What is a Servlet?

A **Servlet** is a Java program that runs on a web server and handles requests and responses. It acts as an intermediary between the client (usually a web browser) and the server, processing incoming requests, performing operations (like accessing databases), and sending responses back to the client.

How Servlets Work:

1. **Client Request**: A user sends a request to a web server (e.g., by clicking a link or submitting a form).
2. **Servlet Container**: The web server passes this request to the servlet container (a part of the server responsible for managing servlets).
3. **Servlet Processing**: The servlet container forwards the request to the appropriate servlet. The servlet processes the request, often involving business logic or database operations.
4. **Response Generation**: The servlet generates a response (like an HTML page, JSON data, etc.) and sends it back to the servlet container.
5. **Client Receives Response**: The servlet container sends the response back to the client.

Need and Advantages

- Servlets can process and store the data submitted by an HTML form.
- Servlets are useful for providing the dynamic contents. For example retrieving and updating the databases.
- Servlets can be used in the cookies. Cookies are small programs which can make use of the information submitted on currently accessed web pages.

- Similarly servlets are used in session tracking. The session tracking are the useful programs that keeps track of all previously accessed the web pages.

https://aravind419.github.io/Aravind-Seminar/

Advantages

- The servlets are very efficient in their performance and get executed in the address space of the belonging web server.
- The servlets are platform independent and can be executed on different web servers.
- The servlets working is based on Request-Response. Any HTML form can take the user input and can forward this input to the servlet. The servlets are then responsible to communicate with the back-end database and manipulate the required business logic These servlets embedded on the web servers using Servlets API.
- Servlets provide a way to generate the dynamic document. For instance : A servlet can display the information of current user logged in, his logging time, his last access, total number Of access he made so far and so on.

Disadvantages

- Servlet is a mixture of java skills and web related HTML skills. Hence it is difficult to write servlets.
- It slows down the application execution.
- The java runtime environment is required on the server , if you want to execute servlet application.

Java Servlet Architecture

When write a ser let program, it is necessary to –

i) either implement Servlet interface or

ii)extend a class that implements Servlet interface.

While implementing Servlet interface we must include javax.servlet package.

First line of Servlet Program:

```
import javax.servlet. * ;
```

GenericServlet class is a **p**redefined implementation of **S**ervlet interface.

Similarly, the **H**ttpServlet class is a **c**hild class of **G**enericServlet class.

Two Ways We Can Write Servlet Program:

```
import javax.servlet.* ;
import javax.servlet, http.*;
import javax.io.*;
public class test extends
GenericServlet
{
//body of servlet
}
```

```
import javax.servlet.* ;
import javax.servlet, http.*;
import javax.io.*;
public class test extends
HttpServlet
{
//body of servlet
}
```

- The **s**ervlet gets the request from the client for some service. The servlet then processes the

request and sends the response back to the client. In order to handle these issues

Method	Purpose
doGet	This method handles the HTTP GET request
doPost	This method handles the HTTP POST request
doPut	This method handlés the HTTP Put request.
doDelete	This method handles the DELETE request.

HttpServletRequest and HttpServletResponse are used in servlet program.

The doGet and doPost methods

• The doGet method requests the data from the source.

• The doPost method submits the processed data to the source.

• **The protocol of doGet method is as follows**

```
protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException.IOException
```

• The ServletException and IOException are thrown to handle the Servlet problems gracefully.

• The HttpServletRequest request : contain the client request made by client.

• The HttpServletResponse response : contains the response made by servlet back to the client.

- **The protocol of doPost method is same as doGet method.**

```
protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException,IOException
```

- The GET request is more efficient than the POST request.
- The GET request is less secure than the POST request.

How To Write Servlet Program?

FirstServlet.java

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

```
import javax.servlet.http.*,

public class FirstServlet extends HttpServlet
{
public void doGet(HttpServletRequest request.HttpServletResponse response)
throws IOException,ServletException
{
response.setContentType(“text/html”);
PrintWriter out=response. getWriter();
out.println("<html>”)
out.println("<head>”)
out.println(" < title>My First Servlet </ title>”);
out.println("<body>”)
out.println (“<h1>HeIlo How are u? </h1>”);
out.println(" <h2>I am enjoying this Servlet Application < /h2>”);
out.println (“<h3>You later!</h3>”);
out.println(“</body>”);
out.println(“</html>”);

}
}
```

https://aravind419.github.io/Aravind-Seminar/