JAVA SERVLET

What is a Servlet?

Servlets are [object](https://en.wikipedia.org/wiki/Object_(computer_science))s that produces response based on the request being done. The basic package defines Java objects to represent feedback and request, as well as objects to reflect its parameters based on configurations and an environment on how to execute it. The package javaxServlet defines HTTP subclasses of the major  servlet elements, including session handling objects that track multiple requests and responses between the web server and a client. Servlets can be compiled in WAR as to represent servlet as a web application.

-Servlet is a technology i.e. used to create web application.

-Servlet is an API that provides many interfaces and classes including documentations.

-Servlet is an interface that must be implemented for creating any servlet.

-Servlet is a class that extend the capabilities of the servers and respond to the incoming request. It can respond to any type of requests.

-Servlet is a web component that is deployed on the server to create dynamic web page.

Advantage of servlet

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-java objects that are intended to be the server in a client-server kind of communication.

- assigned in the request of a client by responding to requests

- is host in “servlet container” that provides the environment in which the servlet runs, as well as controls the “servlet lifecycle.

* Servlet lifecycle

instantiation    → constructor call

        - creates an instance of the servlet to service client requests.

         -invoked implicitly by the servlet container when servlet is called upon to

          service a request by the client and no other instance are present.

Initialization   → init ( ) method

                                        - the method is only called once, when the servlet is created it is called.

 - the servlet is created when the user call a URL request.

 - when a user calls a servlet, a single instance of each servlet is created.

Request handling → service ( ) method

                                            - is considered as the main method for the task to be done.

     - the servlet container calls the method to handle request from client.

      - Get request    → doGet ( ) method

                                      - a request from an HTML or a URL that it has no other method that will be         handled by doGet method

     - Post request  → doPost ( ) method

- is a result from the HTML that is from the POST method.

     - destruction     → destroy ( ) method

- invoked before the servlet instance is ‘unloaded’

## Creating and Initializing a Servlet

* @WebServlet is used to define a servlet in a web application. The annotation @Webservlet is specified on a class and contains data about the servlet being declared. Thi servlet will then specify at least one URL pattern. The urlPatterns or value is used for the annotation. Other attributes can then be used but these are optional. Using the value attribute is done when the only annotation is in the URL pattern; but using the urlPatterns is essential when this is not the case.
* Classes annotated with @WebServlet must extend the javax.servlet.http.HttpServlet class.

* When the instantiating the servlet class and before the request is delivered to the clients is done, a web servlet is initialized.To customize the process of configuring data , initializing resources, and performing another activity you can override the init method of a servlet or just be specific with your parameters in initParams which has a @WebInitParam annotation. If all cannot be completed an UnavailableException is thrown by the servlet.
* Use an initialization parameter to provide data needed by a particular servlet. By contrast, a context parameter provides data that is available to all components of a web application.