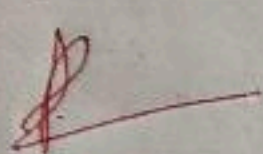


Assignment no :- 05

Topics covered :-

- Servlet
- CGI
- life cycle servlet
- ~~how~~ Manday

Date of performance :- 28-09-22

Evaluation Criteria	Marks (out of 3)	Date	Signature of Instructor
Punctuality	03	06-10-22	
Problem solving technique	03		
Attainment level (out of 3)	03		

Assignment NO- 05

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 Date:

1) What is Servlet? explain Servlet architecture, and steps to create it.

- It is JP. that run on Java environment server

- Servlet technology is used to create web application (ie dynamic web pages)

- Servlet are the java programs that run on the Java environment web server or application server.

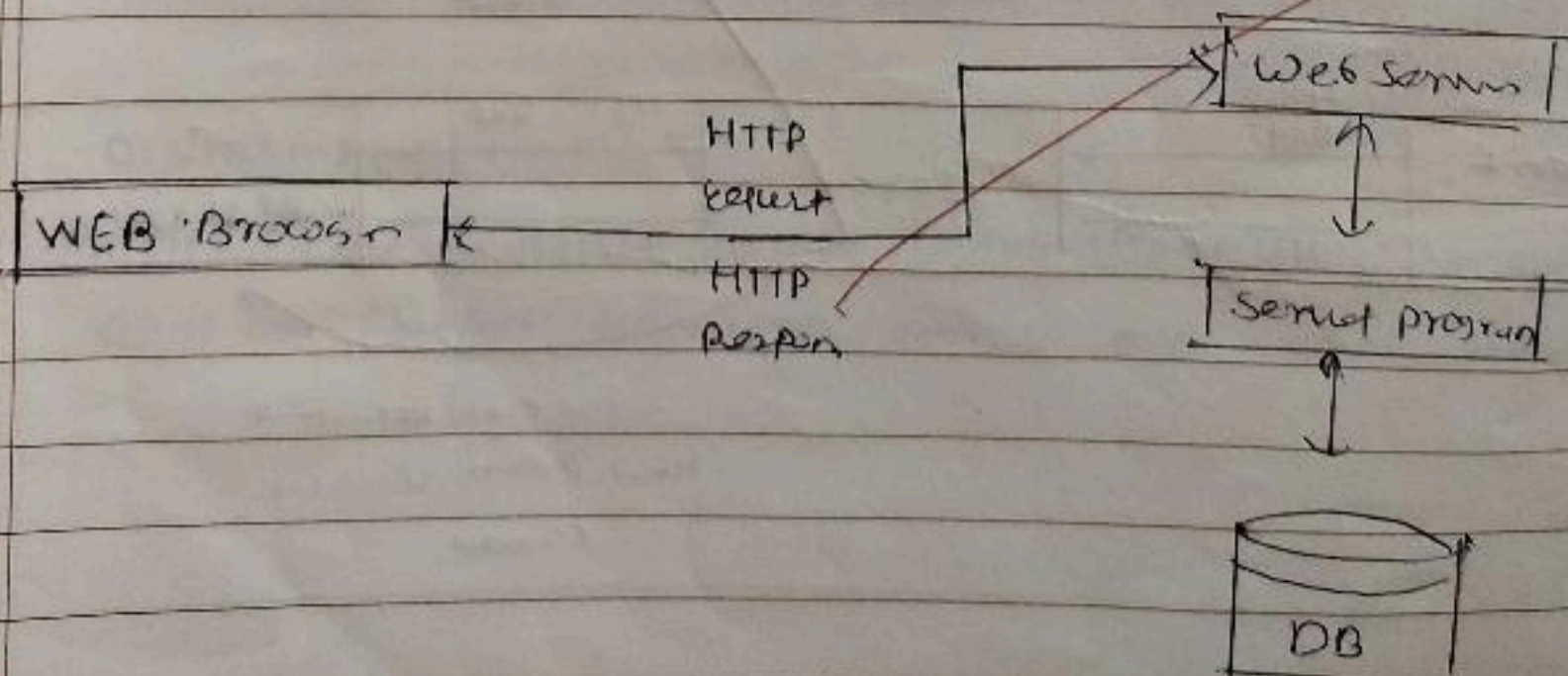
- they are used to handle the request coming from the web server, process the request, produce the response and send it back to web server

• Proper workflow on the server-side

1) Servlet work on server-side.

2) Servlet are capable of handling complex request coming from the web server

Servlet Architecture:

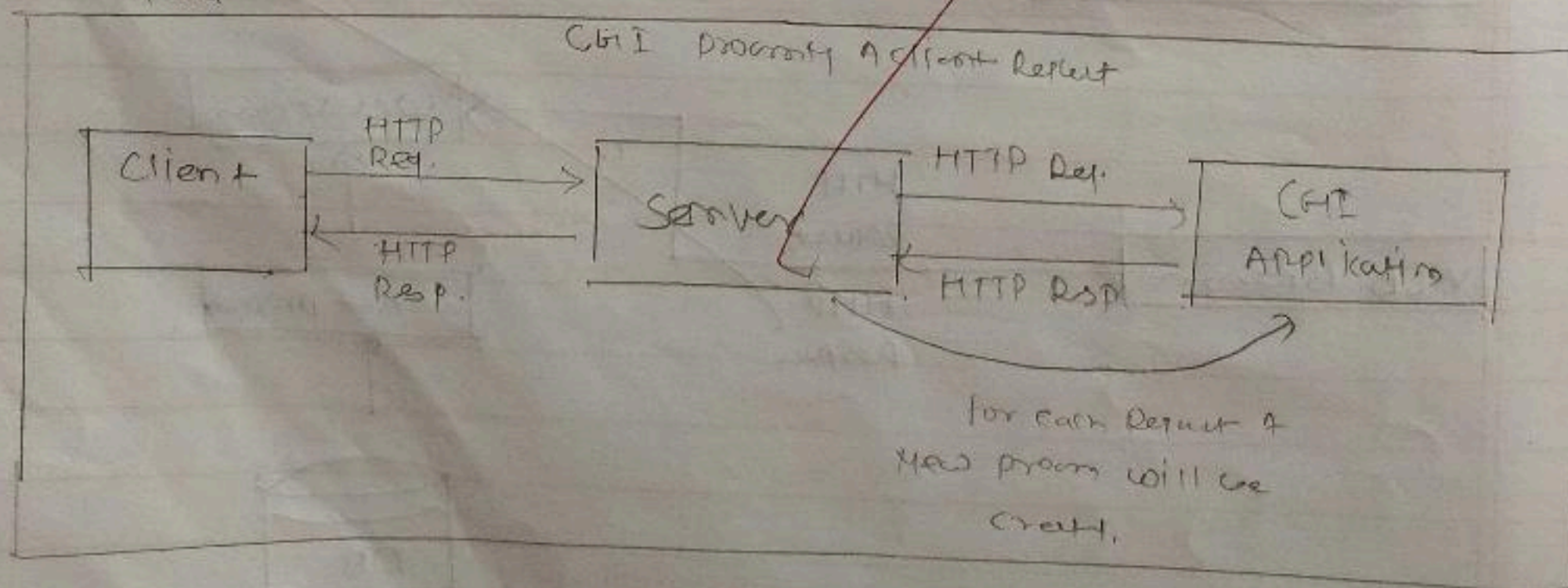


Execution of Servlet basically involves six basic steps

- ① The client send the request to the server
- ② The web server receive the request
- ③ The web server pass the request to the ~~Controller~~ ^{Adapter} corresponding Servlet.
- ④ The Servlet process the request and generate the ~~Response~~ ^{Response} in the format of output.
- ⑤ The Servlet send the response back to the web server.
- ⑥ The web server send the response back to the client browser display it on the screen.

Q.2] What is CGI & explain the processing for client request.

CGI is actually an external application that is written by using any of the programming language like C or C++ and it is responsible for processing client request and generating dynamic content.



- ① In CGI application, when a client make a request to given dynamic CGI application only URL
- ② It then create a new process to services to client's ~~request~~ request
- ③ Invokes the CGI application within the process and then the request information to the application
- ④ Collect the response from the CGI application
- ⑤ Destroy the process & prepare the HTTP response and send it to the client

So in CGI server has to create and destroy the process for every request! it is easy to understand that this approach is applicable for handling low # of client but as the No. of client increase, the workload on the server increase and so the time is taken to process request increase.

Advantage of CGI

- ① Intersitly Animated App
- ② Cost effective Animated tool
- ③ improve the user dynamic

Disadvantage of CGI

- ① If the No. of client increase, it takes more time for server response
- ② It is platform dependent language e.g. C, C++, Perl.

Q.3) write diff. b/w CGI & Servlet

CGI

- ① CGI is not portable.
- ② In CGI sharing data is not possible.
- ③ CGI cannot directly communicate with webserver.
- ④ CGI more expensive than Servlet.
- ⑤ CGI cannot handle the cookies.
- ⑥ Programs are written in the native OS.
- ⑦ It runs on separate process.
- ⑧ It has slow speed.
- ⑨ CGI platform dependent.
- ⑩ CGI security more vulnerable attack.

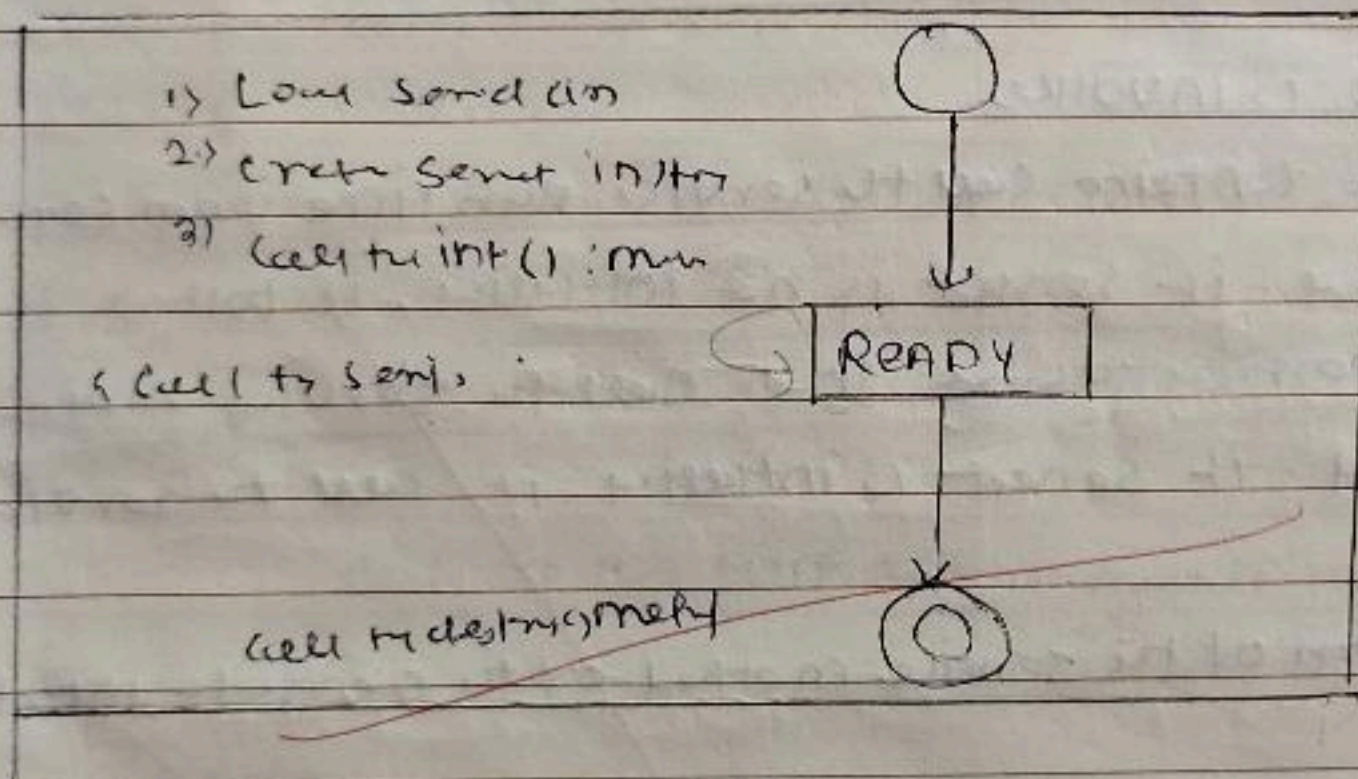
Servlet

- Servlet is portable and efficient.
- Servlet sharing data is possible.
- Servlet can directly communicate with webserver.
- Servlet is less expensive than CGI.
- Servlet can handle the cookies.
- Programs are written in JAVA.
- It runs on JVM.
- It has fast speed.
- Servlet does not depend on platform.
- Servlet security can resist attack.

Q 4) Write and Explain the life cycle of Servlet.

— The web container maintains the cycle of a Servlet instance.
Let's see the life cycle of Servlet :-

1. > Servlet class is loaded
2. > Servlet instance is created
3. > init method is invoked
4. > service method is invoked
5. > destroy method is invoked.



1) Servlet class is loaded

The class loader is responsible to load the Servlet class. The Servlet class is loaded when the first request for the Servlet is received by the web container.

2) Servlet instance is created

The web container creates the instance of a servlet after loading the servlet class. The servlet instance is created only once in the servlet life cycle.

3) init method is invoked

① The web container calls the init method only once after creating the servlet instance. The init method is used to initialize the servlet. It is the lifecycle method of the `javax.servlet.Servlet` interface. The syntax of the init method is given by:

```
public void init (ServletConfig config) throws ServletException
```

4) The service method is invoked

① The web container calls the service each time when request to the servlet is received. If the servlet is not initialized, it follows the first three steps of lifecycle above then calls the service method. If the servlet is initialized, it calls the service method.

The syntax of the service method of the `Servlet` interface is given below:

```
public void service (ServletRequest request, ServletResponse response) throws ServletException, IOException
```

5) The destroy method is invoked

① The web container calls the destroy method before removing the servlet instance from the service. It gives the service an opportunity to clean up any resource for example memory. The syntax of the destroy method of the `Servlet` interface is given below:

```
public void destroy()
```


5) Write how handling a data from server?

Handling client data or request is vital feature of any web application. We can say that this means like Google search or filling a contact us page on any website etc.

HTTP Request method types

There are several HTTP Request method types available like:

- GET :- As its name suggests, it is to get a resource or data from server.
- POST :- to send or post data to server for processing.
- DELETE :- to delete any resource from server.
- HEAD :- It is same as GET but in a response it just returns header.
- PUT :- to upload data on server.
- OPTIONS :- to know the methods supported by server.

Out of the HTTP Request method types, most commonly used method are GET and POST so let's discuss them in detail.

⑥ Write a difference between GET & POST.

GET	POST
① ^{Security limit} GET Request only limited amount of data can be sent because data is sent <u>header</u> .	In case of POST method large amount of data can be sent in <u>body</u> .
② ^{Not Sec} GET request is <u>not</u> <u>secure</u> because data is <u>exposed</u> in <u>URL</u> .	POST request is <u>secure</u> because data is <u>not exposed</u> in <u>URL</u> .
③ ^{Bookmark} GET request can be <u>bookmark</u> .	POST request can <u>not</u> be <u>bookmark</u> .
④ ^{Cache} GET can be <u>cached</u> .	<u>Not</u> <u>cached</u> .
⑤ ^{Eff} GET request is more <u>efficient</u> and <u>used</u> more than POST.	POST request is <u>less</u> <u>efficient</u> & <u>uses</u> <u>less</u> than GET.
⑥ ^{History} GET parameters <u>remain</u> in <u>web browser history</u> .	^{Post} POST parameters <u>are not saved</u> in <u>web history</u> .
⑦ ^{data type} This method supports <u>only</u> <u>string</u> <u>data</u> <u>type</u> .	This method supports <u>different</u> <u>data</u> <u>types</u> , such as <u>string</u> , <u>numeric</u> , <u>boolean</u> , etc.
⑧ ^{hack} Easier for <u>hacker</u> to <u>script</u> <u>kiddies</u> .	<u>More</u> <u>difficult</u> to <u>hack</u> .
⑨ ^{idempotent} GET request is <u>idempotent</u> .	POST request is <u>non-idempotent</u> .
⑩ GET method is <u>visible</u> in <u>the URL</u> .	In POST method value is <u>not visible</u> in <u>URL</u> .

~~06/10/2020~~