

Java Server Pages part-1

JSP:

JSP stands for Java Server Pages.

JSP is a specification for developing applications with Java programming language.

JSP Engine:

JSP Engine is a piece of software and converts JSP into a Servlet

There are three phases in JSP Architecture:

- 1) Conversion 2) Compilation 3) Execution
- 1) JSP converted into a Servlet by JSP Engine.
- 2) Converted Servlet compiled by Java Compiler
- 3) Servlet Executed by Java Runtime Environment and output captured like HTML.
- 4) Jasper is a JSP Engine name in Tomcat Server
- 5) Catalina is a Web Container name in Tomcat Server

JSP Benefits:

- 1) Content and display logic separated
- 2) Simplifying web application development by using JSP with Java beans and custom tags.
- 3) Recompiles automatically whenever changes are made in JSP
- 4) Easier to write and develop web applications

Converted Servlet Life Cycle Methods:

- 1) `jspInit()` 2) `_jspService()` 3) `jspDestroy()`

`jspInit():`

It is called by web container whenever first request comes to a servlet.

_jspService():

It is called by web container for every request.

jspDestroy():

It is called by web container whenever web application is undeployed from server or server shuts down.

JSP Elements:

JSP elements are used to write JSP programs. JSP Elements are divided into three categories.

- 1) Scripting Elements
- 2) Directives
- 3) Actions

Scripting Elements:

There are four scripting elements in JSP:

- 1) Scriptlets
- 2) Declarations
- 3) Expressions
- 4) Comments

1) Scriptlets:

Syntax: <% %>

(or)

<jsp:scriptlet>

===== => Java Code

</jsp:scriptlet>

2) Declarations:

Syntax: <%! %>

(or)

<jsp:declaration>

===== => Java Code

</jsp:declaration>

3) Expressions:

Syntax: <%= %>

(or)

<jsp:expression>

===== => Java Code

</jsp:expression>

4) Comments:

Syntax: <%-- --%>

JSP Implicit Object References:

There are 9 implicit object references are present in JSP. They are ready to use.

- 1) "out" is an object reference of JspWriter
- 2) "request" is an object reference of HttpServletRequest
- 3) "response" is an object reference of HttpServletResponse
- 4) "config" is an object reference of ServletConfig
- 5) "application" is an object reference of ServletContext
- 6) "page" is an object reference of Object
- 7) "pageContext" is an object reference of PageContext
- 8) "session" is an object reference of HttpSession
- 9) "exception" is an object reference of Throwable

JSP Programs:

1) JSP program to display welcome message:

<% out.println("Welcome to JSP"); %>

2) JSP program using HTML:

```
<html>

<body bgcolor=red text=yellow>

<h1>

<% out.println("Welcome"); %>

</h1>

</body>

</html>
```

3) JSP program to count the no. of views:

```
<html>

<body bgcolor=green text=yellow>

<h1><%! int count=0; %>

This page has been accessed <%= ++count %> times

</h1>

</body>

</html>
```

4) Program to display system time:

```
<html>

<body bgcolor=green text=yellow>

<h1>

<% java.util.Date d=new java.util.Date(); %>

<%= d.getHours() %>:<%= d.getMinutes() %>:

<%= d.getSeconds() %>

</h1>
```

```
</body>
```

```
</html>
```

5) Program to display multiplication table:

```
<html>
```

```
<body bgcolor=red text=yellow>
```

```
<table border=20>
```

```
<% for(int i=1;i<=100;i++) { %>
```

```
<tr>
```

```
<td> 5 </td>
```

```
<td> x </td>
```

```
<td><%= i %></td>
```

```
<td> = </td>
```

```
<td><%= 5*i %></td>
```

```
</tr>
```

```
<% } %>
```

```
</table>
```

```
</body>
```

```
</html>
```

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