



Module 15b

Java Server Pages & Java Servlets



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JavaServer Pages (JSP)

JSP is a technology that helps software developers create dynamically generated web pages based on HTML, XML, or other document types.

Released in 1999 by Sun Microsystems.

JSP is similar to PHP, but it uses the Java programming language.

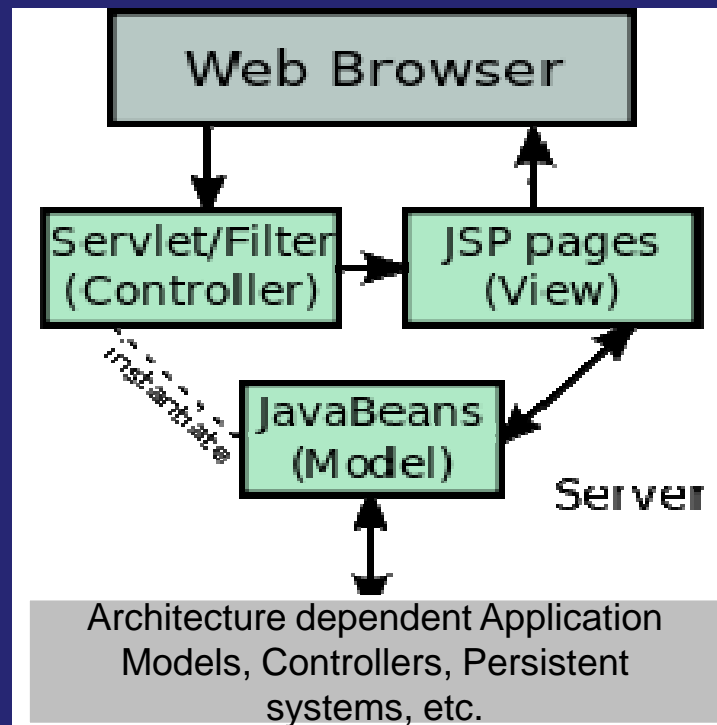
To deploy and run JavaServer Pages, a compatible web server with a *servlet container*, such as Apache Tomcat or Jetty, is required.

Overview

Architecturally, JSP may be viewed as a high-level abstraction of *Java servlets*. JSPs are translated into *servlets* at runtime; each JSP's servlet is cached and re-used until the original JSP is modified.

JSP can be used independently or as the view component of a server-side model–view–controller design, normally with JavaBeans as the model and Java servlets (or a framework such as Apache Struts) as the controller.

Overview



Overview

JSP allows Java code and certain pre-defined actions to be interleaved with static web markup content, with the resulting page being compiled and executed on the server to deliver a document. The compiled pages, as well as any dependent Java libraries, use Java bytecode rather than a native software format.

Like any other Java program, they must be executed within a Java virtual machine that integrates with the server's host operating system to provide an abstract platform-neutral environment.

Syntax

JSP pages use several delimiters for scripting functions.

The most basic is;

`<% ... %>`, which encloses a JSP *scriptlet*. A scriptlet is a fragment of Java code that is run when the user requests the page.

Other common delimiters include:

`<%= ... %>` for *expressions*, where the value of the expression is placed into the page delivered to the user, and

`<%@ ... %>` for *directives*.

Syntax

Java code is not required to be complete or self-contained within its scriptlet element block, but can straddle markup content providing the page as a whole is syntactically correct.

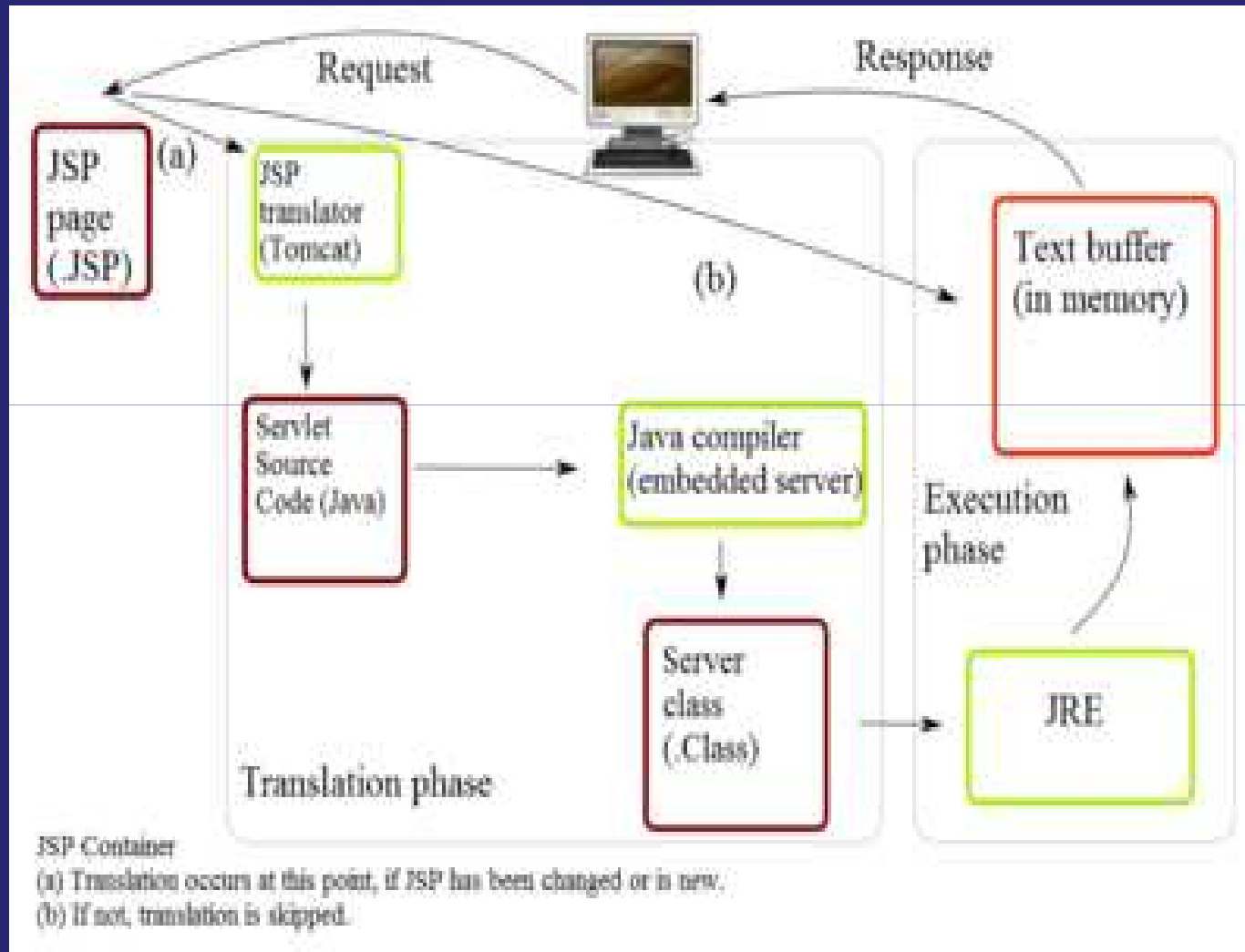
For example, any Java `if/for/while` blocks opened in one scriptlet element must be correctly closed in a later element for the page to successfully compile. Markup which falls inside a split block of code is subject to that code, so markup inside an *if* block will only appear in the output when the *if* condition evaluates to true.

Example

The following would be a valid for loop in a JSP page:

```
<p>Counting to three:</p>
<% for (int i=1; i<4; i++) { %>
    <p>This number is <%= i %>.</p>
<% } %>
<p>Done counting.</p>
```

Life of a JSP File



Comparison with Similar Technologies

JSP pages are similar to PHP pages and ASP.NET Web Forms, in that all three add server-side code to an HTML page. However, all three terms refer to a different component of the system.

- JSP refers to the JSP pages, which can be used alone, with Java servlets, or with a framework such as Apache Struts.
- PHP is itself a programming language, designed for dynamic Web pages.
- ASP.net (Active SP) is a framework comparable to Struts or JavaServer Faces that uses pages called Web Forms.

Comparison with Similar Technologies

While JSP pages use the Java language, ASP.NET pages can use any .NET-compatible language, usually C#.

ASP.NET is designed for a Microsoft Windows web server.

PHP and Java server technologies (including JSP) are fairly operating system agnostic.