


© 2003 Marty Hall



## Including Files and Applets in JSP Pages

JSP and Servlet Training Courses: <http://courses.coreservlets.com>  
 JSP and Servlet Books from Sun Press: <http://www.coreservlets.com>

## Agenda

- Using `jsp:include` to include pages at request time
- Using `<%@ include ... %>` (the include directive) to include files at page translation time
- Understanding why `jsp:include` is usually better than the include directive
- Using `jsp:plugin` to include applets for the Java Plug-in

## Including Files at Request Time: `jsp:include`

- **Format**
  - `<jsp:include page="Relative URL" />`
- **Purpose**
  - To reuse JSP, HTML, or plain text content
  - To permit updates to the included content without changing the main JSP page(s)
- **Notes**
  - JSP content cannot affect main page: only *output* of included JSP page is used
  - Don't forget that trailing slash
  - Relative URLs that starts with slashes are interpreted relative to the Web app, not relative to the server root.
  - You are permitted to include files from WEB-INF

## `jsp:include` Example: A News Headline Page (Main Page)

```

...
<BODY>
<TABLE BORDER=5 ALIGN="CENTER">
  <TR><TH CLASS="TITLE">
    What's New at JspNews.com</TH>
</TR>
<P>
Here is a summary of our three
most recent news stories:
<OL>
  <LI><jsp:include page="/WEB-INF/Item1.html" />
  <LI><jsp:include page="/WEB-INF/Item2.html" />
  <LI><jsp:include page="/WEB-INF/Item3.html" />
</OL>
</BODY></HTML>

```

## A News Headline Page, Continued (First Included Page)


```

<B>Bill Gates acts humble.</B> In a startling
and unexpected development, Microsoft big wig
Bill Gates put on an open act of humility
yesterday.
<A HREF="http://www.microsoft.com/Never.html">
More details...</A>

```

- Note that the page is *not* a complete HTML document; it has only the tags appropriate to the place that it will be inserted

## A News Headline Page: Result



The screenshot shows a web browser window displaying the rendered output of the JSP page. The page title is "What's New at JspNews.com". The content includes a summary of three recent news stories, with the first item being "Bill Gates acts humble, in a startling and unexpected development, Microsoft big wig Bill Gates put on an open act of humility yesterday." followed by a link "More details...".

## The jsp:param Element: Augmenting Request Parameters

- **Code**

```
<jsp:include page="/fragments/StandardHeading.jsp">
  <jsp:param name="bgColor" value="YELLOW" />
</jsp:include>
```
- **URL**
  - http://host/path/MainPage.jsp?fgColor=RED
- **Main page**
  - fgColor: RED
  - bgColor: null
    - Regardless of whether you check before or after inclusion
- **Included page**
  - fgColor: RED
  - bgColor: YELLOW

JSP/Servlet training: <http://www.coreservlets.com>

## Including Files at Page Translation Time: <%@ include ... %>

- **Format**
  - <%@ include file="Relative URL" %>
- **Purpose**
  - To reuse JSP content in multiple pages, where JSP content affects main page
- **Notes**
  - Servers are not required to detect changes to the included file, and in practice they don't.
  - Thus, you need to change the JSP files whenever the included file changes.
  - You can use OS-specific mechanisms such as the Unix "touch" command, or
    - <!-- NavBar.jsp modified 12/1/03 -->
    - <%@ include file="NavBar.jsp" %>

JSP/Servlet training: <http://www.coreservlets.com>

## jsp:include vs. <%@ include ...>

	jsp:include	<%@ include ...>
Basic syntax	<jsp:include page="..." />	<%@ include file="..." %>
When inclusion occurs	Request time	Page translation time
What is included	Output of page	Contents of file
Number of resulting servlets	Two	One
Can included page set response headers that affect the main page?	No	Yes
Can included page define fields or methods that main page uses?	No	Yes
Does main page need to be updated when included page changes?	No	Yes

JSP/Servlet training: <http://www.coreservlets.com>

## Which Should You Use?

- **Use jsp:include whenever possible**
  - Changes to included page do not require any manual updates
  - Speed difference between jsp:include and the include directive (@include) is insignificant
- **The include directive (<%@ include ...>) has additional power, however**
  - Main page
    - <%! int accessCount = 0; %>
  - Included page
    - <%@ include file="snippet.jsp" %>
    - <%= accessCount++ %>

JSP/Servlet training: <http://www.coreservlets.com>

## Include Directive Example: Reusable Footers

```
<%@ page import="java.util.Date" %>
<!-- The following become fields in each servlet that
results from a JSP page that includes this file. -->
<%!
private int accessCount = 0;
private Date accessDate = new Date();
private String accessHost = "<I>No previous access</I>";
%>
<P>
<HR>
This page &copy; 2003
<A HREF="http://www.my-company.com/">my-company.com</A>.
This page has been accessed <%= ++accessCount %>
times since server reboot. It was most recently
accessed from
<%= accessHost %> at <%= accessDate %>.
<%= accessHost = request.getRemoteHost(); %>
<%= accessDate = new Date(); %>
```

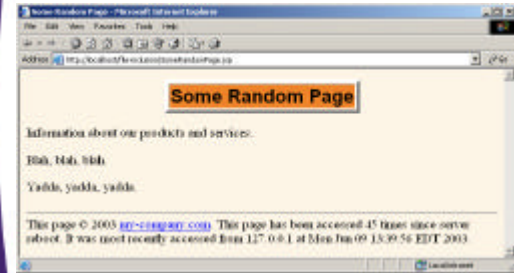
JSP/Servlet training: <http://www.coreservlets.com>

## Reusing Footers: Typical Main Page

```
...
<BODY>
<TABLE BORDER=5 ALIGN="CENTER">
  <TR><TH CLASS="TITLE">
    Some Random Page</TABLE>
<P>
Information about our products and services.
<P>
Blah, blah, blah.
<P>
Yadda, yadda, yadda.
<%@ include file="/WEB-INF/ContactSection.jsp" %>
</BODY></HTML>
```

JSP/Servlet training: <http://www.coreservlets.com>

## Reusing Footers: Result



## Understanding jsp:include vs. <%@ include ... %>

- Footer defined the accessCount field (instance variable)
- If main pages used accessCount, they would have to use @include
  - Otherwise accessCount would be undefined
- In this example, the main page did *not* use accessCount
  - So why did we use @include?

## Options for Deploying Applets

- Develop the applets with JDK 1.1 or even 1.02 (to support *really* old browsers).
  - Works with almost any browser
  - Uses the simple APPLET tag
- Have users install version 1.4 of the Java Runtime Environment (JRE), then use JDK 1.4 for the applets.
  - Requires IE 5 or later or Netscape 6 or later
  - Uses the simple APPLET tag
- Have users install any version of the Java 2 Plug-in, then use Java 2 for the applets.
  - Works with almost any browser
  - Uses ugly OBJECT and EMBED tags

## Using jsp:plugin

- Simple APPLET-like tag
  - Expands into the real OBJECT and EMBED tags
- APPLET Tag
  - `<APPLET CODE="MyApplet.class" WIDTH=475 HEIGHT=350>`
  - `</APPLET>`
- Equivalent jsp:plugin
  - `<jsp:plugin type="applet" code="MyApplet.class" width="475" height="350">`
  - `</jsp:plugin>`
- Reminder
  - JSP element and attribute names are case sensitive
  - All attribute values must be in single or double quotes
  - This is like XML but unlike HTML

## jsp:plugin: Source Code

```
<jsp:plugin type="applet"
  code="SomeApplet.class"
  width="300" height="200">
</jsp:plugin>
```

## jsp:plugin: Resultant HTML

```
<object classid=
  "clsid:8AD9C840-044E-11D1-B3E9-00805F499D93"
  width="300" height="200"
  codebase="http://java.sun.com/products/plugin/1.2.
  2/jinst-1_2_2-win.cab#Version=1,2,2,0">
  <param name="java_code" value="SomeApplet.class">
  <param name="type" value="application/x-java-applet;">
  <COMMENT>
  <embed type="application/x-java-applet;" width="300"
  height="200"
  pluginspage="http://java.sun.com/products/plugin/"
  java_code="SomeApplet.class"
  />
  </noembed></noembed>
  </COMMENT>
</object>
```

## jsp:plugin: Example (JSP Code)

```
...
<BODY>
<CENTER>
<TABLE BORDER=5>
  <TR><TH CLASS="TITLE">
    Using jsp:plugin</TABLE>
<P>
<jsp:plugin type="applet"
  code="PluginApplet.class"
  width="370" height="420">
</jsp:plugin>
</CENTER></BODY></HTML>
```

19 JSP:Servlet training: <http://www.coreservlets.com>

## jsp:plugin: Example (Java Code)

```
import javax.swing.*;

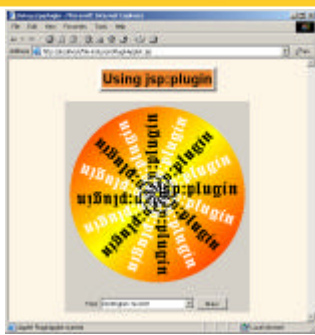
/** An applet that uses Swing and Java 2D
 * and thus requires the Java Plug-in.
 */

public class PluginApplet extends JApplet {
  public void init() {
    WindowUtilities.setNativeLookAndFeel();
    setContentPane(new JPanel());
  }
}
```

- Where are .class files installed?

20 JSP:Servlet training: <http://www.coreservlets.com>

## jsp:plugin: Example (Result)



21 JSP:Servlet training: <http://www.coreservlets.com>

## Attributes of the jsp:plugin Element

- **type**
  - For applets, this should be "applet".
  - Use "bean" to embed JavaBeans elements in Web pages.
- **code**
  - Used identically to CODE attribute of APPLET, specifying the top-level applet class file
- **width, height**
  - Used identically to WIDTH, HEIGHT in APPLET
- **codebase**
  - Used identically to CODEBASE attribute of APPLET
- **align**
  - Used identically to ALIGN in APPLET and IMG

22 JSP:Servlet training: <http://www.coreservlets.com>

## Attributes of the jsp:plugin Element (Cont.)

- **hspace, vspace**
  - Used identically to HSPACE, VSPACE in APPLET,
- **archive**
  - Used identically to ARCHIVE attribute of APPLET, specifying a JAR file from which classes and images should be loaded
- **name**
  - Used identically to NAME attribute of APPLET, specifying a name to use for inter-applet communication or for identifying applet to scripting languages like JavaScript.
- **title**
  - Used identically to rarely used TITLE attribute

23 JSP:Servlet training: <http://www.coreservlets.com>

## Attributes of the jsp:plugin Element (Cont.)

- **javaversion**
  - Identifies version of the Java Runtime Environment (JRE) that is required. Default is 1.2.
- **iepluginurl**
  - Designates a URL from which plug-in for Internet Explorer can be downloaded. Users who don't already have the plug-in installed will be prompted to download it from this location. Default value will direct user to Sun site, but for intranet use you might want to direct user to a local copy.
- **nspluginurl**
  - Designates a URL from which plug-in for Netscape can be downloaded. Default value will direct user to Sun site, but for intranet use you might want local copy.

24 JSP:Servlet training: <http://www.coreservlets.com>

## The jsp:param and jsp:params Elements

- **PARAM Tags**
  - `<APPLET CODE="MyApplet.class" WIDTH=475 HEIGHT=350>`
  - `<PARAM NAME="PARAM1" VALUE="VALUE1">`
  - `<PARAM NAME="PARAM2" VALUE="VALUE2">`
  - `</APPLET>`
- **Equivalent jsp:param**
  - `<jsp:plugin type="applet" code="MyApplet.class" width="475" height="350">`
  - `<jsp:params>`
  - `<jsp:param name="PARAM1" value="VALUE1" />`
  - `<jsp:param name="PARAM2" value="VALUE2" />`
  - `</jsp:params>`
  - `</jsp:plugin>`

JSP and Servlet Training: <http://www.coreservlets.com>

## The jsp:fallback Element

- **APPLET Tag**
  - `<APPLET CODE="MyApplet.class" WIDTH=475 HEIGHT=350>`
  - `<B>Error: this example requires Java.</B>`
  - `</APPLET>`
- **Equivalent jsp:plugin with jsp:fallback**
  - `<jsp:plugin type="applet" code="MyApplet.class" width="475" height="350">`
  - `<jsp:fallback>`
  - `<B>Error: this example requires Java.</B>`
  - `</jsp:fallback>`
  - `</jsp:plugin>`

JSP and Servlet Training: <http://www.coreservlets.com>

## Summary

- `<jsp:include page="Relative URL" />`
  - Output of URL inserted into JSP page at request time
  - Cannot contain JSP content that affects entire page
  - Changes to included file do not necessitate changes to pages that use it
- `<%@ include file="Relative URL" %>`
  - File gets inserted into JSP page prior to page translation
  - Thus, file can contain JSP content that affects entire page (e.g., import statements, declarations)
  - Changes to included file require you to manually update pages that use it
- `<jsp:plugin ...>`
  - Simplifies writing applets that use the Java Plug-In

27

JSP and Servlet Training: <http://www.coreservlets.com>

© 2003 Marty Hall



## Questions?

JSP and Servlet Training Courses: <http://courses.coreservlets.com>  
JSP and Servlet Books from Sun Press: <http://www.coreservlets.com>