Java Server Page(JSP)

Introduction to JSP

- **JSP** is a server side technology. It is used for creating dynamic web applications, using java as programming language.

- This is mainly used for implementing presentation layer (GUI Part) of an application. A complete JSP code is more like a HTML with bits of java code in it.

- A JSP page consists of **HTML tags**(generates Static Content) and **JSP tags** (generates Dynamic Content).

- The JSP pages are easier to maintain than Servlet because we can separate designing(**Presentation Logic**) and development(**Business Logic**).

- JSP pages are opposite of Servlets as a servlet adds HTML code inside Java code, while JSP adds Java code inside HTML using JSP tags.

- **Easy to maintain**
  - JSP can be easily managed because we can easily separate our business logic with presentation logic.
  - In Servlet technology, we mix our business logic with the presentation logic.

- **Fast Development: No need to recompile and redeploy**
  - If JSP page is modified, we don't need to recompile and redeploy the project.
  - The Servlet code needs to be updated and recompiled if we have to change the look and feel of the application.

- **Less code than Servlet**
  - In JSP, we can use many tags such as action tags, implicit objects, custom tags, etc. that reduces the code.

To Work with JSP: (Environment Setup)

1. We need to install Java Software Development Kit (SDK)

2. After successful installation we need to set the **PATH** and **JAVA_HOME** environment variables.

- ✓ **PATH**="C:\Program Files\Java\jdk1.8.0_191\bin;.;"
- ✓ **JAVA_HOME=**"C:\Program Files\Java\jdk1.8.0_191".

3. After that, we need to install Tomcat server(ignore this if XAMPP already installed)

The Anatomy of JSP

- The JSP is almost like a regular web page with the inclusion of dynamic behavior through JSP Elements.

- A JSP page consists of **HTML tags**(generates Static Content) and **JSP tags** (generates Dynamic Content).

- Hence We can say that a JSP page has two components

JSP Elements(tags):

- These are the elements that are understood and translated by JSP Container. These elements are used to generate dynamic content.

Template Data(HTML tags):

- These are the elements that are not understood and translated by JSP Container. The template data is used to generate static content.

A Simple JSP Program:

1. Open text editor (notepad,edit+,notepad++,..)
2. Write jsp program and save it with **.jsp** extension in the following location

   In Windows

   C:/xampp/tomcat/webapps/foldername/filename.jsp

   In Linux(ubuntu)

   var/lib/tomcat/webapps/foldername/filename.jsp

3. To execute, Open any browser and give following as **URL**

   Port No of Tomcat Server

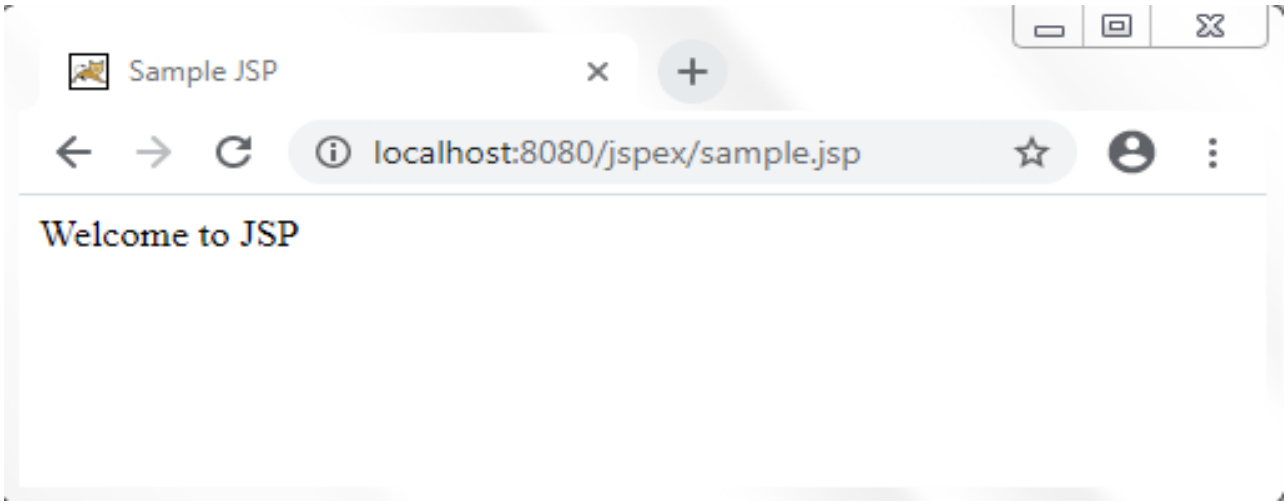
   localhost:8080/foldername/filename.jsp

Example:

"**sample.jsp**"

```
<html>
<head>
<title>Sample JSP</title>
</head>
<body>
<% out.println("Welcome to JSP"); %>
</body>
</html>
```

Output:

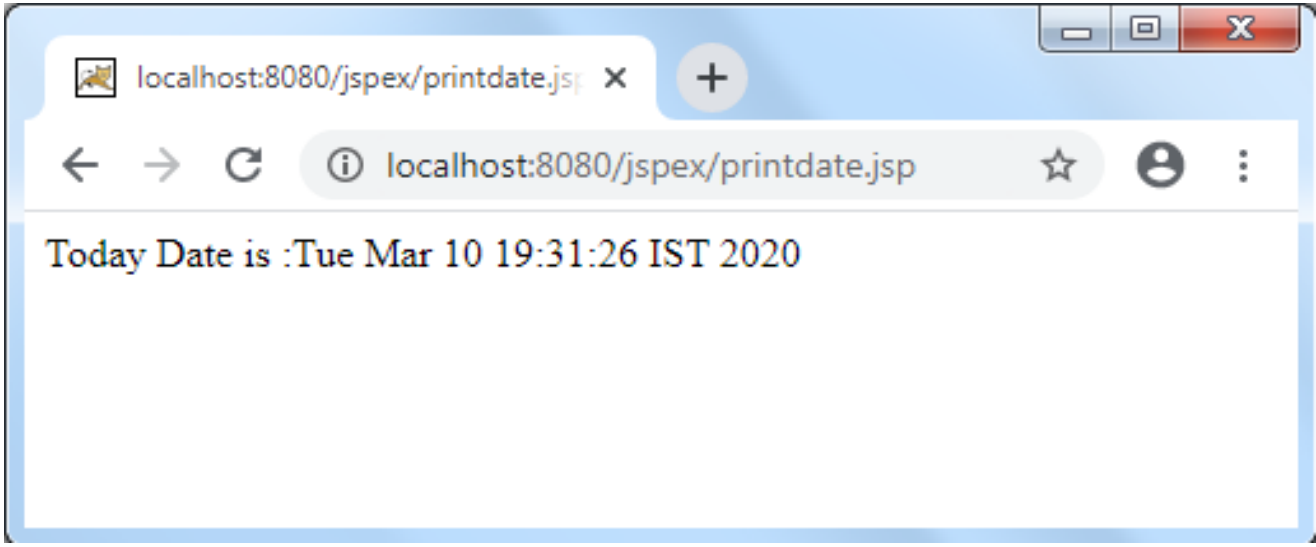


Example: **To display Current System Date and Time**

"**printdate.jsp**"

```
<%@page import="java.util.Date"%>
<html>
<body>
<%
Date d=new Date();
out.println("Today Date is :"+d);
 %>
</body>
</html>
```

Output:



JSP Processing

- Any Web server needs a container to run any web component (or) to provide interface to run web components.

- The JSP also needs a JSP container to execute or process a JSP page.

- In general, a JSP container acts as an interface between JSP page and Server. i.e. it receives all JSP requests and generates the responses.



JSP Processing

- In JSP processing there are two phases ,those are
  - Translation Phase
  - Request Processing Phase

- **In translation phase**, The JSP page converted into servlet code or into (.java file).

- **In request processing phase**, Servlet code can be converted into .class file to process the request.

Fig: JSP Processing

