

JSP Scripting Elements and Directive Elements

What is JSP?

JSP (JavaServer Pages) is a server-side technology used for creating dynamic, platform-independent web applications. It allows embedding Java code in HTML pages using special JSP tags. JSPs are compiled into servlets by the server and help separate the presentation layer from the business logic.

Key Features:

- Simplifies development of dynamic web pages.
 - Enables code reuse through JavaBeans, custom tags, and tag libraries.
 - Supports tag-based programming.
 - Integrates seamlessly with Java EE technologies.
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1. Scripting Elements in JSP

Definition:

Scripting elements allow you to embed Java code directly into your HTML pages. These are processed on the server side before the response is sent to the client.

Types of Scripting Elements:

Type	Syntax	Purpose
Declaration	<code><%! %></code>	Declares variables or methods used in the JSP page
Scriptlet	<code><% %></code>	Contains Java code executed every time the page loads
Expression	<code><%= %></code>	Outputs the result of a Java expression to the browser

Examples:

1. Declaration:

```
<%! int count = 0; %>
<%! public int increment() { return ++count; } %>
```

2. Scriptlet:

```
<%
    int a = 10;
    int b = 20;
    int sum = a + b;
%>
```

3. Expression:

Sum is: <%= a + b %>

2. Directive Elements in JSP

Definition:

Directives provide global information about the entire JSP page to the JSP engine. They control how the JSP page is compiled.

Types of Directive Elements:

Type	Syntax	Purpose
Page Directive	<%@ page %>	Defines page attributes like imports, session, errorPage
Include Directive	<%@ include %>	Includes a file during the translation phase
Taglib Directive	<%@ taglib %>	Declares tag libraries for custom tags

Examples:

1. Page Directive:

```
<%@ page language="java" contentType="text/html" pageEncoding="UTF-8" %>  
<%@ page import="java.util.Date" %>
```

2. Include Directive:

```
<%@ include file="header.jsp" %>
```

3. Taglib Directive:

```
<%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>
```

3. Difference Between Scripting and Directive Elements

Feature	Scripting Elements	Directive Elements
Purpose	Embeds Java code	Controls page behavior and structure
Syntax	<% %>, <%= %>, <%! %>	<%@ %>
Execution Time	Request time	Translation/compile time
Common Use	Calculations, control logic	Imports, error pages, tag libraries
