

# 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
<code>init()</code>	Called once when the servlet is first loaded.
<code>doGet()</code>	Handles HTTP GET requests (like form submissions).
<code>doPost()</code>	Handles HTTP POST requests.
<code>destroy()</code>	Called before the servlet is unloaded.
<code>HttpServlet</code>	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\libservlet-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/`