

Lecture 12

Including Files in JSP Pages

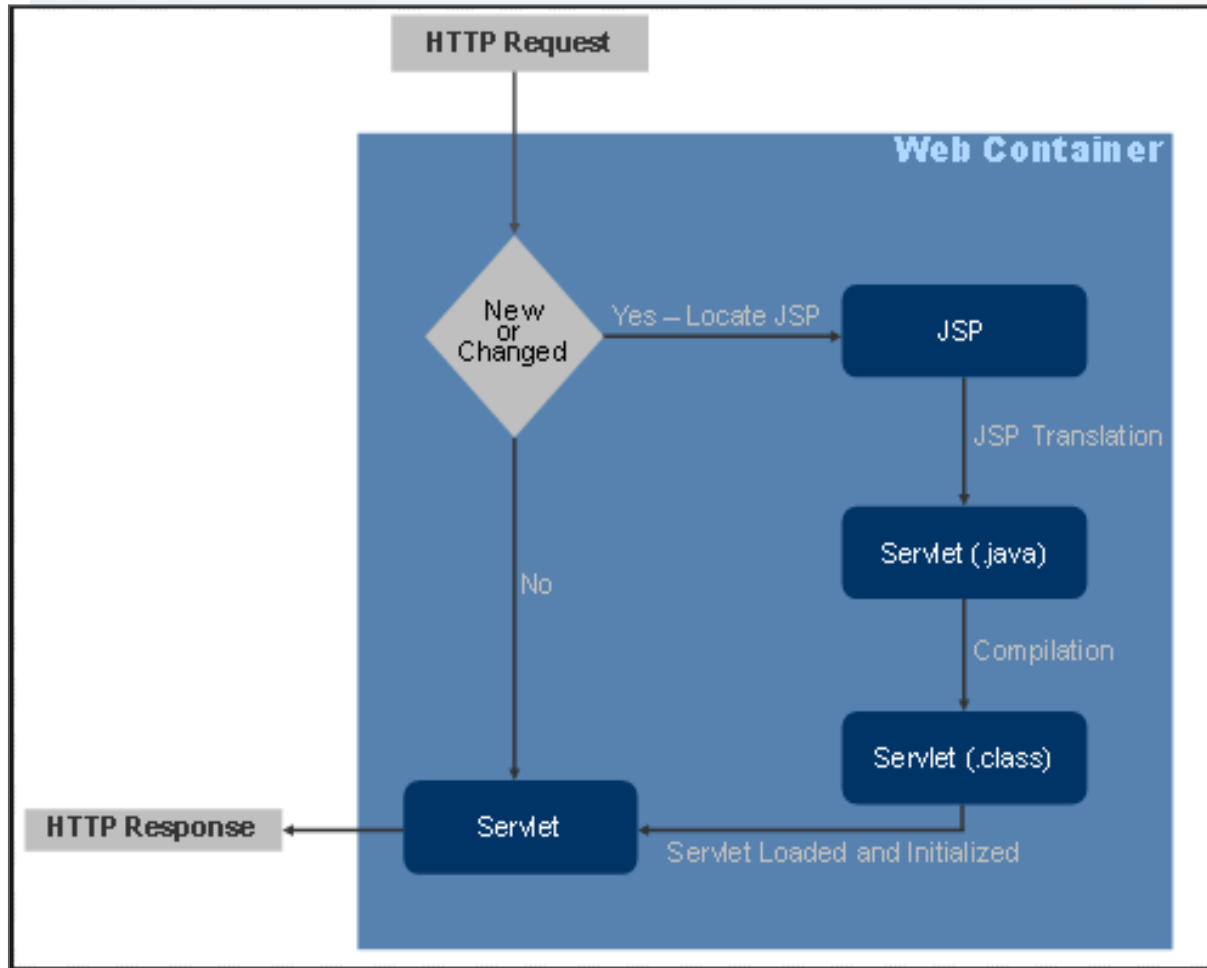
Lecture 12 Agenda

- 1 ➤ Use `jsp:include` to include pages at request time
- 2 ➤ Use `<%@ include ... %>` to include files at page translation time
- 3 ➤ Understanding the difference between `jsp:include` and `<%@ include% >`

Review: JSP Lifecycle

JSP Lifecycle

Review



Web Container manages life cycle of JSP. The life cycle consists of the following phases:

1. The Web container receives a request for a JSP
 - If the JSP exists as a translated resource and **has not** changed, the web container proceeds with servicing the request.
 - If this is the first request for a JSP, or the JSP **has** changed since the last request, the Web Container proceeds with translating the JSP
2. The JSP file is **translated** into a servlet-like implementation class.
3. Servlet undergoes **compilation**, creating JSP instance.
4. Service client request(s).
5. Eventually destroying the instance.

Including Pages at Request Time:
<jsp:include />

Including JSP Pages at Request Time

jsp:include

■ Format

- `<jsp:include page="Relative address">`

■ Purpose

- To reuse JSP, HTML, or plain text context
- To permit updates to the included content without changing the main JSP page(s)

■ Notes

- Think dynamic include (intended for dynamic content)
- JSP content cannot affect the main page: only output of the included JSP page is used.
- Relative URLs that start with slashes are interpreted relative to the web application, not relative to the server root.
- You are permitted to include files from within WEB-INF
- Page is included at **runtime**. Only the content is included not the code.

Example: jsp:include

News Headline: WhatsNew.jsp

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

jsp:include
example

Note location
relative to WEB-INF

Example: jsp:include continued ...

Sample jsp include files

WhatsNew.jsp

Item1.jsp ✕

```
1 <B>Bill Gates acts humble.</B>
2 In a startling and unexpected development, Microsoft big wig Bill Gates
3 put on an open act of humility yesterday.
4 <A HREF="http://www.microsoft.com/Never.html">More details...</A>
5
```

WhatsNew.jsp

Item1.jsp

Item2.jsp ✕

```
1 <B>Scott McNealy acts serious.</B>
2 In an unexpected twist, wisecracking Sun head Scott McNealy was sober
3 and subdued at yesterday's meeting.
4 <A HREF="http://www.sun.com/Imposter.html">More details...</A>
5
```

WhatsNew.jsp

Item1.jsp

Item2.jsp

Item3.jsp ✕

```
1 <B>Larry Ellison acts conciliatory.</B> Catching his competitors
2 off guard yesterday, Oracle prez Larry Ellison referred to his
3 rivals in friendly and respectful terms.
4 <A HREF="http://www.oracle.com/Mistake.html">More details...</A>
5
```

Three sample
(news feeds)
include files

Example: jsp:include continued ...

Screenshot Output



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

Including Files at Page Translation Time

`<%@ include %>`

■ **Format**

- `<%@ include file="Relative address" %>`

■ **Purpose**

- To reuse JSP content in multiple pages, where JSP content affects the main page

■ **Notes**

- Think static include (intended more for static layout/content, ex html ...)
- Is used to include static file (or dynamic file) inside another jsp.
- Most common example is to utilize `<%@ include %>` to include header, footer, navbar.jsp
- Not suitable to include changing resources (news feeds etc ...)
- Page will be included at **translation/compile** time. Actual code is included.

Jsp:include vs. <%@ include .. %>

Table Summary

	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 (code etc ...)
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 pages uses?	No	Yes
Does main page need to be updated when included page changes?	No	Yes

Which Should You Use?

Design Decisions

- 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 significant.
 - Static includes affect page size, dynamic includes affect processing overhead
 - Static includes avoid the overhead of the request dispatcher that a dynamic include necessitates.
- The include directive (`<%@ include ... %>`) has some additional power
 - Main page
`<%! int accessCount = 0; %>`
 - Included Page
`<%@ include file="snippet.jsp"%>`
`<%= accessCount++ %>`

Reusable Footer: Include Directive Example

Typical Footer

```
SomeRandomPage.jsp ContactSection.jsp
1 <%@ page import="java.util.Date"%>
2
3 <!-- The following become fields in each servlet that
4      results from a JSP page that includes this file. --%>
5
6 <%!
7     private int accessCount = 0;
8     private Date accessDate = new Date();
9     private String accessHost = "<I>No previous access</I>";
10 %>
11
12 <P>
13     <HR>
14     This page &copy; 2015
15     <A HREF="http://www.my-company.com/">my-company.com</A>. This page has been accessed
16
17     <%=++accessCount%>
18     times since server reboot. It was most recently accessed from
19
20     <%=accessHost%> at <%=accessDate%>.
21 <%
22     accessHost = request.getRemoteHost();
23     accessDate = new Date();
24 %>
```

Footer defines **accessCount** field
in jsp declaration tag

jsp expression tag
increments
accessCount

Reusable Footer: Include Directive (<@include>) Example

Typical Main Page

```
SomeRandomPage.jsp ContactSection.jsp
1 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2
3 <!--
4 Example of including files at page translation time, rather
5 than including output at request time as with jsp:include.
6 -->
7
8 <HTML>
9 <HEAD>
10 <TITLE>Some Random Page</TITLE>
11 <META NAME="author" CONTENT="J. Random Hacker">
12 <META NAME="keywords" CONTENT="foo,bar,baz,quux">
13 <META NAME="description" CONTENT="Some random Web page.">
14 <LINK REL="STYLESHEET" HREF="JSP-Styles.css" TYPE="text/css">
15 </HEAD>
16
17 <BODY>
18 <TABLE BORDER=5 ALIGN="CENTER">
19 <TR>
20 <TH CLASS="TITLE">Some Random Page</TH>
21 </TR>
22 </TABLE>
23 <P>Information about our products and services.
24 <P>Blah, blah, blah.
25 <P>
26 Yadda, yadda, yadda.
27 <%@ include file="/WEB-INF/includes/ContactSection.jsp"%>
28 </BODY>
29
30 </HTML>
```

include directive.
Note relative
location of footer

Reusable Footers: Include Directive Example

Result



Footer content
added to bottom
of main jsp page

Example Summary

1. Footer defines **accessCount** field (instance variable)
2. If main page had used **accessCount**, then `<%@include .../>` would be compulsory.

Question: Why?

3. In the example, the main page did not use **accessCount**

Question: So why did the code use `@include`?

Summary

- `<jsp:include page="Relative URL">`
 - Output of URL inserted into JSP page at request time
 - Cannot contain JSP content that affects the main page
 - Changes to the included file do not necessitate changes to the pages that use it.
- `<%@ include file="Relative URL"%>`
 - File gets inserted into JSP page prior to page translation
 - Thus the file can contain JSP content that affects entire page (eg: think import statement)
 - Changes to the included file may require additional manual changes to the pages using it.

Questions?