# Major components

## HttpServlet

A **servlet** is a Java class that extends the capabilities of a server, typically a web server, to respond to various kinds of client requests. Servlets are primarily used to handle HTTP requests and generate dynamic web content. They are a core component of Java's enterprise platform (Java EE) for building web applications.

Latest servlet technology (Jakarta Servlet) as today servlet is handled by eclipse co-operation.

# Servlet mapping

1. web.xml (deployment descriptor)

A **deployment descriptor** in the context of Java web applications (and other Java EE applications) is an XML file that describes how an application should be deployed and configured on a server.

<?xml version="l .0" encoding="UTF-8"?>

<web-app xmlns="https://jakarta.ee/xml/ns/jakartaee"

xmlns:xsi= "[http://www.w3.org/2001/XMLSchema- instance](http://www.w3.org/2001/XMLSchema-%20instance%20) "

xsi:schemaLocation="https://jakarta. ee/xml/ns/jakartaee

<https://jakarta.ee/xml/ns/jakartaee/web-app_6_0.xsd>" >

<servlet>

<servlet-name>firstServlet</servlet-name>

<servlet-class>com.FirstServlet</servlet-class>

<load-on-startup>l</load-on-startup>

</servlet>

<servlet-mapping>

<servlet-name> firstServlet </servlet-name>

<url -pattern>/first </url -pattern>

</servlet-mapping>

</web-app>

1. @webServlet annotation

The @WebServlet annotation in Java is a powerful and convenient way to declare a servlet component directly within its class file, eliminating the need for traditional XML configuration in the web.xml deployment descriptor.

# Servlet Request

a **ServletRequest** is an object that encapsulates all the information sent by a client to the server as part of an HTTP request. It provides methods to access data such as request parameters (from forms or URL query strings), headers, cookies, input streams (for uploaded files), and client-specific information like the remote IP address. This object is passed to the servlet's service() method (or doGet(), doPost(), etc.) to enable the servlet to understand and process the client's request.

# Servlet Response

the **Servlet Response** is an object (specifically an instance of jakarta.servlet.http.HttpServletResponse for HTTP servlets) that a servlet uses to send data back to the client that made the request. It acts as an abstraction over the raw HTTP response, providing methods to:

* **Set HTTP headers:** Such as Content-Type (e.g., text/html, application/json), Cache-Control, Location (for redirects), etc.
* **Set the HTTP status code:** Indicating the outcome of the request (e.g., 200 OK, 404 Not Found, 500 Internal Server Error).
* **Write the response body:** Obtaining an OutputStream or PrintWriter to send textual or binary data back to the client.