

SERVLET

A **Servlet** is a **Java program** that runs on a **web server** and handles requests from web clients (like browsers). It is used to build **dynamic web applications**.

Definition:

A **Servlet** is a Java class that extends the capabilities of servers that host applications accessed by means of a **request-response programming model**, typically over **HTTP**.

Key Points:

- Servlets are part of the **Java EE (Jakarta EE)** platform.
- They run on a **Java-enabled web server** (like Apache Tomcat).
- They **process requests, generate responses**, and are commonly used to create **web-based applications**.
- They are more powerful and flexible than traditional CGI scripts.

Part Description

`init()` Called once when the servlet is first loaded.

`doGet()` Handles HTTP GET requests (like form submissions).

`doPost()` Handles HTTP POST requests.

`destroy()` Called before the servlet is unloaded.

`HttpServlet` Base class that provides HTTP-specific methods.

Simple Servlet Program :

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class WelcomeServlet extends HttpServlet {

    public void doGet(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {

        // Set response content type
        response.setContentType("text/html");

        // Get the writer object
        PrintWriter out = response.getWriter();

        // Write the HTML content
        out.println("<html>");
        out.println("<head><title>Welcome</title></head>");
        out.println("<body>");
        out.println("<h2>Welcome to Servlet Programming!</h2>");
        out.println("</body>");
        out.println("</html>");

    }
}
```

How to Run:

1. **Save the file** as WelcomeServlet.java.
2. **Compile** the servlet:

```
javac -classpath 'C:\xampp\tomcat\lib\servlet-api.jar' WelcomeServlet.java
```

Deploy to Tomcat:

- Place the .class file in:
webapps/YourApp/WEB-INF/classes/
- Add servlet mapping in web.xml:

File Name: web.xml

```
<web-app xmlns="http://java.sun.com/xml/ns/javaee"  
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee  
http://java.sun.com/xml/ns/javaee/web-app_3_1.xsd"  
version="3.1">  
<servlet>  
    <servlet-name>WelcomeServlet</servlet-name>  
    <servlet-class>WelcomeServlet</servlet-class>  
</servlet>  
<servlet-mapping>  
    <servlet-name>WelcomeServlet</servlet-name>  
    <url-pattern>/WelcomeServlet</url-pattern>  
</servlet-mapping>  
</web-app>
```

1. **Start Tomcat** and access:

<http://localhost:8080/welcome/WelcomeServlet/>