



Java EE Programming

COMP 303

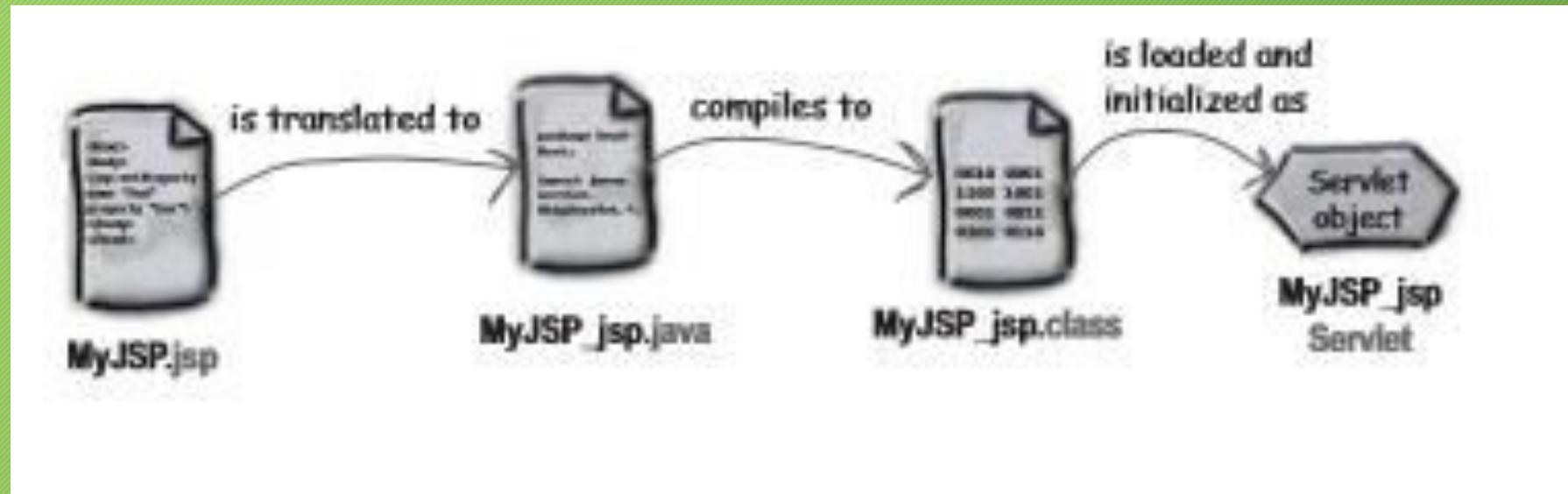
Lecture 4.2: Spring JSP

JSP Introduction

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- A way to create dynamic web pages like a servlet
- Server side processing which requires a web server to run a JSP
- Based on Java Technology,
 - Large library base
 - Platform independence
- Separates the graphical design from the dynamic content.
- JSP contains HTML tags and embedded Java code.

How does a JSP work?



- Directives
- Declarations
- Expressions
- Scriptlets
- Implicit objects
- Standard actions

- JSP directives are instructions to the JSP container that are processed during the page translation process.
- Directives provide a mechanism for making page-level information available to the JSP engine.
- The directives are declared between <%@and%> directive delimiters and take the following form:

<%@ directive {attribute="value"}* %>

JSP page directives

- The page directive is used to provide instructions about a specific JSP page to be used by the container to generate the underlying servlet.
- The following is the basic syntax of the page directive:

```
<%@ page attribute="value" %>
```

JSP Page directives attributes

Attribute	Purpose
autoFlush	Controls the behavior of the servlet output buffer. It indicates whether the buffer should be automatically written when it is full.
buffer	Specifies the buffering model for the servlet output stream. It indicates the size of the buffer.
contentType	Specifies the MIME type and character encoding scheme for the response.
errorPage	Specifies the URL of a JSP that handles the error conditions and reports the runtime exceptions.
extends	Indicates a superclass that the generated servlet must extend.
import	Specifies the classes for use in the JSP page similar to the import statement in Java.
info	Specifies a string for servlet's getServletInfo() method.
isELIgnored?	Specifies whether the EL expression is allowed in the JSP page.
isELEnabled	
isErrorHandler	Specifies whether this JSP page is meant to handle error conditions and report runtime exceptions.
isScriptingEnabled	Specifies whether scripting elements are allowed in the JSP page.
isThreadSafe	Indicates whether the JSP page can handle concurrent requests.
language	Indicates the scripting language that is used in the JSP page.
session	Specifies whether the JSP page participates in the HTTP session.

JSP Page directive example

- Defines attributes that apply to an entire page

```
<%@ page [language="java"]  
[extends="package.class"]  
[import="package.class"]  
[contentType="mimeType"]  
[errorPage="relativeURL"] %>
```

Example:

```
<%@ page extends="myClass" import='java.util.*'  
contentType="text/html" errorPage="error.jsp" %>
```

JSP <include> directive

- Includes a static file

```
<%@ include file="relativeURL" %>
```

Example:

main.jsp: <html><body>

 Current date and time is:

```
<%@include file="date.jsp" %>
```

```
    </body></html>
```

date.jsp: <%@page import ="java.util.*" %>

```
<% =(new java.util.Date()).toLocaleString() %>
```

Output : Current date and time is:

Oct 12, 2016 4:56:50

JSP variable

- Declares a variable or method

```
<% ! declaration; %>
```

Example:

```
<body>
<%! String name; %>
<% name = request.getParameter("name"); if (
    name == null )
name = "World";
%>
<h1>Hello, <%= name %>. </h1>
</body>
```

JSP expression

- To code an expression that can be converted to a string, you use the `<% =` and `%>` tags.
- Within a JSP expression, you can code any Java expression that evaluates to a Java object or to a primitive type.

JSP Example

```
<HTML>
<BODY>
<H2>JSP Expressions</H2>
<UL>
<LI>Current time: <%= new java.util.Date() %>
<LI>Server: <%= application.getServerInfo() %>
<LI>Session ID: <%= session.getId() %>
<LI>The <CODE>testParam</CODE> form parameter:
<%= request.getParameter("testParam") %>
</UL>
</BODY>
</HTML>
```

- **response:** response is subclass of HttpServletResponse.
- **request:** request represents the clients request and is a subclass of HttpServletRequest.
- **session:** session represents the HTTP session object associated with the request.
- **out:** out is an object of output stream and is used to send any output to the client.

API vs. Implicit Objects

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API	Implicit Object
JspWriter	out
HttpServletRequest	request
HttpServletResponse	response
HttpSession	session
ServletContext	application
ServletConfig	config
JspException	exception
PageContext	pageContext
Object	page

JSP Scriptlet

- To code a scriptlet that contains one or more Java statements, you use the `<%` and `%>` tags.
- Within a scriptlet, you can code one or more Java statements. You must end each Java statement with a semicolon.
- Contains a code fragment

<% code fragment %>

Example:

```
<%
    int numOfTimes = 1;
    while (numOfTimes <= 5)
    {
%>
    <h1>This line is shown <%= numOfTimes %> of 5 times in a JSP.</h1>
<%
        numOfTimes++;
    }
%>
```

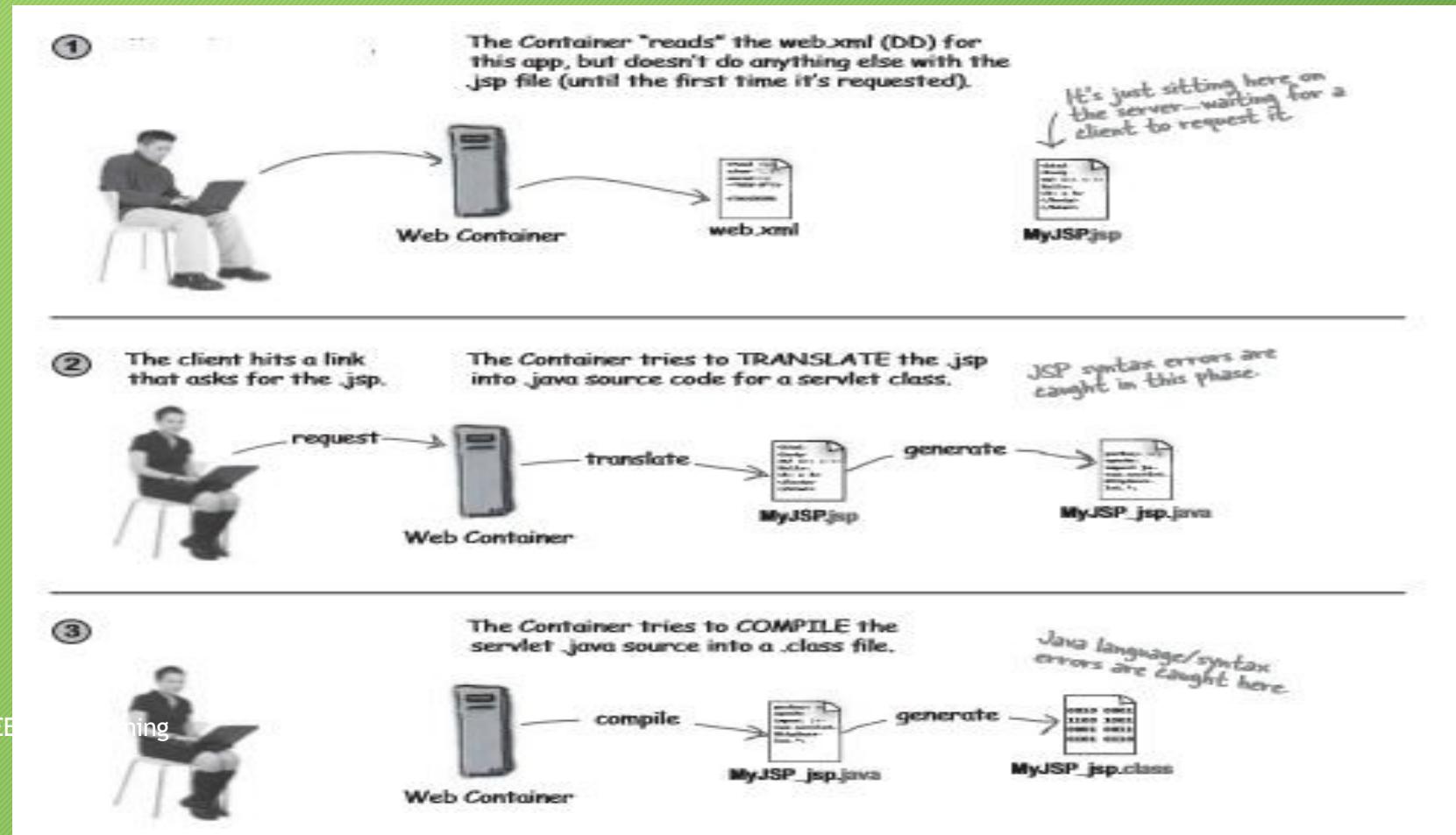
- In JSP, The JSP tag for a comment looks like,
<%-- This is a JSP Comment --%>
- Use of JSP comment in your code, to improve readability and help troubleshoot in situations where you don't want to reveal your thought process to the end user.

JSP Translation and Compilation

During the translation phase each type of data in a JSP page is treated differently. Static data is transformed into code that will emit the data into the response stream. JSP elements are treated as follows:

- Directives are used to control how the web container translates and executes the JSP page.
- Scripting elements are inserted into the JSP page's servlet
- Expression language expressions are passed as parameters to calls to the JSP expression evaluator.
- `jsp:[set | get]`Property elements are converted into method calls to JavaBeans components.
- `jsp:[include | forward]`elements are converted into invocations of the Java Servlet API.
- Custom tags are converted into calls to the tag handler that implements the custom tag.

Life Cycle of JSP



JSP <jsp:forward>

- Forwards request to another file (HTML, JSP, or Servlet) for processing

```
<jsp:forward page =“relativeURL” >
```

Example:

```
<jsp:forward page=“scripts/login.jsp” />
```

or

```
<jsp:forward page=“scripts/login.jsp” >  
    <jsp:param name=“username” value=“jsmith”/>
```

```
</jsp:forward>
```

JSP <jsp:include>

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- Includes a static or dynamic file
`<jsp:include page =“relativeURL” >`

Example:

```
<jsp:include page=“scripts/login.jsp” />  
<jsp:include page=“copyright.html” />
```

- Basham B.; Sierra K; Bates B, Head First Servlets and JSP, 2nd Edition, O'Reilly Media, Inc., 2008

Chapter 7

- <http://docs.oracle.com/javaee/5/tutorial/doc/bnagx.html>

Questions?

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