

ICFAI University, Dehradun

Assignment – 2

Advanced JAVA (CST-3216)

By : -

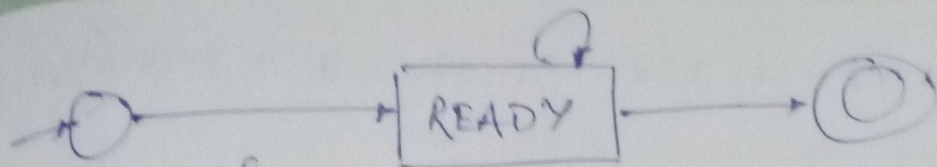
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8) Define Servlet and explain servlet life cycle with example.
It is a server side programming language. It generates dynamic content. A servlet is a class which handles requests, processes them and replies back with a response. It is used to create web applications. Prior to servlet, the Common Gateway Interface (CGI) scripting language was in heavy use as the primary server side programming language. Servlet, due to its complexity, was not much popular among the users, even though it was highly scalable. Therefore, another language, called the JSP was developed, which converts the code written in it to Servlet programs in backend. JSP is comparatively easier to code with than servlet.

Life cycle of Servlet

- ① Servlet class is loaded
- ② instance of class is created
- ③ init() method is invoked
- ④ service method is invoked
- ⑤ destroy method is invoked.



① Class is loaded

② instance of class is created

③ `init()` method is invoked

④ `service` method is called

⑤ `destroy` method is invoked

① Servlet class is loaded

The classloader loads the servlet class when the first request for the servlet is received by the web container.

② Class instance is created.

The same web container generates the instance of the Servlet ~~once~~ in a lifetime after loading the class.

③ `init()` method is called.

Public void `init` (ServletConfig config)
throws ServletException

This method initialises the servlet and is called once.

④ `Service` method is invoked

This is called everytime, a request is received. If it is not initialised earlier, it follows the first three steps to call the `Service` method.

5) Destroy method is called

This is called by webcontainer to remove the servlet instance from the service.

Eg- A servlet is used to take inputs from user through HTML query, record it in database and create web pages dynamically.

Q) Difference betⁿ Http Servlet and Generic Servlet

HttpServlet

- ① It can handle only HTTP protocols
- ② It is the subclass of generic servlet
- ③ It belongs to `javax.servlet.http` package
- ④ It overrides the `service()` of generic servlet

Generic Servlet

- ① It can handle all the protocols including HTTP, HTTPS etc.
- ② It is the direct subclass of servlet interface
- ③ It belongs to `javax.servlet` package
- ④ It belongs only to `service()` method.

5) HttpServlet is an abstract class which extends generic servlet and implement `javax.io.Serializable` interface.

5) It is an abstract class which implements `Servlet`, `ServletConfig` and `javax.io.Serializable` interface.

Q1) Difference betⁿ doGet() and doPost().

doGet()

doPost()

- | | |
|---|---|
| <p>① All the parameters are appended with URL and sent along with the header info.</p> <p>② Only maximum 240B of data can be sent</p> <p>③ It is less private</p> <p>④ It is safe to get information from the server.</p> | <p>① The parameters are hidden to user & are not visible in the URL.</p> <p>② No maximum size of data.</p> <p>③ It is more private and safe.</p> <p>④ It is used to update or post some info to server.</p> |
|---|---|

Q2) which interface must be implemented by all servlets?

The servlet interface provide all common behaviour all the servlet^s defines methods that all servlet must implement. Thus it is the primary interface that needs to be run to create any :Servlet.

Method of Servlet interface:

- i) `public void init (ServletConfig config)`
to initialise servlet class
- ii) `public void service (ServletRequest req, ServletResponse resp)`
to process the requests
- iii) `public void destroy()`
to destroy the servlet instance
- iv) `public ServletConfig getServletConfig()`
returns object of `ServletConfig`
- v) `public String getServletInfo()`
returns info. about servlet regarding
writer, copyright, version, etc.

8) Discuss all access methods of `HttpServletRequest` in detail.

There are various methods of `HttpServletRequest`

- ① `String getPath()` : used to get portion of request URL.
- ② `java.lang.String getMethod()` : get the HTTP method with which request was made.

- ③ `getContentType()`: return type of request content
- ④ `getInputStream()`: returns ~~up~~ stream for reading binary data
- ⑤ `getLocalAddr()`: returns IP address of interface on which requests were received,
- ⑥ `getServerName()`: return the number of server to which the request was sent

⑧ Explain :-

(i) `setContentType()`:

Set content type of the response being sent to the client, if response has not been committed yet, which may include a character encoding specification.

(ii) `setStatus()`:

It takes int as argument and sets status for response.

(iii) `sendError()`:

Sends an error response to the client using specified status code and clearing the buffer.

(iv) `sendRedirect()`:

Sends a temp. redirect response to the client using specified redirect locatⁿ URL.

(v) `setContentLength()`:

it sets the content length header.

(vi) `encodeURL()`: encodes URL by replacing each instance of certain char. by one, two or three escape sequence representing UTF-8 encoding of char.

(vii) `isCommitted()`: returns a boolean if response is committed.

2) What is `HttpServlet`? Explain its methods.

`HttpServlet` is an abstract class given under the `Servlet-API` ^{package} ~~present~~. It is present in `javax.servlet.http` package and has no abstract method. It extends `GenericServlet` class.

Methods:

① `protected void doDelete`

(`HttpServletRequest` r, `HttpServletResponse` sr)

throws `ServletException` & `IOException`.

called by ~~servlet~~ ^{server} (by service method) to allow a servlet to handle a delete request.

(ii) protected void doGet (HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException
called by server to handle get request

(iii) protected void doHead ()

receives the HTTP HEAD request from protected service method and handle to request

(iv) protected void doOptions ()

called by server to allow servlet to handle option which requests and ~~HTTP~~ determines which HTTP method the server support and return appropriate header.

^{protected}
(v) void doPost

called by the server to allow ~~the~~ servlet to handle post request. This method allow user to send information of unlimited length to the web server.

^{protected}
(vi) void doPut: handles PUT request. puts the file on server. Similar ^{as} FTP

Q) In Servlet setAttribute () method is used with session object to store information in session

Define Servlet Response term

The servlet response is an object to assist servlet in sending a response to the client. The servlet container creates a servlet response object & passes it as an argument to the servlet service method. It is also defined as an object to assist servlet in sending a response to the client.

(i) `getWriter()` : returns a `PrintWriter` obj that can send char. text to the client

(ii) `setBufferSize (int size)` : sets preferred buffer size for body of response

(iii) `setContentLength()` : set total length of the content body in the response in HTTP servlets.

(iv) `setContentType()` : set content type of response