Java Server Page (JSP)

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

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

---

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 J or S.</BODY>
</HTML>
```

HelloJSP2.jsp

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

---

How Does JSP Work?

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

---

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 → `out.write(...)`
Pre-defined Variables
- request, response, out
- session, application
- config, pageContext
- page

The same request, response, session etc. that are used in servlets – see the Servlet API documentation for what you can do with them.

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??

  `<%= expression %>` in JSP

  ```
  out.write(expression) in _jspService()
  ```

Example: Add.jsp
- Add two integer parameters and display the sum

JSP Scriptlets
- <% Java code %>
- All code goes inside _jspService()
Example: Add.jsp Again

Add the code to validate the parameters

Another 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>
%
```

JSP Declarations

- `<%! class variables or methods %>`
- All code goes outside `_jspService()`

Example: RequestCounter.jsp

- Initialize a counter as a class variable
- Increment the counter each time the JSP is requested

JSP Scripting Elements

- JSP Expressions
- JSP Scriptlets
- JSP Declarations

Directives

- Affect the overall structure of the JSP
- `<%@ 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