



UTM
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Introduction to Java Servlet

Overview of Application Server

- For hosting template text / static pages / hard coded (html) and server-side application (CGI / servlet)
- Most of the time integrated with a simple web-server
- Can be plugged to a more powerful web-server
- Ranging from million of dollars in pricing to the open-source project which is free

Overview of Application Server

Existing application server in the market

- Apache TOMCAT
- Xampp
- WAMP
- LAMP
- Jboss
- GlassFish

What is Servlet?

- a web component,
- managed by a container (Application Server),
- generates dynamic content. (HTML TAG)
 - serving a different page according to client data submitted via a form
 - Or a GET method
- small, platform independent Java classes compiled to a bytecode that can be loaded dynamically into and run by a web server.
- interact with web clients via a request response paradigm implemented by the servlet container.
- request-response model is based on the behavior of the Hypertext Transfer Protocol (HTTP).

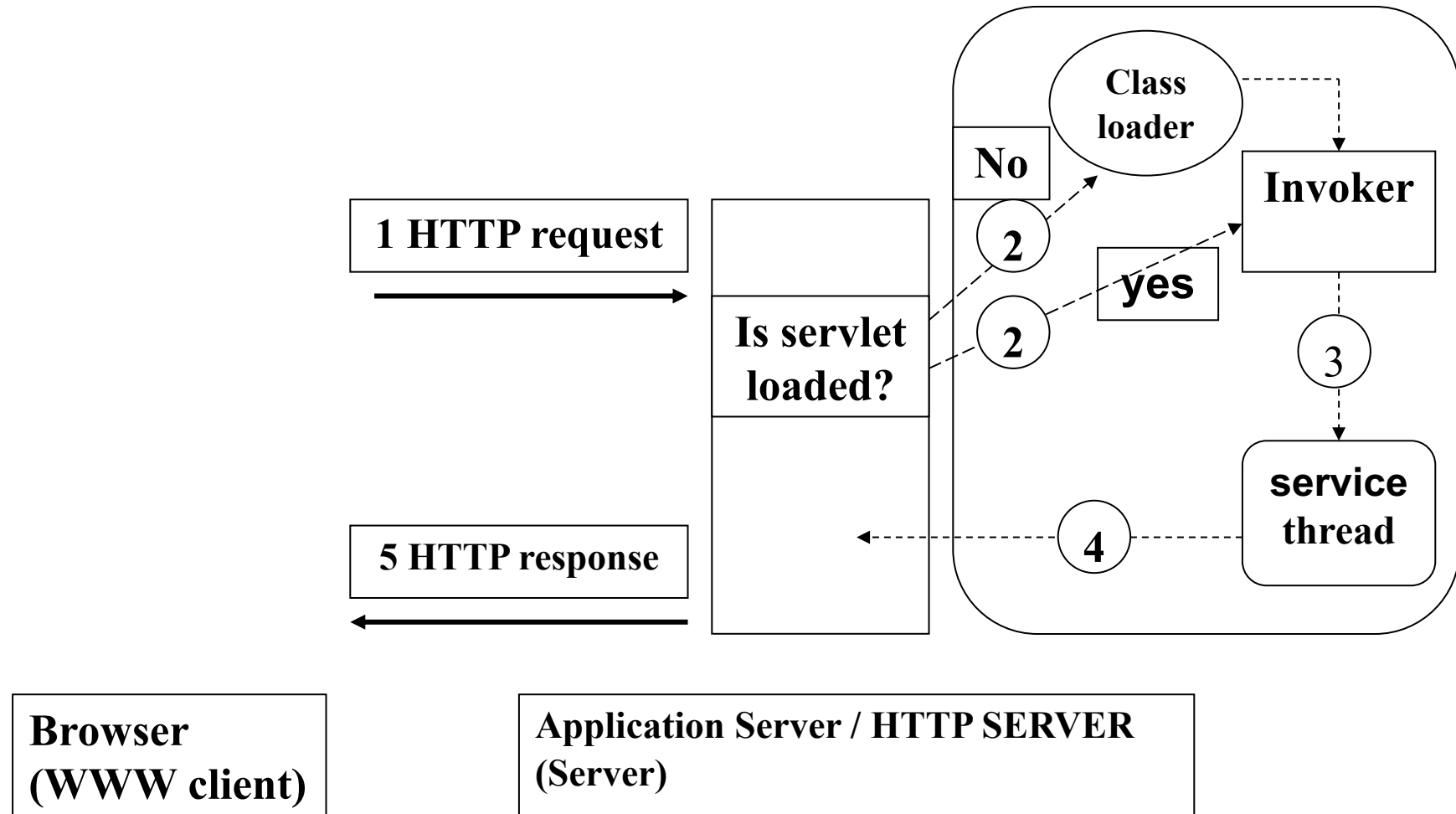
Servlet Tasks

- Read sent user data –
 - via form (POST protocol) or
 - embedded URL (GET protocol)
- Look up info on http request – usually form/POST data or URL/GET data
- Generate result (connect to DB etc.)
- Format the HTML result
- Set the appropriate HTTP response parameters – set content type html/text etc.
- Send document (HTML page) back to client browser

Client Interaction

- When a servlet accepts a call from a client, it receives two objects:
 - A **ServletRequest**, which encapsulates the communication from the client to the server. – `getParameter()`
 - A **ServletResponse**, which encapsulates the communication from the servlet back to the client – `out.println()`
- `ServletRequest` and `ServletResponse` are interfaces defined by the `javax.servlet` package

Request and Response Overview



Normal Servlet Operation

- extends HttpServlet interface
- implement one or more service methods
 - doGet, doPost, etc
- Setting the content type
- Data processing
- Formatting presentation HTML
- Returning a response

Data Transmission

There are two ways on how browser can send data to a servlet via HTTP protocol

- GET method
- POST method

GET Method

- The body of the message (the data) is appended to the servlet URL,
 - `http://localhost/servlet/HelloWorld`
- Separated by a question mark
 - `http://localhost/servlet/HelloWorld?`
- Followed by name-value pair which separated by equals sign
- If value consist of more than one word, separate it using plus sign which the servlet will convert it to space character after parsing
 - `name=rosely+kumoi`
- Every consecutive name-value pair will be separated using ampersand sign (&)
 - `name=rosely+kumoi&ic=h0803907`

POST method

- The body of the message is sent as a stream of data (HTML form data)
- Separated with the servlet URL
- Client send data to servlet using HTML form element

HTML Form element

- **Form tag**

```
<FORM METHOD="post"  
        ACTION="/servlet/HelloWorld"  
        TARGET="frameName">
```

- Fill the **TARGET** value if form result have to display in a different frame
- After coding all the form element (button, textfield, etc) FORM tag must be close using the equivalent end tag - **</FORM>**
- If you have multiple form in a single page every separate every form using the end tag

HTML Form element

- **Textfield element**

- Single line textbox
- Code example:

- `<INPUT NAME="name" TYPE="text" SIZE="25">`

- **Password element**

- Single line textbox - actual text hidden
- Code example:

- `<INPUT NAME="password" TYPE="password" SIZE="25">`

- **TextArea element**

- Multiline textbox
- Code example:

- `<TEXTAREA NAME="address" ROWS="5" COLS="23"></TEXTAREA>`

HTML Form element

- **Combo Box**

- **Single item selection permitted**

```
<SELECT NAME="creditCardType">  
<OPTION SELECTED VALUE="mc">MasterCard  
<OPTION VALUE="visa">VISA  
<OPTION VALUE="amex">American Express  
</SELECT>
```

- **List Box**

- **Multiple item selection permitted**

```
<SELECT NAME="language" MULTIPLE>  
<OPTION SELECTED VALUE="c">C  
<OPTION VALUE="c++">C++  
<OPTION VALUE="java">Java  
</SELECT>
```

HTML Form element

- **Radio Button**
- Only one item selection permitted

```
<INPUT TYPE="RADIO" NAME="creditCard"
      VALUE="mc" CHECKED>MasterCard
```

```
<INPUT TYPE="RADIO" NAME="creditCard"
      VALUE="visa">VISA
```

```
<INPUT TYPE="RADIO" NAME="creditCard"
      VALUE="amex">American Express
```

HTML Form element

- **CheckBox**

- **Name & Value** attribute are only sent to the server (servlet) if the check box is checked
- Usually servlet/CGI programs often check only for the existence of the checkbox name, ignoring its value
- Multiple item selection permitted

<P>

<INPUT TYPE="CHECKBOX" NAME="mailMe" CHECKED>

Check here if you want to get our email newsletter

HTML Form element

- **Push Buttons**

- **Submit Buttons**

```
<INPUT NAME="name" TYPE="submit"  
        VALUE="Submit">
```

- Change value of attribute **VALUE** if you want to change the button label

- **Reset Buttons**

```
<INPUT NAME="name" TYPE="reset"  
        VALUE="Reset">
```

HTML FORM ATTRIBUTE

- required – compulsory field
- value – default value
- readonly – cannot change value but value will be sent to servlet
- disabled - unusable and un-clickable, and its value will not be sent to servlet
- size – textfield size
- maxlength - specifies the maximum allowed length for the input field