

## Including Files & Applets in JSP Documents

### Lecture 10 – Chapter 12

Core Servlets & JSP book: [www.coreservlets.com](http://www.coreservlets.com)  
 More Servlets & JSP book: [www.moreservlets.com](http://www.moreservlets.com)  
 Servlet and JSP Training Courses: [courses.coreservlets.com](http://courses.coreservlets.com)

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## Agenda

- Including JSP files at the time the main page is translated into a servlet
  - via a JSP directive
  - `<%@ include ... %>`
- Including the output of JSP, HTML or plain text pages at the time the client requests the page
  - via an XML custom tag
  - `<jsp:include ... />`
- Including applets that use the Java Plug-In
  - via another XML custom tag
  - `<jsp:plugin ... />`

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## Including Files at Page Translation Time

- **Format**  
`<%@ include file="Relative URL" %>`
- **Purpose**  
 – To reuse JSP content in multiple pages, *where JSP content affects that page (executed when servlet loaded)*
- **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 3/1/00 --%>`
    - `<%@ include file="Navbar.jsp" %>`

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## Reusable JSP Content: ContactSection.jsp

```

<%@ 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; 2000
<A HREF="http://www.my-company.com/">my-company.com</A>.
This page has been accessed <%= ++accessCount %>
times since server reboot. It was last accessed from
<%= accessHost %> at <%= accessDate %>.
<% accessHost = request.getRemoteHost(); %>
<% accessDate = new Date(); %>
    
```

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## Using the JSP Content

```

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

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## Using the JSP Content: Result



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## The `jsp:include` tag

- Lets you reuse navigation bars, tables, and other JSP elements from other pages
- The included elements can contain JSP code and thus are inserted into the current page before it is translated into a servlet
- Encourages a modular design of JSP page content
- The `jsp:plugin` tag is used to include applets on the current page
  - Still a viable option, especially for corporate intranets

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## Including Files at Request Time

- **Format**
  - `<jsp:include page="Relative URL" flush="true" />`
- **Purpose**
  - To reuse JSP, HTML, or plain text content
  - JSP content cannot affect main page: only *output* of included JSP page is used
  - To permit updates to the included content without changing the main JSP page(s)
- **Notes**
  - You are not permitted to specify `false` for the flush attribute in JSP 1.1 and earlier
  - Don't forget that trailing slash

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## Including Files: Example Code

```
...
<BODY>
<CENTER>
<TABLE BORDER=5>
  <TR><TH CLASS="TITLE">
    What's New at JspNews.com</TABLE>
</CENTER>
<P>
Here is a summary of our four most recent news stories:
<OL>
<LI><jsp:include page="news/Item1.html" flush="true" />
<LI><jsp:include page="news/Item2.html" flush="true" />
<LI><jsp:include page="news/Item3.html" flush="true" />
<LI><jsp:include page="news/Item4.html" flush="true" />
</OL>
</BODY></HTML>
```

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## Including Files: Example Result



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## Which include to Use?

- **The `<%@ include %>` directive**
  - + Can include other JSP content
  - Modifications to the included JSP will not be automatically picked up by this JSP
    - unless someone explicitly "touches" this JSP
- **The `<jsp:include />` tag**
  - + Modifications to the included JSP will automatically be picked up when using this form of include
  - Content cannot include other JSPs
    - because the page has already been translated into a servlet by request time
    - but, if a URL is supplied, its content can come from a JSP or servlet (confused?! See section 15.3)
  - Two required attributes (`page` and `flush="true"`)

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## Including Applets for the Java Plug-In

- **Neither Netscape 4 nor IE 5/6 support Java 2**
  - Netscape 6 supports JDK 1.3
- **Problems using applets**
  - In order to use Swing, you must send the Swing files over the network. This process is time consuming and fails in Internet Explorer 3 and Netscape 3.x and 4.01-4.05 (which only support JDK 1.02).
  - You cannot use Java 2D
  - You cannot use the Java 2 collections package
  - Your code runs more slowly, since most compilers for the Java 2 platform are significantly improved over their 1.1 predecessors

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## Solution (?) from Sun: Use the Java Plug-In

- **Only a viable option for intranets**
  - Requires *each* client to install large browser plug-in
- **Cannot use simple APPLET tag**
- **Need long and ugly OBJECT tag for Internet Explorer**
- **Need long and ugly EMBED tag for Netscape**
- **The jsp:plugin action lets you write a simple tag that gets translated into the OBJECT and EMBED tags that are required**
  - Warning: jsp:plugin fails in JRun 3 SP2

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## Using jsp:plugin

- **APPLET Tag**
  - `<APPLET CODE="MyApplet.class" WIDTH=475 HEIGHT=350>`  
`</APPLET>`
- **Equivalent jsp:include**
  - `<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

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## 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

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## 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

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

- **jreversion**
  - Identifies version of the Java Runtime Environment (JRE) that is required. Default is 1.1.
- **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 to direct user to a local copy.

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## 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>`

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## 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>`

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## Example Using Plugin

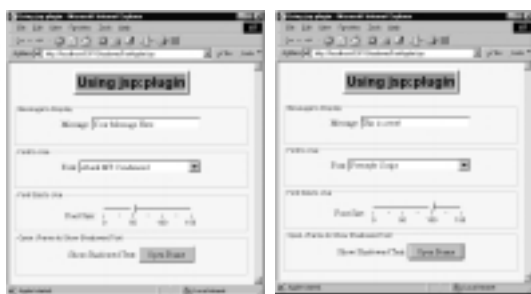
```
<DOCTYPE ...>
...
<jsp:plugin
  type="applet"
  code="coreservlets.ShadowedTextApplet.class"
  width="475" height="350">
  <jsp:params>
    <jsp:param name="MESSAGE"
              value="Your Message Here" />
  </jsp:params>
</jsp:plugin>
...
</BODY></HTML>
```

- See book and Web site for applet code

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## Example Using Plugin (Cont.)



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## Example Using Plugin (Cont.)



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## Summary

- `<jsp:include page="Relative URL" flush="true" />`
  - 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 applets for plugin

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## Questions?

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