

Project - 10

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⇒ Dependencies 1.

- ① <Parent> spring-boot-starter-parent 1.2.1-2
- ② Spring-boot-starter-Actuator
- ③ Spring-boot-starter-JPA
- ④ Spring-boot-starter-web
- ⑤ Spring-boot-starter-test
- ⑥ Spring-boot-starter-mail
- ⑦ Spring-boot-starter-security
- ⑧ JSON-webtoken-jjwt - 0.9.1
- ⑨ mysql-connector-java - 8.0.28
- ⑩ C3PO
- ⑪ Spring-boot-devtools.

⇒ Tools 1.

- ① Eclipse
- ② Mysql workbench.
- ③ Argo UML
- ④ ER win.
- ⑤ VS Code.

⇒ Technologies :-

- ① JDK 1.8
- ② MySQL 8
- ③ Angular 8-1-3
- ④ Springboot 2-1-2
- ⑤ JPA

Q:- Application Properties :-

A:- Springboot keeps application configurable parameter into application.properties file. this file is located in root class path.

its contains:-

- ① server.port
- ② DCP
- ③ JPA
- ④ Email/server parameter
- ⑤ custom parameter.

JPA :-

```
spring.jpa.show-sql = true
```

```
spring.jpa.properties.hibernate.
```

```
format-sql = true.
```

```
dialect = MariaDB53 dialect.
```

Q) What is Hikari ?

A:- Springboot by default configure hikari connection pool for JPA.

it is a lightweight and lightning fast JDBC connection pooling framework. (Its a library for JDBC).

Q) How to deploy web application on external web server?

A:- Startup class extended by SpringBoot servlet initializer.

Q) How to create war and deploy?

A:- change packaging setting to war In pom.xml.

<packaging> war </packaging>

step ① Right click on Project.

② Run as → maven build.

③ open a window where set Goals = "clean package"

④ apply and run.

Q. How we send email?

A:- ① added dependency in pom.xml
(spring-boot-starter-mail)

② application.properties me mail ka configure kiya hai.

spring-mail-host = smtp.gmail.com

spring-mail-port = 587

spring-mail-username =

password =

③ EmailServiceImp me send() method banai hai usme EmailDTO ka object pass kiya hai.

send(EmailDTO dto, UserContext) {

Note:- Backend ki form se data lekar DTO me data.

④ Predefined classes ka use kiya hai

(i) javax.mail.Sender (ii) MimeMessage

then,

Java mail sender = email sender;

mime message message = emailSender.

Create MimeMessage();

then:-

email sender ki send method use
kerne hai aur usme mime message ka object
pass kiya hai.

Frontend part:-

① forget password component - HTML par ~~on~~
button var (click) event ka use karke
Submit() ko call kiya hai.

② .ts me Submit() bana i hai
this. httpservice. ~~get~~ post (self-endpoint,
self-formdata)

Note:- end point = "http://localhost:3001/
auth/forgotpassword"

Q: Which Architecture has been followed in Project?

A: - We have used in :-

Angular - Component - Service
(internally it follows MVC)

Boot - Layered Architecture.

Q: Explain Layers in Layered Architecture?

Ans: ① Presentation layer ② Business layer
③ Data Access layer ④ Integration layer

Q: Which design pattern used in which layer?

A: ① presentation - DTO design pattern
- Front controller --
- Command design pattern
(Navigates by URL ⁺ calls specific ctrl)

② Business layer - Bridge design pattern
- DTO design pattern
- Session Facade --

Q) Data Access Layer -
- DTO design pattern
- Bridge design pattern
- DAO design pattern.

(ii) Integration layer -
- DTO design pattern
- Builder design pattern

Q) Which module is applied at each layer
of project ?

A:-
Presentation layer - Angular
Business layer - Spring AOP
Data Access layer - Spring DAO, Spring
ORM

Integration layer - Spring mail, Spring
security.

Q. How HttpClient is provided and used?

- A:
- First import HttpClient in app.module.ts
 - then we made HttpService class
 - then we called HttpClient inside HttpService constructor.
 - then we describe two methods get() and post().
 - inside get(url, data) we passed parameter inside post(url, data, callback) - parameter
 - then we made other class by name service locator and called in constructor router, endpoint, httpService.
 - finally where we required then call to service locator.

Q. What is a callback function?

- A:- Callback function is a function which is passed to a function as parameter and is executed when the outer-function is complete. typescripts supports callback functions to make your program asynchronous.

Q: Describe
① `@Transactional (Read only = True)`
② `@Transactional (Read only = False)`

A: Read only = True (can only be read not write).

Read only = False (do whatever you want)

Q: Why have we used `@Transactional (readonly = True)` on Search operation or why have we handling transaction in a search operation?

A: To free up system Resources like:-

- Session (release current session)
- Transaction \rightarrow JPA
- Connection -

Q: Where have we used `@Transactional (Read only = False)`

A: We have write in below methods

`Save()`,

`Update()`,

`Delete()`.

(Q) How to handle the Exception ?

A:- By using Spring ORM

- it raise ORM specific exception.

By using DAO classes

- it converts ORM specific exception to data Access exception.

⇒ data access exception is an unchecked exception that throws into service layer

⇒ if handle @ service layer it propagate @ service layer

- try - catch block	- it gets rolled back
- it gets committed	

Note :- if we wish to propagate it further and don't wants to rollback then it is propagate to calling method (that is CI) then further forwarded to main method and finally it will propagate to JVM that handles the exception.

Q:- How to apply Internationalization?

A:- Configuration file (app.module.ts) me translate package import kiya hai by command:-

→ npm x translate

① Assets folder me subfolder banai hai (i18n) ke name se.

③ i18n folder me 2 json file banai hai
Hi.json → for Hindi
En.json → for English

(JSON = java script object notation)

④ json file me har ek field ke liye pipe operator ka use karke key and value ke pair me store kiya hai.

⑤ lang parameter ko constructor me pass kiya hai.

Q:- How to set language change in dropdown
English vs Hindi ?

A:- ① navbar-component.html

<select =locale (change) = change locale
(locale-value)>

<option value = "en"> English </option>

<option value = "hi"> Hindi </option>

</select>

② navbar-component.ts

changeLocale ()

changeLocale (locale : string)

localStorage.setItem ("Locale", locale);

this.translate.use (localStorage.getItem
("Locale"));

Q. How to make and apply Front controller?

A. ① Front controller का java class इसके हैं -
 इसमें HandlerInterceptorAdapter को
 extends किया है।

② को methods को override किया है -

- (a) Pre handle (HttpServletRequest request,
- (b) Post handle (HttpServletResponse response,
 object handler)

③ Starter class में

④ autowired करते हैं FrontController frontController;

⑤ Interceptor को add करते हैं -

Override

```
public void addInterceptor(Interceptor
  Registry registry) {
```

(interceptor registry को object करती है)

then :

(a) registry.addInterceptor(frontController);

- (b) registry.addPathPattern ("/*");
- (c) registry.excludePathPatterns ("!/Auth/*");

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Q:- How to Connect Frontend to Backend ?

A:- We have connected with the help of CORS (cross origin Resource sharing).

① In startup file :-

CorsConfigurer() \Rightarrow
web mvc configurer adapter ka object banaya
 \rightarrow webMvcConfigurer = new webMvcConfigurer

② web Mvc configurer ki addCors mapping k use kia hai aur uske cindar cors registry ka object registry pass kiya hai .
 \rightarrow addCors mapping (corsRegistry registry);

③ Cors Registration ka object banaya (cors) aur cors registry add mapping () ka use kiya.

→ corsRegistration.cors = registry.addMapping("/**");

④ cors Registration Ki allowed origin() ka use kiya hai

→ cors.allowedOrigins("http://localhost:4200");

→ cors.allowedHeaders("*");

return ue;

Q1. How to set Input validations and display on the view?

A1. Frontend :-

- ① SignIn button पर click होने पर लॉगिन करें।
- ② Login.component.html में click event पर use "onsubmit" SIGNIN() का call करें।
- ③ login.component.ts में SIGNIN() एवं this-service-locator.httpservice - post("http://localhost:8080/auth/login", form.data) पर फ़ंक्शन लें।

Backend :-

- ④ Login form वे Baseform का extends करें।
 - ⑤ Particular field पर validations apply करें जैसे by annotations like:-
- ① NotEmpty
 - ② Email.

⑥ Login Ctrl ने BaseCtrl को extend करता है -

⑦ ORS Response classes लगाए हैं com.rays.common package में।

⑧ @PostMapping("login") में ORSResponse का Login() को लाइन करता है और उसमें 3 ट्रॉटर 4 parameter pass करता है।

→ login(@RequestBody @Valid LoginForm form, BindingResult bindingResult, HttpSession session, HttpServletRequest request)

⑨ BaseCtrl की validate method को call करता है और bindingResult को object पार्स करके ORSResponse को object res में hold करता है।

→ ORSResponse res = validate(bindingResult);

⑩ Condition check की है।-

```
if (!res.isSuccess()) {
```

```
    return res;
```

⑪ again frontend or !-

login-component.ts the signIn() & callback function in res object ont call fnsit,

⑫ login-component.html & login and password
ani field & interpolation ont use onon
print fnsit !

 {{ form.inputerrors.login }}

 {{ form.inputerror.password }}

Q: Where do you write input validation
messages ?

A: Backend in form par likha hai validation
 @NotEmpty (message = "login id is required")
 @Email
 @Pattern (regexp = "(^\$ | [0-9] {10})")

Q:- As a result, input error object will be :-

A:- ORSResponse has 3 attribute objects :-

- (a) public static String Data = "data";
- (b) — “ ” — Input_Error = "inputerror";
- (c) — “ ” — Message = "message";

② Hashmap on object result का नाम है

③ method का नाम है - addInputErrors (Object

^{Input-Error} value) :-
result.put (~~MESSAGE~~, value);

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Q:- How to set Business validations ?

A:- Particular Ctrl use :-

① base service का authenticate method का call करेंगे (form.getLoginId(), form.getPassword()); यह login और userdetails object को जो hold करता है।

② condition check करेंगे ।

```
if (dto == null) {  
    res.setStatus(401);  
    res.addMessage("Invalid ID or Password");  
    return res; }  
else {  
    if (resResult.getMessage() != null) {  
        self.form.message = resResult.getMessage();  
    }  
}
```

③ Frontend UI :-

login-component.ts में condition check करते हैं।
if (resResult.message) {
 self.form.message = resResult.message;
}

④ HTML में

self.form.message ?? से Print करते हैं।

Q:- How to upload picture of given userId ?

A:- user.component.html \Rightarrow

① Input type = file के पर change event का use करें myfile() को call करें।

② myfile() का लिखा है user.component.ts में -

myfile(files: FileList) {
this.fileToUpload = files.item(0);}

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Backend UI \Rightarrow

③ ORS Response type का uploadPic() लिखा है.
④ Path variable का use करें Id को get करें।

multipart file का object लिखा है 'file'
HttpServlet request का object लिखा है 'request'

\rightarrow public ORSResponse uploadfile (@PathVariable long userId, @RequestParam ("file") multipartfile file, HttpServletRequest req);

(2) BaseService की findById() का call होता है। जहाँ userId और userContext के object pass होते हैं और उनको UserDTO के object dto में hold होता है।

→ UserDTO dto = baseService.findById(
(userId, userContext));

(3) AttachmentDTO का object बनाया जाता है। description, Path और userId पास होता है।

→ AttachmentDTO doc = new Attachment
DTO(file);

doc.setPath(req.getServletPath());
doc.setDescription("Profile Picture");
doc.setUserId(userId);

(4) Condition check होता है:-

→ if userDTO.getImageId() != null
then
doc.setId(userDTO.getImageId());

(5) Attachment service की save method का call होता है। जहाँ doc और userContext pass होता है। long imageId में hold होता है।

→ Long imageId = attachmentService.save
(doc, userContext);

⑧ ORS Response का object लाना है और ORS Response
में addResult() का call करना है सेमें key,
value के pair के ImageId को set करना
finally return response करना।

→ ORSResponse res = new ORSResponse();
res.setSuccess(true);
res.addResult("ImageId", imageId);
return res;

Q. Process of Preload ?

A : Backend \Rightarrow

- ① Respective controller ORSResponse type ont
Preload() लगाएँ -
 \rightarrow @GetMapping("preload")
 public ORSResponse preload () {
- ② ORSResponse on object बनाएँ
 \rightarrow ORSResponse res = new ORSResponse
 (true);
- ③ Respective DTO on object बनाये दो
 \rightarrow ex \Rightarrow RoleDTO dto = new RoleDTO();
- ④ Respective service Interface on autowire करें
 \rightarrow @Autowired
 RoleServiceInt roleService = null;
- ⑤ Respective service on search() का call
 करके जड़े दो पास करके जूरे list वाले object
 में hold करें।
 \rightarrow List<dropdownList> list = roleservice.
 search(dto, userContext);

⑥ CORS Response with oddResult(s) at key with
value on pair in data save form -

→ yes-oddresult ("rolelist", list);

then -

return yes;

Frontend DR -

⑦ can select tag of option set form -

<select [(ngModel)]="form.searchParams.roleId">

<option *ngFor="let e of form.preload-

rolelist [value]="e.value">

{{e.value}}</option>

</select> → Print form()

Q:- What will you do for extra Search field?

A:- Frontend UI :-

- ① HTML में एक extra input field जैसा form-type का text लेने के label बनाया -
`[ngModel] = "form-searchParams.firstName"`
- ② click event के submit() पर कॉलबॉक्स -
- ③ Component.ts के submit() में इसे सेट करें -

→ service locator - `httpservice.post(this.api.Search, this.form.value);`

Backend UI :-

- ④ Respective controller extend करें BaseCtrl और Base Ctrl के search() पर कॉलबॉक्स
 - ⑤ BaseCtrl में ORSResponse type के search() में @Requestbody Form form;
- public ORSResponse search(@requestbody Form form);

⑥ ORSResponse on object लिया -

→ ORSResponse res = new ORSResponse();

⑦ ORSResponse on addData() on call लिया

उसमें सिर्फ baseService की search की call लियी
जिस परामिटर परिसंग लिया : DTO, pageNo, page
size, userContext.

→ res.addData(baseService.search(DTO,
pageNo, pageSize, userContext));

⑧ BaseService में baseDAO की search() की
call लियी

→ baseDAO - Search()

⑨ respective DAOImp class extends BaseDAO
BaseDAO की getWhereClause() को override
किया जोर परामिटर परिसंग लिया

→ protected List getWhereClause(Dto, criteria
builder builder, Root qroot);

⑩ List on object लिया है जिसे condition check
किया ।

→ if (!isEmptyString(dto.getName())) {
 whereCondition.add(builder.like(qroot.get("name"
 + dto.getName() + "%")));
}
then
 return list;

Q1 - Flow of List ?

A1 - Frontend UI :-

- ① Navbar-component.html में dropdown से link लिया है जिसमें "/ userList" तो routerLink = "['user']" है।

Backend UI :-

UserCtrl extends baseCtrl.

② BaseCtrl ont Search() call on.

③ ORSResponse ont object भारतीय res.

res.oddData(baseService.search(dto, pageNo, pageSize, userContext));

④ BaseServiceImp extends BaseDAO.

⑤ BaseServiceImp class ont Search() तो BaseDAO ont Search() call on

→ Search () {
baseDAO.Search (DTO, pageNo, pageSize
userContext);

⑥ BaseDAOImp extends BaseDAO

⑦ getWhereClause() लिया है BaseDAO ने तीर तीसी parameter pass किए हैं -

(TDTO, pageNo, CriteriaBuilder builder, Root<T> root);

⑩ TypedQuery on object तो लिखा

→ TypedQuery <T> query = createCriteria
(dto, userContext);

⑪ Pagination handle लिखा

query.setFirstResult (pageno * pagesize);

query.setMaxResults (pagesize);

⑫ query ऑफ गेटरिस्ट ऑफ कॉल करना है और
list ऑफ ऑब्जेक्ट ऑफ होल्ड करना है।

→ List list = query.getResultList();

⑬ Then
return list;

Again Frontend कर !.

⑭ Form ऑफ लिस्ट ऑफ एर्रे ऑफ होल्ड करना

⑮ component.html ऑफ *ngfor लॉप लगाया

→ [<ngfor] = "let m for form.list >

⑯ अल फील्ड्स ऑफ प्रिंट ऑफ करना

m.imageid

m.name

m.loginId etc.

Q1 How to make Primary Key or generate the Id ?

A1 Based TO :-

@Id

@GeneratedValue(generator = "ncSPK")

@GenericGenerator(name = "ncSPK", strategy = "native")

@Column(name = "ID", unique = true, nullable = false)

protected Long id;

Q2 What is JSON ?

A2 JSON stands for javascript object notation
it is a lightweight format for storing and transporting data.

JSON data is written as name/value pairs followed by a colon:
"firstName": "Ripin"

Q How to apply Spring Security?

A:-

- Pom.xml \Rightarrow dependency add or $\text{Spring-boot-starter-security}$.
 \rightarrow JWT [0.9.1]

class-1

- Web security config class anno $\text{WebSecurityConfigurerAdapter}$ or extend WebSecurity

- Security configurator method or -
 - csrf or disable token | $\text{CSRF} = \text{cross site request forgery}$
 - Token name set anno ,
 - Session or stateless anno ,
 - filter or add anno token or validate or $\text{on every user request}$ or

class-2

- JWT authentication entry point name or class or anno $\text{AuthenticationEntryPoint}$ or Implement anno ,

- Security commence method or HttpRequest with $\text{HTTP servlet response}$ or object pass or

- Commerce (HttpServletRequest req, HttpServletResponse resp);

⑥ response ^{o sendError} ans ~~setError~~ method ~~ans~~
 use ~~ans~~ in HttpServlet response. SC -
 UNAUTHORIZED, "oops session is expired"
~~ans set form~~

↳ resp. sendError (HttpServletResponse. SC -
 AUTHORIZED, "oops session expired");
~~msg~~

class 3

⑦ JWT token util class ~~ans~~ & site
~~3rd~~ methods ~~ans~~ -

- get username from token();
 token issue date () / time() /
 expired date () / token validity(),
 etc.

- do generateToken () ^{ans use ~~ans~~}
 return token ~~ans~~ form /

Q) What you did for Exception ?

Exception Handling

① Application Exception Handler CH बनाया है फलतः
annotate करते हैं - @ControllerAdvice से.

@ControllerAdvice → Handles exception ~~globally~~
globally.

② इसी class में हमने @Exception Handler annotation
use किया है. जो for specific exception
handle करता है।

- @ExceptionHandler(value = RuntimeException.
class)

जो runtime exception handle करता है।
or response on object बनाया है और
उसमें odd message () का use किया है।

③ then - Exception classes बनाते हैं,

(1) Application Exception → it handles
exception from Service class

(b) DatabaseException \rightarrow handles exceptions from DAO classes.

(c) DuplicateException \rightarrow handles exceptions from anywhere.

\Rightarrow Firstly DAO classes convert any ORM specific exception to database exception
 \downarrow
(unchecked exception)

unchecked exception propagated to service layer.

WCF Service \rightarrow calling method \rightarrow main method (call)

\rightarrow JVM

→ To generate Spring boot project-

Select dependencies:-

- 1 - Spring boot JPA
- 2 - mysql-connector driver
- 3 - Spring-web
- 4 - dev-tools

Q What is EntityManager ?

A:- A DAO requires DCP to get connection from database. different ORMs need different persistence Resources like JDBC need DataSource, JPA need EntityManager, and Hibernate need SessionFactory.

- In JPA, the EntityManager interface is used to allow applications to manage and search for entities in the relational database.

Q: How to disabled previous button?

A:- We have used click event disabled =
"form.PageNo == 0"

- <button (click) = "Previous()" [disabled] =
"form.PageNo == 0"

Q: How to disabled next button?

A:- we have used click event disabled =
"form.list.length < 5"

- <button (click) = "next()" [disabled] =
"form.list.length < 5"

Q: How to set index or S-No.?

A:- index on ~~one~~ variable it hold ~~for~~ -
- let $i = \text{index}$

then!:- interpolation on use ~~on~~ print ~~to~~ -
 $\text{Eg}(\text{form.PageNo} * 5) + i + 1$

Q: Describe Session-Facade design pattern?

A: We have used in service classes because service class :-

- they perform transaction and
- handle business operations.

it is a single entry point for entire

(note:- its internally works) we ~~use~~ ^{autowired} application class.

Q1. What is predicate in where clause?

A1- It is a functional interface that has a method by name test that return boolean value (true or false) it is used in JPA at the place of criteria for restrictions.

Q1. What is root in where clause?

A1- JPA uses it to define the root of query for specific table to fetch the rows in a criteria query, a root is always an entity.

Q1. What is criteria Builder in where clause?

A1- it is used to construct criteria queries, compound selections, expressions, predicates, ordering.

it provides method to define bind parameters, which you can use to create your where clause and to set the corresponding values.

Q1. What is typed query in Search?

A1- it gives you an option to mention the types of entity when you create a query therefore any operation

hereafter does not need an explicit cast to the intended type whereas the normal query API does not return the exact type of object, you need to cast.

Q. :- How to disable next button ?

A. :- Backend :-

- BaseCHT and search method of baseService and search method of call API
- Parameters of dto,pageno+1, pagesize और usercontext का फैटी
- इसे List के object nextList से hold करता है
- ORS response के object की addResult method का call होता है जिसमें key और value का pair के set करता है ("nextList", nextList.size())
 - key = "nextList" (if is object)
 - value = nextList.size();
- ORS response के object रेसर्च रिसल्यूट्स में दिया जाता है

Frontend :-

- Base-component.ts की search method को जहाँ search API का hit होता है

- - self.nextList = res.result.nextList;
callback method at get one more!
- userList.component.html \nexists [disabled] =
"nextList == 0" \wedge \neg first \neg next
button disable \exists !