Java EE
javax.servlet.Servlet

Jakarta EE
jakarta.servlet.Servlet

```
public interface Servlet  // Defines the Life Cycle of a Servlet
{
    public void init(ServletConfig config) throws ServletException;
    public void service(ServletRequest request, ServletReponse response) throws
IOException, ServletException;
    public void destroy();
    public String getServletInfo();
    public ServletConfig getServletConfig();
}
```

```
public abstract class GenericServlet implements Servlet
{
    // Default implementation for the methods of the Servlet interface
        // were provided

    // Along with this it provided additional helper methods that a servlet
    // may require
}

 class jakarta.servlet.http.HttpServlet extends GenericServlet
 {
     // Provides the Http protocol specific implmentation of the GenericServlet

     // 7 Http Methods default implementation

     <form method=get,post,put,trace,options,head,delete

 }
```

Web Application

1. Deployment
2. Execution

First.war
tomcat manager
upload war file
deploy

/First

loclahost/First/GetTime

Deployment of a WebApplication in a Web Server

1. Checks the structure of the WAR file.
2. Checks if a Deployment descriptor (web.xml) is available in the WEB-INF
   - -> Yes
     a. Parse the web.xml to check validity of the document.
     b. If the document is not valid => it will throw a SAXParseException and teh deployment will abort.
   - -> NO >=JavaEE 1.6 (web.xml became optional, bcoz Annotations)
     a. Deployer scans all the classes that are present in the WEB-INF/classes folder and looks for all the classes that have been annoted with @WebServlet, it identifes them as a Servlet

XML documents
1. well formed
2. valid

1. that follows the basic rules of XML
a. tags that are open should be closed
b. stags are case sensitive
<servlet></Servlet>
c. tags should be properly nested

d. properties should be quoted
<form action='Authenticate'>

2. Valid
a. Every document that is Valid has to be well formed
b. If an XML document follows the rules defined within a DTD or XSchema then it is said to be valid

<pankaj>
Hello
</pankaj>

continuation of Deployment

the Deployer is responsible to register each servlet with its respective servlet mapping and settings for the current web application, it forms a Context table

ContextTable : /OnlineShopping

Name	URL Pattern	Class	MA	etc
Authenticate	/Authenticate	org.fi.servlets.Authenticate	750	...
Category	/Category	org.fi.servlets.Category	0	

Execution http://localhost/Context/URL

Request
http://localhost/OnlineShopping/login.html

WebServer,
1. Checks do I have a Context by the name of /OnlineShopping
YES
2. Check do I have a file login.html
Yes
return the file login.html to the client

3. If the URL requested is not a .html then follow the steps: -

http://localhost/OnlineShopping/Authenticate

WebSErver, checks the ContextTable for /OnlineShopping
a. do i have an entry for /Authenticate, if yes, then check the memory address of the entry pertiaining to /Authenticate,
   i. the MA is 0 (this means this is the very first time this servlet has been requested for
      1. Load the class pertaining to this servlet (org.fi.servlets.Authenticate.class)
      2. Instantiate an object of this Servlet Class
      3. Inject (pre-initializing the datamembers) the Servlet Object with required values
      4. Container -> calls the init method of the servlet to perform initialization
         init is the method where the programmer writes the initialization code for his servlet such as connecting to databases, opening files or performing any
         one time execution that may be arequird for this object.
      5. If the init method has successfully executed then the Servlet is ready to serve the request of the client and the memory address of this Servlet is updated in the ContextTable.
      6. **
   ii. MA is ! 0 => **

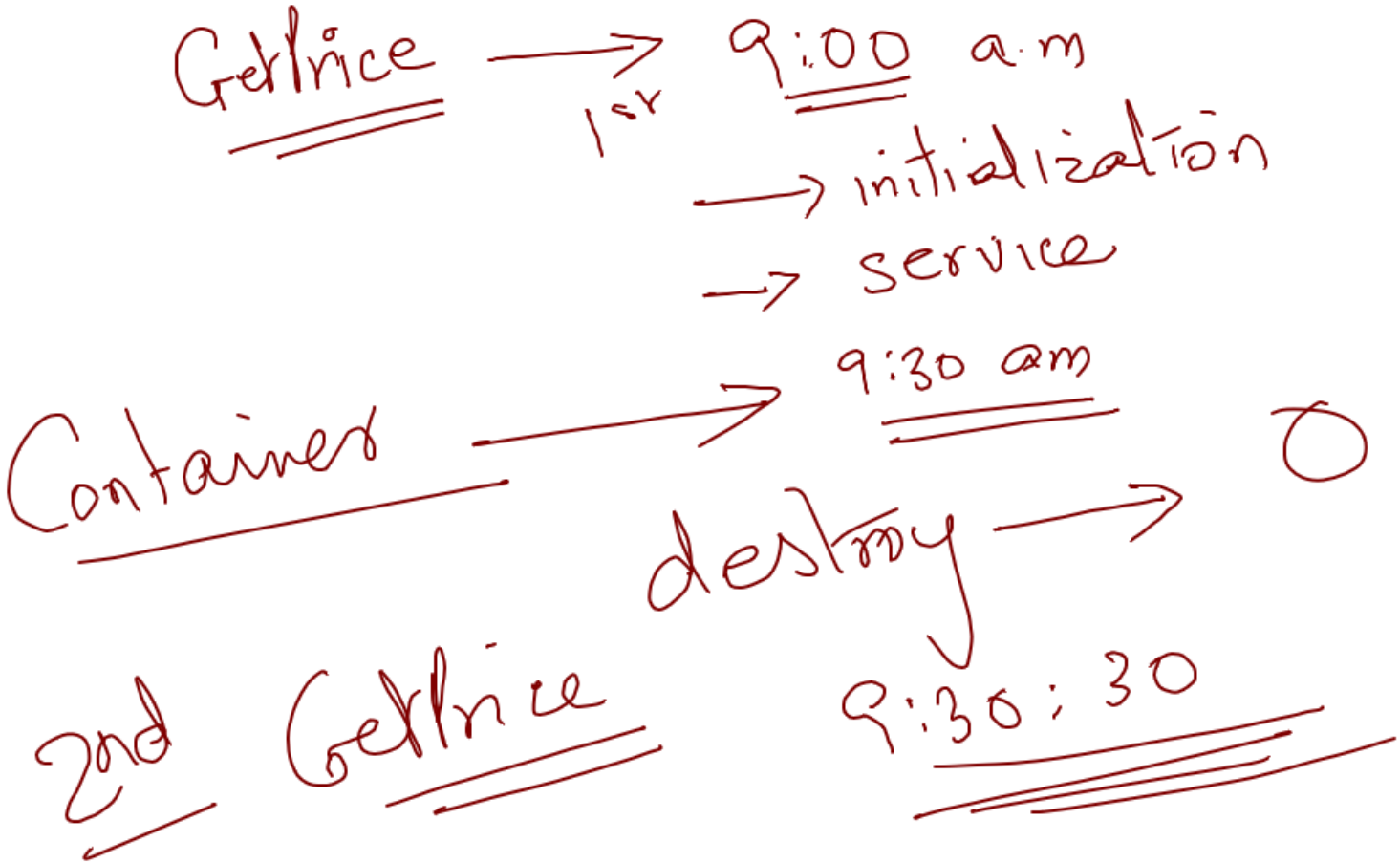
** The Web Container/Server calls the service method of the Servlet.

Destroy of hte Servlet will be fired in 1 of the following 3 conditions :-

1. Either the web application is stopped by the admin, or the webserver is shutdown in any of the above cases the destroy method of all the servlets that are in memory will be fired, the memory address in the context table set to 0 and the servlet object will be marked for Garbage Collection.

2. If the web application is reloaded by the admin, Reloading is stopping and starting, while stopping the Web Application the destroy method of all the servlets that are in memory will be fired, the memory address in the context table set to 0 and the servlet object will be marked for Garbage Collection.

3. When the threshold timeout of a servlet expires then the the destroy method of the servlet will be fired, the memory address in the context table set to 0 and the servlet object will be marked for Garbage Collection.


GetInice
1st
9:00 a.m
initialization
service
Container
9:30 am
destroy
0
2nd GetInice
9:30:30