Servlet

A servlet is a program that resides in server, executes in server, and respond back to client.

Servlet is an Interface that is implemented by GenericServlet class.

As Servlet is an interface that means it is a specification

Servlet is an API.

Servlet is a Technology.

Servlet is a web Component works on web layer of enterprise application.

First Servlet for Tomcat 9

Note: Tomcat 9 is JakartaEE 8.0 compatible so it is fully backward compatible there is no difference between program structure of JakartaEE8.0 and JavaEE8.0

```
import javax.servlet.*;
import java.io.*;
public class MyFirstServlet extends GenericServlet

public void service(ServletRequest req,ServletResponse resp)throws
ServletException,IOException

PrintWriter pw=resp.getWriter();
pw.println("Hello World!!");
```

GenericServlet,ServletRequest,ServletResponse and ServletException available in javax.servlet package

IOException and PrintWriter in java.io package

GenericServlet is an abstract class and service() method is also abstract in GenericServlet class.

ServletRequest and ServletResponse are interface.

Compilation of Program

In order to compile the source code we need the same compiler that we used for JavaSE applications.

As javax.servlet package is not available in java standard edition library and provided by the Tomcat hence need to set the servlet-api.jar (contains javax.servlet package) explicitly in class path.

Excecution of Servlet

in order to exceute servlet we need two things.

create web config file called as web.xml or deployment descriptor file, it is a xml based file provides mapping to the web server.

Deploy the Servlets and web.xml on tomcat.

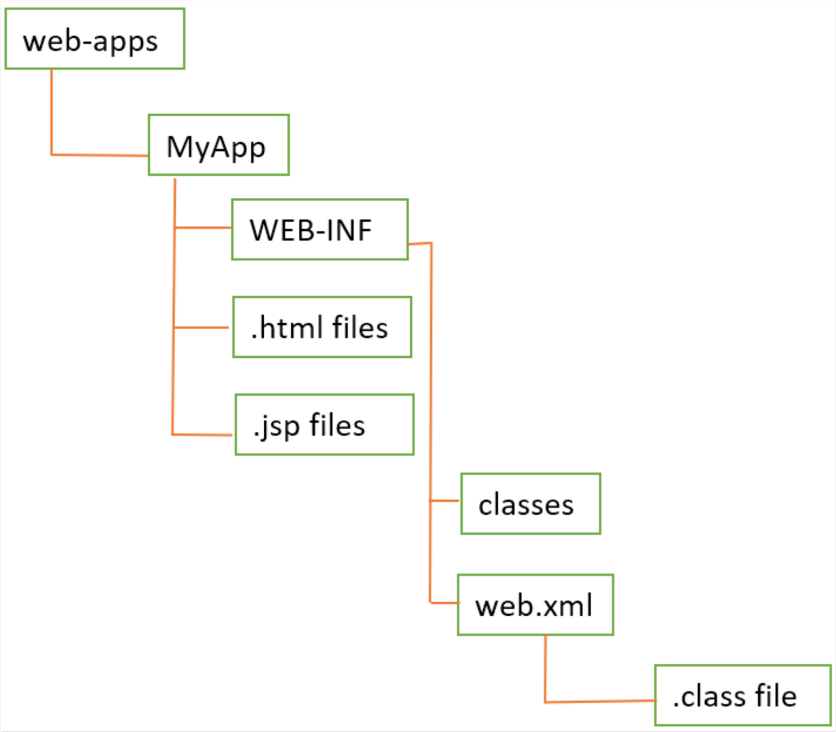
The Deployment Descriptor file

```
<web-app>

<servlet>
<servlet-name>MyFirstServlet</servlet-name>
<servlet-class>MyFirstServlet</servlet-class>
</servlet>

<servlet-mapping>
<servlet-name>MyFirstServlet</servlet-name>
<url-pattern>MyFirstServlet</url-pattern>
</servlet-mapping>

</web-app>
```

Deployment process:

First create the web application root folder in webapps folder of tomact directory ie. MyApp
the webapps folder loaction path would be: c:/program files/apache software foundation10.1/webapps

use the below directory structure to deploy the servlet/jsp/html on server



The Description of web.xml tags.

<servlet> tag:

This tag provides the servlet related information to web server like <servlet-class> tag tells web server about exact .class file name of server.

you can assign any local name for that servlet.class file using <servlet-name> tag.

<servlet-mapping> tag :

This tag's work is to map the request to actual .class file, for this web server uses <url-pattern> tag to map the browser request .

suppose browser will send a request like localhost:1990/MyApp/MyServlet that means the <url-pattern> should be wriiten in format <url-pattren>/MyServlet</url-pattern> to map this request.

now <servlet-mapping> has a subtag <servlet-name> that gives the local name of servlet and this local name is already mapped to actual class name in <servlet> tag.

so webserver gives the clear instruction to application server to excecute MyServlet.class file for request localhost:1990/MyApp/MyServlet

Mapping techniques:

Exact Mapping :in exact mapping url should be exactly same as of the url pattern in web.xml

in exact mapping technique <url-pattern> tag should be written like:
<url-pattern>/abc/pqr/mno<url-pattern>

so the request should be like localhost:1990/MyApp/abc/pqr/mno

Directory Mapping:in directory mapping technique any directory structure can be added after wild card. here * symbol is called as wild card.

in directory mapping technique <url-pattern> tag should be written like:

<url-pattern>/abc/*<url-pattern>

so the request can formed in various ways as we can append any thing after abc (only the required directory is /abc)

localhost:1990/MyApp/abc
localhost:1990/MyApp/abc/pqr
localhost:1990/MyApp/abc/pqr/mno
localhost:1990/MyApp/abc/index.html etc

Extension mapping: in extension mapping trail portion of request url should match with extension in url pattern.

in extension mapping technique <url-pattern> tag should be written like:
<url-pattern>*.html<url-pattern>

so the request can formed in various ways as we have to end the request url with .html

localhost:1990/MyApp/.html

localhost:1990/MyApp/abc/.html

localhost:1990/MyApp/abc/pqr/.html

localhost:1990/MyApp/abc/pqr/mno/index.html

localhost:1990/MyApp/abc/index.html