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## Basic Java Servlet Interview Questions

1. What is the difference between CGI and Servlet?

   **Advantages of servlets over CGI are:-**

   - Servlets are multithreaded which can support multiple users' requests. i.e., servlet is a resource and where as requests are treated as threads. So multiple requests (threads) can access a single instance of servlet resource asynchronously. Whereas CGI provide a new instance for every request, it is a single thread model .By creating new instance every request server won't support multiple requests.
   - Servlets are used to generate dynamic content.
   - Servlets are platform independent.
   - Servlets are more efficient compare to other server side programming.

2. What is meant by a servlet?

   Servlet is a server side component written in java, which can host request of client, process the request and response sent back to the client.

   Servlet is a java program that is run inside a servlet engine called web server. It take requests from client and responds to those requests.

3. What are the types of servlets? What is the difference between 2 types of Servlets?

   There are two types of servlets provided by servlet API those are
   1) **GenericServlet**- It can use for any type of protocols (http, ftp, telnet)
      It is protocol independent ,it support service() method only
   2) **HttpServlet-** It can use for only http protocol, it support doGet() and doPost() methods
      with Service() methods

4. What is the type of method for sending request from HTTP server?

   Http server request can sent in two types one is GET and second one is POST

5. What are the exceptions thrown by Servlets? Why?

   Exceptions thrown by servlet are:
   ServletException
   IOException

6. What is the life cycle of a servlet?

init()–used for initialization
service()–for processing client requests
destroy()– used for closing

7. What is meant by cookies? Why is Cookie used?
8. What is HTTP Session?
9. What is the difference between GET and POST methods?

Using GET method, we can able to pass 2K data from HTML.
In POST method, we do not have any size limitation.

10. How can you run a Servlet Program?
11. What is the middleware? What is the functionality of Webserver?
12. What webserver is used for running the Servlets?
13. How do you invoke a Servelt? What is the difference in between doPost and doGet methods?
14. What is the difference in between the HTTPServlet and Generic Servlet? Explain their methods? Tell me their parameter names also?
15. What are session variable in Servlets?
16. What is meant by Session? Tell me something about HTTPSession Class?
17. What is Session Tracking?
18. Difference between doGet and doPost?

When we make a request to any servlet, request doesn't goes directly to the servlet instead it will go to the service method of the super class and then it is passed as a parameters to the service method of your class. In doGet() method the data will append to the url as a query string and we can't send huge amount of data using doGET() method. Where as in doPost() method the data can be directly sent to browser without displaying it in the url. With this we can send as much of data as we can. But doGet() method is little faster when compared to doPost().but it is not recommended as for some sensitive messages like password will be displayed as a query string in it.

19. What are the methods in HttpServlet?

doGet()
doPost()
doHead()
doPut()
doOptions()
doDelete()
doTrace().

20. What are the types of SessionTracking? Why do you use Session Tracking in HttpServlet?

    1. Using Cookies
    2. Using URL rewriting
    3. Using HTTP session
    4. Using Hidden form fields.

21. What is the servlet?
Servlet is a script, which resides and executes on server side, to create dynamic HTML.
In servlet programming we will use java language. A servlet can handle multiple requests concurrently

22. What is the architecture of servlet package?
Servlet Interface is the central abstraction. All servlets implements this Servlet Interface either directly or indirectly.
( may implement or extend Servlet Interfaces sub classes or sub interfaces)


  Servlet
   |
Generic Servlet
   |
HttpServlet  ( Class )  -- we will extend this class to handle GET / PUT HTTP requests
   |
 MyServlet

23. What is the difference between HttpServlet and GenericServlet?
A GenericServlet has a service () method to handle requests.
HttpServlet extends GenericServlet added new methods
doGet()
doPost()
doHead()
doPut()
doOptions()
doDelete()
doTrace() methods
Both these classes are abstract.

24. What's the difference between servlets and applets?
Servlets executes on Servers. Applets executes on browser. Unlike applets, however, servlets have no graphical user interface.

25. What are the uses of Servlets?

A servlet can handle multiple requests concurrently, and can synchronize requests. Servlets can forward requests to other servers and servlets. Thus servlets can be used to balance load among several servers.

26. When doGET() method will going to execute?

When we specified method='GET' in HTML

Example : < form name='SSS' method='GET'>

27. When doPOST() method will going to execute?

When we specified method='POST' in HTML

< form name='SSS' method='POST' >

28. What is the difference between Difference between doGet() and doPost()?

GET Method: Using get method we can able to pass 2K data from HTML

All data we are passing to Server will be displayed in URL (request string).

POST Method: In this method we do not have any size limitation.

All data passed to server will be hidden; User cannot able to see this info on the browser.

29. What is the servlet life cycle?

When first request came in for the servlet, Server will invoke init() method of the servlet. Thereafter if any user request the servlet program, Server will directly executes the service() method. When Server want to remove the servlet from pool, then it will execute the destroy() method

30. Which code line must be set before any of the lines that use the PrintWriter?

setContentType() method must be set.

31. Which protocol will be used by browser and servlet to communicate ?

HTTP

32. In how many ways we can track the sessions?

Method 1) By URL rewriting

Method 2) Using Session object

Getting Session form HttpServletRequest object

HttpSession session = request.getSession(true);

Get a Value from the session

session.getValue(session.getId());

Adding values to session
cart = new Cart();
session.putValue(session.getId(), cart);

At the end of the session, we can inactivate the session by using the following command
session.invalidate();

Method 3) Using cookies

Method 4) Using hidden fields

33. How Can You invoke other web resources (or other servlet / jsp ) ?
Servlet can invoke other Web resources in two ways: indirect and direct.

Indirect Way: Servlet will return the resultant HTML to the browser which will point to another Servlet (Web resource)

Direct Way: We can call another Web resource (Servlet / Jsp) from Servlet program itself, by using RequestDispatcher object.

You can get this object using getRequestDispatcher("URL") method. You can get this object from either a request or a Context.

Example :
RequestDispatcher dispatcher = request.getRequestDispatcher("/jspsample.jsp");
if (dispatcher != null)
dispatcher.forward(request, response);
}

34. How Can you include other Resources in the Response?
Using include method of a RequestDispatcher object.

Included WebComponent (Servlet / Jsp) cannot set headers or call any method (for example, setCookie) that affects the headers of the response.

Example : RequestDispatcher dispatcher = getServletContext().getRequestDispatcher("/banner");
        if (dispatcher != null)
        dispatcher.include(request, response);
}

35. What is the difference between the getRequestDispatcher(String path) ServletRequest interface and ServletContext interface?

The getRequestDispatcher(String path) method of ServletRequest interface accepts parameter the path to the resource to be included or forwarded to, which can be relative to the request of the calling servlet. If the path begins with a "/" it is interpreted as relative to the current context root.

The getRequestDispatcher(String path) method of ServletContext interface cannot accepts relative paths. All path must sart with a "/" and are interpreted as relative to curent context root. If the resource is not available, or if the server has not implemented a RequestDispatcher object for that type of resource, getRequestDispatcher will return null. Your servlet should be prepared to deal with this condition.

36. What is the use of ServletContext ?
Using ServletContext, We can access data from its environment. Servlet context is common to all Servlets so all Servlets share the information through ServeltContext.

37. Is there any way to generate PDF'S dynamically in servlets?
We need to use iText. A open source library for java. Please refer sourceforge site for sample servlet examples.

38. What is the difference between using getSession(true) and getSession(false) methods?
getSession(true) - This method will check whether already a session is existing for the user. If a session is existing, it will return that session object, Otherwise it will create new session object and return taht object.

getSession(false) - This method will check existence of session. If session exists, then it returns the reference of that session object, if not, this methods will return null.


Q: Explain the life cycle methods of a Servlet.

A: The javax.servlet.Servlet interface defines the three methods known as life-cycle method.
public void init(ServletConfig config) throws ServletException
public void service( ServletRequest req, ServletResponse res) throws ServletException, IOException
public void destroy()
First the servlet is constructed, then initialized wih the init() method.
Any request from client are handled initially by the service() method before delegating to the doXxx() methods in the case of HttpServlet.

The servlet is removed from service, destroyed with the destroy() methid, then garbaged collected and finalized.

Q: What is the difference between the getRequestDispatcher(String path) method of javax.servlet.ServletRequest interface and javax.servlet.ServletContext interface?

A: The getRequestDispatcher(String path) method of javax.servlet.ServletRequest interface accepts parameter the path to the resource to be included or forwarded to, which can be relative to the request of the calling servlet. If the path begins with a "/" it is interpreted as relative to the current context root.

The getRequestDispatcher(String path) method of javax.servlet.ServletContext interface cannot accepts relative paths. All path must sart with a "/" and are interpreted as relative to curent context root.

Q: Explain the directory structure of a web application.

A: The directory structure of a web application consists of two parts.
A private directory called WEB-INF
A public resource directory which contains public resource folder.

WEB-INF folder consists of
1. web.xml
2. classes directory
3. lib directory

Q: What are the common mechanisms used for session tracking?

A: Cookies
SSL sessions
URL- rewriting

Q: Explain ServletContext.

A: ServletContext interface is a window for a servlet to view it's environment. A servlet can use this interface to get information such as initialization parameters for the web applicationor servlet container's version. Every web application has one and only one ServletContext and is accessible to all active resource of that application.

Q: What is preinitialization of a servlet?

A: A container doesnot initialize the servlets ass soon as it starts up, it initializes a servlet when it receives a request for that servlet first time. This is called lazy loading. The servlet specification defines the <load-on-startup> element, which can be specified in the deployment descriptor to make the servlet container load and initialize the servlet as soon as it starts up. The process of loading a servlet before any request comes in is called preloading or preinitializing a servlet.

Q: What is the difference between Difference between doGet() and doPost()?

A: A doGet() method is limited with 2k of data to be sent, and doPost() method doesn't have this limitation. A request string for doGet() looks like the following:
http://www.allapplabs.com/svt1?p1=v1&p2=v2&...&pN=vN
doPost() method call doesn't need a long text tail after a servlet name in a request. All parameters are stored in a request itself, not in a request string, and it's impossible to guess the data transmitted to a servlet only looking at a request string.

Q: What is the difference between HttpServlet and GenericServlet?

A: A GenericServlet has a service() method aimed to handle requests. HttpServlet extends GenericServlet and adds support for doGet(), doPost(), doHead() methods (HTTP 1.0) plus doPut(), doOptions(), doDelete(), doTrace() methods (HTTP 1.1).
Both these classes are abstract.

Q: What is the difference between ServletContext and ServletConfig?

A: ServletContext: Defines a set of methods that a servlet uses to communicate with its servlet container, for example, to get the MIME type of a file, dispatch requests, or write to a log file.The ServletContext object is contained within the ServletConfig object, which the Web server provides the servlet when the servlet is initialized

ServletConfig: The object created after a servlet is instantiated and its default constructor is read. It is created to pass initialization information to the servlet.

Question: What are the phases in JSP?

Answer: a) Translation phase ? conversion of JSP to a Servlet source, and then Compilation of servlet source into a class file. The translation phase is typically carried out by the JSP engine itself, when it receives an incoming request for the JSP page for the first time
b) init(), service() and destroy() method as usual as Servlets.

Question: How many cookies can one set in the response object of the servlet? Also, are there any restrictions on the size of cookies?
Answer: If the client is using Netscape, the browser can receive and store 300 total cookies
4 kilobytes per cookie (including name)
20 cookies per server or domain

Question: What?s the difference between sendRedirect( ) and forward( ) methods?
Answer: A sendRedirect method creates a new request (it?s also reflected in browser?s URL ) where as forward method forwards the same request to the new target(hence the chnge is NOT reflected in browser?s URL).
The previous request scope objects are no longer available after a redirect because it results in a new request, but it?s available in forward.

SendRedirectis slower compared to forward.

Question: Is there some sort of event that happens when a session object gets bound or unbound to the session?

Answer: HttpSessionBindingListener will hear the events When an object is added and/or remove from the session object, or when the session is invalidated, in which case the objects are first removed from the session, whether the session is invalidated manually or automatically (timeout).

Question: What do the differing levels of bean storage (page, session, app) mean?

Answer: page life time - NO storage. This is the same as declaring the variable in a scriptlet and using it from there.

session life time - request.getSession(true).putValue "myKey", myObj);

application level ? getServletConfig().getServletContext().setAttribute("myKey ",myObj )

request level - The storage exists for the lifetime of the request, which may be forwarded between jsp's and servlets

Question: Is it true that servlet containers service each request by creating a new thread? If that is true, how does a container handle a sudden dramatic surge in incoming requests without significant performance degradation?

Answer: The implementation depends on the Servlet engine. For each request generally, a new Thread is created. But to give performance boost, most containers, create and maintain a thread pool at the server startup time. To service a request, they simply borrow a thread from the pool and when they are done, return it to the pool.

For this thread pool, upper bound and lower bound is maintained. Upper bound prevents the resource exhaustion problem associated with unlimited thread allocation. The lower bound can instruct the pool not to keep too many idle threads, freeing them if needed.

Question: Can I just abort processing a JSP?

Answer: Yes. Because your JSP is just a servlet method, you can just put (whereever necessary) a < % return; % >