properties page.

# Set the color for your extension changes

By default, all changes or additions you make to your Peregrine Studio project are highlighted with blue text. You can change the color Peregrine Studio uses to indicate extension changes with the following procedures.

To change the color Peregrine Studio uses to indicate extension changes:

**1**    Click T**ools** > **Options** > **Appearance**.

The appearance window opens.

**2**    From the **Extension color** drop-down box, select the color you want to use to indicate changes to base packages originating from package extensions.

**3**    Click **OK**.

Within the Project Explorer view, Peregrine Studio highlights each node of the tree that contains a component that has been changed or added. This allows you to navigate through the Project Explorer tree view and locate where you have made changes and additions.

To view the changes made in a project:

**1**    Select a node displayed with blue text to view the component properties.

**2**    Review the properties listed in the window displayed to the right of the Project Explorer (the Properties window). Changes that were made to this component will be displayed with blue text. If no blue text is displayed in the

Properties window, then the change or addition is in one of the child nodes below the current node.

**3**  If necessary, expand any child nodes highlighted with blue text and review the Properties window for changes.

## View referenced components with the lookup button

Whenever an item links to or references another component, Peregrine Studio displays a lookups button next to the field. 

You can click this button to display the form, image, schema, or script that is called by the reference.

Use Go to Previous View (the orange arrow pointing to the left) to return to the component making the reference.

# 3

**CHAPTER**

# Peregrine Studio Projects and Packages

Peregrine Studio *projects* contain all of the *packages* that make up an application. A new package must be created when you are making changes to your project. You can then activate or deactivate packages depending on the features you want to be included in your current project.

This chapter includes the following topics:

## Peregrine Studio projects

Peregrine Studio saves all the source files for AssetCenter Web as a project file. A Studio project file consists of the following components.

| Studio component | Description |
|---|---|
| AssetCenter Web components | The XML form definitions that specify the functionality of the AssetCenter Web interface. The application server will dynamically render the AssetCenter Web XML form definitions as HTML when a specific form is requested. |
| ECMAScripts[1] | ECMAScripts create and format message objects to the Archway servlet. AssetCenter Web components will use ECMA message objects to display and process data. |

| Studio component | Description |
| --- | --- |
| Document schema definitions | The XML files that define how the Archway servlet should format the ECMA message objects sent to and received from back-end databases. AssetCenter Web components will use the ECMA message objects to display and process data. |
| Presentation files | Any supporting files such as images, client-side JavaScript, hand-coded HTML or JSP files, or translation strings that will be included with AssetCenter Web. |
| Stylesheets | The Cascading Style Sheet (CSS) files that define the colors and fonts that will be used in your AssetCenter Web pages. |

[1] ECMAScript is the core language standard shared between JavaScript and JScript.

For a listing of where Peregrine Studio saves and builds these files, see Project files on page 41.

# Project components

Peregrine Studio organizes project components into a hierarchy of parent and child elements. The position of a project component determines the individual properties it can have. Properties include, for example, what other project components can be placed within the component and the type of editor used to edit the component. All Peregrine Studio projects conform to the hierarchy listed below:

Template

Group of modules

Module

Activity

Form
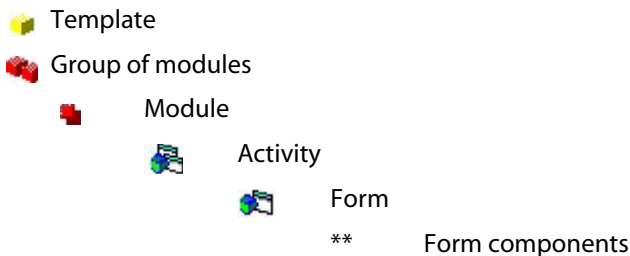
** Form components

# Project component descriptions

This table lists and describes some of the common Peregrine Studio components. For a complete list of the components that make up a Peregrine Studio project, see Peregrine Studio Components.

| Component | Description |
| --- | --- |
| Project | The project component:<br><br>Is the container for all the elements that are part of your current project file.<br><br>Is always the top node of the Project Explorer tree.<br><br>Is represented by an open package icon in the Peregrine Studio Project Explorer tree. |
| Templates (support files) | The templates component:<br><br>Is the container for all the common elements reused throughout the project.<br><br>Appears with a yellow cube icon in the Peregrine Studio Project Explorer tree. |
| Group of modules | The group of modules component:<br><br>Is the container for all the XML form definition files and modules that make up AssetCenter Web.<br><br>Appears with a double red cubes icon in the Peregrine Studio Project Explorer tree.<br><br>Does not have any one dedicated graphical representation in the built project. |
| Module | The module component:<br><br>Is a container for the activities and forms that make up AssetCenter Web.<br><br>Appears with a double red box icon in the Peregrine Studio Project Explorer tree.<br><br>Appears as a text link on the navigation sidebar and may also appear on the AssetCenter Web Home Menu.<br><br>**Note:** The module component is usually where access restrictions are defined. Setting access restrictions limits a module to particular user roles. |
| Activity | The activity component:<br><br>Defines a particular task or action such as searching for records, displaying records, or entering records.<br><br>Is a container for a particular set of forms.<br><br>Appears with a cube and two window panes icon in the Peregrine Studio Project Explorer tree.<br><br>Appears as a text link on the navigation sidebar (Activity Menu). |

| Component | Description |
|---|---|
| Form | The form component:<br><br>Is where AssetCenter Web user interfaces and displays are<br>defined.<br><br>Appears with a cube and a single window pane icon in the Peregrine Studio Project Explorer tree.<br><br>**Note:** Typically, the system displays each form component as a page in the main frame. |
| Form components | Form components such as fields, actions, tables, and lookups:<br><br>Define the actual user interfaces and displays used in a AssetCenter Web form.<br><br>Appear with a variety of icons in the Peregrine Studio Project Explorer Tree.<br><br>Typically have a graphical element in a AssetCenter Web<br>form. |
| Group of scripts | The group of scripts component:<br><br>Is a container for all the server-side ECMAScripts used by AssetCenter Web.<br><br>Appears with a document with a yellow border icon in the Peregrine Studio Project Explorer tree. |
| Group of schemas | The group of schemas component:<br><br>Is a container for all the document schema definitions that AssetCenter Web uses.<br><br>Appears with a data store and document icon in the Peregrine Studio Project Explorer tree. |
| Group of files | The group of files component:<br><br>Is a container for supplemental files that your Web applications can use. You can store images, client-side JavaScript, localized string files, or initialization files here.<br><br>Appears with a folder icon in the Peregrine Studio Project Explorer tree. |
| Group of Strings | The group of strings component:<br><br>Is a container for all the text strings that AssetCenter Web<br>uses.<br><br>Appears with a globe icon in the Peregrine Studio Project Explorer tree. |

Portal Components are available only in the portal module.

# Project files

This table describes the files that make up a Studio project and the information they contain. Items listed in *italics* are variables. To determine the actual file name, replace the italic text with the component name.

Warning:  Do not edit these files outside of Studio. Manual changes you make outside of Studio will be lost during the build process.

| Component | Save and build location | Contains |
|---|---|---|
| project | Saved as:<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`project.adw` | <package> names<br>Path to *package*.xml |
| package | Saved as:<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`\package\package.xml` | <package> name<br><modules> name<br><module> names<br>Path to *module*.xml<br>Schema Names<br>Path to *schema*.xml<br>Script Names<br>Path to *script*.xml<br>String Resources |
| modules | Saved as:<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`\package\package.xml` | <modules> name |
| module | Saved as a single file:<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`\package\modules\module.xml`<br>Built as a collection of forms:<br>`C:\OAA\build\WEB-INF\apps\`<br>`package\forms\module\activity\`<br>`form.xml` | <module> name<br>XML code for <activity>, <form>, and <form> components |
| schema | Saved as<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`\package\modules\Schemas\`<br>`schema.xml`<br>Built as:<br>`C:\OAA\build\WEB-INF\apps\`<br>`package\schema\schema.xml` | XML code for <schema> |

| Component | Save and build location | Contains |
|---|---|---|
| script | Saved as:<br>C:\Program Files\Peregrine\<br>Get-It Tailoring Kit\acw\<br>\*package*\*modules*\<br>Scripts\*script*.xml<br>Built as:<br>`C:\OAA\build\WEB-INF\apps\`<br>`package\jscript\`<br>`script type\script.js` | XML code for <script> |
| presentation files | Saved as:<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`\package\modules\presentation\`<br>`presentation file.jsp`<br>Built as:<br>`C:\OAA\build\presentation`<br>`file.jsp` | Directory where presentation files can be stored to be included in a Studio build. |
| strings | Saved as:<br>`C:\Program Files\Peregrine\`<br>`Get-It Tailoring Kit\acw\`<br>`\package\package.xml`<br>Built as:<br>`C:\OAA\build\WEB-INF\apps\`<br>`package\package_en.str` | Text strings for English, German, Italian, French, and Japanese. |

# Building a project

During the build process, Studio compiles all project files and copies them to deployment folder you specified in your Peregrine Studio Build Settings.

## Build options

Peregrine Studio offers the following build options from the Build menu.

| Build option | Description |
|---|---|
| Clean the target folders | Deletes the contents of the presentation and deployment folders. |
| Build element | Builds the currently selected element in the project explorer. This element will not be rebuilt the next time a differential build is performed. |
| Differential build | Builds only those elements that have changed since the last build. |
| Rebuild all | Builds all elements of the project. |
| Stop Build | Stops a currently running build process. |

Warning: The Clean the target folders option cleans the folders listed in your build settings. If you build your project directly to your application server, then using this option deletes your installation of AssetCenter Web. It is recommended that you avoid using this option if you have installed AssetCenter Web on your development machine.

# Setting project build settings

You can define the build settings option to define the file locations and file formats used during the build process. Each Peregrine Studio project can have its own project settings.

To set project build settings:

**1** From the Build menu, select Project settings.
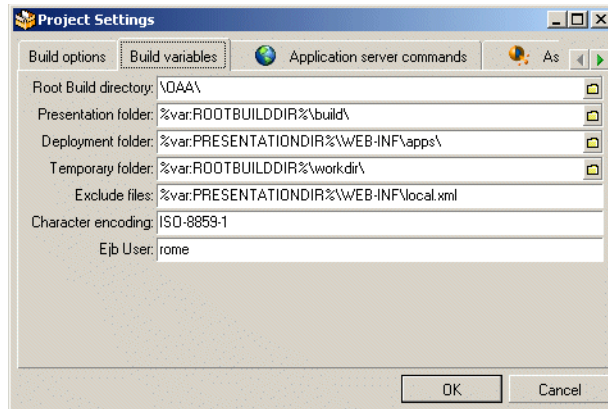


**2** Click the **Build Variables** tab.

**3** Enter or browse to the proper directory for the following settings.

| Setting | Definition |
|---------|------------|
| Root Build Directory | This is the drive and folder you want to be root for building Peregrine Studio projects. Whatever path you enter here becomes the variable `%var:ROOTBUILDDIR%`. |
| Presentation folder | This is the folder where your application is deployed. It can be:<br><br>■ the folder where your application server will look for the file to serve (recommended only for interim builds). For example:<br>`C:\tomcat\webapps\oaa`<br><br>■ or the image folder that will be used to create the war file (recommended for final builds). For example:<br>`C:\Program Files\Peregrine\Portal\image`<br><br>Whatever path you enter here becomes the variable `%var:PRESENTATIONDIR%`. |
| Deployment folder | The folder where scripts, schemas, and XML form definitions are located. You do not need to change the value of this setting.<br>**Note:** Do not change this option. |
| Temporary folder | The folder where Peregrine Studio will generate temporary files used in the build process. You do not need to change the value of this setting. |
| Exclude files | A semicolon-separated list of files or directories that you want Peregrine Studio to exclude from removing or rebuilding during a build. You do not need to change the value of this setting. |
| Character encoding | Not used. JSP encoding is determined by the character encoding setting on the Settings page of the Admin module. You do not need to change the value of this setting. |
| Ejb User | Not used. AssetCenter Web does not use the rome adapter. You do not need to change the value of this setting. |

**4** Click **OK** to save your settings.

# Peregrine Studio project packages

Packages contain all the XML form definitions, ECMAScripts, and schemas necessary to run AssetCenter Web. Your AssetCenter Web project is defined by one or more packages, which are either *system* or *extension* packages.

| Package type | Definition |
|---|---|
| System | The system packages provided by Peregrine Systems define the out-of-box functionality of AssetCenter Web. |
| Extension | Any packages you create are called *extensions*. Package extensions store all of your additions or modifications to the existing system packages. |

You can see the system packages and the extensions that make up your project from the Package Activation toolbar. This view displays the active packages that can be edited and built in your project. When a package is activated, the changes or additions will be included in the build. When a package is deactivated, the changes or additions will not be included in the build. The modular design of packages allows you to decide which changes and additions will be included or excluded from the build process.

**Tip:** Group similar Web application functions in the same package extension. This will allow you to activate or deactivate groups of functions using the Package Activation toolbar. For example, if you are testing different interfaces with the same functionality, you may want to save each interface in a different package extension. After you determine which interface is better, you can implement the new interface by activating that package extension and rebuilding the project.

Packages are not displayed in the Project Explorer *Project* tree. The list of available packages (packages that have been activated) is included in the Package Explorer drop-down list located below the toolbar in Peregrine Studio.

## Saving changes with package extensions

All additions and changes to a project must be saved under a package extension name. By default, all of the system packages that ship with AssetCenter Web are write-protected and cannot be used as the save location for your tailoring efforts. To tailor your installation you need to create one or more new package extensions where your changes and additions will be saved.

To create a new package extension:

**1** Open Peregrine Studio.

**2** Click **File** > **New** package to start the Create New Package wizard.

**3** Enter the name and package dependencies for the new package.

| Term | Definition |
|------|------------|
| Name | Enter a name for the new package extension. The package extension name cannot contain spaces or special characters. |
| Dependencies | Select the existing system package or packages that your package extension will be dependent on. Select the system packages that you want to make changes to as the package dependencies. Your new package extension must be dependent on at least one existing package. See Package dependencies on page 48 for more information on package dependencies. |

**4** Click **OK** to complete the wizard.

**5** Save your Peregrine Studio project file.

**6** Close and then restart Peregrine Studio.

Any changes or additions you make to AssetCenter Web are saved in your new package.

## Activating and deactivating packages

You can control the packages and package extensions that are part of AssetCenter Web by activating or deactivating them from the Package Activation menu. To include a package in AssetCenter Web installation, activate the package, and then build the Studio project. To remove a custom package from your installation, deactivate the package and delete it from the following path:

```
C:\Program Files\Peregrine\Get-It Tailoring Kit\acw\package name.
```

**Tip:** In some cases it is simpler to re-install AssetCenter Web than to delete unwanted custom packages.

To activate a package:

**1** To display the package activation toolbar, click **View** > **Package Selector**.

**2** Click the Package activation button.

**3** Select the check box next to the package name or names you want to activate.

**4** Click **OK**.

All active packages will be included in the next build.

To deactivate a package:

**1** Click the Package activation button.

**2** Clear the check box next to the package name or names you want to deactivate.

**3** Click **OK**.

All deactivated packages will be excluded from the next build.

**Important:** Deactivating a package does not delete it from the AssetCenter Web interface if you have already built it. To delete tailoring changes you have already built you can either re-install or delete the XML form definitions for your package extension.

# Package dependencies

Each package has a list of dependencies that define what other packages it can make changes or additions to.

When you create a package extension, you must select the other packages that your extension can change. You will only be able to make changes or additions to the packages that are listed in your extension's package dependencies. If you

try to make changes outside your extension's dependencies, you will produce a dependency conflict.

You can use the package dependency list to determine what other packages a particular extension affects. This information is particularly useful if you are trying to resolve conflicts in your projects.

Package dependencies are first defined by the New Package wizard when you create a package. You can manually change the package dependencies using the procedures described below.

## Setting package dependencies

To set package dependencies:

**1**   Go to **Tools** > **Package Dependencies**.

**2**   From the left pane, select the package name for which you want to set dependencies.

   The list of defined dependencies appears in the right pane.

**3**   Select the check boxes next to the package names you want to add as package dependencies. Clear the check boxes next to the package names you want to remove as package dependencies.

**Note:** Dependent packages activate or deactivate as a group. For example, suppose you create a user extension called *New_Interface* that is dependent on the *Extension* package. If you deactivate the *Extension* package, you will also deactivate the *New_Interface* package. If you activate the *New_Interface* package, you will also activate the *Extension* package.

**4**   Click **OK** to set the dependencies.

# Warnings for conflicts

Peregrine Studio validates your project and ensures that there are no conflicting instructions or missing components. If Peregrine Studio encounters a conflict, it displays an exclamation point ❗ icon next to each node that contains a conflicting component within the Project Explorer view.

Peregrine Studio will display a conflict warning if any of the following conditions occur.

- Two or more active project components describe the same thing. For example, if you have two active package extensions that rename the same button, you will create a resource conflict.
- You make changes or additions to a package that is not defined as a dependent package. For example, if you create a package called *test* that is solely dependent on the package *changes*, then the *test* package cannot make changes or additions to other packages, such as *incidentmgt*. Attempting to make such changes will create a dependency conflict.

## Resource conflicts

Resource conflicts occur when two or more activated package extensions describe the same project components. For example, if the Extension package extension adds a *submit* action to a form, then you will see a resource conflict if another package extension (for example, called *demo*) also adds a submit action to that form. The submit action on that form can only be described by one package extension at a time.

### Resolving resource conflicts

To resolve a resource conflict, you can either deactivate the package extension with the conflicting project component or you can delete the project component creating the conflict from one of the package extensions. Continuing the example from above, you could either deactivate the *demo* package extension or you could delete the submit action from the *demo* package extension.

## Dependency conflicts

Dependency conflicts occur when you change a project component in a packages that is not listed as a dependency for your current package extension.

For example, if the *demo* package extension is solely dependent on the *incidentmgt* package, then the *demo* package extension cannot make changes to the *sharedtemplates* package without creating a dependency conflict.

### Resolving dependency conflicts

To resolve a dependency conflict you can either add a dependency to the package extension, or you can move the changes to another package extension with the proper dependencies. Continuing the example above, you could either make the *demo* package extension dependent on the *sharedtemplates* package or you could move the changes from the *demo* package extension to another package extension such as *extension*, which is already dependent on the *sharedtemplates* package.

## Viewing conflict information

The Advanced Information pane tells you whether you have a resource or a dependency conflict.

To view conflict information:

1   Select a node with an exclamation point icon displayed next to the name from the Project Explorer view. 

2   Click **View** > **Advanced information**.

A new information window will be displayed at the bottom of the Peregrine Studio interface. This window displays information on the conflict.

For additional information about a particular project component and its possible settings, refer to the Studio Introduction and the Studio online help.

# Deploying tailoring changes

After you build your Peregrine Studio project file, you will need to deploy your new files to the application server running AssetCenter Web. The following sections describe how to deploy your tailoring changes to your test and production environments.

# Deploying to Windows platforms

You can deploy your tailoring changes directly over your Windows network.

To deploy tailoring changes on Windows platforms:

**1**  Stop the application server on the target machine.

**2**  Copy the files from the Peregrine Studio deployment directory to the application server's deployment directory on the target server.

**3**  Restart the application server on the target machine.

# Deploying to UNIX platforms

You can deploy your tailoring changes to UNIX platforms using whatever cross-platform methods you have available such as FTP, shared drives, or e-mail.

# 4 CHAPTER

# Peregrine Studio Components

This chapter contains a list and description of all of the components you can add to a Project in Studio. The information follows the menu structure of these components and subcomponents as you see them in Studio.

The menus that you see when you open the AssetCenter Web package in Peregrine Studio may vary slightly from the menu options documented here. Menu options change depending on the components you created. For example, you must have the folder called `shared templates` in your package to enable DocExplorer Reference as a menu option.

# Adding components

To add components to your Project, right-click on the node to which you want to add a component. A menu of options opens.
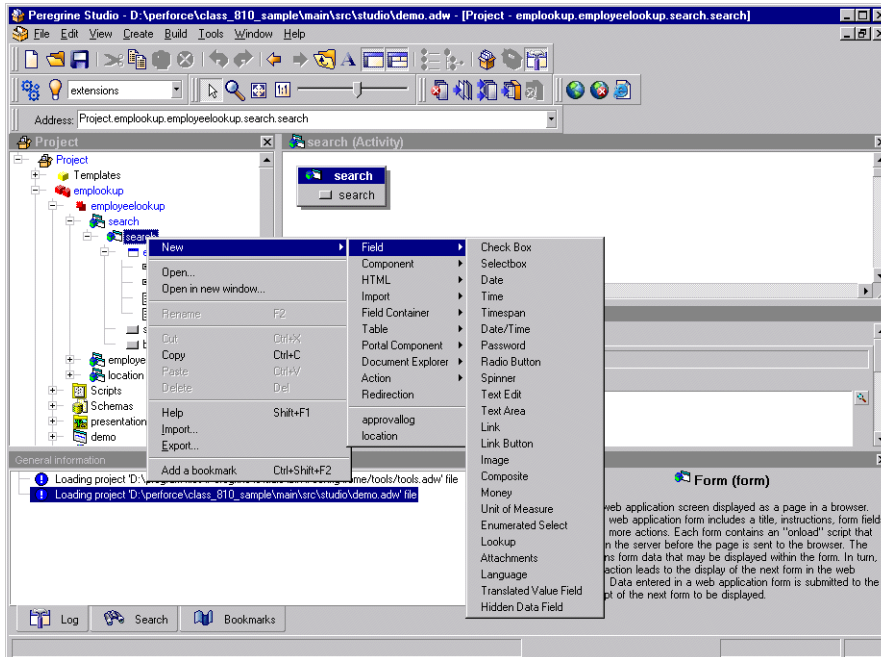
# Project > New >

| Component | Description |
|---|---|
| **Directory Object** | Not supported. |

## Group of Modules > New >

When you create a Group of Modules component, it includes a folder called Explorers that contains default content for DocExplorer personalization screens. It also includes a Group of Roles, which is a list of roles that control access rights. From the Group of Modules, you can create the following.

| Component | Description |
|---|---|
| **Module** | AssetCenter Web contains modules. The role that a user takes in performing tasks often determines the modules. For example, you can design one module for employees who open requests for service. Another module can be for managers approving requests. Modules typically have specific access role restrictions so that only those users who need to perform the module's task have permission to do so. |
| **Peregrine Portal Activity** | Each module contains one or more activities that define the steps users can take to complete the module's task. For example, a Request module can have activities for browsing catalogs, reviewing a shopping cart, and filling out a request form. Each activity typically displays in AssetCenter Web on a sidebar menu at the left of a form. Activities typically have specific access role restrictions so that only those users who need to perform the activity's task have permission to do so. |
| Form | Defines a AssetCenter Web screen displayed as a page in a browser. The typical form includes a title, instructions, form fields, and one or more actions. Each form contains an onload script that executes on the server side before the page goes to the browser. The script obtains form data to display within the form. In turn, each form action leads to the display of the next form in AssetCenter Web Data entered in a form is submitted to the onload script of the next form to be displayed. |

| Component | Description |
|---|---|
| Field > | |
| Check Box | Allows you to toggle a value on or off. |
| Selectbox | Allows you to select a value from a list displayed in a Combo Box field. |
| Date | Allows you to view or enter a date. You can enable or disable (the default is *enabled*) an optional calendar form component (Date Picker) for users to enter dates. To define a start year for the drop-down list or for the calendar form component, add a + or - sign in front of a number. This number specifies the number of years before or after the current year you want the start and end years to be. |



| | | |
|---|---|---|
| Time | Allows you to view or set a time value. |
| Timespan | Allows you to view or edit a timespan value. |
| Date/Time | Allows you to view or set a date and time value. There is an optional calendar form component (Date Picker) that you can enable or disable in Studio (the default is *enabled*). See Date component. |
| Password | Allows you to enter a password. |
| Radio Button | Allows you to select one of several choices using radio buttons. |
| Spinner | Allows you to enter a numerical value. The control allows you to type the number in directly. It also allows you to select a number by clicking on the spinner buttons that increase and decrease the value. |

| Component | | Description |
|---|---|---|
| Field> (continued) | Text Edit | Allows you to display or edit a value in a plain text field. |
| | Text Area | Allows you to enter text into a multiline edit field. |
| | Link | Displays a hyperlink that the user can click to navigate to another Web location or site. |
| | Link Button | Displays an image button created out of background images and text. |
| | Image | Displays an image. |
| | Composite | Allows the creation of a field that consists of two or more fields placed next to each other. |
| | Money | Allows you to view or edit a monetary value. |
| | Unit of Measure | Allows you to view or edit a value that is a unit of measure. |
| | Enumerated Select | Allows you to select a value from a list displayed in a Combo Box field. |
| | Lookup | Allows you to enter a value by performing a lookup operation. The lookup is done in a separate pop-up window. |
| | Attachments | Allows you to view and add attachments to a document. |
| | Language | Allows you to select a preferred language from a list of supported languages. |
| | Translated Value Field | Displays text returned by a translation script function. |
| | Hidden Data Field | Stores data obtained by the form's onload script without displaying it to the user. The data is included when the form is submitted and the user navigates to another form. |
| Component > | | |
| | Treelink | Displays a treelink component. |
| | Directory | Displays a directory component based on data received from a document query to an adapter. |
| | List Builder | Allows you to configure a list by selectively adding items to a listbox from a list of choices. |
| | Workflow | Displays a workflow diagram. |
| | OAA Workflow | Displays a workflow diagram. |
| | Stack | Displays a stack component |
| | SVG | Displays an SVG component. |
| | Web Application Menu | Displays a menu of all registered modules or packages in the current Web application. |

| Component | Description |
|---|---|
| HTML > | |

| | | |
|---|---|---|
| | Blank Line | Adds a blank vertical line to the form. |
| | Free-form HTML | Allows you to insert arbitrary HTML into a form as well as insert client-side JavaScript into a Web page. |
| | | **Note:** Peregrine Systems recommends that you move large amounts of client-side JavaScript to a presentation file that the page can then import. |

| Import > | |
|---|---|

| | | |
|---|---|---|
| | Static Import | Imports the text content of a file for inclusion in a Web page. You can import files that define static HTML, JSP code or client-side JavaScript functions. |
| | External HTML Plug-in | Includes dynamic content into the form. At run time, the URL that the plug-in references is accessed by the server, returning contents which then insert into the form. |

| Field Container > | |
|---|---|

| | | |
|---|---|---|
| | Field Section | Aligns fields into a column. Displays all field labels in an aligned column to the left of the fields. You can divide fields into groups by inserting Headers and Instructions as needed. To display more than one column of fields, create a Form Columns container and place a Field Section container in each column. |
| | Multicolumn Field Table | Organizes input fields into a multi-column table. Peregrine Systems recommends that you use Form Columns and Field Sections instead. |
| | Entry Table with Field Instructions | Organizes input fields into a multicolumn table with fields on the left and instructions for each field on the right. |
| | Component Template | Allows you to define a group of form elements that can be reused in more than one form. Changes to the template are propagated to all places where the template is used. |
| | Tabs | Adds tabs to a form, each pointing to different content defined by a separate form. |
| | Dynamic Menu | Displays a multicolumn menu based on data received from a document query to an adapter. |
| | Form Columns | Divides the form into columns, allowing content to be grouped and organized. |

| Component | Description |
|---|---|
| **Table >** | |
| Simple Table | Displays a list of documents resulting from a query. |
| Document Table | Displays a list of documents resulting from a query. |
| Tree | Displays a list of documents resulting from a query as a tree. |
| **Portal Component >** | |
| Component Editor | Generates fields elements used to configure a specific portal component. Not intended for general AssetCenter Web use. |
| Portal Header | Generates the portal page header. Not intended for general AssetCenter Web use. |
| Corkboard Header | Generates header information needed by any page that includes a corkboard. Not intended for general AssetCenter Web use. |
| Corkboard Configurator | Generates a list of choices containing all known portal components. The list can be used to configure the components to display in a specific corkboard container. |
| Corkboard | Displays the portal components chosen and configured by each user. |
| Custom Configurative | Allows users to define their own custom component configurators. |
| **Document Explorer >** | |
| Search | Displays a personalized list of fields used to perform document searches. |
| List | Displays a personalized table with the list of documents found as a result of a search. |
| Detail | Displays a personalized view of a document detail. |

| Component | Description | |
|---|---|---|
| Action > | | |
| | Action | Displays a button for an action. The button can be a link to another page or a submit action. |
| | Default Action | Defines a form's submit action when no actual buttons are displayed. |
| | Back | Navigates to the previous page of the Web application. |
| | Home | Navigates to the home page of the Web application. |
| | Print | Prints the current AssetCenter Web form. |
| | Close | Use to close pop-up windows. |
| | Redirection | Redirects a page to a link depending on the result of the onload script matched against the condition. |
| | Transition | Contains an onload script and redirect arguments. After the script runs, execution redirects according to the condition that the script returns. The options available from the Transition menu are the same as the Form menu, except there is no Action option. |
| **Group of Strings** | List of multilingual strings. | |
| | Multilingual String | The name of the StringResource is the ID of the string. |
| **Group of Scripts** | Server-side ECMAScripts. | |
| **Script** | Server-side ECMAScript (JavaScript) file containing functions that the Web application forms uses. | |
| | Header | Initial comments and imports required in this script file. |
| | Function | Script function defining application logic executed on the server. Make sure that all functions that have public access accept a Message object as the single input parameter and return a Message object as a response. For example: |
| | | ```
function xyz( msg )
{var msgResponse=new Message(); ...
return msgResponse;}
``` |
| | | A script requires this public access interface if you use it as an onload script for a form or if you call it directly using an Archway HTTP message. |
| **Group of Scripts** | Server-side ECMAScripts. | |

| Component | Description | |
|---|---|---|
| **Group of Triggers** | A collection of triggers. AssetCenter Web does not use this container. | |
| **Trigger** | Individual trigger for a document. AssetCenter Web does not use this component. | |
| | Message action | Message action that the trigger executes. |
| | Workflow action | Workflow action that the trigger executes. |
| | Script action | Script action that the trigger executes. |
| | Bizdoc Java action | Java action that the trigger executes inside Bizdoc. |
| **Group of Triggers** | Collection of triggers. AssetCenter Web does not use this component. | |
| | Trigger | Individual trigger for a document. |
| | Group of Triggers | Collection of triggers. |
| **Group of Schemas** | Database schemas describing documents accessible by AssetCenter Web Schemas define the field table mapping between AssetCenter Web and the back-end database. | |
| **Raw Schema** | Description of a document's mapping on a real database. | |
| **Schema** | Not supported. | |
| **Group of Images** | Folder containing the image files used in your Web application. | |
| **Image** | The image loads into the ImageData property as binary data. The system uses the file name property only the first time to load the image. | |
| **Group of Images** | Folder containing image files. | |
| | Image | The image loads into the ImageData property as binary data. The system uses the file name property only the first time to load the image. |
| | Group of Images | Folder containing image files. |
| **Group of Presentation Files** | Folder containing files copied directly to the presentation folder for use within the AssetCenter Web Web server. | |
| **Text** | Any generic file in the Presentation folder that the Web server needs; for example, client-side JavaScript, static JSP files. | |
| **Binary** | Binary file outputted in the presentation folder. Accessed by the Web server and used by the browser. | |

| Component | Description | | |
|---|---|---|---|
| **Group** | Folder containing files copied directly to the presentation folder for use within the AssetCenter Web Web server. | | |
| | Text Presentation File | Any generic file in the Presentation folder that the Web server needs; for example, client-side JavaScript, static JSP files. | |
| | Binary Presentation File | Binary file outputted in the presentation folder. Accessed by the Web server and used by the browser. | |
| | Group of Presentation Files | Folder containing files copied directly to the presentation folder for use within the AssetCenter Web Web server. | |
| **Group of default DocExplorer screens** | Folder containing default content for DocExplorer Personalization screens. | | |
| **Reference of a file** | File object. | | |
| **Directory Object** | Not supported. | | |
| **Group of Portal Components** | Components that appear in the portal components menu and that the user can add to the home page. | | |
| **Portal Component** | | | |
| | (contents) | The content of the portal component that is displayed. | |
| | (configure) | Allows configuration of a portal component. | |
| **Group of files** | A temporary container of miscellaneous files that a Web application uses. For example, string files and `scriptpoller.ini` files are stored here. | | |
| **String file** | Temporary representation of a string file. | | |
| **Ini file** | Temporary representation of a `scriptpoller.ini` file. | | |
| **Group of Strings** | List of multilingual strings. | | |
| Multilingual String | The name of the StringResource is the ID of the string. | | |
| **Group of Roles** | Not supported. | | |

### Group of Style Sheets > New >

| Component | Description |
| --- | --- |
| Style Sheet | Not supported. |

### Group of Roles

| Component | Description |
| --- | --- |
| Group of Roles | Not supported. |

### Group of Files > New >

| Component | Description |
| --- | --- |
| String file | Temporary representation of a string file. |
| Ini file | Temporary representation of a `scriptpoller.ini` file. |

### Group of Strings > New >

| Component | Description |
| --- | --- |
| Multilingual string | The name of the StringResource is the ID of the string. |

### Entities (collection of business objects) > New >

| Component | Description |
| --- | --- |
| Entity | AssetCenter Web does not use this component. |

### Interfaces > New >

| Component | Description |
| --- | --- |
| Interface | Not supported. |

## System enumerations > New >

| Component | Description |
|---|---|
| **System enumeration** | Describes a system enumeration, used to define data attributes where the value stored is not the value displayed to the user. This allows multilingual databases. |
| Value | Define one value for a system enumeration. |

## Templates > New

| Component | Description |
|---|---|
| Schema | Not supported. |
| Field Container Component Template | |
| Directory Object | Not supported. |
| Group of Methods | Includes a list of methods. You can create new methods under this element. |
| Method—Java Method | The name is not significant. You can add a comment to the method |
| Method—Java Method | The name is not significant. You can add a comment to the method. |
| Message action | AssetCenter Web does not use this component. |
| Workflow action | AssetCenter Web does not use this component. |
| Bizdoc Java action | AssetCenter Web does not use this component. |
| Script action | AssetCenter Web does not use this component. |
| Trigger | AssetCenter Web does not use this component. |
| Group of Images | Allows you to create a group of images. |
| Attribute | AssetCenter Web does not use this component. |
| Reference | AssetCenter Web does not use this component. |
| Contain | Contains an object as an embedded member. |
| Computed | Computed property. |
| Structure | AssetCenter Web does not use this component. |
| Collection | AssetCenter Web does not use this component. |
| Methods | AssetCenter Web does not use this component. |
| Entity | AssetCenter Web does not use this component. |

**CHAPTER**

**5** Scripting

This chapter provides an overview of how to use scripts. You must be familiar with JavaScript and ECMAScript and have access to the JavaDocs provided with your AssetCenter Web Tailoring Kit installation CD.

This chapter covers the following topics:

- Overview of scripts on page 65
- Testing scripts on page 74
- Common message operations on page 79
- Using ECMAScript in an object-oriented manner on page 82
- Sample scripts on page 87
- References on page 95

## Overview of scripts

AssetCenter Web uses scripts to query back-end databases and to format the results into XML documents based on schemas. Generally, you only need to create new scripts if you create new forms. Most customizations do not require changes to the script, but rather to the schema that the script uses to display data. Before creating or making changes to a script, you must create or activate a writable package extension in which to save your changes.

**Tip:** You can use the existing scripts as templates for your custom scripts. Try and find a script that has similar functionality to what you want, and then copy and paste the script into your Peregrine Studio project.

# Script types

AssetCenter Web uses two types of scripting to transfer and format data between your back-end databases and Web application forms.

| Scripting type | Description |
| --- | --- |
| Server-side | Server-side scripts run from a Web server. Server-side scripts have access to both user-submitted form data and any data that a back-end system generates. You can return the output of server-side scripts to both a back-end system and the remote browser. All AssetCenter Web server-side scripts use ECMAScript. An example of server-side scripting is querying a back-end system for the list of assets assigned to a particular user. |
| Client-side | Client-side scripting runs from a JavaScript-capable browser. Client-side scripts have access to user data before submitting to a Web server and any back-end data that uploads with the current Web page. Only the client browser uses the output of client-side scripts. All AssetCenter Web client-side scripts are in JavaScript. An example of using client-side scripting is updating the total number of assets assigned to a user when an item is added. |

# Where to store scripts

The following table describes how you can include both types of scripting into your projects.

| Script type | Language | Where created and stored |
| --- | --- | --- |
| Server-side | ECMAScript | You can author server-side scripts in Peregrine Studio. Each script then becomes an object available for use throughout the project. |
| | | It is possible to create scripts outside of Peregrine Studio that can then be used in schema extensions, or as a AssetCenter Web script interface. |
| | | You can also create scripts as script extensions to modify the behavior of existing scripts (see the AssetCenter Web Admininstration Guide). |
| Client-side | JavaScript | You can author client-side scripts outside of Peregrine Studio and add them to your project. You can also include client-side scripts as part of the HTML code stored with a form. |

Peregrine Studio stores all server-side ECMAScripts as part of your project file. At build time, Peregrine Studio copies the scripts into your application server's deployment folder and creates all necessary AssetCenter Web forms. At run

time, the deployment application server executes the forms along with any server-side scripts that the forms call and sends the output to the client browser. The client browser executes any client-side JavaScript present in the rendered HTML page.

# How to use scripts

The Archway servlet supports several different methods to invoke and utilize scripts within AssetCenter Web. The following sections describe the different ways to use ECMAScript and JavaScript within AssetCenter Web.

## Forms—server side

All AssetCenter Web forms support invoking onload server-side scripts. Typically, the onload script creates an XML message to gather and format information from a back-end database. The script message can contain queries or updates to the database or to XML documents built from a schema. The scripts typically use a schema, one or more input parameters, and a back-end database query to create an XML document.

Many server onload scripts use one of the following API calls.

| This API | Sends the following |
|---|---|
| sendDocQuery | SQL or XML document query to the back-end database. Archway queries the record using the table and field information that the schema supplies. The database then returns the results of the query as an XML document formatted as defined in the schema. |
| sendDocInsert | XML document to the back-end database that describes a new record. Archway creates the new record in the database using the table and field information that the schema supplies. |
| sendDocUpdate | XML document to the back-end database that describes an update to an existing database record. Archway updates the record using the table and field information that the schema supplies. |
| sendDocDelete | XML document to the back-end database that describes a record in the database to be deleted. Archway deletes the record using the table and field information that the schema supplies. |

AssetCenter Web typically uses the following ECMAScript syntax to refer to schemas. For additional methods of formatting these messages, refer to the JavaDocs API documentation provided with your AssetCenter Web installation.

```
archway.sendDocQuery( "adapter name", "schema name", input msg);
archway.sendDocInsert( "adapter name", message object);
archway.sendDocUpdate( "adapter name", message object);
archway.sendDocDelete( "adapter name", message object);
```

| Parameter | Value |
|-----------|-------|
| adapter name | Enter the name for the back-end database adapter. This adapter uses the ODBC connection that you defined in the `archway.ini` file. For most applications, the adapter is a two-letter name. |
| schema name | Enter the name defined in the `<document name="schema name">` element of the schema file. |
| input msg | Enter the variable name of a message that OAA uses to store input parameters for the ECMAScript function. The default input message is the msg object defined in all onload functions. The input message is the XML message containing the HTML page parameters. |
| message object | Enter a variable name of a message object containing a schema name and any input parameters. |

## Client side

The browser handles all client-side scripting when a user views a Web application.

**Note:** Peregrine Systems does not provide customer support for custom client-side scripts.

# Editing an existing script

You can edit the ECMAScript in your project directly from the Peregrine Studio interface.

**Important:** You may lose changes that you make to existing scripts when you next upgrade. Use script extensions whenever possible to avoid this problem.

To edit an existing script:

**1**   Select the form in the Project Explorer.

**2**   Click the **Script** tab in the Properties window.

**3** In the Server Onload Script field, click the magnifying glass button to view the script in the Peregrine Studio text editor.



**4** Make any changes to the script in the text editor.

**5** Save your project.

**6** Build your project file.

**7** Restart your application server or set the File Change Monitor option from the Administration page.

The script update loads into AssetCenter Web.

## Adding a custom script

You can add custom scripts to your Peregrine Studio project for use by forms, schemas, and form components.

To add a custom script:

**1** Determine what kind of script you want to create.

You can create the following script types.

| Script type | Description |
| --- | --- |
| Form onload script | Run these scripts to gather data for non-DocExplorer forms. Peregrine Studio stores form onload scripts below the first Group of Scripts node. These typically are **Scripts** or **ServerScripts**. |
| Preexplorer | Run these scripts to manipulate the XML document that renders in the AssetCenter Web interface. Peregrine Studio stores preexplorer scripts below the Preexplorer Group of Scripts node. |
| Preload | Run these scripts to gather data for DocExplorer forms. Peregrine Studio stores preload scripts below the Preload Group of Scripts node. |
| Schema | Run these scripts before or after an adapter connects with the back-end database. Peregrine Studio stores schema scripts below the Schema Group of Scripts node. |

**2** Right-click the appropriate Group of Scripts node, point to **New**, and then click **Script**.

Peregrine Studio creates a new script node below the Group of Scripts.

**3** Type the name of your script and press **ENTER**.

**4** Right-click the new Script node, point to **New**, and then click **Header**.

Peregrine Studio creates a new Header node below the Script node.

**5** Using the text editor window, type the header information for your new script.

**6** Right-click the new Script node, point to **New**, and then click **Function**.

Peregrine Studio creates a new Function node below the Script node.

**7** Using the text editor window, type the function information for your new script.

**8** Save your project.

**9** Build your project file.

**10** Restart your application server or set the File Change Monitor option from the Administration page.

The new script loads into AssetCenter Web.

## Date values in scripts

In server-side scripts, all dates in the XML messages must use the internal format `YYYY-MM-DD`. The format for timestamps is `YYYY-MM-DDTHH:mm:SS.SSSZ`, where

| Symbol | Value |
| --- | --- |
| T | Is the letter T. |
| HH | Specifies the hours in 24 hour format. |
| mm | Specifies the minutes. |
| SS.SSS | Specifies the number of seconds and milliseconds. |
| and Z | Indicates the time zone. |

The following is an example of the format showing GMT:

`2004-02-19T16:58:23+00:00`

The following is an example of the format using the name of the time zone:

`2004-03-29T07:00:00America/Los_Angeles`

**Note:** The names of time zones are in the `Java.util.TimeZone class`.

Timestamps are usually in the GMT time zone. However, dates on server machines do not need to be in this format. The user interface automatically converts dates to and from the local date format automatically whenever the system uses date widgets or date columns.

When you set the date manually in an XML message, you may need to manipulate its format. Use the `DataFormatter.getArchwayDate` and `DataFormatter.getArchwayDateTime` functions.

See Working with dates in scripts on page 94 for examples of date manipulation.

# Testing scripts

AssetCenter Web offers two means of testing your ECMAScript:

■ Rhino JavaScript Debugger
■ URL Queries

## Rhino JavaScript debugger

You can now configure AssetCenter Web to send script output to the Rhino JavaScript Debugger Mozilla provides. The Rhino JavaScript Debugger provides a graphical user interface for debugging interpreted ECMAScript. When you enable the Rhino JavaScript Debugger, you can log on to the AssetCenter Web server and see debugging information about your installation as you browse through the AssetCenter Web interface.

**Important:** To use the Rhino JavaScript debugger and configure your application server to run as a service, you must set up your service to interact with the desktop.

To enable the Rhino JavaScript debugger:

**1**    Log on to the AssetCenter Web administration page.

**2**    Click **Settings** > **Logging** tab.

**3**    For the Debug script option, select **Yes**.

**4**    Click **Save** to store your changes.

**5**    Log on to the AssetCenter Webserver.

**6**   Browse to the AssetCenter Web deployment directory. By default, the directory path is:

```
<application server>\<context>\WEB-INF
```

| Parameter | Value |
|---|---|
| <application server> | Enter the installation path to your application server. For example, `C:\Program Files\Peregrine\Common\Tomcat4` |
| <context> | Enter the path where you deployed the AssetCenter Web files. For example, `webapps\oaa`. |

**7**   Using a text editor, open the file `local.xml`.

**8**   Add the following line anywhere between the `<settings>` elements:

```
<showDebugger>true</showDebugger>
```

**9**   Save the file.

**10**  Copy the `rhinodebugger.jar` file from the AssetCenter Web Tailoring Kit Installation CD to the following path on your test server:

```
<application server>\<context>\WEB-INF\lib
```

| Parameter | Value |
|---|---|
| <application server> | Enter the installation path to your application server. For example, `C:\Program Files\Peregrine\Common\Tomcat4` |
| <context> | Enter the path where you deployed AssetCenter Web the files. For example, `webapps\oaa`. |

**11**  Restart your application server.

The Rhino JavaScript Debugger opens the next time you start your application server on this system.



For more information about the Rhino JavaScript Debugger, go to the Mozilla Web site: *http://www.mozilla.org/rhino/debugger.html*.

# URL queries

You can test the output that your server-side onload scripts and schemas generates by using URL queries to the Archway servlet.

Archway invokes the server script or schema as an administrative user and returns the output as an XML document. Your browser must have an XML renderer to display the output of the XML message.

Using URL queries can be useful for debugging your tailoring changes and for using the Archway servlet without having to log on to AssetCenter Web.

**Note:** Your browser may prompt you to save the XML output of the URL query to an external file.

## URL script queries

Archway URL script queries use the following format:

```
http://server name/oaa/servlet/archway?script name.function name
```

| Parameter | Value |
|---|---|
| server name | Enter the name of the Java-enabled Web server. If you are testing the script from the computer running the Web server, you can use the variable `localhost` as the server name. |
| oaa/servlet | This mapping assumes that you are using the default URL mapping that AssetCenter Web automatically defines for the Archway servlet. If you defined another URL mapping, replace the servlet mapping with the appropriate mapping name. |
| script name | Enter the name of the script you want to run. |
| function name | Enter the name of the function that the script uses. |

## URL schema queries

Archway URL schema queries use the following format:

```
http://server name/oaa/servlet/archway?adapter name.Querydoc
&_document=schema name
```

| Parameter | Value |
|---|---|
| oaa/servlet | This mapping assumes that you are using the default URL mapping that AssetCenter Web automatically defines for the Archway servlet. If you defined another URL mapping, replace the servlet mapping with the appropriate mapping name. |
| adapter name | Enter the name for the back-end database adapter the schema uses. The adapter uses the ODBC connection that you defined in the Admin module Settings page. |
| schema name | Enter the name defined in the `<document name="schema name">` element of the schema file. |

Make sure that your script output resembles the following example.



## URL SQL queries

Archway URL SQL queries use the following format:

```
http://server name/oaa/servlet/archway?adapter name.query&_table=
table name&field name=value&_[optional]=value
```

| Parameter | Value |
|---|---|
| oaa/servlet | This mapping assumes that you are using the default URL mapping that AssetCenter Web automatically defines for the Archway servlet. If you defined another URL mapping, replace the servlet mapping with the appropriate mapping name. |
| adapter name | Enter the name for the back-end database adapter the schema uses. This adapter uses the ODBC connection that you defined in the Admin module Settings page. |
| table name | Enter the SQL name of the table you want to query from the back-end database. |
| field name | Enter the SQL name of the field you want to query from the back-end database. |

| Parameter | Value |
|---|---|
| value | Enter the value you want the field or optional parameter to have. |
| _[optional] | Enter any optional parameters to limit your query. Examples include: |
| | `_return` Returns the values only of the fields you list. |
| | `_count` Specifies how many records you want returned with the query. |

# Common message operations

The following section describes some common methods that server-side scripts use to create XML messages. Refer to the JavaDocs, especially `com.peregrine.oaa.core.Message`, for more information and examples about XML message operations.

- Create a new generic message. You can use `archway.sendDocQuery()` to create a generic XML message. You can then add elements to the XML message with other methods.

  ```
  var msgQuery = new Message();
  ```

  This creates an empty XML message called `msgQuery`.

- Create a new message with a specific XML element tag. You can then use `archway.sendDocUpdate()` and `archway.sendDocInsert()` to send the XML message to the back-end database.

  ```
  var msgRequest = new Message( "Request" );
  ```

  This creates an XML message called `msgRequest` with the element `<Request>`.

- Add a value to a particular XML element. You can use this method to add a new element and value to the XML message.

  ```
  msgQuery.add( "LastName", "Jones" );
  ```

  This adds the value `Jones` to the element `<LastName>`. The output is in standard XML format: `<LastName>Jones</LastName>`.

- Set the value of an XML element. You can use this method to overwrite the value of an existing element in the XML message.

  ```
  msgQuery.set( "LastName", "Jones" );
  ```

  This sets the value of the element `<LastName>` to `Jones`. The output is in standard XML format: `<LastName>Jones</LastName>`.

- Get the value of an element in the XML message. This method returns an empty string "" if there is no value for the element.

  ```
  var strName = msg.get( "LastName" );
  ```

  This sets the variable `strName` to the value of the element `<LastName>` in the XML message. For example, if the XML message contains the element `<LastName>Jones</LastName>` then `strName` uses the value `Jones`.

- Get all of the elements and values (the subdocument) listed under a particular element in the XML message. This method returns an empty string "" if there is no subdocument for the element.

  ```
  var msgRequest = msg.getMessage( "Request" );
  ```

  This sets the variable `msgRequest` to the subdocument listed under the element `<Request>` in the XML message. For example, suppose the XML message contains the following elements:

  ```
  <Request>
      <ID>1234</ID>
      <LastName>Jones</LastName>
      <Status>Approval</Status>
  </Request>
  ```

  Then, the `msgRequest` uses the subdocument:
  `<ID>1234</ID><LastName>Jones</LastName><Status>Approval</Status>`.

- Set a script condition when the script returns a particular XML message result. You can use conditions to control when to activate Peregrine Studio form components such as redirections and access fields.

- For example, the following script checks the value of the Name element:

```
if ( msg.get( "Name" ) == "" )
{
msgResponse.setCondition( "error" );
    return msgResponse;
}
```

This function searches the XML message for the value of the <Name> element. If the value is empty, then the script sets the error condition.

- Return the number of instances that a particular element appears in an XML message. You can use this method to set a condition for further actions. For example, the following script uses the getList method to set a condition.

```
var list = msgResponse.getList( "Location" );
if ( list.getLength() == 0 )
msg.setCondition( "noresults" )
var i = 0;
for ( i = 0;i < list.getLength(); i++ )
{
// add function to process records in the list ...
}
```

This sets the variable list to the number of <Location> elements in the XML message. If the number of instances is zero, then the script sets the noresults condition, otherwise the script performs some other action.

- Log the contents of a particular XML message. This method saves the output of the script to the file archway.log. This is another way of debugging your ECMAScript in addition to the .

Using a logging domain, you can group log messages from a particular component or script.

```
env.debuglog( "AssetCenter Web",
    "sendDocQuery returned the
message ", msgResponse );
```

Without using a logging domain.

```
env.debuglog( "sendDocQuery returned the message ",
msgResponse );
```

**Important:** You must enable the Debug Logging option from the AssetCenter Web administrative interface (Administration > Settings > Logging tab).

**Tip:** Remove or comment out this method before deploying to your production environment because script logging is CPU-intensive and degrades server performance.

# Using ECMAScript in an object-oriented manner

## ECMAScript implementation in AssetCenter Web

All Scripts defined in Peregrine Studio load as one ECMA script object. The functions defined in the Script are the object's methods, and the variables declared outside a function are the object's attributes. This implementation as an object is what enables you to use the dot syntax to call scripts and functions.

## Name resolution in ECMAScript

Every ECMAScript object has a special property: its *prototype*. A prototype is an ECMA script object in the property name resolution for the object.

Every script is run within a scope that holds a set of objects and variables declared in the same scope.

When you access a property or call a function in a given environment, ECMA script tries to resolve the name in the current scope first (usually the function's context). If it does not find it, it tries in the current object's prototype. If it does not find the property in the prototype, or in the prototype's prototype, the ECMAScript engine searches in the parent scope.

# Using the object prototype for object-oriented programming

The fact that ECMAScript looks for a variable name or a function name in the prototype if it does not find it in the object, gives some ability to define a standard behavior as an object's method, and make this object the prototype for another object that can overwrite the behavior by providing a method with the same name.

The following is an example that you can try with the ECMAScript command line utility.

To use an object prototype:

**1** In the `WEB-INF/lib` folder, type `java -jar js.jar` to start the command line.

```
function vehicle()
{
  function _start ()
  {
    print("starting " + this.getVehicleName())
  }
  this.start = _start;
  this.getVehicleName = new Function("return 'vehicle'; ");
}
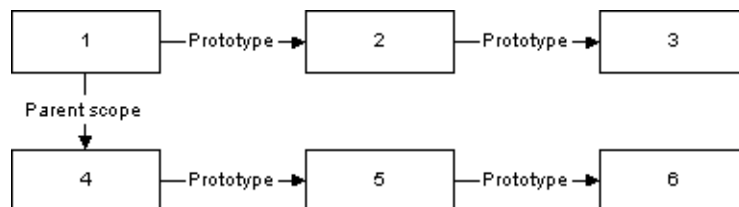
function airplane()
{
  this.getVehicleName = new Function("return 'airplane'; ");
}
airplane.prototype = new vehicle();


function car(make)
{
  this.getVehicleName = new Function("return 'car ' + this.make;");
  this.make = make;
}
car.prototype = new vehicle();
```

**2** Create three objects, one for each class.

```
var myVehicle = new vehicle();
var myPlane = new airplane();
var myHonda = new car("Honda");
```

**3** Try the start method for each of these objects.

```
js> myVehicle.start()
starting vehicle
js> myPlane.start()
starting airplane
js> myHonda.start()
starting car Honda
```

Although the airplane class and the car class do not implement the start method, start is in their prototype. You can also see that since these two classes overwrite the getVehicleName function, the start method calls the method defined in the object. These are standard behaviors in object-oriented languages.

Overwriting a method to extend the parent class method is more complicated in ECMA script.

To overwrite a method to extend the parent class method:

**1** Create a sports car class that derives from the car class, and extend the start method to add a warm-up phase before the car actually starts.

```
function sportscar1(make)
{
  // other way to declare that the prototype for the
  // sportscar object is a car object. Contrary to
  // the other way, where only one vehicle object is the
  // prototype of all the car objects, here there will be
  // one car object per sportscar1 object.
  this.parentCar = new car(make);
  this.__proto__ = this.parentCar;
  // Extend the start function
  function _start()
  {
    print("warming up");
    this.parentCar.start();
  }
  this.start = _start;
  // Change also the vehicle name to reflect that this is
  //a sports car
  this.getVehicleName = new Function("return 'sports car ' +
this.make;");
}
```

**2** Create an object for this class.

```
var myMaserati = new sportscar1("Maserati");
```

**3** Call the start method.

```
js> myMaserati.start();
warming up
starting car Maserati
```

You can see that the new start method is called, that the start method declared in vehicle is called as well. But the new getVehicleName was not called, as the second line that prints shows as starting sports car Maserati. This is because using this.parentcar.start() changes the scope in which the start function is called from the sportscar1 object to the parentcar object (car class), and as a result the getVehicleName is resolved in the scope

of the car object. To change this behavior, the parent function must be called in a specific way, as shown in the following `sportscar2 class`.

```
function sportscar2(make)
{
  this.parentCar = new car(make);
  this.__proto__ = this.parentCar;
  // Extend the start function
  function _start()
  {
    print("warming up");
    this.parentCar.start.apply(this, arguments);
  }
  this.start = _start;
  // Change also the vehicle name to reflect that this is
  //a sports car
  this.getVehicleName = new Function("return 'sports car ' +
this.make;");
}
```

To change the start method:

**1** Create an object for this class.

```
var myFerrari = new sportscar2("Ferrari");
```

**2** Call the start method.

```
js> myFerrari.start();
warming up
starting sports car Ferrari
```

This delivers the expected result. The code is using the apply method of the Function object, passes the object used as `this` first, and the arguments that were passed to the current function (`_start`).

**Note:** The code uses `this.parentCar` instead of `this.__proto__`, which seems valid, but can cause an infinite recursive call if another class deriving from `sportscar2` extends the start method and calls it parent, because `this.__proto__` is evaluated against the derived object, and the start function in `sportscar2` continues to call itself. It is therefore preferable to store the parent object in a variable that the subclasses do not overwrite. Here, with a nomenclature that uses the parent prefix and

the parent class name, the uniqueness is ensured. Try this with a racecar class that derives from `sportscar2` and overwrite the start function by calling the parent.

# How to use object orientation for tailoring

In AssetCenter Web, objects instantiate automatically from the script files when they load in memory. To implement the prototype hierarchy, you must set the `__proto__` attribute in a script file's header.

For example:

```
import requestinterfacebase;
this.__proto__ = requestinterfacebase.valueOf();
```

The previous `valueOf method` returns a pointer to the `requestinterfacebase` object. The line is equivalent to `this.__proto__ = requestinterfacebase;`.

If you need to call a parent method, you can specify it using the dot format. For example:

```
// Submit the request (Call the parent method)
var msgNewRequest = requestinterfacebase.saveRequest.apply
(this, arguments);
```

As long as each object has a unique name, for example the script name, there is no need to store the parent object in a member variable. In that respect, using object orientation in AssetCenter Web is simpler than in the general case.

# Sample scripts

The following sections provide sample server-side ECMAScripts and descriptions that you can use as templates in AssetCenter Web. If you need help with a client-side scripting, see the list of suggested reference materials on .

## General script samples

You can use ECMAScript to serve a number of different functions such as creating an XML document from a schema, running a SQL query, or formatting

the data received from a database query. The following samples show some of the ways to use ECMAScript to gather data.

# Selecting a field from a schema

```
function getCityList ( msg )
{
//Query sample database for the records using the citylist
//schema
var msgQuery=newMessage();
msgQuery.set("_return", "Name");
var msgReturn=archway.sendDocQuery ("xx","citylist", msgQuery);

return msgReturn;
}
```

### Input

A message object, msg. This script does not typically have input from any previous form. If you change this script to be part of a results form, then the input message can contain form fields or values from a prior list form.

### Output

The script produces an XML document built from the schema and adapter specified in the sendDocQuery function. The following XML output is an example of the kind of data using a similar script returns.

```
<recordset _count="-1" _countFound="3" _more="0" _start="0">
   <citylist>
      <Id>1</Id>
      <Name>Burbank</Name>
   </citylist>
   <citylist>
      <Id>2</Id>
      <Name>London</Name>
   </citylist>
   <citylist>
      <Id>3</Id>
      <Name>Santa Clara</Name>
   </citylist>
</recordset>
```

Although the sendDocQuery function specifies only the <Name> element, Archway automatically includes the <ID> element in the XML document produced. This is expected behavior of the Archway servlet.

### Description

This script gathers a list of city names for an employee search form. The sendDocQuery function creates an XML document built from the citylist schema and searches for the value of the <Name> element. You can use parameters like "Name" in your script messages to limit or add to the list of values that your schema query returns.

# Calling other scripts and combining the results

```
function getSearchInfo( msg )
{
//Create empty variable msgResponse
var msgResponse = new Message();

//Call getDepList function and add results to msgResponse.
msgResponse.add( this.getDepList( msg ) );
// Call getCityList function and add results to msgResponse
msgResponse.add( this.getCityList( msg ) );

return msgResponse;
}
```

### Input

A message object, msg. This script does not typically have input from any previous form. If you change this script to be part of a results form, then the input message can contain form fields or values from a prior list form.

### Output

The script produces an XML document built from two other scripts, getDepList and getCityList. Each script adds to the XML document stored in the msgResponse variable by running a sendDocQuery function with a schema. The

following XML output is an example of the kind of data that using a similar script returns.

```xml
<_doc>
<recordset _count="-1" _countFound="19" _more="0" _start="0">
    <departmentlist>
        <Id>1</Id>
        <DepartmentName/>
    </departmentlist>
    <departmentlist>
        <Id>2</Id>
        <DepartmentName>Administration</DepartmentName>
    </departmentlist>
    <departmentlist>
        <Id>3</Id>
        <DepartmentName>Administrative Services</DepartmentName>
    </departmentlist>
    <departmentlist>
        <Id>4</Id>
        <DepartmentName>Burbank Agency</DepartmentName>
    </departmentlist>
...



</recordset>
<recordset _count="-1" _countFound="3" _more="0" _start="0">
    <citylist>
        <Id>1</Id>
        <Name>Burbank</Name>
    </citylist>
    <citylist>
        <Id>2</Id>
        <Name>London</Name>
    </citylist>
    <citylist>
        <Id>3</Id>
        <Name>Santa Clara</Name>
    </citylist>
</recordset>
<_form>e_employeelookup_search_search.jsp</_form>
</_doc>
```

## Description

This script generates the city and department names that a user can select from in an employee search form. The `.add` function appends the output of the `getDepList` and `getCityList` functions to the `msgResponse` variable. The two

script references use the relative naming convention (`this`) to indicate that the functions called are part of the same script as `getSearchInfo`.

# Form script sample

Most ECMAScripts run during a form's onload processing. Typically, form scripts query and format data for display in a Web application form, but you can also use them to update existing database records or insert new ones. The following examples show how to use server onload scripts to search a database for employee information.

# Creating an XML document from a schema

```
function getEmpList( msg )
{
//Add Department subdocument to the input message
var strReturn = msg.get("_return");
if ( strReturn.length > 0 )
   msg.set("_return", strReturn + ";Department");

//In msg, set sort to LastName and then FirstName
msg.add( "_sort", "LastName,FirstName" );

//Query sample database for the records using the
//employeedetail schema and the criteria found in the msg object
var msgReturn = archway.sendDocQuery( "xx", "employeedetail",
msg );
//Test if the number of items returned is zero, if true set
//ListEmpty condition
if ( msgReturn.get("_countFound") == "0" )
   msgReturn.setCondition( "ListEmpty" );

//Return the contents of the msgReturn variable
return msgReturn;
}
```

### Input

A message object, `msg`. This script has an input message from a previous search form. In this case, the input message includes a subdocument, `Department`, in addition to any other input data passed to the script. This subdocument searches the `DepartmentName` field data that the database stores in a separate table. In addition to adding a subdocument, the script sorts the input message

by the `LastName` and `FirstName` elements. The following XML demonstrates the input message of a search on the `CityName` of Burbank (`CityID=1`).

```
<_doc>
<_form>e_employeelookup_employee_emplist.jsp</_form>
<_start>0</_start>
<_return>;employeedetail;CityName;OfficePhone;DepartmentName;
FirstName;LastName;Id;</_return>
<_count>10</_count>
<_ctxobj/>
<_ctxidfld/>
<_ctxidval/>
<CityID>1</CityID>
<search>1</search>
<_blankFields>;FirstName;false;LastName;false;DepartmentID;false
</_blankFields>
<__x>__y</__x>
<_callingform>e_employeelookup_search_search.jsp</_callingform>
<FirstName insertblank="false"/>
<LastName insertblank="false"/>
<DepartmentID insertblank="false"/>
</_doc>
```

## Output

The script produces an XML document built from the schema and adapter specified in the `sendDocQuery` function. The following XML output is an example of the kind of data that using a similar script returns.

```xml
<recordset _count="10" _countFound="2" _more="0" _start="0">
   <employeedetail>
      <Id>10</Id>
      <FirstName/>
      <LastName>Burbank Agency</LastName>
      <OfficePhone>(408) 422-5501</OfficePhone>
      <CityName>Burbank</CityName>
      <DepartmentID>16</DepartmentID>
      <Department>
         <DepartmentName>Sales</DepartmentName>
      </Department>
   </employeedetail>
   <employeedetail>
      <Id>11</Id>
      <FirstName/>
      <LastName>Burbank Unit</LastName>
      <OfficePhone>(650) 572-9000</OfficePhone>
      <CityName>Burbank</CityName>
      <DepartmentID>19</DepartmentID>
      <Department>
         <DepartmentName>Technical Support</DepartmentName>
      </Department>
   </employeedetail>
<_form>e_employeelookup_employee_emplist.jsp</_form>
</recordset>
```

## Description

This script displays the results list that the search form generates. The script uses two functions to change the data in the `msg` input message object. The first function checks the input message to determine the number of elements that the search results return. If there any search results to return, the script adds the `Department` subdocument to the `msg` message object. The second function sorts the input message by `LastName` and then `FirstName`. Using the adapter name and document schema name, this script then runs a `SendDocQuery` function to gather any search results that match those listed in the input message. The script then checks the `<_countfound>` tag that the query generates and determines if the return list is empty. If the list is empty, the script sets the `msgReturn` variable to the `ListEmpty` condition. This condition redirects users to the `listempty` form.

# Working with dates in scripts

The following code samples demonstrate tasks related to date manipulation.

To get the string that corresponds to the current date:

```
// Gets current date
var date = new Date();
// Gets the current date and time string
var strDateTime =
DataFormatter.getArchwayDateTime(date.getTime());
// Get the current date string
var strDate = DataFormatter.getArchwayDate(date.getTime() -
date.getTimezoneOffset()*60000);
```

To get a date value from the internal OAA format:

```
var strDAssignment = msg.get("dAssignment");
var lMsAssignment =
DataFormatter.getDateTimeInMilliseconds(strDAssignment);
```

To get a date and time value from the internal OAA format:

```
var strDtInvent = msg.get("dtInvent");
var lMsInvent     =
DataFormatter.getDateTimeInMilliseconds(strDtInvent);
```

Note that these numeric values are very convenient for comparing dates, performing arithmetic calculations on dates (such as calculating a duration and adding an amount of time to a date), and other tasks. From these numeric values, you can get an ECMAScript Date object.

```
var dateAssignment = new Date(lMsAssignment);
var dateInvent = new Date(lMsInvent);
```

In addition, you can get a Java date object.

```
var jdateAssignment = new
Packages.java.util.Date(lMsAssignment);
var jdateInvent = new Packages.java.util.Date(lMsInvent);
```

To display a date value in a user-friendly format:

```
var strUserDtAssignment = user.getUserFormat(strDAssignment,
"date", null);
var strUserDtInvent = user.getUserFormat(strDtInvent,
"datetime", null);
```

To get the internal OAA format for a date and time:

```
var strOAADtInvent1 =
DataFormatter.getArchwayDateTime(lMsInvent);
var strOAADtInvent2 =
DataFormatter.getArchwayDateTime(dateInvent.getTime());
var strOAADtInvent3 =
DataFormatter.getArchwayDateTime(jdateInvent.getTime());
```

To get the internal OAA format for a date only:

```
var strOAADAssignment1 =
DataFormatter.getArchwayDate(lMsAssignment);
var strOAADAssignment2 =
DataFormatter.getArchwayDate(dateAssignment.getTime());
var strOAADAssignment3 =
DataFormatter.getArchwayDate(jdateAssignment.getTime());
```

# References

This section contains reference material to help you with scripting.

## Sources for client-side JavaScript

- Devguru (JavaScript, VB script, HTML, etc.): *http://www.devguru.com/*
- HTML Writer's Guild: *http://www.hwg.org/*
- JavaScript, The Definitive Guide, David Flanagan, 3rd Edition, O'Reilly Publishing.
- JavaScript articles at IRT.org: *http://www.tech.irt.org/articles/script.htm*
- JavaScript Made Easy*: http://www.easyjavascript.com/*
- JavaScript Source: *http://javascriptsource.com/*
- JavaScript Source master list: *http://javascript.internet.com/master-list/*

- Netscape's Developer Site: *http://developer.netscape.com*

- Netscape's online JavaScript documentation:
  *http://developer.netscape.com/docs/manuals/index.html?content=*
  *javascript.html*

- Web Monkey: *http://www.webmonkey.com/*

- ZDNet JavaScript introduction:
  *http://www.zdnet.com/devhead/filters/0,,2133214,00.html*

# JavaDocs for the main Archway package

For in-depth information about the Archway servlet and all the functions it supports, refer to the JavaDocs that are available on the AssetCenter Web Tailoring Kit installation CD. The JavaDocs are in the `\documentation\javadocs` folder of your AssetCenter Web Tailoring Kit installation CD. To view the docs, launch the `index.html` file from this folder.

# 6 Tailoring Tasks

**CHAPTER**

The following chapter lists all the tailoring tasks you can perform with the AssetCenter Web tailoring kit.

This chapter covers the following topics:

# Tailoring workflow

You can use this flowchart to determine how to tailor AssetCenter Web.

**Sample Tailoring Tasks**

Enable User Self-Registration
Enable Change Password
Enable Automatic Login
Enable Integrated Windows Authenication
Enable/Disable Personalization
Assign Global Capability Words
Set a maximum row count on tables

Change theme
Add/Remove content from portal page
Perform and save document searches
Change time zone

Change the images used in a theme
Change the size or number of frames
Change the layout of frames
Change how form components are rendered (XSL)
Change the style sheet

Add a field on a form
Remove a field from a form
Make a field read-only or required
Change a field's label
Change a form's title or instructions
Set permissions to update, create, delete documents on a form.

Add or hide a field on the Available Fields column
Display or hide a field on a particular Personalization form
Change a field's attribute type (string, boolean, number, etc.)
Call a script in addition to the form onload script

Add custom forms to your project
Add form components to a form without Personalization
Change the schema used by a form component
Change the onload script launched by a form
Create a new schema

```
                                   Start

                                     |
                                     v
         Is there                 Login to admin.jsp,
         an Admin       --Yes-->   change the setting,
         setting?                  and reset the server.
                                     
                         No
                                     |
                                     v
         Is a portal               Enable and
         component      --Yes-->    personalize the
         available?                 portal component
                                     
                         No
                                     |
                                     v
         Are you                   Create a custom
         tailoring a    --Yes-->    theme and change
         theme?                     the images and
                                     XSL files as needed
                         No
                                     |
                                     v
         Is              Is there a            Use
         personalization  personalization  --Yes--> Personalization to
         available?  --Yes--> setting?              tailor the form
                                     
         No                   No
                                     |
                                     v
                          Are you               Create a schema
                          adding a field  --Yes-->  extension and then use
                          or script?              Personalization to
                                                  tailor the form
                         No
                                     |
                                     v
                          Use Peregrine
                          Studio to tailor the
                          form
                                     |
                                     v
                                  Finish
```

# List of tailoring tasks

The following sections list the tailoring tasks you can perform with the AssetCenter Web Tailoring Kit and Peregrine Studio.

## Forms and form components

You can tailor forms and form components in the following ways:

## Scripting

You can use the following scripting methods for tailoring:

## Schemas

You can tailor schemas in the following ways:

## Translation

You can translate your tailored forms in the follow ways.

- Editing existing translation strings files on page 141
- Adding new translation strings files on page 144

# Tailoring forms and components

Each page displayed in AssetCenter Web consists of a form and several form components. Each form also has the following supporting elements:

- An onload script that gathers the data that the form displays or processes information from the previous form.
- A schema, which maps to fields in the database and determines what information to display.

For a complete list of each component available in Studio, see Peregrine Studio Components.

You can change a form's title, instructions, onload script, and component labels. You can also hide a form component and make a form read-only.

To tailor AssetCenter Web forms

**Step 1** Open the project file you want to tailor in Peregrine Studio.

**Step 2** Select or create a package extension in which to save your changes.

**Step 3** Open your browser and log in to AssetCenter Web.

**Step 4** Navigate to the form you want to tailor by doing one of the following:

- Click the Studio address in the Form Information banner. Peregrine Studio will appear as the active window and display the current form's properties page.
- In Peregrine Studio, locate the form in the Project Explorer.

**Step 5** Modify the AssetCenter Web form in Peregrine Studio.

**Step 6** Save the project file.

**Step 7** Rebuild the project file.

**Tip:** If you have only made changes to one or more forms in an activity or module, use the Differential Build option to build just the components that have changed. This option will reduce the time needed to build your Peregrine Studio project. 🚪

**Step 8** Restart your application server to clear the cache.

**Step 9** Refresh the browser to reload the form you modified.

**Step 10** Review your changes and test the added functionality.

**Tip:** If you want to test new access right settings for your components, log on to AssetCenter Web with several different users with different access rights.

# Changing a form's title

Each form displays a title at the top of the navigation menu. If you want to change or remove the title displayed for a particular form, set the following form properties.

To change a form title

**1** Open the form's properties in Peregrine Studio.

**2** In the **Title (en)** field, enter the new form title.

**3** Click the check mark button at the right of the field to accept the new title. ☑

**4** Save and build your project file.
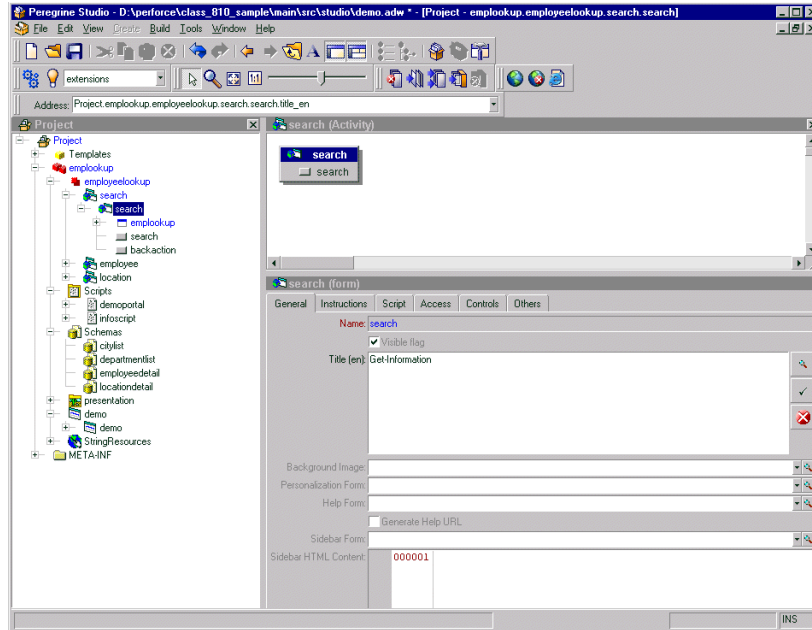


# Changing a form's instructions

Most forms display a set of instructions at the top of the frame. You can change the instructions to match any changes you make to the form's interface.

To change form instructions:

**1** Select the form in the Project Explorer.

**2** Select the Instructions tab in the Properties window.

**3** In the Instructions (en) field, enter the new form instructions.

**4** Click the check mark button at the right of the field to accept the new form instructions. ✓

**5** Save and build your project file.
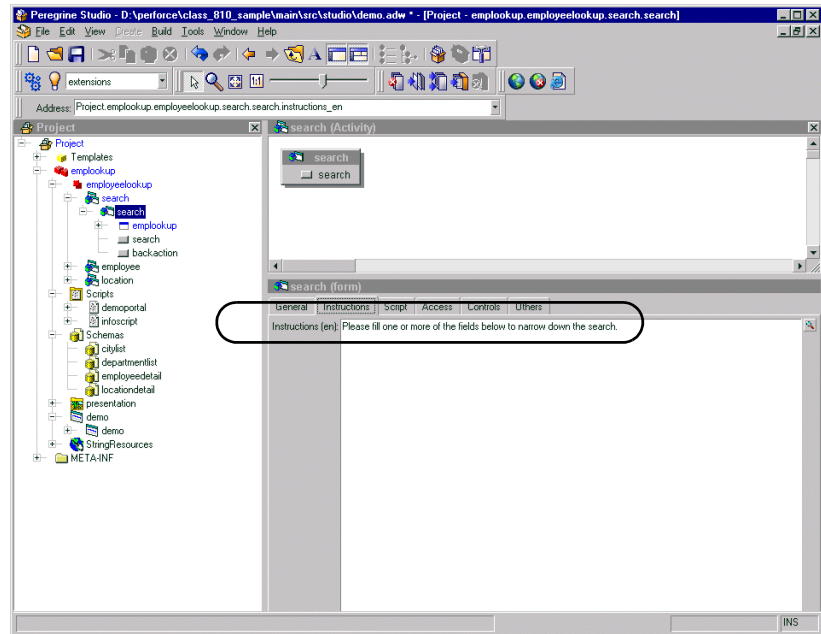


# Changing a form's onload script

A form's onload script gathers all the data that the form displays, or processes information from the previous form. Many onload scripts also invoke schemas to present back-end database information in a format that is easier to map to particular form fields or form components.

To change the onload script that a form invokes:

**1** Select the form in Studio.

**2** Click the Script tab in the Properties window.

**3** In the Server Onload Script field, enter or select the script you want to invoke when this form is loaded. You can use the drop-down list to select any of the scripts saved in your project file.

**4** Save and build your project file.

**5** Restart your application server.

# Changing a form component's label

Many form components contain a label that is displayed next to or above the form component. Some of the most commonly configured form components are the field form components (check box, select box, edit field, and so forth).

To change a component label (field label):

**1** Select the form in the Project Explorer.

**2** On the General tab, select the **Label (en)** field, enter the new form component label, and press ENTER.

**3** Save your project.

**4** Build your project file.
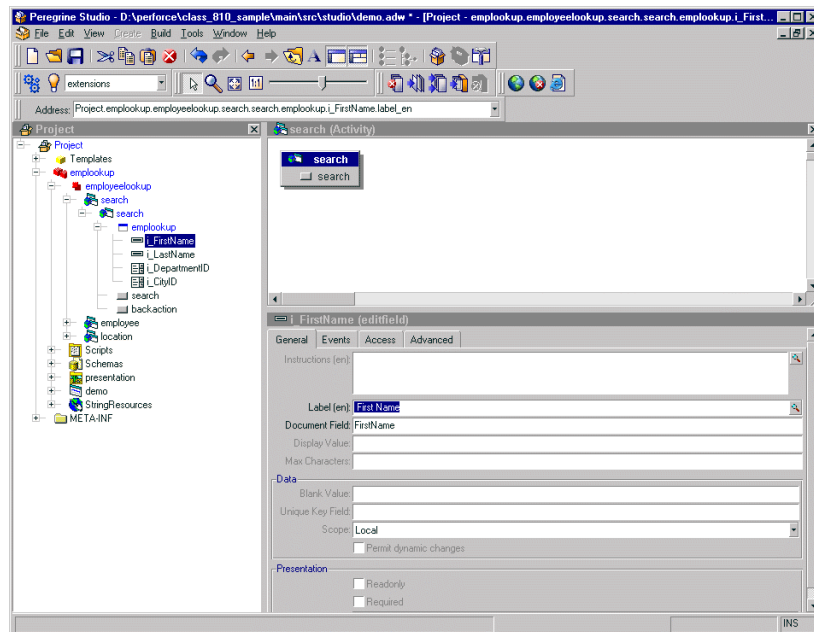
# Hiding a form component

All form components have a Visible flag property that hides or displays the component in the Web application interface. If you want to remove a form component from the interface but still have it available in Peregrine Studio, you can toggle the form component's Visible flag to No. This prevents the form component from being part of the next Peregrine Studio build. Non-visible (and thus non-built) form components are displayed with a red X over the form component icon in the Project Explorer tree.

To hide a form component in the interface:

1   Select the form in the Project Explorer.

2   On the Advanced tab, clear the **Visible flag** option.

3   Save your project.

4   Build your project file.



Warning:  If you clear the check box beside the Visible flag option, that component is not included in the generated HTML.

# Changing a form component to read-only

Certain form components such as edit fields and text areas are available for users to enter and change information. If you want to restrict these form

components so that they only display data, you can set the read-only attribute for the form component. The data displayed by a read-only form component will no longer have a bounding box or area to indicate that it can be edited or changed.

You can change a form component back to its original state by removing the read-only attribute.

To make a form component read-only:

**1** Select the form in the Project Explorer.

**2** On the General tab, select the **Read-only** check box.

**3** Save your project.

**4** Build your project file.
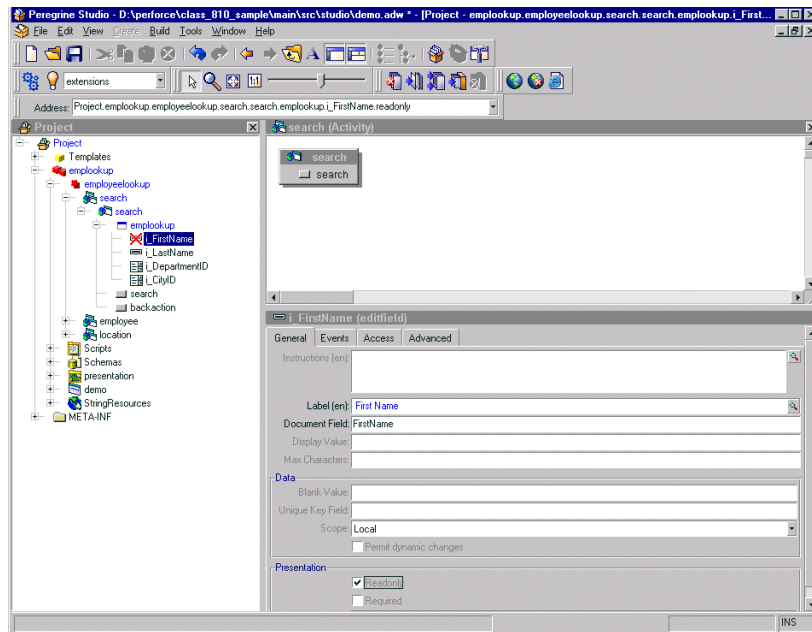


## Changing the schema that a form component uses

Certain form components such as selectfields and simple tables use a schema to determine what information to display. You can change the information these

form components display by changing the schema defining the document fields. In some cases you may also need to change other form component attributes that depend on the fields defined in the schema.

To change the schema that a form component uses:

**1** Select the form in the Project Explorer.

**2** Click the Advanced tab.

**3** In the Databound section, select the **Document** field, and enter or select the name of the schema that you want to use as the source document for this form component.
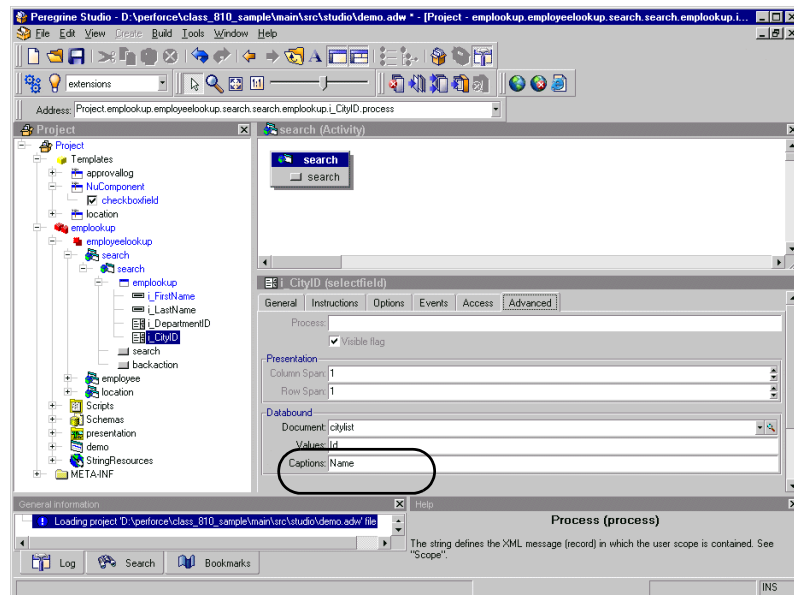


**4** Save and build your project file.

# Changing the document field that a form component uses

Certain form components such as selectfields and table columns use a particular document field of a schema to determine what information to display. You can change the information these form components display by changing the document fields these components use.

**Note:** The list of document fields available to a form component is determined by the schema used. Peregrine Studio does not validate the document field you select.

To change the document field that a form component uses:

**1**    Select the form component in Peregrine Studio to display the component's properties.

**2**    In the Document Field field, enter the name of the field in the XML message where this form component's information is stored.

**Note:** The field you select must be defined as an attribute in the schema defined in the form component's properties.

**3**    Save your project.

**4**    Build your project file.
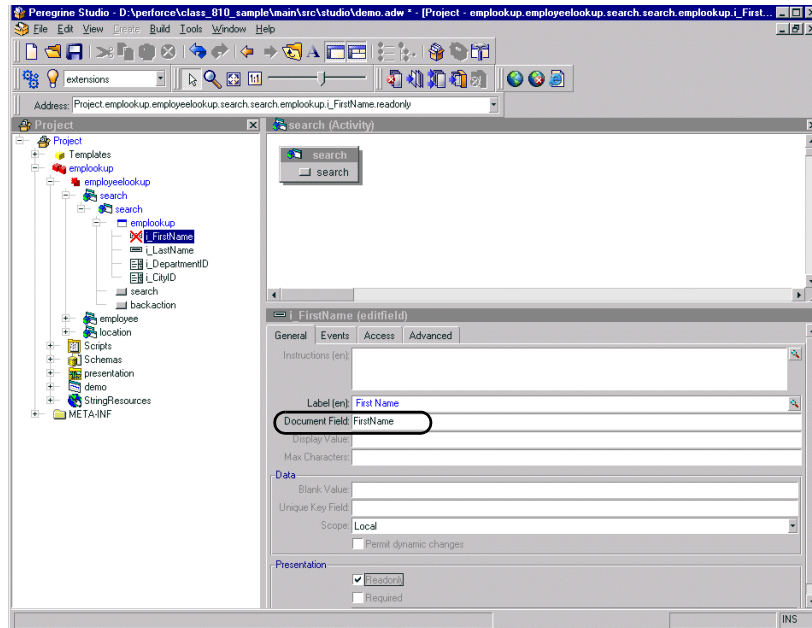
## Format of document field name

The Document Field attribute of forms is always mapped to an element in the Message object returned by the form's onload script.

The Archway servlet formats Message objects as XML files using the tag definitions and back-end database table and field information that the schemas provide.

The Document Field attribute of a form component must map to an `<attribute>` element in a schema.

- You can specify the Document Field attribute that a form component uses in one of several ways:
- If the Document Field attribute has a unique `<attribute>` name in the schema, you can list just the `<attribute>` name.
- If the Document Field attribute is repeated in the schema, you must specify the nested `<document>` name or names and the `<attribute>` name. The `<document>` name and the `<attribute>` name must be separated by a slash character (/).
- If the Document Field attribute is part of a nested `<document>` element, you have the choice of either listing the `<attribute>` name by itself or specifying some or all of the path using the syntax of `<documents>/<document>/<attribute>`. This syntax allows Web application developers to specify as much or as little of the document path as is needed to create a field attribute mapping.

## Example

Suppose you are creating a form where users can review and submit asset requests. You can format a typical asset request as the following XML message:

```
<request>
   <Number>012345</Number>
   <Purpose>Asset Management</Purpose>
   <EndUser>
     <FirstName>Michaela</FirstName>
     <LastName>Tossi</LastName>
   </EndUser>
   <Requester>
     <FirstName>Richard</FirstName>
     <LastName>Hartke</LastName>
   </Requester>
</request>
```

In this case, the `<FirstName>` and `<LastName>` tags are repeated in two different sections of the XML message. To display these tags in a form, you will need to specify more of the document path when you enter the path of the Document Field attribute. The entries below illustrate the minimum document path needed for the Document Field attribute in a form component.

```
Number
Purpose
EndUser/FirstName
EndUser/LastName
Requester/FirstName
Requester/LastName
```

You can also specify the Document Field attribute path using all the elements of the XML message. The following entries illustrate the full document path that can be used for the Document Field attribute in a form component.

```
request/Number
request/Purpose
request/EndUser/FirstName
request/EndUser/LastName
request/Requester/FirstName
request/Requester/LastName
```

The number of elements that you must specify in the document path is determined by how you set up your schemas.

# Displaying a form within a frameset

You can display forms within multiple frames by creating a special frameset form. All frames within a frameset form will be displayed within the frame normally reserved for forms.

To display forms within a frameset:

**1**  Right-click the activity where you want the frameset form to be, point to New, and then click Form.

**2**  Click the Others tab.

**3**  Select Frameset from the Formtype drop-down list box.

**4**  Enter row and column sizes in the Frameset pane.

**Note:** You can use percentage to describe frameset size properties.
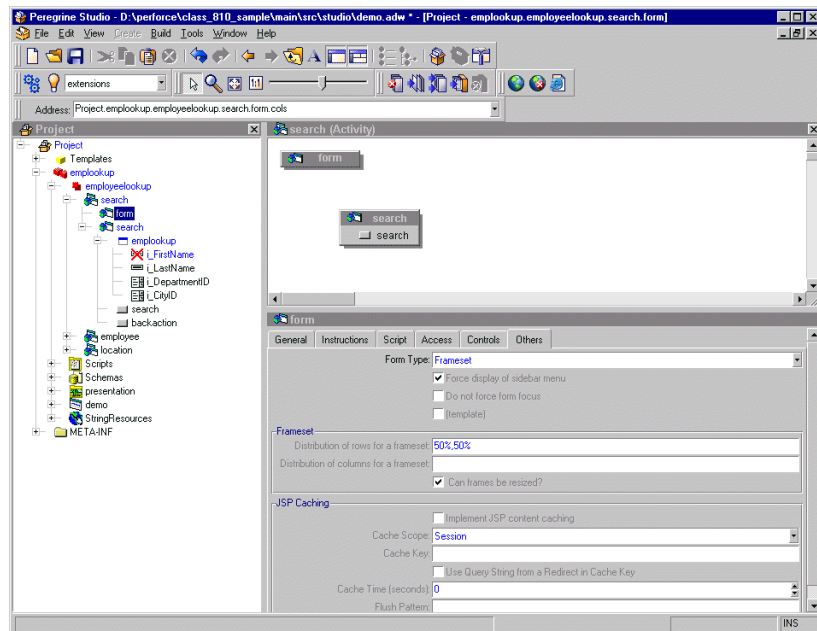


**5**  Create a new form for each frame in the frameset form.

**6**   Create a redirection under the frameset form for each target form in the frameset.

**7**   Save your project.

**8**   Build your project file.

To display the form title within a frameset:

**1**   Open the frameset form's component properties in Studio.

**2**   Create a new server onload script within your project.

**3**   Add the following lines to the script:

```
top.setTitle("My Title Text");
```

Where `My Title Text` is the title you want to display at the top of the frameset.

**4**   Open the component properties page for the target form within the frameset.

**5**   Click the Script tab.

**6**   Select the server script you created in Step 2.

**7**   Save your project.

**8**   Build your project file.

# Adding AssetCenter Web to an existing frameset

You can add AssetCenter Web to an existing frameset to incorporate into your corporate intranet. To do this, you will need to edit a JavaScript file within your project file and add a reference to AssetCenter Web to the parent frameset.

To add AssetCenter Web to an existing frameset:

**1**   Open the following file in a text editor:

```
<tomcat installation>\webapps\oaa\js\setDomain.js
```

or locate the file in the equivalent directory in your application server.

**2**   Add the following line to the bottom of the script:

```
setDomain(server name);
```

where `server name` is the name of the server where the parent frameset is located.

**3**   Save the file.

**4**   Add the following line to each JSP file that will include AssetCenter Web in a frameset. These files must be saved on the server listed in step 2.

```
<script language="JavaScript" SRC="js/setDomain.js">
</script>
```

**5**   Save the updated JSP files.

# Displaying a script variable in a form component

You can use script variables to reuse information gathered from other forms in form components such as form titles and instructions.

All script variables begin with a double dollar sign notation and then display the variable name in parentheses; for example, `$$(FirstName)`. All variable names map to an XML element name in the script output of a form. Thus the script

variables `$$(FirstName)` and `$$(LastName)` map to the elements `<FirstName>` and `<LastName>` in the XML output of a script.



The contents of each variable are displayed in the form title.

**Note:** You must select the **Display form information** option from **Administration** > **Settings** in order to see the Script Input and Script Output options.

Variable names can also include schema attribute names or nested elements names using a slash notation. For example, the buyer script uses the $$(Price/currency) variable to pass information from the currency attribute of the `<Price>` element. Using the sample data, the $$(Price/currency) variable would pass 1119.00 for the `<Price>` and USD for the `currency` attribute.
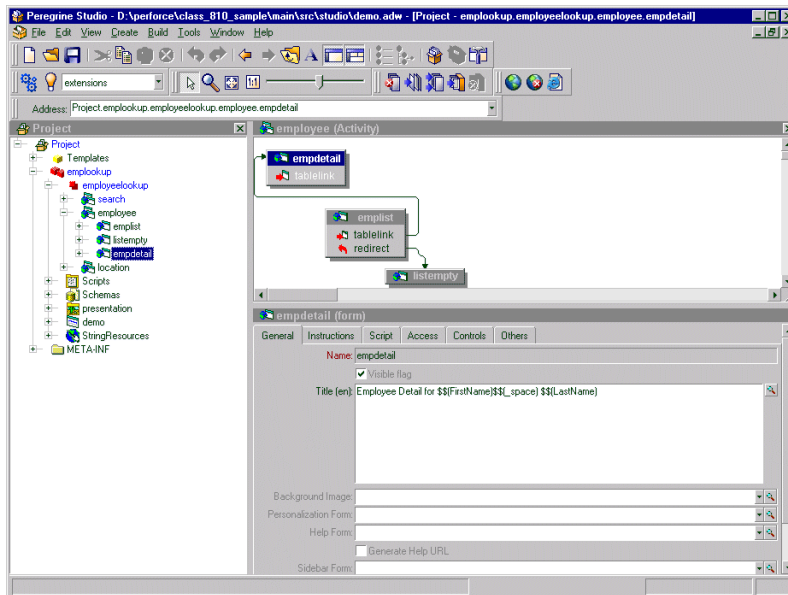
# Creating a portal component

Portal components are special forms that display on the Peregrine Portal home page within special portal frames. To create your own portal components you need:

- AssetCenter Web packages and source code (included with the AssetCenter Web tailoring kit)

- Peregrine Studio

To create a portal component:

**1** Open the AssetCenter Web project in Peregrine Studio.

**2** Right-click the Group of Modules node to which you want to add a portal component and then select **New** > **Group of Portal Components**.

  You do not have to add another Group of Portal Components if one already exists in your project.

**3** Right-click the Group of Portal Components node from the navigation tree and select **New** > **Portal Component**.

**4** Enter the following properties for the portal component:

| Property | Description |
| --- | --- |
| Label (en) | Enter the name you want the portal component to have in the Add/Remove content page. |
| Column type | Select either wide or narrow. This setting determines the size of the portal frame where AssetCenter Web displays the portal component. |
| Height of IFRAME | Enter a height value if you plan to display this portal component from WebSphere Portal Server. |

**5** Right-click on the new portal component and select **New** > **Contents**.

  A standard form page is added.

**6** Enter any form components, onload scripts, parameters, or access restrictions you want the portal component to have.

**Tip:** You can use existing AssetCenter Web portal components as a template.

Keep in mind the following considerations:

- Portal components have less space then normal forms to display information. You should design your form component to fit in either a narrow or wide portal component frame.

- Portal components cannot include the redirection form component. If you want to direct users to another form or HTML page, you will need to use the Business View Authoring tool.

- You can import a static JSP or HTML page into a portal component.

**Note:** The procedures listed in Step 7 through Step 11 are optional. You do not have to provide a configuration form for your portal components.

**7** Right-click on the new portal component and select **New** > **Configure**.

A standard form page is added.

**8** On the configure form, enter the relative URL to form you want to use to configure your portal component in the Alternative HREF field.

Use the following format for the URL:

*e_moduleName_activtyName_formName.do?property=value*

| Parameter | Description |
|---|---|
| For `moduleName` | Enter the module where your configuration form resides. |
| For `activityName` | Enter the activity name where your configuration form resides. |
| For `formName`, | Enter the name of your configuration form. |
| For `property` | Enter any URL query you want to submit with the URL. This is an optional part of the URL and can be ignored if your configuration form does not require it. Typically, only DocExplorer forms require a property entry. |

For example:

*e_helpdesk_status_myPortalComp.do*

**9** Create a new form matching the Peregrine Studio address you entered in Step 8.

This form will be the target configuration form of the Alternates HREF setting.

**10** Define the following settings for your configuration form.

| Setting | Description |
| --- | --- |
| Server OnLoad Script | This script must either be set to or call the portal.editComponent script. |
| | **Note:** You can only have one server onload script per portal component that runs from either the contents or the configure form. |
| | If you call the portal.editComponent function from a custom script you must adhere to the following script conventions. |
| | Your custom script must include code similar to the following. |
| | ```//Contents of your custom script``` |
| | ```...``` |
| | ```//Combine the messages from your function and portal.editComponent Msg.add(yourMsg);``` |
| | Your custom script must preserve the value of the _Id variable that the **portal.editComponent** function passes to it. |
| Save action | You must add a save action to your configuration form that has a target-form of **portal.edit.save**. |
| No sidebar navigation | All of the out-of-box AssetCenter Web portal component configuration forms do not display in the navigation sidebar. If you want to follow this convention, then clear the Force display of sidebar menu option on the Others tab. |
| Optional fields for configuration | All of the following fields are available from the portal.editComponent script. You can use them as document fields in your form components. |
| _column | Determines whether the component displays in a wide or narrow frame. |
| _title | The title you want to display for the portal component. |

| Setting | Description |
|---------|-------------|
| `_originalTitle` | The default name of the portal component that users can restore to. This field is typically used as a hidden field and should not be visible to users. |
| `DtLastModify` | The date the portal component was last modified to keep track of changes or revisions. This usually is a hidden field that is not visible to users. |

**11** Add any additional form components you want to use to configure your portal component.

**12** Save your project file.

**13** Build your project and deploy your updated AssetCenter Web files to your application server's presentation folder.

**Important:** You must add an adapter name entry to the **Alias for** field in the **PortalDB** tab in order for AssetCenter Web to display portal components. This setting is available from the Administration page (`admin.jsp`).

# Adding personalization

DocExplorers allow end users a means to create and customize searches of AssetCenter Web data. From the end-user perspective, personalization is a collection of standard forms that allow users to change part of the interface to suit their needs. The administrator determines which forms and features of personalization each user has by setting global personalization rights and by granting individual users capability words to do additional personalization.

From an application developer's perspective, a DocExplorer is a template activity that allows for the rapid development of AssetCenter Web changes without the need to rebuild a Peregrine Studio project for every change made. A DocExplorer enables you to add or remove fields, change the layout of a form, and change interface elements such as headers and buttons in real time using the browser interface.

# Supporting personalization

Personalization of AssetCenter Web is provided in two ways:

- End-users can use personalization for all forms that have been built using Document Explorers (DocExplorers). Personalization allows authorized users to change the appearance and functionality of AssetCenter Web directly from the Web interface.

- Developers can use Peregrine Studio to add personalization capabilities to their own AssetCenter Web forms by creating new DocExplorers. This functionality can be enabled only by using Peregrine Studio.

To add Personalization capabilities to AssetCenter Web, you must have these components:

- An AssetCenter  back-end database. Personalization requires you to store each user's login rights and personalization changes in a back-end database.

- Adapter aliases defined for the following tabs on the AssetCenter Web Administration settings page:
  - Portal
  - PortalDB

- A user account with personalization rights enabled. A user's login profile determines the level of personalization rights AssetCenter Web grants to the user. A user's personalization rights determine not only what personalized components can be seen and changed, but also determines whether other users will see their personalization changes.

- A configured DocExplorer activity to provide personalization in the AssetCenter Web Peregrine Studio project. You must configure each DocExplorer activity with an adapter name and a schema name. A DocExplorer can only use one schema at a time.

# DocExplorer configuration required in Peregrine Studio

In order for users to use a DocExplorer from the Web interface, you must define at least two settings in Peregrine Studio:

▪ The *schema* the DocExplorer uses. The schema determines what database tables and fields are available to query.

▪ The *adapter* the DocExplorer uses to connect to the back-end database.

You can use any of the existing schemas provided with AssetCenter Web or create your own schema entries. For more information on schemas, see the Document Schema Definitions chapter.

# Adding a DocExplorer reference

A DocExplorer Reference is the preferred method for adding a DocExplorer to a Peregrine Studio project. A DocExplorer Reference is a special template that redirects users to a full DocExplorer activity with two parameters: the schema and adapter to be used. You can use a DocExplorer Reference to call any generic DocExplorer functionality.

To add a DocExplorer Reference:

**1** Right-click on a Module component in your project. Select **New** > **DocExplorerReference**.

**2** Enter a name for your new DocExplorer Reference activity. The default name is `DocExplorerReference`.

**3** Expand the DocExplorerReference activity.

**4** Click on the setup form.

**5** On the form properties page, click the General tab and enter the following required information:

Title (en).

**6** Select the redirect action.

**7** On the properties page, click the Link Params tab.

**8** Enter the parameters you want to use in the Param field. By default, this field has the following value:

`_docExplorerContext=<DOCUMENT_NAME>&_DocExplorerBackend=<TARGET_NAME>&_docExplorerSubType=<SUBTYPE_INSTANCE>`

Replace `<DOCUMENT_NAME>` with the schema name you want the DocExplorer to use. This is a required parameter.

Replace `<TARGET_NAME>` with the adapter alias you want the DocExplorer to use. For example, enter ac for the AssetCenter adapter for AssetCenter Web. This is a required parameter.

Replace `<SUBTYPE_INSTANCE>` with the personalization form subtype you want to invoke or leave blank to use no subtype. This is an optional parameter.

Warning: Do not change the target form of the redirect action. This action must go to `docExplorer.default.start`.

**9** Save your project.

**10** Click the **Differential build of project** button to rebuild your project.

# Personalizing a DocExplorer reference

After you add a DocExplorer Reference, you can make changes to this activity directly from the AssetCenter Web Web interface.

To personalize DocExplorer pages:

**1** Log on to AssetCenter Web.

**2** Click the activity name for your Document Explorer from the navigation sidebar. By default, the Document Explorer name is DocExplorer.

Important: The first time you access a Document Explorer, the interface displays a blank search form.

**3** Click the wrench icon from the upper right of the interface.

**4**    Make your changes to the search form, and then click **Save**.

Your personalized search form displays.

**5**    Click **Search** to display the results list form.

**6**    Click the wrench icon from the upper right of the interface.

**7**    Make your changes to the list form, and then click **Save**.

**8**    Click on any of the results displayed in your personalized list form to go to the detail form.

**9**    Click the wrench icon from the upper right of the interface.

**10**    Make your changes to the detail form, and then click **Save**.

**11**    If you have user rights to create documents, click the activity name for your Document Explorer from the navigation sidebar to return to the search form.

**12**    Click **Create** to display the create form.

**13**    Click the wrench icon from the upper right of the interface. Make your changes to the create form, and then click **Save**.

# Adding personalization form components – lookup fields

To personalize your custom forms, add lookup fields to them. Lookup fields use some of the Personalization features found in a DocExplorer template activity.

**Note:** Lookup fields are already part of the DocExplorer template activity, so you need not add them there. Add lookup fields to the custom forms that you have manually built in Peregrine Studio.

You can add two types of lookup fields to your custom forms:

| Lookup type | Reference |
|---|---|
| Field | See Field lookup on page 123. |
| Subdocument | See Subdocument lookup on page 124. |

# Field lookup

You can use the field lookup form component to select the value of one (and only one) particular field of a schema. The Lookup field queries the back-end database for all the values of a pre-defined field, and displays those values in a list. For example, when opening an asset request, create a lookup field for a Name field to list all the employee names in the back-end database.

To add a field lookup to a form:

**1** Right click the form to which you want to add a lookup field.

**2** Go to **New** > **Field** > **Lookup**.

**3** Enter the following settings for the Data attributes.

| Attribute | Description |
| --- | --- |
| Display Field | The label you want displayed for the lookup field in the AssetCenter Web form. If you do not enter a value for this parameter, the label defaults to the Document Field parameter described below. |
| Document Field | The name of the field you want to use as the unique key for your query. In a field lookup, the value of this field must match the field name portion of the Document Path in Step 4. This value is posted to the onload script when a particular lookup entry is selected. |
| Unique Key Field | Required if the lookup is added in a document table. Uniquely identifies the field lookup for each row of the table. |

**4** Enter settings for the following DocExplorer Adapter attributes.

| Attribute | Description |
| --- | --- |
| Adapter | The name of the back-end database adapter you want to use to lookup the information. |
| Document Path | The name of the schema and *field* that you want to lookup. The naming convention used with this parameter is *schema name.field name* with a period (.) between them. For example, the entry employee.name will lookup the name field from the employee schema. |

5   Enter the following setting for the Link Parameters attribute.

| Attribute | Description |
| --- | --- |
| Target form | Enter docExplorer.fieldlookup.start as the form name. This value enables personalization if the end-user has sufficient personalization rights. |

6   Click the **Differential build of project** button to rebuild your project.

7   Log in to AssetCenter Web, browse to the updated form, and click the magnifying glass lookup icon to display a pop-up lookup form.

The lookup field displays a list of values that match the Document Path you entered in Step 4.

8   If you want to change the field used for the lookup, click the **Personalize this page** link and select the new field you want to use.

## Subdocument lookup

You can use a subdocument lookup form component to select all the field values that are part of a subdocument record. (A subdocument typically has its own schema.) A subdocument lookup returns the value of each field defined in the external schema. Any other form components that use the information in the subdocument fields are automatically updated. For example, you could use a subdocument lookup to update several fields such as address, state, zip, and country by selecting a single location.

**Tip:**   Use subdocument lookups to quickly change multiple fields on a form.

To add a subdocument lookup to a form:

1   Right click the form to which you want to add the lookup.

2   Go to **New** > **Field** > **Lookup**.

**3** Enter the following settings for the Data attribute.

| Attribute | Description |
|---|---|
| Display Field | The label you want displayed for the lookup field in the AssetCenter Web form. Required. If you do not enter a valid value for this parameter, an error occurs. |
| Document Field | The name of the field you want to use as the unique key to query the subdocument. The value of this field is used to look up all other document fields in the subdocument. This value is posted to the onload script when a particular lookup entry is selected. |
| Unique Key Field | Required if the lookup is added to a document table. Uniquely identifies the subdocument lookup for each row of the table. |

**4** Enter settings for the following for the DocExplorer Adapter attributes.

| Attribute | Description |
|---|---|
| Adapter | The name of the back-end database adapter you want to use to lookup the information. |
| Document Path | The name of the schema and *subdocument* that you want to lookup. The naming convention for the path is: `schema name.subdocument name` with a period (.) between them. For example, the entry `employee.location` looks up the location subdocument from the employee schema. |

**5** Enter the following setting for the Link Parameters attribute.

| Attribute | Description |
|---|---|
| Target form | Enter `docExplorer.documentlookup.init` as the form name. |

**6** Click the **Differential build of project** button to rebuild your project.

**7** Log in to your Web application, browse to the updated form and click the magnifying glass lookup icon to display a pop-up lookup form.

The lookup field will display a list of values that match the Document Path you entered in .

**8** If you want to change the subdocument used for the lookup, click the **Personalize this page** link and select the new subdocument you want to use.

# Tailoring scripts

Although you do not have to use Peregrine Studio to edit or add scripts in your project, the text editor, cross reference checking mechanism, and project navigator make Peregrine Studio a full-featured development platform. The following sections describe how to change scripts from within Peregrine Studio.

## Editing an existing script

You can edit the ECMAScript in your project directly from the Peregrine Studio interface.

**Tip:** You may lose changes that you make directly to existing scripts when you next upgrade. If you want to change an existing script consider using a schema extension to call your custom script in addition to the existing script.

To edit an existing script:

**1** Select the form in the Project Explorer.

**2**    Click the Script tab in the Properties window.
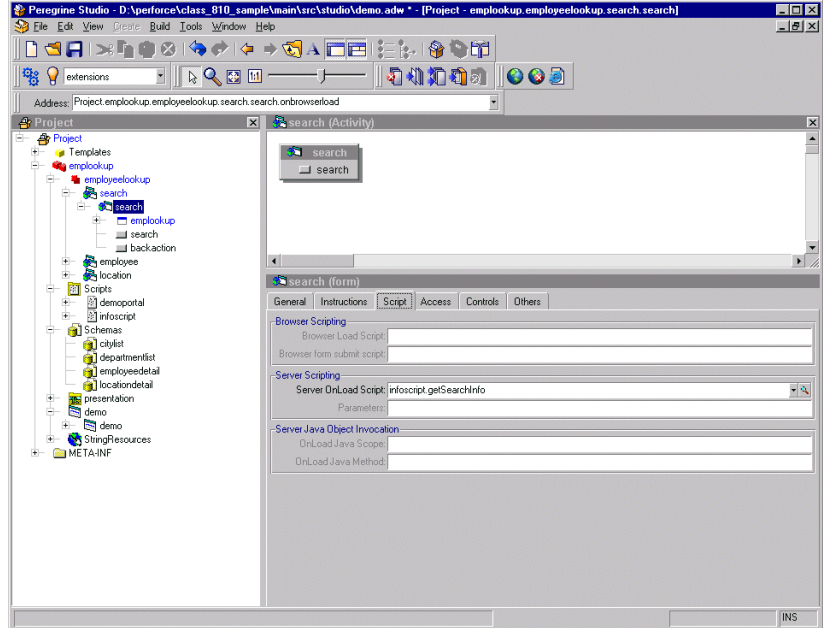
**3**   In the Server Onload Script field, click the magnifying glass button to view the script in the Peregrine Studio text editor. 
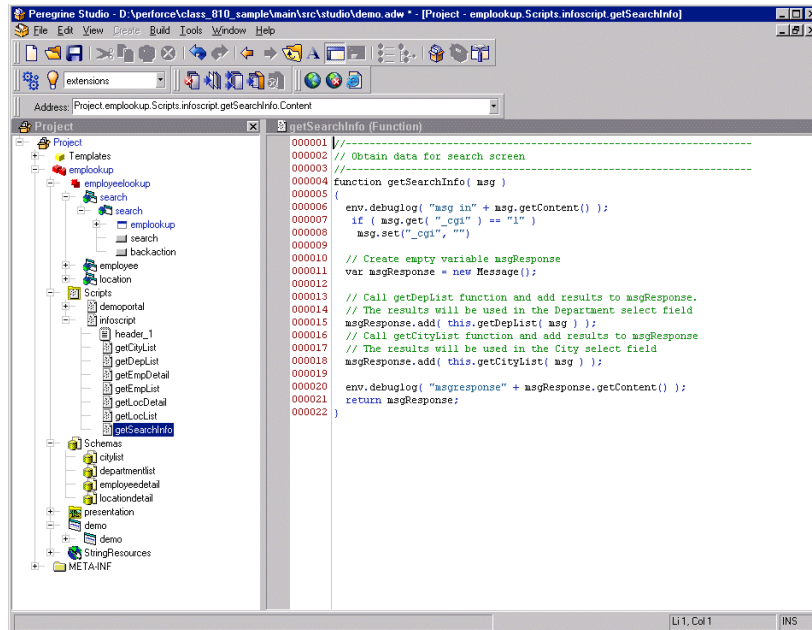


**4**   Make any changes to the script in the text editor.

**5**   Save your project.

**6**   Build your project file.

**7**   Restart your application server or set the **File Change Monitor** option from the Administration page.

**Tip:**   Turn off the File Change Monitor setting on your production system to increase performance.

The script update is loaded into AssetCenter Web.

# Adding a custom script

You can add custom scripts to your Peregrine Studio project for use by forms, schemas, and form components.

To add a custom script:

**1** Determine what kind of script you want to create.

You can create the following script types.

| Script type | Description |
|---|---|
| Form onload | These are scripts run to gather data for non-DocExplorer forms. Peregrine Studio stores form on-load scripts underneath the first Group of Scripts node (Typically called **Scripts** or **ServerScripts**). |
| Preexplorer | These are scripts run to manipulate the XML document that the gets rendered in the AssetCenter Web interface. Peregrine Studio stores preexplorer scripts underneath the **Preexplorer** Group of Scripts node. |
| Preload | These are scripts run to gather data for DocExplorer forms. Peregrine Studio stores preload scripts underneath the **Preload** Group of Scripts node. |
| Schema | These are scripts run before or after an adapter connects with the back-end database. Peregrine Studio stores schema scripts underneath the **Schema** Group of Scripts node. |

**2** Right-click the appropriate Group of Scripts node, point to **New**, and then click **Script**.

Peregrine Studio creates a new script node underneath the Group of Scripts.

**3** Type in the name of your script and press ENTER.

**4** Right-click the new Script node, point to **New**, and then click **Header**.

Peregrine Studio creates a new Header node underneath the Script node.

**5** Using the text editor window, type in the header information for your new script.

**6**   Right-click the new Script node, point to **New**, and then click **Function**.

Peregrine Studio creates a new Function node underneath the Script node.

**7**   Using the text editor window, type in the function information for your new script.

**8**   Save your project.

**9**   Build your project file.

**10**  Restart your application server or set the **File Change Monitor** option from the Administration page.

The new script is loaded into AssetCenter Web.

# Creating custom schemas

You can create custom schemas to instruct the Archway Document Manager how to query, update, or insert information to your back-end databases. A custom schema gives you complete control over the logical and physical mappings used by your forms.

**Tip:**   For most tailoring tasks, you can accomplish the same results using a schema extension.

If you want to create custom schemas you will need to use Peregrine Studio to add the custom schema to your project and then to configure other project components to use the custom schema. Deploying a custom schema will also require building and copying project files to your AssetCenter Web server. The following procedures outline how to create a custom schema.

**Step 1**   Create or activate a package extension to save your changes in Peregrine Studio. See the Peregrine Studio Projects and Packages chapter.

**Step 2**   Add a new schema file to your Peregrine Studio project. See Adding a schema to your Peregrine Studio project on page 131.

**Step 3**   Add logical and physical mappings to your schema file. See Adding logical and physical mappings to your schema on page 132.

**Step 4**   Configure other project components to use your custom schema. See Tailoring forms and components on page 100.

**Step 5**   Rebuild your AssetCenter Web project. See the Peregrine Studio Projects and Packages chapter.

**Step 6**   Deploy your new AssetCenter Web project files. See the Peregrine Studio Projects and Packages chapter.

# Adding a schema to your Peregrine Studio project

You can only add a custom schema to a *group of schemas* node. This node will also be a child element of a *group of modules* node, and typically has the name *Schemas*.

To add a schema to your Peregrine Studio project:

**1**   Right-click the group of schemas node to which you want to add a schema.

   This node will be underneath the group of modules node for AssetCenter Web. If your project contains more than one group of modules, choose the one that has a group of schemas node.

**2**   Point to **New**, and then click **Raw Schema**.

   A new node appears with the name Schema.

**3**   Rename your schema using the following conventions.

### Schema Naming Conventions

Each custom schema you create should have a unique name to prevent data errors from naming conflicts. Your custom schema name must meet the following criteria:

- The schema name is in all lower case.
- The schema name is unique from any other schema name in the Peregrine Studio project.
- The schema name is unique from any attribute name mapping within the schema.

# Adding logical and physical mappings to your schema

After you have added a new schema to your Peregrine Studio project, you are ready to add logical and physical mappings. Studio displays the content of your custom schema in a text editor window. You can use the text editor window to review and edit the XML source code of your schema. You can also use any text editor to edit your schema.

**Note:** If you use an external text editor to edit your custom schema, Peregrine Studio will not pick up the changes until the next time you open the project file.

All schemas must have both a logical and a physical mapping section. The logical mapping section is where you define what names and labels AssetCenter Web uses for fields in the user interface. The physical mapping section is where you define what back-end database tables and fields are used by each logical mapping. The following sections describe how to create the logical and physical mapping sections.

### Creating the logical mappings

**Step 1** Add the XML namespace element and the two `<schema>` elements. See Adding required schema elements on page 133.

**Step 2** Add two `<documents>` elements for the logical mappings. See Adding logical mapping <documents> elements on page 133.

**Step 3** Add two `<document>` elements to define the schema name. See Adding logical mapping <document> elements on page 133.

**Step 4** Add one `<attribute>` element for each logical mapping you want to create. See Adding logical mapping <attribute> elements on page 134.

## Adding required schema elements

1   Add an `<?xml>` element to the top of the file:

```
<?xml version="1.0"?>
```

This element declares that the file uses the XML namespace.

2   Add two `<schema>` elements underneath the namespace declaration:

```
<schema>
</schema>
```

These elements notify the Archway Document Manager that this file is a schema. All schema definitions must be enclosed between these two elements.

## Adding logical mapping <documents> elements

1   Add two `<documents>` elements between the `<schema>` element containers:

```
<documents>
</documents>
```

These elements are the container for the logical mappings.

2   Add the `name` attribute to the `<documents>` element:

```
<documents name="base">
```

The attribute value `name="base"` is required. This attribute value notifies the Archway Document Manager that this section is for logical mappings.

## Adding logical mapping <document> elements

1   Add two `<document>` elements between the `<documents>` element containers:

```
<document>
</document>
```

These elements are the container for the schema document.

**2**  Add the `name` attribute to the `<document>` element:

```
<document name="schema_name">
```

For `schema_name`, enter the same name you selected when adding the schema to the Peregrine Studio project. This attribute value *must* match the file name of the schema (without the `.xml` extension) or an error will occur. The Archway Document Manager uses this attribute value to create an XML document of the same name.

## Adding logical mapping <attribute> elements

**1**  Add one `<attribute>` element between the `<document>` elements for each logical mapping you want to create:

```
<attribute/>
```

**Note:** You can use the standard XML self-closing tag syntax `<element />` with the `<attribute>` element. You can also close every `<attribute>` element with a `</attribute>` element if you want.

**2**  Add a `name` attribute to each `<attribute>` element:

```
<attribute name="sample"/>
```

The Archway Document Manager uses this attribute value to create an XML element in any document message built from this schema. For example, the

Archway Document Manager would convert this attribute into the XML element `<sample>`.

3   Add a `type` attribute to each `<attribute>` element:

```
<attribute name="sample" type="string"/>
```

AssetCenter Web uses this attribute value to determine how to render the field in the user interface. For more information about the type attribute, see the Document Schema Definitions chapter.

4   Add any optional attributes to the `<attribute>` elements.

For more information about the attributes available for the `<attribute>` element, see the Document Schema Definitions chapter.

## Creating the physical mappings

**Step 1**  Add two `<documents>` elements for each adapter you want to support. See Adding physical mapping <documents> elements on page 136.

**Step 2**  Add two `<document>` elements to define the back-end database table name. See Adding physical mapping <document> elements on page 137.

**Step 3**  Add one `<attribute>` element for each logical mapping you created. See Adding physical mapping <attribute> elements on page 137.

### Adding physical mapping <documents> elements

**1** Add another set of <document> elements between the <schema> element containers:

```xml
<?xml version="1.0"?>
<schema>
   <documents name="base">
      <document name="schema_name">
         <attribute name="Id" type="id"/>
         <attribute name="sample" type="string"/>
      </document>
   </documents>

   <documents>
   </documents>

</schema>
```

These elements are the container for the physical mappings.

**2** Add the name attribute to the <documents> element:

```xml
<documents name="adapter_name">
```

For adapter_name, enter the abbreviation of the adapter you want to use to connect to your back-end database such as ac.

**3** Add the version attribute to the <documents> element if you plan to add different physical mappings for each version of your back-end database:

```xml
<documents name="ac" version="4">
```

**Important:** You can skip to the next section if you are not going to provide different physical mappings for multiple versions of your back-end database.

**4** If you want to provide physical mappings for each version of your back-end database, repeat steps 1 through 3 for each version you want to support.

You must provide a different value for the version attribute for each set of <documents> elements.

### Adding physical mapping <document> elements

**1**  Add another two <document> elements between the physical mapping
<documents> element containers:

```
<?xml version="1.0"?>
<schema>
   <documents name="base">
      <document name="schema_name">
         <attribute name="Id" type="id"/>
         <attribute name="sample" type="string"/>
      </document>
   </documents>

   <documents name="ac">
      <document>
      <document/>
   </documents>

</schema>
```

These elements are the container for the back-end database table to be
queried.

**2**  Add the name attribute to the <document> element:

```
<document name="table_name">
```

For table_name, enter the SQL name of the table you want to map to. The
Archway Document Manager uses this attribute value to query the
back-end database table.

**3**  Add any optional attributes to the <document> element that you want to use
to connect to the back-end database or to run process scripts.

For more information about the attributes available for the <document>
element, see the Document Schema Definitions chapter.

### Adding physical mapping <attribute> elements

**1**  Add one <attribute> element between the physical mapping <document>
elements for each logical mapping you created:

```
<attribute/>
```

**Note:** You can use the standard XML self-closing tag syntax `<element />` with the `<attribute>` element. You can also close every `<attribute>` element with a `</attribute>` element if you want.

**2**  Add the identical `name` attribute to each `<attribute>` element as you defined in the logical mappings:

```
<attribute name="sample"/>
```

Each logical mapping `<attribute>` element must have a matching physical mapping `<attribute>` element. The Archway Document Manager uses this value to determine which logical name maps to a particular back-end database field.

**3**  Add a `field` attribute to each `<attribute>` element:

```
<attribute name="sample" field="field_name"/>
```

For `field_name`, enter the SQL name of the field you want to map to. The Archway Document Manager uses this attribute value to query the back-end database field.

**4**  Add any optional attributes to the `<attribute>` elements.

For more information about the attributes available for the `<attribute>` element, see Schema Definitions in the AssetCenter Web Administration Guide.

## Sample schema

The following is a sample schema that you can use for as a template for your own custom schemas.

```
<?xml version="1.0"?>
<schema>

<!--=========================================================
Logical Mappings: XML elements and data types defined
=========================================================-->
    <documents name="base">
        <document name="sample">
            <attribute name="Id" type="number"/>
            <attribute name="contact" type="string" label="Contact"/>
        </document>
    </documents>

<!--=========================================================
Physical Mappings: Logical names mapped to SQL names
=========================================================-->
    <documents name="acsc">
        <document name="sample" table="amRequestincidentsamContact"/>
            <attribute name="Id" field="lReqIdincident.idlContactId" />
            <attribute name="contact" field= "lEmplDeptIdcontact.nameName"/>
        <document/>
    </documents>

</schema>
```

# Adding data validation

You can have AssetCenter Web validate field values in one of two ways:

- Make an input field required. Users will not be able to submit a form until they have entered all required fields.
- Add a custom validation script or function. If you want to check the validity of the data users submit, you must create a validation script or function.

## Making a field required

Personalization forms allows you to mark fields as required, forcing users to fill in a value for that field in order to proceed to the following page.

To make a field required:

**1** Login to AssetCenter Web with a user account that has
`getit.personalization.admin` rights.

The user must have advanced personalization rights to save changes as
default.

**2** Navigate to the form you want to personalize, and then click the
personalization wrench icon.

The Personalize Document Detail window opens.

**3** From the Current Configuration window, double-click the field or
subdocument that you want to require.

The field or subdocument properties window opens.

**4** Select one of the following options:

| Option | Action |
|---|---|
| Subdocument | Select the **Required** option under the Explorer Options section. |
| Field | Toggle the **Required** option to **Yes**. |

**5** Click **Set as Default** to save your changes as the default view for all users.

All users who can see this form now see the required field or lookup.

# Assigning default values

## Translating tailored modules

Out-of-box, all Get-It web applications are provided in English. You can order translated versions of AssetCenter Web by purchasing a language pack. AssetCenter Web 4.3.2 language packs are available in the following languages:

French
Italian
German
Japanese

**Note:** Refer to the Peregrine support web site to determine the current availability of AssetCenter Web language packs.

If you tailor your installation of AssetCenter Web, you will need to translate any strings that you added. The following sections describe how you can translate your tailored modules.

If you have a language pack version of AssetCenter Web, you will need to edit the existing string files for these applications and add any new strings that resulted from your tailoring efforts. For more information on the process, refer to Editing existing translation strings files on page 141.

If you do not have a language pack version of AssetCenter Web and you want to create a new translation, refer to the instructions in Adding new translation strings files on page 144.

To configure AssetCenter Web to use your new translation, refer to Configure AssetCenter Web to use new string files on page 145.

### Editing existing translation strings files

You can make edits, additions, and deletions to string files outside of Peregrine Studio using any text editor or standard translation software.

To edit an existing translation string file:

**1** Open the English string file for your Peregrine Studio project in a text editor or translation program.

You can find all the translation string files in the application server's deployment directories:

```
<application server install>\webapps\oaa\WEB-INF\strings
<application server install>\webapps\oaa\WEB-INF\apps\
<application group of modules name>
```

**Note:** The English string file has the ISO-639 two letter abbreviation EN in the file name.

All strings files have the STR file extension.

**2** Search for any new text that you added to your tailored Peregrine Studio project.

The string file uses the following format:

```
String_label, "translated string"
```

Where `String_label` is the Peregrine Studio name given to the string, and

Where `translated string` is the actual value of the string to be translated.

For example if you added a new button, you might look for:

```
EMPLOOKUP_EMPLOYEELOOKUP_SEARCH_LABEL, "Search"
```

**3** Copy the entire line containing the English string.

**4** Open the string file for the target language in which you want to add a translation.

**Note:** The string file will use the ISO-639 two letter abbreviation for the language in the file name.

**5** Paste the copied English string into the target string file. You can paste the string at the end of the string file.

**6** Change the "`translated string`" portion of the new string to the target language of your translation. For example, to change the string listed above to French, you might enter the following:

`EMPLOOKUP_EMPLOYEELOOKUP_SEARCH_LABEL, "Recherche"`

**7** Save the new string file.

The new translation strings are available as soon as you stop and restart the application server.

# Adding new translation strings files

You can add new string files to provide additional language support to AssetCenter Web. The translation process can be accomplished using any text editor or standard translation software.

**Important:** Peregrine does not support any user translated versions of AssetCenter Web.

To edit an existing translation string file:

**1**   Open the English string file for your Peregrine Studio project in a text editor or translation program.

You can find all the translation string files in your application server's installation directory:

```
<application server install>\webapps\oaa\WEB-INF\strings
<application server install>\webapps\oaa\WEB-INF\apps\
<application group of modules name>
```

**Note:** The English string file has the ISO-639 two letter abbreviation EN in the file name.

All strings files have the STR file extension.

**2**   Copy the entire the English string file.

**3**   Create a new string file for the target language in which you want to add a translation.

**Note:** The string file must use the ISO-639 two letter abbreviation for the language in the file name.

**4**   Paste the copied English string file into the new file.

**5** Change the "`translated string`" portion of each string to the target language of your translation.

**6** Save the new string file.

The new translation strings will be available as soon as you stop and restart the application server.

# Configure AssetCenter Web to use new string files

**1** Log in as an administrator (the administrator login page is at `admin.jsp`).

**2** Click **Settings**.

**3** Click the **Common** tab.

**4** Enter the two letter ISO-639 language code for the languages you want to support in the **Locales** field. The first code entered is the default language used. The other languages you define are available in a drop-down list.

**5** In the **Content type encoding** field, enter the character encoding used for the display language. The following table lists some of the common character encoding formats.

| Character Encoding | Character Set |
|---|---|
| ISO-8859-1 | U.S. and Western European character sets. This is the default character set used by Studio. |
| Shift_JIS | Japanese character set |
| ISO-8859-2 | Polish and Czech character set |

**6** Click **Save** at the bottom of the Settings form to save your changes.

**7** On the Console form, click **Reset Peregrine Portal** to implement your changes.

Users can select the display language for their session used when they login to the Peregrine OAA Platform.

# A | Troubleshooting and FAQs

**APPENDIX**

This appendix contains troubleshooting information for Peregrine Studio and tailoring tasks.

This chapter covers the following topics:

# AssetCenter Web environment

This section describes warnings or errors that can be generated while running a AssetCenter Web in your system environment.

## Out of memory error

### Problem

Your application server has run out of memory resources.

### Solution

AssetCenter Web run best on a system with a minimum of 512 MB of RAM. If you cannot add more physical memory to your machine, you can increase the virtual memory space used on your Windows system. Adding virtual memory will require more hard disk space and may degrade system performance as cached information is saved to and retrieved from the hard disk. Refer to your Windows help for information on setting or changing virtual memory.

## Cannot start Java – install JRE

### Problem

Peregrine Studio produces an error message when you attempt to create a package or build a project.

```
Cannot start Java ('jvm.dll' not found). The JRE (Java Runtime
Environment) must be installed ...
```

### Solution

Install a dedicated copy of the Java 2 SDK for Peregrine Studio to use. You can install the Java 2 SDK from the AssetCenter Web Tailoring Kit installation CD.

# Peregrine Studio

This section describes common problems with write protections, conflicts, and build errors generated with Peregrine Studio.

## Cannot edit — components have grey background

### Problem

Peregrine Studio displays some or all of your project components with a grey background, and you cannot make or save changes to the project components.

### Solution

Peregrine Studio uses the grey background to indicate that an item is write-protected. The most common reasons that Peregrine Studio components are write protected are:

■  A write-protected package is selected in the package selector.

■  The project (.adw) file is set to read-only.

Packages delivered by Peregrine are write-protected. You must save all of your changes and additions to a user-created package extensions. If the package selection box displays one of the Peregrine Studio default packages, then your project will be write protected until you create and activate a new package extension in which to save your changes.

## Red exclamation point displays next to nodes

### Problem

Peregrine Studio displays a conflict icon next to one or more of your project components, and you cannot build the project. The conflict could be the result of multiple packages attempting to change or modify the same component, or the conflict could be the result of improperly defined package dependencies.

### Solution

To resolve the conflict you should first view more information about the nodes displaying the conflict icon.

To view information about a conflict:

1   Select a node with an exclamation point icon displayed next to the name
    from the Project Explorer view. ❗

2   Click **View** > **Advanced Information**. Peregrine Studio displays a new
    information window at the bottom of the interface. This window displays
    information on the conflict.

The information on selection indicates whether you have a resource or a dependency conflict.



Conflict icon
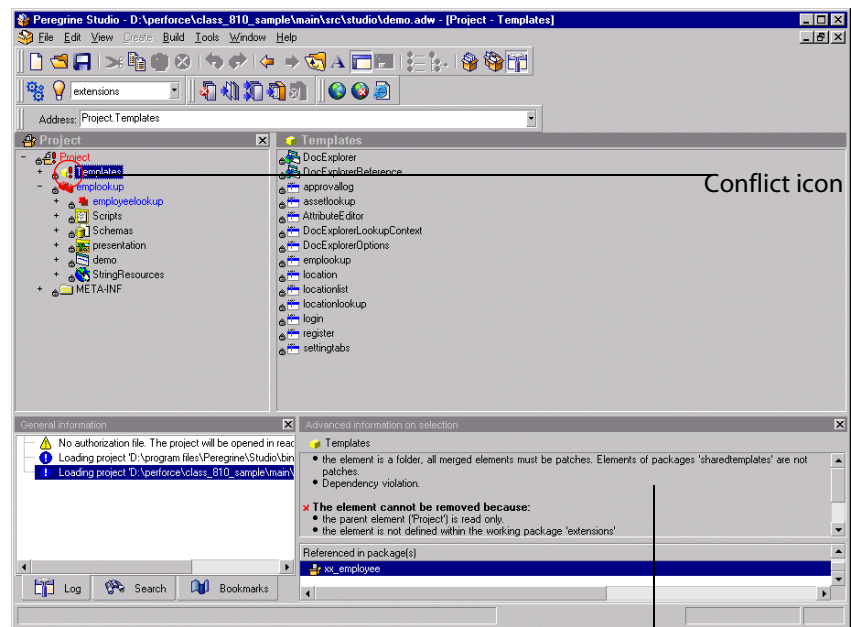
Information about the conflict

## Resource conflicts

Resource conflicts occur when two or more project components describe the same thing. To resolve a resource conflict, delete or reconfigure one of the project components that is creating the conflict. If the conflicting components are part of separate package extensions, you can choose to deactivate one of the package extensions to resolve the conflict.

## Dependency conflicts

Dependency conflicts occur when a package extension attempts to modify a package that is not listed as a dependent package. To resolve the conflict you can choose one of two solutions:

- Add the package you want to modify as a package dependency of the conflicting package extension.
- Move the changes in the conflicting package extension to another package extension that already has the proper package dependencies.

# Scripting errors

Information about scripting errors is displayed as text at the top of the main frame and in the `archway.log` file.

## Unable to find script file

### Problem
The following error message displays when you select a form:

```
Unable to find script file for <name>
```

This message also appears in the `archway.log` file.

### Solution
This error message is usually the result of an invalid script file name or adapter name.

Verify in Peregrine Studio that the form is calling a valid script file name. In particular make sure that the script name does not use mixed case. Script file names should be in all lower case. If you copied a script from another form or Web application you may have renamed the script incorrectly.

Verify that the script calls a valid adapter. If the `<name>` value is the name of a new adapter defined in the script file, then define the new adapter in the Admin Settings module, stop and restart your application server, and then restart the Archway server (using the Admin Control Panel) to correct the problem.

If you have verified that the script file exists and uses the proper adapter, then stop and restart your application server. This will refresh the adapter settings.

## Script produces an ECMAScript error

### Problem
An ECMAScript Error is displayed with the script name, source code, and line number of the error when a form is displayed.

**Solution**

Open Peregrine Studio, review the error-producing script for typos, and verify that it uses the correct function and schema names. For example, you might have a function where *msg* is incorrectly listed as *nsg*. Correct any errors and rebuild the project.

**Note:** ECMAScript is case sensitive and will return an error message if the case does not match the object called.

**Tip:** If you have enabled the HTTP listener in Peregrine Studio, you can click on the underlined script name listed at the top of the error message to go directly to the script and line number of the error. Peregrine Studio must be open for the hyperlink to work.

# ECMAScript error: undefined value or property

**Problem**

The following error displays when you select a form:

```
ECMAScript Error: Error Message: Runtime error Function called on
undefined value or property
```

This error also displays in the `archway.log` file.

**Solution**

Verify that the form calls the proper script name in the server onload script attribute. Also check that the script name contains no typos and that it is listed with the proper case. If the script name listed in the form is correct, there is a possibility that there is a script name conflict. Each script in your project needs a unique name. Try renaming your script to a new name, updating the server onload script attribute, and rebuilding your project. If renaming the script fixes the problem then you had a script name conflict.

# Tailoring errors

The following sections describe some of the common errors associated with tailoring AssetCenter Web. Refer to the sections below for solutions to common tailoring problems.

# Script output not appearing in form component

### Problem

Data is not displayed in your AssetCenter Web form component. This problem could be the result of a faulty script that is not generating an XML document or the result of form components that are not properly mapped to the fields of the generated XML document.

### Solution

Verify whether your script is generating an XML document by enabling the Show form information option and then looking at the contents of the Script Output tab. If the script is working properly, you should see your AssetCenter Web data encoded as in the XML document displayed on the Script Output page. If you do not see an XML document, then your script has an error.

If you can see data displayed in the Script Output tab, then the problem is how you have mapped the form components to the XML fields. View the form component properties from Peregrine Studio, and verify that the Document Field attribute of the form component maps to an XML tag displayed in the Script Output tab.

# Too few parameters error

### Problem

The following error message displays when you select a form:

```
ERROR:...: ***SQL Exception caught***
```

The script output displays the following error:

```
-3010: [...][...] Too few parameters. Expected 1.
```

These messages also appear in the `archway.log` file.

### Solution

There is an incorrect field mapping or typo in the schema used in this form. Review the schemas used by this form and verify that there are no typos. Also verify that all the attributes defined in the schema map to valid fields in the back-end database. The value in the field attribute must match the field name of the back-end database. This is particularly important for the ID attribute, which must map to a unique numerical value that identifies each record.

# AssetCenter Web always goes to redirection form

### Problem

You have defined a redirection to another form in AssetCenter Web and the source form always takes users to the redirection form regardless of the search conditions and results.

### Solution

Validate that the Condition attribute of the redirection is not blank. The Condition value should match the value defined by the setCondition function of your form's ECMAScript. If the Condition attribute is left blank, the default action is to redirect to the target form regardless of the returned results.

# Syntax error in FROM clause

### Problem

The following error message is displayed when you select a form:

```
ERROR:...: ***SQL Exception caught***
```

The script output displays the following error:

```
-3506 [...][...] Syntax error in FROM clause.
```

This error also displays in the `archway.log` file.

### Solution

The schema name you defined for the form is wrong. The schema name can be listed incorrectly in two places:

■ The form's onload script may refer to the wrong schema name.

■ The `<document name=value>` does not match the schema file name.

# B Copyright Notices

**CHAPTER**

Peregrine Systems acknowledges the copyrights belonging to the following third parties. (This appendix constitutes a continuation of the copyright page.)

## Notices

### finj.jar

The `finj.jar` is covered under the GNU Lesser General Public License version 2.1. The license is included below under section GNU LGPL.

The finj source is included in `finj.jar` file in the `\Program Files\Peregrine\Studio\bin\classes` directory.

### GNU LGPL

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA  02111-1307  USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to

guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the

users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

 Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to freesoftware only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library

has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License").

Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the

Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably

considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

 4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even

though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables. When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law. If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object

file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as

well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompany is the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system.

Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

 8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on

you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or

of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

   Copyright (C) <year>  <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA  02111-1307  USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990 Ty Coon, President of Vice

That's all there is to it!

# Index

PEREGRINE

## A

actions. *See* form components

1/21/0