Java Server Page (JSP)

**Why?**
- It's tedious to generate HTML using println()
- Separate presentation from processing

**How?**
- Java code embedded in HTML documents

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HelloJSP1.jsp

```html
<!DOCTYPE HTML PUBLIC "-/W3C//DTD HTML 4.0 Transitional//EN">
<html>
<head><title>Hello JSP 1</title></head>
<body>A JSP without 3 or 5. </body>
</html>
```

HelloJSP2.jsp

```html
<!DOCTYPE HTML PUBLIC "-/W3C//DTD HTML 4.0 Transitional//EN">
<html>
<head><title>Hello World</title></head>
<body>Hello World on <%= new java.util.Date() %>.</body>
</html>
```

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How Does JSP Work?

![Diagram]

- Look under
  `$CATALINA_HOME/work/Catalina/localhost/context_name`

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Some Simple Observations about the JSP/Servlets

- In package org.apache.jsp
- `_jspService()` handles everything
- replaces service() in HttpServlet
- What happened to doGet(), doPost(), ...??
- HTML text \(\rightarrow\) out.write(...)?
- A number of pre-defined variables
  - request, response, out
  - config, pageContext
  - page, session, application
JSP Components

- HTML template text
- Code elements of Java
  - Scripting elements
  - Directives
  - Beans
  - Expression language
  - Custom tag libraries

Comments

- <%-- Hidden Comments --%>
- <!-- Output (HTML) Comments -->

JSP Expressions

- <%= Java expression %>
  - What’s an expression??
  - The expression is evaluated, converted to a string (how??), and inserted into the output, at runtime
  - Example: BGColor.jsp

Pre-defined Variables

- request, response, out
- session, application
- config, pageContext
- page

Scriptlets

- <% Java code %>
  - All code goes into _jspService()
  - What about class variables? other methods?

Scriptlet Example

```jsp
<% if( Math.random() < 0.5 ) { %>
  <H1>Have a <I>nice</I> day!</H1>
<% } else { %>
  <H1>Have a <I>lousy</I> day!</H1>
<% %>
```
Declarations

- `<%@ class variables or methods %>`
- Example: LifeCycle.jsp
  - Overriding init()

Package Revisited

- Import Java class libraries
  - `<%@ page import="package1.*" %>`
  - `<%@ page import="p1.a, p2.*" %>`
- Using user created classes or third party packages
  - Where??
  - How??

Directives

- Affect the overall structure of the JSP/servlet
- `<%@ type attr="value"... %>`
- Three type of directives
  - page
  - include
  - taglib

Some Page Directives

- `<%@ page import="java.util.*, java.util.zip.*" %>`
- `<%@ page contentType="text/html" %>`
- `<%@ page pageEncoding="Shift_JIS" %>`
- `<%@ page session="false" %>` (default is true -- `%>
- `isELIgnored, errorPage, isErrorPage`