

*Core Servlets and JavaServer Pages / 2e*  
*Volume 1: Core Technologies*  
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**JSP**  
**Intro and Overview**

# Agenda

- **Understanding the need for JSP**
- **Evaluating the benefits of JSP**
- **Comparing JSP to other technologies**
- **Avoiding JSP misconceptions**
- **Understanding the JSP lifecycle**
- **Installing JSP pages**
- **Looking at JSP in the real world**

# 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
  - Get fun, high-paying jobs
- **But, it sure is a pain to**
  - Use those println statements to generate HTML
  - Maintain that HTML

# The JSP Framework

- **Idea:**

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

- **Example:**

```
<!DOCTYPE ...>
<HTML>
<HEAD>
<TITLE>Order Confirmation</TITLE>
<LINK REL=STYLESHEET
      HREF="JSP-Styles.css"
      TYPE="text/css">
</HEAD>
<BODY>
<H2>Order Confirmation</H2>
Thanks for ordering
<I><%= request.getParameter("title") %></I>!
</BODY></HTML>
```

# Benefits of JSP

- **Although JSP technically can't do anything servlets can't do, JSP makes it easier to:**
  - Write HTML
  - Read and maintain the HTML
- **JSP makes it possible to:**
  - Use standard HTML tools such as Macromedia DreamWeaver or Adobe GoLive.
  - Have different members of your team do the HTML layout than do the Java programming
- **JSP encourages you to**
  - Separate the (Java) code that creates the content from the (HTML) code that presents it

# Advantages of JSP Over Competing Technologies

- **Versus ASP or ColdFusion**
  - Better language for dynamic part
  - Portable to multiple servers and operating systems
- **Versus PHP**
  - Better language for dynamic part
  - Better tool support
- **Versus pure servlets**
  - More convenient to create HTML
  - Can use standard tools (e.g., DreamWeaver)
  - Divide and conquer
  - **JSP programmers still need to know servlet programming**

# Advantages of JSP (Continued)

- **Versus Velocity or WebMacro**
  - Standard
- **Versus client-side JavaScript (in browser)**
  - Capabilities mostly do not overlap with JSP, but
    - You control server, not client
    - Richer language
- **Versus server-side JavaScript (e.g., LiveWire, BroadVision)**
  - Richer language
- **Versus static HTML**
  - Dynamic features
  - Adding dynamic features no longer “all or nothing” decision

# Setting Up Your Environment

- **Set your CLASSPATH. Not.**
- **Compile your code. Not.**
- **Use packages to avoid name conflicts. Not.**
- **Put JSP page in special directory. Not.**
  - *install\_dir\webapps\ROOT\* (HTML and JSP -- Tomcat)
  - *install\_dir\servers\default\default-app* (JRun)
- **Use special URLs to invoke JSP page. Not.**
  - Use same URLs as for HTML pages (except for file extensions)
- **Caveats**
  - Previous rules about CLASSPATH, install dirs, etc., still apply to regular Java classes used by a JSP page



# Example

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML>
<HEAD>
<TITLE>JSP Expressions</TITLE>
<META NAME="keywords"
      CONTENT="JSP,expressions,JavaServer Pages">
<META NAME="description"
      CONTENT="A quick example of JSP expressions.">
<LINK REL=STYLESHEET
      HREF="JSP-Styles.css"
      TYPE="text/css">
</HEAD>
```

# Example (Continued)

```
<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>
```

# Example: Result

- **If location was**

`C:\jakarta-tomcat-xx\webapps\ROOT\jsp-scripting\Expressions.jsp`

- **URL would be**

- `http://localhost/jsp-scripting/Expressions.jsp`

## **JSP Expressions**

- Current time: Mon Oct 31 15:49:45 EST 2005
- Server: Apache Tomcat/5.5.9
- Session ID: 0388502C8442AE5A21D2512DEA09C4A4
- The testParam form parameter: null

# Translation/Request Time Confusion

- **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 JSP page is totally 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 (developers should test all JSP pages they install).
  - Page translation does *not* occur for each request.

# The JSP Lifecycle

		Request #1	Request #2		Request #3	Request #4		Request #5	Request #6
JSP page translated into servlet	Page first written	Yes	No	Server restarted	No	No	Page modified	Yes	No
Servlet compiled		Yes	No		No	No		Yes	No
Servlet instantiated and loaded into server's memory		Yes	No		Yes	No		Yes	No
init (or equivalent) called		Yes	No		Yes	No		Yes	No
doGet (or equivalent) called		Yes	Yes		Yes	Yes		Yes	Yes

# JSP/Servlets in the Real World: Airlines

- Delta Airlines
- United Airlines
- AirTran
- American Airlines
- British Airways
- KLM
- Air China
- Saudi Arabian Airlines
- Iceland Air

The screenshot displays the Delta Airlines website interface within a Mozilla Firefox browser window. The browser's address bar shows the URL <http://www.delta.com/home/index.jsp>. The website features a prominent Delta logo at the top left and a search bar at the top right. A navigation menu includes links for Home, Travel, SkyMiles®, Programs & Services, About Delta, and Contact Us. The main content area is divided into several sections: a SkyMiles log in section with fields for SkyMiles number and PIN, a flight search section with options for Round-trip and One-way, and a section for purchasing flights online for 1,000 bonus miles. The flight search section includes fields for Leaving from, Departure date (Feb 13), Time (morning), Going to, Return date (Feb 20), and Time (morning). It also features a Passengers dropdown set to 1 and a Preferred cabin (fare) dropdown set to Coach (Deeply-discounted). A Refundable checkbox is present. Below the flight search is an Itinerary Search & Check-In section with fields for First name, Last name, and Confirmation #. The Flight Information section includes a Flight number dropdown, Leaving from and Going to fields, and radio buttons for Yesterday, Today (selected), and Tomorrow. The footer contains copyright information for ©2005 Delta Air Lines and links for News Releases, Privacy Policy, Security, Legal Notices, Customer Commitment, and Web Compatibility.

# JSP/Servlets in the Real World: Travel Sites

- Travelocity.com
- Orbitz.com
- HotWire.com
- Hotels.com

The image shows two overlapping browser windows. The top window is Hotwire.com, displaying a search interface with a navigation menu (Home, Flights, Hotels, Car Rentals, Packages, Cruises, Deals & Destinations) and a search form. The bottom window is Orbitz.com, showing a search form with fields for 'From', 'To', 'Leave', and 'Return', and a 'Find' button. The Orbitz.com page also features a 'CLEARED FOR SAVING!' banner and a 'Featured Deals' section.

**Hotwire.com**  
Fly. Sleep. Drive. Cheap.  
Welcome to Hotwire!  
(To create a Hotwire Account, [click here.](#))  
[My Account](#) [Customer Care](#)

**Orbitz.com**  
Welcome to Orbitz. [Sign in](#) | [Register now](#)  
[Site feedback](#)

**Orbitz Search Form:**

Build your trip, find a great deal!

Flight + Hotel (selected) | Flight + Car | Hotel + Car

From: City name or airport code | To: City name or airport code

Leave: Feb 27 | Return: Mar 6

OPTIONAL (U.S. & CANADA ONLY)  
 Search one day before and after  
[Find low fares for weekends and flexible trips](#)

Travelers (up to 9)

Adult (18-64)	Senior (65+)	Youth (12-17)	Child (2-11)	Infant in lap (under 2 yrs)	Infant in seat (under 2 yrs)
1	0	0	0	0	0

[Expand search options](#)  
(One-way, non-stops, preferred airlines, etc.) [Find](#)

**Orbitz.com Promotions:**

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LANDING LOW FARES JUST GOT EASIER  
Airlines announce new, simplified fares **from \$95\***

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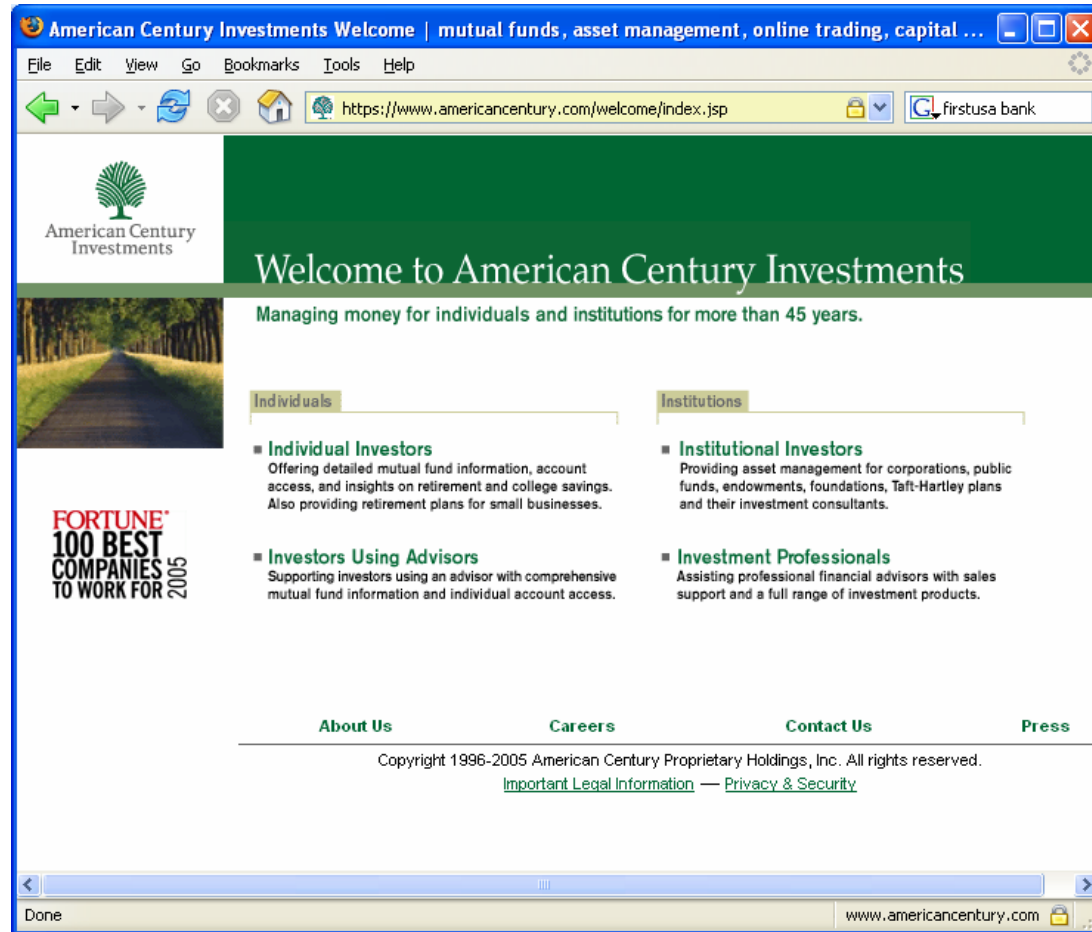
Deal	From*
<a href="#">Cruise Bonus Event</a>	<a href="#">Save</a>
<a href="#">Save on vacation packages to the Caribbean</a>	<b>\$500</b>
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# JSP/Servlets in the Real World: Financial Services

- American Century
- Vanguard
- Fidelity
- NY Stock Exchange
- First USA Bank
- Royal Bank of Scotland
- Banco Popular de Puerto Rico
- Bank of America
- China Construction Bank





# JSP/Servlets in the Real World: Retail

- Sears.com
- Walmart.com
- SamsClub.com
- Macys.com
- Ibean.com
- Kohls.com
- Ikea.com
- REI.com
- Longaberger.com

Sears.com - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.sears.com/sr/java/sr/home.do?BV\_SessionID=@@@@1786211443.1107722

Sears

Shopping Cart | My Profile | Order Status | Customer Service | Store locator

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**Clothing**  
• Womens  
• Mens  
• Girls 4 - 6X  
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• Cameras & Camcorders  
• Televisions  
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See more

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• Bedding  
• Furniture & Storage  
See more

**Gifts**

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Price Match Plus policy  
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As seen on TV

Extreme MAKEOVER HOME EDITION

# JSP/Servlets in the Real World: Entertainment

- WarnerBrothers.com
- Billboard.com
- E! (eonline.com)
- PBS.org



# JSP/Servlets in the Real World: Military and Federal Government

- DHS
- TSA
- FAA
- CIA
- NSA
- GSA
- IRS
- Army
- Navy

The image displays three overlapping browser windows. The top window is Mozilla Firefox showing the DHS Home Page (http://www.dhs.gov/dhspublic/index.jsp). The middle window is Mozilla Firefox showing the TSA Home Page (http://www.tsa.gov/public/index.jsp). The bottom window is Mozilla Firefox showing the GoArmy.com website (http://www.goarmy.com/flindex.jsp). The GoArmy.com page features a navigation menu with links like HOME, ABOUT THE ARMY, CAREERS & JOBS, BENEFITS, SOLDIER LIFE, and FOR PARENTS. It also includes a search bar, a U.S. Army logo, and a 'CONTACT THE ARMY' section with options like 'Request Info Pack', 'Ask a Question', 'Chat with a Recruiter', 'Locate a Recruiter', 'Learn How to Join', and 'ARMY CAREER EXPLORER'. The main content area of GoArmy.com has a background image of a military helicopter and text asking 'What's it like being a Soldier?', 'How does the Army work?', and 'What jobs does the Army offer?'.

# JSP/Servlets in the Real World: Sports

- Baltimore Orioles
- Major League Baseball (mlb.com)
- NHL.com
- Nascar.com
- The Sports Authority
- Dicks Sporting Goods

The screenshot shows the Baltimore Orioles' official website in a Mozilla Firefox browser window. The browser's address bar displays the URL: `http://baltimore.orioles.mlb.com/NASApp/mlb/index.jsp?c_id=bal`. The website header includes the Orioles logo, navigation links for Scoreboard, Stats, Schedule, Minors, History, Fan Forum, Community, and Kids, and a search bar. The main content area features a large photo of Sammy Sosa smiling, with a headline: "Mailbag: What will Sosa's impact be?". Below the headline is a sub-headline: "Two days after the Orioles officially landed Sammy Sosa in one of the biggest trades in team history, Gary Washburn answers questions from fans in this special Sosa mailbag. Full story". To the right of the main content are several promotional banners: "Spring Training 2005 Countdown to Pitchers and Catchers" with a timer showing "12 days 17 hours 40 minutes 36 seconds"; "Spring Training Tickets" with a "Buy Tickets" button; "Interactive Baseball Network" with a "Buy Tickets" button; "Own a piece of history" with a "Buy Tickets" button; "2005 Season Ticket Account Holders" with a "Renew Your Account Online!" button; "2005 Tickets on Sale Now!" with a "Buy Tickets" button; "Spring Training Tickets on Sale Now!" with a "Buy Tickets" button; and "Junior Orioles dugout club" with a "Buy Tickets" button. The bottom of the page includes a "Complete Game Broadcasts" section, "Orioles QUICK STATS" with radio buttons for AVG, HR, RBI, SB, Wins, ERA, SV, and SO, a "POLL" section with the question "Who will lead the Orioles in home runs this season?", and a "Done" status at the bottom left.

# JSP/Servlets in the Real World: Search/Portals

- Google
- Half.ebay.com
- netscape.com
- excite.com
- dice.com

The image shows two overlapping browser windows. The top window is a Mozilla Firefox browser displaying a Google search for 'java jobs'. The search results show 'Results 1 - 10 of about 11,500,000 for java jobs. (0.23 seconds)'. The bottom window is the Half.com website, which is an eBay site. The website features a search bar, navigation links, and a 'Textbook Superstore' section. The 'Textbook Superstore' section lists several textbooks with their list prices and Half.com prices, totaling \$408.00 and a savings of \$252.51. The website also features a 'Four great reasons to shop at Half.com...' section and a 'Bargain Bins' section for books.

**Google Search: java jobs - Mozilla Firefox**

File Edit View Go Bookmarks Tools Help

Google Web Images Groups News Froogle Local<sup>New!</sup> more »

java jobs Search Advanced Search Preferences

Web Results 1 - 10 of about 11,500,000 for [java jobs](#). (0.23 seconds)

**Half.com: The Smartest Place to Buy and Sell Books, Music, Movies, and Games and more... - Mozilla Firefox**

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http://half.ebay.com/index.jsp

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# Summary

- **JSP makes it easier to create and maintain HTML, while still providing full access to servlet code**
- **JSP pages get translated into servlets**
  - It is the servlets that run at request time
  - Client does not see anything JSP-related
- **You still need to understand servlets**
  - Understanding how JSP really works
  - Servlet code called from JSP
  - Knowing when servlets are better than JSP
  - Mixing servlets and JSP
- **Other technologies use similar approach, but aren't as portable and don't let you use Java for the "real code"**