

16/11/2021

Adj Java - DB

loading JDBC driver to method area → mandatory in Web apps
optional in Standalone

parsed, tokenised only Onu

③ Create statement → prepared statement → callable statement

"empty statement holder"

they are interface

Query Parameters
are first sanitised

④ Set IN Params → methods of PST

public void setType(int parampos, Type value);



? position

Table → Pojo class

Column → Pojo attributes

Rows → Pojo object



? → IN/OUT

parameter

Execution of stored Procedure



i) Stored Procedure :- Step

① stored proc/function exist in DB

② create callable statement from DB connection

③ API of connection z/f

public CST prepareCall(String sql)

SQL = " { call procName(?, ? ...)? } "

{ } meant for
JDBC Driv.

To transfer this to
DB understandabl,
for

Function syntax

func: " { (?) = call functionName((), (), ?, ?, ...) } "
1. 2. 3.

Counting in function.

Day 2.1 SRC → Dao, pojo, utils,
→ Account.java.

Advance Java

JDK → 11 version



Apache Jakarta EE 8 (maintained by eclipse foundation)

④ Java EE perspective.

Run on any webservices

what is J2EE?

if is specification only (what part only)

why separation?

Database independence.

④ which specs? (Rules or Contract)?

specification of primary services required for any enterprise foundation.

④ What is enterprise application?

if is industry grade platform which are build to operate in a corporate environment.

Vendor of J2EE specs?

- Oracle / Sun / IBM / Eclipse.

What Tomcat Server gives?

Servlet API, JSP, API, security, connection pooling, naming Service.

What is Diff web / & app server?

→ Web container + EJB (Enterprise Java Bean) container
+ ALL J2EE services implementation.

Other options

Apache → tomcat (web server) / TomEE

Oracle/sun - Glassfish

Red Hat → JBoss (wild fly)

Oracle/BEA → Weblogic

J2EE server independence - deal and deploy server side app.

AAA layer involved in HTTP request-response flow

Static web
in html

Dynamic programming
⑧ J2EE, servlet

File Tab → dropdown list → choose dynamic web project →
project → day3-2, Dynamic Web module Version → 3.1

Src/main/java
build/class

Webcontext → root →
typically same
as folder

JAR, WAR

Content directory (src/main/webapp)

Generate Web.xml deployment descrip-

Tar

WAR → Web application archive

Folder structure

Servlet-api.jar

AS which is compiler signature folder
Ans → WEB-INF

XML → case sensitive

First index.html page →

src → main → webapp → Now → HTML

keep lower

File Name = index → finish

Welcome message

<body>

<h4> Welcome 2 web Application </h4>

To run on server Launch server

Right click on project → Run as → Run on server

format → finish →

Run client & server separate

Chrome :- client side (only browser & Internet)

URL (uniform Resource Locator)

http://localhost:8080/day3.2

Reload → sending multiple request

IDE (server) Launch on External client (Redeploy → Run again) 5

Windows → web browser → chrome →

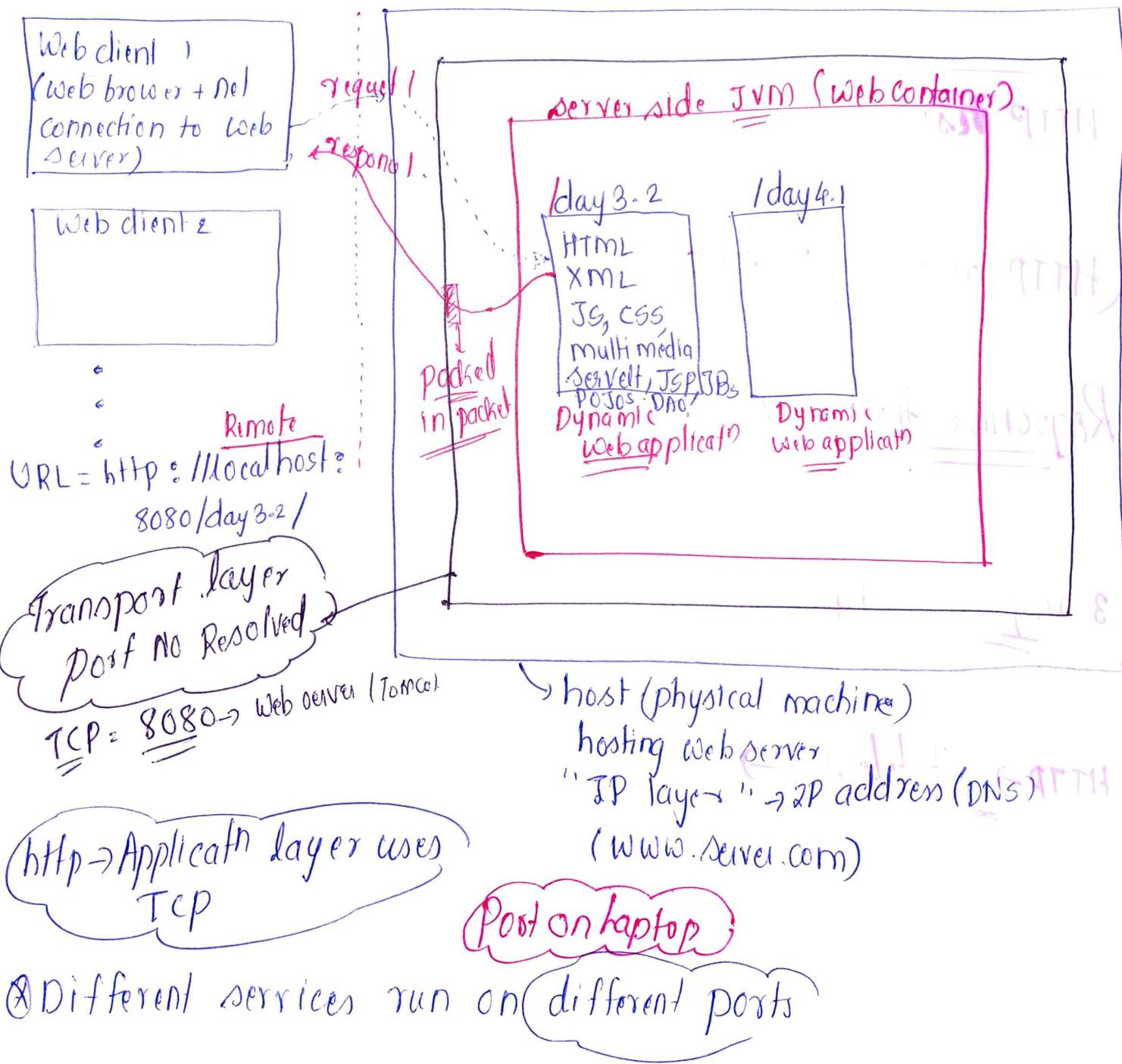
Redeploy

Stopping Servers

Vehicle bar → ⏎ → to stop

W (→ Web Container)

HTTP Request Response Flow



6. Web container :- serverside JVM ... ready made impl. of services.

e.g. Tomcat → Servelt life cycle

e.g. servelt life cycle, JSP, + creates & n respobj.
+ session tracking, concurrency

8080/Day 3.2/T → given to Web container
uri → uniform resource

WC → Web INF → Webxml

HTTP resp pkt

Resp status code = 1xx

HTTP response packet

all ok

2xx

3xx

4xx

5xx

Redirectn

Client side err

failure's

server side error

Response Headers

cookies, resp content-type (HTML), content-length,

3. response body

static or dynamic

HTTP → Stateless → don't remember client, client can send

100 {request}

because TCP connection is closed.

Web developer tool

inspect → Network → request → headers

10/17



Why Servlet?

To add dynamic nature to the web application whose life cycle is managed by WCL (Web container)
→ Life cycle methods → init, service, destroy (WC)

init → called once (class instantiation)

service : called multiple (once per every request);

destroy → called once (called by WC)

Job list

① Request processing (programmer will)

② B.L (Business Logic)

③ Dynamic response generation

④ Data access (DAO class ... managing DAO layer)

⑤ page navigation.

Java docs → javax.servlet.

Interface servlet

⊗ impl class → GenericServlet → HttpServlet →

objective: Test basic servlet life cycle

① Step → Stop the server

② src/main/java

↳ Right → New class →

package → pages

Name = HelloServlet. No main

@ WebServlet(" / test ");
 Public class HelloServlet extends HttpServlet {
 does not contain any abstract methods
 @ override →
 → Generic servl → init(), destroy,
 @ override
 init() {
 System.out.println("in init " + Thread.currentThread());
 }
 @ override
 destroy() {
 System.out.println("in destroy " + Thread.currentThread());
 }
 @ override
 doGet(HttpServletRequest request, HttpServletResponse response) {
 response.setContentType("Text/html");
 Method to generate Response - (doGet());
 try {
 PrintWriter pw = response.getWriter();
 pw.print("<html>Hello from Servlet...</html>");
 pw.print("
 " + LocalDate.now() + "</html>");
 }
 catch (Exception e) {
 e.printStackTrace();
 }
 }
 }

How to execute Wc (annotation)

Most important Dstructure → HashMap

Right-click → run as web

17/11/2021 Day 4 Advanced Java

popular vendors and their products

Apache → Tomcat / JBoss , Oracle - Glassfish , IBM , Weblogic

request response flow?

URL -> http://www.abc.com:8080 / (day 4.1) delegated to web container

How to change port no

Server → web.xml → connector → port = "8080".

What is Web container?

④ provides runtime environment for dynamic web component (servlet & JSP filter)

Jobs

- 1) Creating http request & http response object
- 2)

What is Web.xml?

Deployment descriptor one per webapp

④ will be created by programmer

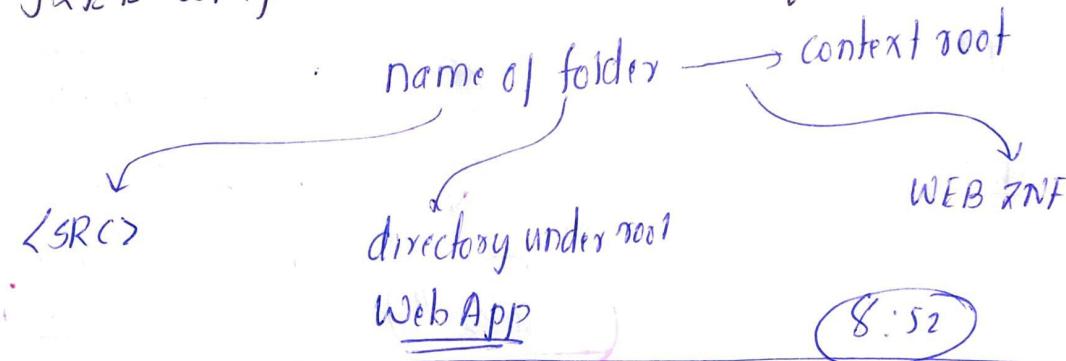
④ will be read by web container

④ only once at Web app deployment time.

④ If consists of deployment instruction,

8:38

J2EE Compliant folder structure of web dynamic app



q) why servlet?

ordinary Java class without main, represent dynamic web component

⑩ Servlet API implementation class in server

8:40 - 9:10

Service (servlet request req, servlet response resp)

↳ will be called only after init();

WC → service → protected service (http) → get post

doXXXX

doGet →

① Step 1: set response content type, (text/html)

client browser will treat as html.

② Step 2: To send response from servlet:

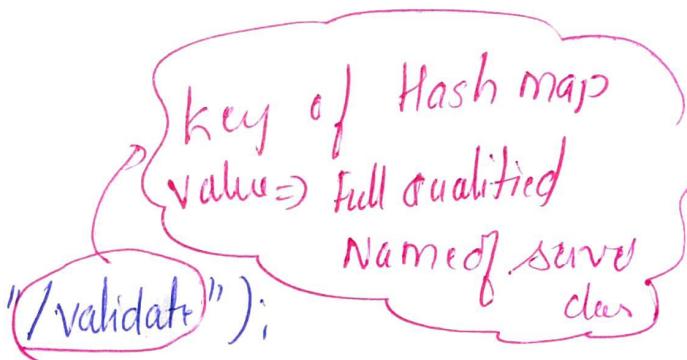
PrintWriter → character oriented, buffered, o/p stream.
servlet to client

③ Send dynamic content:

Deployment of servlet:

(i) via annotation

@WebServlet (value = "/validate");



/day4.1 /validate → URI → acts as key of Hash map

Web container: is lazy manner behaviour

↳ it will wait for first request

⑩

④ Client send :- `http://host:port/day4.1/validate`

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→ Step → in life cycle of servlet → loading of servlet as class
Object or reaction → init → service → protected service →
(Generic) (HTTP API)
`doGet();`
`doPost();`

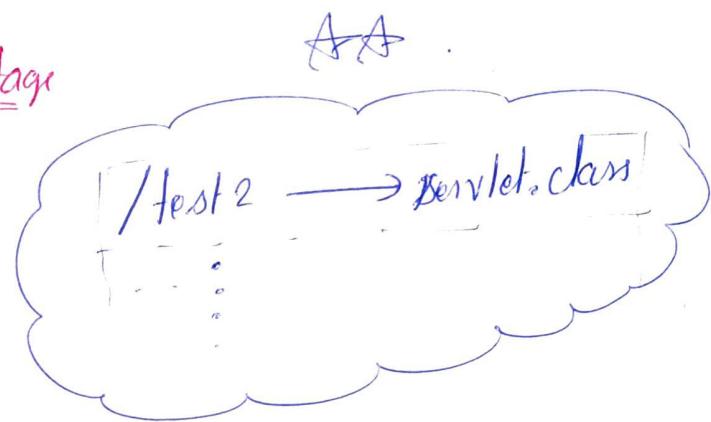
2nd / 3rd nth request :-

- no class loading
- no init
- public service → protected service → `doPost();`

Destroy()

Configuring Servlet using XML tags

```
< servlet >
  < servlet-name > abc
  < class >
    < servlet-mapping >
      < servlet-name > abc
      < url-pattern > /test2
```



What is default loading policy of WC for servlet?

Lazy → WC will start servlet life cycle after client send first request

How to make WC Eager :- LoadOnStartup

because → getting connection from database is time consuming.
hence connection should be started at deployment

④ time consuming initialisation → WC should be eager

④ → `javadoc -> WebServlet -> loadOnStartup`

→ Start life cycle at deployment phase only

↳ @WebServlet (value = "test/test", loadOnStartup = 1) positive

⑧ `Src → main → Webapp → index.html:`
`Web.xml → remove unwanted.`

body

```
<h5><a ref = "test1">LazyInit of</a>
<h5><a ref = "test2">EagerInit of</a>
```

After click
URL → `http://localhost:8080/Day4.1/test`

IDE / hostmate → Right click → Servlet (Creating Servlet)
package → pages
class name = servlet1 → edit 'URL mapping' → /test1.
→ Add constructor

↳ add init() w/o arguments
 sysc("in init");

 destroyed()
 sysc("in destroy");

↳ protected void doGet()
) {
 // set resp content type, done for client browser
 resp.setContentType("text/html");
 Attach char oriented buffer.
 try(PrintWriter pw = resp.getWriter()) {
 pw.println("Testing lazy init of "+locable);
 }

src → main.java → newServlet → Servlet2

→ url mapping → /test2 → copy code of /test1

@ WebServlet(value = "/test2", loadOnStartup = 1)

O/p → after startup → in init 1 2 3 → Eager loading
↳ life cycle of '2' started

How to get class name?

servlet1 → sys0 (in doGet of) : " + getClass();

① Auto loading modified saved class

② automatically classloading modification loaded after

③ copy servlet2 → servlet3

@ WebServlet(value = "/test3", loadOnStartup = 2)

Order of loading

O/p → Init 1 2 3 2 → Both will be loaded at init but
 Init 1 2 3 4 3

(2) → (1) (1) → (2).

Reading request from client :

copy input.html → day3/help.html → webapp

form tag < action = "test_input" >

Default → GET

URL = /day4/1/f1=madhura&browser=chrom

step1 → add link in index.html

1st fill form

< a href = "input.html" > Testing All O/p

Step 2 - Write Servlet

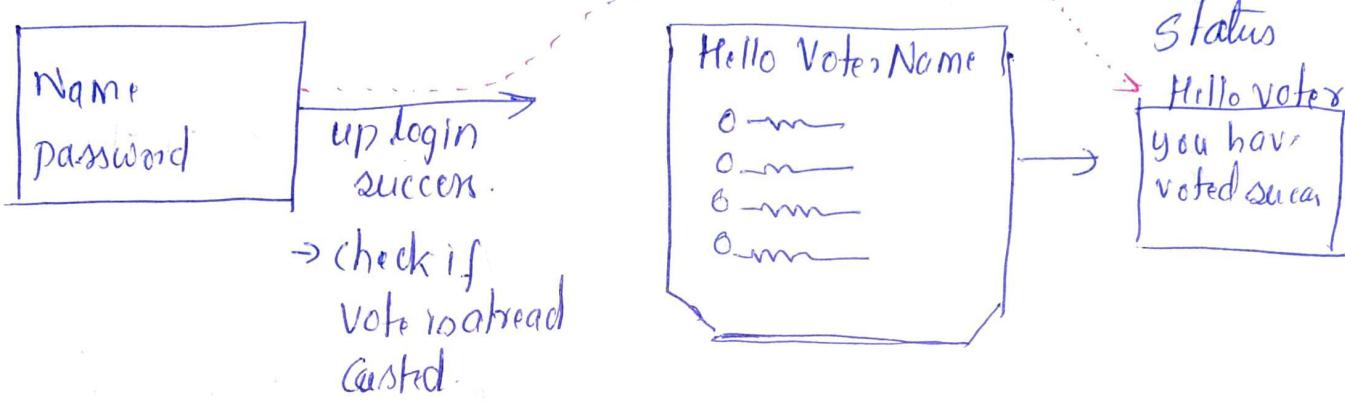
testAUserInput — URL pattern - /testInput

① Set resp content type.
`response.setContentType("text/html")`

try (PrintWriter pw) {
 pw.print
}

? in url → start of Query String

Online Voting :- upon casted voted



Objective :- login - logout flow in online voting app.

login.html → login servlet → successful login → redirected to candidate list page → display logged in voter.

New project day 4-2 → add web.xml → Finish
 3-1

→ copy login form → Webapp.

How To tell which is welcome page

Web.xml <welcome-file> login.html </>

④ Table requirement → Voter details
→ Candidate details → POST 15

Make "POST"
<action="authenticate" method="post"> Ritual

login servlet
src/main/java → servlet → pages → LoginServlet
URI mapping → /authenticate
→ init(), doPost()
destroy()

④ @Override

init() {

@Override

doPost() {

response.setContentType("text/html");

try { PW pw = getPassword(); } {

}

Setting DB Voter

④ Voter pojo → src/main/java → new class → pojos
→ Voter.

Voter {

private int id;

private String name;

private String email;

private String password;

private boolean status;

private Role role;

Constructor, toString, getters setters.

DAO / DButils

Adding JAR files to webapp

→ copy DButil from earlier project

→ SRC/main/java → DButils

→ ad

① JDBC Jar

→ C:\WEB\WEB-INF\lib → all jars copied here.

② OJ

<tomcat>\lib

Adding JDBC driver

to web app

We need to call
every new app!

PUDT → API (DUPT)

DAO → interface → dao
→ VoterDAO.

{

method declarations for user Authentication

Voter authenticateUser (String name, String password) throws SQLException;

}

DAO → class impl :

{

private Connection cn;

private PreparedStatement ps;

Constructor {

Cn = fetchConnection();

ps = cn.prepareStatement ("Select * from voter

By SQL (VoterDAO created)

Where name = ? & password = ?

Dao - clean up

```

    {
        if (pst1 != null)
            pst1.close();
        if (cn != null)
            cn.close();
    }

```

Add Constructor as per requirement

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@Override authenticate user

```

    {
        pst1.setString(1, name);
        pst1.setString(2, pswd);
        try (Resultset rst = pst1.executeQuery()) {
            if (rst.next())
                return new Voter(rst.getInt(1), name, pswd, rst.getString(3));
            return null;
        }
    }

```

because role will have only '1' entry

get mail
p2D
pswd, rst.getBoolean(5), rst.getString(1)).
status

Servlet will manage all above

init() → instantiation
do post → authenticate
destroy → clean

Init (all slow task)

@WebServlet (value = "/authenticate", loadOnStart = 1);

init () { Private VoterDaoImpl dao; } instantiation

surround by dao = new VoterDaoImpl();
try-catch. }

To send exception to WC.

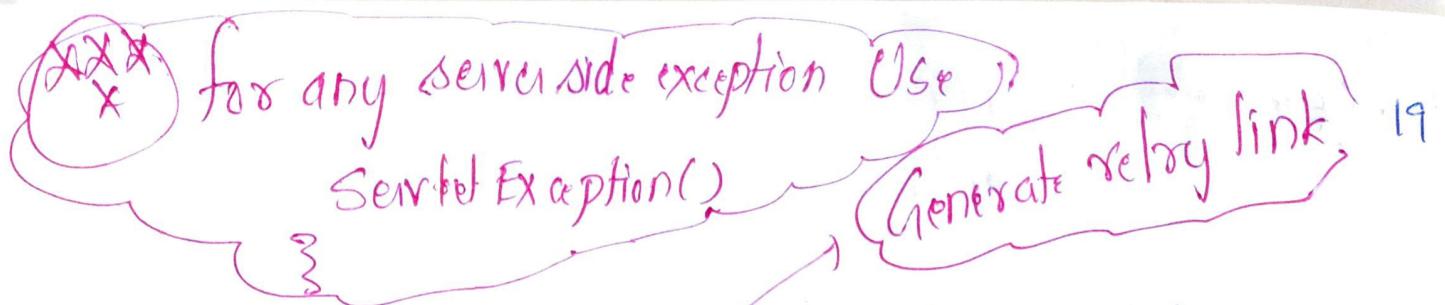
Centralised error handling in Web App

18 (X) try () {
 Rethrow to WC

 Centralised error handling in Webapp
 } catch (Exception) {
 rethrow if by wrapping it in
 ServletException
 }
 II ServletException (String msg, Throwable rootcause)
 throw e; // Error X
 throw new ServletException ("Initialisation failed, " + getClass(), e);
 }

Destroy() → {
 wrap in RuntimeExcept
 }
 do {
 postdao.cleanup()
 } wrap in try catch {
 try () {
 catch (SQLException e) {
 throw new RuntimeExcept("Error in destroy()", getClass(), e)
 }
 }
 }
 Rethrow not required

da Service → protected Service → doPost()
 try (DAO) {
 String nm = req.getParameter("name");
 String pswd = req.getParameter("pass");
 Servl has to call Dao
 User = dao.authenticate(nm, pswd);
 }
 Rethrow user wrapping to WC
 Vofer user



→ ⑧ If in case of success point → Success + Voter details)

Otherwise retry link.

If (`user != null`)

`pw.print("<hs>Login successful & your details "+user);`

else

`pw.print("<h5>Retry</h5>");`

Redirect/Navigate automatic (page Navigation):

P Navigation

client pull
(after new request Navig)

Server pull
"Navigate in same request"

s_1, s_2 (choose later) → client pull → $s_1 \rightarrow s_2$

Server pull → $s_1 \rightarrow s_2$

① Client pull

② Client has not

③ Action from client required

to click any link

auto Redirect

④ Button, Link click
(client + Browser involved)

API of
HttpServlet Response

`void sendRedirect(String)`

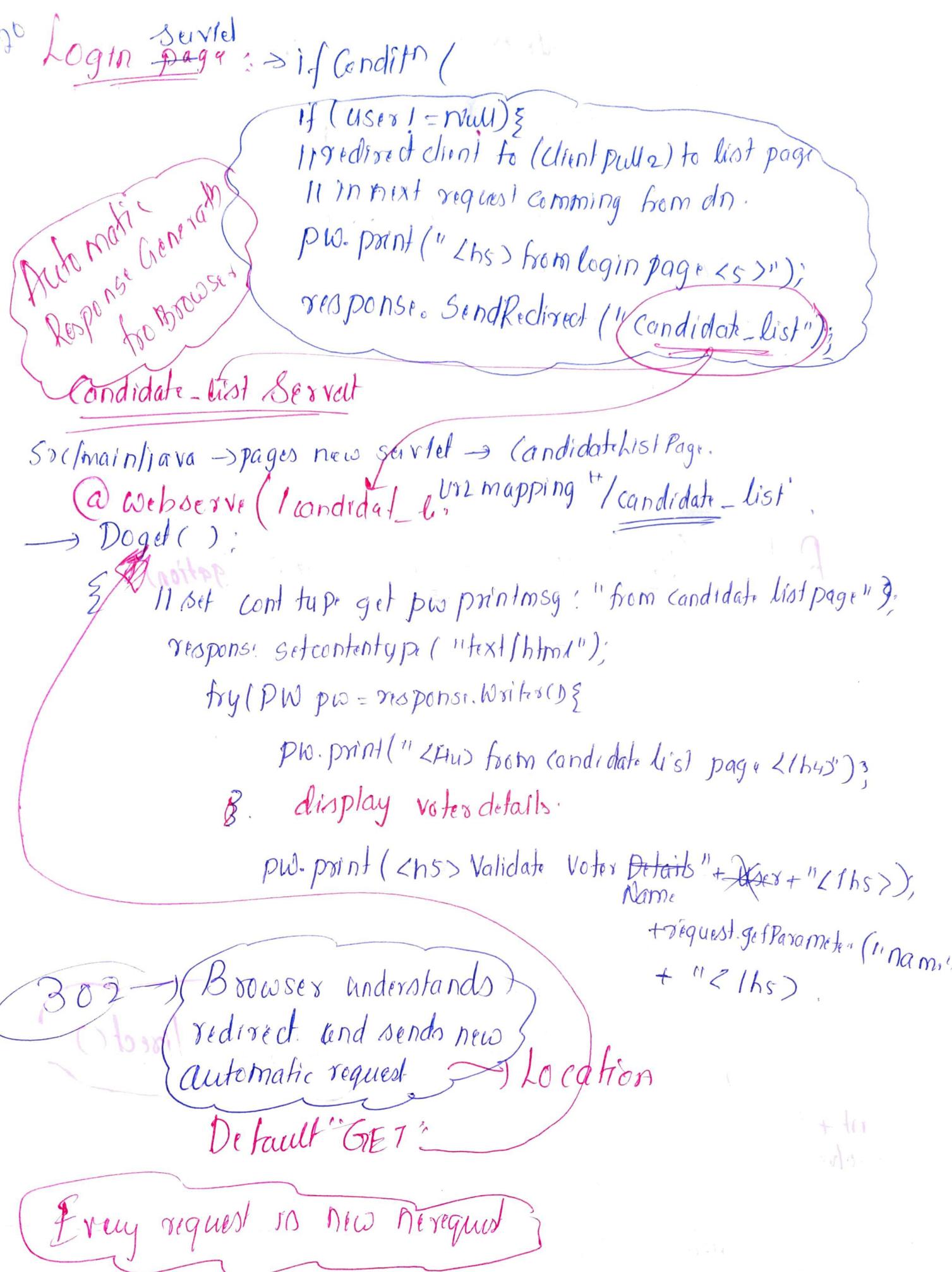
Send redirect()

13:02

Java docs → HttpServlet → sendRedirect

$s_1 \rightarrow s_2$

`response.sendRedirect("s2");`



flush(): → before redirect not allowed.

→ ⑦

16:06 Deallocate *

user →



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Folder structure

Web-INF (mandatory)

Web.xml (deployment desc of webapp)

Who: we

When: only once @ deployment

Content: welcome-file, & view dep

class: pojo, dao, ...

<lib>: additional jars (e.g JDBC
JAR, spring, hibernate)

Servlet API → specification = Jakarta
implementation = Tomcat

Servlet API → <tomcat-install>/lib

Specification → servlet-api.jar

{remain same for all servers}

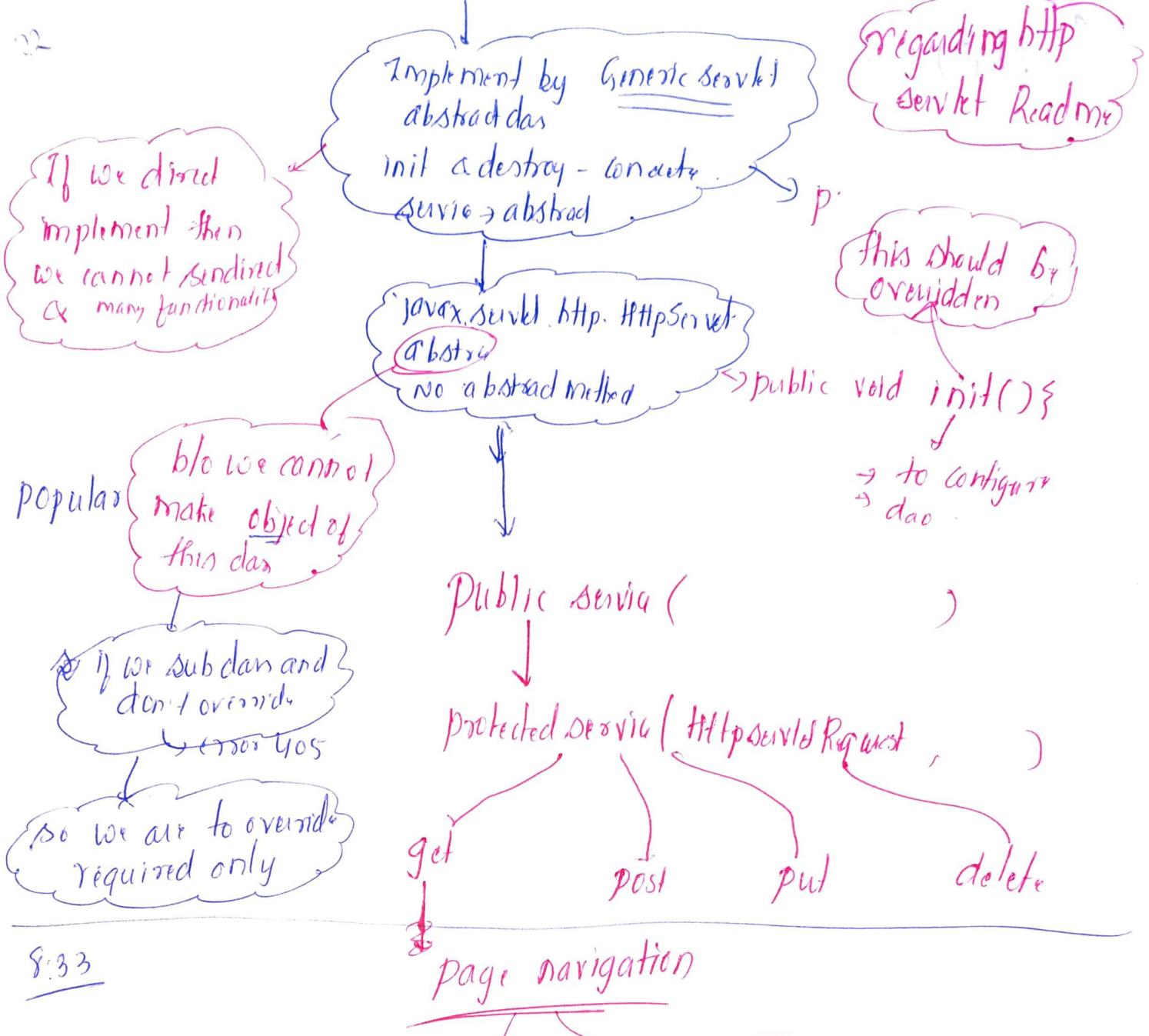
Implementation → Catalina.jar



Servlet API

javax.servlet.Servlet

5 methods, 3 lifecycle methods



① Redirect Scenario →
(P (client is involved))
down loaded registration form

form action = url pattern

Internal Working of redirect 2map

② Array String → moderation black rank
Geeks for geek (4050)

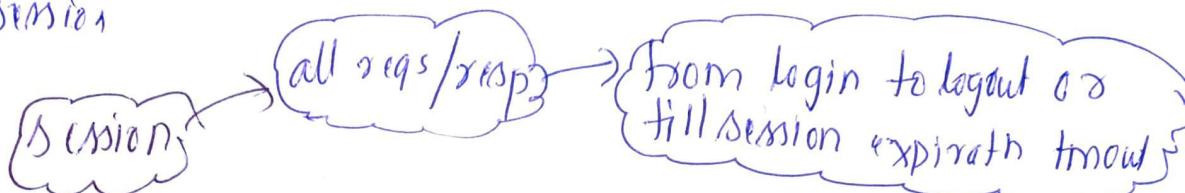
How to remember client

Session tracking

- ⊗ conversational b/w client & server (may contain multiple request)
- ⊗ since it is stateless hence unable to

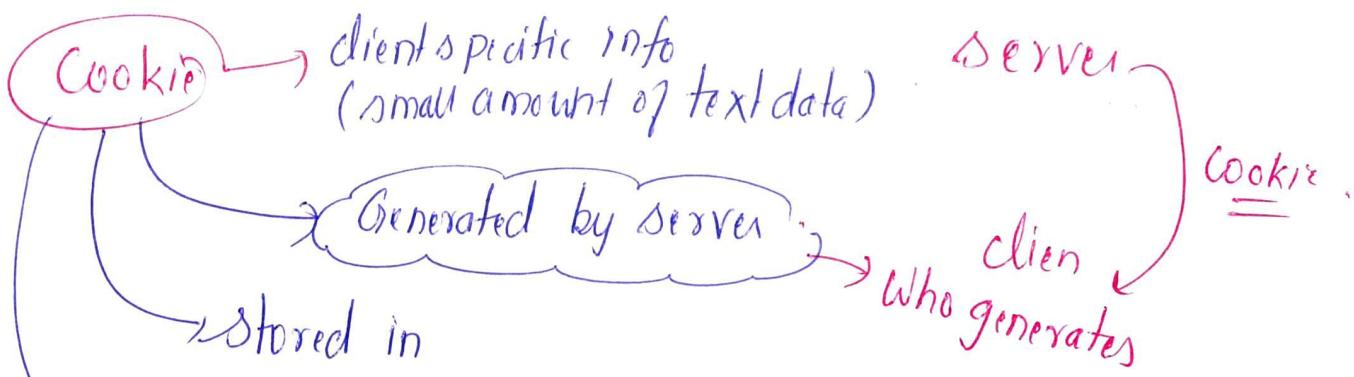
Need of session tracking

- ① To identify the client among multiple clients.
- ② To remember the conversational state of the client (e.g.: list of purchased books / shopping cart / bank account details) throughout session.



Techniques to implement it

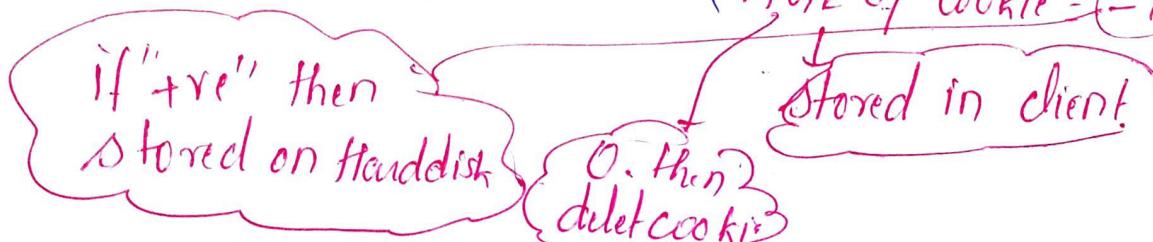
- ① plain cookie based Approach.

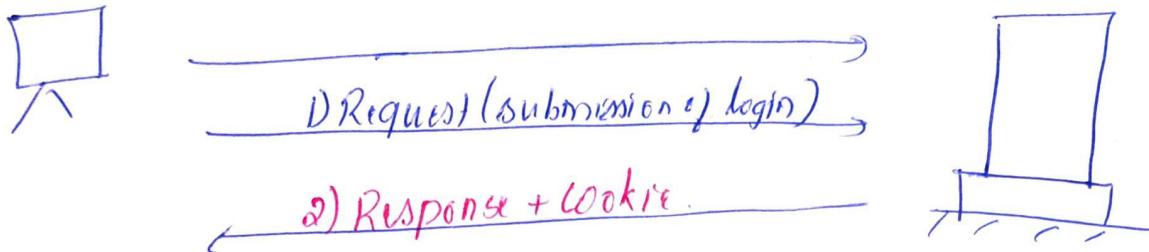
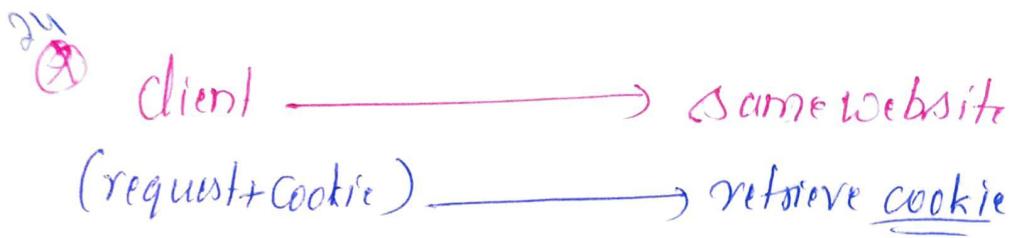


Exchange in headers

privacy setting : (client checks for security check)

We accept cookies (AGE of cookie = -1)





- ① Create a cookie class Cookie class
- ② Javax... cookie (String name, String val) Disadvantage
- ③ Add cookies to resp header Only text is allowed
Objects X
Image X

API HttpServlet Response.

addCookie()

client side

Cookie enabled → ✓

Cookie disabled → fails miserably.

④ stored in browser cache (till age expires)

How to read Cookies

getCookies() → return Cookie[]

If null → cookies not available

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Copy day 4.2 → 5.1 WARNING while copying ⚡ ⚡ ⚡

RC → properties → Web project setting → context root [day 5.1]

→ Welcome page → login.html.

After submit

Authentication → server check if there is mapping
@ webServlet();

Log loginServlet → Add cookie
if (user != null)

before → Redirect →

Step 1:- create cookie II

Cookie c1 = new Cookie (name, pwd)

response.addCookie(c1);
"Idht_info"; user.toString());

Additional headers =

Enable cookies

privacy and other site data → no sites added

Q How to retrieve Validated User from
Cookie

Cookie[] cookies = request.getCookies();

if (cookies != null)

{
pw.println("<h4>Validated Voter " + request.getParameter("name"))

⑧ Retrieve get cookie

```
for (Cookie : cookies)
    if (c.getName().equals("clnt_info")){
        System.out.println("<h5>Validated voter detail">" + c.getValue())
    }
}
```

Where to see cookie

inspected → more → application

Blocking Cookies

Add site: localhost:8080 /days.1/

localhost:8080 /days.1/ ↗

Disadvantages of cookie

- ⑧ Web developer has to slog more to manage cookies
- ⑧ Cookies can handle only text, storing obj or images is difficult
- ⑧ As cookies ↑ it will result into increased traffic
- ⑧ Entire state of the clnt. is saved on the clnt side, if the client browser rejects the cookies.

Session tracking based on HttpSession API

Entire state is saved on server side, (HttpSession object)

But the key to this HttpSession is still sent to client in form of a cookie (cookie management done by wsg)

only one cookie is main

one cookie

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Storage → on Session object → Session Object
on server

10 client 5 request each

no of session obj

10

→ Related to client

session object key is sent to "client"

Copy → S.1 → S.2 → Http Session based

PC → properties → web project setting → context root → S.2

Login Servlet :-

If (user != null)

④ cookie based approach

Steps :- HttpSession → get HttpSession();
2/f.

① Get HTTP Session Object.

API of HttpSession

HttpSession getSession

Meaning: Servlet request will be created n return a

new HttpSession object (for new client) or ref existing
one from WC's

Step 1 :- get HttpSession from WC.

/* API of HttpServletRequest

get session()

HttpSession session = request.getSession();

(Session.isNew())

To check

new or existing

Q8 How to find out session Id:-

sys("sessionID" + session.getId());

⑧ predefined name of cookie

→ Name & Value

JSESSIONID, Val = sag...
.....

How to save data in HttpSession: - Scope (entire scope);

public setAttribute();

→ String name, Object attrval;

→ Accepts → Objects

⑧ server side object

Getting Values from HttpSession

hs.getAttribute("client_info");

Customer cust = (Customer) hs.

login servlet Saving validated email & password

S.2 ⑧ session.setAttribute("client-details", user);

Session.GetAttribute()

Getting user details: request.getSession();

Get HttpSession

HttpSession hs = request.getSession();

⑧ sys("New session " + hs.getId())
(sessionID hs.getId())

```

Voter client = hs.get("clnt_details")
if (client != null) {
    → Type cast
    sys("validated voter "+client);
    sys()
} else
    sys("no cookies session failed");

```

How to remove attribute from session

removeAttribute (String attrName); → remove Attribute

How to Invalidate session

Candidate list page:

add link for logout

pw.print(Log me out);

Logout servl @WebServlet (" /logout");

```

doGet() {
    setContentType("text/html");
    try (PrintWriter pw = response.getWriter()) {
        if (confirm("client remember")) {
            get session
        }
    }
}

```

HttpSession session = request.getSession();

sys("session new = ");

sys("session ID "+session.getId());
Get user details

Voter user = (Voter) session.getAttribute("clnt_details");
if (user != null)

pw.print("User details from logged page: "+user)

else {
 pw.print("no cookies");
 // invalidate HttpSession
 session.invalidate();
 // visit again →
 // send "visit again" in case admin logged in
 check the role
 If (user.getRole().equals("admin"));
 pw.print("<hs> ea ref='login.html'>Visit again")

Conditional Rendering

⑧ checking voter & admin, voted or not voted
loginServlet before redirecting

```

    if (user.getRole().equals("admin")) {
        response.sendRedirect("admin-page");
    } else if (user.isStatus()) {
        respond.sendRedirect("logout");
    } else {
        response.sendRedirect("candidate-list");
    }
  
```

Admin Page → copy logout

```

doGet() {
    try (PrintWriter pw) {
        HttpSession hs = request.getSession();
        pw.print("<html> Welcome Admin, Hello  

        Voter admin = (Voter) hs.getAttribute("voter"));
        if (admin != null)
            else pw.print("session failed");
    }
}
  
```

Add → Candidate pojo :-

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```
public class Candidate {  
    private int candidateId;  
    private String name;  
    private int votes;  
    constructor, Getters, Setters.
```

Dao Interface for Candidate

Method to add display all candidate

```
List<Candidate> getAllCandidate();
```

Impl class ICandidate Dao

State Cn -> Pst

Constructor : {

```
Cn = fetchConnection();  
pst = cn.prepareStatement("select * from Candidate");  
System.out.println("dao created");
```

Connection closing only ones (Multiple Dao)

add static method in DB Ufils :-

```
{ if (cn != null)  
    cn.close(); }
```

```
public List<Candidate> getAllCandidate() {
```

```
    List<Candidate> list = new ArrayList<>();
```

```
    try { ResultSet rs = r.cn.pst.executeQuery(); } {
```

```
    while (rs.next()) { }
```

```
        list.add(new Candidate(m, m, m, m)); }
```

```
    return list;
```

How Share resources - all over app.

DButils.Connection.

→ login servlet

We can add Dao/class in http Sessions
add to Sessions ★ ★ ★

Session.setAttribute ("Voter-dao", VoterDao);
("Candidate-dao", CandidateDao);

Candidate Servlet :- if (client == null)

pw.print

Candidate

Candidate DaoImp (DAO = (Candidate). hs.getAttribute ()
|| invoke Candidate methods list of candidate
list <Candidate> = (DAO.getAllCandidates());

Dynamic Form Generation

pw.print ("")
for (Candidate c : candidates)
pw.print ("

Lab

How mark session object for GC

session.invalidate();

`response.sendRedirect("candidate_list");`

Send empty response

code → 302

header →

location = candidate_list

cookie = JSESSIONID =
.....

Browser Sends back
`http://localhost:8080/day5-2/candidate-list`
 + cookie if enabled

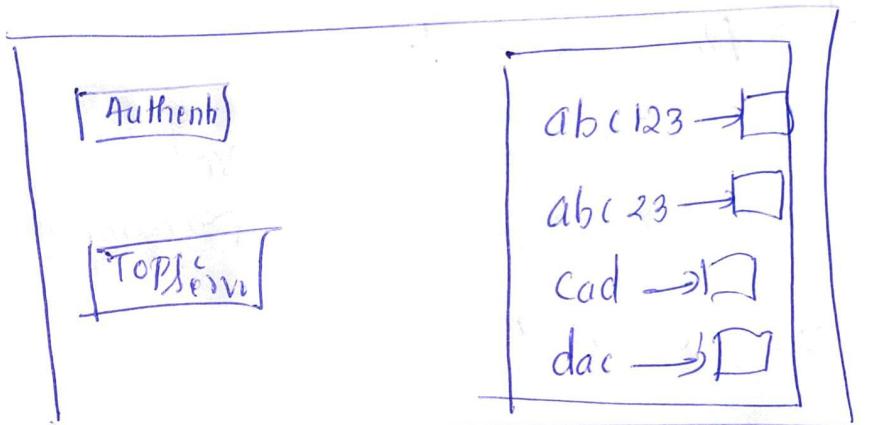
Dynamic Web app

client1(abc123)

client2(abc123)

3(cad)

4(dac)



Form → "action" ⚡ ⚡ ⚡

logout page To check if user has reached logout how?
direct or after voting

1) Get user details from session.

get user from session.

`if (user.isStatus())`

`else`. You have already voted.

else { read from request }

Int candidateId = Integer.parseInt(request.getParameter("candidate_id"));

Inrement VoteCount:

Increase candidate \rightarrow \uparrow

change status of voter \rightarrow True.

|| get daos from session scope.

(CandidateDaoImpl) CandidateDao = ()

) Session.getAttribute("candidate_dao");

(VoterDaoImpl) VoterDao = ()

("voter_dao");

Candidate Dao Interface

\rightarrow add a method to incr votes for specific candidate
String incrementCandidateVotes(\rightarrow int candidate_id);

Candidate dao class impl,

ps12 = ("update Candidates set votes = votes + 1 where id = ?");

close ps12();

ps12.setInt(1, candidateId);

int updateCount = ps12.executeUpdate();

if ($\downarrow == 1$)

return Success

return "Votes update failed";

Voter Dao Interface :- String updateVotingStatus(int voterId)

Voter Impl class

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@override

```

pst2 = cn.prepareStatement("update voters set status = true
                           where id = ?);

int updateCount = pst2.executeUpdate();
if (updateCount == 1)
    return "voted successfully";

```

Logout page :- Transaction Case : Use Case

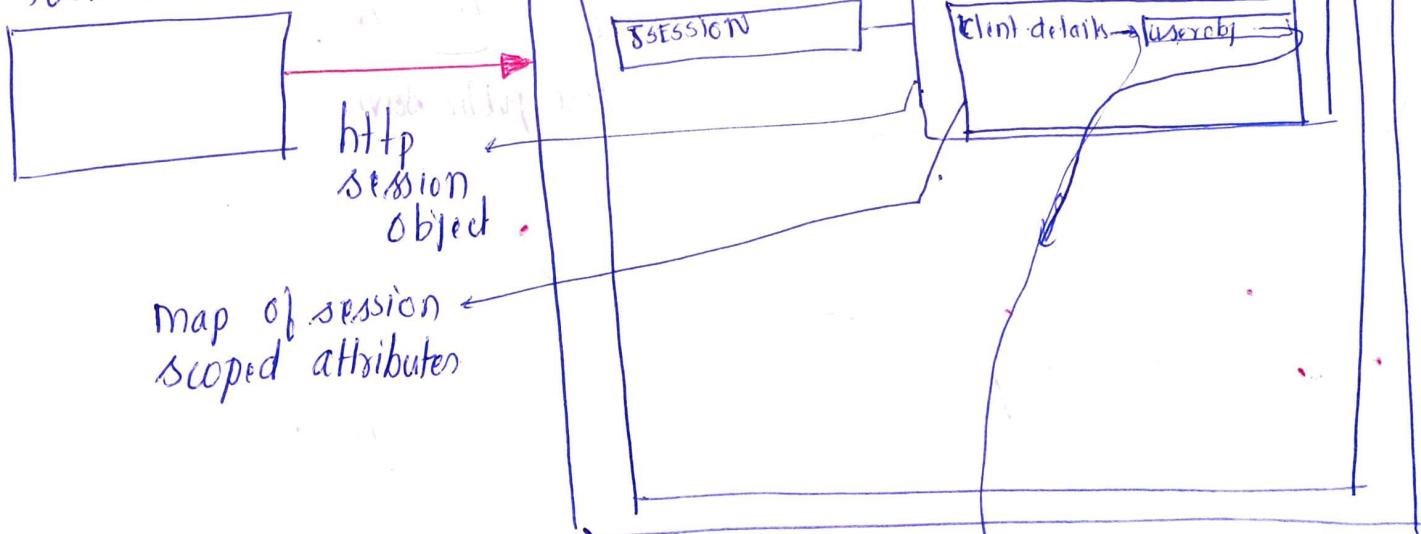
CandidateDao.incrementCandidateVotes(candidateId);

PWPoint(voterDao.updateVotingStatus(candidateId));

Visits	topic	name	author	content	Date	
Id	name	author	date	visits	cont.	topicId
1	2	3	4	5	6	7

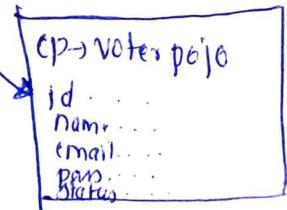
19/11/2021 :- Internals of HTTP Session

After login
form submission

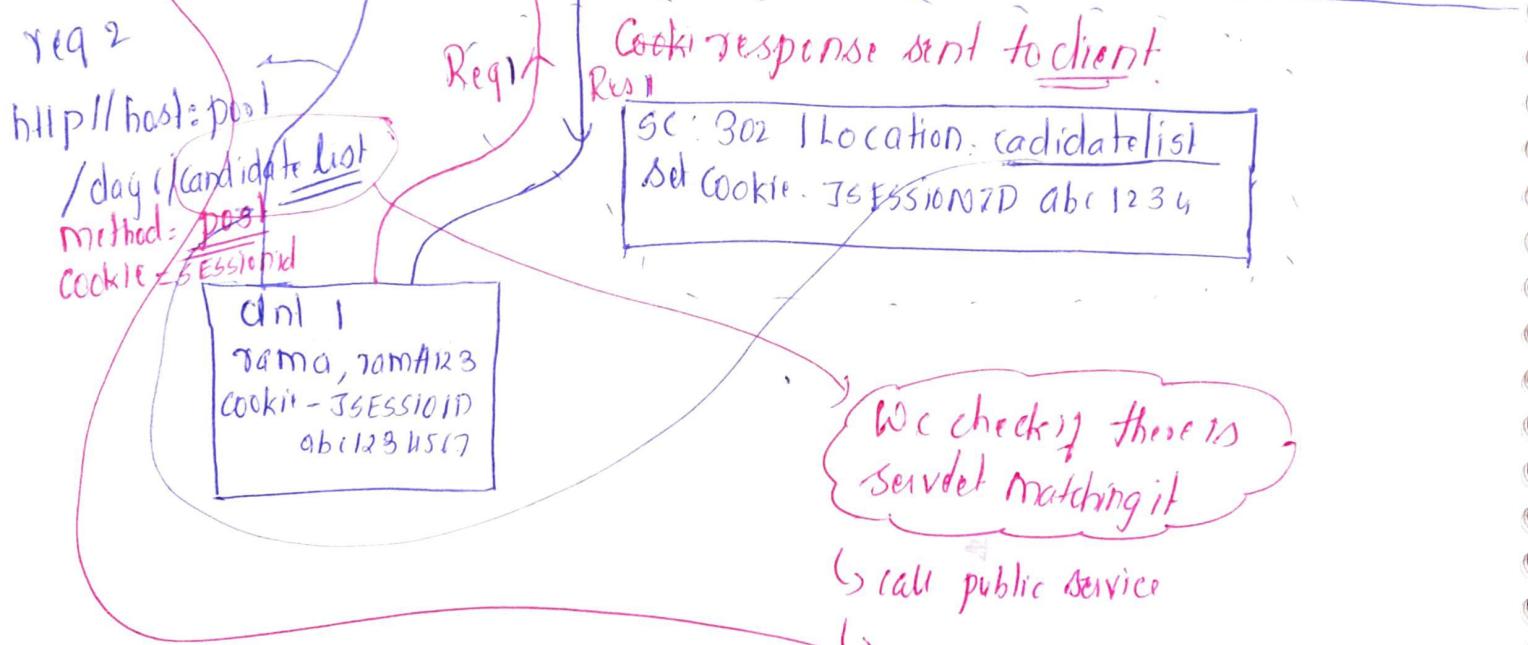
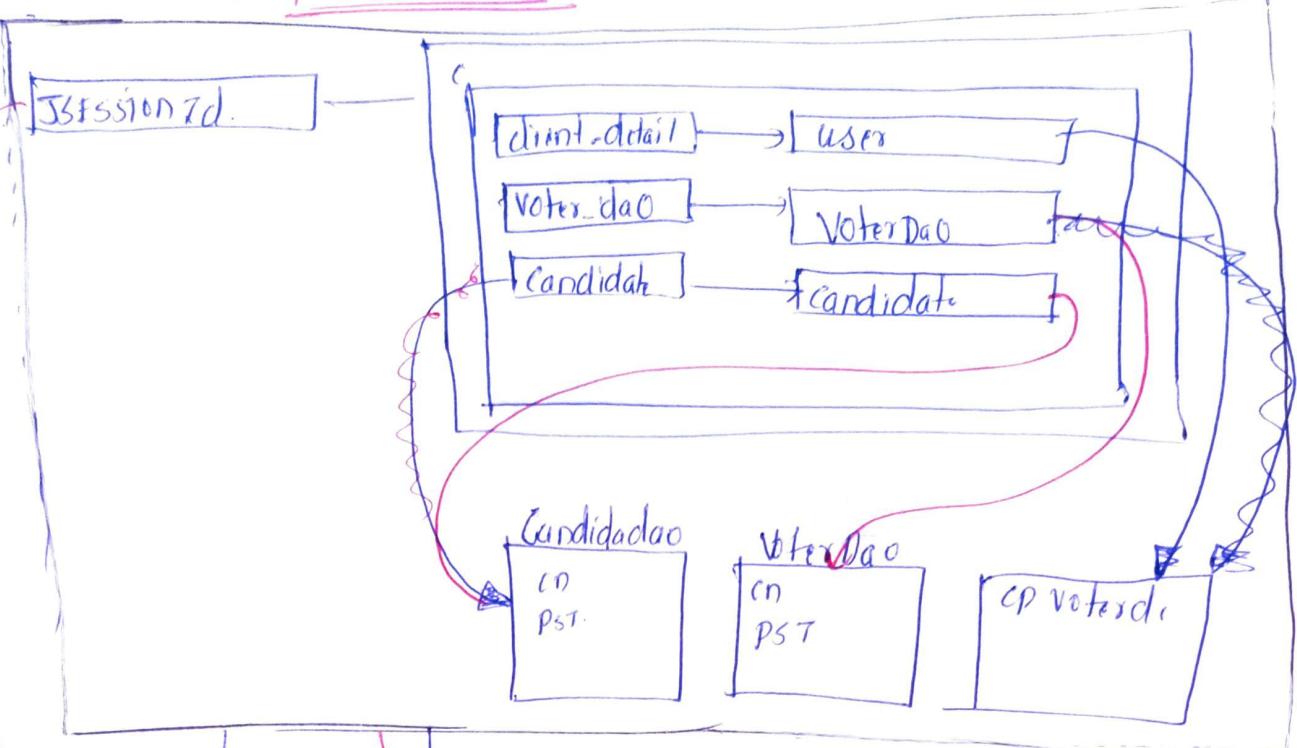


① only created not sent to client

②



HttpSession Internals



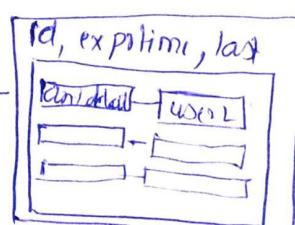
HttpSession hs = request.getSession()

Executed on outer map:

VoterDAO ← hs.getAttribute()

new client started session

client 2 → Req 2 → JSESSIONID



Outer Map

- holder of session object

Outer < string (value of JSESSIONID), HttpSession >

Inner map

< string (attr name), object >

Servlet life cycle (managed by Wc)

- @ web application deployment time, Wc prepares a map either using servlet tag from web.xml or @annotation if too fast, look up.

key = URL pattern (e.g. /authenticate)

Value = Fully Qualified servlet class name.

Web container checks load on startup @ deployment

specified

- Wc starts the init sequence (A)

not specified

- Wc locates servlet class (from WEB-INF/classes)

load to MA (Class.forName())

Instantiates it (using default const)

↓
if

- Create ServletConfig object & populates it with init parameters if any

Wc invoke method, public void init() on servlet instance, by passing ServletConfig object to it, by passing ServletConfig INIT sequence over, Invoked exactly once in life of servlet.

3rd Servlet Config Object → init() → populated
⑧ ↓ null object create. ↓ i.e. empty

for supply initial parameters what is preferred method?

XML → to keep changes external

<init-param>

<param-name>

Day 6.1 project: login servlet

→ comment annotation

→ open web.xml.

<!-- login servlet deployment tags -->

private
to servlet {

<servlet>

<servlet-name> login </>

<servlet> pages.LoginServlet </>

<servlet-mapping>

<servlet-name> login

<url-pattern> /authenticate

<init-param>

<param-name> db-url

<param-value> jdbc:mysql://localhost:3306/mm

</>

<init-param>

<param-name> user-name

<param-value> root

</>

<init-param>

<param-name> pwdz

<param-value> rootz

Initialisation of parameters
via XML

*** Example ***



Getting init parameters

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Login - servlet

default Constructor() {

```
syso (n in def ctor o) "+getclan+" config "+getsevlistconfig";
```

Parameterised Constructors

Symbol("in parameterized (t0)"),

```
init() {
```

`ServletConfig config = getServletConfig();`

```
sys("config/init" + config);
```

How to Access servlet Specific init param

II APR Object Config : public String getInitParameter(String name);

```
String url = config.getInitParameter("get \"dB_url");
```

```
String Username = config.getInitParameter("username");
```

) (" pad ") ;

DButils Add to DButils

```
static public void openConnection(String url, String userNm, String pass)
```

{ if (cn == null)

Cn=Driver managt.getconnection(url,username,password);

Login servlet : init

```
try openConnection(url,username,password);
```

④ parameterized is not called never,

"Thread is per request"

No Concurrency in WC

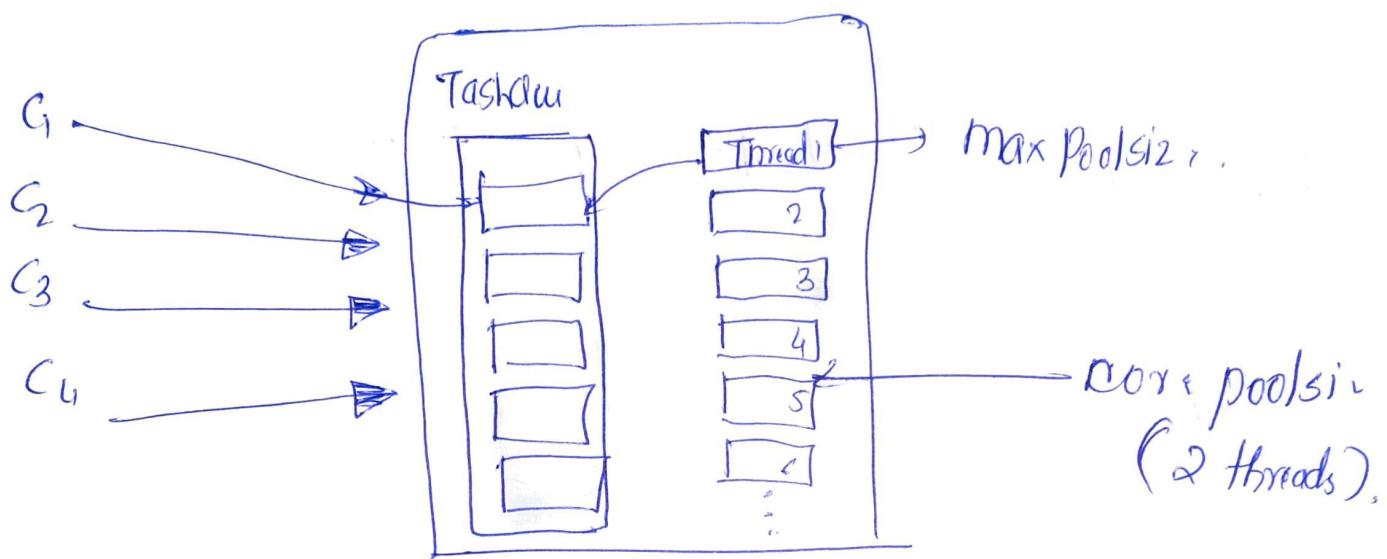
Executor Framework (thread pool executor)

④ part of standard Edition :-

Why executor framework?

Thousands of thread creation per request overheads WC

④ everything managed by Web container.



Thread pool is created at "startup"

11:48 → Review

Catalyst based and GGL2

Server pull :-

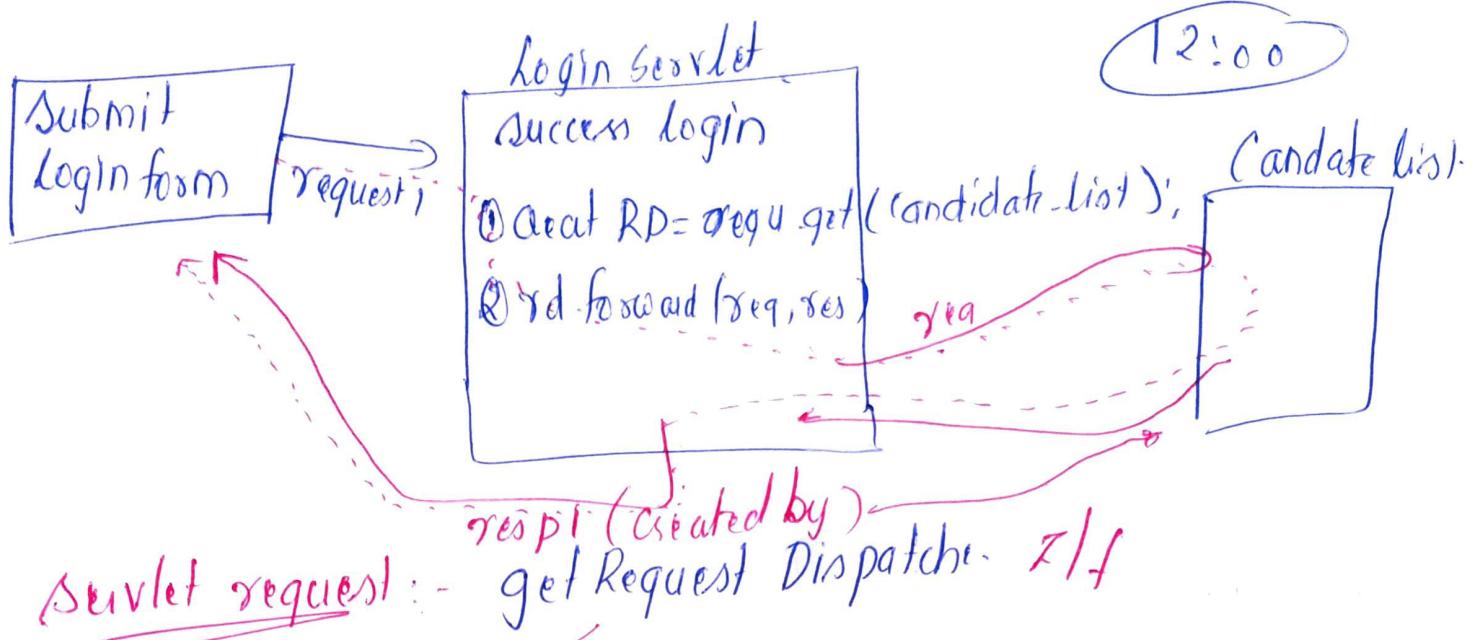
making the client to next page in same request

④ client sends req to server

Steps for server pull

Request Dispatching / Resource Chaining

U1



Servlet request :- get Request Dispatcher

object that request from client and dispatch

Servlet Object → Servlet
→ HTML

Request Dispatcher Object

Day 4.2 → Day 6.2 line - 81 →

II Server pull : Request dispatching tech. (forward scenario)

Step 1:- Create Request Dispatcher Object.

getRequestDispatcher(String path);

Request Dispatcher rd = request.getRequestDispatcher("")

↳ "Candidate list");

Use pattern of next servlet:

forward (request, response);

forwards a request from a servlet to another resource (servlet, jsp file)

→ forward the client request to Next page. In same request.

rd.forward(request, response);

uv
sd. forward (req, res);

① we suspends current execution page, do

② clear pw Buffer

**

③ we calls candidatelist(servlet) → get methods
do postMethods

6.2 candidate list page → change to do post

Same thread → executes sd. forward

④ Control comes back to caller

Session →

⊗ narrower scope will do:

⊗ In order to share it

Scopes in web applicatn

core java → default default

private default protected public

page → request → session → applicatn

client pull

client → server (.)

RDD dispatcher → request

client pull
scope?

server pull
scope?

How to keep data in required scope

→ session → setAttribute()

only & invoker object changes

Significance

so Request to site → to HTTP session Application servlet context / per app advertisement discount cur	SetAttribute getAttribute getAttribute Name	scope = current request only (as called after current resp committed) scope = current session shared across all web pages from same web app same client scope = entire web shared across all web pages from same web application for any client.
---	---	---

login servlet → Decrease scope of

request.setAttribute("user_detail", user);

HttpSession for → client pull

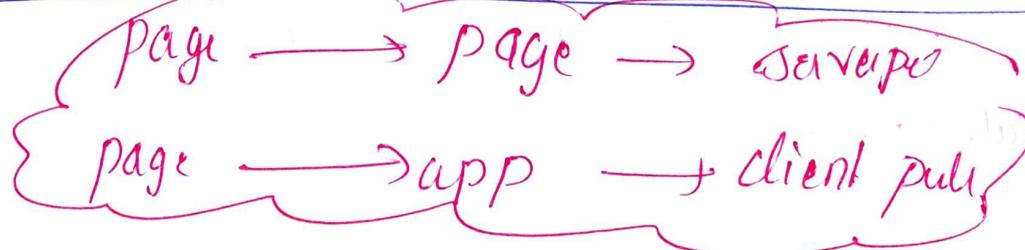
We cannot empty Buffer before dispatch give Exception

⊗ last page is suppose to generate response

getParameter vs getAttribute

limited to string

→ limited to object



④ (3) Include Scenario (include page)

- ④ We can send details of resource also but it is not allowed to status code

6-3 → forward → induce.

→ does not discard PW Buffer

Can do post & do get call each other yes

~~Stop the sever remove application~~

⑤ We can call override get a post

Assignment Discussion

DButils

All URLS :-

After selecting topic

miniscope required
incident pull is
session

7

Authenticate page :- add tutorial dao; entire web app only once
add clean up(); instantiated.

Tutorials page :- add servlet

HttpSession session = request.getSession();

```
Tutorial dao = (Tutorial Dao)session.getAttribute("tut_dao");
// Invoke tutorial dao to get name
```

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```
for (String s : Names) {  
    pw.print("<h5> <a href='tutorialDetail'> < /a> < /h5>");  
      
    (<a href='tutorial_detail?tut_name=" + s + "'> " + s + "</a> </h5> )  
}
```

/Tutorial detail

```
doGet( );
```

```
con.try[ pw = response.getWriter()];  
{
```

```
HttpSession session = request.getSession();
```

```
Tutorial Dao = ( ) session.getAttribute("tut_dao")
```

```
String Topicname = response.getParameter("tut_name");
```

Tutorial DaoImpl.java

```
public void updateVisits(int tutorialId) throws  
pstz. ServletException {  
    int i = 1; tutorialId;
```

Logout link $\langle h5 \rangle \langle a href='logout' \rangle \text{Logout} \langle /a \rangle \langle /h5 \rangle$

Servlet (Logout) → doGet

```
HttpSession session = request.getSession();
```

```
User user = (User) session.getAttribute("user-detail");
```

```
pw.print("<h5> Hello.
```

Back link → Dynamic link Back link

NumberFormatException.

$\langle h5 \rangle \langle a href='!tutorial?topic_id=' + tutorialDetails.getTopicId()$

JSP

JSP (Java Server Pages)

20/11/2021

Dynamic web page (having

Why JSP?

- ④ JSP allows separation of presentation logic from business logic.
- ⑤ Typically JSP contains → presentation logic
- ⑥ Java beans or custom tags

Ease of development : JSP pages are auto-generated & translated by W.C into servlet & compiled, & deployed.



Day 7.1 → only JSP content :-

web.xml → (Index.jsp) → welcome page

Create JSP page in Web-app →
web.xml → private

Webapp → JSP new → JSP → index

Configuring JSP template

JSP Files → Encoding → utf-8

@Server TimeStamp

→ Body section <h3> Welcome 2 JSP! </h3>

→ @Server TimeStamp:

<%@ LocaldateTime.now() %> </h3>

JSP API

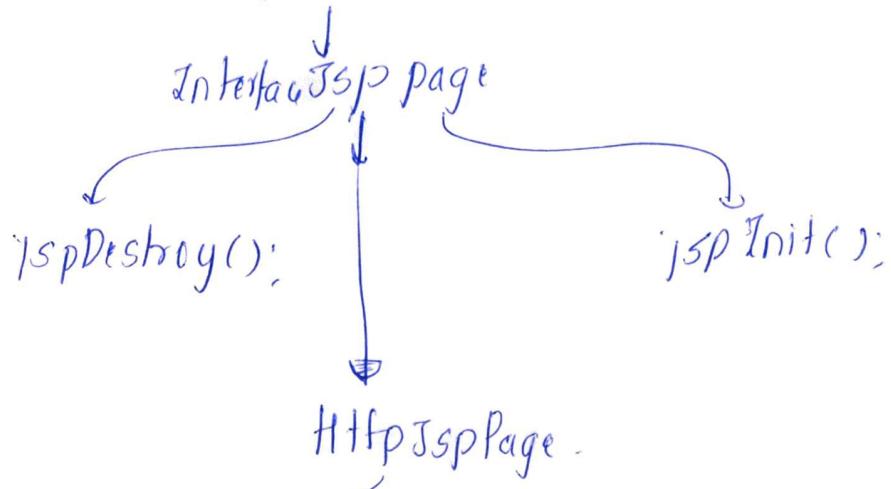
→ go to tomcat home folder → lib → JSP-api → Specifica

Implementation → JASPER

Servlet → HttpServlet

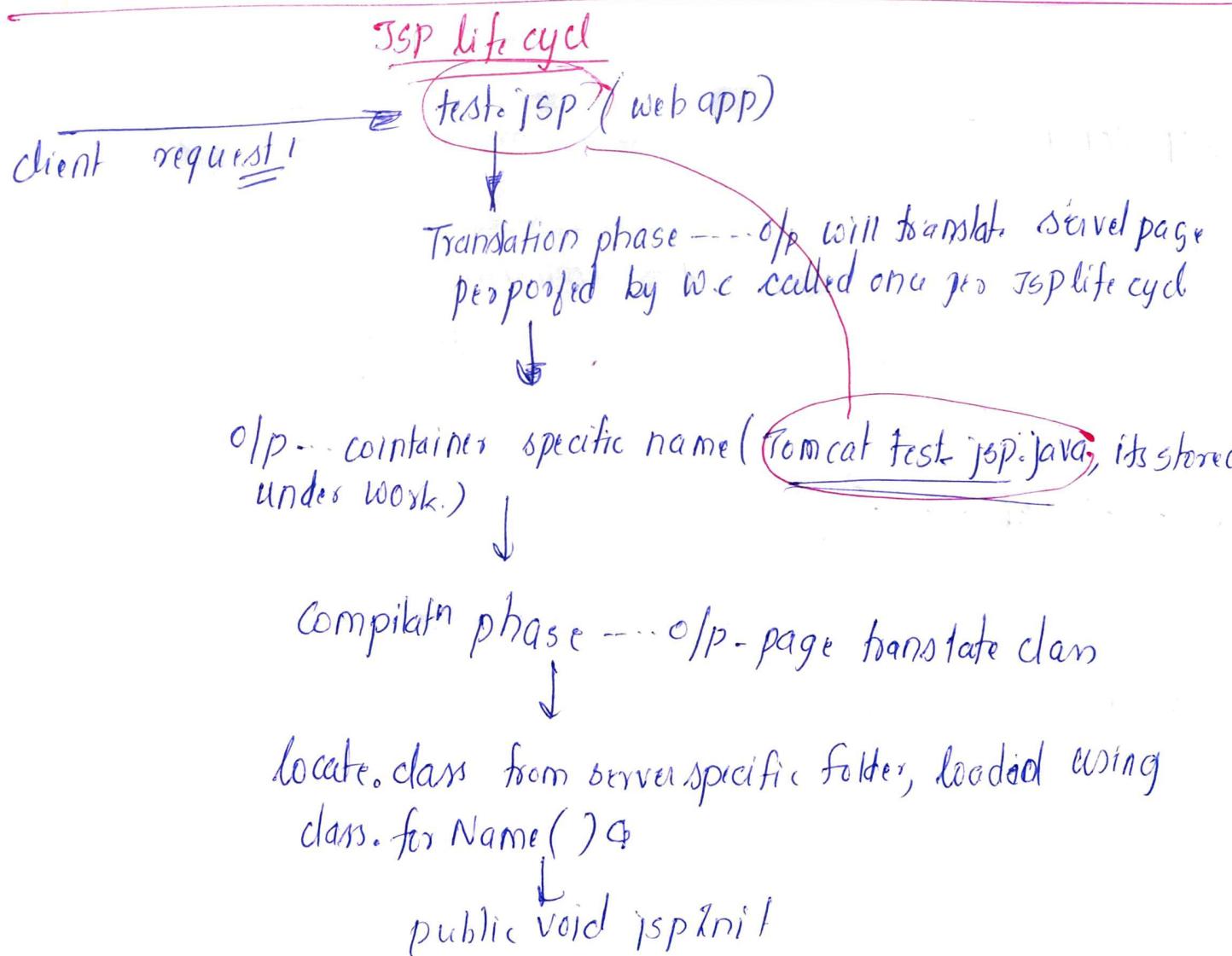
47

→ Interface Servlet



- `jspService(HttpServletRequest req, HttpServletResponse res)`

We should not override service → translation is done by W.C
Programmer should not touch



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WC puts out a thread... run()

public void _jspService(HttpServletRequest rq, rs) throws
SE, IO,

⊗ We cannot/should not override → called per request

↓
Jspdestroy()

Index.jsp → Index.jsp.java

Java x. servlet
javax. ~~http~~. servlet. http
javax. servlet.jsp.x

Three are important
and compulsory added files
import

Translation → Compilation → Runtime

Jsp comments :- syntax <%-- comment text --%>

day 7
Index.jsp

<hs> Test Comments

<!-- client side --> → client ignores

Implicit objects :

out → it is JSP specific

writer ≈ printWriter

Javadocs → JspWriter.

⊗ out → JspWriter (datatype)

⊗ request → HttpServletRequest

⊗ response → HttpServletResponse

Session → HttpSession ^{datatype}
Config → Create object req.getSession()
JSPs implicitly participate in session tracking.
Implicit session tracking

Config → ServletConfig (\rightarrow servlet-specific)

10 JSP \rightarrow 10 config object
1 config/Jsp.

Application - Servlet text() \rightarrow

2 webapps \rightarrow

Exception \rightarrow is not accessible to all JSPs

Page \rightarrow current translated page class

~~Page context~~

represent current page environment.
12 JSP's \rightarrow 12 page context

Javadoc \rightarrow Page context \rightarrow abstract class \rightarrow

Page scope

API used in page context

PageContext.setAttribute();

Scripting Elements

Scriptlets :- Can be used to add java code directly. Avoid scriptlets.

(

Syntax = <% java code ... %> \rightarrow within body.

↳ location inside the translated page: within -JSPService

Usage →

day 7.1 → index.jsp → <a href = "test.jsp"
"login-form"> Test script!

copy the form tag

day 7.1 → login.jsp → Body → paste.
action = display.jsp

day 7.1 → display.jsp → Body Embed java code in Html
Scriptlet

(2^o)

out.print(" <H5> Hello, " + request.getParameter("name")
" Password " + request.getParameter("password"))

(%)>

no deploy no refresh

Why no to scriptlets → mixture

In case of post also we get O/P

JSP Ex: JSP Expression:

Syntax: <% = expr to evaluate %>

Evaluates an Expressions → convert to string

→ send it to client Browser.

e.g. <% = new Date() %>

Expression to evaluate: java method, invocation which not val
or const. expr or attribute, or variable, (Instance var
→ stored in translated page. ∵ within - JSPService.

e.g. <% = new Date() %>