

# Project Report

Product Name	Plan, Schedule, Test Community Portal
Qualification Name (ITSF)	Advanced Certificate in Software Applications (Development and Deployment)
Product Name	NICF-Capstone Project using Java
Module Name (ITSF)	NICF-Capstone Project using Java

Student name		Assessor name	
WeeChong, Teo			
Date issued	Completion date		Submitted on
16 June 2022	14 July 2022		14 July 2022

Project title	Design, Develop, Implement & Document Community Portal Website
---------------	--

Learner declaration	
I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.	
Student signature:	Date:

# Content

1. Project background
2. Project Objectives
3. Project Requirement Specifications
4. Task 1
5. Task 2
6. Task 3
7. Task 4
8. Task 5
9. Task 6

# 1 Project Background

Over the years, ABC Job Center has helped millions of people find jobs and has equipped hundreds of thousands of employers with the talent they need.

As an industry leader, ABC Job Center works with companies big and small, providing cutting-edge solutions for everything from recruiting to employment screening and human capital management.

## 2 Project Objectives

ABC Jobs Pte Ltd wants to develop a community portal for Software Developers, similar to LinkedIn.com.

Users will be able to register in the portal using the Registration Page. Users of the portal can search for other users using various parameters such as First Name, Last Name, Company Name, City & Country. Users will be able to view the Public Profile of users after searching them. The portal allows users to login, request for forgotten password and update their profile information.

The project scope is to plan the testing, test script preparation, and execution of the test cases.

## 3 Project Requirement Specification

### 3.1 Project Requirement

The requirement of the project is to design a Community Portal Similar to LinkedIn.com. Users will be able to register in the portal using the Registration Page. Users of the portal can search for other users using various parameters such as First Name, Last Name, Company Name, City & Country. Users will be able to view the Public Profile of users after searching them. The portal allows users to login, request for forgotten password and update their profile information

The overview of the project is as below.

There are 2 types of users in this Community portal. They are

1. Software Programmer
2. Administrator

Software Programmer should be able to perform following functions in the portal

1. Allow the programmers to register in the portal, show a thank you page & send a registration confirmation email.
2. Search & Find Other Programmers after login and view their profile.
3. Provide Login Page
4. Provide password retrieval functionality.
5. Update their Profile after logging in.
6. Send Messages to Each Other on the Portal
7. Create Threads & Post Replies to a Thread
8. Post Job Opportunities in the Portal

Administrator should be able to perform following functions in the portal

1. Administer user data.

2. Send bulk email inviting programmers to register on the community portal

In the project, there are 4 types of testing should be conducted.

Unit Testing – check individual unit of module are working properly before integrating them together.

Integration Testing – Individual software modules are combined and tested as a group.

Usability Testing – To understand the overall user experience and to identify friction points that prevent users from completing tasks.

Cross Browser testing - To check whether the software is capable of running on different browsers, operating systems, mobile devices. The goal of the company is to get a good user experience regardless of those devices.

## 4 Task 1

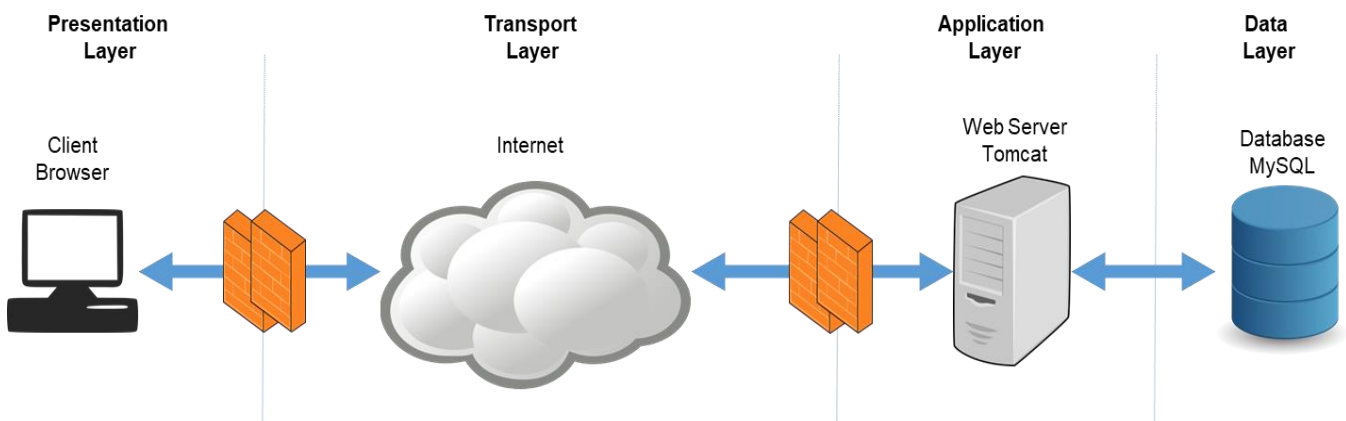
### Task Statement:

1. Write a brief requirement specification for the Community Portal.
2. Include it as part of the Project Report

### Solution:

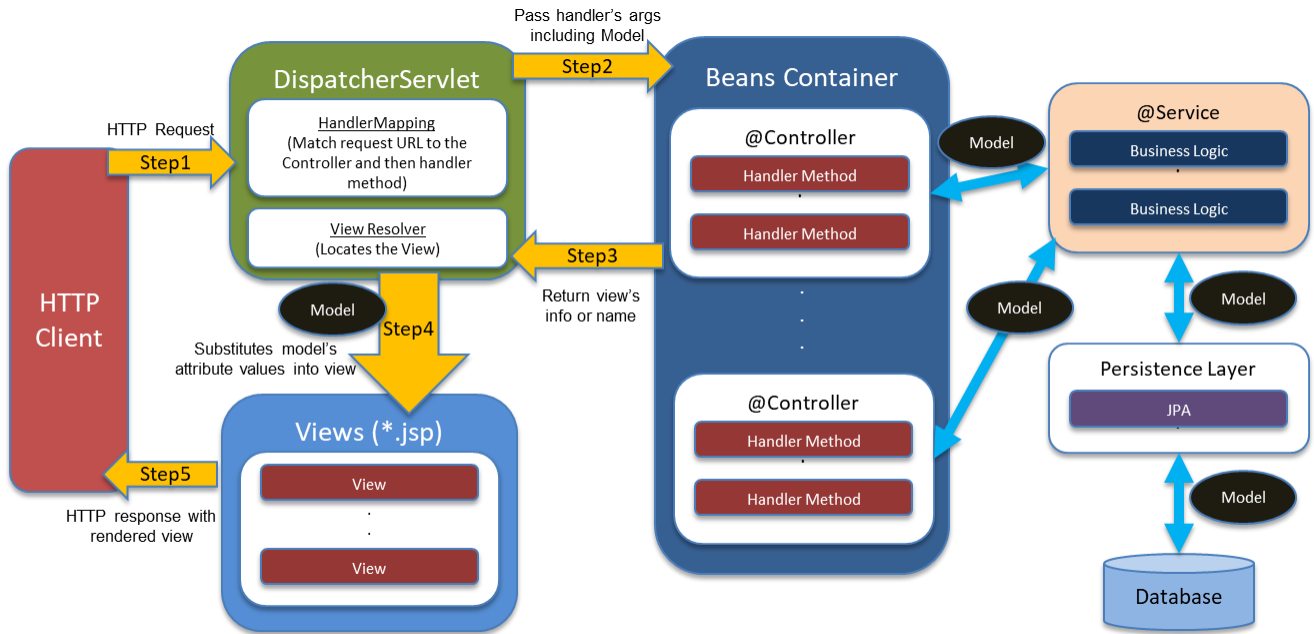
#### 4.1 Architecture of the System

##### 4.1.1 System Architecture



The user will use a browser to connect to the ABC Jobs Pte Ltd Community Portal via the internet. The Community Portal will be hosted in a web server with a database connected.

### 4.1.2 Application Architecture



The application architecture is based on the concept of the Front Controller as in the typical Spring Model View Controller architecture. The DispatcherServlet plays the role of the Front Controller in the architecture.

The request comes in from the HTTP client. The DispatcherServlet will pass the request to the appropriate handler method according to the request mapping. The controller uses the service controllers to perform business logics which interact with the database via the JPA persistence layer. The controller will return the view name to the DispatcherServlet who will return the rendered view via the View Resolver.

## 4.2 System

Two modules are to be developed in this project. The two modules are

1. Community Portal Module – This is a public module whereby the general public can access.
2. Administrative Module – This is a restricted module whereby only the administrator can access to perform administrative functions.

### 4.2.1 Community Portal Module

The table shows the pages in the community portal module where the software developers can access.

S/N	Page	Description	Page Type
1	Community Portal Home Page	This is the landing page	
2	Registration Page	New user register through this page	Create
3	Registration Confirmation Page	A confirmation page for successful registration	View
4	Login Page	This page allows registered user to login	View
5	Forget Password Page	This page allows user to request to reset his/her password	Edit
6	Reset Password Confirmation Page	This page shows a message to inform that a reset link has been sent	View

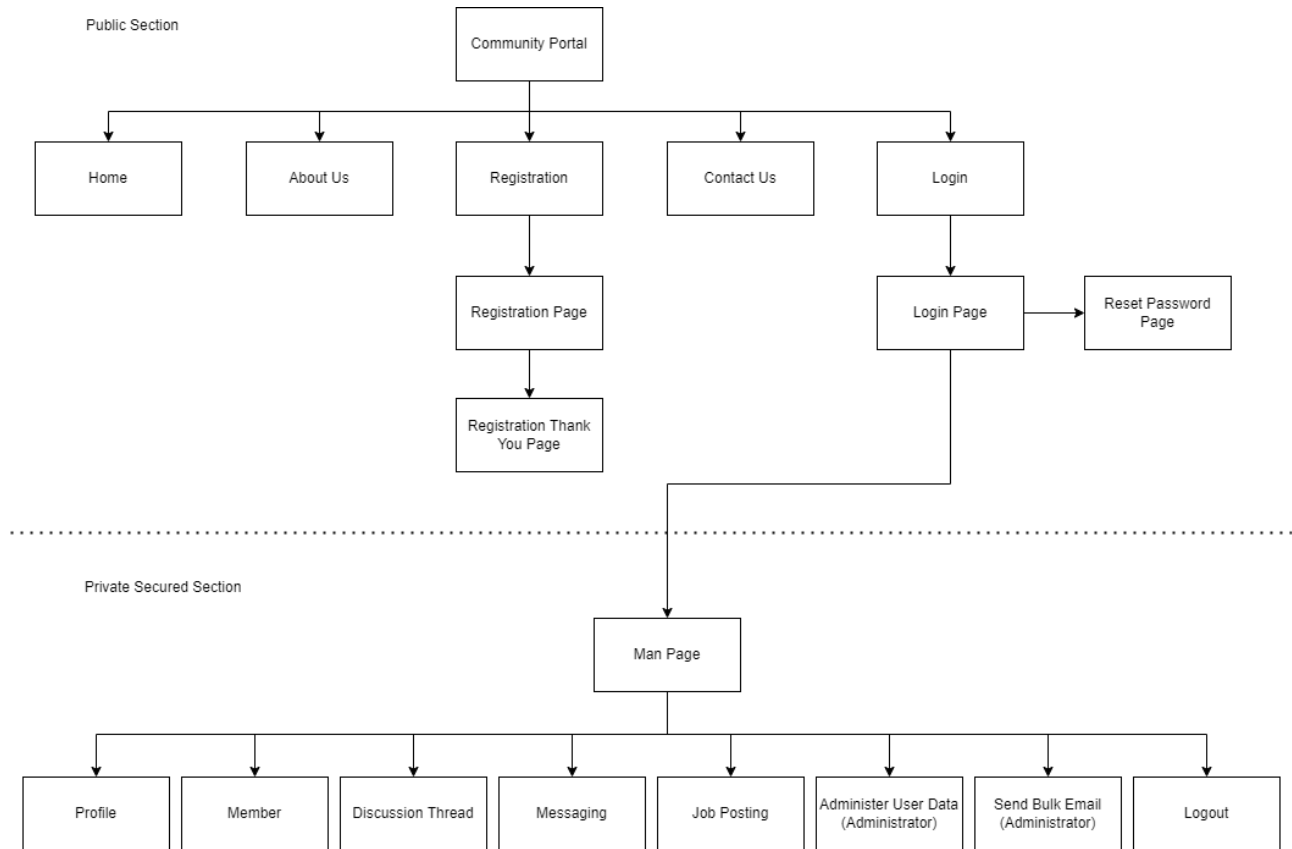
S/N	Page	Description	Page Type
7	Forget Password Change Password Page	This page allows user to change password from the reset link email	Edit
8	Update Profile Page	This page allows user to update his/her profile information	Create for new profile Edit for update profile
9	Search Users Page	A function to allow login user to search for other registered members	View
10	List Search Results	The result for the search for registered members	View
11	Public Profile Page	This page shows the public profile information of a selected registered member	View
12	Send Message	Send a message to another member	Create
13	Read Message	Read a message from a member	View
14	List Message Board (Thread)	List the thread discussions	View
15	Post A Thread	Post a thread discussion topic	Create
16	Read A Thread	Read a thread discussion topic	View
17	Post A Job	Post a new job posting	Create
18	Apply A Job	Apply a job from the list of job postings	Create
19	List Job Opportunities and Responses	Display the list of job postings and the number of applicants	View

#### 4.2.2 Administrative Module

The table shows the pages in the administrative module where the administrator is given access.

S/N	Page	Description	Page Type
1	Administer User Data	Administrative function to list user account information and to request to reset user account password.	View, Create
2	Send Bulk Email	Import a list of emails and use them to send invitations	Create, View

### 4.2.3 Sitemap



## 4.3 Technical Environment Requirements

### 1. Software

- MySQL Relational Database System
- MySQL Server 8.0.29
- MySQL Workbench 8.0.29
- phpMyAdmin
- JDK 1.8
- Apache Tomcat Server 9.0.59
- Spring Framework 5.x
- Microsoft Word
- Microsoft PowerPoint
- Programming Languages: HTML, CSS, JavaScript, jQuery, Structured Query Language

### 2. Hardware

- Client (User) – Windows 10 and above. Mac 10.11 and above
- Server – Windows Server, MySQL Server
- Firewall with port numbers 8080, 3306 accessible

## 4.4 System Integration Requirements

### 4.4.1 Database

JDBC Connector 8.0.29 - Connection to MySQL database using JDBC connections.

#### **4.4.2 Mail Server**

Javax Mail API - Sending of registration confirmation email, reset password link email and bulk invitation emails require a mail server.

### **4.5 Portability Requirements**

#### **4.5.1 Server**

The backend server code is written in Java hosted in Tomcat on Windows platform. The code can be ported to Linux platform that provide the same stack of server software.

#### **4.5.2 Client**

The front end runs on browser. Therefore, it must be compatible with different browser applications not limited to Chrome, Safari, Edge and Firefox browsers. All devices – Desktop, Tablets or Mobile that can run the browser application will be able to access the system.

### **4.6 Maintainability Requirements**

#### **4.6.1 Database**

Backup script to back up the database every 6 hours. Restore script to restore the database in event of failure.

Database maintenance must finish within 3 hours so data is available by 8 a.m. local time after an overnight update.

#### **4.6.2 Application**

Application update must finish within 3 hours so system is available by 8 a.m. local time after an overnight update.

### **4.7 Performance Requirements**

System must be able to scale when traffic volume increase with up to 1000 concurrent users. System must be available 24/7 with at least 99.9% uptime.

Each page must load within 3 seconds.

### **4.8 Security Requirements**

#### **4.8.1 Client-Server Communication**

For secured communication between the client and server, we will use HTTPS over SSL/TLS.

#### **4.8.2 Spring Security**

Spring Security is a framework that focuses on providing both authentication and authorization to Java applications.

In order to access the system, login is required. Spring Security will provide the authentication feature.

The permission to access the application function is restricted by roles – Member or Administrator. This will be handled by Spring authorization feature.



### 4.8.3 Password

Passwords should not be stored in the clear in the database. Passwords are stored with irreversible cryptographic functions.

Request to reset password are to be time constraint. Reset request that has expired should not proceed with the password change.

### 4.8.4 Access Control

Below is a table showing the security access for different kind of users

S/N	Page	Visitor	Registered Member	Administrator
1	Community Portal Home Page	✓	✓	✓
2	Registration Page	✓	✓	✓
3	Registration Confirmation Page	✓	✓	✓
4	Login Page	✓	✓	✓
5	Forget Password Page	✓	✓	✓
6	Forget Password Change Password Page	✓	✓	✓
7	Update Profile Page		✓	
8	Search Users Page		✓	
9	List Search Results		✓	
10	Public Profile Page		✓	
11	Send Message		✓	
12	Read Message		✓	
13	List Message Board (Thread)		✓	
14	Post A Thread		✓	
15	Read A Thread		✓	
16	Post A Job		✓	
17	Apply A Job		✓	
18	List Job Opportunities and Responses		✓	
19	Administer User Data			✓
20	Send Bulk Email			✓

## 4.9 Database Requirement Specification

#### 4.9.1 Entities

##### Community Portal User

The table shows the attributes required to perform the required functionalities of the community portal. The attributes are then used to associate with the required entities.

Functionalities / Pages	Attributes Required	Associated Entities
Registration	email password	User
Registration Confirmation Email	email	User
Login	email password	User
	roleId description	Role
Forget Password Page	email	User
	email expiryTimeStamp	ResetPassword
Forget Password Change Password Page	email password	User
	email expiryTimeStamp	ResetPassword
Update Profile	firstName lastName gender dateOfBirth photo city country	User Profile
	year description institute	Education
	startYear duration position company	Experience
	year description institute	Skill
Search User	search by firstName, lastName, city, country	UserProfile
	search by company	Experience
Public Profile Page	firstName lastName gender dateOfBirth photo city country	UserProfile

	year description institute	Education
	startYear duration position company	Experience
	year description institute	Skill
Send Messages	dateTime senderUserId receiverUserId content replyToMsgId status	Message
Read Messages	dateTime senderUserId receiverUserId content replyToMsgId status	Message
List Message Board (Thread discussion)	dateTime userId content media replyToThreadId status	Thread
Post A Thread	dateTime userId content media replyToThreadId status	Thread
Read A Thread	dateTime userId content media replyToThreadId status	Thread
Post A Job	postUserId jobReferenceNo salary description position type company location closingDate	Job
Apply A Job	jobId salary description position type company location closingDate	Job
	applicationId applicantUserId applicationDate jobId expectedSalary status	JobApplication

List Job Opportunities & Responses	postedUserId jobReferenceNo salary description position type company location closingDate	Job
	applicationId applicantUserId applicationDate jobId expectedSalary status	JobApplication

## Community Portal Administrator

The table shows the attributes required to perform the required administrative functionalities of the community portal. The attributes are then used to associate with the required entities.

Functionalities / Pages	Entity	Attributes
Administer User Data	User	userId email password createdDate emailConfirmed status
	ResetPassword	email expiryTimeStamp
Send Bulk Email	User	email password status

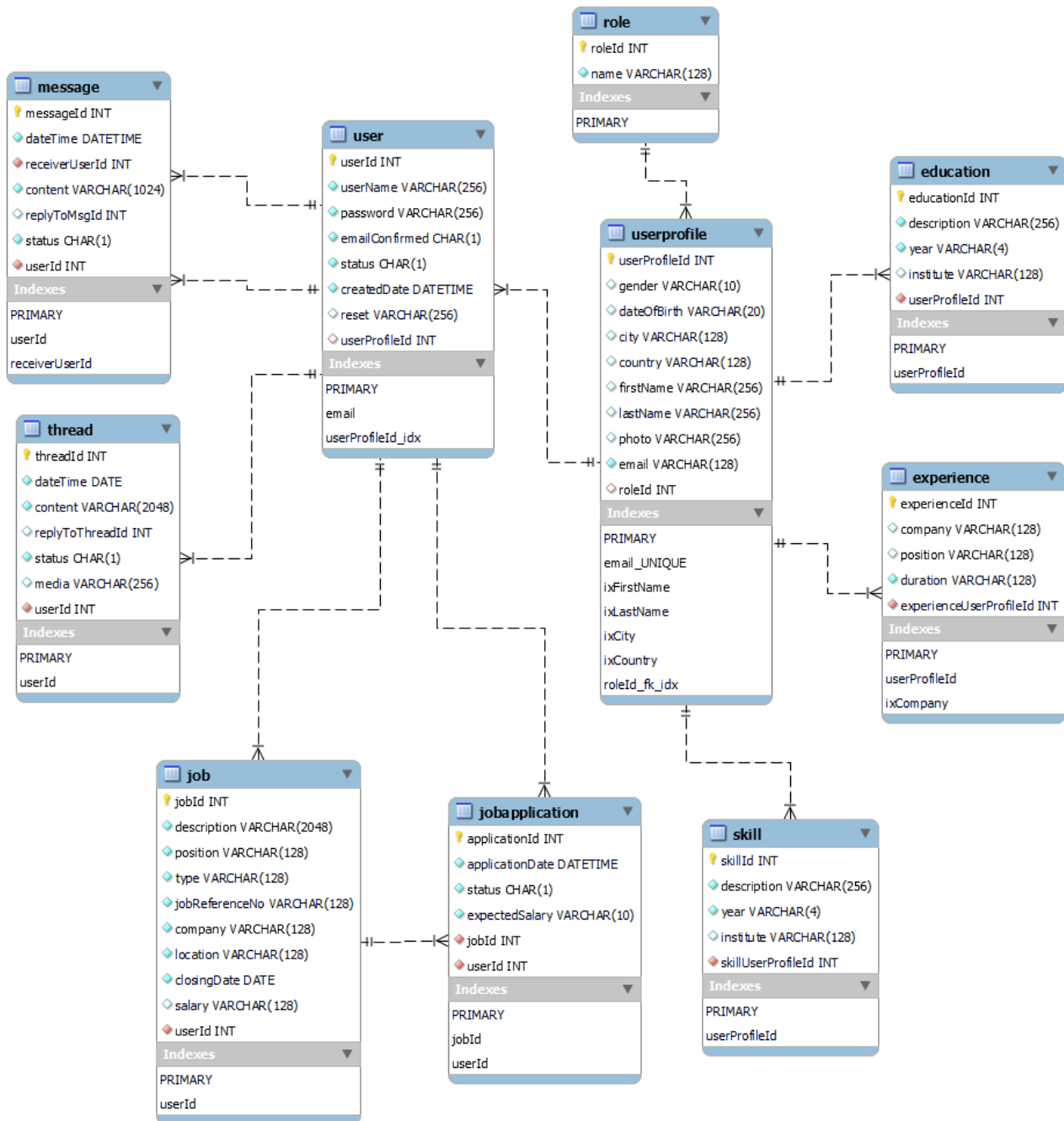
### 4.9.2 Entities and Attributes

The table shows the required entities and their attributes.

Entities	Attributes	Comments
User	userId – unique identification for user email – email of user password – password of user createdDate – date created emailConfirmed – flag to indicate if user has confirmed his/her email status – status of user account such as active, suspended, etc	User account information
Role	roleId – unique identification for role description – description of role such as member, administrator, etc	User role – member, administrator
ResetPassword	resetId – unique identification for password reset request email – email of user whose password to reset expiryTimeStamp – time stamp of when this request expires	Record to store reset password request

User Profile	userProfileId – unique identification for user profile firstName – first name of user lastName – last name of user gender – gender of user dateOfBirth – date of birth of user photo – photo of the user city – city where the user is located country – country where the user is located	User profile information
Education	educationId – unique identification for education record year – year of achievement description – description of the achieved education institute – education institute where education is achieved	User education record
Experience	experienceId – unique identification for work experience record startYear – start year of the work experience duration – duration of the work experience position – position of the work experience company – company of the work experience	User work experience record
Skill	skillId – unique identification for skill record year – year when the skill was obtained description – description of the skill institute – institute where the skill was obtained	User skill record
Message	messageId – unique identification for the message dateTime – time stamp of the message senderUserId – user Id of the sender receiverUserId – user Id of the receiver content – content of the message replyToMsgId – message Id to reply to status – status of the message	Message detail information
Thread	threadId – unique identification for the thread discussion record dateTime – time stamp of the record userId – user Id who create or reply the thread discussion content – content of the thread discussion media – media content such as an image or video replyToThreadId – thread Id to reply to status – status of the thread	Discussion thread detail information
Job	jobId – unique identification for the job posting record PostedUserId – user Id of the creator of the job posting jobReferenceNo – job reference number salary – salary of the job description – description of the job scope, required skills, etc position – job title type – job type such as contract, permanent, etc company – hiring company location – location of work place closingDate – closing date of the job posting	Job posting record
JobApplication	applicationId – unique identification for the job application record applicantUserId – user Id of the applicant applicationDate – date of application jobId – job Id of the applied job expectedSalary – expected salary status – status of the job application	Record of job application by member

### 4.9.3 EERD



## 4.10 Testing Requirement Specification

### 4.10.1 Features to be tested

S/N	Page	Description
1	Registration Page	New user register through this page
2	Registration Confirmation Page	A confirmation page for successful registration
3	Login Page	This page allows registered user to login
4	Forget Password Page	This page allows user to request to reset his/her password
5	Update Profile Page	This page allows user to update his/her profile information

S/N	Page	Description
6	Search Users Page	A function to allow login user to search for other registered members
7	List Search Results	The result for the search for registered members
8	Public Profile Page	This page shows the public profile information of a selected registered member

#### 4.10.2 Features not to be tested

S/N	Page	Description
1	Forget Password Change Password Page	This page allows user to change password from the reset link email
2	Send Message	Send a message to another member
3	Read Message	Read a message from a member
4	List Message Board (Thread)	List the thread discussions
5	Post A Thread	Post a thread discussion topic
6	Read A Thread	Read a thread discussion topic
7	Post A Job	Post a new job posting
8	Apply A Job	Apply a job from the list of job postings
9	List Job Opportunities and Responses	Display the list of job postings and the number of applicants
10	Administer User Data	Administrative function to list user account information and to request to reset user account password.
11	Send Bulk Email	Import a list of emails and use them to send invitations

For ABC Jobs Pte Ltd – Community Portal project, we will perform Unit Test and Integration Test to test the functionalities, and Cross Browser Test and Usability Test to ensure good user experience.

## 5 Task 2

### Task Statement:

1. Briefly explain different types of testing, how they will help to create a better system.
2. Include it as part of Project Presentation.

### Solution:

There are two broad categories of types of testing – Functional test types and non-functional test types.

Functional testing is a type of software testing in which the system is tested against the functional requirements and specifications. Functional testing ensures that the requirements or specifications are properly satisfied by the application. This type of testing is particularly concerned with the result of processing. It focuses on simulation of actual system usage but does not develop any system structure assumptions.

It is basically defined as a type of testing which verifies that each function of the software application works in conformance with the requirement and specification. This testing is not concerned about the source code of the application. Each functionality of the software application is tested by providing appropriate test input, expecting the output and comparing the actual output with the expected output.

Non-functional testing is a type of software testing that is performed to verify the non-functional requirements of the application. It verifies whether the behaviour of the system is as per the requirement or not. It tests all the aspects which are not tested in functional testing.

Non-functional testing is defined as a type of software testing to check non-functional aspects of a software application. It is designed to test the readiness of a system as per non-functional parameters which are never addressed by functional testing. Non-functional testing is as important as functional testing.

Below is the difference between functional and non-functional testing:

Functional Testing	Non-functional Testing
It verifies the operations and actions of an application.	It verifies the behavior of an application.
It is based on requirements of customer.	It is based on expectations of customer.
It helps to enhance the behavior of the application.	It helps to improve the performance of the application.
Functional testing is easy to execute manually.	It is hard to execute non-functional testing manually.
It tests what the product does.	It describes how the product does.
Functional testing is based on the business requirement.	Non-functional testing is based on the performance requirement.

Below is the list of some common types of Software Testing.

Functional Testing Types	Non-functional Testing Types
Unit testing Integration testing System testing Sanity testing Smoke testing Interface testing Regression testing Beta/Acceptance testing	Performance Testing Load testing Stress testing Volume testing Security testing Compatibility testing Install testing Recovery testing Reliability testing Usability testing Compliance testing Localization testing

## 5.1 Unit Testing

Unit testing is usually done by developers instead of testers. The purpose is to ensure functional correctness and completeness of individual program units.

With unit testing, the speed of development will be faster. If you perform developer tests instead of unit tests, then you need to set breakpoints, fire up the GUI, and provide inputs. But if you do unit test, you write the code, write the test, and then run the test. You don't need to provide the inputs or fire up the GUI.



In the end, you have a more reliable code. It takes less time to find and fix the bugs during unit testing than in System or Acceptance testing.

Unit tests are easier to debug as only the latest changes need to be debugged if the test fails, whereas if you test on a higher level, then you will have to scan the changes made within weeks or months.

In addition, we can test a part of the project without waiting for others to be completed due to the modular nature of the unit test.

The only disadvantage with unit testing is that it's not possible to check all the execution paths and it cannot catch broad system errors or integration errors.

## **5.2 Integration Testing**

Integration testing is a level of software testing where individual units are combined and tested as a group. The purpose of this level of testing is to expose faults in the interaction between integrated units. Developers themselves or independent testers perform Integration Testing.

## **5.3 User Acceptance Testing**

This is the last phase of testing. The purpose to validate the end-to-end business flow meeting the functional requirements. UAT is performed by the intended users of the system or software.

The outcome of the test is that there must have no critical defects open and the business process works satisfactorily. The test is complete once the UAT is signed off with all stakeholders.

## **5.4 Stress Testing**

This is a non-functional test. The purpose is to test the stability & reliability of the system in order to determine the system robustness and error handling in heavy load conditions. This is to avoid system crash during extreme situations in the production environment.

## **5.5 Load Testing**

This test determines a system's performance under real-life load conditions. It will provide application behaviour when multiple users access it concurrently with the infrastructure resources.

## **5.6 Compatibility Testing**

Compatibility testing is to check whether the software is capable of running on different devices, platforms, operating systems etc. This test will be performed in the staging environment.

# **6 Task 3**

### **Task Statement:**

1. Propose relevant tests suitable for the Project Scenario
2. Include it as part of Project Presentation

### **Solution:**

For ABC Jobs Pte Ltd – Community Portal project, we will perform Unit Test and Integration Test to test the functionalities, and Cross Browser Test and Usability Test to ensure good user experience.

Test	Test Type	Objective
Unit Test	Functional Test	To ensure the smallest module or component of the system is behavior according to the specification. This is carried out by the developer.
Integration Test	Functional Test	Testing of a complete and fully integrated software product to validate the end-to-end business flow to meet the functional requirement. This test is performed in the staging environment where a QA team will be involved.
Usability Test	Non-functional Test	Usability tests to understand the overall user experience and to identify friction points that prevent users from completing tasks.
Cross Browser Test	Non-functional Test	Cross Browser testing is to check whether the software is capable of running on different browsers, operating systems, mobile devices. The goal of the company is to get a good user experience regardless of those devices.

## 6.1 Unit Testing

Unit testing is the first level of testing in software testing where individual components of a software are tested. It is done during the development of an application to check whether the individual unit or module of the application is working properly. It is done by the developers in the developer's environment.

### 6.1.1 Goals of Unit Testing

1. To isolate every section of code.
2. To make sure individual parts are correct.
3. To find bugs early in development cycle.
4. To save testing cost.
5. To allow developers to refactor or upgrade code at the later date.

### 6.1.2 Advantages of Unit Testing

1. It finds problems early in the development cycle. So it reduces the cost of testing. The cost of finding a bug earlier is considerably lower than the cost of finding it later.
2. It reduces defects when changing the existing functionality (Regression Testing)
3. It simplifies the debugging process. Debugging is the process of finding and resolving defects within a program that prevent correct operation of a software. When unit testing is implemented only the latest changes made in the code need to be debugged when a test fails.
4. it provides code documentation due to better coding standards and practices

Unit Testing is performed by using White Box Testing method. There are two types of Unit Testing – Manual & Automated.

### 6.1.3 Scope of test

We use JUnit 5 for Unit Testing to test the following units.

1. Login Service Class
2. User Service Class

## 6.2 Integration Testing

Integration Testing is a black box testing. Testing the fully integrated application is also called as an end-to-end scenario testing. To ensure that the software works in all intended target systems. Verify thorough testing of every input in the application to check for desired outputs.

### **6.2.1 Scope of test**

Functionalities to be tested are as follow.

1. Registration Page
2. Login Page
3. Forget Password Page
4. Search Users Page
5. List Search Results
6. Public Profile Page

## **6.3 Usability Test**

Usability testing is the process that evaluates how easy it is for end-users to use the website. It involves a group of test subjects performing specific tasks and giving feedback through interviews or questionnaires about the website's performance.

There are basic metrics that can be used for usability testing to plan necessary improvements on the website, such as user-friendliness and satisfaction, efficiency, and errors.

### **6.3.1 User-friendliness**

User-friendliness measures if people can understand the user interface and easily complete the tasks.

### **6.3.2 Efficiency**

Efficiency measures how quickly they can do it. The less amount of time they need to finish the tasks, the better the design is.

### **6.3.3 Errors**

User testers also help find small mistakes like spelling or punctuation issues that might have gone unnoticed. Additionally, they may also find broken links or elements that are not working as they should.

During the usability testing, it's also essential to keep track of how many mistakes the participants made.

### **6.3.4 User Satisfaction**

Even if the participants can complete the task without errors, they may still provide insights to help improve user satisfaction. For example, they may find the visual design, color scheme, or text fonts could be better placed or are difficult to understand.

### **6.3.5 Scope of test**

The following metrics for the usability test.

1. TOT – time on task
2. UER – user error rate %
3. TSR – task success rate
4. NPS – net promoter score
5. CSAT – customer satisfaction

The following functionalities will be measured for the usability test.

1. Registration
2. Login
3. Reset Password
4. Search
5. Update Profile

## 6.4 Cross Browser Testing

Cross browser testing is testing an application on different browsers, operating systems, mobile devices to see look and feel and performance.

This test is important as different users use different operating systems, different browsers, and different mobile devices. The goal is to give a good user experience regardless of those devices.

### 6.4.1 Scope of test

1. Check is the website loads on a browser
2. Check is the elements (such as buttons, forms, menu) visible
3. Check is the elements clickable on a page

For browser compatibility testing tools, we could use automated tools such as LambdaTest, a cross browser testing cloud. Using the Lambda tool, users can test the community portal website on 2000+ real browsers & OS devices. However, we will not use any third-party automated tool due to no project budget.

## 7 Task 4

### Task Statement:

1. Write briefly on optimal scheduling times for different tests
2. Prepare a schedule for execution of tests
3. Include it as part of Project Presentation.

### Solution:

### 7.1 Functional Points

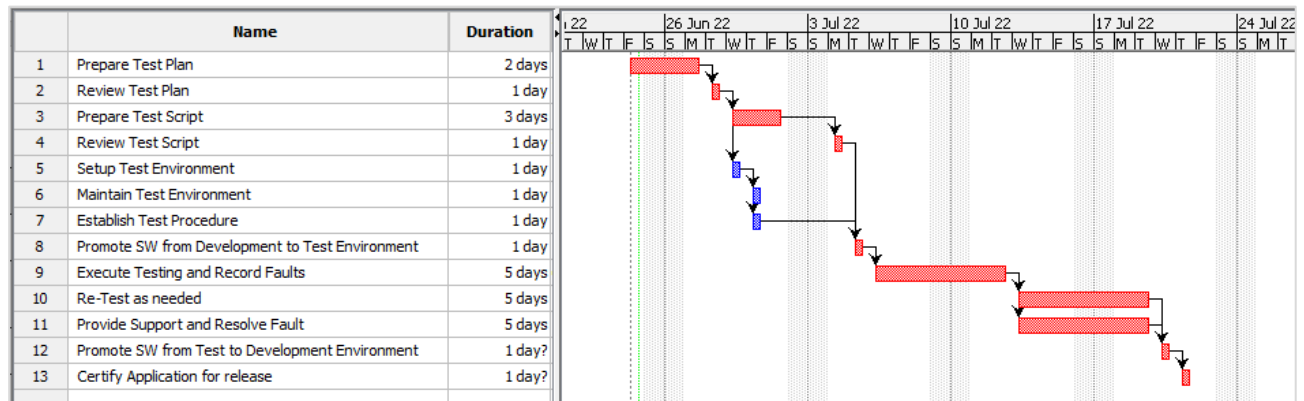
	Complexity	Weightage	Functional Points	Total (Weightage*Functional Points)
Registration	M	3	6	18
Login	S	1	3	3
Forget Password	S	1	4	4
Forget Password Change Password	S	1	2	2
Update Profile	M	3	8	24
Search Users	S	1	2	2
Public Profile	S	1	1	1

	Complexity	Weightage	Functional Points	Total (Weightage*Functional Points)
Send Message	S	1	2	2
Read Message	S	1	1	1
List Message Board (Thread)	S	1	1	1
Post A Thread	M	3	2	6
Read A Thread	S	1	1	1
Post A Job	S	1	1	1
Apply A Job	M	3	2	6
List Job Opportunities and Responses	M	3	1	3
		Total Functional Points		75
		Hour/Functional Point		0.5
		Total Hours		37.5
		Number of Hours/day		8
		Number of Days		4.6875

## 7.2 Schedule

S/N	Task	Resource	Estimate Effort (man-days)
1	Prepare Test Plan	Test Manager	2
2	Review Test Plan	Project Manager, Test Manager, Testers	1
3	Prepare Test Scripts	Testers	3
4	Review Test Scripts	Test Manager, Testers	1
5	Setup Test Environment	Developer, QA Team	1
6	Maintain Test Environment	QA Team	1
7	Establish Test Procedure	Testers, Developer, QA Team	1
8	Promote Software from Development to Test Environment	Developer, QA Team	1
9	Execute Testing and Record Faults	Testers	5
10	Re-execute Tests as needed	Testers	5
11	Provide Support and Resolve Faults	Developer, QA Team	5

S/N	Task	Resource	Estimate Effort (man-days)
12	Promote Software from Test to Development Environment	Developer, QA Team	1
13	Certify Application for release	QA Team	1
	Total		28



## 8 Task 5

### Task Statement:

1. Develop a Phase Test Plan for testing the application
2. Include it as part of Project Report

### Solution:

#### 8.1 Test Plan

The Test Plan is designed to prescribe the scope, approach, resources, and schedule of all testing activities of the project ABC Jobs Pte Ltd - Community Portal.

The plan identifies the items to be tested, the features to be tested, the types of testing to be performed, the personnel responsible for testing, the resources and schedule required to complete testing, and the risks associated with the plan.

#### 8.2 Test Strategy

The test approach will be as follows.

1. Unit Testing
2. Integration Testing
3. Cross Browser Testing
4. Usability Testing

Unit Testing will be performed by the developer during the development stage. JUnit5 will be used for Unit Testing.

Cross Browser Testing ideally should be done as soon as possible, whenever any page is ready to start testing it on different browsers. This will increase the efforts even though it helps to resolve defects at early phases of the software testing life cycle.

However, for ABC Jobs Pte Ltd – Community Portal, Cross Browser Testing will be done together with the Integration Testing. The same test scenarios will be executed on selected browsers – Chrome and Edge manually due to no budget for automated test tools.

Any browser compatibility issues encountered after release will be handled as part of the Problem Management.

Usability Testing will be performed after the User Acceptance Testing to gather user experience feedback. Any issues and feedback will be handled as part of the Problem Management.

The remaining sections of this document describe the test scope, test objective, criteria etc for Integration Testing.

### 8.2.1 Scope of Testing

#### 8.2.1.1 Features to be tested

The following features of ABC Jobs Pte Ltd – Community Portal which were defined in the functional requirement specification are to be tested.

Functionalities of the community portal

S/N	Page	Description
1	Registration Page	New user register through this page
2	Login Page	This page allows registered user to login
3	Forget Password Page	This page allows user to request to reset his/her password
4	Update Profile Page	This page allows user to update his/her profile information
5	Search Users Page	A function to allow login user to search for other registered members
6	List Search Results	The result for the search for registered members
7	Public Profile Page	This page shows the public profile information of a selected registered member

#### 8.2.1.2 Features not to be tested

These features are not to be tested due to time constraints.

S/N	Page	Description
1	Forget Password Change Password Page	This page allows user to change password from the reset link email
2	Send Message	Send a message to another member
3	Read Message	Read a message from a member
4	List Message Board (Thread)	List the thread discussions

S/N	Page	Description
5	Post A Thread	Post a thread discussion topic
6	Read A Thread	Read a thread discussion topic
7	Post A Job	Post a new job posting
8	Apply A Job	Apply a job from the list of job postings
9	List Job Opportunities and Responses	Display the list of job postings and the number of applicants
10	Administer User Data	Administrative function to list user account information and to request to reset user account password.
11	Send Bulk Email	Import a list of emails and use them to send invitations

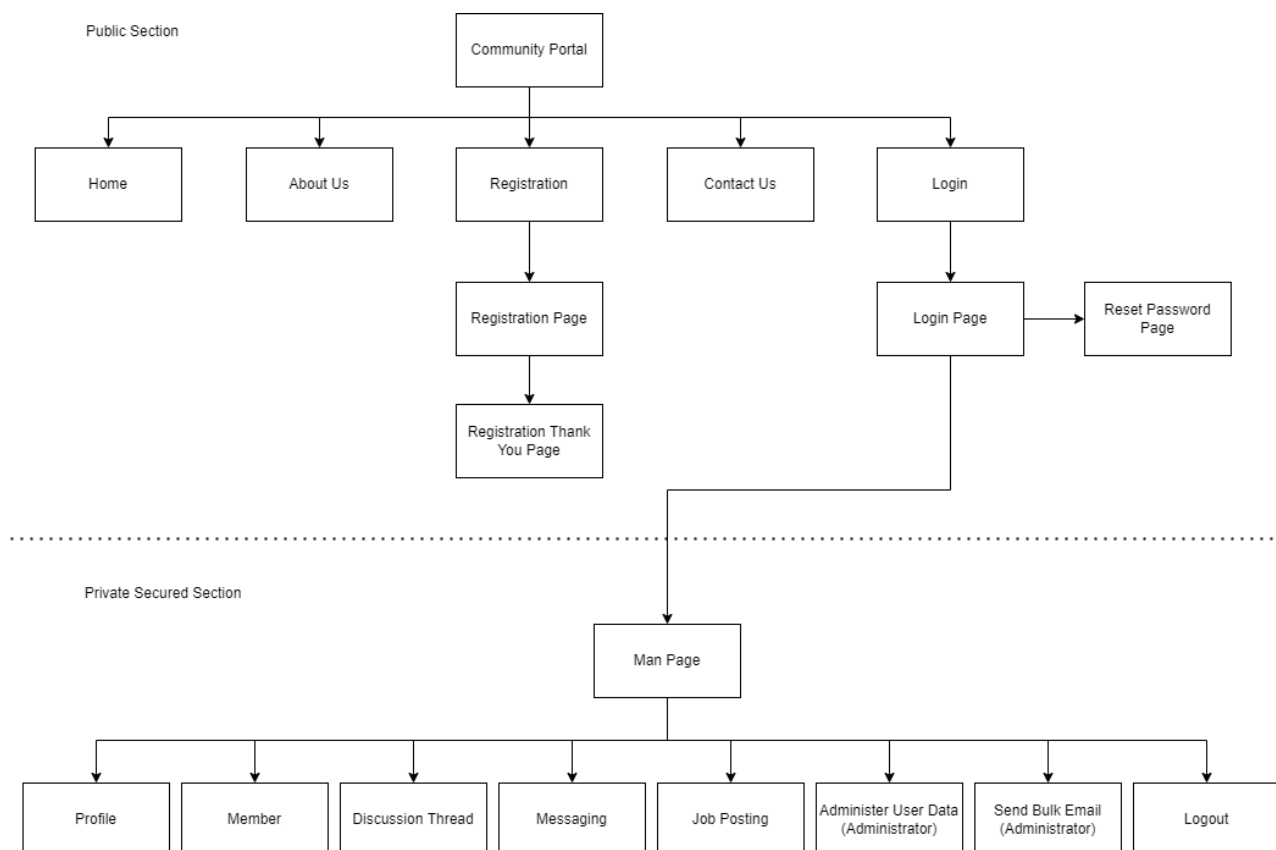
### 8.2.2 Risk and Issues

S/N	Risk	Mitigation
1	Team members do not have the required skills for website testing	Plan training course to upskill team members
2	The project schedule is too tight to complete the project on time	Set test priority for each of the test activity
3	Developer lack experience and who just completed Lithan ACWD course	Assigned experience developer as mentor

### 8.3 Test Objective

The test objectives are to verify the functionality of ABC Jobs Pte Ltd – Community Portal. The project should focus on testing public and private pages. This is to guarantee all these operations can work normally in real business environment.





## 8.4 Test Criteria

## 8.5 Suspension

Testing will be suspended in event of any of the following.

1. 40% of test cases failed, the testing will be suspended until the development team resolve all the failed cases
2. Build containing serious defects which limit testing progress
3. Significant change in requirements suggested by client
4. Software/Hardware problems
5. Assigned resources are not available when needed

## 8.6 Resumption

Testing will be resumed in event of any of the following.

1. Critical show-stopper defects are resolved
2. Significant change in requirements resolved and handled by change management process
3. Software/Hardware problems resolved
4. Assigned resources are available

## 8.7 Exit Criteria

In order for successful completion of the test phase,

1. All high priority test cases must be performed
2. Pass rate of 90% of the test cases with 100% critical severity bugs fixed

3. All expected and actual results are captured and documented with the test script
4. All test metrics collected based on reports

## 8.8 Resource Planning

### 8.8.1 System Resource

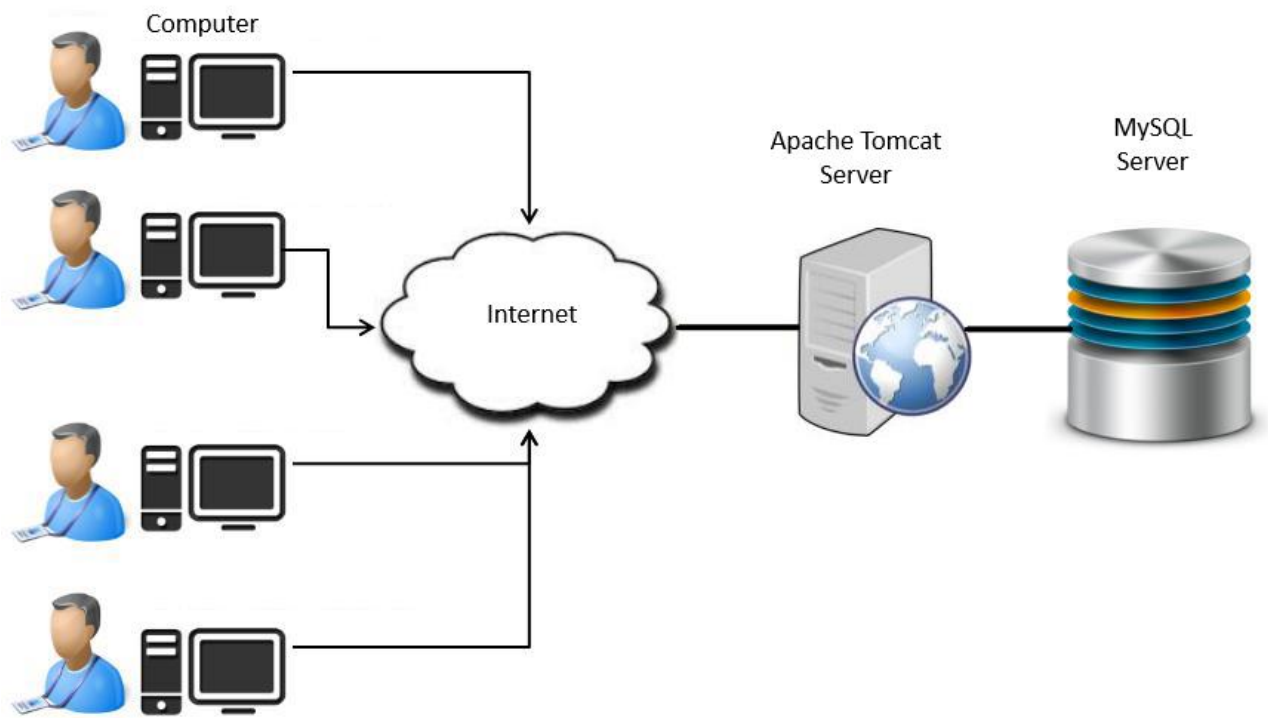
S/N	Resources	Description
1	1 Server	Need a Apache Web Server with Tomcat Server and MySQL server
2	1 Network	A LAN with internet connection with speed at least 5 Mb/s.
3	4 Computers	At least 4 computer running Windows 10 or above, RAM 8GB, CPU 3.4 Ghz with multiple browsers – Edge, Chrome, Safari, Firefox.

### 8.8.2 Human Resource

S/N	Resources	Description
1	1 Test Manager	Manage the testing phase of the project
2	4 Testers	A LAN with internet connection with speed at least 5 Mb/s.
3	1 Developer	Identify and resolve bugs

## 8.9 Test Environment

The test environment should be setup as shown below.



## 8.10 Schedule & Estimation

Test Schedule			
Test Schedule ID	ACWD-CPJ-0122A		
Product ID/Name	ABC Jobs Pte Ltd – Community Portal		
Product Version	0.1		
Present Owner	Wee Chong, Teo		
Created On	16 June 2022		
Review On	28 June 2022		
Review By	Lithan		
Review Comments	NA		
Current Version	0.1		
Change Details	NA		
Current Status	Approved		
Signing Off Authority	<i>Project manager's name</i>	Project Manager	28 June 2022

S/N	Task	Resource	Estimate Effort (man-days)
1	Prepare Test Plan	Test Manager	2
2	Review Test Plan	Project Manager, Test Manager, Testers	1
3	Prepare Test Scripts	Testers	3
4	Review Test Scripts	Test Manager, Testers	1
5	Setup Test Environment	Developer, QA Team	1
6	Maintain Test Environment	QA Team	1
7	Establish Test Procedure	Testers, Developer, QA Team	1
8	Promote Software from Development to Test Environment	Developer, QA Team	1
9	Execute Testing and Record Faults	Testers	5
10	Re-execute Tests as needed	Testers	5
11	Provide Support and Resolve Faults	Developer, QA Team	5
12	Promote Software from Test to Development Environment	Developer, QA Team	1
13	Certify Application for release	QA Team	1
	Total		28

## 8.11 Test Deliverables

### 8.11.1 Prior Testing

1. Test plans
2. Test schedule and testers assignment
3. Test cases and scripts
4. Test data

### 8.11.2 During Testing

1. Test execution logs and results
2. Error logs

### 8.11.3 Post Testing

1. Test result and report
2. Defect report

## 8.12 Functional Test Scenario

Use Case ID	Function
UC0001	Registration
UC0002	Login
UC0003	Forget Password
UC0004	Update Profile

Use Case ID	Function
UC0005	Search
UC0006	Search Result
UC0007	Show Public Profile

Use Case ID	Scenario ID	Test Scenario
UC0001	TS0001	Valid new email
	TS0002	Register with existing email
UC0002	TS0003	Valid email and password
	TS0004	Invalid email and/or password
UC0003	TS0005	Valid existing email
	TS0006	Non-existing email
UC0004	TS0007	Update user information
	TS0008	Upload user picture
	TS0009	Add user education
	TS0010	Add user experience
	TS0011	Add user skill
UC0005	TS0012	Search for existing user
	TS0013	Search for non-existing user
UC0006	TS0014	Search produce a list of users
UC0007	TS0015	Show Public Profile page

### 8.13 Test Case

Scenario ID	Precondition	Test Step	Test Data	Expected Result	Actual Result	Pass/Fail
TS0001	1. Community Portal installed 2. New user	1. Goto Registration page 2. Enter email 3. Enter password 4. Enter confirm password	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 Confirm Password = 1234	Should go to the registration confirmation page.	As expected.	Pass
TS0002	1. Community Portal installed 2. Existing user	1. Goto Registration page 2. Enter email 3. Enter password 4. Enter confirm password	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 Confirm Password = 1234	Should reject registration due to existing email	As expected.	Pass

Scenario ID	Precondition	Test Step	Test Data	Expected Result	Actual Result	Pass/Fail
TS0003	1. Community Portal installed 2. Existing user	1. Goto Login page 2. Enter email 3. Enter password	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234	Should go to the main page after successful login.	As expected.	Pass
TS0004	1. Community Portal installed 2. Non-existing user	1. Goto Login page 2. Enter email 3. Enter password	Email = <a href="mailto:gen@gmail.com">gen@gmail.com</a> Password = 1234	Should reject login due to non-existing email and return to login page.	As expected.	Pass
TS0005	1. Community Portal installed 2. Existing user	1. Goto Login page 2. Click on Reset Password link 3. Enter email	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a>	Should go to the reset confirmation page.	As expected.	Pass
TS0006	1. Community Portal installed 2. Non-existing user	1. Goto Login page 2. Click on Reset Password link 3. Enter email	Email = <a href="mailto:gen@gmail.com">gen@gmail.com</a>	Should reject reset request due to non-existing email.	As expected.	Pass
TS0007	1. Community Portal installed 2. Existing user	1. Goto Profile page after login 2. Click Pencil icon in User Information section 3. Enter user information and submit	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 First Name = Ken Last Name = Goh Gender = Male Date of birth = 01-01-1999 City = Singapore Country = Singapore	Should go to the profile page to show the updated information.	As expected.	Pass
TS0008	1. Community Portal installed 2. Existing user	1. Goto Profile page after login 2. Click User icon in the left panel 3. Select the picture to upload and submit	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 File = ken.jpg	Should go to the profile page to show the updated information.	Did not show the profile page as expected. An error page of HTTP Status 500 – Internal Server Error is shown.	Fail
TS0009	1. Community Portal installed 2. Existing user	1. Goto Profile page after login 2. Click Plus icon in Education section 3. Enter the education information	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 Year = 2020 Description = Master of Science Institute = NTU	Should go to the profile page to show the updated information.	As expected.	Pass

Scenario ID	Precondition	Test Step	Test Data	Expected Result	Actual Result	Pass/Fail
TS0010	<ol style="list-style-type: none"> <li>Community Portal installed</li> <li>Existing user</li> </ol>	<ol style="list-style-type: none"> <li>Goto Profile page after login</li> <li>Click Plus icon in Experience section</li> <li>Enter the experience information</li> </ol>	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 Duration = 2020-Present Position = Full Stack Developer Company = Google	Should go to the profile page to show the updated information.	As expected.	Pass
TS0011	<ol style="list-style-type: none"> <li>Community Portal installed</li> <li>Existing user</li> </ol>	<ol style="list-style-type: none"> <li>Goto Profile page after login</li> <li>Click Plus icon in Skill section</li> <li>Enter the skill information</li> </ol>	Email = <a href="mailto:ken@gmail.com">ken@gmail.com</a> Password = 1234 Year = 2020 Description = Google Cloud Certified Institute = Google	Should go to the profile page to show the updated information.	As expected.	Pass
TS0012	<ol style="list-style-type: none"> <li>A user Monica exists</li> <li>Login successful with an existing user</li> </ol>	<ol style="list-style-type: none"> <li>Goto Search page by clicking on the Search link</li> <li>Enter the search text</li> </ol>	Login email/password = <a href="mailto:ken@gmail.com">ken@gmail.com</a> /1234 Search text = monica	A record with name Monica should display in a list.	As expected.	Pass
TS0013	<ol style="list-style-type: none"> <li>A user Mary does not exist</li> <li>Login successful with an existing user</li> </ol>	<ol style="list-style-type: none"> <li>Goto Search page by clicking on the Search link</li> <li>Enter the search text</li> </ol>	Login email/password = <a href="mailto:ken@gmail.com">ken@gmail.com</a> /1234 Search text = mary	Should display "Nothing found" message.	As expected.	Pass
TS0014	<ol style="list-style-type: none"> <li>3 users located in Singapore exists</li> <li>Login successful with an existing user</li> </ol>	<ol style="list-style-type: none"> <li>Goto Search page by clicking on the Search link</li> <li>Enter the search text</li> </ol>	Login email/password = <a href="mailto:ken@gmail.com">ken@gmail.com</a> /1234 Search text = singapore	A list of users located in Singapore should be displayed in a list.	As expected.	Pass
TS0015	<ol style="list-style-type: none"> <li>Login successful with an existing user</li> <li>Search result with a user found</li> </ol>	<ol style="list-style-type: none"> <li>Click on the name</li> </ol>	Login email/password = <a href="mailto:ken@gmail.com">ken@gmail.com</a> /1234 Search text = monica	Should display the Public Profile Page with the selected user information.	As expected.	Pass

## 9 Task 6

### Task Statement:

1. Execute the tests created, take appropriate screen capture & include it as part of Project Presentation.
2. Present the results of testing and include it as part of Project Presentation

### Solution:

#### 9.1 Unit Testing

Unit Testing will be performed by the developer during the development stage. We use JUnit 5 for Unit Testing to test the following units.

1. Login Service Class
2. User Service Class

##### 9.1.1 LoginServiceTest

1. testInvalidUserName – To test for invalid user name.
2. testInvalidUser – To test for invalid credential.
3. testValidUser – To test for valid credential.
4. testValidUserName – To test for valid user name.

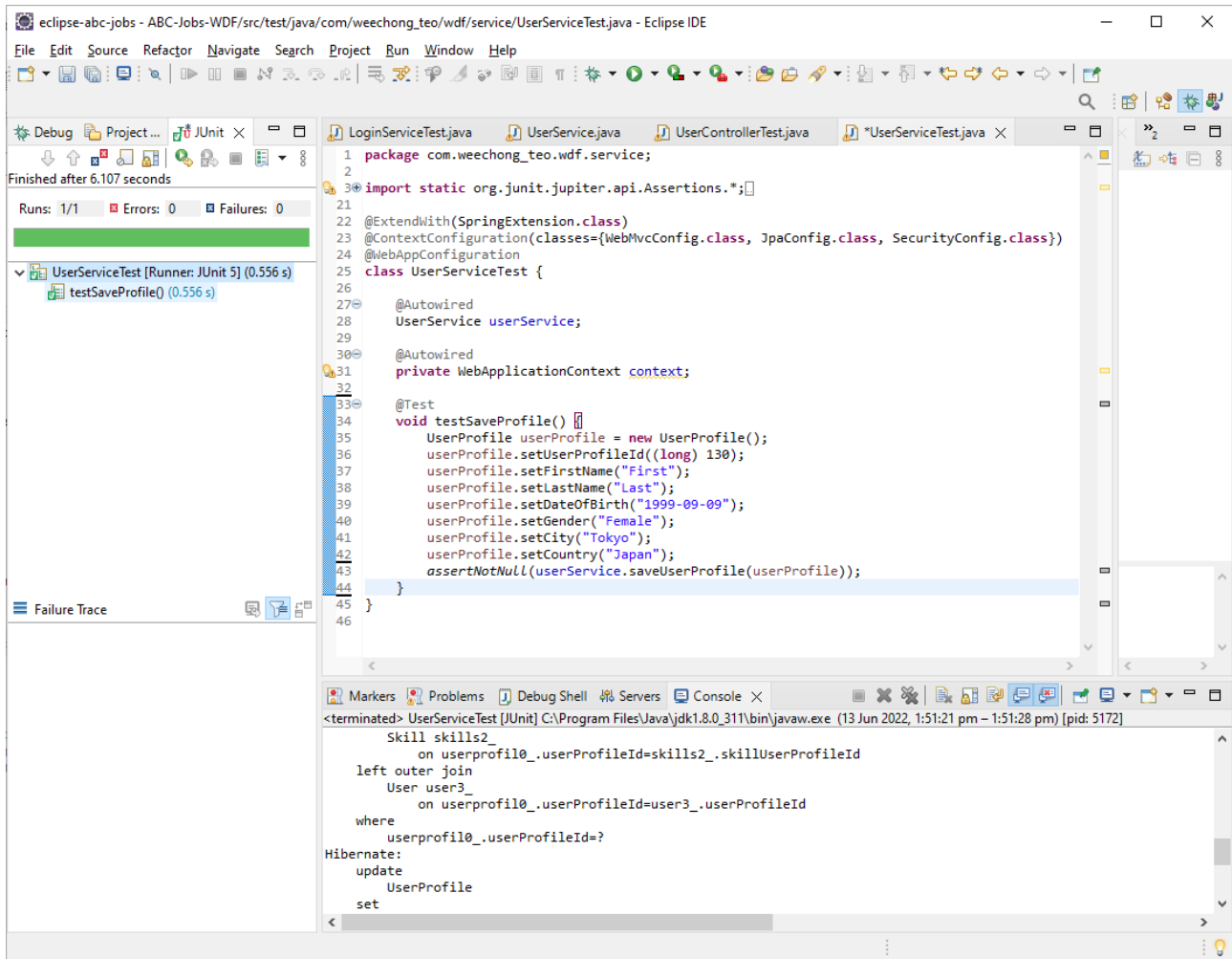
The screenshot shows the Eclipse IDE with the file `LoginServiceTest.java` open. The code defines a `LoginServiceTest` class with four JUnit 5 tests: `testValidUserName`, `testInvalidUserName`, `testInvalidUser`, and `testValidUser`. The tests use `@Autowired` for `LoginService` and `WebApplicationContext`. The `testValidUser` test creates a `User` object and uses `loginService.isValidUser(testUser)` to verify the user's presence. The IDE's left sidebar shows the test results for `LoginServiceTest` (Runner: JUnit 5) with a success rate of 4/4 runs, 0 errors, and 0 failures. The bottom console shows the command to run the tests: `skills3 .skillId as skillId1 6 2 .`

```
22 @WebAppConfiguration
23 class LoginServiceTest {
24
25     @Autowired
26     LoginService loginService;
27
28     @Autowired
29     private WebApplicationContext context;
30
31     @Test
32     void testValidUserName() {
33         User loginUser = loginService.findByUserName("john@gmail.com");
34         assertTrue(loginUser instanceof User);
35     }
36
37     @Test
38     void testInvalidUserName() {
39         User loginUser = loginService.findByUserName("notFound@gmail.com");
40         assertNull(loginUser);
41     }
42
43     @Test
44     void testInvalidUser() {
45         User testUser = new User();
46         testUser.setUserName("john@gmail.com");
47         testUser.setPassword("2");
48         Optional<User> loginUser = loginService.isValidUser(testUser);
49         assertFalse(loginUser.isPresent());
50     }
51
52     @Test
53     void testValidUser() {
54         User testUser = new User();
55         testUser.setUserName("john@gmail.com");
56         testUser.setPassword("1");
57         Optional<User> loginUser = loginService.isValidUser(testUser);
58         assertTrue(loginUser.isPresent());
59     }
60
61 }
62
```



## 9.1.2 UserServiceTest

1. testSaveProfile – To test a user profile is created and saved.

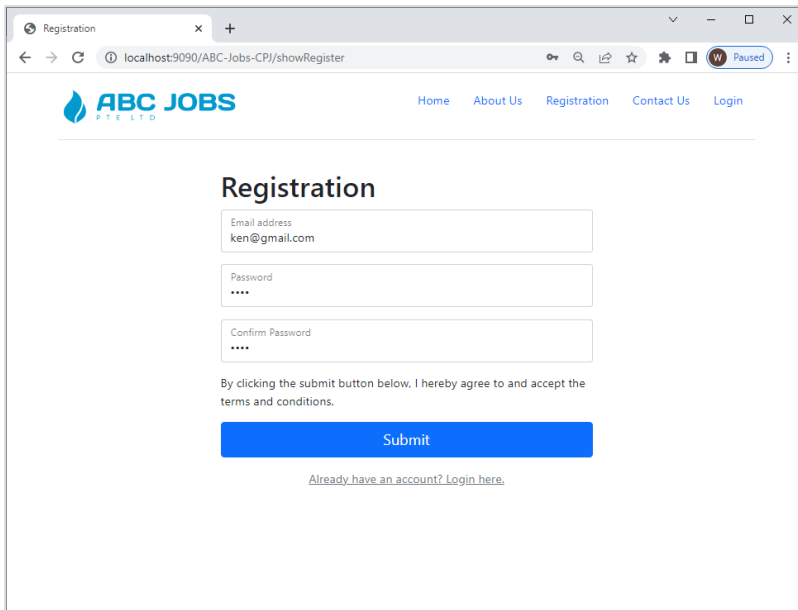


## 9.2 Integration Testing

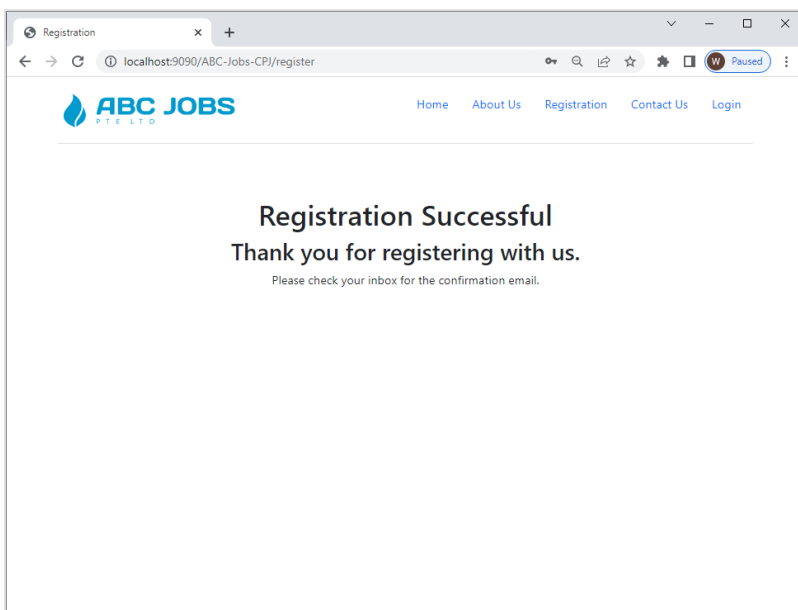
Screen captures of the browser and database.

## 9.2.1 Registration


### 9.2.1.1 Valid non-existing email



The screenshot shows a web browser window with the URL `localhost:9090/ABC-Jobs-CPI/showRegister`. The page features the ABC JOBS logo and a navigation menu with links to Home, About Us, Registration, Contact Us, and Login. The main heading is "Registration". Below it, there are three input fields: "Email address" (containing "ken@gmail.com"), "Password" (with masked characters "\*\*\*\*"), and "Confirm Password" (also with "\*\*\*\*"). A text block states: "By clicking the submit button below, I hereby agree to and accept the terms and conditions." Below this is a blue "Submit" button. At the bottom, there is a link: "Already have an account? Login here."



The screenshot shows the same web browser window, but the URL is now `localhost:9090/ABC-Jobs-CPI/register`. The page displays a large heading "Registration Successful" followed by "Thank you for registering with us." and a smaller text "Please check your inbox for the confirmation email." The navigation menu and logo remain the same.



The screenshot shows an email interface with the subject "Registration Successful". The sender is "abcjobscommunityportal@gmail.com" and the recipient is "ken@gmail.com". The email body says "Thank you for registering with us." The email was received at "16:38 (5 minutes ago)". At the bottom, there are "Reply" and "Forward" buttons.

userId	email	password	emailConfirmed	status	createdAt	reset	userProfileId
163	a@gmail.com	1	0	0	2022-06-09 14:04:58		124
176	ken@gmail.com	1234	0	0	2022-06-27 08:38:26		138
177	monica@gmail.com	1234	0	0	2022-06-27 08:48:53		139

#### 9.2.1.1.1 Invalid existing email

Registration

Email address  
ken@gmail.com

Password  
\*\*\*\*

Confirm Password  
\*\*\*\*

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

[Submit](#)

[Already have an account? Login here.](#)

Registration

Email address  
ken@gmail.com

Password  
\*\*\*\*

Confirm Password  
\*\*\*\*

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

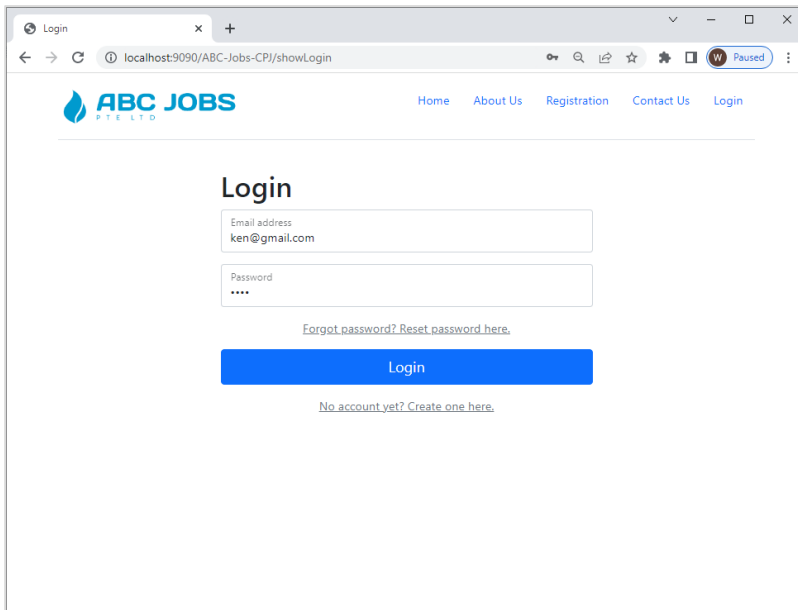
[Submit](#)

[Already have an account? Login here.](#)

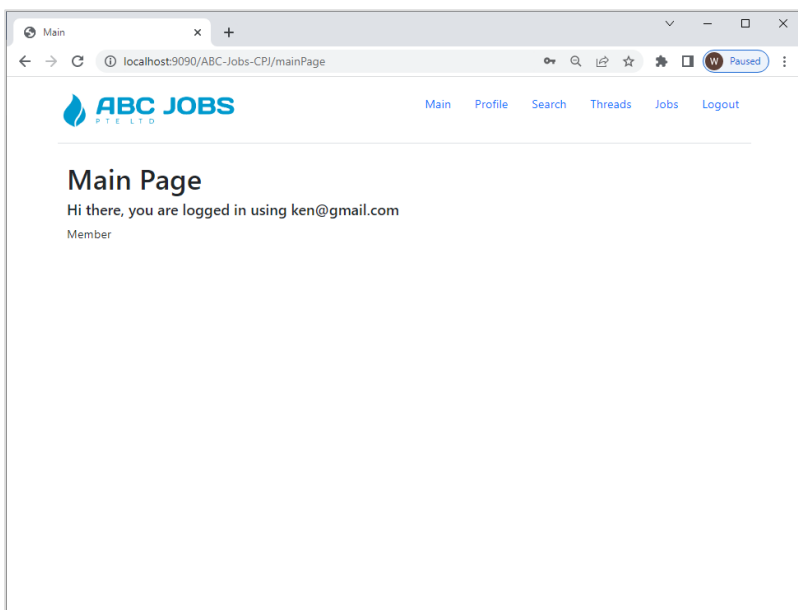
ken@gmail.com already exists!

## 9.2.2 Login

### 9.2.2.1.1 Valid email and password

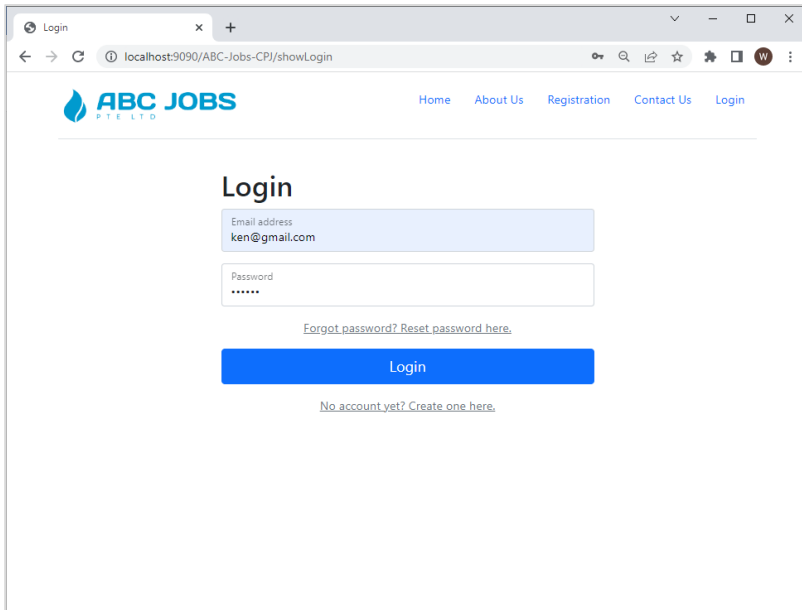


The screenshot shows a web browser window with the URL `localhost:9090/ABC-Jobs-CPI/showLogin`. The page features the ABC JOBS logo and a navigation menu with links: Home, About Us, Registration, Contact Us, and Login. The main heading is "Login". Below it, there are two input fields: "Email address" containing "ken@gmail.com" and "Password" with masked characters. A link "[Forgot password? Reset password here.](#)" is positioned below the password field. A prominent blue "Login" button is centered below the inputs. At the bottom, a link "[No account yet? Create one here.](#)" is displayed.

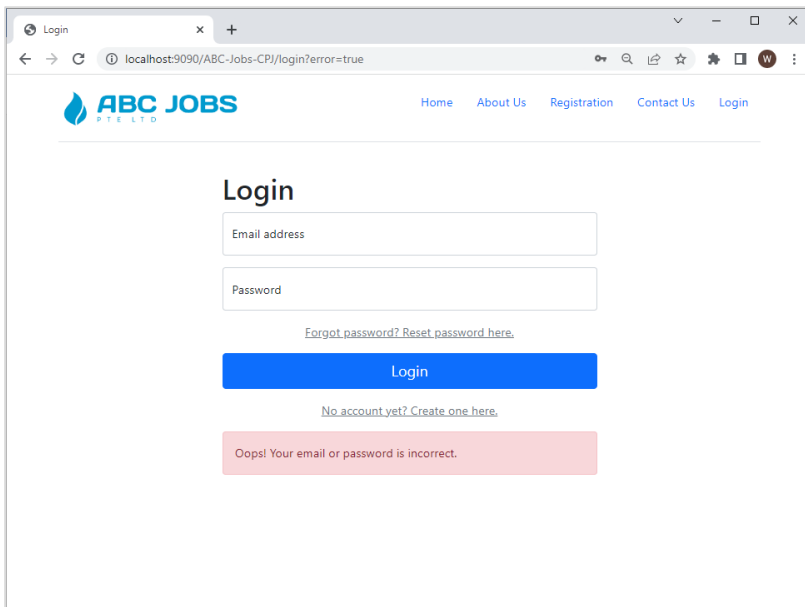


The screenshot shows the same web browser window after a successful login, with the URL `localhost:9090/ABC-Jobs-CPI/mainPage`. The navigation menu now includes "Main", "Profile", "Search", "Threads", "Jobs", and "Logout". The main heading is "Main Page". Below the heading, a message reads "Hi there, you are logged in using ken@gmail.com" followed by the user's role, "Member".

### 9.2.2.1.2 Invalid email and/or password



A screenshot of a web browser showing the login page for 'ABC JOBS PTE LTD'. The browser's address bar shows 'localhost:9090/ABC-Jobs-CPI/showLogin'. The page has a navigation bar with links: Home, About Us, Registration, Contact Us, and Login. The main heading is 'Login'. Below it, there are two input fields: 'Email address' containing 'ken@gmail.com' and 'Password' with masked characters. A link 'Forgot password? Reset password here.' is positioned below the password field. A blue 'Login' button is centered below the inputs. At the bottom, a link 'No account yet? Create one here.' is displayed.



A screenshot of the same ABC JOBS login page, but the browser's address bar now shows 'localhost:9090/ABC-Jobs-CPI/login?error=true'. The page layout is identical to the previous screenshot, but a red error message box is now visible at the bottom, stating 'Oops! Your email or password is incorrect.'.

## 9.2.3 Reset Password

### 9.2.3.1.1 Valid existing email

Reset Password

Please input your email to receive the reset link.

Email address  
ken@gmail.com

Submit

Reset Password

We have emailed you the link to reset your password.

Please follow the instruction in the email.

Reset Password

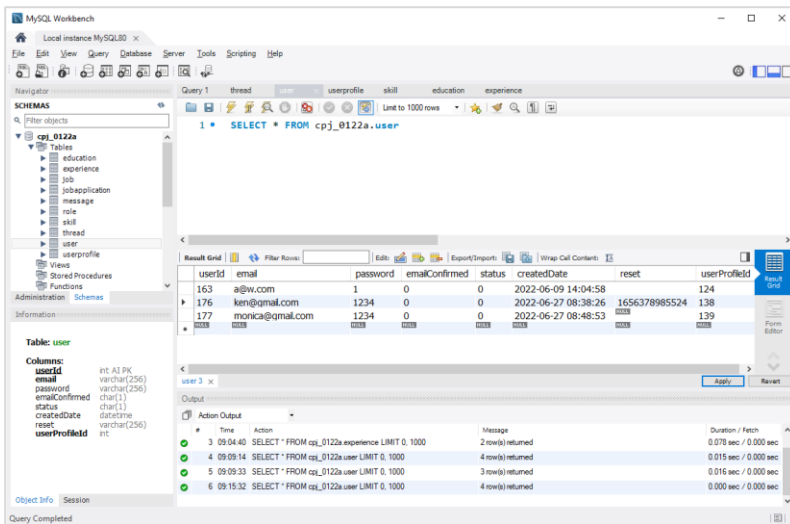
abciobscommunityportal@gmail.com

to ken@gmail.com

16:54 (1 minute ago)

<http://localhost:9090/ABC-Jobs-CPJ/newPassword?reset=1656320143242>

Reply Forward



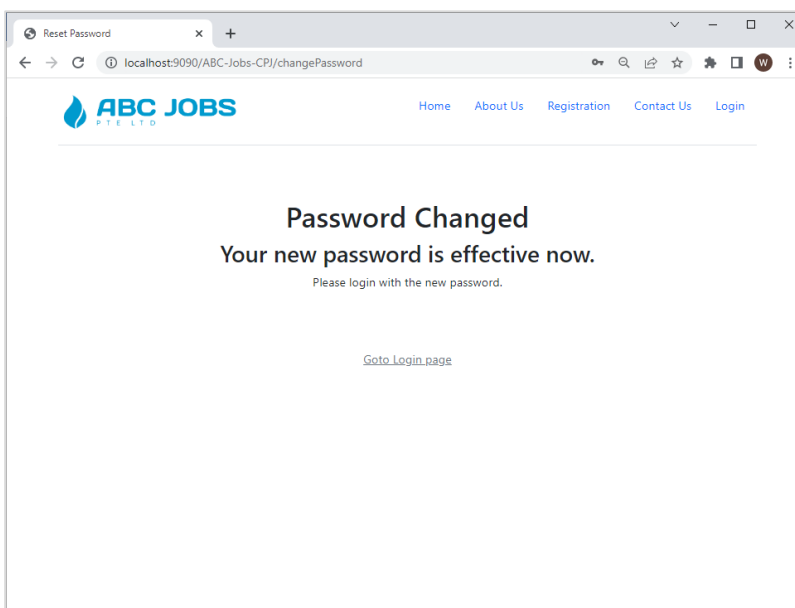
Using the link in email to open the new password page to change the password.

**New Password**

New Password  
\*\*\*\*

Confirm Password  
\*\*\*\*

[Submit](#)



### 9.2.3.2 Invalid non-existing email

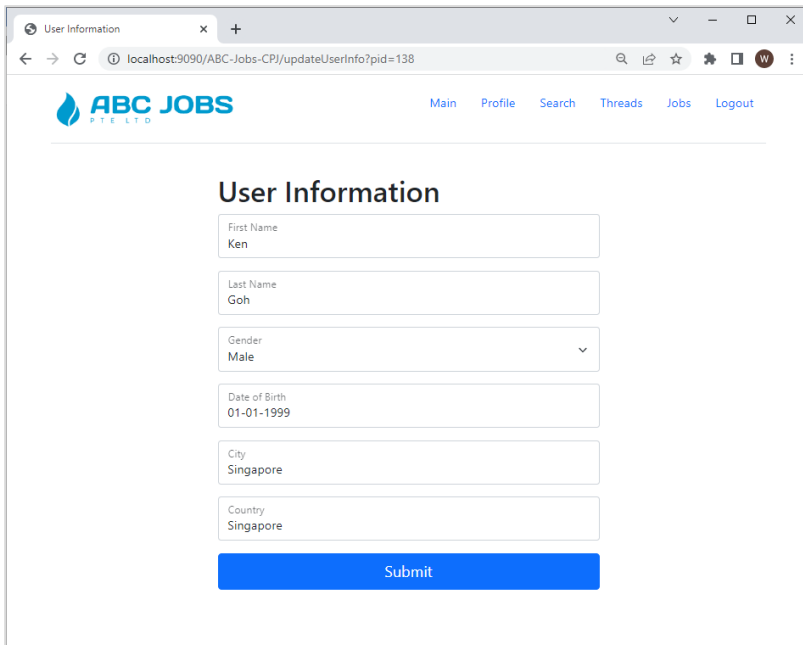
The screenshot shows a web browser window with the URL `localhost:9090/ABC-Jobs-CPI/resetPassword`. The page has a header with the ABC JOBS logo and navigation links: Home, About Us, Registration, Contact Us, and Login. The main heading is "Reset Password" with the instruction "Please input your email to receive the reset link." Below this is a text input field labeled "Email address" containing the text "nonexisting@email.com". A blue "Submit" button is positioned below the input field.

This screenshot shows the same "Reset Password" page after the submission. The "Email address" input field is now empty. The blue "Submit" button remains. A red error message box has appeared below the button, displaying the text "nonexisting@email.com not found." The rest of the page layout, including the header and navigation links, remains unchanged.



## 9.2.4 Update User Profile

### 9.2.4.1 Update User Information

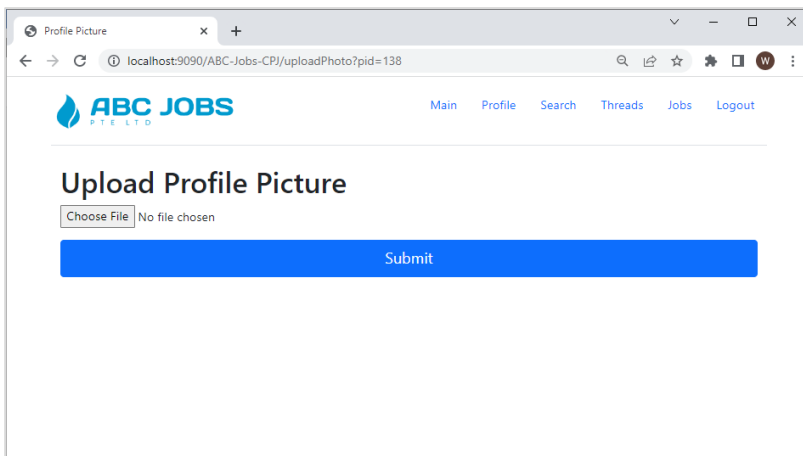


The screenshot shows a web browser window with the title 'User Information'. The address bar shows the URL 'localhost:9090/ABC-Jobs-CPI/updateUserInfo?pid=138'. The page header includes the 'ABC JOBS' logo and navigation links: 'Main', 'Profile', 'Search', 'Threads', 'Jobs', and 'Logout'. The main content area is titled 'User Information' and contains a form with the following fields:

- First Name: Ken
- Last Name: Goh
- Gender: Male (dropdown menu)
- Date of Birth: 01-01-1999
- City: Singapore
- Country: Singapore

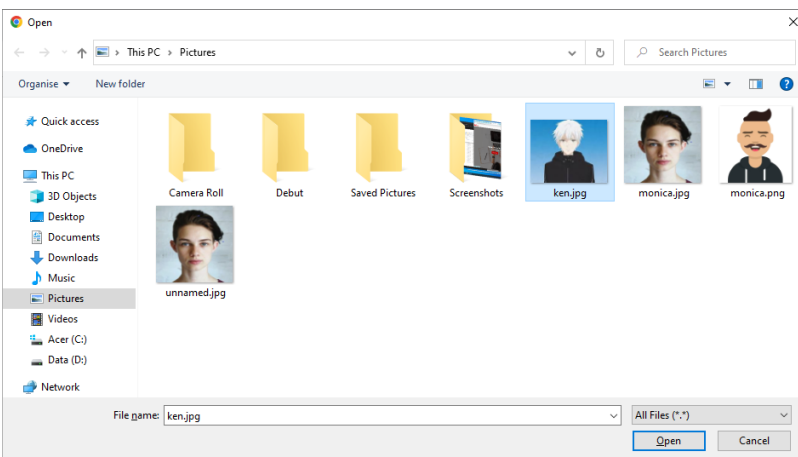
A blue 'Submit' button is located at the bottom of the form.

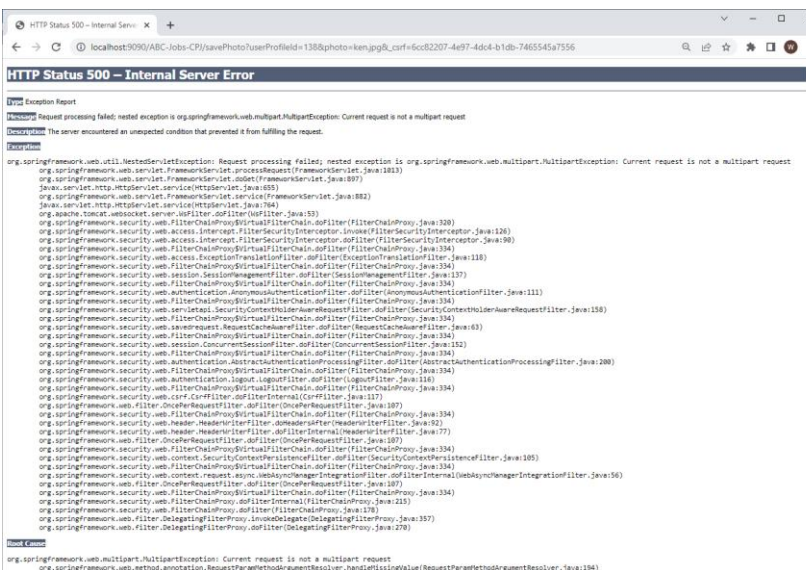
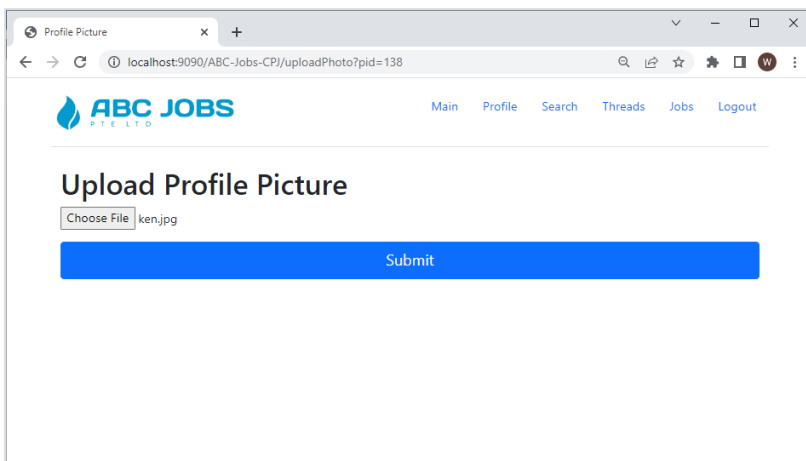
### 9.2.4.2 Update User Picture



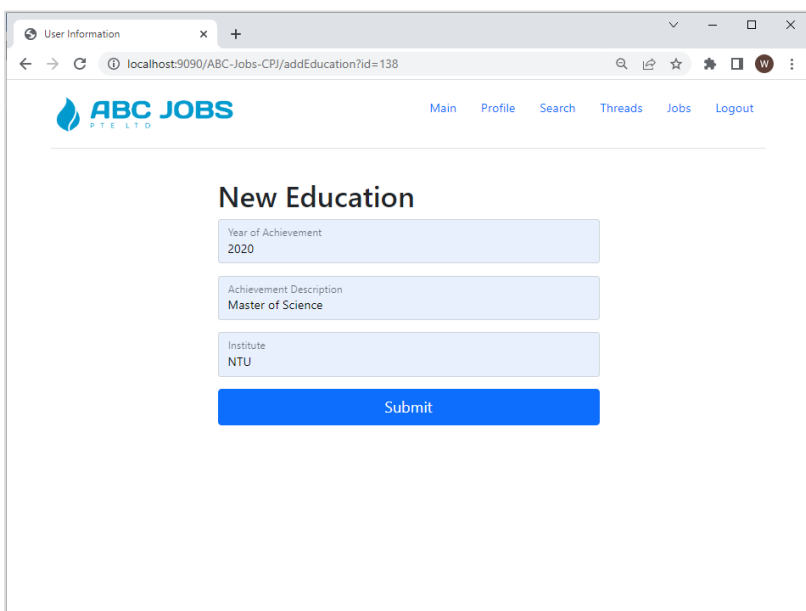
The screenshot shows a web browser window with the title 'Profile Picture'. The address bar shows the URL 'localhost:9090/ABC-Jobs-CPI/uploadPhoto?pid=138'. The page header includes the 'ABC JOBS' logo and navigation links: 'Main', 'Profile', 'Search', 'Threads', 'Jobs', and 'Logout'. The main content area is titled 'Upload Profile Picture' and contains a form with the following elements:

- A 'Choose File' button next to the text 'No file chosen'.
- A blue 'Submit' button.





### 9.2.4.3 Add User Education



#### 9.2.4.4 Add User Experience

The screenshot shows a web browser window with the URL `localhost:9090/ABC-Jobs-CPJ/addExperience?id=138`. The page header features the 'ABC JOBS' logo and navigation links: Main, Profile, Search, Threads, Jobs, and Logout. The main content area is titled 'New Experience' and contains three input fields: 'Duration' with the value '2020-Present', 'Position' with the value 'Full Stack Developer', and 'Company' with the value 'Google'. A blue 'Submit' button is located at the bottom of the form.

#### 9.2.4.5 Add User Skill

The screenshot shows a web browser window with the URL `localhost:9090/ABC-Jobs-CPJ/addSkill?id=138`. The page header features the 'ABC JOBS' logo and navigation links: Main, Profile, Search, Threads, Jobs, and Logout. The main content area is titled 'New Skill' and contains three input fields: 'Year of Achievement' with the value '2020', 'Achievement Description' with the value 'Google Cloud Certified', and 'Institute' with the value 'Google'. A blue 'Submit' button is located at the bottom of the form.

### 9.2.4.6 Updated User Profile

Profile

localhost:9090/ABC-Jobs-CPI/showProfile

ABC JOBS PTE LTD

Main Profile Search Threads Jobs Logout

**Ken Goh**  
Full Stack Developer  
Google

**User Information** [Edit]

First Name	Ken	Last Name	Goh
Gender	Male	Date of Birth	01-01-1999
City	Singapore	Country	Singapore

**Education** [Add]

2020	Master of Science	NTU
------	-------------------	-----

**Experience** [Add]

2020-Present	Full Stack Developer	Google
--------------	----------------------	--------

**Skill** [Add]

2020	Google Cloud Certified	Google
------	------------------------	--------

## 9.2.5 Search

### 9.2.5.1 Record found

Search

localhost:9090/ABC-Jobs-CPI/search

ABC JOBS PTE LTD

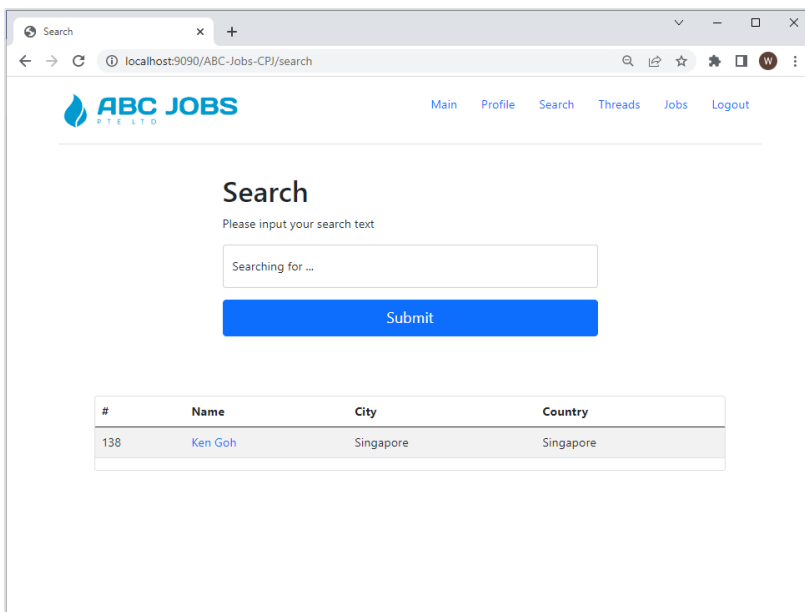
Main Profile Search Threads Jobs Logout

**Search**

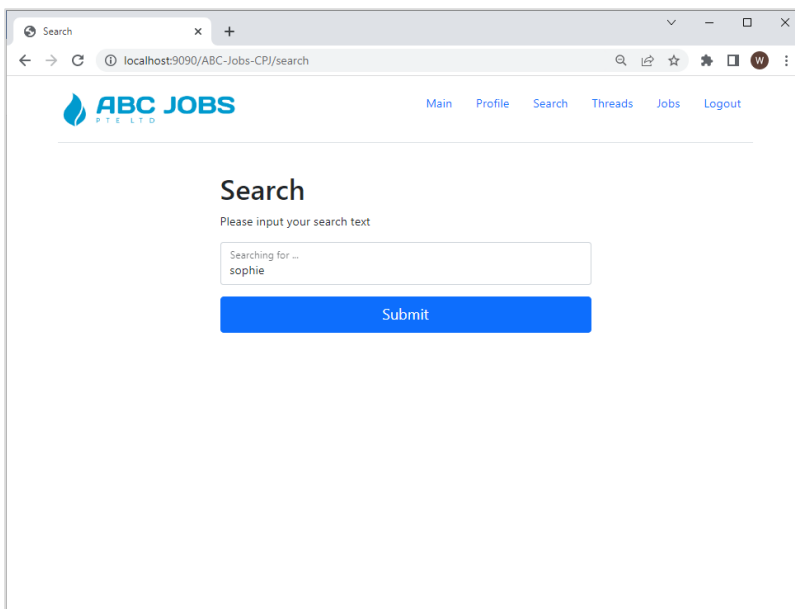
Please input your search text

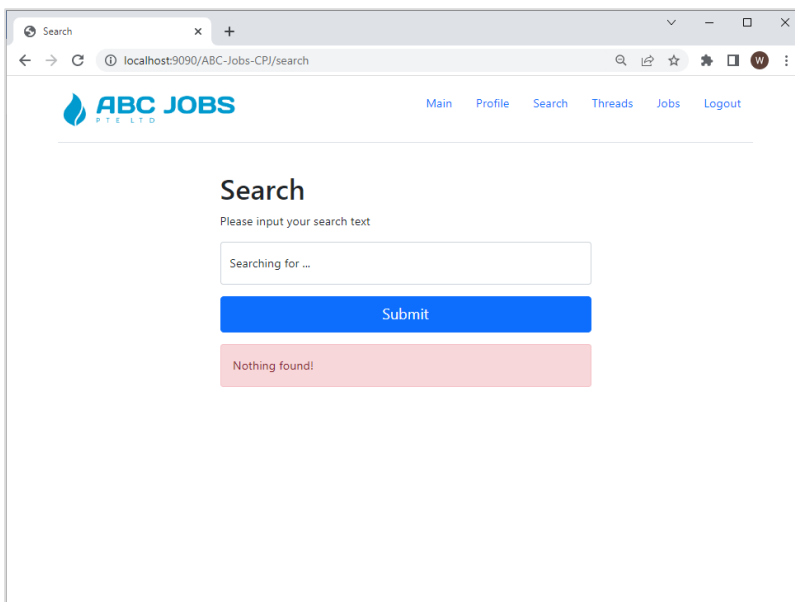
Searching for ...  
ken

Submit

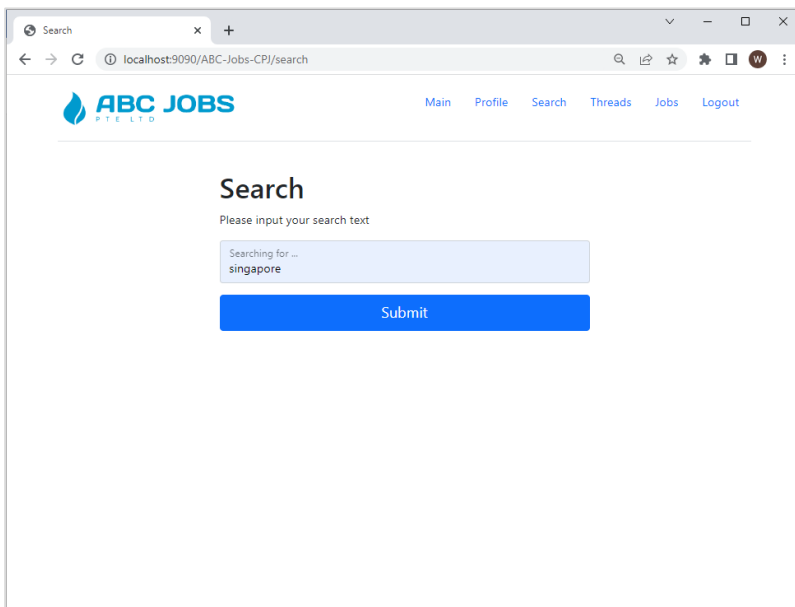


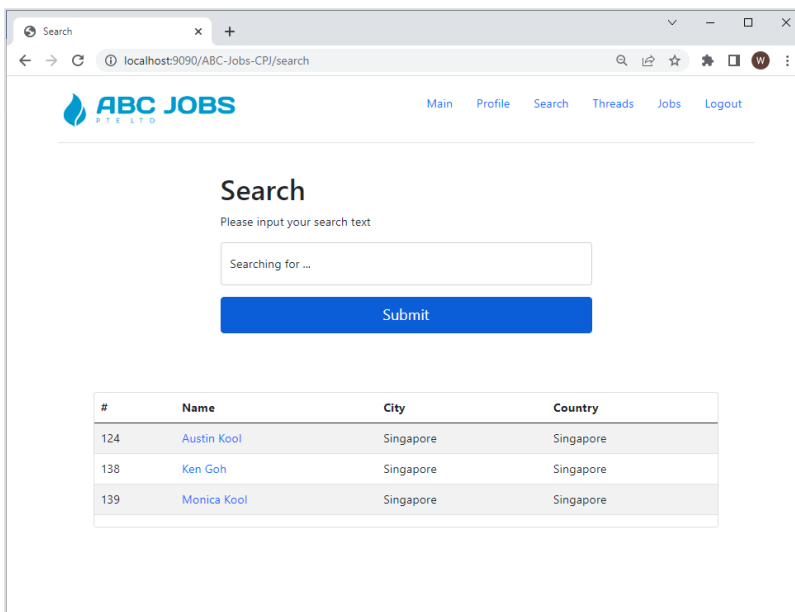
#### 9.2.5.2 No record found



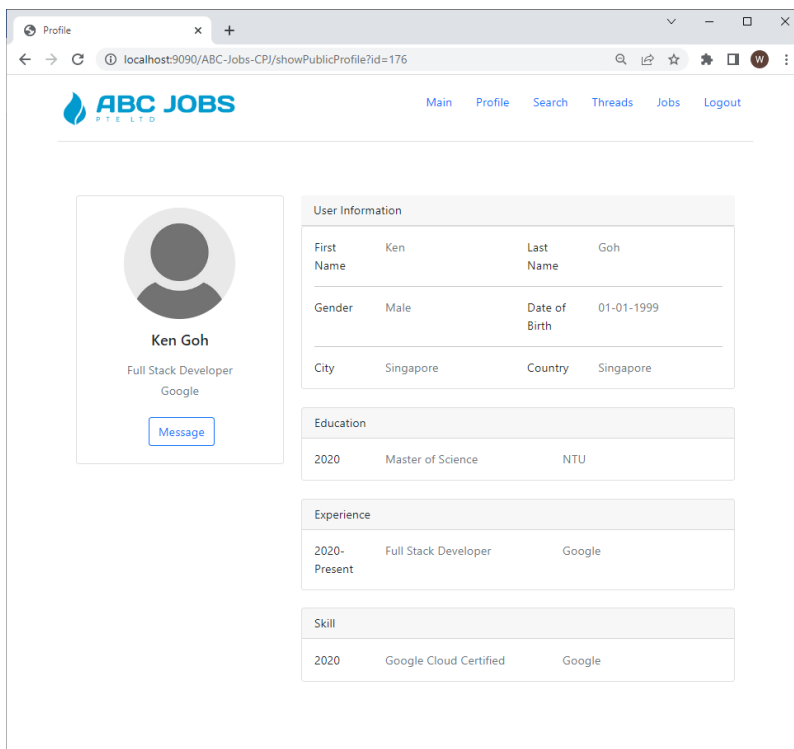


## 9.2.6 Search Result





### 9.2.7 Show Public Profile



## 9.3 Usability Testing

Usability tests to understand the overall user experience and to identify friction points that prevent users from completing tasks.

The following metrics for the usability test.

1. TOT – time on task
2. UER – user error rate %
3. TSR – task success rate

4. NPS – net promoter score
5. CSAT – customer satisfaction

The following functionalities will be measured for the usability test.

1. Registration
2. Login
3. Reset Password
4. Search
5. Update Profile

### 9.3.1 Registration

Participant Name	TOT (seconds)	UER (#errors)	TSR (Success/Fail)	Observation	Feedback
WeiZhong, Ng	35	0	Success	Completed task without issue	Very little input information required
Ramya	25	0	Success	Completed task without issue	Simple entry
Muthukumari	65	1	Success	User has error at confirmed password	Undecisive on which email address to use
Siti Nafisah	36	0	Success	Completed task without issue	Quick and easy to register
Khairul	50	1	Success	User has come issue with the confirmed password	Minimum input of data

	TOT	UER	TSR
Average Score	42.2	40%	100%

### 9.3.2 Login

Participant Name	TOT (seconds)	UER (#errors)	TSR (Success/Fail)	Observation	Feedback
WeiZhong, Ng	15	0	Success	Completed task without issue	Simple login. Use only email and password
Ramya	10	0	Success	Completed task without issue	Easy
Muthukumari	10	0	Success	Completed task without issue	Simple
Siti Nafisah	19	0	Success	Completed task without issue	Normal login process
Khairul	20	0	Success	Completed task without issue	No issue



	TOT	UER	TSR
Average Score	14.8	0%	100%

### 9.3.3 Reset Password

Participant Name	TOT (seconds)	UER (#errors)	TSR (Success/Fail)	Observation	Feedback
WeiZhong, Ng	10	0	Success	Completed task without issue	Simple and fast
Ramya	10	0	Success	Completed task without issue	Easy
Muthukumari	15	0	Success	Completed task without issue	Simple
Siti Nafisah	15	0	Success	Completed task without issue	Usual password reset practise
Khairul	10	0	Success	Completed task without issue	Nothing difficult

	TOT	UER	TSR
Average Score	12	0%	100%

### 9.3.4 Update Profile

Participant Name	TOT (seconds)	UER (#errors)	TSR (Success/Fail)	Observation	Feedback
WeiZhong, Ng	55	0	Success	Completed task without issue	Very clear on what to input
Ramya	60	0	Success	Completed task without issue	Not sure what content to input
Muthukumari	30	0	Success	Completed task without issue	Simple data entry
Siti Nafisah	83	0	Success	Completed task without issue	Simple to use
Khairul	60	0	Success	Completed task without issue	Easy entry

	TOT	UER	TSR
Average Score	57.6	0%	100%

### 9.3.5 Search User

Participant Name	TOT (seconds)	UER (#errors)	TSR (Success/Fail)	Observation	Feedback
WeiZhong, Ng	23	0	Success	Completed task without issue. Not sure how to go to main page	Not familiar with the design
Ramya	51	0	Success	Completed task after knowing how the search works	Not clear how to search
Muthukumari	45	0	Success	Completed task after finding the search field. Expecting predictive search feature	No predictive search feature
Siti Nafisah	10	0	Success	Completed task without issue	Just type name and find
Khairul	30	0	Success	Not sure that searching require the whole name	Best to have predictive search because may not know the full name

	TOT	UER	TSR
Average Score	31.8	0%	100%

### 9.3.6 Customer Satisfaction and Net Promoter Scores

Participant Name	Satisfaction Score	Promoting Score
WeiZhong, Ng	3	7
Ramya	5	8
Muthukumari	5	9
Siti Nafisah	5	10
Khairul	5	8

	CSAT	NPS
	80%	40%

## 9.4 Cross Browser Testing

We will test the following using 3 different browsers – Chrome, Edge and Firefox.

1. Check is the website loads on a browser
2. Check is the elements (such as buttons, forms, menu) visible

### 3. Check is the elements clickable on a page

List of browsers for testing.

Browser	Versions
Google Chrome	100.x and above
Microsoft Edge	100.x and above
Firefox	101.x and above

#### 9.4.1 Check is the website loads on a browser

S/N	Page	Chrome	Edge	Firefox
1	Community Portal Home Page	✓	✓	✓
2	Registration Page	✓	✓	✓
3	Registration Confirmation Page	✓	✓	✓
4	Login Page	✓	✓	✓
5	Forget Password Page	✓	✓	✓
6	Reset Password Confirmation Page	✓	✓	✓
7	Forget Password Change Password Page	✓	✓	✓
8	Update Profile Page	✓	✓	✓
9	Search Users Page	✓	✓	✓
10	List Search Results	✓	✓	✓
11	Public Profile Page	✓	✓	✓
12	Send Message	✓	✓	✓
13	Read Message	✓	✓	✓
14	List Message Board (Thread)	✓	✓	✓
15	Post A Thread	✓	✓	✓
16	Read A Thread	✓	✓	✓
17	Post A Job	✓	✓	✓
18	Apply A Job	✓	✓	✓
19	List Job Opportunities and Responses	✓	✓	✓

#### 9.4.2 Check is the elements (such as buttons, forms, menu) visible

S/N	Page	Chrome	Edge	Firefox
1	Community Portal Home Page	✓	✓	✓

S/N	Page	Chrome	Edge	Firefox
2	Registration Page	✓	✓	✓
3	Registration Confirmation Page	✓	✓	✓
4	Login Page	✓	✓	✓
5	Forget Password Page	✓	✓	✓
6	Reset Password Confirmation Page	✓	✓	✓
7	Forget Password Change Password Page	✓	✓	✓
8	Update Profile Page	✓	✓	✓
9	Search Users Page	✓	✓	✓
10	List Search Results	✓	✓	✓
11	Public Profile Page	✓	✓	✓
12	Send Message	✓	✓	✓
13	Read Message	✓	✓	✓
14	List Message Board (Thread)	✓	✓	✓
15	Post A Thread	✓	✓	✓
16	Read A Thread	✓	✓	✓
17	Post A Job	✓	✓	✓
18	Apply A Job	✓	✓	✓
19	List Job Opportunities and Responses	✓	✓	✓

#### 9.4.3 Check is the elements clickable on a page

S/N	Page	Chrome	Edge	Firefox
1	Community Portal Home Page	✓	✓	✓
2	Registration Page	✓	✓	✓
3	Registration Confirmation Page	✓	✓	✓
4	Login Page	✓	✓	✓
5	Forget Password Page	✓	✓	✓
6	Reset Password Confirmation Page	✓	✓	✓
7	Forget Password Change Password Page	✓	✓	✓
8	Update Profile Page	✓	✓	✓
9	Search Users Page	✓	✓	✓
10	List Search Results	✓	✓	✓

S/N	Page	Chrome	Edge	Firefox
11	Public Profile Page	✓	✓	✓
12	Send Message	✓	✓	✓
13	Read Message	✓	✓	✓
14	List Message Board (Thread)	✓	✓	✓
15	Post A Thread	✓	✓	✓
16	Read A Thread	✓	✓	✓
17	Post A Job	✓	✓	✓
18	Apply A Job	✓	✓	✓
19	List Job Opportunities and Responses	✓	✓	✓

## 9.4.4 Screen Capture

### 9.4.4.1 Chrome

Registration

ABC JOBS  
PTE LTD

Home About Us Registration Contact Us Login

**Registration**

Email address  
ken@gmail.com

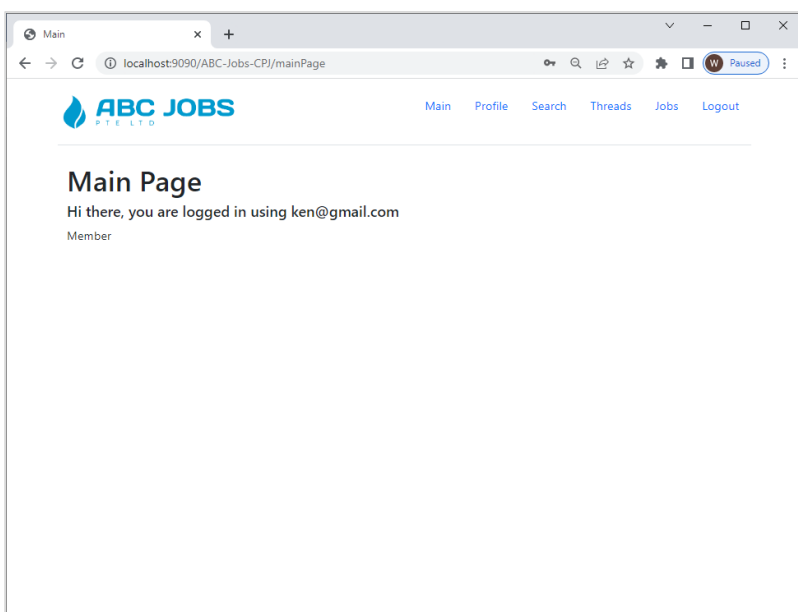
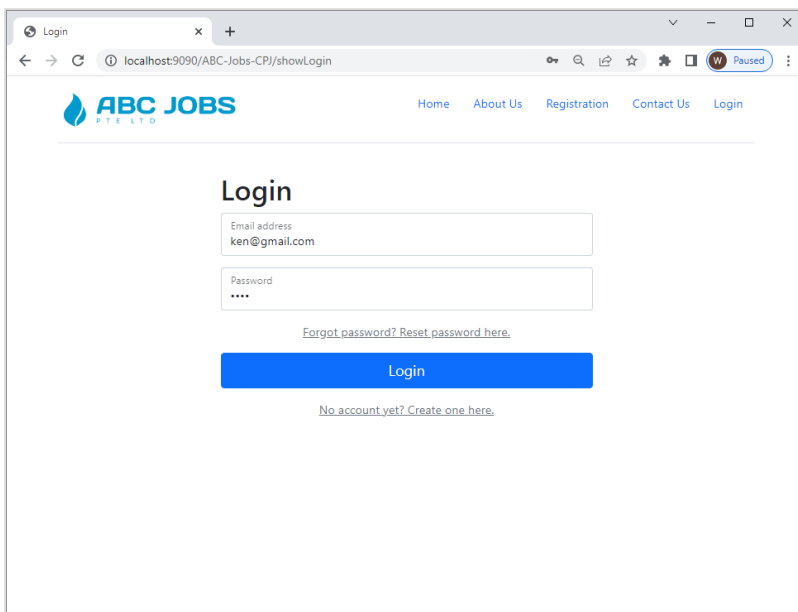
Password  
....

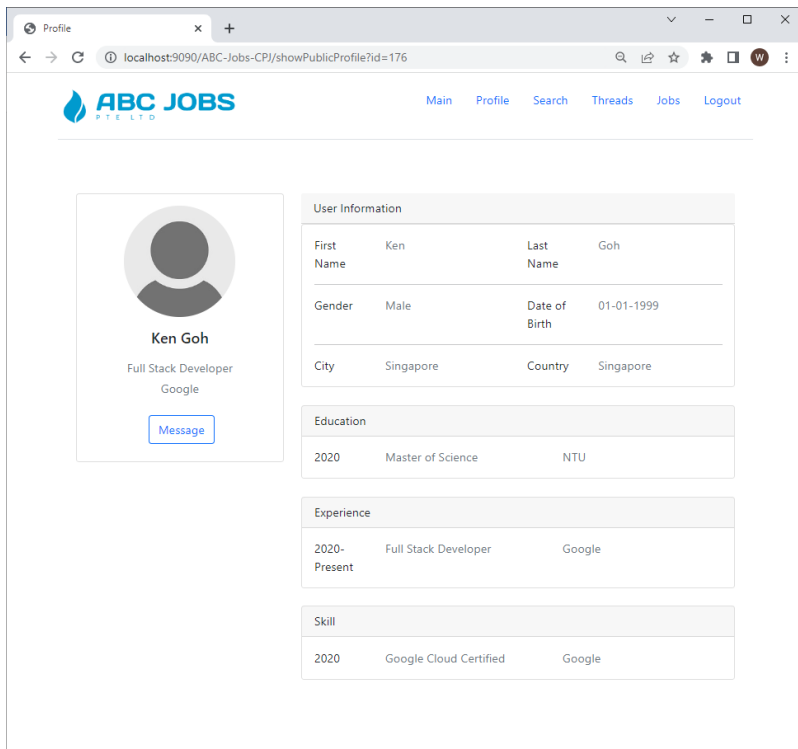
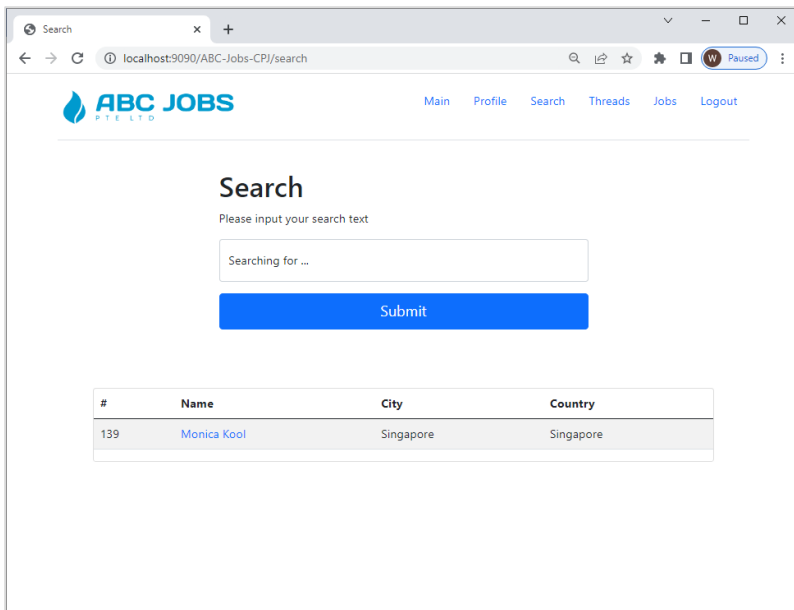
Confirm Password  
....

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

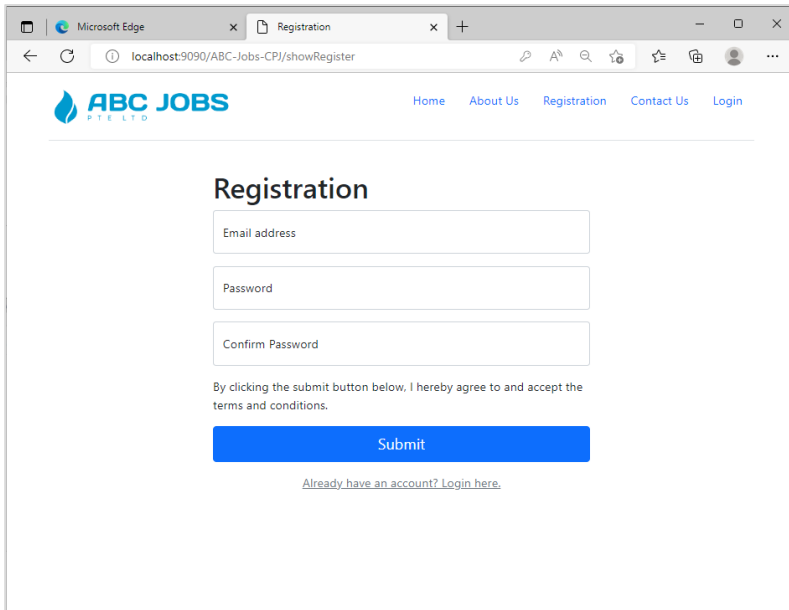
**Submit**

[Already have an account? Login here.](#)

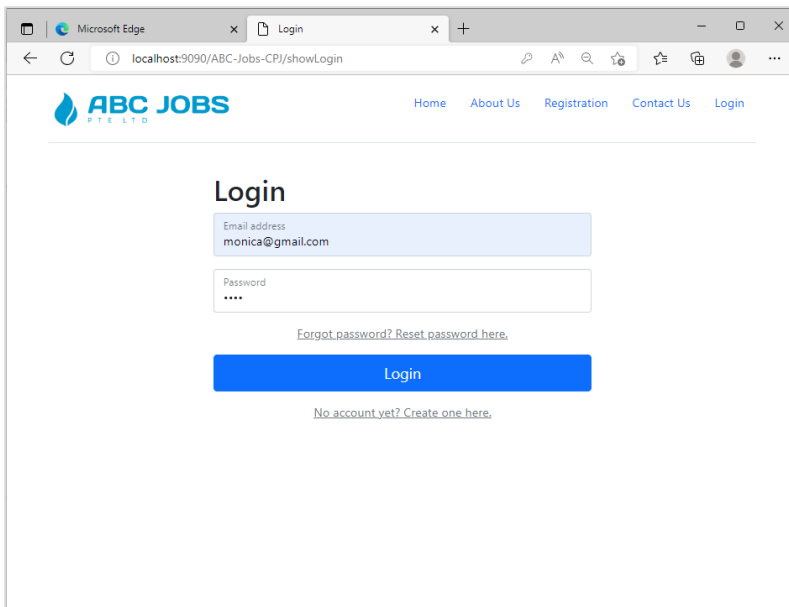




#### 9.4.4.2 Edge

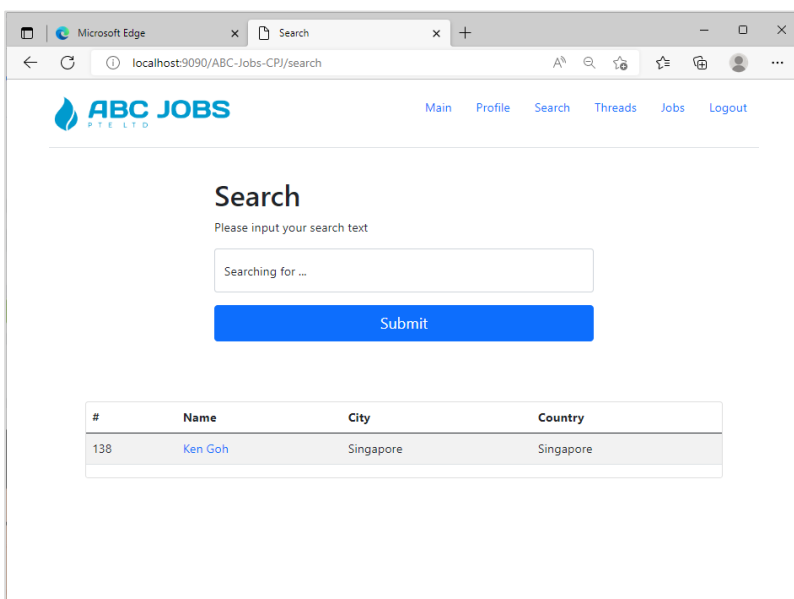
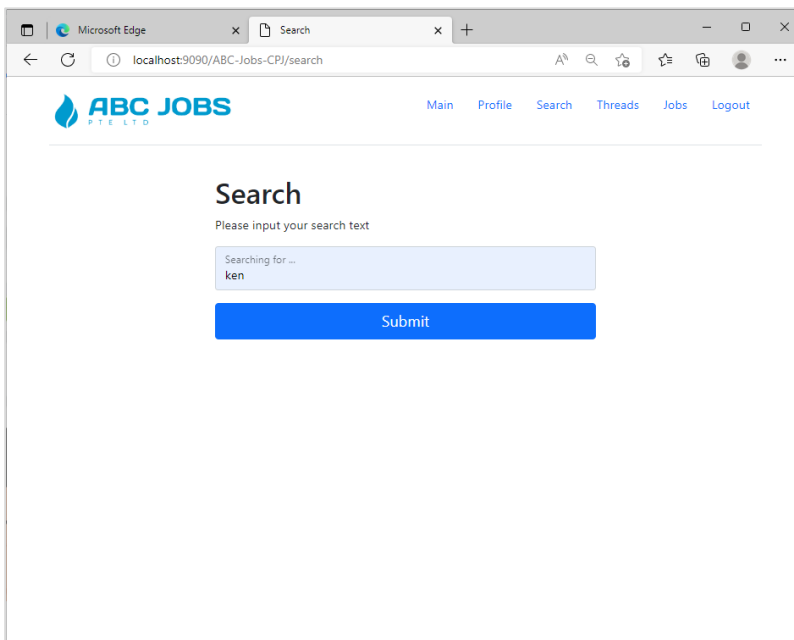
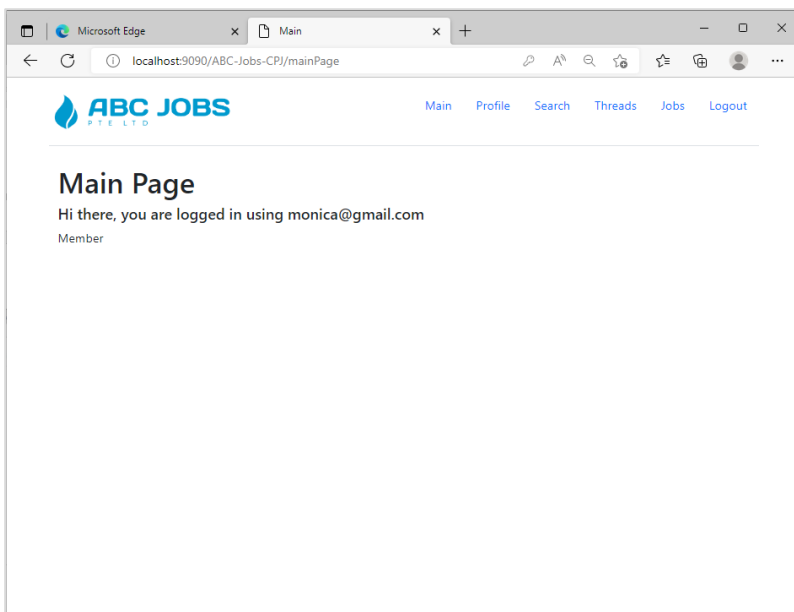


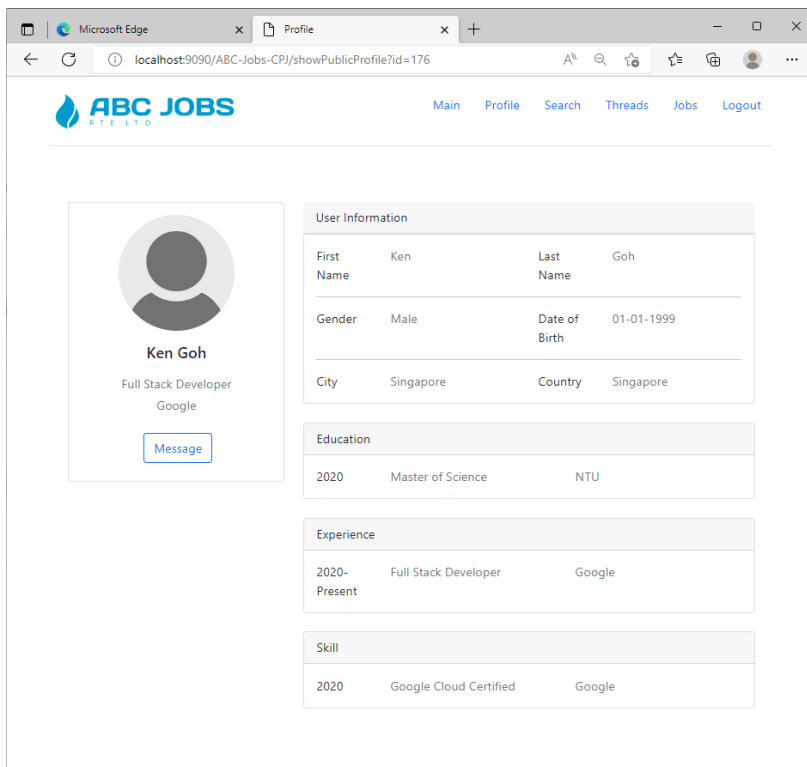
The screenshot shows the 'Registration' page of the ABC JOBS PTE LTD website. The browser is Microsoft Edge, and the address bar shows 'localhost:9090/ABC-Jobs-CPI/showRegister'. The page features a navigation bar with links to Home, About Us, Registration, Contact Us, and Login. The main content area has a heading 'Registration' followed by three input fields: 'Email address', 'Password', and 'Confirm Password'. Below these fields is a text line: 'By clicking the submit button below, I hereby agree to and accept the terms and conditions.' followed by a blue 'Submit' button. At the bottom, there is a link: 'Already have an account? Login here.'



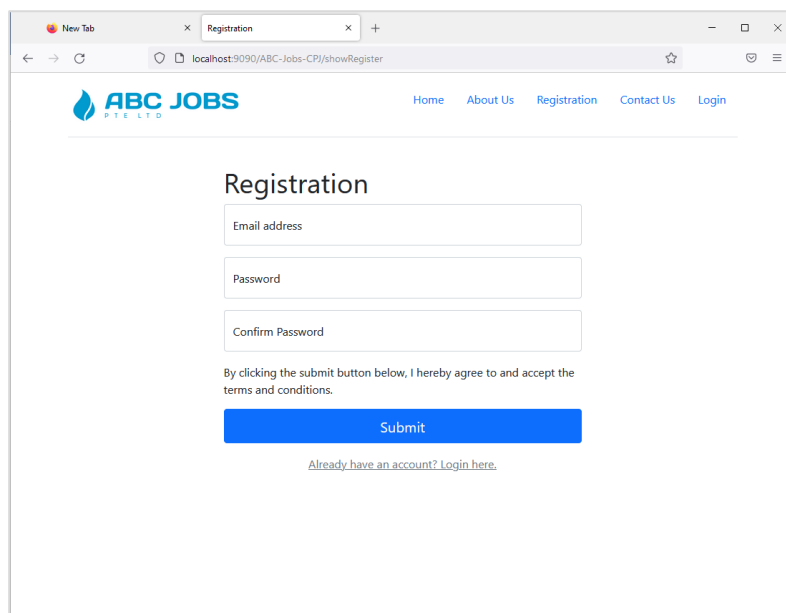
The screenshot shows the 'Login' page of the ABC JOBS PTE LTD website. The browser is Microsoft Edge, and the address bar shows 'localhost:9090/ABC-Jobs-CPI/showLogin'. The page features a navigation bar with links to Home, About Us, Registration, Contact Us, and Login. The main content area has a heading 'Login' followed by two input fields: 'Email address' (containing 'monica@gmail.com') and 'Password' (containing '....'). Below these fields is a link: 'Forgot password? Reset password here,' followed by a blue 'Login' button. At the bottom, there is a link: 'No account yet? Create one here.'







#### 9.4.4.3 Firefox



New Tab x Login x +

localhost:9090/ABC-Jobs-CPI/showLogin

**ABC JOBS** PTE LTD Home About Us Registration Contact Us Login

## Login

Email address  
ken@gmail.com

Password  
••••

[Forgot password? Reset password here.](#)

Login

[No account yet? Create one here.](#)

New Tab x Main x +

localhost:9090/ABC-Jobs-CPI/mainPage

**ABC JOBS** PTE LTD Main Profile Search Threads Jobs Logout

## Main Page

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

Member

New Tab x Search x +

localhost:9090/ABC-Jobs-CPI/search

**ABC JOBS** PTE LTD Main Profile Search Threads Jobs Logout

## Search

Please input your search text

Searching for ...  
singapore

Submit

