

5 February 2024. over CGT.

- ✓ Analysis of ~~lifecycle~~ of JSP and Servlet. Difference between do get and do post.
- ✓ lifecycles of JSP, lifecycle of servlet.
- ✓ Servlet lifecycle.

**loading the servlet** **Step 1:** web container loads the servlet class and creates an instance of the servlet. The container can create a servlet instance at container startup or it can delay it until the servlet is needed to service a request.

**Step Two** The servlet gets initialised during the first request with all the configuration set as per the Configuration file. during initialisation init method will run.

**Step 3** whenever invoke. servlet's service methods would be invoked to process HTTP requests.

**Step 4** Destruction: servlet gets destroyed when application is deployed from web server.

Note step 1 and step 2 will be run only once in the servlet lifecycle.

loading + instantiation + initialisation done only once. The service method can be invoke many times.

Package is divided into: javax.servlet, javax.servlet.http.

import javax.servlet.\*; import javax.servlet.http.\*;

1. To HTTP protocol support from API's The classes and,

# Explain the servlet API's. The classes and interfaces in javax.

Servlet are protocol independent. It can support different protocols like HTTP and FTP. 2. The javax.servlet.http: The classes and interface in this package are specific for requests using HTTP protocols of the extended class and interface in this package extend the specified in the javax.servlet package.

Introduce Class - Exception:

| Servlet         | Class                  | Servlet & Response   |
|-----------------|------------------------|----------------------|
| ServletRequest  | GenericServlet         | Exception            |
| ServletResponse | ServletInputStream     | ServletException     |
| ServletContext  | ServletOutputStream    | UnavailableException |
| ServletConfig   | ServletRequestWrapper  |                      |
| Filter          | ServletResponseWrapper |                      |
| FilterChain     | ServletRequestEvent    |                      |

|                              |   |
|------------------------------|---|
| Interface(Abstract methods)  | Object  |
| Class-(Concrete method)      | Throwable   |
| Abstract Class both          | Exception   |
| Ret. M1() :- Abstract Method | unchecked.  |
| Type M1() :- Concrete Method | Error. No set by Runtime exception<br>↳ SQL checked → class exception |

classes in Interface, class and exception.

| Interface           | Class               | Exception             |
|---------------------|---------------------|-----------------------|
| HTTPForwardRequest  | HTTPServlet         | Runtime exception.    |
| HTTPForwardResponse | Cookie              | Unavailable exception |
| HTTPSessionContent  | HTTPRequestWrapper  |                       |
| HTTPSession         | HTTPResponseWrapper |                       |

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### E-commerce.

SW requirements for E-commerce.

Business layer: platforms: E-commerce platforms are software solutions that enable E-commerce businesses to build and manage their online stores. These e-commerce platforms

provide the foundation for building and managing e-commerce stores. E-commerce platforms

offer various features like product catalog management, shopping cart functionality, secure payment gateways, inventory tracking and order management, etc.

(a) The main 4 cloud examples: E-commerce platforms

are:- (i) Shopify; (ii) WooCommerce; (iii) Magento; (iv) BigCommerce.

(b) SW Content management system: CMS.

CMS is used to create, update and manage website content including product descriptions.

I. Design, landing pages and customise the overall look and feel of the e-commerce site:

(i) The world-class CMS Content Management, Joomla, Drupal along with its several unique plugins and themes.

(ii) TMS: Inventory Management system: This software

This s/w tracks inventory levels, monitors product availability,

and automates inventory activities.

(iii) These tools help to optimise stock levels,

prevent overstocking, check stock levels before fulfilling, monitor delivery and return processes etc.

Typical examples of TMS are :- i) Trade-Geko, ii) Zoho-Inventory.

(iii) ~~SKU-vault, Order stick tools~~.

(iv) Order management system (OMS): OMS s/w enable business to efficiently process and manage orders from various channels.

(v) OMS integrated with e-commerce platforms, inventory systems and shipping carriers to automate order work flow, tracks shipments and provides real-time order status updates; Examples are :- shipstation, Orderline, channel advisor.

(vi) Payment Gateway, s/w : facilitates secure online transactions by connecting e-commerce platforms to payment providers.

(vii) These tools handle payment processing, encryption and decryption of card details, seamless checkouts, authorisation, validation, and confirmation activities etc.

e.g. name: Paypal, Stripe, Square, Braintree etc.

(viii) Analytics and reporting tools:

These tools provide several activities regarding analysis and supporting business such as customer behaviour, sales performance, etc.

These tools help businesses to monitor key activities, identify trends, make data driven decisions, google analytics, Adobe Analytics etc.

### (VII) Social Media management tools:

Social media management

Servlet (interface) ext. by Generic servlet (implementation class API)  
HTTP servlet is a Normal class & it generic servlet can extend  
any class.

Indirectly: Servlets implement this interface.

Class: Generic servlet: Defines a generic protocol-independent  
Servlet developed to cater Non-HTTP request.

Class: HTTP servlet.

Servlet used to cater client HTTP requests.

Servlet interface is the abstraction of the Java-Servlet API.

(i) All the methods are abstract

(ii) All the methods are abstract

(iii) All the methods of implementation is either directly or indirectly by  
Ext. a class which implement the ~~Generic~~ ~~Servlet~~ interface.

Example of servlet implementation: HTTP servlet.

Generic servlet implements Servlet Interface

void init() { }      The 2 inbuilt classes are

void service() { }      (i) HTTP servlet

void destroy() { }      (ii) Generic servlet

Now the application architecture will be using  
the HTTP servlet which implements the Servl. interface

void doGet() - called by the servlet container for a request to a servlet that is being taken out of service.

void doPut(servletConfig) called by the servlet container to indicate to a servlet that is being placed into service.

✓ String getServletInfo()

HTTPServlet is a class structure.

Any servlet which works on the HTTP should extend the HTTP Servlet class. This class contains implementation of methods that are HTTP specific. Also contain the implementation of the methods declared in the servlet interface. The contains doxxx methods which are known as the service methods. All the extending servlets, this class must implement any one of the doxxx() methods. Examples of doxxx(): doGet(), doPost()

doGet and doPost functionality:

void doGet(HttpServletRequest req, HttpServletResponse resp).

Description: called by the server via the service method to allow a servlet to handle a get request. will be called whenever it is selected or the form method is Get).

void doPost(HttpServletRequest req, HttpServletResponse resp)  
called by the server via the service method to allow a servlet to handle a post request, will be called whenever the form method is Post.

void doHead (HttpServletRequest request, HttpServletResponse response)  
Receives an HTTP Head request from the browser  
service, method and handles the request. Head  
request returns only the header information.

Note: Any class extending the HttpServlet should  
override any of the doxxxx methods based on the  
requirement.

Q: Diff. b/w do get and do post?

In projects almost get and post are commonly  
used.

Important Interfaces in the servlet API:

(1) HTTP Servlet Request

(2) HTTP Servlet Response

(3) ServletConfig

(4) ServletContext

(5) Request Dispatch.

HTTP Servlet Request Interface:

This interface extends the ServletRequest interface contains  
methods to access request information by the HTTP servlet.

ServletRequest

This interface is used by servlets to  
access.

HttpServletRequest

access. The f

6 Feb 2024 E-commerce:

Social Networking management tools  
(i) Social media management & w. help businesses to manage and coordinate posts across various social media platforms. These tools help in promoting products, engaging with customers and analyzing social media platform performance.

These tools are very effective nowadays to explore the e-commerce businesses very quickly across the world. for e.g: (i) Zendesk, (ii) Hootsuite

(iii) Buffer, (iv) Sprout.

These tools help in supporting the e-commerce business with social media environment.

Customer support and live chat: at present customer support system is very necessary for a e-commerce business to help.

The customers regarding these problems where they try to know about the solution of the problem. These tools facilitate real-time communication with customers providing assistance and resolving queries promptly.

These tools enhance customer satisfaction and ~~some~~ improve the overall shopping experience of e-commerce business.

These do serve standard e-commerce business.  
must have a customer support system to run it smoothly. Examples of customer support systems are: livechat, intercom, etc.

S/w: ~~of~~ shipping and logistics S/W: These tools helps to streamline the process of shipping products to the customer at real time at their location.

(iv) These few features features such as: label printing, order tracking, carrier integrations, rate collection etc. with other subsystems of e-commerce - Business.

by using these few tools an e-commerce business can buy a delivery to their products in time to their customers. Hence it plays a very important role in the development of an e-commerce site.

examples of shipping and logistic software: (i) Ship station,

shipments, easy up etc.

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## E-commerce: security threats?

As we know that e-commerce business has become increasingly popular in recent years offering conveniences and accessibility.

To consumers would add. However, with its growth there are also various types of security threats associated with e-commerce.

There are some common threats that e-commerce platforms and consumers may face. These are as follows:

(i) Cybersecurity threats or attacks: Most of the e-commerce businesses suffer from cybersecurity attack in which sensitive customer data, including personal and financial information are taken into consideration.

• Cyber intruders may attempt

(ii) Cyber criminals may attempt to exploit or hack the related information from the system through several cyber criminal activities.

such as hacking, phishing or malware attacks.

These attacks can lead to data breaches, financial losses and damage to the company's reputation.

(iii) Identity theft: It is another major threat faced involves fraudulent emails, messages, links etc. to dupe user to steal sensitive information such as login credentials, credit card information, financial info., identity related information etc.

These information can be used further in other illegal activities.

(iv) Payment frauds: E-commerce platforms are vulnerable to payment fraud where cyber criminals use stolen credit card information or other card (payment card) information, and finally use all these in charge back fraud. This can result in financial losses for both merchants and consumers.

Data Breaches: E-commerce platforms have vast amount of customer data including personal information and payment details. If the platforms security measures are inadequate then hackers can gain unauthorized access to these data leading to data breaches and the exposure of sensitive information.

(v) Fake products: Online market places can become breeding grounds for fake products. Fraudulent sellers may offer fake or low quality products to the consumer via e-commerce business that finally damaging the reputation of e-commerce business.

(iii) Product delivery issues: sometimes trapping, delaying and delivering packages once unacceptable to theft, loss or delay impacting the customer experience.  
Additionally parcel piracy: misuse packages have stolen from deliverymen has become a concern in some regions.

Feb 2021 Rest and Rest methods

doXXX

'get()' or 'post()' called by a server to handle a rest request.

deposit and dooption is not used.

do Google: 1000 project  $\Rightarrow$  download the selected project, Dummy server  
of project in your machine!

- ① what is the default service, HTTP service?
- ② what and why?
- ③ do get and do post method.

After interface is used by the client to access.

Parameters sent by client are part of rest requests from the browser. Client information like post number, client protocol form field values.

Important methods in selected Request.

- 1) Having get ParameterByName (String parameterName) :  
Returns the value of a request parameter as a string or null  
If the parameter does not exist.
  - 2) Implementation getParameterNames () Returns an enumeration  
of string objects containing the names of the parameters contained  
in the request.
- Having [ ] getParameterValues (String ParameterName)

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Returns an array of the ~~string~~ objects containing all the values for the given ~~key~~ parameter. If the parameter does not exist.

~~SetStringAttribute (String attributeName, Object attributeValue)~~: Stores an attribute in this request.

~~void removeAttribute (String attributeName)~~.

✓ ~~String getAttribute (String attributeName)~~.

Returns the value of the named attribute as an object, or null if no attribute of the given name exists.

Request Dispatcher.

~~get RequestDispatcher (String Path)~~.

~~cookies []~~

~~HTTPSession getSession()~~: Returns the current session associated with the request or if the request does not have a session, ~~Creates~~.

Important methods in Servlet Response.

~~PrintWriter getWriter ()~~: Returns a PrintWriter object that can send character text to the client.

~~void setContent-Type (String type)~~: Sets the content type of the response being sent to the client.

void sendRedirect (String location): Returns a PrintWriter object that command the <sup>character</sup> to the ~~string~~ client.

### Steps How to Create a Project

1. Eclipse IDE (IDE)
2. Tomcat installation.
3. Ask the workspace?

4. Add a server runtime env.

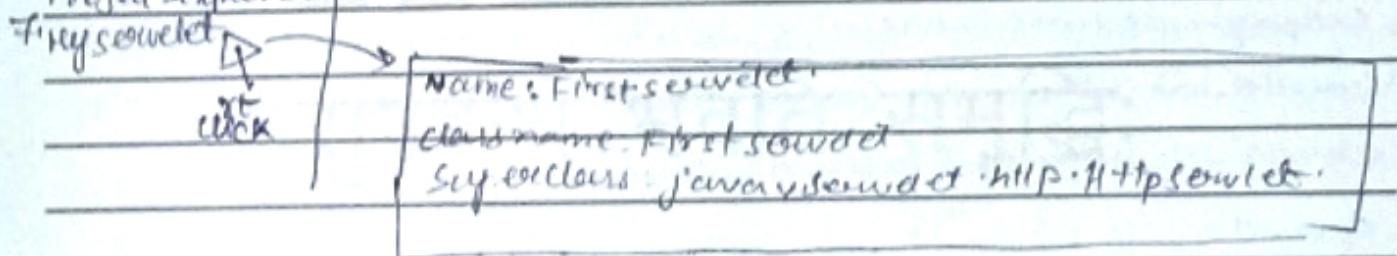
Windows → preference → Server → Runtime Environment

Apache Tomcat: Go to server view.

5. Windows → Show View → Server →

6. Dynamic web project → give name → set the server.  
→ next → finish.

Project Explorer



1. File → New - Dynamic Web Project

Name: BCA Sem 6 → Finish.

BCA Sem 6 - Right click

↓ Now

Servlet → Next (Do not any change in it) → Next →

→ Next → Finish.

Before we the math check box tick in

do get or do Post checkbox → Finish.

What is web.xml file?

web.xml is a configuration file which contains the application configuration and deployment details of the web application.

Some of the important configurations in web.xml file:

1. content-type

2. servlet

3. servlet-mapping

4. welcome-file-list

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<servlet>

2 <description></description>

3 <display-name>First Servlet</display-name>

4 <servlet-name>FirstServlet</servlet-name>

5 <servlet-class>Servlets.FirstServlet</servlet-class>

> </servlet>

<servlet-mapping>

<servlet-name>First Servlet</servlet-name>

> <url-pattern>/FirstServlet</url-pattern>

> </servlet-mapping>

Coding of servlet:

```
package servlet;
import java.io.IOException;
```

public class First Servlet extends HttpServlet.

```
private static final long serialVersionUID = 1L;
```

```
protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
```

```
PrintWriter out = response.getWriter();
```

```
response.setContentType("text/html");
```

```
out.print("<html><head>");
```

```
out.print("<title> My First servlet </title>");
```

```
out.print("</head>");
```

```
out.print("<body>");
```

```
out.print("<h1> Welcome to world of servlets</h1>");
```

http://localhost:8000/MyFirstWebApp/FirstServlet.web.xml

It's also called deployment descriptor.

```
out.print("</body>");
```

```
out.print("</head>");
```

where firstServlet is the url mapping provided in web.xml file.

Now lets develop a HTML form servlet to demonstrate how form parameters are handled in servers using servlets.

✓ Create a login.html with user name and password.

✓ Create a login servlet to handle the request.

✓ Create a successServlet to display the success message.

18f) Create in the webcontent directory,

form method = "get"

action = "loginServlet"

Servlet at doGet() लिखना पड़ेगा।

login.html

doGet() में:

success - servlet address

success servlet extends HttpServlet.

Protected void doGet(HttpServletRequest Req)

String user = request.getParameter("user");

## E-commerce

Policy's Procedures and Terms:

E-commerce Policies and laws.

Cyber law or Indian Act regarding e-commerce.

Cyber laws are also known as Cyber crime laws or Internet laws or Indian Act regarding e-commerce.

Cyber laws are legal regulations and frameworks.

that govern an address issues related to the use of e-commerce, digital technologies, data protection and cyber security.

(ii) These laws are designed to prevent and prosecute criminal activities and regulate behaviour inside cyberspace.

(iii) Cyberlaws play a crucial role in maintaining security, privacy, and ordering the digital transmission providing legal framework that favour online activities, protect individuals and organisations and promote responsible use of technology.

(iv) Indian cyber laws: Aim to create a secure digital environment, protect individual rights and regulate various terms and conditions of digital transmission and other cyber activities within the country.

(b) India has several cyber laws and regulations, but the most common is called Information Technology Act 2000. This law contains following regulations:

(i) the IT Act 2000 is the primary legislation governing cyber activities and e-commerce law in India. This law recognises electronic records and digital signature as a legally valid document. This law defines cyber crimes and penalties for cyber offenses such as hacking, phishing, data theft illegally, cyberfraud, access of resources via unauthorised way, etc.

This law establishes the Indian Computer Emergency Response Team to handle the cybersecurity incidents and respond to the cyber threats: CERT-IAL.

ITACT 2011: These rules framed under the IT ACT 2000. This law regulates the collection and the handling of sensitive personal data by Indian companies.

Thus, this rule regulates the use of personal and transactional data to spread out with several conditions. This rule mandates reasonable security practices.

and procedures for handling sensitive personal data. This rule defines what constitutes sensitive <sup>personal</sup> functional information and specifies guidelines for its collection, storage, and transfer.

#### Payment and Settlement System Act: 2007

(i) This act regulates payment selected digital transaction in India. (ii) This act governs payments and settlement systems specially imputed time, including electronic fund transfers, digital payments, online banking etc.

(iii) This act facilitates the operation, regulation and oversight of payment system, to ensure efficiency, security and consumer protection.

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e-commerce.

e-payment system (Electronic payment system).

(i) An electronic payment system is also known as an online payment system, digital payment system or payment Gateway system.

(ii) E-payment system have now an increasingly popular way to handle financial transactions due to their convenience and security. (EPS) - Electronic payment system.

An EPS is a method of making financial transactions.

through electronic channels such as the internet using different types of mobile devices. An EPS refers to the technology and the infrastructure used to facilitate financial transactions

and the exchange of money between two ends electronically.

**IBM** ESTABLISHED in 1979

An EPS system provides a convenient and secure way to make off financial transaction over the internet between the two or more bodies. These systems allow individuals and businesses to make payments or receive payments electronically without the need of physical cash, cheques, paper-based methods or other (Draft, challan) or other traditional payment methods. A typical EPS system involves multiple parties including payment processors, financial institutions, merchants, and customers during the digital payment transaction. These systems use a variety of technologies and protocols including encryption, authentication, communication etc. to ensure the secure transmission of financial information.

Examples of popular international electronic payment systems are: (i) Google Pay (ii) Apple Pay (iii) PayPal (iv) VENMO (v) Bitcoin etc.

Each system has its own unique features and capabilities, and the use depends on their needs and preferences. A typical EPS exist in various forms, such as credit cards, debit cards, online banking, mobile wallets, mobile payment systems etc.

These payment methods offer a convenient, secure and efficient way to transfer money. Some common EPS are:-

(i) Card based payment system: This system supports or makes payments at point of sale - (POS) - Terminals - POS - Point of sale system.

Some popular payment cards are: - Smart card, credit card, debit card, Master Card.