

# LITHAN

## Design, Develop, Implement & Document Community Portal Website

### Module Project

**Module:** Web Development Foundations

**Course:** NICF Advanced Certificate in Software & Applications (Development & Deployment)

**Start Date** : 18 May 2022

**End Date** : 14 June 2022

**Submission Date** : 14 June 2022

**Learner Name** : Wee Chong, Teo

**Enrollment ID** :

**Presentation Date** : 15 June 2022

Version Number	Effective Date of release	Summary of Included Changes	Author
1	4 <sup>th</sup> March 2016	First Edition	Satya CVS
2	08 <sup>th</sup> Sep 2017	Changed for Module 5	Shrinivas K R
3	20 <sup>th</sup> Jul 2018	Changed for Module 5 RQF	Shrinivas K R

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# 1. Development Tools

# LITHAN

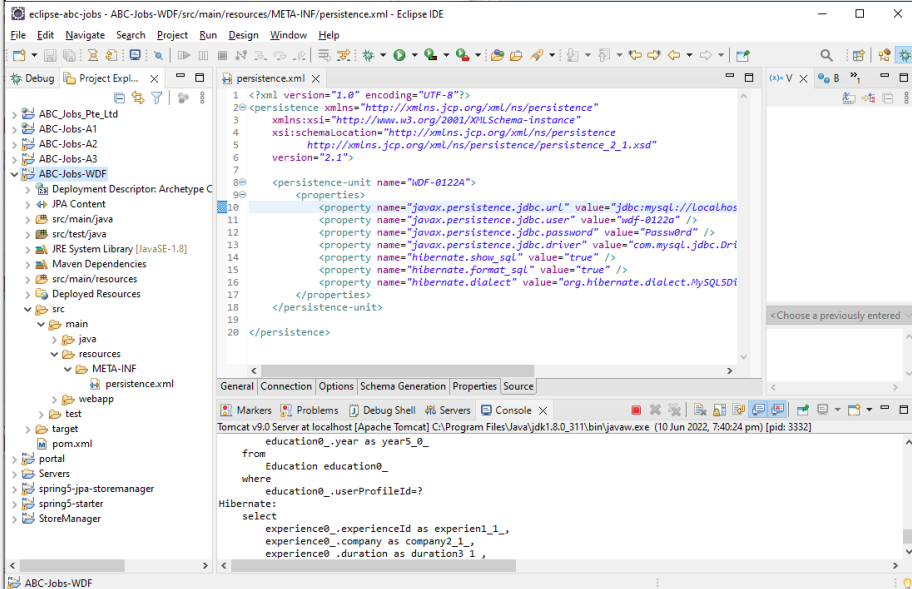
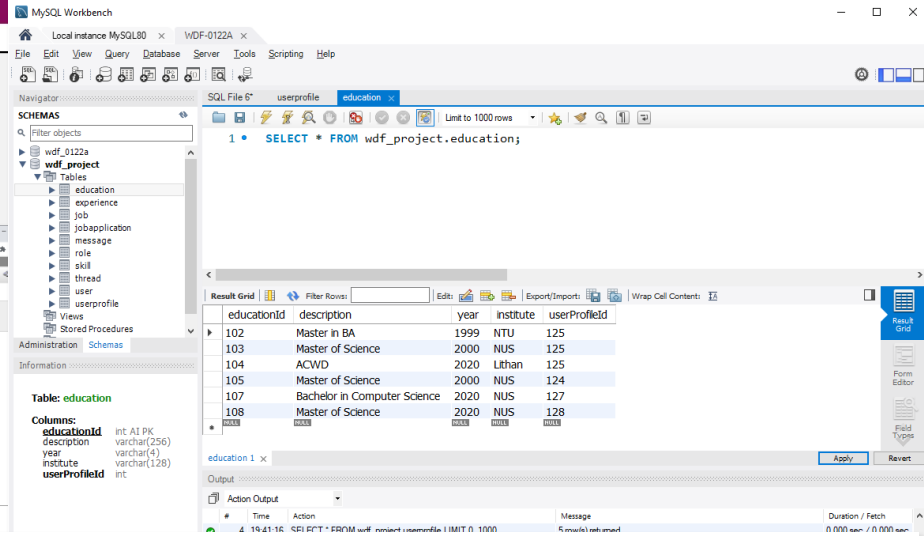
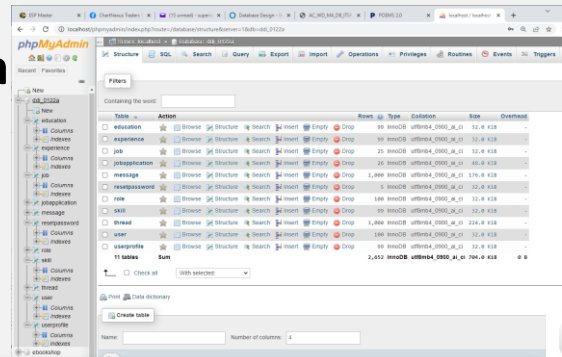
MySQL Server and Workbench

Apache Tomcat Server

phpMyAdmin

Eclipse IDE


JDK 1.8



[Home](#) [Documentation](#) [Configuration](#) [Examples](#) [Wiki](#) [Mailing Lists](#) [Find Help](#)

## Apache Tomcat/9.0.59

If you're seeing this, you've successfully installed Tomcat. Congratulations!



**Recommended Reading:**

- [Security Considerations How-To](#)
- [Manager Application How-To](#)
- [Clustering/Session Replication How-To](#)

[Server Status](#)  
[Manager App](#)  
[Host Manager](#)

### Developer Quick Start

[Tomcat Setup](#) [Realms & AAA](#) [Examples](#) [Servlet Specifications](#)  
[First Web Application](#) [JDBC Data Sources](#) [Tomcat Versions](#)

#### Managing Tomcat

For security, access to the [manager webapp](#) is restricted. Users are defined in:

```
$CATALINA_HOME/conf/tomcat-users.xml
```

In Tomcat 9.0 access to the manager application is split between different users.  
[Read more...](#)

[Release Notes](#)  
[Changelog](#)  
[Migration Guide](#)  
[Security Notices](#)

#### Documentation

[Tomcat 9.0 Documentation](#)  
[Tomcat 9.0 Configuration](#)  
[Tomcat Wiki](#)

Find additional important configuration information in:

```
$CATALINA_HOME/RUNNING.txt
```

Developers may be interested in:

- [Tomcat 9.0 Bug Database](#)
- [Tomcat 9.0 JavaDocs](#)
- [Tomcat 9.0 Git Repository at GitHub](#)

#### Getting Help

[FAQ and Mailing Lists](#)

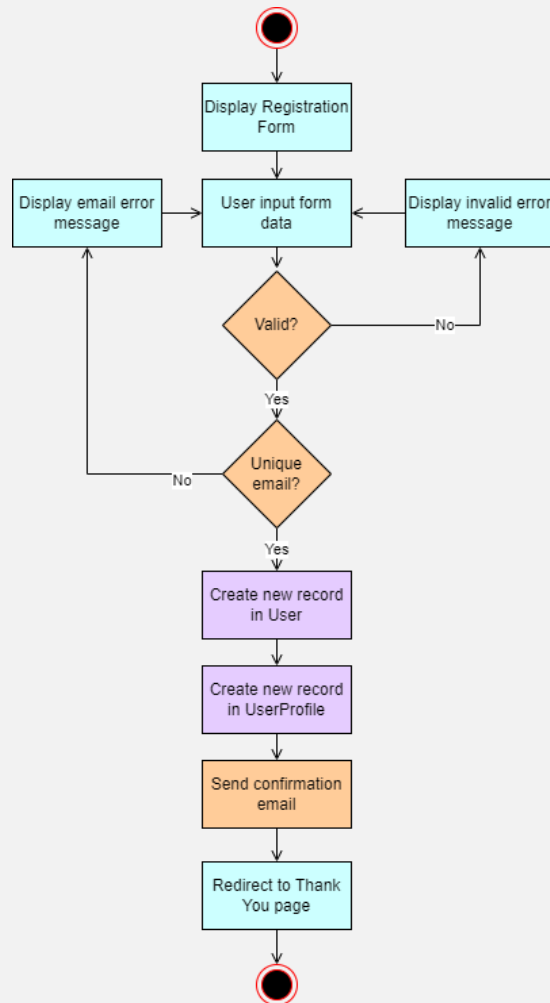
The following mailing lists are available:

- [tomcat-announce](#)  
Important announcements, releases, security vulnerability notifications. (Low volume).
- [tomcat-users](#)  
User support and discussion
- [tomcat-dev](#)  
User support and discussion for [Apache Taglibs](#)
- [tomcat-dev](#)  
Development mailing list, including commit messages

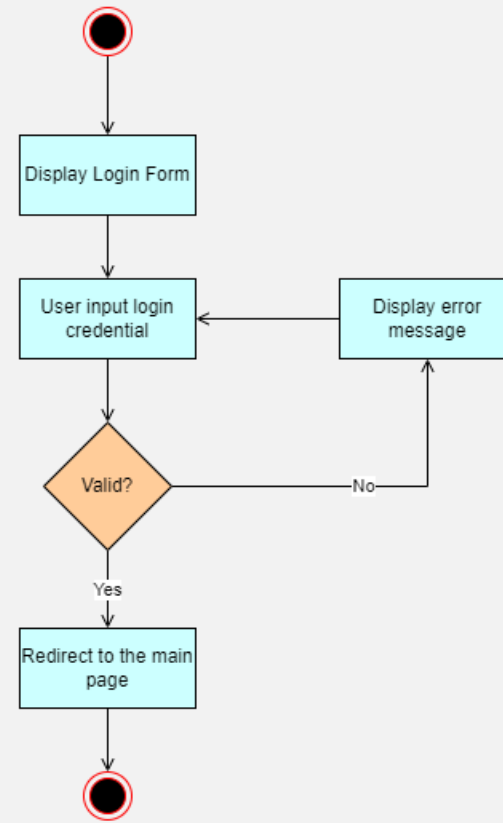
## 2. Business Process

LITHAN

### Registration



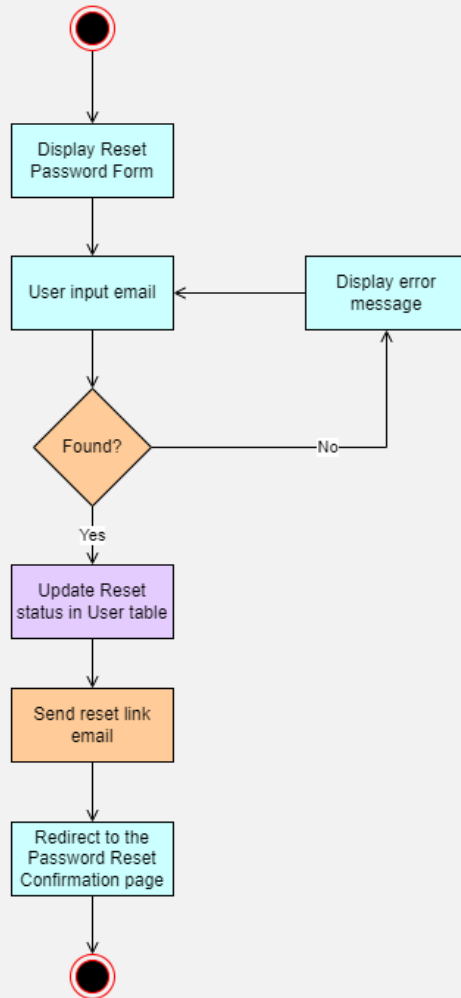
### Login



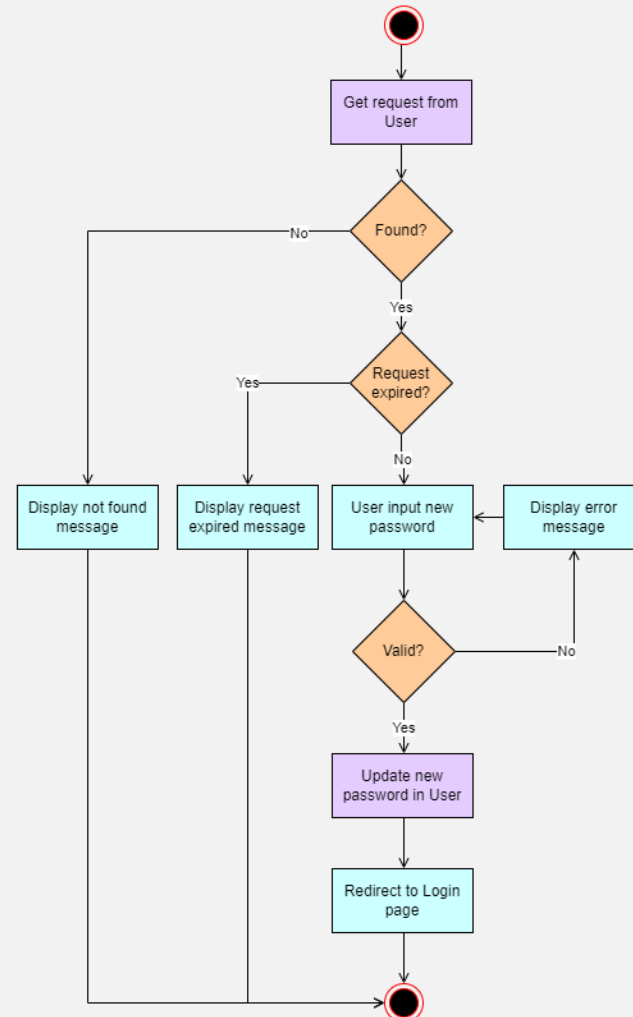
## 2. Business Process

LITHAN

### Reset Password



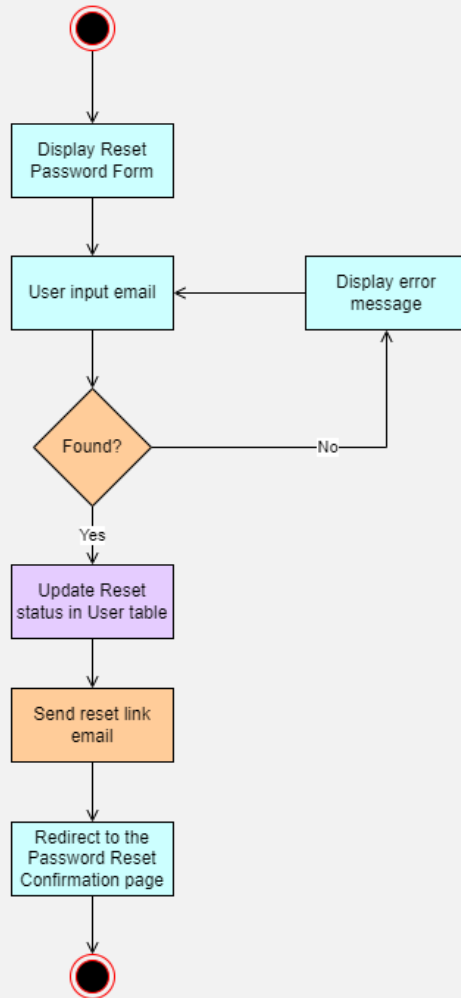
### Change Password



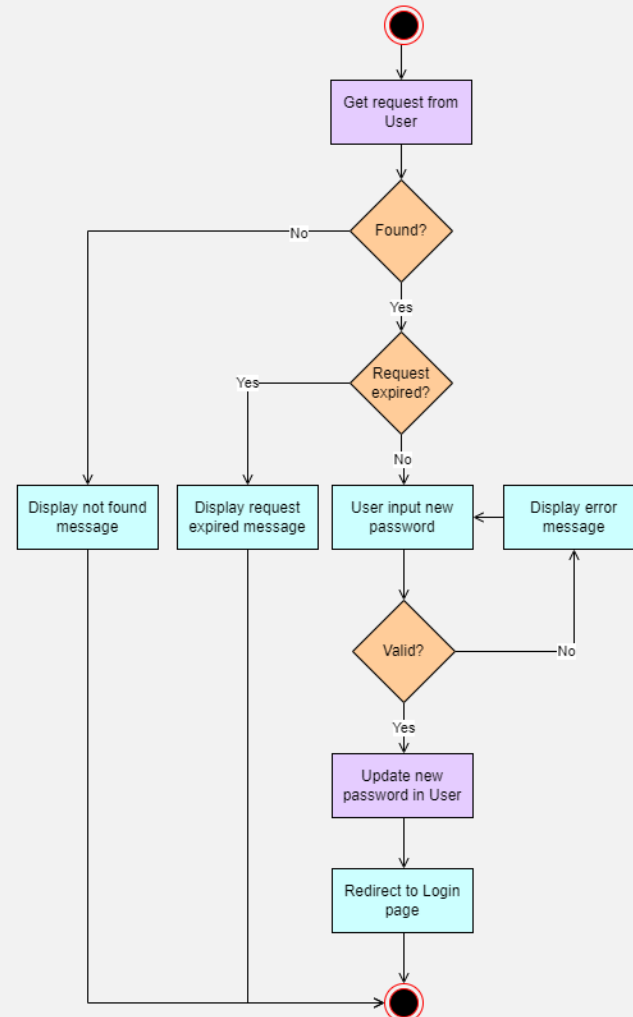
## 2. Business Process

LITHAN

### Reset Password



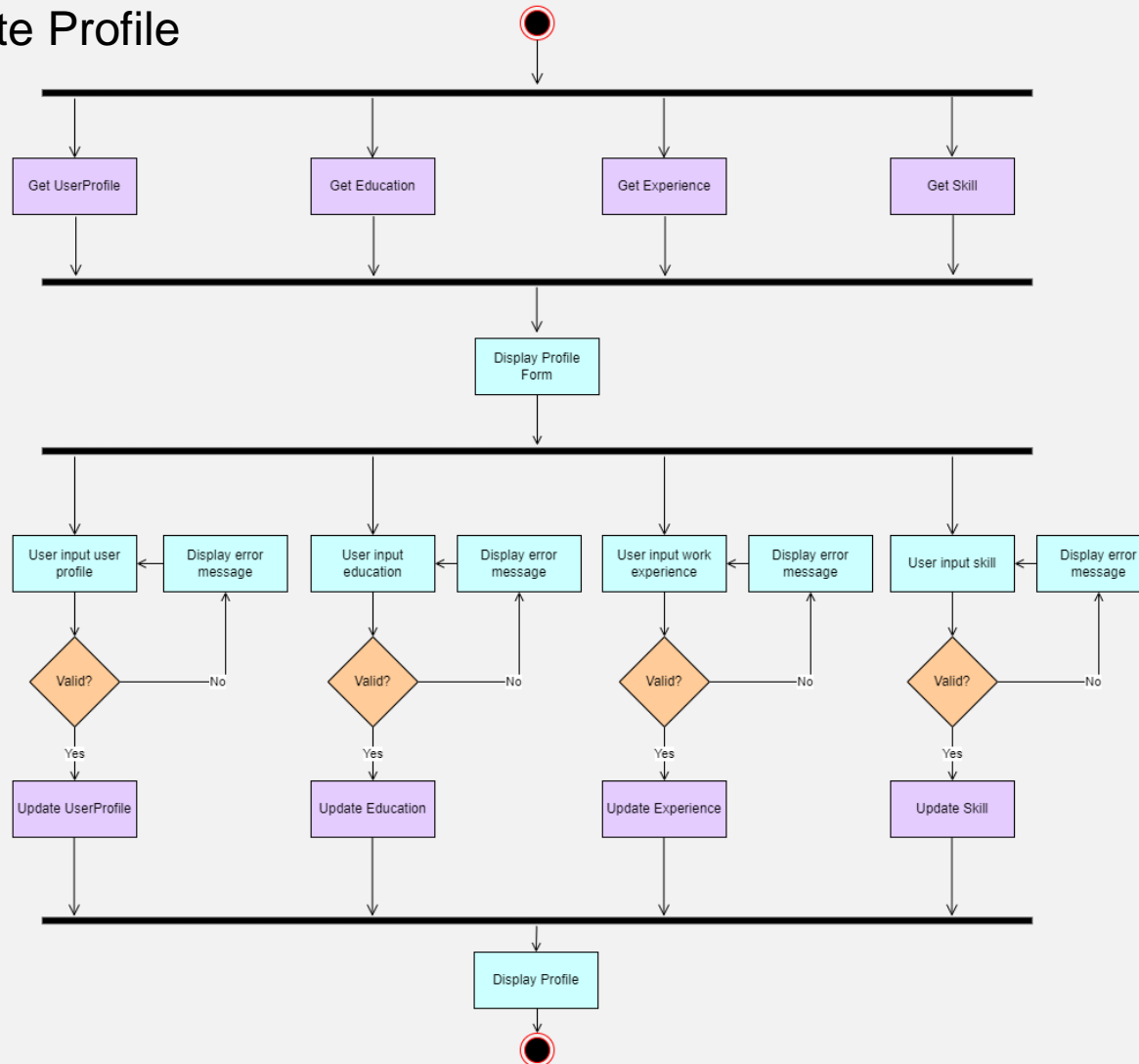
### Change Password



## 2. Business Process

LITHAN

### Update Profile

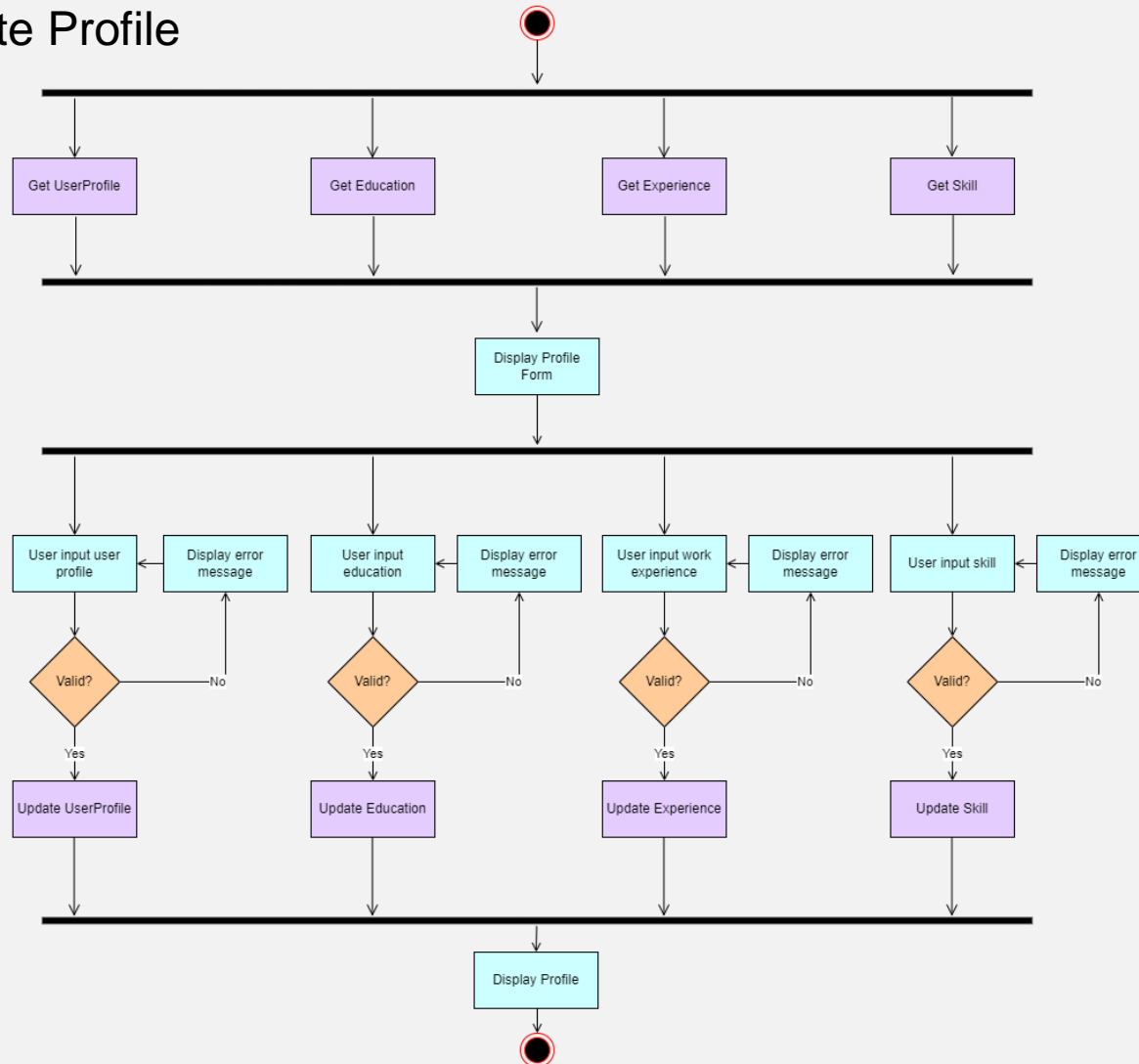




## 2. Business Process

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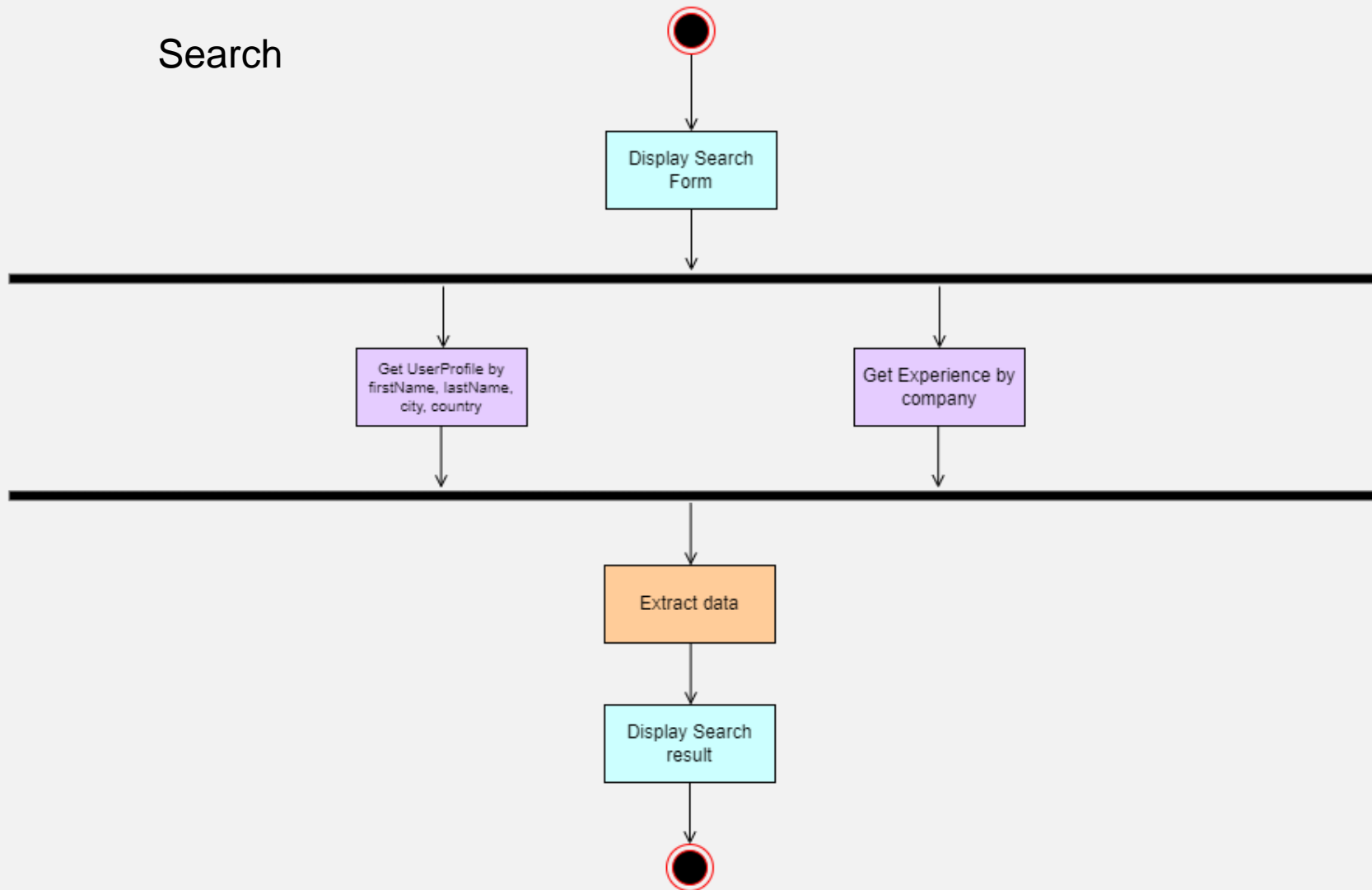
### Update Profile



## 2. Business Process

LITHAN

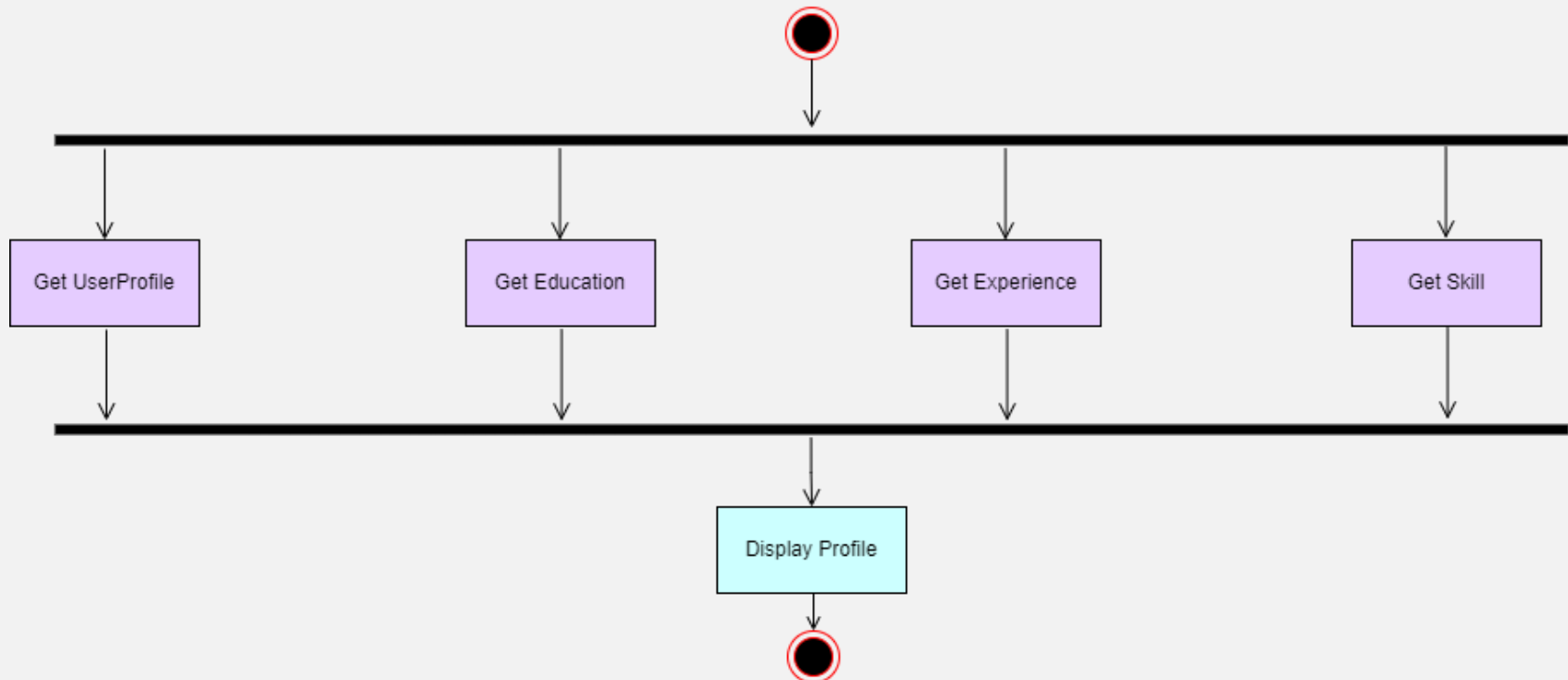
Search



## 2. Business Process

LITHAN

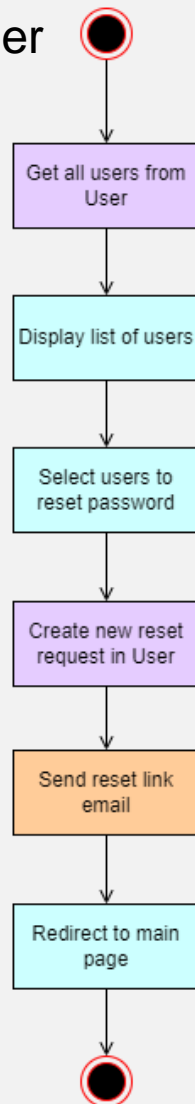
### Display Public Profile



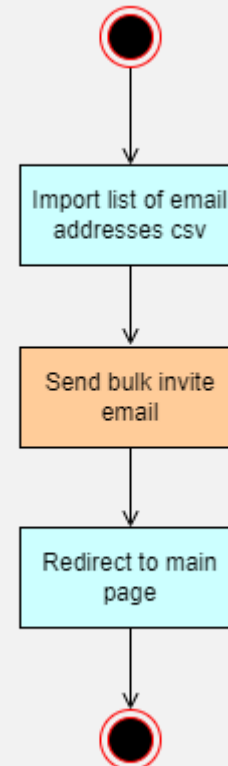
## 2. Business Process

LITHAN

### Administer User



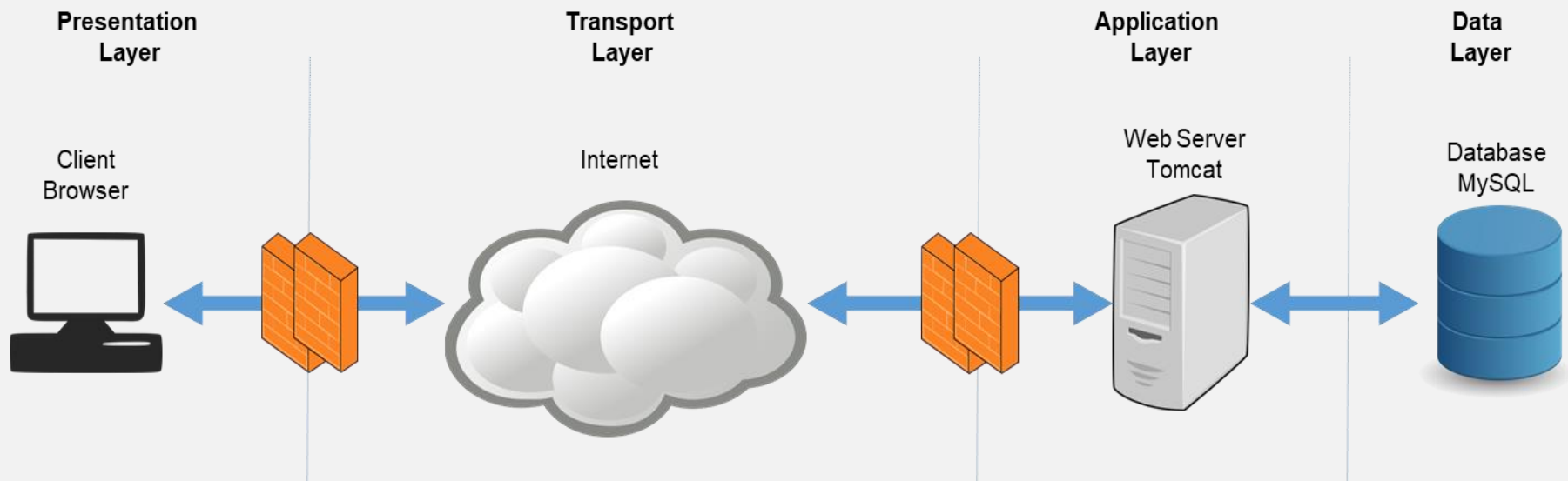
### Send Bulk Email



### 3. Application Block Diagram

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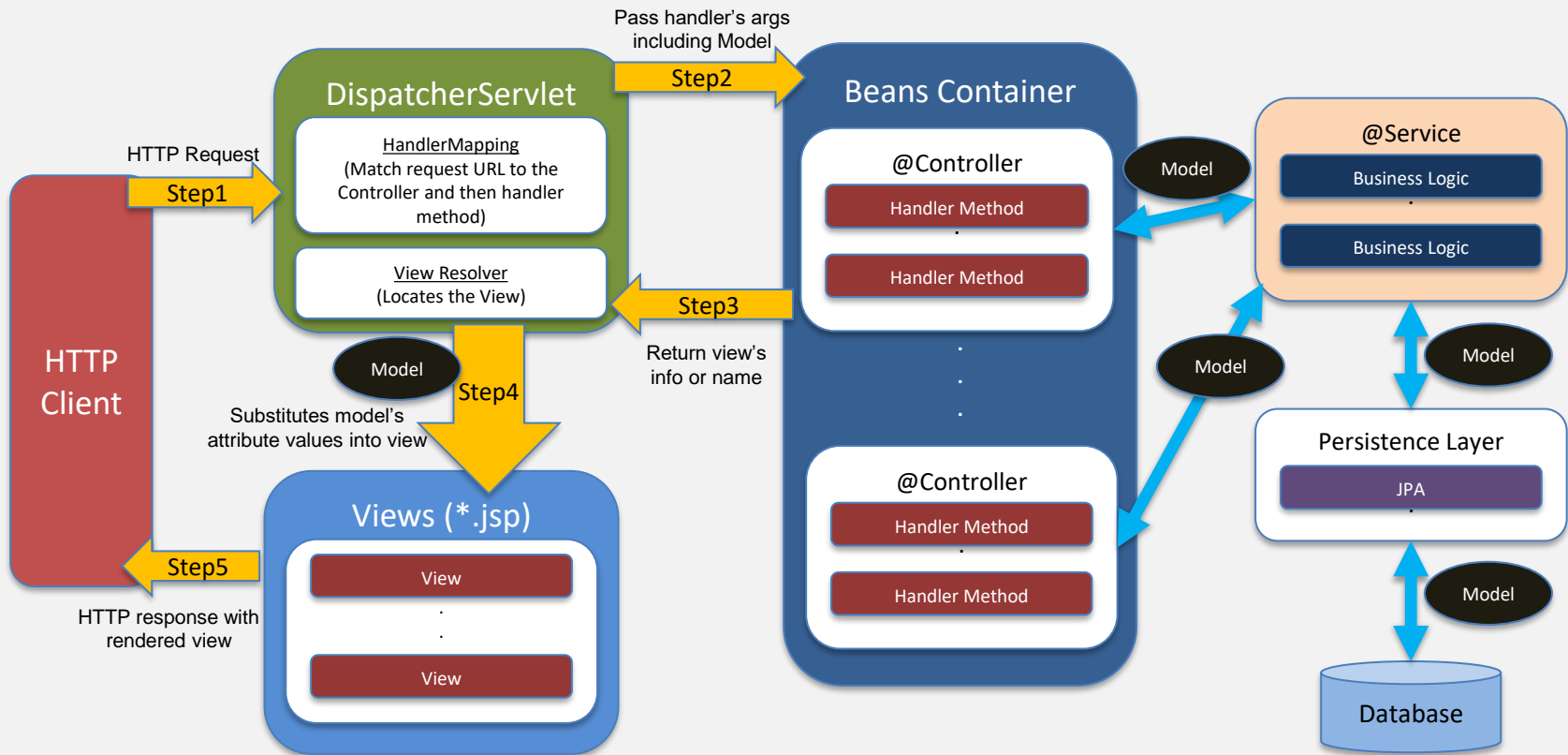
#### ☐ System Architecture



# 3. Application Block Diagram

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## ❑ Application Architecture



## 4. Applications

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Public Section

Community Portal

Home

About Us

Registration

Contact Us

Login

Registration Page

Registration Thank  
You Page

Login Page

Reset Password  
Page

Private Secured Section

Man Page

Profile

Member

Discussion Thread

Messaging

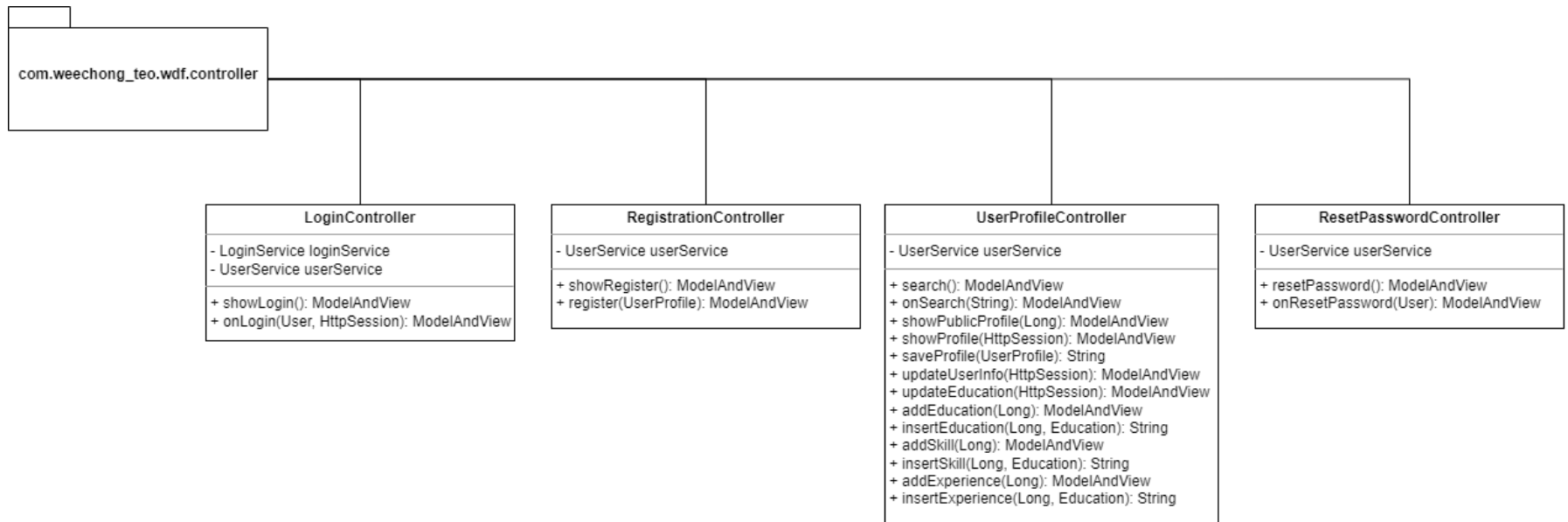
Job Posting

Administer User Data  
(Administrator)

Send Bulk Email  
(Administrator)

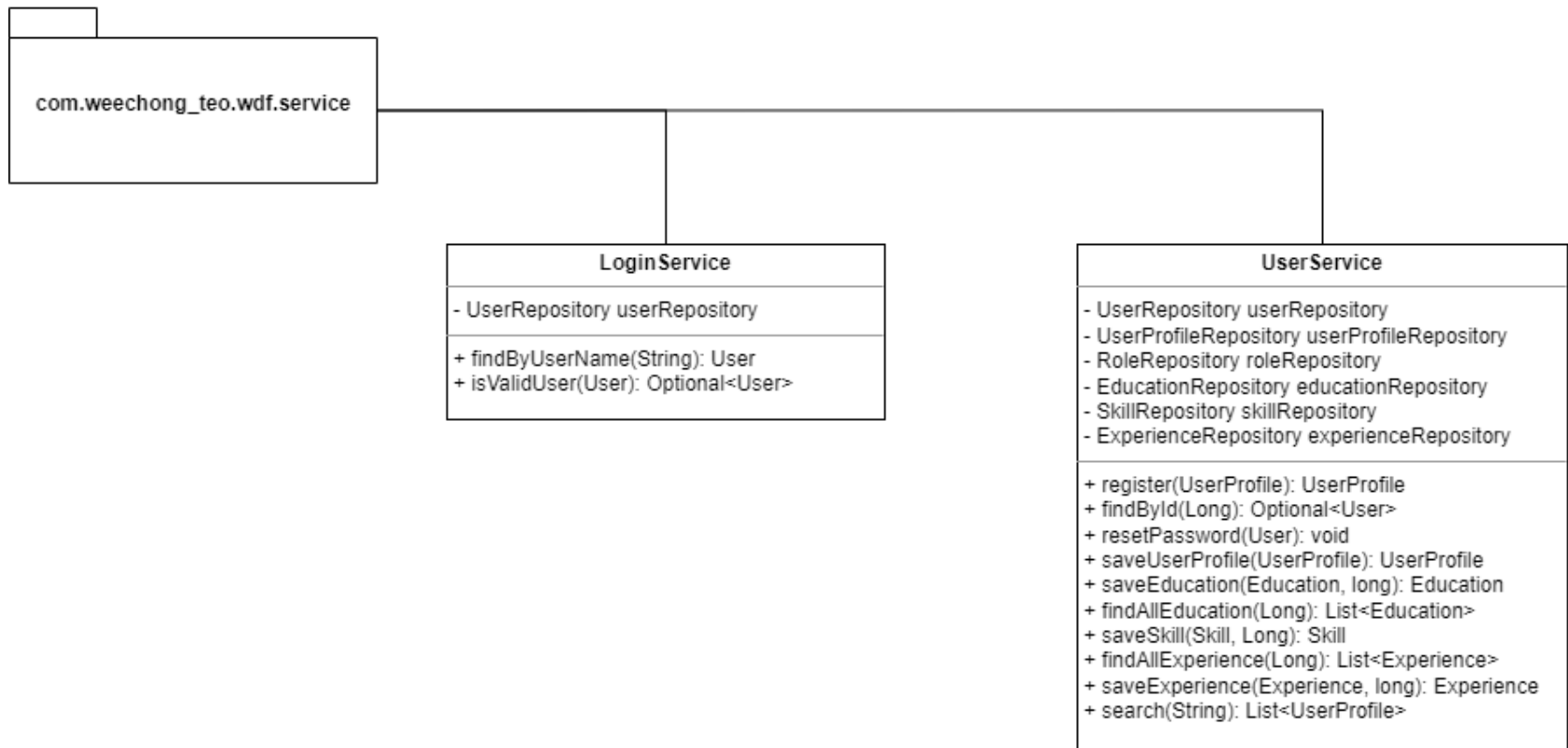
Logout

# 5. Models, Controllers, Classes Developed LITHAN

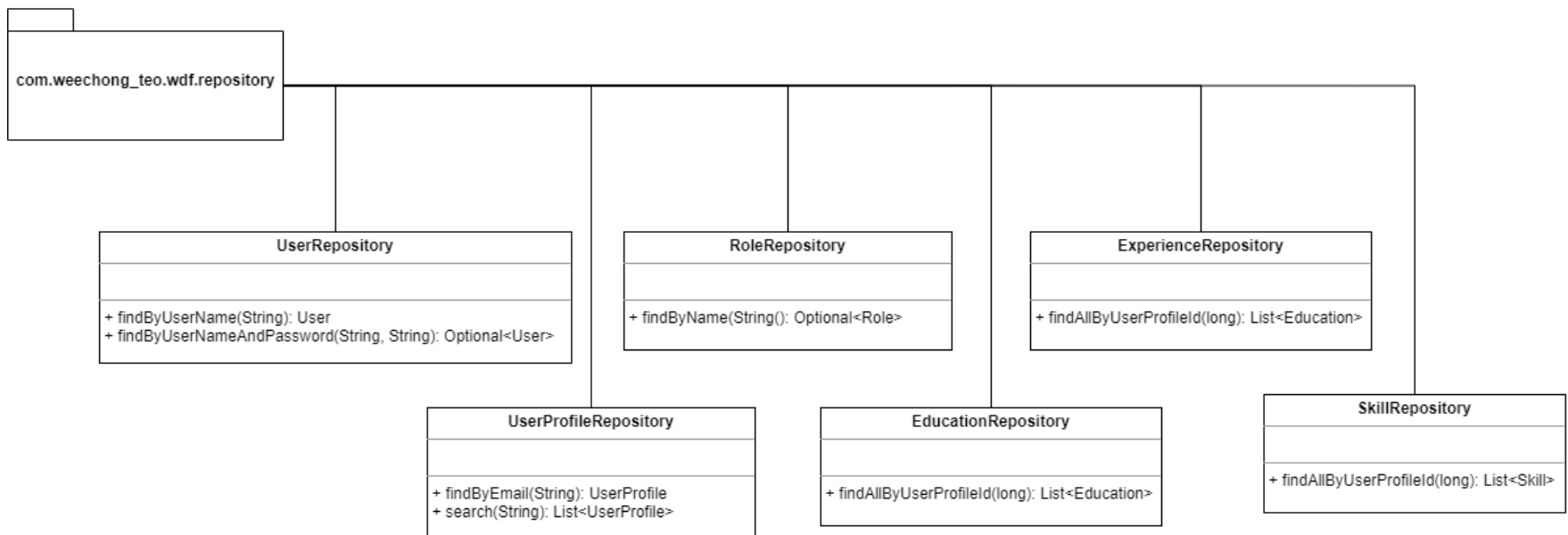




## 5. Models, Controllers, Classes Developed LITHAN



## 5. Models, Controllers, Classes Developed **LITHAN**



# 5. Models, Controllers, Classes Developed LITHAN

com.weechong\_teo.wdf.entity

User
<ul style="list-style-type: none"><li>- userId: Long</li><li>- userName: String</li><li>- password: String</li><li>- emailConfirmed: char</li><li>- status: char</li><li>= createdAt: Timestamp</li><li>- reset: String</li><li>- userProfile: UserProfile</li></ul>
<ul style="list-style-type: none"><li>+ getUserId(): Long</li><li>+ setUserId(Long): void</li><li>+ getUserName(): String</li><li>+ setUserName(String): void()</li><li>+ getPassword(): String</li><li>+ setPassword(String): void</li><li>+ getEmailConfirmed(): char</li><li>+ setEmailConfirmed(char): void</li><li>+ getStatus(): char</li><li>+ setStatus(char): void</li><li>+ getCreatedAt(): Timestamp</li><li>+ setCreatedAt(Timestamp): void</li><li>+ getReset(): String</li><li>+ setReset(String): void</li><li>+ getUserProfile(): Long</li><li>+ setUserProfile(Long): void</li></ul>

Role
<ul style="list-style-type: none"><li>- roleId: Long</li><li>- name: String</li><li>- users: List&lt;User&gt;</li></ul>
<ul style="list-style-type: none"><li>+ getRoleId(): Long</li><li>+ setRoleId(Long): void</li><li>+ getName(): String</li><li>+ setName(String): void()</li><li>+ getUsers(): List&lt;User&gt;</li><li>+ setUsers(List&lt;User&gt;): void</li></ul>

UserProfile
<ul style="list-style-type: none"><li>- userProfileId: Long</li><li>- firstName: String</li><li>- lastName: String</li><li>- gender: String</li><li>- dateOfBirth: String</li><li>= createdAt: Timestamp</li><li>- city: String</li><li>- country: String</li><li>- photo: String</li><li>- email: String</li><li>- password: String</li><li>- confirmGender: String</li><li>- role: Role</li><li>- user: User</li><li>- skills: List&lt;Skill&gt;</li></ul>
<ul style="list-style-type: none"><li>+ getUserProfileId(): Long</li><li>+ setUserProfile(Long): void</li><li>+ getFirstName(): String</li><li>+ setFirstName(String): void()</li><li>+ getLastName(): String</li><li>+ setLastName(String): void()</li><li>+ getGender(): String</li><li>+ setGender(String): void</li><li>+ getDateOfBirth(): String</li><li>+ setDateOfBirth(String): void</li><li>+ getCity(): String</li><li>+ setCity(String): void</li><li>+ getCountry(): Timestamp</li><li>+ setCountry(Timestamp): void</li><li>+ getPhoto(): String</li><li>+ setPhoto(String): void</li><li>+ getPassword(): String</li><li>+ setPassword(String): void</li><li>+ getConfirmPassword(): String</li><li>+ setConfirmPassword(String): void</li><li>+ getRole(): Role</li><li>+ setRole(Role): void</li><li>+ getUser(): User</li><li>+ setUser(User): void</li><li>+ getSkills(): List&lt;Skill&gt;</li><li>+ setSkills(List&lt;Skill&gt;): void</li></ul>

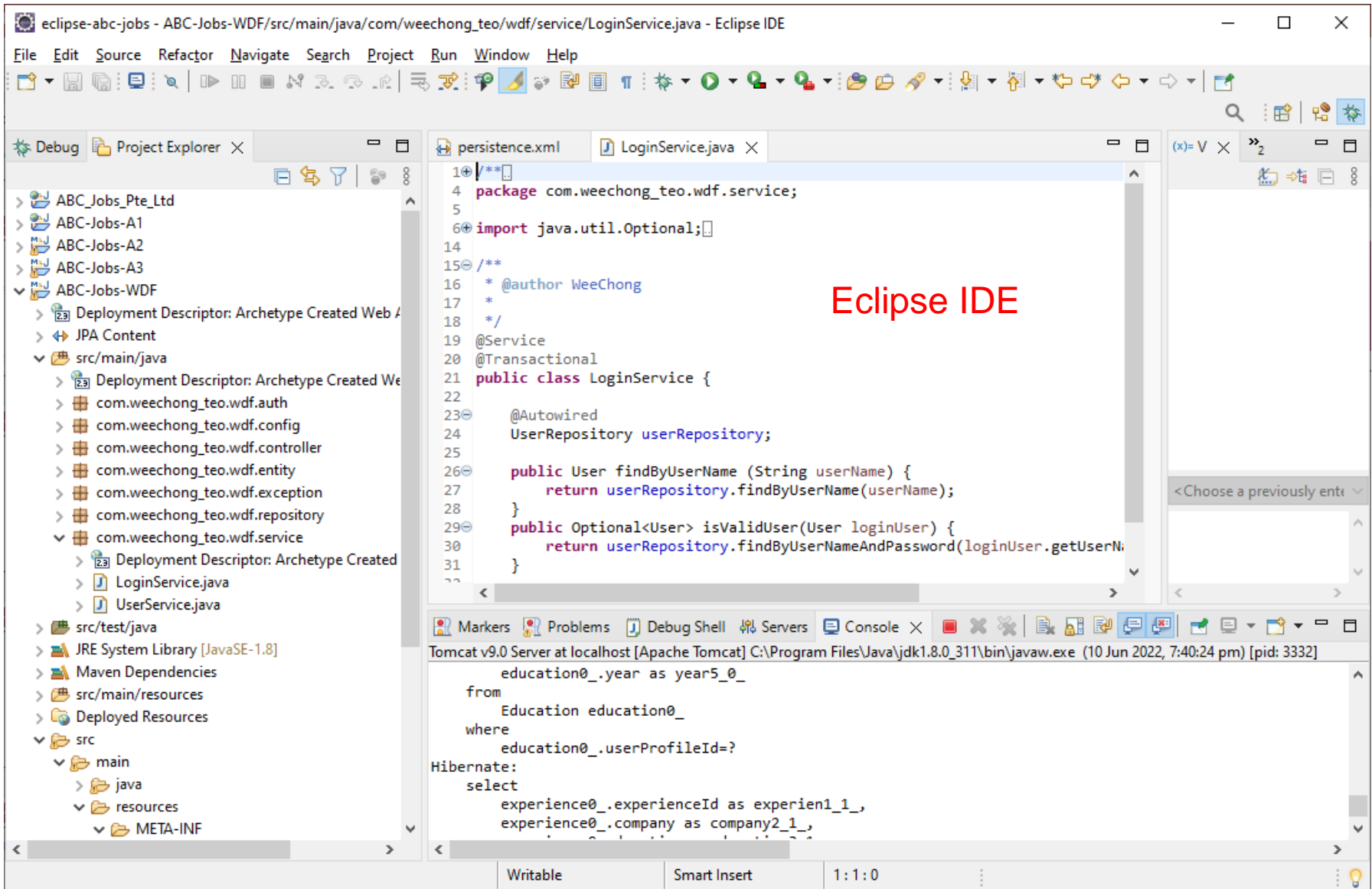
Education
<ul style="list-style-type: none"><li>- educationId: Long</li><li>- description: String</li><li>- institute: String</li><li>- year: String</li><li>- userProfile: Long</li></ul>
<ul style="list-style-type: none"><li>+ getEducationId(): Long</li><li>+ setEducationId(Long): void</li><li>+ getDescription(): String</li><li>+ setDescription(String): void()</li><li>+ getInstitute(): String</li><li>+ setInstitute(String): void</li><li>+ getYear(): String</li><li>+ setYear(String): void</li><li>+ getUserProfile(): Long</li><li>+ setUserProfile(Long): void</li></ul>

Experience
<ul style="list-style-type: none"><li>- experienceId: Long</li><li>- position: String</li><li>- company: String</li><li>- duration: String</li><li>- experienceProfile: Long</li></ul>
<ul style="list-style-type: none"><li>+ getExperienceId(): Long</li><li>+ setExperienceId(Long): void</li><li>+ getPosition(): String</li><li>+ setPosition(String): void()</li><li>+ getCompany(): String</li><li>+ setCompany(String): void</li><li>+ getDuration(): String</li><li>+ setDuration(String): void</li><li>+ getExperienceProfile(): Long</li><li>+ setExperienceProfile(Long): void</li></ul>

Skill
<ul style="list-style-type: none"><li>- skillId: Long</li><li>- description: String</li><li>- institute: String</li><li>- year: String</li><li>- userProfile: Long</li></ul>
<ul style="list-style-type: none"><li>+ getSkillId(): Long</li><li>+ setSkillId(Long): void</li><li>+ getDescription(): String</li><li>+ setDescription(String): void()</li><li>+ getInstitute(): String</li><li>+ setInstitute(String): void</li><li>+ getYear(): String</li><li>+ setYear(String): void</li><li>+ getUserProfile(): Long</li><li>+ setUserProfile(Long): void</li></ul>

# 6. Tool Screens

# LITHAN



# 6. Tool Screens

# LITHAN

**Java Perspective**

**Java Package**

- ABC\_Jobs\_Pte\_Ltd
- ABC-Jobs-A1
- ABC-Jobs-A2
- ABC-Jobs-A3
- ABC-Jobs-WDF
  - src/main/java
    - com.weechong\_teo.wdf.auth
    - com.weechong\_teo.wdf.config
    - com.weechong\_teo.wdf.controller
    - com.weechong\_teo.wdf.entity
    - com.weechong\_teo.wdf.exception
    - com.weechong\_teo.wdf.repository
    - com.weechong\_teo.wdf.service
  - src/test/java
- JRE System Library [JavaSE-1.8]
- Maven Dependencies
- src/main/resources
- src
  - main
    - webapp
      - resources
      - WEB-INF
        - pages
        - web.xml
    - test
    - target
    - pom.xml
  - portal
  - Servers
  - spring5-jpa-storemanager
  - spring5-starter
  - StoreManager

**Java Editor**

```
1  /**
2
3  4  package com.weechong_teo.wdf.service;
4
5
6  6  import java.util.Optional;
7
8
9  14
10 15 /**
11 16  * @author WeeChong
12 17  *
13 18  */
14 19  @Service
15 20  @Transactional
16 21  public class LoginService {
17
18 22
19 23      @Autowired
20 24      UserRepository userRepository;
21 25
22 26      public User findByUserName (String userName) {
23 27          return userRepository.findByUserName(userName);
24 28      }
25 29      public Optional<User> isValidUser(User loginUser) {
26 30          return userRepository.findByUserNameAndPassword(loginUser.g
27 31      }
28 32
29 33 }
30 34
```

**Java Class**

- com.weechong\_teo.wdf.service
- LoginService
  - userRepository: UserRepository
  - findByUserName(String): User
  - isValidUser(User): Optional<User>

**Problems and Javadoc**

0 errors, 350 warnings, 0 others (Filter matched 100 of 350 items)

Description	Resource	Path
⚠ Warnings (100 of 350 items)		
⚠ Attribute (align) is obsolete. Its use is discouraged in HTML5 documents.	register.jsp	/portal/src/main/webapp/WEB-INF/views
⚠ Attribute (align) is obsolete. Its use is discouraged in HTML5 documents.	view-profile.jsp	/portal/src/main/webapp/WEB-INF/views
⚠ Attribute (align) is obsolete. Its use is discouraged in HTML5 documents.	xlogin.isn	/portal/src/main/webapp/WEB-INF/views

# 6. Tool Screens

# LITHAN

**Controls**

**Code Editor**

**Variables**

**Breakpoints**

**Expression**

**Console**

The screenshot displays the Eclipse IDE interface. The top menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. The toolbar contains various icons for file operations, editing, and running. The left sidebar shows the Project Explorer with a tree view of the project structure, including a 'Daemon Thread' and 'LoginController.showLogin() line:'. The main Code Editor window displays the LoginController.java file, which contains package, import, and class definitions. The right sidebar features the Variables view, which shows a table of variables and their values. The bottom panel contains the Console view, which displays the output of the application, including logs from Tomcat and Hibernate.

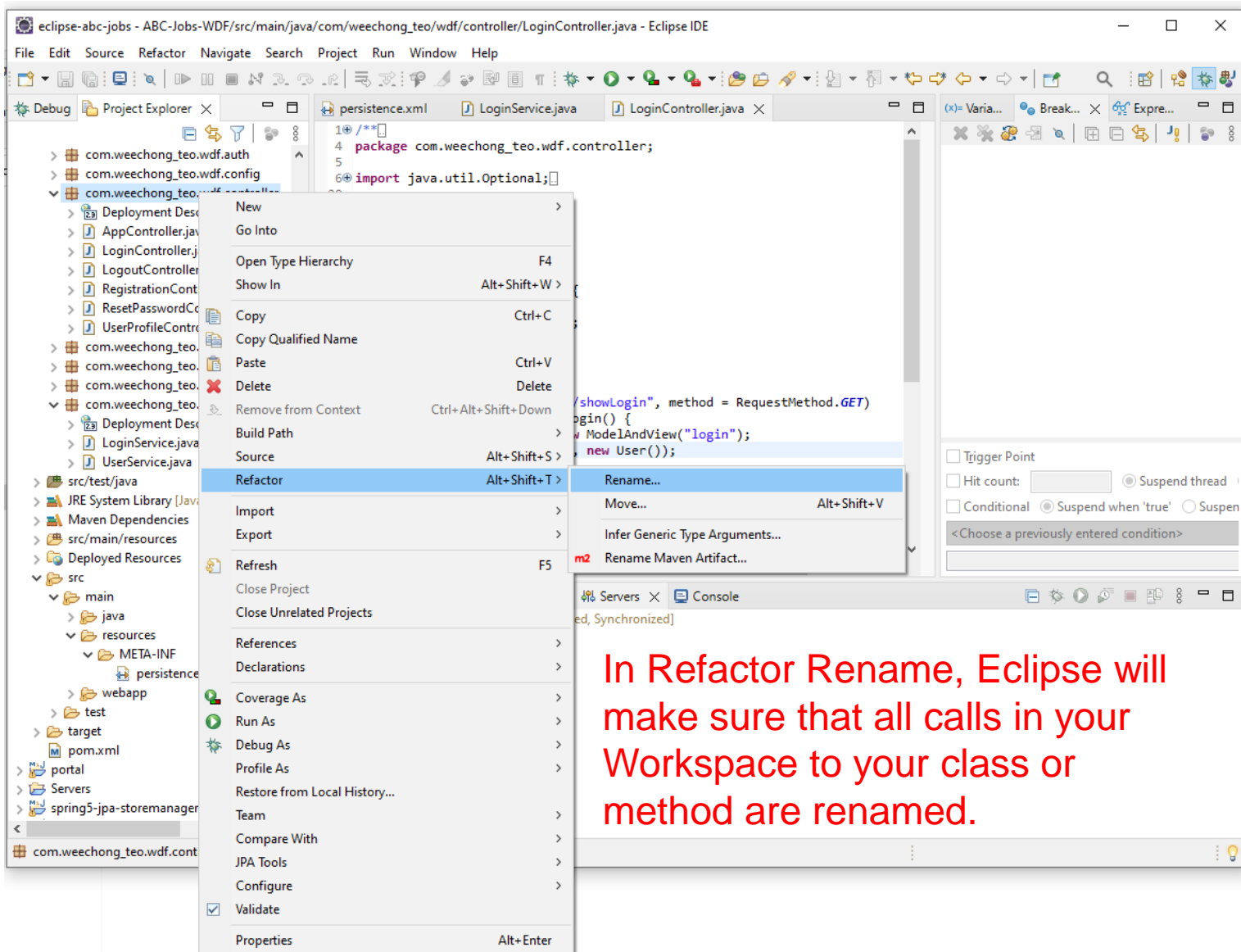
Name	Value
<init>() returned	(No explicit return value)
this	LoginController (id=89)
mav	ModelAndView (id=112)

Tomcat v9.0 Server at localhost [Apache Tomcat] [pid: 24024]

INFO: HH000115: Hibernate connection pool size: 20 (min=1)  
Jun 10, 2022 10:35:55 PM org.hibernate.dialect.Dialect <init>  
INFO: HH000400: Using dialect: org.hibernate.dialect.MySQL5Dialect  
Jun 10, 2022 10:35:57 PM org.hibernate.engine.transaction.jta.platform.internal.JtaPlatformInitiator initiateService  
INFO: HH000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]  
At Authen configure  
At Security configure  
Jun 10, 2022 10:36:01 PM org.apache.coyote.AbstractProtocol start  
INFO: Starting ProtocolHandler ["http-nio-9090"]  
Jun 10, 2022 10:36:01 PM org.apache.catalina.startup.Catalina start  
INFO: Server startup in [29997] milliseconds

## 6. Tool Screens

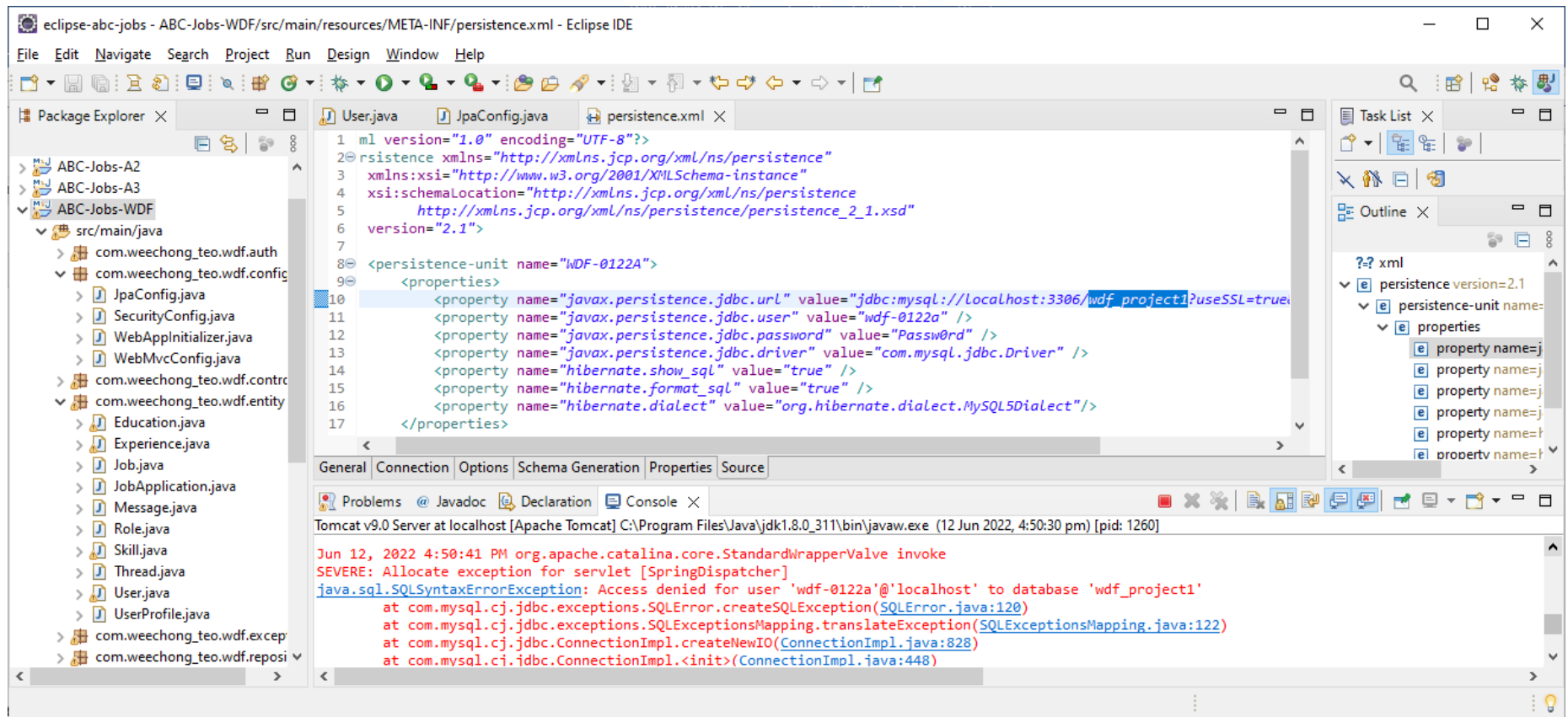
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## 6. Tool Screens

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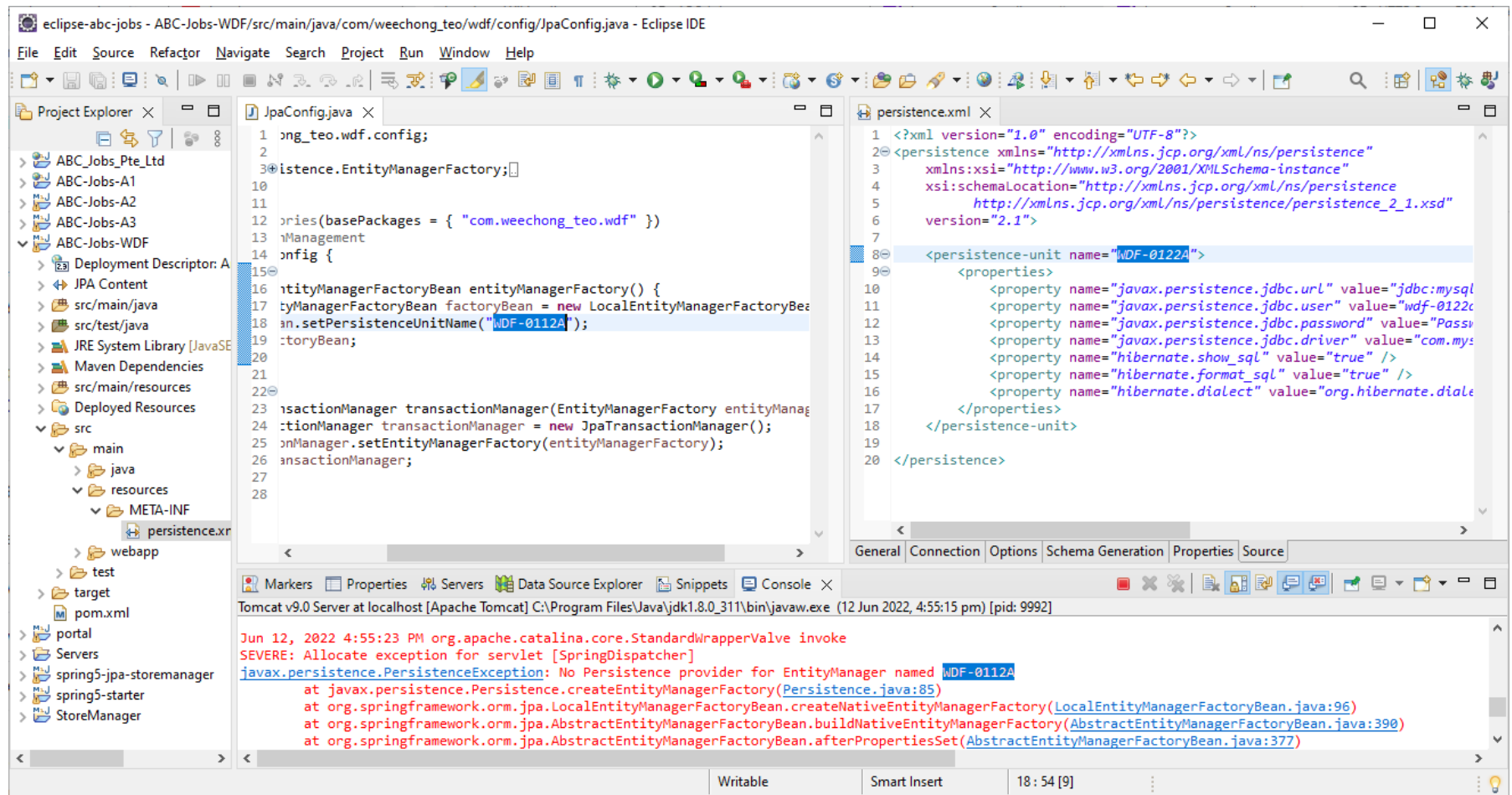


The name of the database was incorrectly configured in the persistence.xml. Changing the database name to the correct name resolve the problem.



## 6. Tool Screens

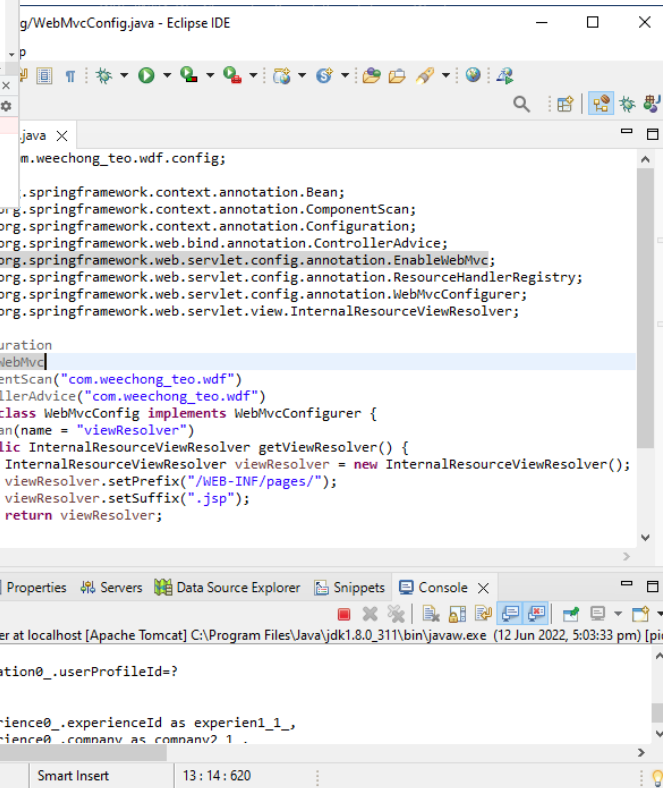
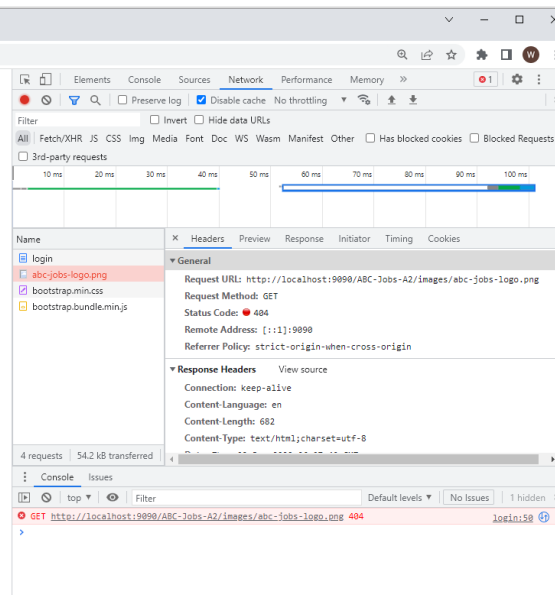
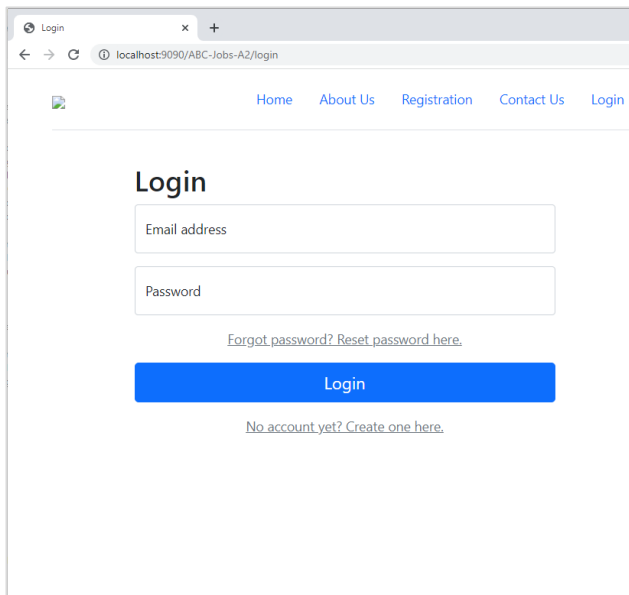
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Due to typo error, the Persistence provider cannot be connected.  
Update the following line in JpaConfig.java file resolved the problem.

# 6. Tool Screens

# LITHAN



Unable to load static resources

The solution is to add the annotation `@EnableWebMvc` to `WebMvcConfig` `@Configuration` classes in order to enable MVC Java configuration.

# 7. Classes - Entities

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## ☐ Entities

S. No.	Class Name	Description
1	User	User account information
2	Role	User role – member, administrator
3	User Profile	User profile information
4	Education	User education record
5	Experience	User work experience record
6	Skill	User skill record
7	Message	Message detail information
8	Thread	Discussion thread detail information
9	Job	Job posting record
10	JobApplication	Record of job application by member

## 8. Classes Developed

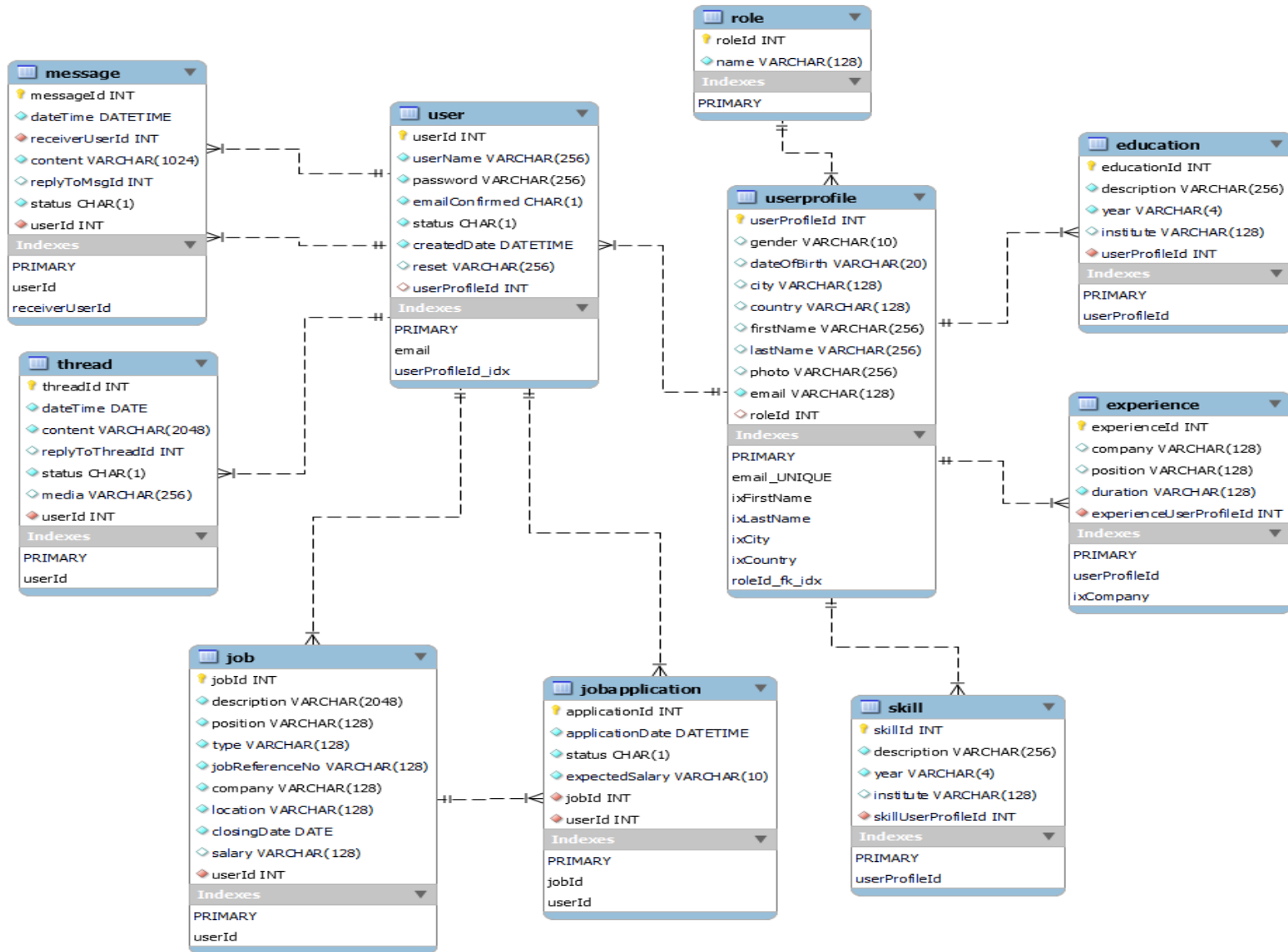
LITHAN

### ☐ Business Classes

S. No.	Class Name	Description
1	LoginService	A Spring service class to provide handling methods to process the login flow
2	UserService	A Spring service class to provide handling methods to handle the registration process, update of user profile including the education, experience and skill, handle the reset of password, and search for user.

# 9. Database Design

# LITHAN



# 10. UI Design

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Community Portal

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upgrading

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world

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Registration

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Email

Password

Confirm Password

By clicking the submit button below, I hereby agree to and accept  
the terms and conditions.

Submit

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Reset Password

Please input your email to receive the reset link.

Email

Submit

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# 11. Struts Includes

## ❑ Apache Struts Includes

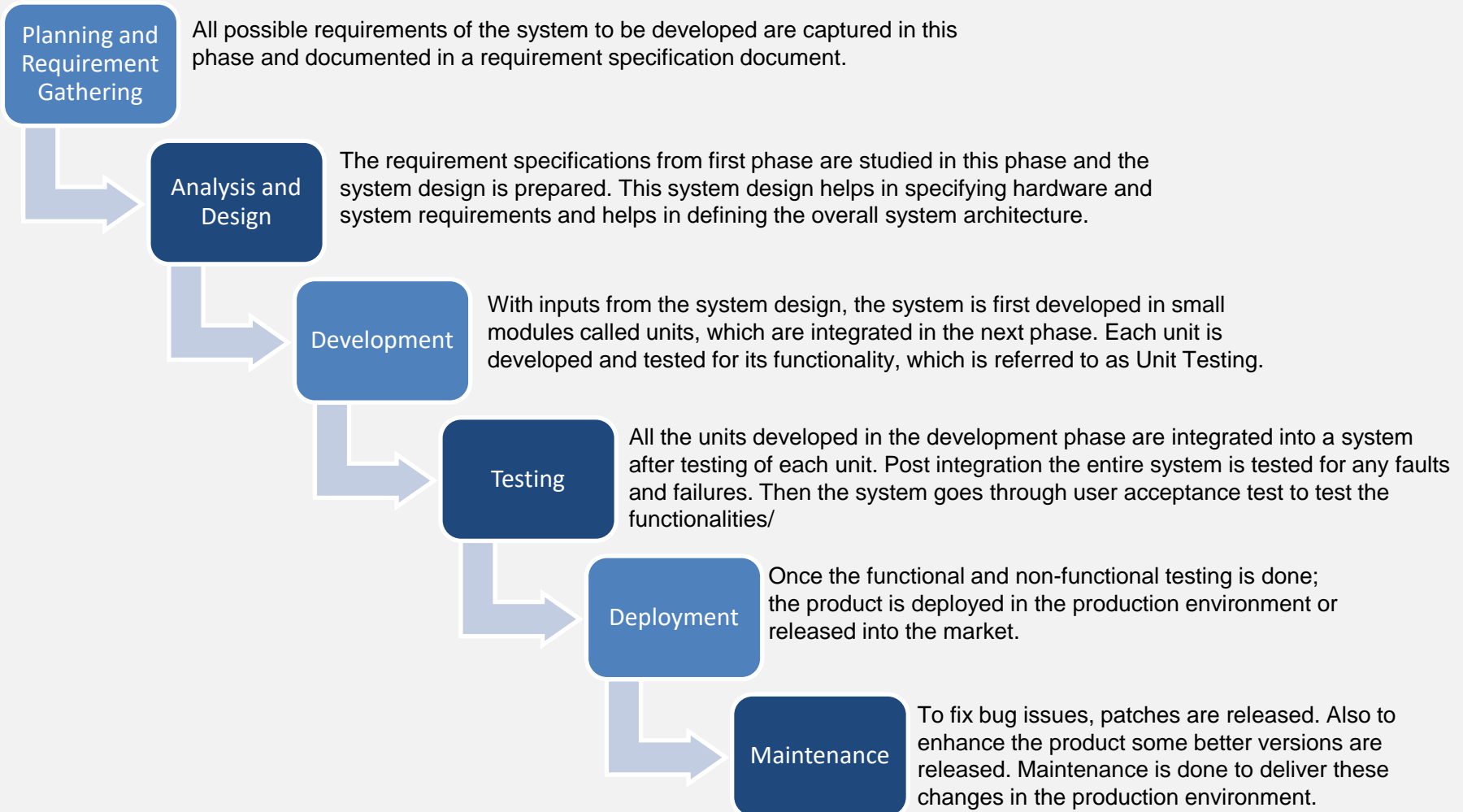
S. No.	Include	Purpose of Include
1	cdn.jsp	Bootstrap 5 CDN, common custom CSS styles
2	navbar.jsp	Navigational bar for pre-login menu
3	header.jsp	Navigational bar for post-login menu

```
1 <%@ page language="java" contentType="text/html; charset=ISO-8859-1" %>
2 <%@ pageEncoding="ISO-8859-1" isELIgnored="false" %>
3 <%@ taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>
4 <!DOCTYPE html>
5 <html>
6 <head>
7 <meta charset="ISO-8859-1" %>
8 <title>Search</title>
9 <jsp:include page="cdn.jsp" />
10 </head>
11 <body>
12 <div class="container">
13
14 <jsp:include page="header.jsp" />
15
16 <div class="container">
17 <main class="form">
18 <div id="content">
19 <h1>Search</h1>
20 <form method="POST" action="search" modelAttribute="searchProfile" class="needs-validation">
21 <p>Please input your search text</p>
22 <div class="form-floating mb-3">
23 <input type="text" class="form-control" id="searchText" name="searchText"
24
```

# 12. Software Development Methodology

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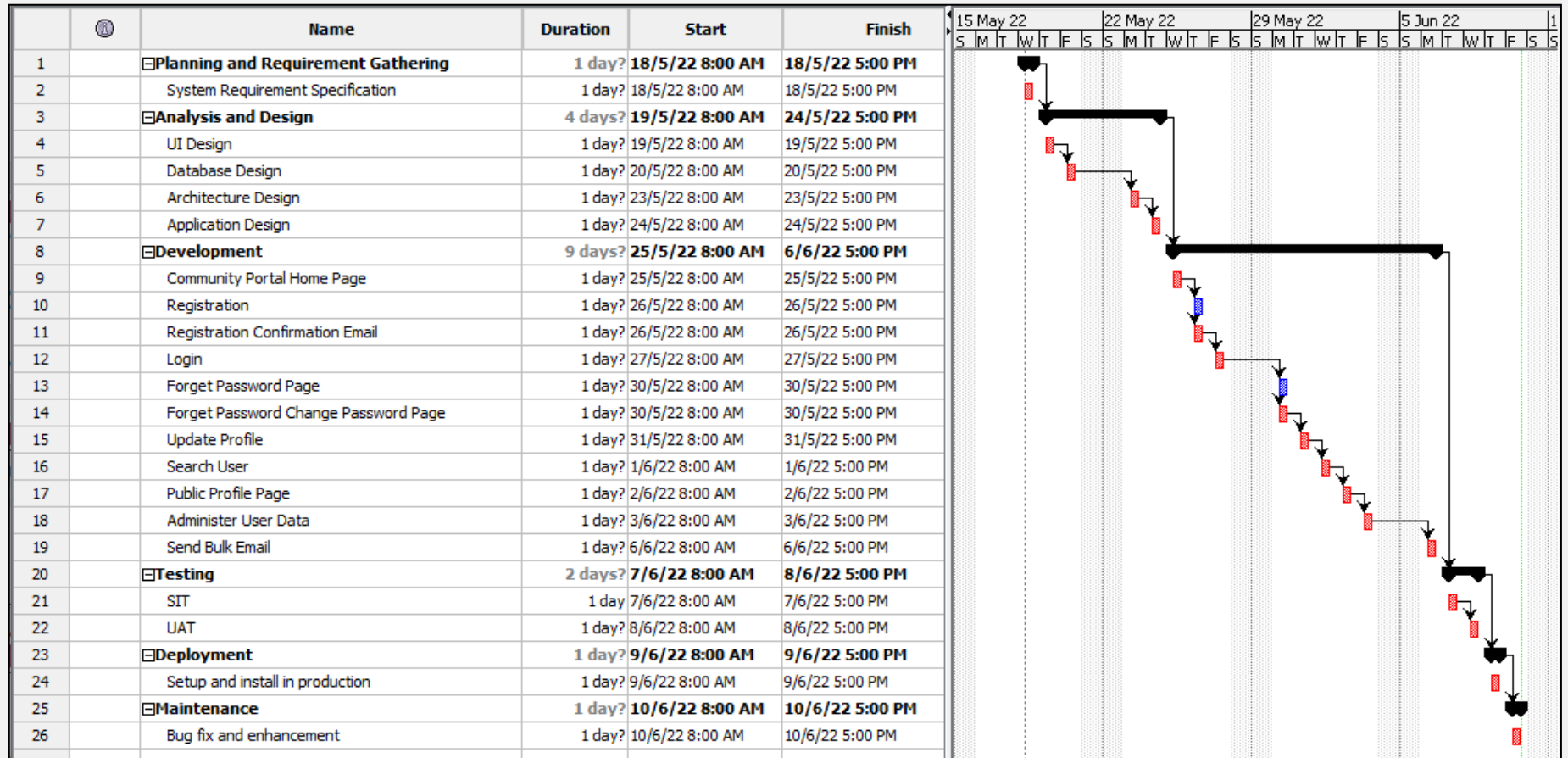
## ❑ Waterfall SDLC methodology





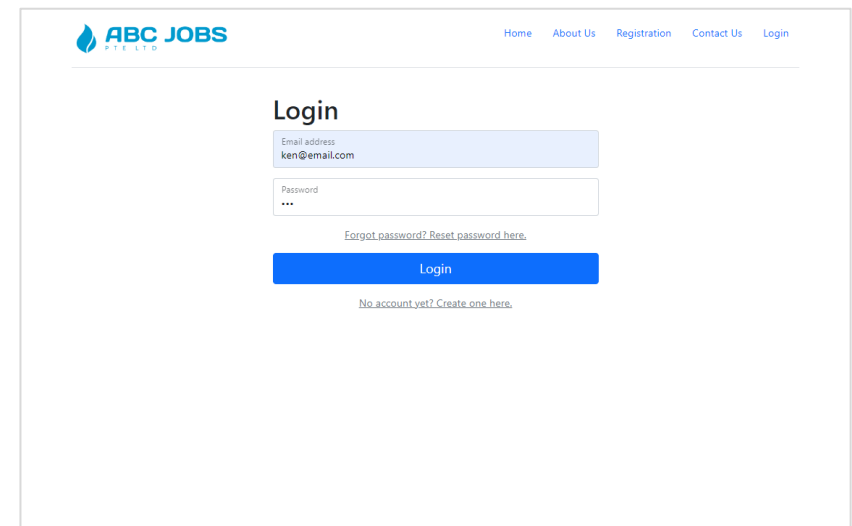
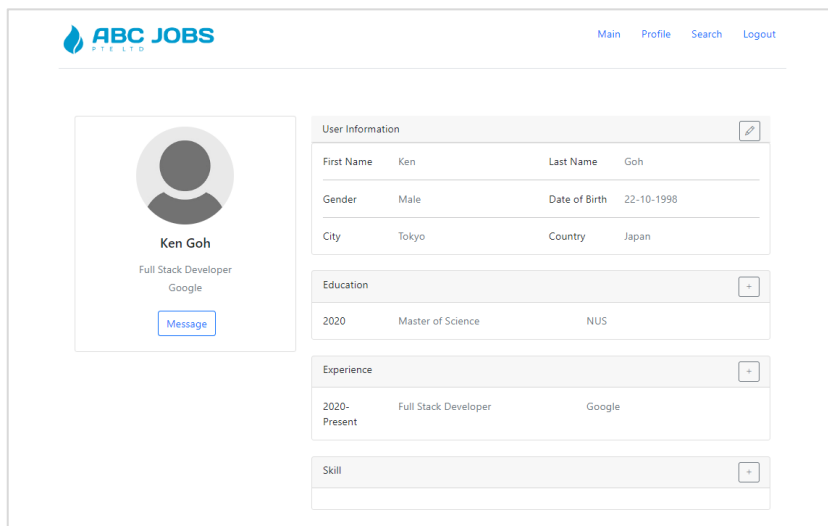
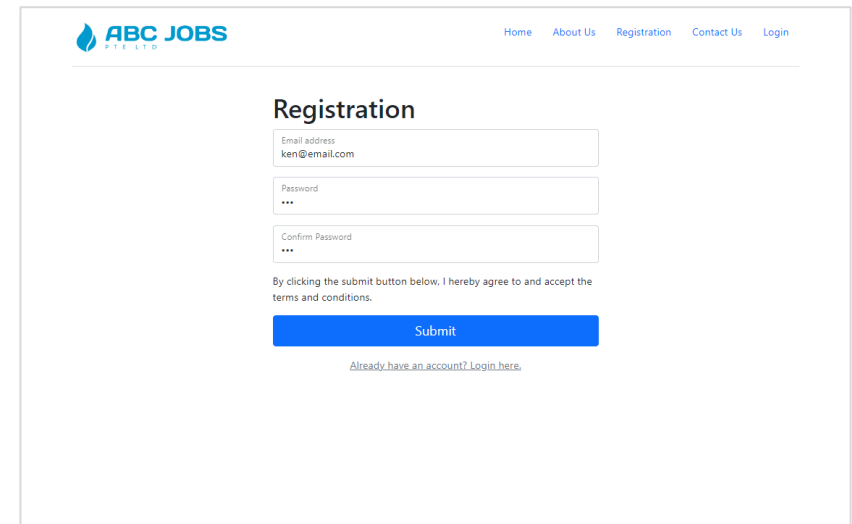
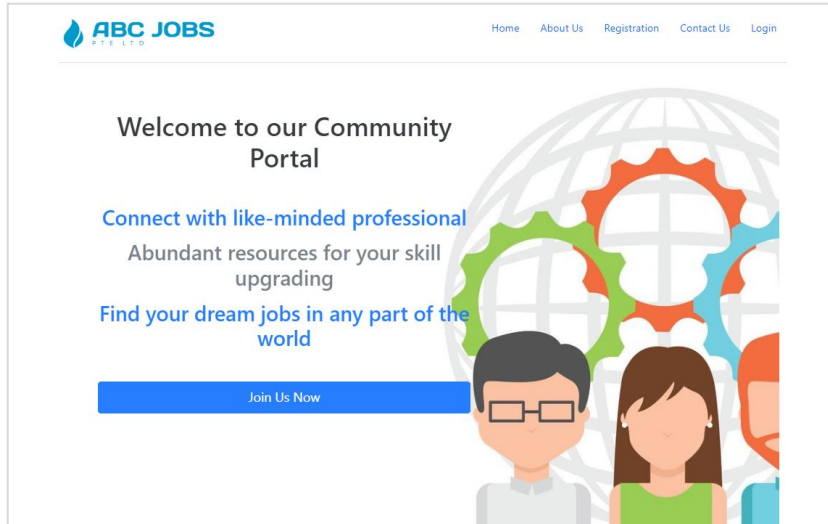
# 13. Project Plan

LITHAN




# 14. Application Screen Shots

# LITHAN



# 14. Application Screen Shots

# LITHAN

[Main](#) [Profile](#) [Search](#) [Logout](#)

## User Information

First Name  
Ken

Last Name  
Goh


Gender  
Male

Date of Birth  
22-10-1998

City  
Tokyo

Country  
Japan

Submit

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## New Education

Year of Achievement  
2020

Achievement Description  
Master of Science

Institute  
NUS

Submit

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## Search

Please input your search text

Searching for ...

Submit

#	Name	City	Country
124	<a href="#">Austin Kool</a>	Singapore	Singapore
125	<a href="#">Monica Goh</a>	Singapore	Singapore
127	<a href="#">John Kool</a>	Singapore	Singapore

[Home](#) [About Us](#) [Registration](#) [Contact Us](#) [Login](#)

## Reset Password

Please input your email to receive the reset link.

Email address  
ken@email.com

Submit

# 15. Project Milestones & Tasks

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Project Task ID	Project Task Description	Project Milestone ID
1	Setup the Development Environment based on the Technical Development Environment	1
2	Power point Detailing the Business Process in the Proposed Application	1
3	Project Report detailing the Technical Design	1
4	Power Point Detailing the Project Plan	1
5	Develop the UI HTML standard pages (Based on Module 3 work)	2
6	Create common Struts Includes, Models, Views & Controllers	2
7	Develop Classes	2
8	Develop Struts Application	2

# 16. Project Milestones & Tasks

Project Task ID	Project Task Description	Project Milestone ID
9	Develop Test Cases	3
10	Develop Project Documentation	3
11	Develop User Manual	3

# 17. Milestone Feedback & Action taken

LITHAN

Project Milestone ID	Milestone Feedback received from Tutor / Learning Facilitator	Action Taken (Yes / No)
1	System Architecture diagram to include interactions between Client, Server and DB with Internet & Firewall	Yes
2	Activity diagrams to include the detail steps	Yes
	Revise and optimize the database design and the java code	Yes
3		

## 18. Modifications Made based On Feedback

LITHAN

### ☐ **Revise the database design and optimize the java code**

- ☐ Remove the ResetPassword table
- ☐ Include reset field in User table
- ☐ Include roleId field in UserProfile table
- ☐ Bypass org.hibernate.loader.MultipleBagFetchException: cannot simultaneously fetch multiple bags
- ☐ Remove the @OneToMany mapping between UserProfile and Education
- ☐ Remove the @OneToMany mapping between UserProfile and Experience
- ☐ Keep @OneToMany mapping between UserProfile and Skill

# 19. Project Results

## List of Pages

- src
  - main
    - java
    - resources
    - webapp
      - resources
        - images
          - abc-jobs-logo.png
          - favicon.ico
          - home-bg.jpg
          - monica.jpg
          - user.jpg
  - WEB-INF
    - pages
      - addEducation.jsp
      - addExperience.jsp
      - addSkill.jsp
      - cdn.jsp
      - header.jsp
      - home.jsp
      - index.jsp
      - login.jsp
      - mainPage.jsp
      - navbar.jsp
      - register.jsp
      - registerConfirmation.jsp
      - resetPassword.jsp
      - resetPasswordConfirmation.jsp
      - search.jsp
      - showProfile.jsp
      - showPublicProfile.jsp
      - updateEducation.jsp
      - updateProfile.jsp
      - updateUserInfo.jsp
- web.xml



C:\eclipse-abc-jobs\ABC-Jobs-WDF\src\main\webapp\WEB-INF\pages

Quick access

OneDrive

This PC

Network

Name

Date modified

Type

addEducation.jsp	10/6/2022 11:15 AM	JSP File
addExperience.jsp	10/6/2022 11:21 AM	JSP File
addSkill.jsp	10/6/2022 11:22 AM	JSP File
cdn.jsp	10/6/2022 3:29 PM	JSP File
header.jsp	9/6/2022 11:08 PM	JSP File
home.jsp	8/6/2022 11:23 PM	JSP File
index.jsp	31/5/2022 12:40 PM	JSP File
login.jsp	9/6/2022 1:08 PM	JSP File
mainPage.jsp	10/6/2022 3:44 PM	JSP File
navbar.jsp	3/6/2022 12:11 PM	JSP File
register.jsp	9/6/2022 3:44 PM	JSP File
registerConfirmation.jsp	3/6/2022 9:06 AM	JSP File
resetPassword.jsp	8/6/2022 9:57 PM	JSP File
resetPasswordConfirmation.jsp	3/6/2022 8:55 AM	JSP File
search.jsp	10/6/2022 3:31 PM	JSP File

20 items



## 20. Proposed Improvements

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☐ List of Improvements

☐ Alert Notification



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### Main Page

Hi there, you are logged in using ken@email.com

☐ Spring Security