

Lecture 9

JSP Introduction and Overview

Lecture Agenda

- 1 Understanding the need for JSP.
- 2 Evaluating the benefits of JSP.
- 3 Comparing JSP to other technologies.
- 4 Avoiding JSP misconceptions
- 5 Understanding the JSP Lifecycle
- 6 Installing JSP Pages
- 7 Looking at JSP in the real world

Understanding the need for JSP

Introduction to JSP

Understanding the need for JSP

- With Servlets, it is easy to ...
 - Read form data
 - Read HTTP request headers
 - Set HTTP status codes and response headers
 - Use cookies and session tracking
 - Share data among servlets
 - Remember data between requests
- But, it is a pain to
 - Use println statements to generate HTML
 - Maintain the HTML code with the servlet (PrintWriter etc...)

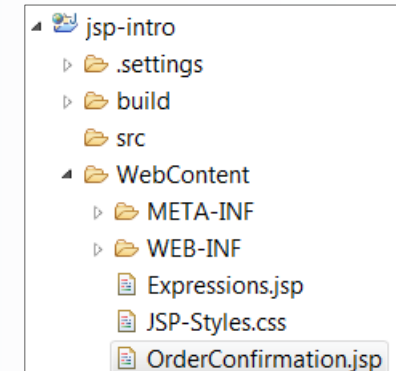
The JSP Framework

Introduction to JSP

■ Concept

- Use regular HTML for most of the page
- Mark Servlet code with special tags
- Entire JSP page gets translated into servlet (once) and servlet is what actually gets invoked (each request).

```
OrderConfirmation.jsp
1 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2 <HTML>
3 <HEAD>
4 <TITLE>Order Confirmation</TITLE>
5 <LINK REL=STYLESHEET HREF="JSP-Styles.css" TYPE="text/css">
6 </HEAD>
7 <BODY>
8     <H2>Order Confirmation</H2>
9     Thanks for ordering
10    <I><%=request.getParameter("title")%></I>!
11 </BODY>
12 </HTML>
```



Benefits of JSP

| Benefit | Explanation |
|-----------------|---|
| Write/Read HTML | <ul style="list-style-type: none">• Write HTML is easier to write• HTML code for project is easier to read and maintain |
| Specialization | <ul style="list-style-type: none">• Use standard HTML tools such as Dream Weaver• Have different members of your team do HTML layout while other members do Java programming |
| Organized Code | <ul style="list-style-type: none">• Separate Java code that creates the content from the (HTML) code that presents it. |

Advantages of JSP over Competing Technologies

| Technology | Explanation |
|------------------------|--|
| ASP or ColdFusion | <ul style="list-style-type: none">• JSP is a better language for dynamic content• Portable to multiple servers and operating systems |
| PHP | <ul style="list-style-type: none">• Larger tool and industry support. |
| Pure Servlets | <ul style="list-style-type: none">• More convenient to create HTML• Can use added tools (Dreamweaver)• Divide and conquer• JSP Programmers must know servlet programming! |
| Client-Side JavaScript | <ul style="list-style-type: none">• Capabilities do <u>not</u> overlap |

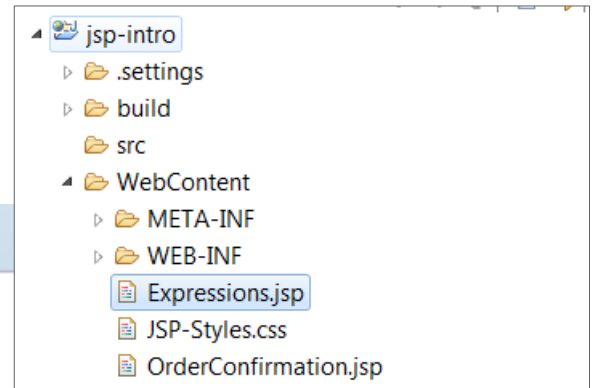
Setting Up Your Environment for JSP

| Technology | Explanation |
|--|---|
| Set CLASSPATH | <ul style="list-style-type: none">• No Change |
| Compile Code | <ul style="list-style-type: none">• No Change |
| Place JSPs in Special directory | <ul style="list-style-type: none">• Use the WebContent folder in Eclipse• Same folder as HTML, GIFs, JPEG CSS etc .. |
| Use Special URLs to invoke JSP Page | <ul style="list-style-type: none">• Same URLs as for HTML pages (<u>except</u> for file extensions). |

Example JSP

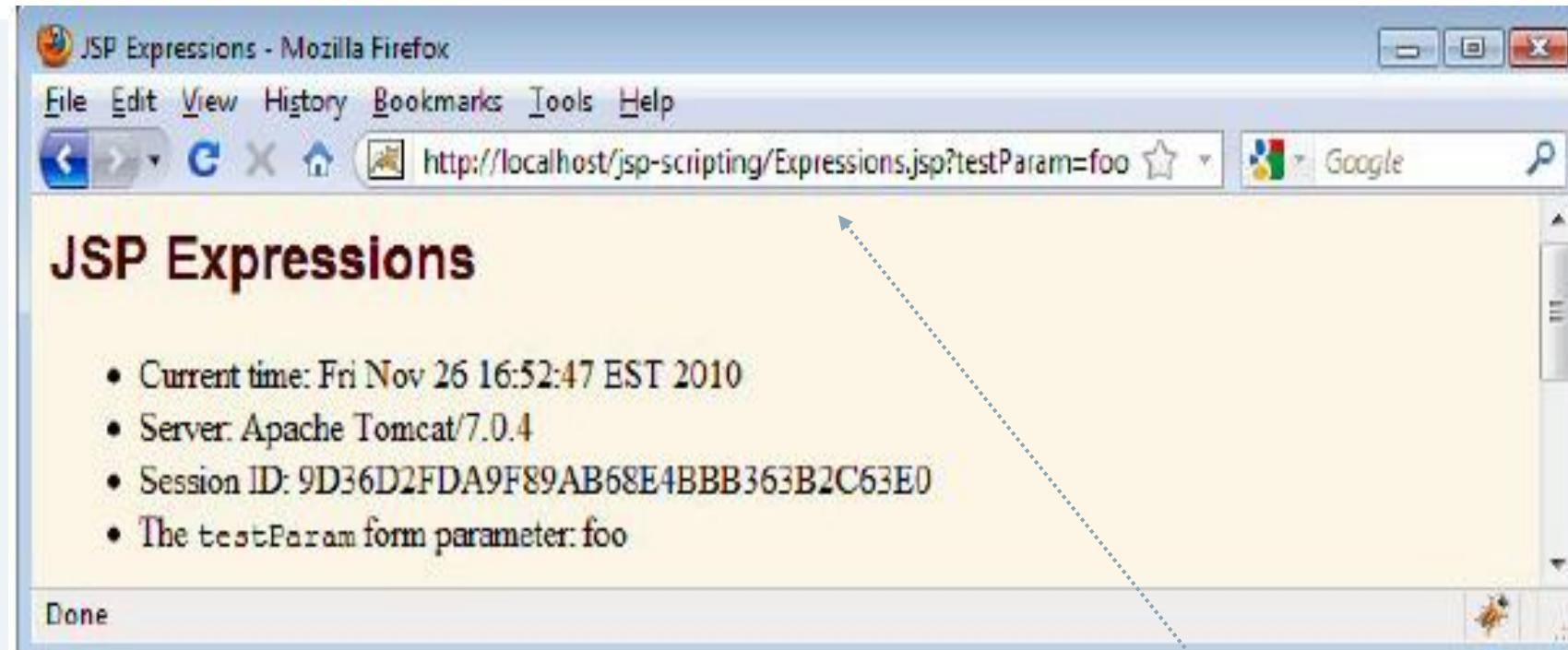
Expressions.jsp

```
1 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
2 <HTML>
3 <HEAD>
4 <TITLE>JSP Expressions</TITLE>
5 <META NAME="keywords"
6     CONTENT="JSP, expressions, JavaServer Pages, servlets">
7 <META NAME="description" CONTENT="A quick example of JSP expressions.">
8 <LINK REL="stylesheet" HREF="JSP-Styles.css" TYPE="text/css">
9 </HEAD>
10 <BODY>
1     <H2>JSP Expressions</H2>
2     <UL>
3         <LI>Current time: <%=new java.util.Date()%>
4         <LI>Server: <%=application.getServerInfo()%>
5         <LI>Session ID: <%=session.getId()%>
6         <LI>The <CODE>testParam</CODE> form parameter: <%=request.getParameter("testParam")%>
7     </UL>
8 </BODY>
9 </HTML>
```



Java Code and HTML in JSP

Example: JSP Result



- URL:
 - `http://hostname/<project-name>/filename.jsp`

Note filename extension for JSP (.jsp)

JSP Misunderstandings

JSP Misunderstandings

Most common JSP Misunderstandings

- JSP is a Server-Side technology
 - JSP is a server-side technology, not a client-side technology.
- Very Common Question

Q: I can't do such-and-such with HTML. Will JSP let me do it?

A: Remember JSP runs entirely on the server.
- Similar questions ...

Q: How do I put an image in JSP page?

A: Send an tag to the client

Q: How do I use JavaScript in JSP?

A: Send the appropriate HTML tags

```
<script src="js/angular/angular.min.js"></script>
```

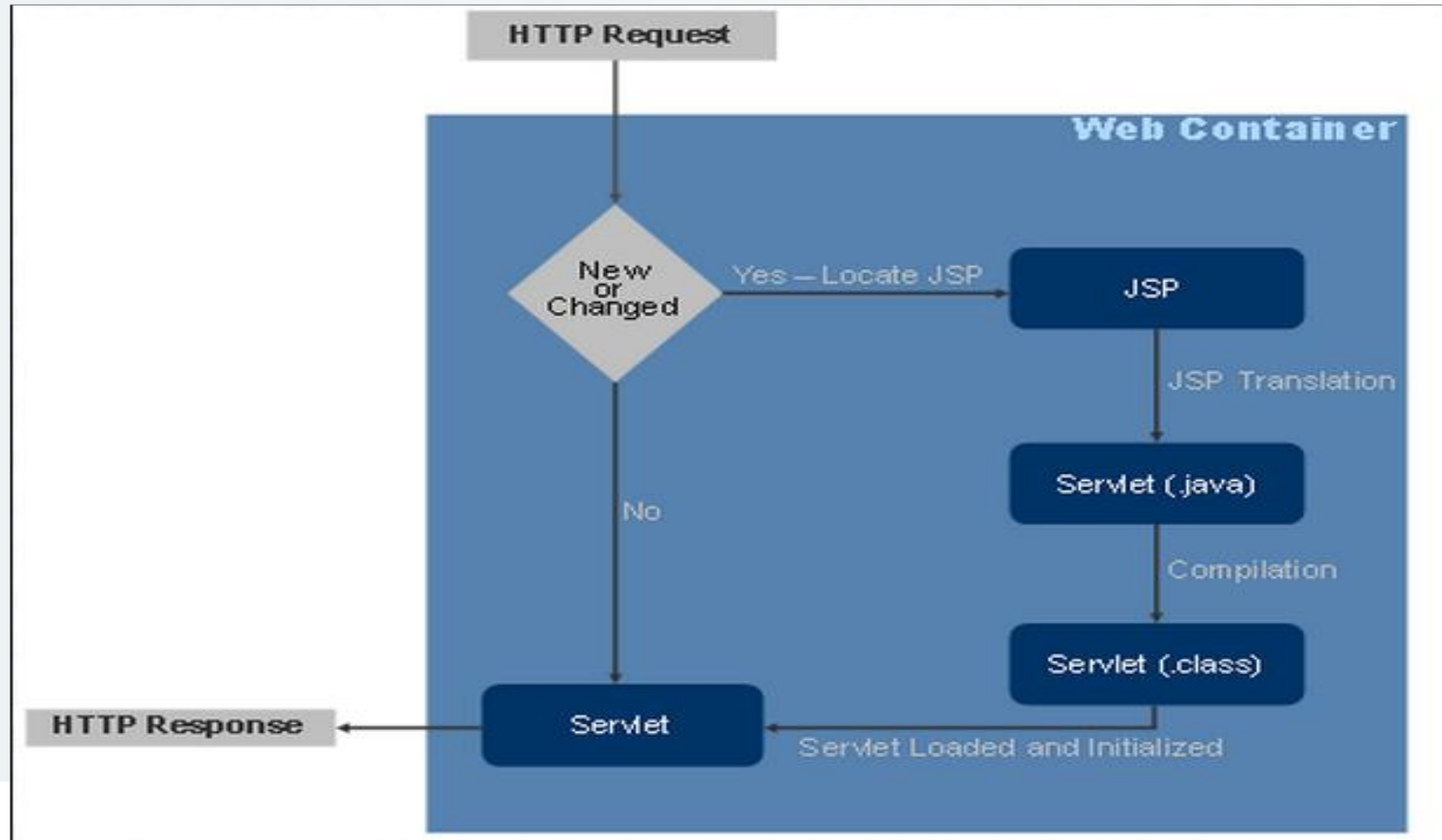
Translation/Request Time Confusion

Understanding JSP

- What happens at page translation time?
 - JSP constructs get translated into servlet code
- What happens at request time?
 - Servlet code gets executed. No interpretation of JSP occurs at request time. The original JPS is ignored at request time; only the servlet that resulted from it is used.
- When does page translation occur?
 - Typically, the first time JSP page is accessed after it is modified. This should never happen to real user (developer should test all JSP pages they install).
 - Page translation does not occur for each request.

JSP Lifecycle

JSP Lifecycle Diagram



JSP/Servlets in the Real World?

Ten Most Popular Web Sites

Top 10 Most popular Web Sites

1. Google

- Java (Web),
C++ (indexing)

2. Facebook

- PHP

3. YouTube

- Flash, Python, Java

4. Yahoo

- PHP and Java

5. Microsoft Live.com

- .NET

6. Baidu

- Unknown

7. Wikipedia

- PHP

8. Blogger

- Java

9. MSN

- .NET

10. Twitter

- Ruby on Rails, Scala, Java

JSP and Servlets in the Real World

Companies using JSP

| | | |
|------------------------|------------------------------|--------------------|
| Delta Airlines | American Century | WarnerBrothers.com |
| United Airlines | Vanguard | Billboard.com |
| AirTran | Fidelity | E!(eonline.com) |
| American Airlines | NY Stock Exchange | PBS.org |
| British Airways | First USA Bank | Comcast |
| KLM | Royal Bank of Scotland | games.atari.com |
| Air China | Banco Popular de Puerto Rico | DHS |
| Saudi Arabian Airlines | Bank of America | TSA |
| Iceland Air | China Construction Bank | FAA |
| Travelocity.com | Sears.com | CIA |
| Orbitz.com | Walmart.com | NSA |
| HotWire.com | HomeDepot.com | GSA |
| Hotels.com | SamsClub.com | IRS |
| CheapTickets.com | Macys.com | Army |
| National Car Rental | Ilbean.com | Navy |
| Avis Car Rental | Kohls.com | USPS |
| Enterprise Car Rental | Ikea.com | NSF |
| Hertz Car Rental | Target.com | UN Oceans |
| | Longaberger.com | diabetes.org |
| | Nike.com | fas.org |
| | CircuitCity.com | dlse.org |
| | | science.edu.sg |
| | | gbif.net |
| | | collegeboard.com |

Questions?