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# មូលន័យសង្ខេប

ក្នុងអំឡុងកាលធ្វើកម្មសិក្សារយៈពេល៣ខែ បន្ទាប់ពីបានបញ្ចប់ការសិក្សាឆ្នាំទី៤របស់ខ្ញុំនៅ វិទ្យាស្ថានបច្ចេកវិទ្យាកម្ពុជា គ្រប់សិស្សានុសិស្សទាំងអស់រួមទាំងខ្ញុំផងដែរគឺមានកាតព្វកិច្ចត្រូវចុះកម្ម សិក្សាក្នុងគោលបំណងធ្វើការអនុវត្តជាក់ស្តែងនូវអ្វីដែលខ្ញុំបានសិក្សានៅសាលាកន្លងមក។ របាយ ការណ៍នេះបានផ្តល់ឱ្យមាននូវព័ត៌មានលំអិតនៃការចុះកម្មសិក្សារបស់ខ្ញុំនៅក្រុមហ៊ុនអលវេបរយៈពេល ៣ខែ ដែលបានធ្វើឡើងចាប់ពីថ្ងៃទី ១២ ខែកក្កដា ឆ្នាំ២០២២ ដល់ថ្ងៃទី ១១ ខែតុលា ឆ្នាំ២០២២។ ប្រធានបទកម្មសិក្សារបស់ខ្ញុំគឺ **ប្រព័ន្ធសំណួរអេឡិចត្រូនិចសម្រាប់ការជ្រើសរើសបុគ្គលិក** ដែលជា ប្រព័ន្ធមួយសំខាន់ ដែលប្រើនៅក្នុងក្រុមហ៊ុនដែលបានបង្កើតឡើងក្នុងគោលបំណងដើម្បីផ្តល់នូវគេហ ទំព័រមួយសម្រាប់ការគ្រប់គ្រងដំណើរការធ្វើតេស្តជ្រើសរើសបេក្ខជន និងសិស្សនិស្សិតដែលដាក់ពាក់ សំហាត់នៅក្នុងក្រុមហ៊ុន។

ប្រព័ន្ធសំណួរអេឡិចត្រូនិចសម្រាប់ការជ្រើសរើសបុគ្គលិក គឺជាគេហទំព័រមួយដែលត្រូវបាន បង្កើតឡើងក្នុងគោលបំណងផ្តល់នូវមុខងារសំខាន់ៗ ដែលអនុញ្ញាតឱ្យអ្នកប្រើប្រាស់អាចគ្រប់គ្រង ទិន្នន័យបេក្ខជនទាំងអស់ដោយសំរួលការរក្សាទុកក្នុងក្រដាស។ មួយវិញទៀតអ្នកប្រើប្រាស់អាចបង្កើត សំណួរជាច្រើនប្រភេទដូចជា ផ្ទៀងផ្ទាត់ បំពេញចន្លោះ សំនួរមានចម្លើយត្រូវមួយ សំនួរមានចម្លើយត្រូវ លើសពីមួយ និងសំនួរចម្លើយសរសេរ ដែលអាចអោយបេក្ខជនធ្វើតេស្តផងដែរ។ លើសពីនេះទៅទៀត យើងក៏មានការវិភាគ ដែលដាក់បង្ហាញថ្ងៃដែលបេក្ខជនត្រូវធ្វើតេស្តដែលងាយស្រួលសម្រាប់គ្រប់គ្រង ពេលវេលា។ មិនត្រឹមតែប៉ុណ្ណោះនៅពេលដែលបេក្ខជនធ្វើតេស្តរួចយើងមានការកែចម្លើយដោយ ស្វ័យប្រវត្តិដែលអាចជួយកាត់បន្ថយពេលវេលាសម្រាប់អ្នកប្រើប្រាស់។

គម្រោងនៃកម្មវិធីគេហទំព័រមួយនេះត្រូវបានអនុវត្តនៅក្នុងភាសាសរសេរកម្មវិធី Java ដោយ ប្រើប្រាស់ប្រព័ន្ធពីក (Framework) Spring Boot។ សម្រាប់ការគ្រប់គ្រងទិន្នន័យនៃប្រព័ន្ធនេះត្រូវបាន

អនុវត្តជាមួយជាមួយ PostgreSQL និង សម្រាប់ខាងផ្នែកការបង្ហាញទៅកាន់អ្នកប្រើប្រាស់ត្រូវបានអនុវត្តជាមួយ AngularJS។

ជាលិទ្ធផលនៃការចុះកម្មសិក្សានេះ បច្ចុប្បន្ននេះកំពុងស្ថិតក្នុងការអភិវឌ្ឍន៍បន្ថែមនៅឡើយ ពីព្រោះគេហទំព័រនេះត្រូវតម្រូវអោយមានការកែទៅលើប្រភេទចម្លើយដែលសរសេរដោយបេក្ខជនដែលមានទម្រង់ជាកូដច្រើនប្រភេទភាសា និងកែតម្រូវនូវមុខងារផ្សេងៗដើម្បីអោយកាន់តែប្រសើរមុនពេលដាក់ប្រើប្រាស់ជាផ្លូវការក្នុងក្រុមហ៊ុន។

## RÉSUMÉ

Pendant le stage de trois mois après avoir terminé ma quatrième année universitaire à l'Institut de technologie du Cambodge. Tous les étudiants du département d'ingénierie de l'information de la technologie et de la communication et moi-même avons été obligés de faire un stage pour appliquer ce que j'ai appris à l'école dans la pratique. Dans ce rapport, on donne les détails de stage qui commencent du 12 Juillet jusqu'à 11 Octobre 2022 à la ALLWEB Co.,Ltd. Pendant les stages, le projet que s'appelle "ALLWEB Online Quiz for Recruitment" dont l'objective est fournir un réseau d'application pour contrôler les candidates information et examiner les candidates quand ils appliquent les stages et travailler dans cette entreprise.

Le système de quiz en ligne est un réseau d'application développé pour offre les fonctionnalités utiles en terme de faire l'examen pour les candidates en permettant à l'utilisateur de gérer toutes les informations sur les candidates. Un autre avantage est permettre aux utilisateurs de créer plusieurs types de questions c'est-à-dire les questions de faux ou vrai, les questions à choix multiples, ou remplir les espaces vides. Ensuite les utilisateurs peuvent voir les horaires pour les candidates à faire l'examen et gérer facilement l'emploi du temps sans utiliser un autre système. De plus, le système est aussi corriger automatiquement les réponses et retourner les résultats après les candidates ont terminé l'examen.

Ce projet de plate-forme est exécuté en le programme de JAVA avec SPRING BOOT Framework utilisation. Pour les bases de données de ce système, ils permettant avec PostgreSQL et pour Client side I utilisent dans AngularJS.

Le projet est actuellement encore en phase de développement puisqu'il est nécessaire d'ajouter un autre ajout de réponse correcte comme le code source et de configurer quelques bogues pour s'assurer que le système fonctionne bien avant utiliser dans l'entreprise.

## ABSTRACT

During the three-month internship after ending my fourth academic year at the Institute of Technology of Cambodia. All students of the department of Information of Technology and Communication Engineering and I were obliged to undergo an internship to apply what I have learned in school into practice. This report drives into detail of internship which took place between 12 July and 11 October 2022 at ALLWEB Co., Ltd. The project during the internship concerns the “ALLWEB Online Quiz for Recruitment” whose object is to provide a web application platform for controlling the candidate information and candidate test when they apply for internship and work at ALLWEB.

The Quiz Online System is a web application project developed for offering useful functionalities in terms of doing a test for candidates by enabling users to manage all of the candidate information. Another feature is that the system allows users to create multiple types of questions, such as Yes/No questions, multiple choice questions, fill-in-the-blanks, matching, and free text questions. Moreover, users can view the schedule of the candidate to do the test and easily manage the timetable without bookmarking in other tools. One of the main functions that the system can do is automatically answer correctly after the candidate completes the test and return the result.

This web platform project is implemented in JAVA programming language by using the Spring Boot framework. The database of the system is implemented with PostgreSQL and also AngularJS is implemented on the client side.

As a result of this internship, the project is currently still in the developing stage since it required the addition of another correct answer as the source code and configuration. There are some bugs in making sure that the system works well before hosting for utilization in the company.

## **LIST OF ABBREVIATION**

UI	: User Interface
MVC	: Model View Controller
UML	: Unified Modeling Language
URL	: Uniform Modeling Language
JPA	: Java Persistence API
IDE	: Integrated Development Environment
SQL	: Structure Query Language
CSS	: Cascading Style Sheets
HTML	: Hypertext Markup Language
ERD	: Entity Relation Diagram

## LIST OF FIGURES AND TABLE

Figure 1: Logo of ALLWEB Co., LTD.....	2
Figure 2: Location map of ALLWEB Co., LTD.....	5
Figure 3: Project methodology .....	8
Figure 4: Use Case diagram.....	12
Figure 5: Database schema .....	13
Figure 6: Activity diagram of adding new candidate .....	14
Figure 7: Activity diagram of adding new question .....	15
Figure 8: Activity diagram of assign quiz for candidate .....	16
Figure 9: Activity diagram of reset password .....	17
Figure 10: Physical architecture of application .....	18
Figure 11: Java language logo .....	19
Figure 12: Spring Boot logo .....	19
Figure 13: Logo Html CSS Javascript.....	20
Figure 14: Logo Angular JS .....	20
Figure 15: Logo Angular Meterial.....	20
Figure 16: Logo FullCalendar .....	21
Figure 17: Logo PostgreSQL.....	21
Figure 18: Logo GitLab.....	21
Figure 19: Logo IntelliJ Idea .....	22
Figure 20: Logo Visual Studio Code.....	22
Figure21: Logo PgAdmin4.....	23
Figure 22: Logo Postman .....	23
Figure 23: Spring Boot initialization .....	25
Figure 24: AngularJS new Project.....	25
Figure 25: AngularJS new project set up .....	26
Figure 26: Adding Spring Boot dependencies in pom.xml .....	26
Figure 27: Connect to PostgreSQL database .....	27
Figure 28: Project structure Spring Boot (Backend) .....	28
Figure 29: Project Structure Angular JS (Client Panel) .....	29
Figure 30: Login authentication flowchart.....	31
Figure 31: Create new candidate flowchart.....	32
Figure 32: Create new question flowchart.....	33
Figure 33: Edit multiple answer flowchart.....	34

Figure 34: Mail Configuration.....	35
Figure 35: Mail Received .....	35
Figure 36: Login page .....	40
Figure 37: Dashboard page.....	40
Figure 38: Candidate list page .....	41
Figure 39: User list page.....	41
Figure 40: Quiz list page .....	42
Figure 41: Question list page.....	42
Figure 42: Schedule page .....	43
Figure 43: Report user page .....	43
Figure 44: Mail configuration page.....	44
Figure 45: Quiz detail page .....	44
Figure 46: Quiz preview page .....	45
Figure 47: Candidate detail page.....	45
Figure 48: Create user dialog.....	46
Figure 49: Edit user dialog .....	46
Figure 50: Create question dialog.....	47
Figure 51: Add question for quiz dialog.....	47
Figure 52: Remove question from quiz dialog .....	48
Figure53: Edit profile page.....	48
Figure 54: Change password page.....	49
Figure 55: Confirm delete dialog .....	49
Figure 56: Confirm mail send dialog.....	50
Figure 57: Confirm duplicate quiz dialog .....	50
Figure 58: Edit multiple answer .....	51
 Table 1: Planning table .....	 8
Table 2: Project requirements table .....	11
Table 3: Project result Table.....	36



# TABLE OF CONTENT

ACKNOWLEDGEMENT .....	i
<b>មូលនិយមសង្ខេប .....</b>	<b>ii</b>
RÉSUMÉ .....	iv
ABSTRACT .....	v
LIST OF ABBREVIATION .....	vi
LIST OF FIGURES AND TABLE .....	vii
TABLE OF CONTENT .....	ix
INTRODUCTION .....	1
<b>1. GENERAL PRESENTATION OF INTERNSHIP .....</b>	<b>2</b>
1.1 Introduction.....	2
1.2 Activity and service .....	2
1.3 Address and contact .....	5
<b>2. THE INTERNSHIP PROJECT PRESENTATION.....</b>	<b>6</b>
2.1 Structure .....	6
2.2 Operation manager at ALLWEB company problematic .....	6
2.3 Objective .....	6
2.4 Software development life cycle.....	7
2.4.1 Waterfall .....	7
2.4.2 Planning .....	8
<b>3. PROJECT ANALYSIS, CONCEPTION AND DESIGN .....</b>	<b>10</b>
3.1 Case study of requirement .....	10
3.1.1 Project requirement .....	10
3.1.2 Non-Functional requirement.....	11
3.2 Project analysis .....	12
3.2.1 Use Case diagram .....	12
3.2.2 Database schema.....	13
3.2.3 Activity diagram.....	13
3.2.3.1 Add new candidate diagram.....	13
3.2.3.2 Add new question diagram.....	14
3.2.3.3 Assign quiz to candidate .....	15
3.2.3.4 Reset password diagram.....	16
<b>4. TECHNOLOGY AND DESIGN .....</b>	<b>18</b>
4.1 System and design .....	18

4.1.1	Physical architecture.....	18
4.1.2	Logical architecture .....	18
4.2	Programming language .....	19
4.3	Framework and technology.....	19
4.4	Version control system .....	21
4.5	Tools .....	22
<b>5.</b>	<b>PROJECT IMPLEMENTATION .....</b>	<b>24</b>
5.1	Project setup.....	24
5.1.1	Environment setup.....	24
5.1.2	Project initialization.....	24
5.1.2.1	Create a Project with Spring Boot framework .....	24
5.1.2.2	Create AngularJS application.....	25
5.2	Configuration .....	26
5.3	Project structure .....	27
5.4	Project implement .....	29
5.4.1	Login authentication and logout process .....	29
5.4.2	Create new candidate.....	31
5.4.3	Create new question .....	32
5.4.4	Edit multiple answer.....	33
5.4.5	Email configuration process .....	34
<b>6.</b>	<b>CONCLUSION .....</b>	<b>36</b>
6.1	Complete and uncompleted task .....	36
6.2	Strong point.....	36
6.3	Weak point .....	37
6.4	Difficulties .....	37
6.5	Experience.....	37
6.6	Perspective .....	38
6.7	Summary .....	38
<b>7.</b>	<b>REFERENCES .....</b>	<b>39</b>
<b>8.</b>	<b>ANNEXES .....</b>	<b>40</b>

# INTRODUCTION

As engineering students of the department of Information and Communication Engineering at the Institute of Technology of Cambodia, the students are required to take an internship for thesis defending before graduation, so they can apply the knowledge that has learned from school as well as acquires new knowledge both soft and hard skill from a company, organization or somewhere else.

Technology offers us many new innovations from day to day, especially smartphone, laptops, and desktops which contain modern browsers. Nowadays, there are several platforms of browser applications in the market like Google Chrome, Microsoft Edge, and Apple Safari that offered the use and develop many types of websites. Through this evolution, during my internship, I made a decision of developing a website application. Otherwise, I applied knowledge, I have got from my adviser, about design patterns in order to prove the lesson theory.

Due to the year the fourth internship required students to hold an acceptable project considered by their own adviser. Meanwhile, management at ALLWEB needs a system to help the administrator manage their ALLWEB easier than usual. ALLWEB Online Quiz System to manage all users' information and result when they do the quiz. Moreover, this application is built using our recruiting team to manage the quiz for candidates.

As a result, ALLWEB Group has proposed a project on the Web application "ALLWEB Online Quiz System" to meet these constraints to facilitate users to manage their system in ALLWEB.

This is the final internship report such a thesis divided into 7 chapters. The first is the general presentation of the internship project and information about the place where I took it in order to build this application. The second focuses on the internship project presentation that I work on during three months internship. The third is the analysis of project ideas, conception, and design that talks about the main functional requirement and optional functional requirement. Fourth talk about technology and tool that I use. The fifth is focusing on project implementation. The last one is the conclusion.

# 1. GENERAL PRESENTATION OF INTERNSHIP

## 1.1 Introduction

ALLWEB Co., Ltd is one of the leading Cambodia IT companies since 2004. The company are specialized offshore software development, website development and also aim to address emerging needs in Cambodia as its companies are growing fast. The Company intends to participate in the emergence of a local high-end software development market. We are currently having many partners around the world and also has experience in website development and build the system to the company, bank and shop in Europe and Asia.



Figure 1: Logo of ALLWEB Co., LTD

## 1.2 Activity and service

ALLWEB Co., Ltd have specializes teams are specifically created to provide each customer need with unique quality of service and solution:

- **Mobile app and software**

ALLWEB is specialized in Mobile and Software development as well as IT infrastructure management and support. We provide custom software solutions for both desktop and mobile use that fit your business with a wide range of technology. Most of the components we have builds for more than ten years implement complex business logic independently from development considerations.

ALLWEB mobile Solutions enable:

- Support for Any Device – Build applications once, and run them on all devices including the ISO, Android, BlackBerry, and Window mobile.
- Stunning Usability – With ALLWEB Mobile Platform, we ensure highly usable applications that lead to high user adoption rates.
- Fast and Risk-Free Change – Quickly deliver new functionality and change requests without ever breaking your application.

- **Website**

Website Offer includes:

- Implementation of personalized content with text, photo
- High performance delivery within 2 weeks
- SEO optimized Website: get ready to be worldwide known!
- Domain name registration: give us the name you want and we do the online registration for you!
- Website hosting with professional service and reliable uptime 24/7.
- Website maintenance: 1 month offered

Website Offer + includes:

- Website offer features included
- Email management with hosting services
- Mobile version for any devices (IOS, Android)
- High performance delivery within 1 month
- Many options to choose, like
  - Forum management
  - Blog management
  - Live chat
  - Any many more!

- **eCommerce**

eCommerce Offer includes:

- Optimized Product display: Multiple pictures per products, Zoom-in on product photos, Display available quantities, Sort products by relevance / price, etc.
- Quick product search tool: your customers will go straight to your product!
- Coupons and vouchers management: increase your customers' loyalty and attract new ones!
- From one shop to multiple shops management: get an efficient and easy to use centralized management system!
- High quality Analytics and Reports: manage the performance of your online shop from your desk. Realtime results for Order and sales, best performing categories, coupons, products, etc!
- Domain name registration: give us the name you want and we do the online registration for you!

- Website hosting with professional service and reliable uptime 24/7: Your shop is now opened for online customers anytime!
- Optional: Want to deploy your shop also on mobile phone and tablet use? Let's take the mCommerce option! (+2 weeks in delivery)

- **Hosting solutions and domain registration**

Web Hosting

- Reliable, fast and secured
- Easy to set up and use
- Professional support
- For any budget size

Every domain registration includes the following domain tools:

- URL Forwarding Redirect traffic from one domain to another
- Email Forwarding: Automatically forward emails to other valid email addresses
- DNS Management: Retain total control over your DNS records
- Transfer Lock: Protect your domain from unauthorized domain transfers

- **IT and strategy consulting**

We bring a full range of IT capabilities to a variety of IT business situations, including:

- IT Strategy Development: Information technology helps companies transform themselves and grow their business
- IT Performance Improvement: Under-performing IT hurts business performance
- IT Project Effectiveness: ALL WEB CO LTD helps clients to maximize their business results from major IT initiatives, including turnaround programs

- **Network and IT support**

We are working with general contractors, IT consultants, system furniture vendors, etc. We understand that time is money, and jobs must absolutely stay on schedule. ALL WEB provides high quality support whatever your business is, with premium manufacturer products, and a timely and professional installation.

### 1.3 Address and contact

- Address : Kim Hap Building (5<sup>th</sup> floor), Street 388, Mao Se Toung Blvd, Sangkat Toul Svay Prey 2, Khan Chnamkarmon, Phnom Penh, Cambodia
- Tel : +855 23 221 320
- Email : [contact@allweb.com.kh](mailto:contact@allweb.com.kh)
- Website : <https://www.allweb.com.kh/about-us>
- Location : Shown in *Figure 2*

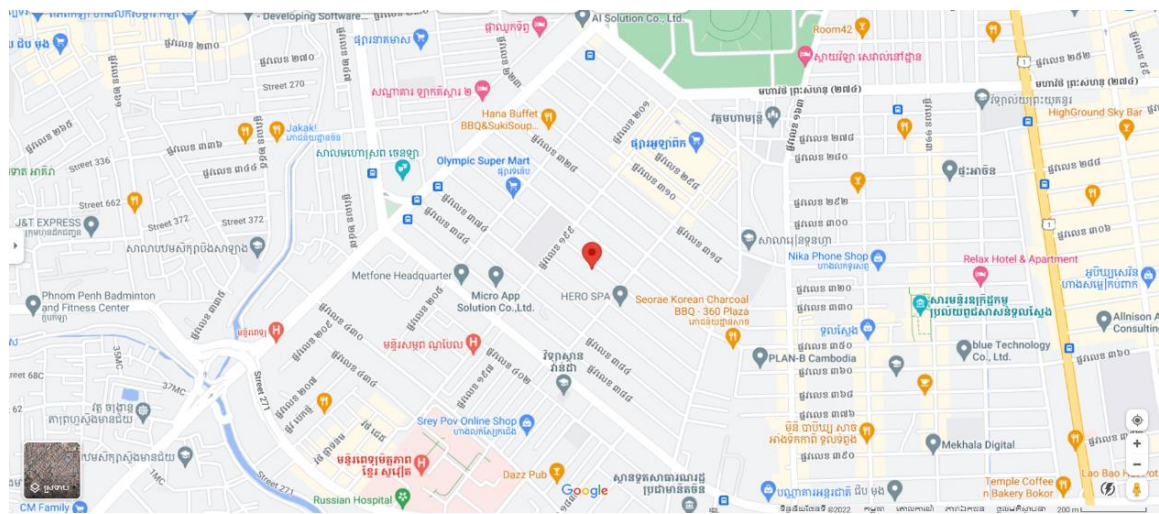


Figure 2: Location map of ALLWEB Co., LTD

## **2. THE INTERNSHIP PROJECT PRESENTATION**

During the internship three months at ALLWEB company, I work on a project called “Online Quiz Management System”, which is a web application developed to manage the user quiz and assign quiz for user. This project is a new project in company.

### **2.1 Structure**

The internship and project development were guided and assisted by:

- Academic Supervisor: Mr. HOK Tin  
Lecturer in the department of Information and Communication Engineering.
- Company Supervisor: Mr. NY Chanthoeurn

### **2.2 Operation manager at ALLWEB company problematic**

The reason that we propose to build this system is that we found many difficulties whenever there is a new candidate who wants to apply to be an internee or a staff.

- The tests are available on paper and difficult to keep document confidentiality. We cannot share this document with our candidates when they ask for a simple test in term to try to learn the test before coming to take the real test.
- Wasted the recruitment working time to print out the quiz and give it to candidates in order to take the test.
- The question is available only with the limited questions and difficult to change the questions for each candidate and it is easy for candidate share to another person.
- Difficult to keep historical records of candidate after they finish recruitment.
- After finish the test, it would be waste some working time of the staff to correct their work in order to select the candidates who got higher score.

We accelerate the automatic correction for the test, because of we do not have much time to correct them.

### **2.3 Objective**

To develop a web application called: “ALLWEB Online Quiz for Recruitment” solve many problems such as:

- Automatically set the quizzes for the candidate to take the test, and it will stop the candidate when they finish the test or the time is out. It provides the opportunity to run the test and complete the test automatically without HR team tell the candidate to stop.



- It will calculate the score for the candidate automatically. The result of candidate will save into the database with some user's information so that HR team can consider about their ability in the future as well. In this case, it does not waste some working time of staff for checking it.
- It does not take some spaces to store the document of the candidate. Moreover, it will permanently store their result in our database system without worrying about losing the candidate document.

## **2.4 Software development life cycle**

### **2.4.1 Waterfall**

As shown in Figure 3, to realize a project, it is necessary to carefully choose a great and suitable development methodology. As a result, the Waterfall methodology was chosen for developing this project, because the project is respectful to an approach, define-before-design, and design-before-code. Moreover, the methodology works well on this project with a limited development time.

- Requirement: I had to understand the objective, functionalities, and what needs to be designed.
- Design: for this stage, I studied the requirement specification and prepare for the system design.
- Implementation: the whole web application was divided into tasks where each of which needed to be finished by coding and testing
- Verification: all of the tasks were integrated to get a complete application. And the web application is needed to do testing to find out about the errors or flaws.
- Maintenance: as a web developer, I have to check the report from the user and fix the error that has occurred.

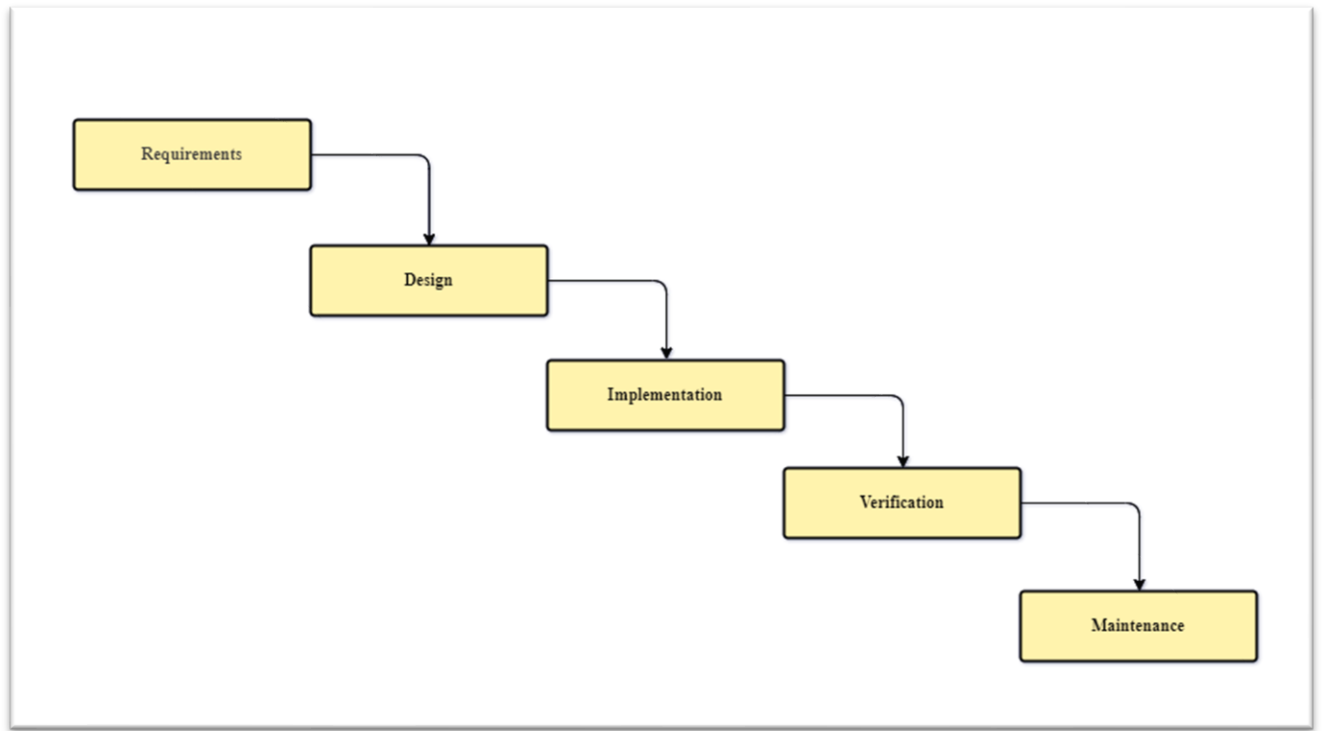


Figure 3: Project methodology

#### 2.4.2 Planning

Tasks	Weeks											
	1	2	3	4	5	6	7	8	9	10	11	12
Do the assignment	■	■										
Learn new technology			■	■								
Analyze and design the project requirements				■	■	■						
Implementation						■	■	■	■	■	■	■
Testing								■	■	■	■	■

Table 1: Planning table

As shown in *Table 1*, for the whole 12 weeks that I spent during the internship at ALLWEB company, I spend the first two weeks doing an assignment given by our company advisor, which is a tiny project on using the Java web application. At the start of the third week, the company advisor assigned me a project that I have to do for this internship program. I learned

about the technologies that I going to implement with the project for about two weeks. At the same time, I also did the project analysis and designed the requirement of the project by using about three weeks. After that, I started working on the implementation of the project from week 6 and did testing of the functionalities from week 8.

### 3. PROJECT ANALYSIS, CONCEPTION AND DESIGN

In this section, I begin to identify all the main functional requirement and optional functional requirement of the system.

#### 3.1 Case study of requirement

##### 3.1.1 Project requirement

ALLWEB online quiz system for recruitment creates with three differences role of users. For any user role, they can work on their functions as shown in the Table 2.

User	Functional	Description
Admin	CRUD user	The admin can create, edit, view and delete users from the system
Admin & Recruiter	View dashboard	User can see useful data such as the total number of candidates, total number of quizzes, total number of questions, total results, the chart of monthly quiz candidates.
	CRUD candidates	User can manage the candidates by inputting their information into system
	CRUD quizzes	User can manage the quizzes by inputting quiz information into system.
	CRUD questions	User can manage the quizzes by inputting question information into system
	CRUD answers	User can manage the answer by inputting answer information into system
	Login authentication	The system is required user to log into the system before using the features of the system

	CRUD question level	User can create, edit, view and delete question level.
	Edit question type	User can edit question type name.
	Generate the report of candidate	User can export the report of candidates during a period of time as excel.
	Update profile and change password	User can update the information and change password as well
	Forgot password	User can reset their password by input their email. system send link for reset their password.
	Reset password	Used to set new password in case their click link in their email
	Reset password for candidate	User able to generate new password and send new password to candidates by mail
	Live quiz overview	User can see the candidate quiz process
Candidate	Candidate login	User can login by input their email and password before they can do quiz
	Do quiz	User can do their quiz that admin or recruiter assign

Table 2: Project requirements table

### 3.1.2 Non-Functional requirement

Non-functionality requirements refer to the functions that are used to improve the system, rather than the functions that are able to see the system or website. The important non-functional requirement that I have to consider are listed below:

- Clean code: with these requirements, as a team, we make sure that our code is indented, commenting on functions, needed parameters, return variables, and so on.
- Performance: it is very important to make the website performs smoothly without errors.

- Stability: make the website run without causing any errors or slows or losing any user data.
- Security: make the website security stronger so that no one can hack into the website.
- Maintenance: detect errors or mistakes in order to increase the quality of the application.
- GUIs: must be simple, familiar, and user-friendly so that users could be easy to understand.

## 3.2 Project analysis

In this section, I begin to use UML Diagram that refer to a standard language. I used it to visually model processes or designs in software bases system.

### 3.2.1 Use Case diagram

Figure 4 shows a use case diagram defined to prove the demanding features in our application. Each use box expresses the import module that will be implemented and that contains other features in it. There are three types of users. The user is required to log into the system before using any functionalities of the website.

In the diagram in Figure 4, there is the keyword "include", that is to say before accessing our system it is necessary that this actor authenticates his identification first.

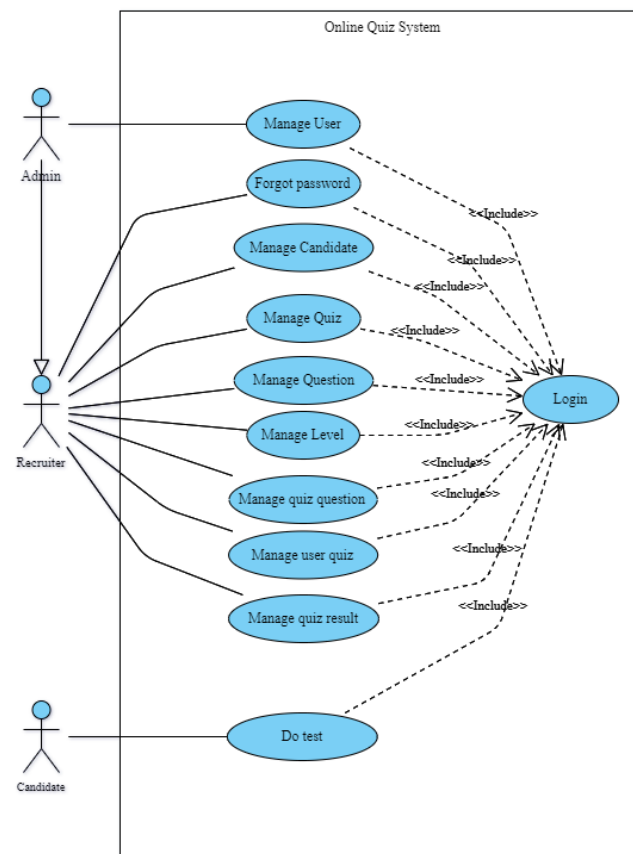


Figure 4: Use Case diagram

### 3.2.2 Database schema

As shown Figure 5 is a database schema that I created after analyzing the main function of the project, I can find the given needed and the categories in the different tables. From the conception of association entity and relational model, we can find the relations and the cardinalities between each table. In addition, we can define the conceptual model of data with the attributes in each entity.

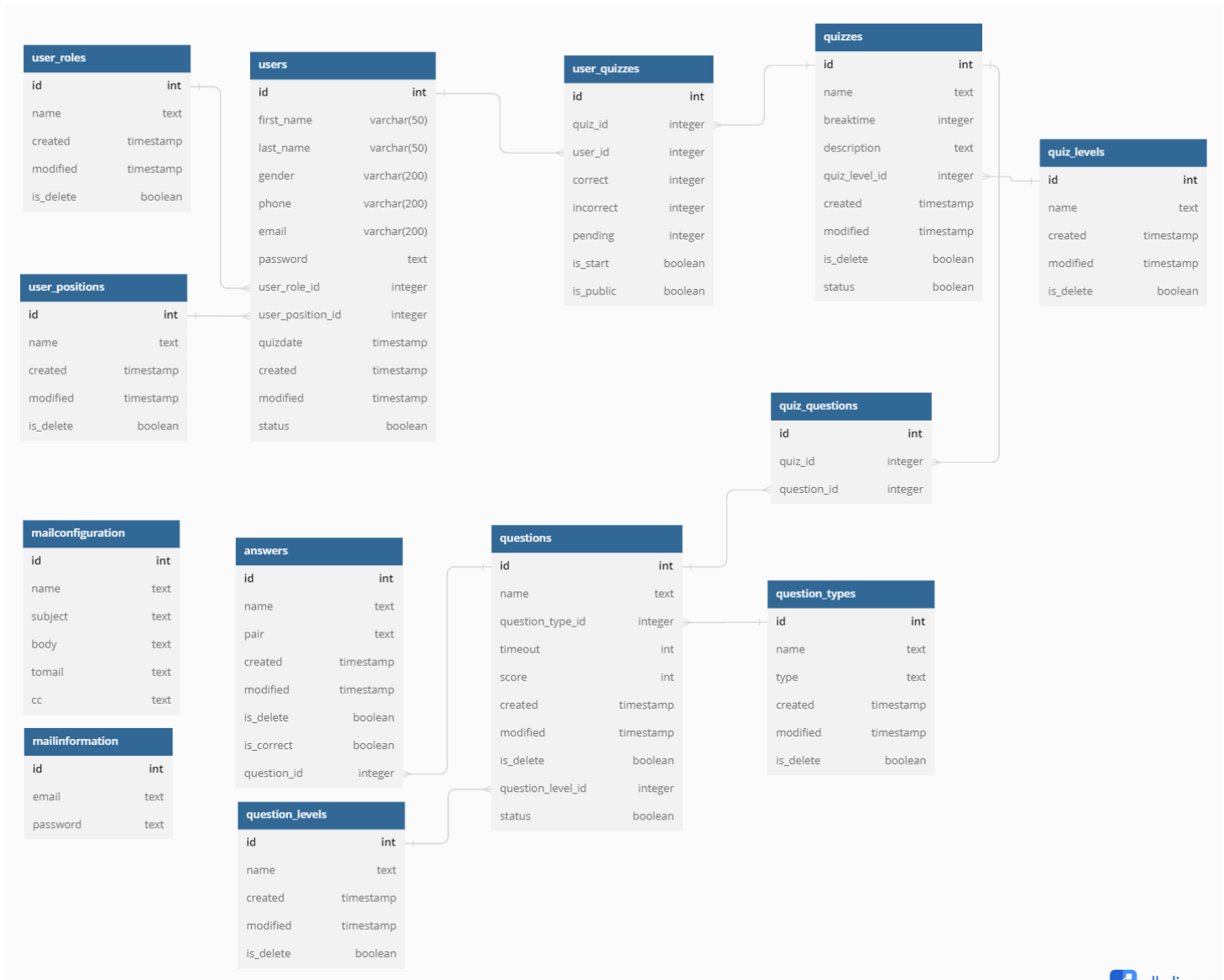


Figure 5: Database schema

### 3.2.3 Activity diagram

#### 3.2.3.1 Add new candidate diagram

Figure 6 is an activity diagram for users to create new candidates. In order to create a new candidate, users as administrators or recruiters need to login into the system first. After

successful login, users can add candidates by selecting the button “Add Candidate”. The user is required to enter all of the required data of the candidate and click the “submit” button to complete the process.

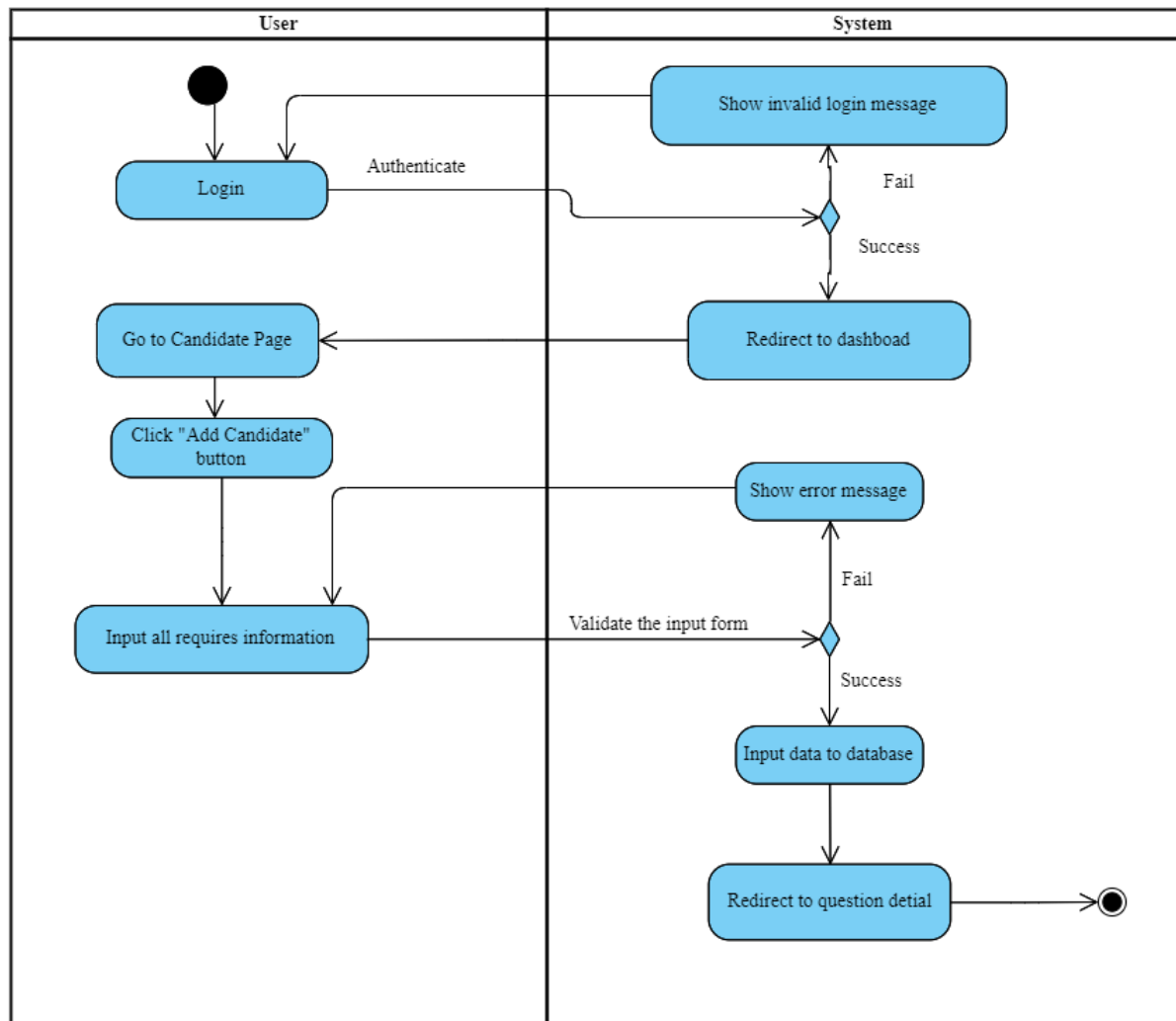


Figure 6: Activity diagram of adding new candidate

### 3.2.3.2 Add new question diagram

As shown in *Figure 7* is an activity diagram to create a new question. The first admin user or recruiter user needs to login into the system. After successful login, the admin can add questions by going to the question page and selecting the “Add Question” button. The user just selects the question type first and enters all of the required data of the question and selection the “Submit” button to finish the adding question process. After creating the question system forward to the question detail page. On the question, detail page user can see details information about the question, and the user can add the answer to the question by clicking the “Add answer” button. The User then has to input the required data of the answer and click submit to finish adding the answer process.



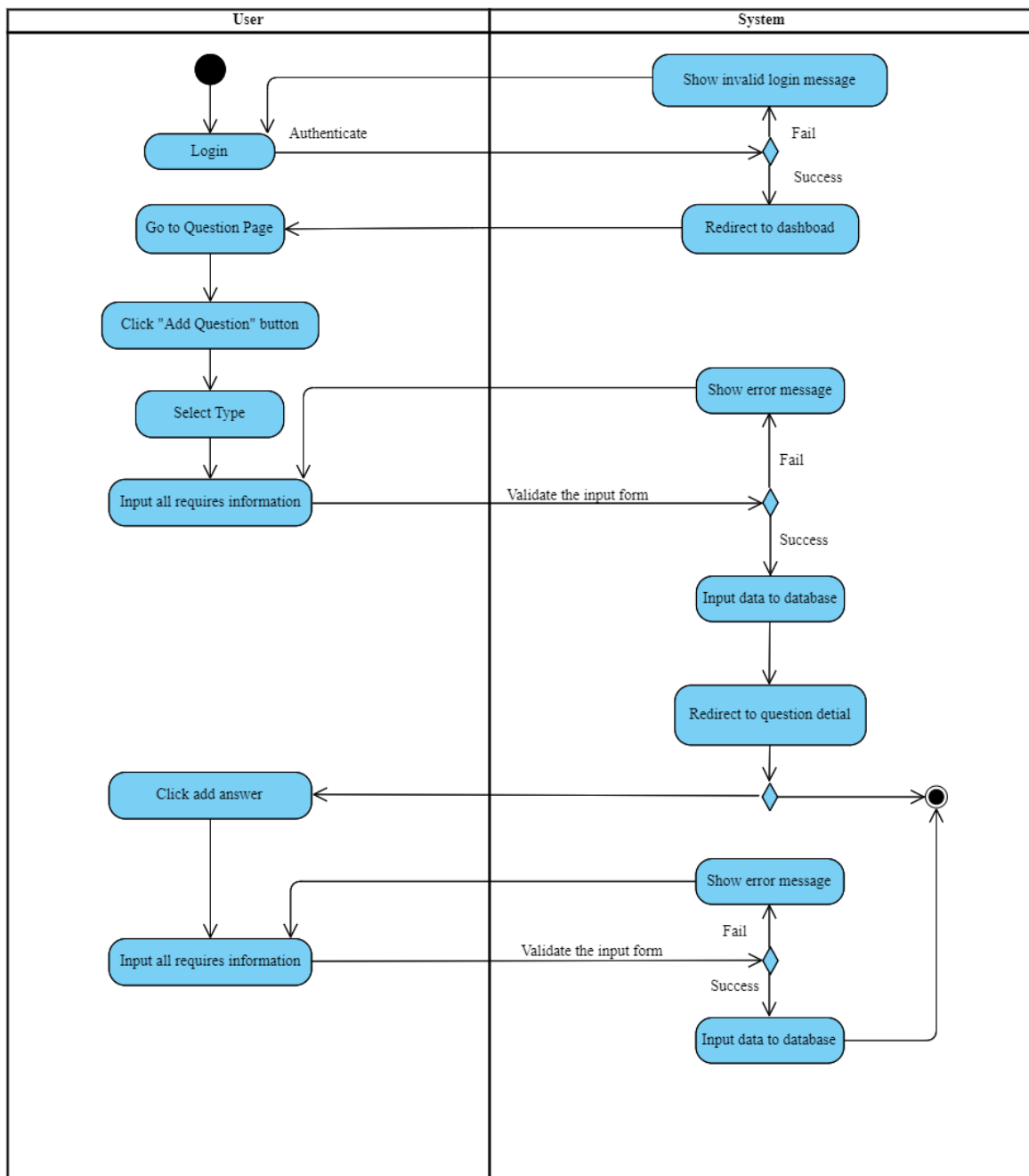


Figure 7: Activity diagram of adding new question

### 3.2.3.3 Assign quiz to candidate

To assign a quiz to the user, the admin or recruiter user needs to login into the system first after successful login, the user can define the quiz by going to the page “Candidates”. After the system forward to the page candidate and lists all candidates. The user can click view candidate detail, the system is redirected to the page candidate detail User can select on “Add quiz” button and check the box of quiz that the user wants to assign to the candidate, and click the “Submit” button for finish assign quiz to the candidate as shown in *Figure 8*.

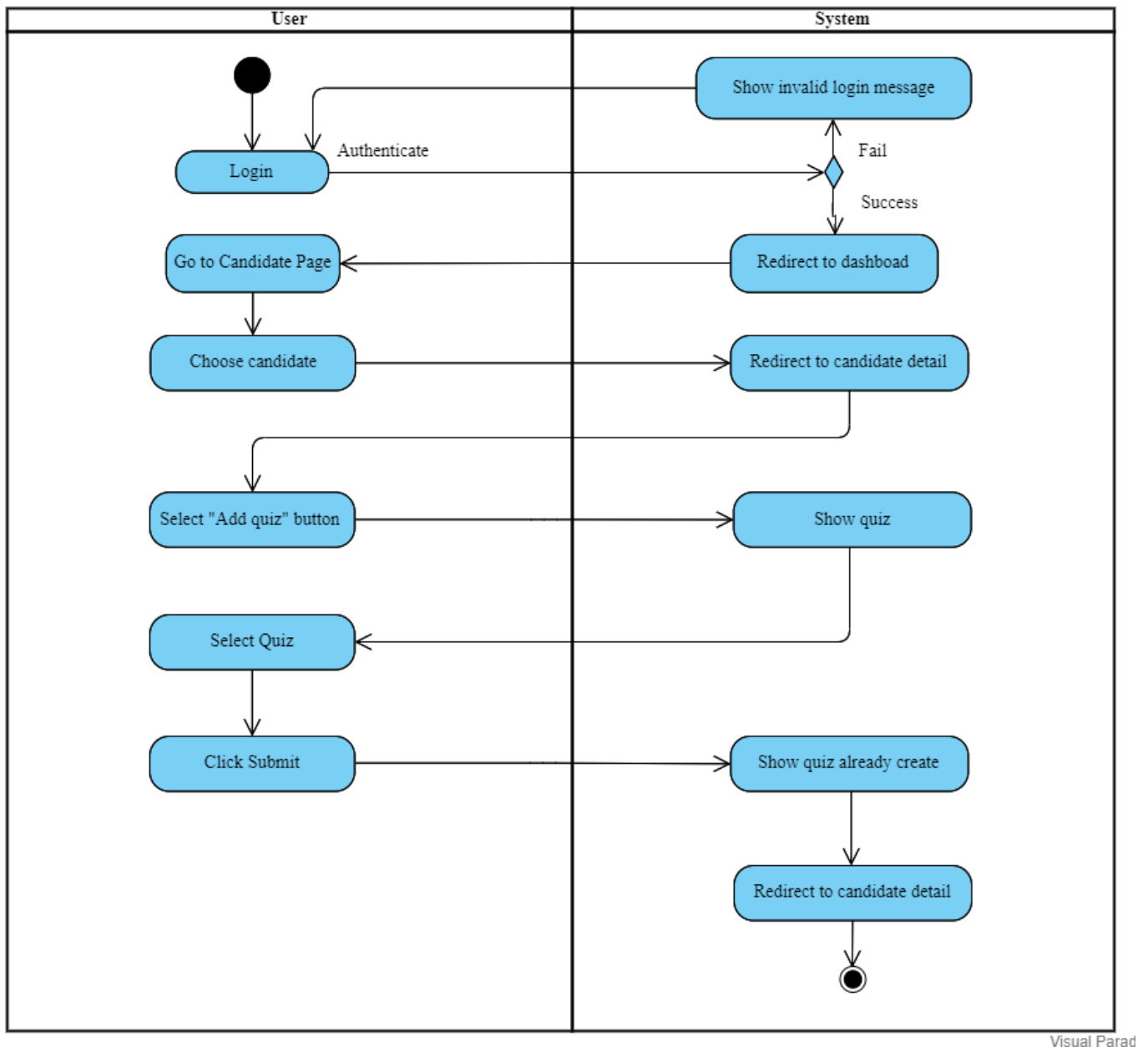


Figure 8: Activity diagram of assign quiz for candidate

### 3.2.3.4 Reset password diagram

Figure 9 is an activity diagram to show the order to reset the password. The first user starts the system at the "login page". Users can select the "Forgot password" button. The system forward to the page Forgot password. Next user needs to enter their email. After that system holds on and sends mail to the user via their entered email. The user can click the link and it redirects to the reset password page. Users need to input the password and confirm the password. After input already user can click the "Submit" button to finish the reset password process.

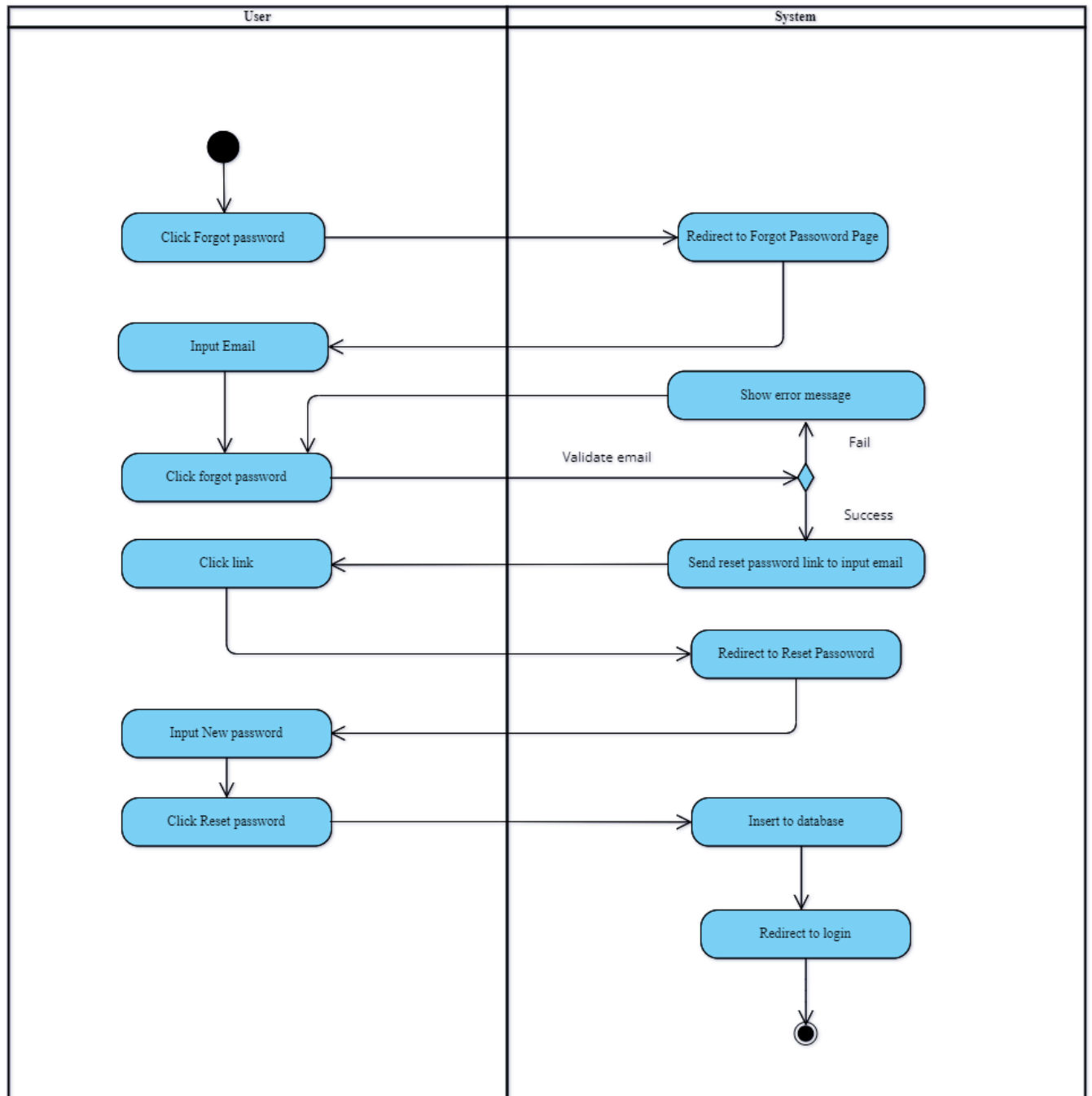


Figure 9: Activity diagram of reset password

## 4. TECHNOLOGY AND DESIGN

### 4.1 System and design

#### 4.1.1 Physical architecture

As shown in *Figure 10*, the physical architecture of the system is described below through the figure and the explanation of each component.

- Client access to the system via a web browser where the HTTP request will be sent to the web server (Apache Tomcat).
- web server receives HTTP requests and generates JSP files for the web view by using Java language in Struts framework.
- Database server (PostgreSQL) is used for storing data for this system. When there is any request from the web server, the query corresponding to the request will be generated.

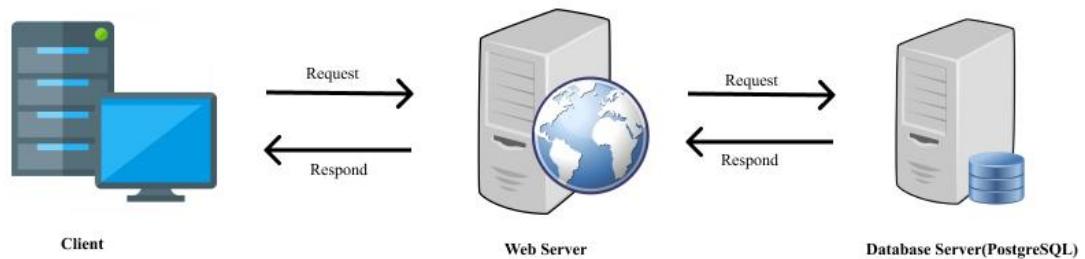


Figure 10: Physical architecture of application

#### 4.1.2 Logical architecture

The logical architecture as shown in Figure 11 describes about the idea of how Struts framework uses MVC structure to build the web application with Java programming language with Angular JS.

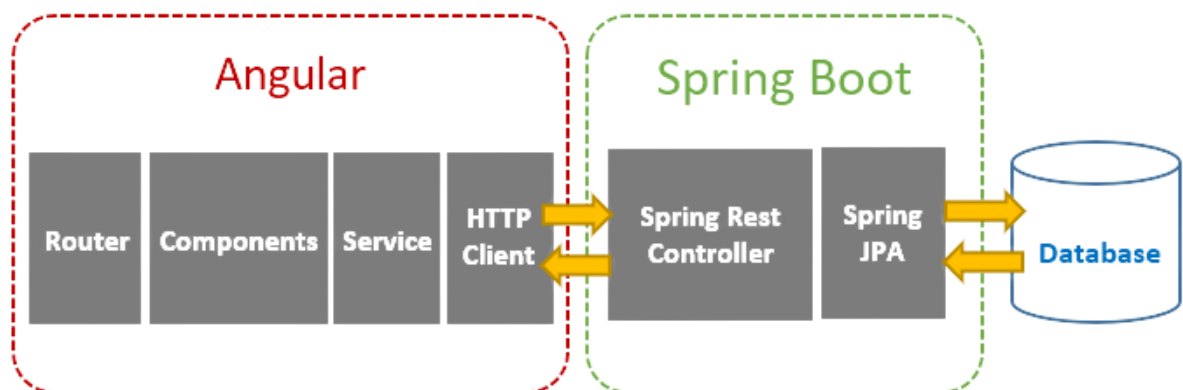


Figure 11: Logical architecture of application

- Spring Boot exports REST Apis using Spring Web MVC & interacts with PostgreSQL Database using Spring JPA
- Angular Client sends HTTP Requests and retrieves HTTP Responses using HttpClient Module, showing data on the components. We also use Angular Router for navigating to pages.

## 4.2 Programming language

**Java** [1] is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. I choose Java programming language for my project because Java is easy to learn, simple to use object-oriented and it is used in many companies around the world. In addition, Java is fast secure, and reliable.



Figure 11: Java language logo

## 4.3 Framework and technology

**Spring Boot** [2] is an open sources Java-based framework used to create a microservice. It is developed by the Pivotal Team and is used to build stand-alone and production-ready spring applications. I choose Spring Boot for developing my project because spring boot has more features for me to choose from and more libraries to use in the project to help develop faster and safe.



Figure 12: Spring Boot logo

**HTML** [3] is used to put the structure of a website together for documents designed to be displayed in a web browser. **CSS** [4] acts as makeup for HTML where it improves the user interface such as color and layout of a website structure build with HTML. **JavaScript** [5] is a full-on programming language that adds interactivity and functionality to a website.



Figure 13: Logo Html CSS Javascript

**AngularJS** [6] is a discontinued free and open-source JavaScript-based web framework for developing single-page applications. It was maintained mainly by Google and a community of individuals and corporations. It aimed to simplify both the development and the testing of such applications by providing a framework for client-side model–view–controller (MVC) and model–view–viewmodel (MVVM) architectures, along with components commonly used in web applications and progressive web applications.



Figure 14: Logo Angular JS

**Angular Material** [7] is the most popular material design component for angular for developing websites. It has internationalized and accessible components for the user. Well-tested to ensure performance and reliability. I chose Angular Material because it has more components for me to choose and I can update my style on it. It can save a lot of time in designing user interfaces and building client-side from scratch.

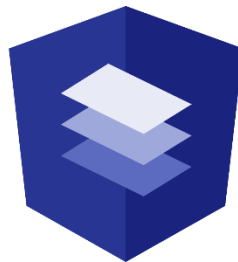


Figure 15: Logo Angular Material

**FullCalendar** [8] (*FullCalendar - JavaScript Event Calendar*) is a plug-in for the calendar view for the web application. It provides many useful features such as being powerful and lightweight, developer-friendly, and open-source. I chose it because my project has a schedule to show the test candidates. It can help me to generate the calendar by just querying and sending the data to it when we initialize.



Figure 16: Logo FullCalendar

**PostgreSQL** [9] is a widely used relational database management system with a proven architecture that has resulted in a strong reputation for reliability, data integrity, and performance. I use PostgreSQL because it is compatible well with SQL Query Builder of the Spring Boot Framework. Regarding performance in sever, it is working fast than MYSQL on accessing data and queries.



Figure 17: Logo PostgreSQL

#### 4.4 Version control system

In the programming field such as web development, vision control is a type of practice that tracks and provides control over changes to source code. I chose GitLab [10] for project version controls. For my project, version control is very important because it helps me to manage my project. I can store my source code every time I complete any functionality. Easy to get it back when writing something wrong in my project. Additionally, I can create an additional branch to store our code. Because it my project there are 3 main folder projects is API, admin panel, and candidate panel.



Figure 18: Logo GitLab

## 4.5 Tools

**IntelliJ IDEA** [11] is a type of the best IDE. Integrated Development Environment is Intelligent Coding Assistance for web development because it provides on-the-fly error prevention, best auto completion and code refactoring, zero configuration debugging, and an extended HTML, CSS, and JavaScript editor. IntelliJ has many features but the best three features are interesting and we decide to use them. Those three features are:

- Smart Java Code Editor
- Code Quality Analysis
- Easy Code Navigation and search

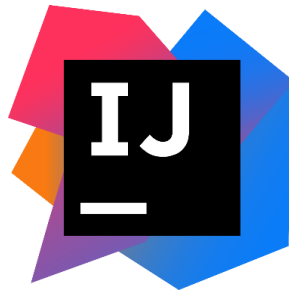


Figure 19: Logo IntelliJ Idea

**Visual Studio Code** [12] is a standalone source code editor that runs on Windows, macOS, and Linus. The top pick for Website development, with more extension support. I used it because it works fast for my computer and it can create and compile the project similar to other tools.

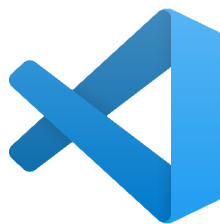


Figure 20: Logo Visual Studio Code

**PgAdmin4** [13] is an administration PostgreSQL tools. We use it to design, back up, restored, and manage databases. It works well and easy to manage the data in my database. It can generate queries for me to select, create, update and delete. An important control on data is that we can back up the data as a file from the tool and we can restore it, so our data is secure.





Figure21: Logo PgAdmin4

**Postman** [14] is an API platform for developers to design, build, test, and iterate their APIs. It is an HTTP client that tests HTTP requests, utilizing a graphical user interface, through which we obtain different types of responses that need to be subsequently validated. I used postman for testing project API after I build it completely in each functionality before I integrate it with the front end. When we have the swagger configuration in our project, we just import the link of our API description, it generates all the requests for us to test easily.



Figure 22: Logo Postman

## **5. PROJECT IMPLEMENTATION**

This section, detail the implementation of the project during the internship. I explain how to set up tools and technology, project implementation, and installment.

### **5.1 Project setup**

#### **5.1.1 Environment setup**

Prior to development of project, I need to setup some required environments and tools in order to make the project work. Those environments are list as below:

- Install JDK, at least from version 1.7.
- Install the IDE. In my case, I choose the IntelliJ IDEA and Visual Studio Code for code editor.
- Install the Postman for testing API
- Install PostgreSQL for database
- Install the pgAdmin4 for manage database

#### **5.1.2 Project initialization**

##### **5.1.2.1 Create a Project with Spring Boot framework**

After setup all of the required environments, I use the Spring boot initializer [15] as shown in Figure 25 to create a Spring project. I can initialize what kind of project, language, and JDK version in this Spring Initializer. After I choose the language, JDK version, and input information already. I can add dependencies by clicking on “Add Dependencies” and searching up all the dependencies which I need adding all the needed dependencies, we can click “Generate” to download the initialized project into our pc in a jar package.

Project

☒ Maven Project
 ☐ Gradle Project

Language

☒ Java
 ☐ Kotlin
 ☐ Groovy

Spring Boot

☐ 3.0.0 (SNAPSHOT)
 ☐ 3.0.0 (M4)
 ☐ 2.7.4 (SNAPSHOT)
 ☒ 2.7.3
 ☐ 2.6.12 (SNAPSHOT)
 ☐ 2.6.11

Project Metadata

Group

com.example

Artifact

demo

Name

demo

Description

Demo project for Spring Boot

Package name

com.example.demo

Packaging

☒ Jar
 ☐ War

Java

☐ 18
 ☒ 17
 ☐ 11
 ☐ 8

Dependencies

ADD DEPENDENCIES... CTRL + B

Lombok

DEVELOPER TOOLS

Java annotation library which helps to reduce boilerplate code.

Spring Security

SECURITY

Highly customizable authentication and access-control framework for Spring applications.

PostgreSQL Driver

SQL

A JDBC and R2DBC driver that allows Java programs to connect to a PostgreSQL database using standard, database independent Java code.

Spring Data JPA

SQL

Persist data in SQL stores with Java Persistence API using Spring Data and Hibernate.

GENERATE CTRL + G

EXPLORE CTRL + SPACE

SHARE...

Figure 23: Spring Boot initialization

### 5.1.2.2 Create AngularJS application

I used AngularJS to ask the front-end, first of all before we can create a project in AngularJS, we need to install Nodejs for handling data communication. We can download NodeJS at [www.nodejs.org](http://www.nodejs.org). Every dependency or library in AngularJS will be stored in the “package.json” file and we can add more new libraries to the project by using “npm install”. To install Angular CLI we need to use the command “npm install -global @angular/cli”. After we install already, we can create a new project by command “ng new <nameproject>” as shown in Figure 26. Then we need to press enter to add Angular routing and after that, we can choose style CSS and press “enter” and waiting it running create our new project as shown in Figure 27.

```

C:\Users\Ravit\Desktop\Project>ng new demo
? Would you like to add Angular routing? Yes
? Which stylesheet format would you like to use? (Use arrow keys)
> CSS
SCSS [ https://sass-lang.com/documentation/syntax#scss ]
Sass  [ https://sass-lang.com/documentation/syntax#the-indented-syntax ]
Less  [ http://lesscss.org ]
  
```

Figure 24: AngularJS new Project

```
npm install
CREATE demo/angular.json (2912 bytes)
CREATE demo/package.json (1035 bytes)
CREATE demo/README.md (1058 bytes)
CREATE demo/tsconfig.json (863 bytes)
CREATE demo/.editorconfig (274 bytes)
CREATE demo/.gitignore (548 bytes)
CREATE demo/.browserslistrc (600 bytes)
CREATE demo/karma.conf.js (1421 bytes)
CREATE demo/tsconfig.app.json (287 bytes)
CREATE demo/tsconfig.spec.json (333 bytes)
CREATE demo/.vscode/extensions.json (130 bytes)
CREATE demo/.vscode/launch.json (474 bytes)
CREATE demo/.vscode/tasks.json (938 bytes)
CREATE demo/src/favicon.ico (948 bytes)
CREATE demo/src/index.html (290 bytes)
CREATE demo/src/main.ts (372 bytes)
CREATE demo/src/polyfills.ts (2338 bytes)
CREATE demo/src/styles.css (80 bytes)
CREATE demo/src/test.ts (749 bytes)
CREATE demo/src/assets/.gitkeep (0 bytes)
CREATE demo/src/environments/environment.prod.ts (51 bytes)
CREATE demo/src/environments/environment.ts (658 bytes)
CREATE demo/src/app/app-routing.module.ts (245 bytes)
CREATE demo/src/app/app.module.ts (393 bytes)
CREATE demo/src/app/app.component.html (23364 bytes)
CREATE demo/src/app/app.component.spec.ts (1067 bytes)
CREATE demo/src/app/app.component.ts (208 bytes)
CREATE demo/src/app/app.component.css (0 bytes)
| Installing packages (npm)...
```

Figure 25: AngularJS new project set up

## 5.2 Configuration

After we installed the project, we need to do a few configurations inside the project

- Spring Boot Project
  - If we miss some dependencies when initializing. We can add those dependencies in the “pom.xml” file as shown in Figure 28 and click “load maven change”. This configuration can help us not to need to re-generate the same project again.

```
<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-devtools</artifactId>
  <scope>runtime</scope>
  <optional>true</optional>
</dependency>
<dependency>
  <groupId>org.postgresql</groupId>
  <artifactId>postgresql</artifactId>
  <scope>runtime</scope>
</dependency>
<dependency>
  <groupId>org.projectlombok</groupId>
  <artifactId>lombok</artifactId>
  <optional>true</optional>
</dependency>
<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-test</artifactId>
  <scope>test</scope>
</dependency>
```

Figure 26: Adding Spring Boot dependencies in pom.xml

- If we initialize with database driver, we need to configuration on “application.properties” file by input require information as shown in Figure 29.

```
spring.datasource.url=jdbc:postgresql://localhost:5433/learn_1
spring.datasource.username= postgres
spring.datasource.password=1111
```

Figure 27: Connect to PostgreSQL database

### 5.3 Project structure

The application structure is Spring Boot is basically the structure of folders, sub-folders, and files included in a project. When we create the project, we will get an overview of the application structure as shown in Figure 30.

- Spring Boot Structure
  - **src**: is the root fold of Spring Boot application
  - **model**: is the folder that store all entities of the project and each entity have their own attribute and they constitute as a table in the database
  - **repository**: is a mechanism for encapsulating storage, retrieval, and search behavior which emulates a collection of objects according to our logic we write.
  - **service**: is used with classes that provide some business functionalities. It is used for encapsulating the detail and providing a CRUD interface for an entity.
  - **controller**: is a folder that store all the controller for REST API and URL.
  - **config**: is a folder that store configuration security and configuration properties.
  - **dto**: is a folder for store request data entity and each request entity have their own attribute.
  - **resources**: contain the static file for Spring Boot application that use to configuration.
  - **pom.xml**: Project Object Model is the fundamental unit of work in Maven. It is an XML file that contains information about the project and configuration details used by Maven to build the project. It contains default values for most projects.

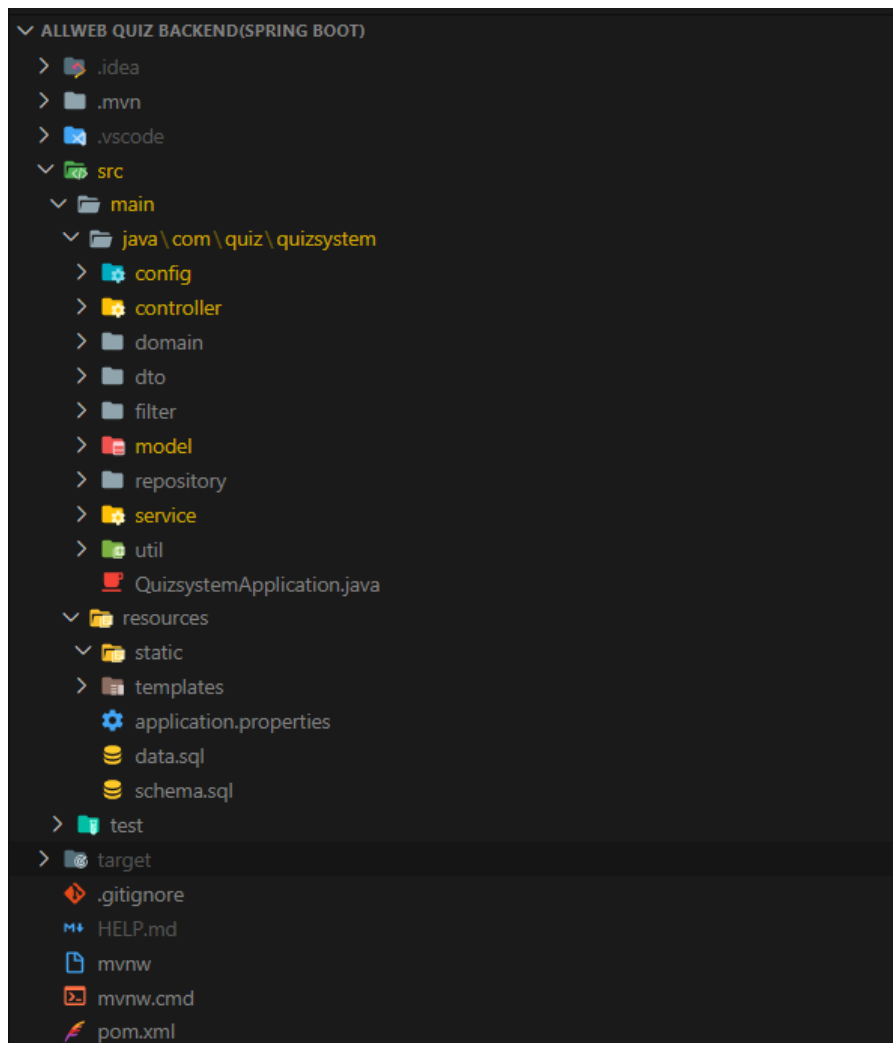


Figure 28: Project structure Spring Boot (Backend)

- AngularJS structure as show in Figure 31:
  - **node\_modules**: is cache for the external modules that your project depends upon. When you command npm install them, they are downloaded form the web and copied into the node\_modules folder.
  - **src**: is the root folder for storing assets, component, and views.
  - **assets**: is a folder for store custom made CSS, Javascript, picture and icon
  - **component**: is a folder for storing all the customs made component which is the UI logic, fetching API and displaying them according to the logic we write.
  - **package.json**: is a json file that track all of our dependencies and their version which was install using “npm install”
  - **page**: is a folder for store page for displaying them according to route
  - **dialog**: is a folder for store dialog for create and modify data in each page
  - **material**: is a folder for store modules Angular Material UI is UI component for help us design website.

- **service:** is a folder for store the service that are used to request REST API from spring

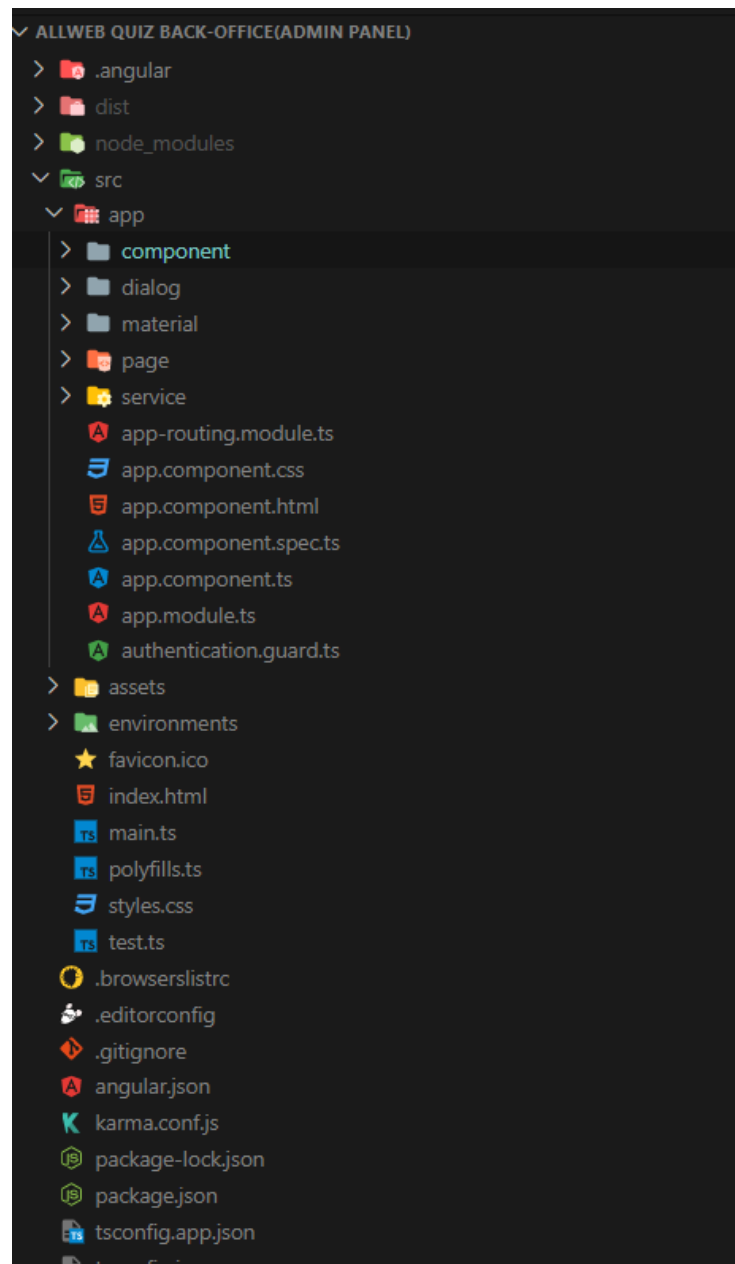


Figure 29: Project Structure Angular JS (Client Panel)

## 5.4 Project implement

### 5.4.1 Login authentication and logout process

Login and logout are one of the most important functionalities of the system since it is used for security purpose to prevent other from using our web application without having a registered account in the system. The first stage of the procedure when a user tries to enter the URL to the home page of the website is that it will check the cookies and session on the browser through the Java action class to see if the user is already login yet. In case there is already the information

of the user such as ID and email on cookies or session of the browser, then the route will be forwarded to the dashboard page or the home page of the website. In contrast, after checking the cookies and session of the browser with no user information, it will be routed to the login page. In this case, the user has to input the correct email and password that is already registered in the database.

The user authentication operation is worked in a few steps as shown in Figure 32. Firstly, I need to check the session for finding user is null or not. If the user is null system lets the user input information and the user completes enter, I need to query data from the database by getting the user with the input email. In terms of the encrypted password of the user stored in the database is in form of a hash password encrypted by using this library. To verify whether the password inputted by the user is correct or not, I have to use a build-in function from this library which is called “*check password (plainPassword, hashedPassword)*”, where *plainPassword* is the password inputted password and *hashedPassword* is the password of user retrieved from the database. If both passwords are matched, the function will return true, or false otherwise. When the user retrieved from the database, it means that the login is success and the input password matched the password stored in the database, which means that the login is success and then the route will be forwarded to the dashboard page, otherwise, an invalid login message will be displayed to the user and the system will allow them to enter their information again.

The logout operation happens when the user clicks the logout button. It will clear the cookies and invalidate the session of the user login in the browser. Finally, it will be routed to the login page.



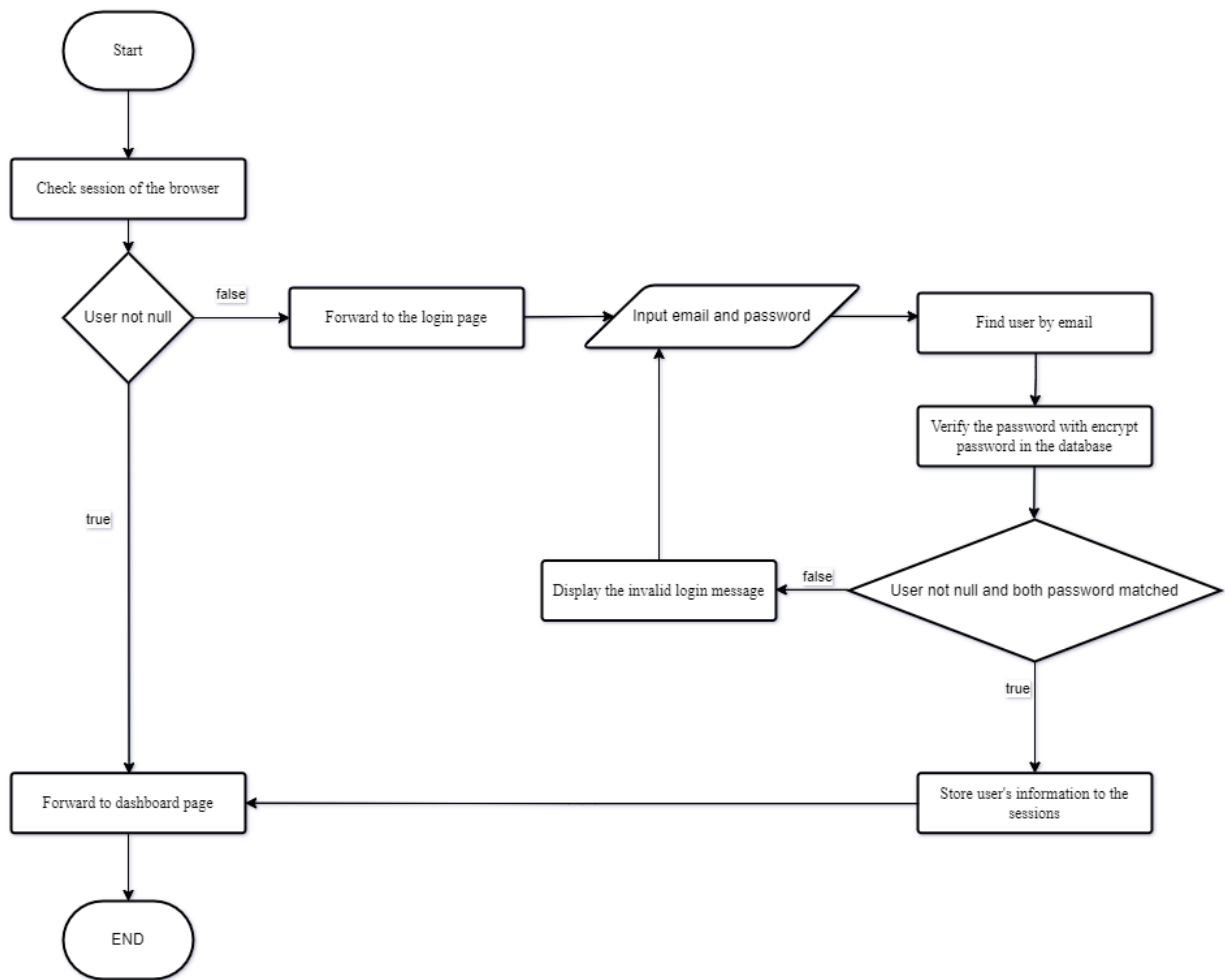


Figure 30: Login authentication flowchart

#### 5.4.2 Create new candidate

One of the core functions of this project is to allow the admin user to manage the candidates, which means the user needs to be able to create them to do any other function with them such as set the interview, adding the result, etc.

Figure 33 shows an in order to perform this function, firstly, the user needs to log into the system. To create a new candidate, users need to the candidate page and select the “Add candidate” button. The user will be asked to enter all of the required information about the candidate into the required field. There is one special input box, which is the email input. The input email will be validated if it is the existing email or not. If the email is the existing system will show an error message and let the user enter another email. Another is when the user enters the correct email and completes all of the required input, the user can finally create the candidate by clicking the button “Submit” and storing the input data in the database of the user table, else, it will show an error message to the user and required the user to reinput data again. After the data storing is complete, the system forwards the user to the candidate list page.

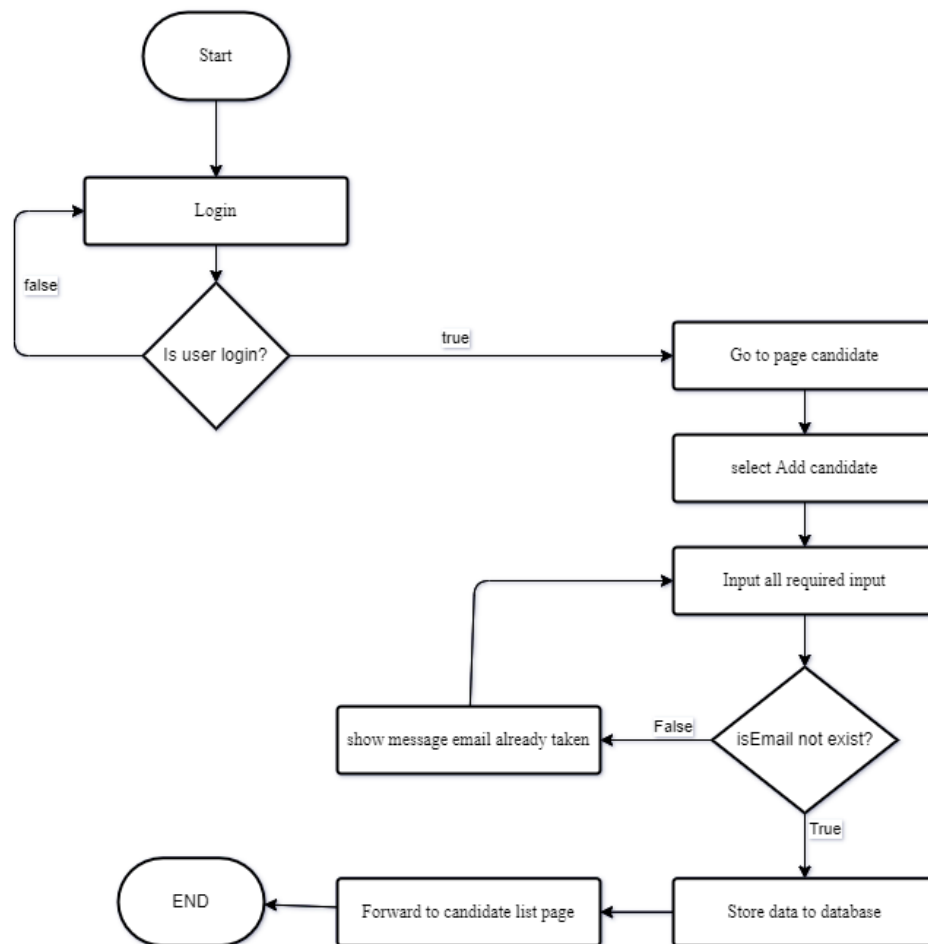


Figure 31: Create new candidate flowchart

### 5.4.3 Create new question

Another main function of the project is to enable the user admin and recruiter to manage the question and quizzes for a candidate to do the test.

Figure 33 shows an order to create a question. Firstly, the user needs to login into the system, then go to the question page and select the “Add question” button. The system will let the user input the required information. The user needed to select the type of question that is important information for me to create a new question. If the user selects the type question “*Fill in the gap*”, we need to add a hint and preview of the question for the user to understand how to create the question type “fill in the gap” and we need to add an event for the user enters the question. Because we need to find the gap for use it as answers and insert it into the database when we create a question. After the user input the question type, question and require information user can finally create the question by clicking the button “Submit” and I store the input data in the database of the question. Else, if the question type is “*Fill in the gap*” I store the input data in

the database of questions and database of answers. If have an error system displays an error message to the user and required the user to reinput data.

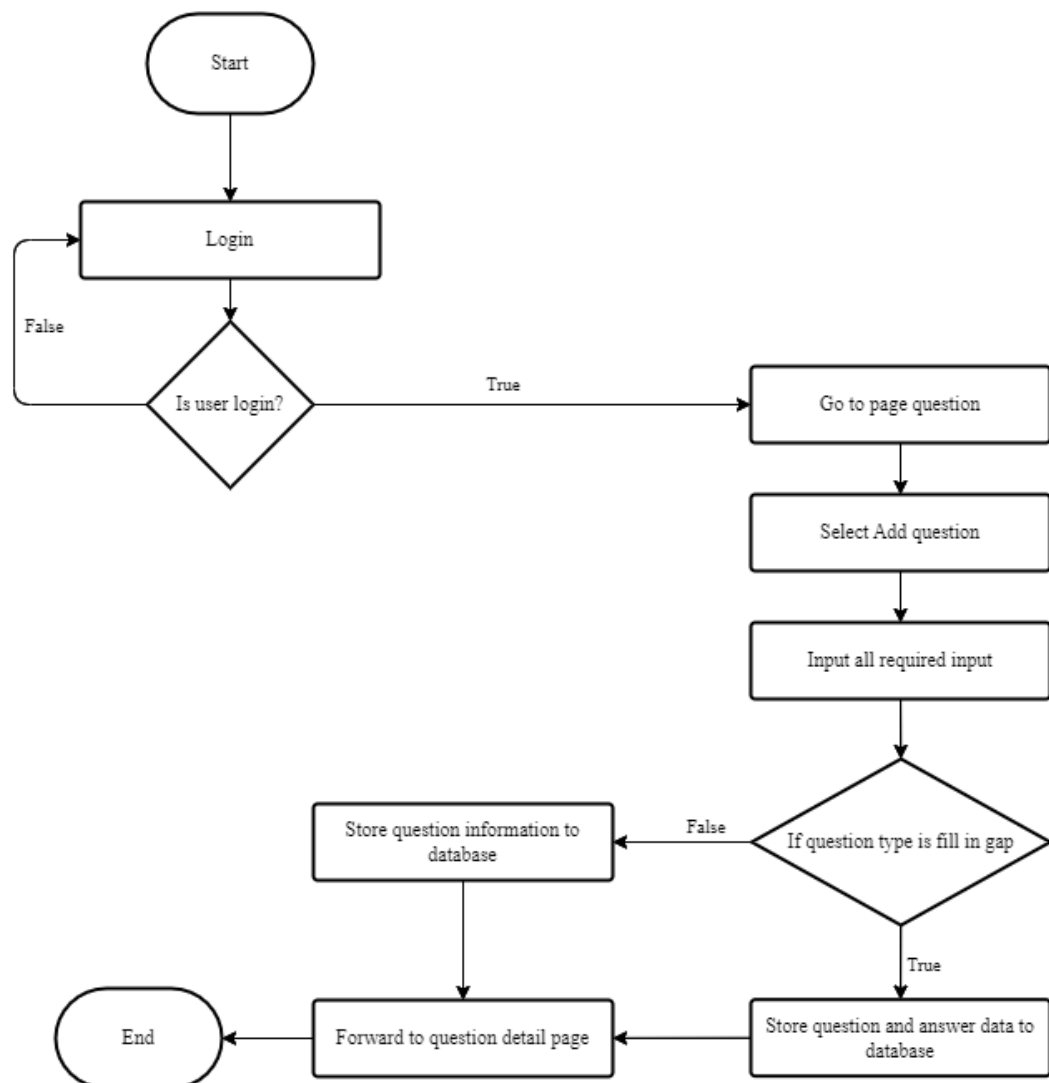


Figure 32: Create new question flowchart

#### 5.4.4 Edit multiple answer

Another important function of the project is to edit multiple answers to questions that can help the user admin or recruiter can create questions and modify answers fast.

Figure 35 shows how to edit multiple answers. Firstly, the user needs to login into the system, then go to the question page and select question detail, and then the user needs to select the “Edit Multiple” button. The system queries to the database to get all answers and lists in row input. Users can update all answers and the system validates all fill input to make sure user input is correct. After the user edit complete user can click the button “Submit” to complete edit multiple answers.

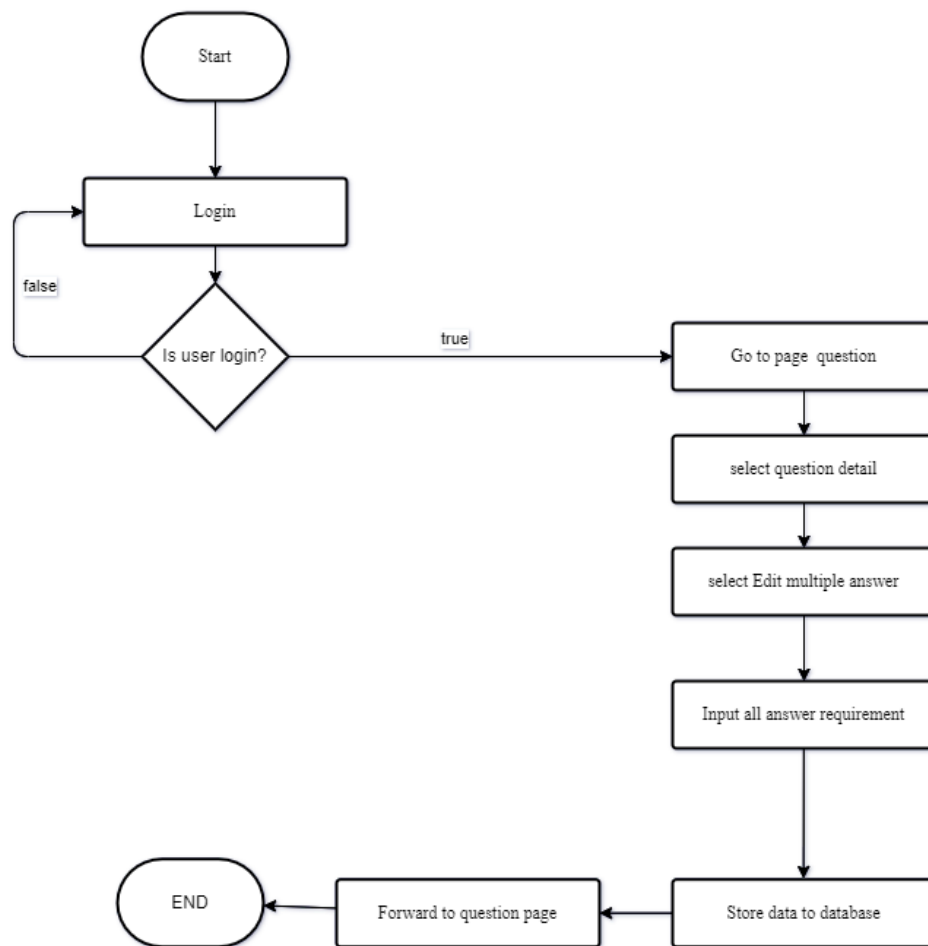


Figure 33: Edit multiple answer flowchart

#### 5.4.5 Email configuration process

Figure 36 shows about source code that I configure for the mail server to store email and passwords in the database. I use the email configuration to run the process of sending emails to users. I keep the email and email app password of the application in the database. When the project starts it is query data to past in *Java Mail Sender Implement*. After the process, we can send emails to candidates or users with their information o users that have the role of administrator or recruiter can request the link reset password when they forgot the password.

```

@Configuration
public class EmailConfig {
    @Autowired
    private MailinformationService mail_info_service;

    @Bean
    public JavaMailSender getJavaMailSender() {

        Mailinformation mailaccount = mail_info_service.getMailInfomation(id: 1);

        JavaMailSenderImpl mailSender = new JavaMailSenderImpl();
        mailSender.setHost(host: "smtp.gmail.com");
        mailSender.setPort(port: 587);

        mailSender.setUsername(mailaccount.getEmail());
        mailSender.setPassword(mailaccount.getPassword());

        Properties props = mailSender.getJavaMailProperties();
        props.put("mail.transport.protocol", "smtp");
        props.put("mail.smtp.auth", "true");
        props.put("mail.smtp.starttls.enable", "true");
        //props.put("mail.debug", "true");

        return mailSender;
    }
}

```

Figure 34: Mail Configuration

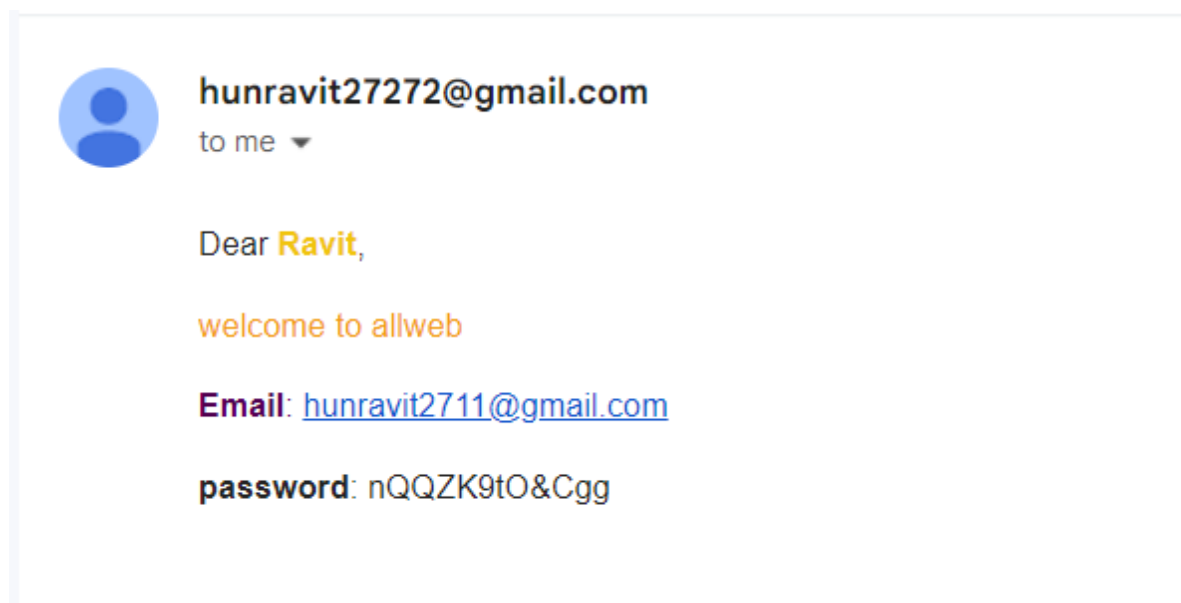


Figure 35: Mail Received

## 6. CONCLUSION

The internship at ALLWEB really help me develop both my technical skill and my soft skill, though there were still a few difficulties that I had during this internship, I was still able to solve them in due time.

### 6.1 Complete and uncompleted task

After finish the internship program at the ALLWEB company, the result of the project that I worked on will be illustrated in the table below.

Task	Completed	Uncompleted
Login authentication	✓	
View dashboard	✓	
CRUD candidate	✓	
CRUD user	✓	
CRUD quiz	✓	
CRUD question	✓	
CRUD answer	✓	
Assign and remove question	✓	
Assign and remove quiz for user	✓	
CRUD quiz level	✓	
CRUD question type	✓	
Update profile information	✓	
Forgot password and reset password	✓	
Generate report of candidate	✓	
Configuration mail	✓	
Configuration mail template	✓	
Mail sender	✓	
User result		✗

Table 3: Project result Table

### 6.2 Strong point

In this internship program, I have worked hardly on my project and have successfully conducted so many strong points as follow:

- Comprehensible and attractive UI
- Authentication and validation work efficiently

- Most of the functionalities are very responsive
- Loading speed is very fast
- Performance is acceptable
- Less step to archive each operation

### **6.3 Weak point**

Even though the system was developed with many strong points, there is still some weak points. Those that are needed to improved and developed on are:

- Faster mail send operation
- Store file image of user
- Web socket communicate
- Make more configuration for help user easy configurate

### **6.4 Difficulties**

For this internship, I have got experienced many difficulties and problems. The primary issue is the limitation of work knowledge. I have to learn and adapt to the new technology that I have never worked on it before in order to work on my project. This is my first time for my internship in developing a web application project using Java language with Spring Boot framework and Angular JS as the front-end. Even though I have learned a lot about it at school, there are more operations and concepts applied to the project which I have never seen before. I have to do a lot of research to do the tasks of my project.

Regarding a great deal of issues during the implementation, it is also the valuable experiences that I get from this internship.

### **6.5 Experience**

Honestly, three months of internship is quite a short period, and acquiring knowledge. Following are experiences that I have received from my internship including soft skills and hard skills:

- The working process in the company
- Communication between co-worker
- New technology
- Project management and processes
- Time management
- Deal with trouble

- Self-learning and doing research

## **6.6 Perspective**

If I have an opportunity to continue working on this project, I want to certain feature has not satisfied the users yet and adding new feature that are useful for company.

There are functionalities that I should have builds in the future:

- Upgrade web socket
- Upgrade front-end for candidate quiz to improve user friendly
- Upgrade security when candidate do test
- Make system can store user information
- Enables the system to save files and videos for inclusion in order question to improve testing to be more user friendly

## **6.7 Summary**

The internship is finally very vital for students to gain social and academic skills. After finishing the internship, I become fully aware of the fact that the knowledge we have learned in class is like a foundation for us to adapt to every new thing that we need in our future job. Furthermore, this internship program allows me to get more experience, I am able to practice the use of the methodology of project management and how to use it properly. I am sure that all of these experiences will be the most valuable for my future career.



## 7. REFERENCES

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## 8. ANNEXES

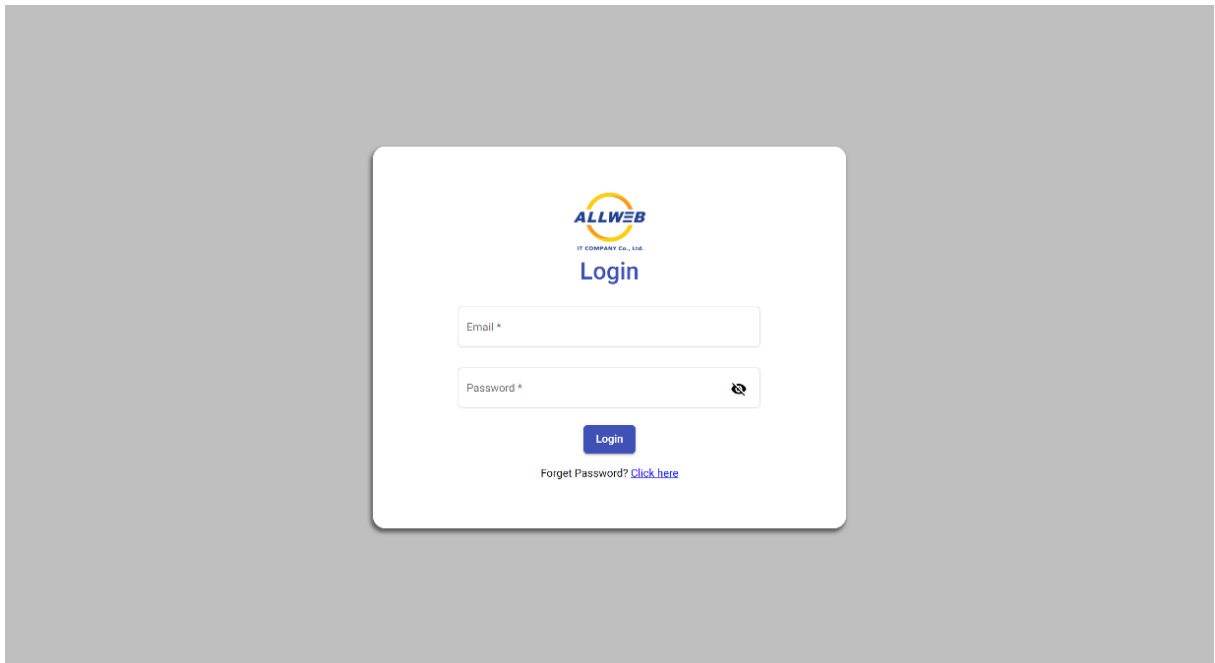


Figure 36: Login page

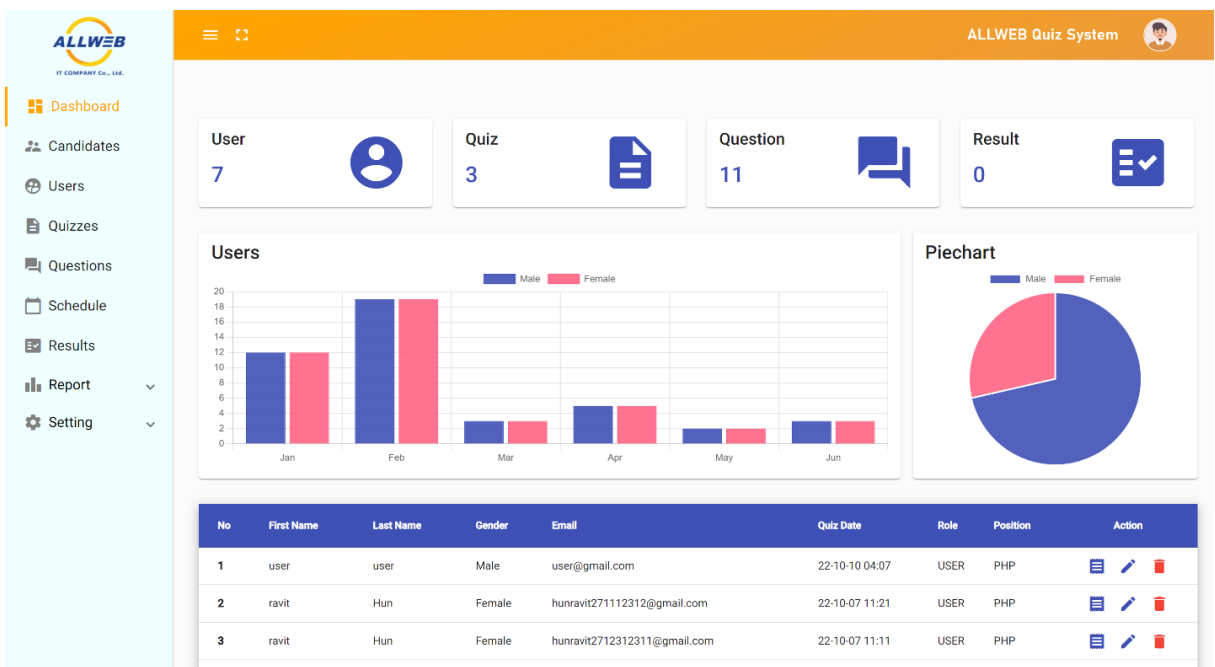


Figure 37: Dashboard page

- Dashboard
- Candidates
- Users
- Quizzes
- Questions
- Schedule
- Results
- Report
- Setting

ALLWEB Quiz System

Candidate

Total user: 7

Search

Add Candidate +

No	First Name	Last Name	Gender	Email	Quiz Date	Role	Position	Quiz No	Action
1	user	user	Male	user@gmail.com	22-10-10 04:07 PM	USER	PHP	2	
2	ravit	Hun	Female	hunravit271112312@gmail.com	22-10-07 11:21 AM	USER	PHP	0	
3	ravit	Hun	Female	hunravit2712312311@gmail.com	22-10-07 11:11 AM	USER	PHP	0	
4	ravit	Hun	Male	hunravit27111111@gmail.com	22-10-07 10:11 AM	USER	PHP	0	
5	Sophea	Test	Male	Sophea@gmail.com	22-10-06 11:06 AM	USER	PHP	0	

Items per page: 5 1 - 5 of 7

Figure 38: Candidate list page

- Dashboard
- Candidates
- Users
- Quizzes
- Questions
- Schedule
- Results
- Report
- Setting

ALLWEB Quiz System

User

Total user: 9

USER

RECRUITER

ADMIN

All

Search

Add User +

No	First Name	Last Name	Gender	Email	Quiz Date	Role	Position	Quiz No	Action
1	user	user	Male	user@gmail.com	22-10-10 04:07 PM	USER	PHP	2	
2	ravit	Hun	Female	hunravit271112312@gmail.com	22-10-07 11:21 AM	USER	PHP	0	
3	ravit	Hun	Female	hunravit2712312311@gmail.com	22-10-07 11:11 AM	USER	PHP	0	
4	ravit	Hun	Male	hunravit27111111@gmail.com	22-10-07 10:11 AM	USER	PHP	0	
5	Sophea	Test	Male	Sophea@gmail.com	22-10-06 11:06 AM	USER	PHP	0	

Items per page: 5 1 - 5 of 9

Figure 39: User list page

- Dashboard
- Candidates
- Users
- Quizzes**
- Questions
- Schedule
- Results
- Report
- Setting

ALLWEB Quiz System

Quiz

Total Quiz: 3

Search

Add Quiz +

No	Name	Level	BreakTime	Question No	Action
1	quiz 3	level3	600	0	
2	Test	level3	600	0	
3	Quiz User 1	level2	600	6	

Items per page: 5 1 - 3 of 3

Figure 40: Quiz list page

- Dashboard
- Candidates
- Users
- Quizzes
- Questions**
- Schedule
- Results
- Report
- Setting

ALLWEB Quiz System

Question

Total Question: 11

Multiple Choices

Single Choice

Fill in gaps

Question

Matching Question

All

Search

Add Question +

No	Name	Timeout (Min)	Score	Type	Level	Action
1	sadasd	1 min	1	Multiple Choices	question_level2	
2	Hello [a] welcome to my project [b]	10 min	5	Fill in gaps	question_level2	
3	Add [a] asdad [b]	10 min	5	Fill in gaps	question_level2	
4	asdasdad	10 min	5	Matching Question	question_level2	
5	asdasdad [a] asdad [b]	10 min	5	Fill in gaps	question_level2	

Items per page: 5 1 - 5 of 11

Figure 41: Question list page

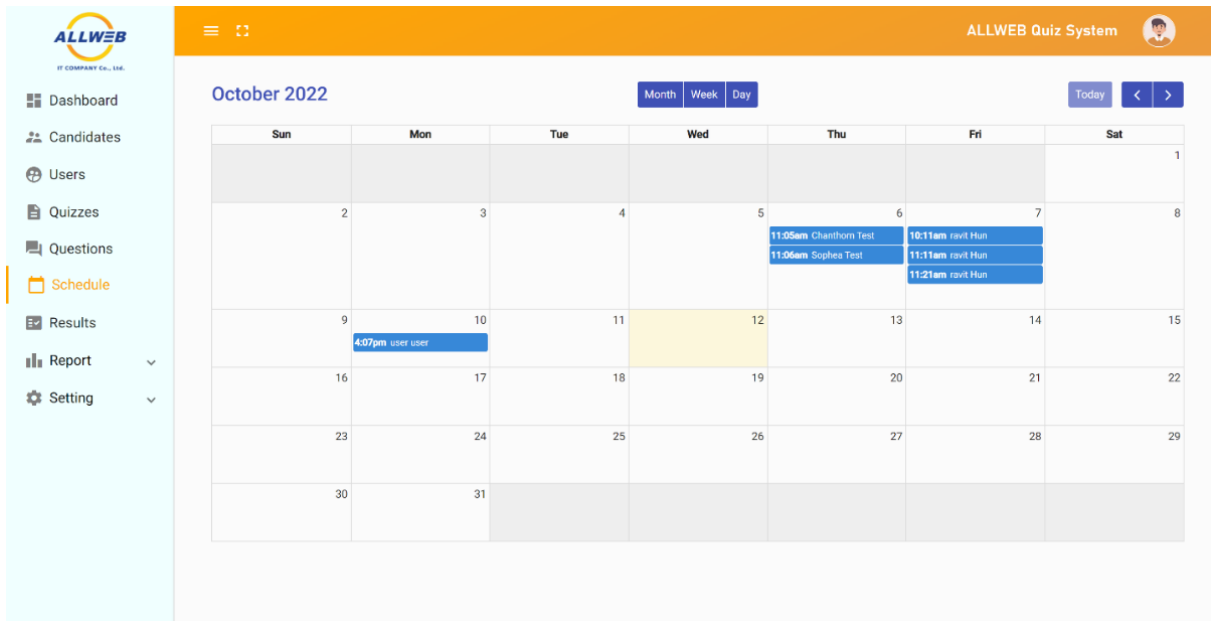


Figure 42: Schedule page

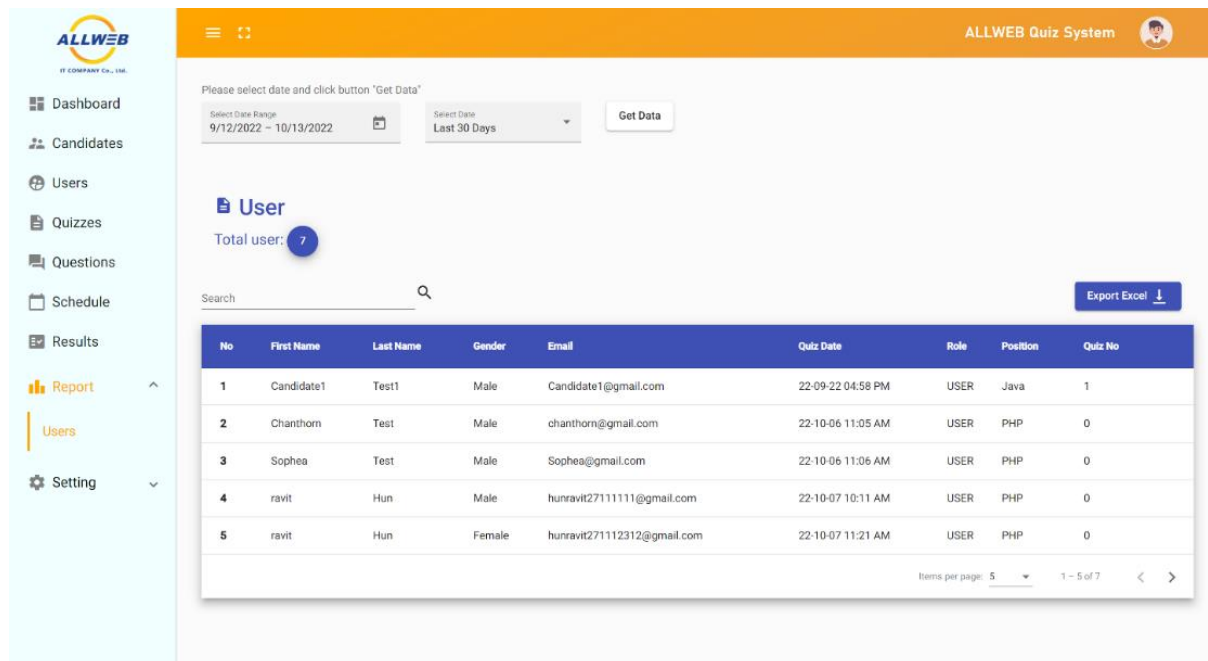


Figure 43: Report user page

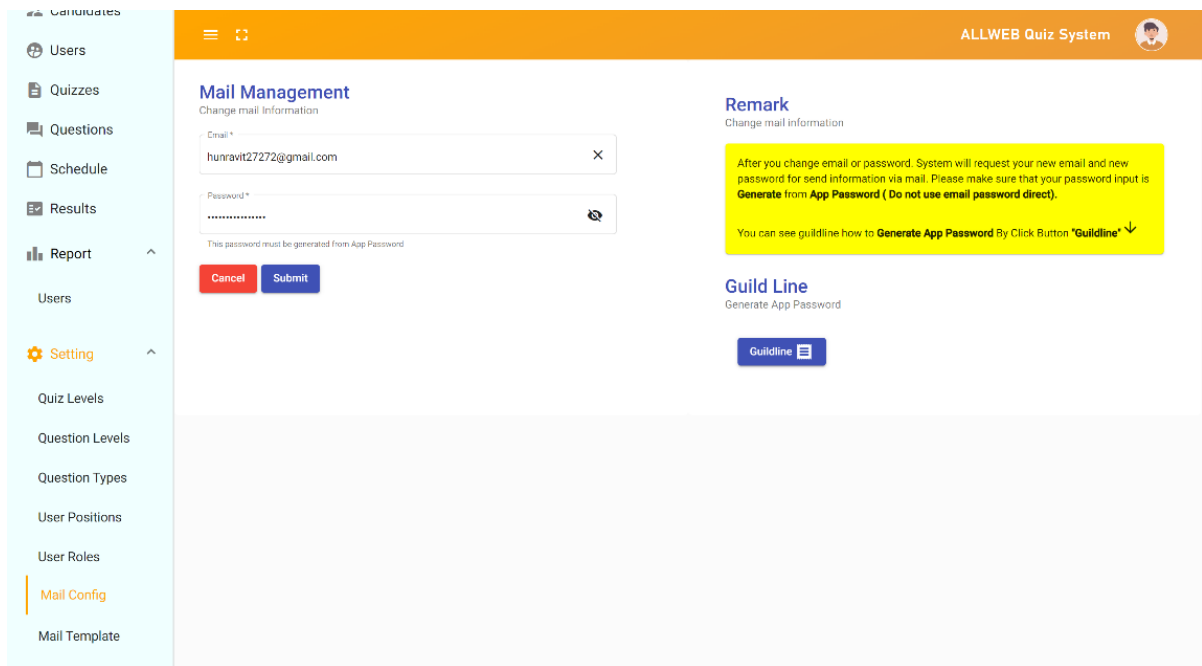


Figure 44: Mail configuration page

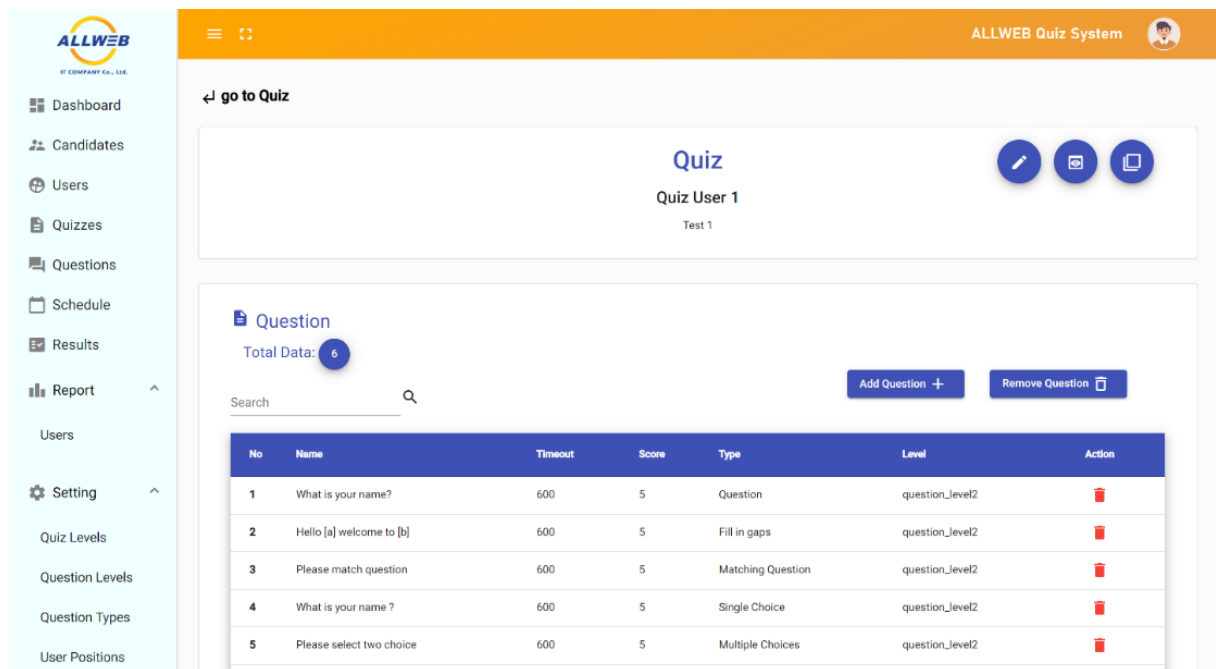


Figure 45: Quiz detail page

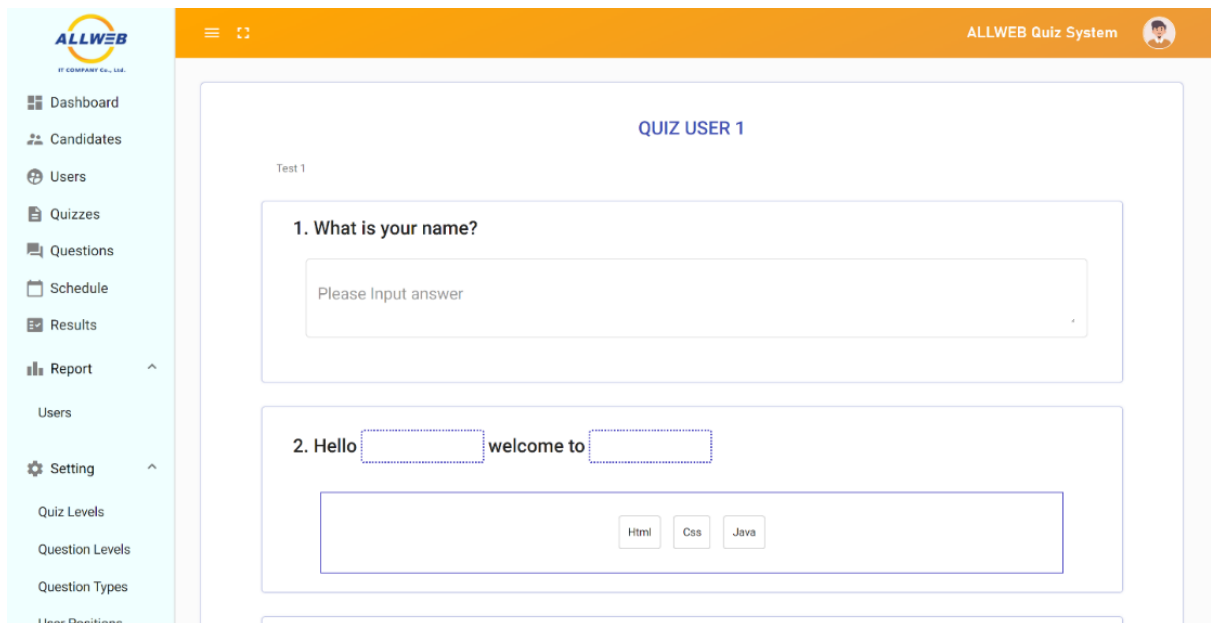


Figure 46: Quiz preview page

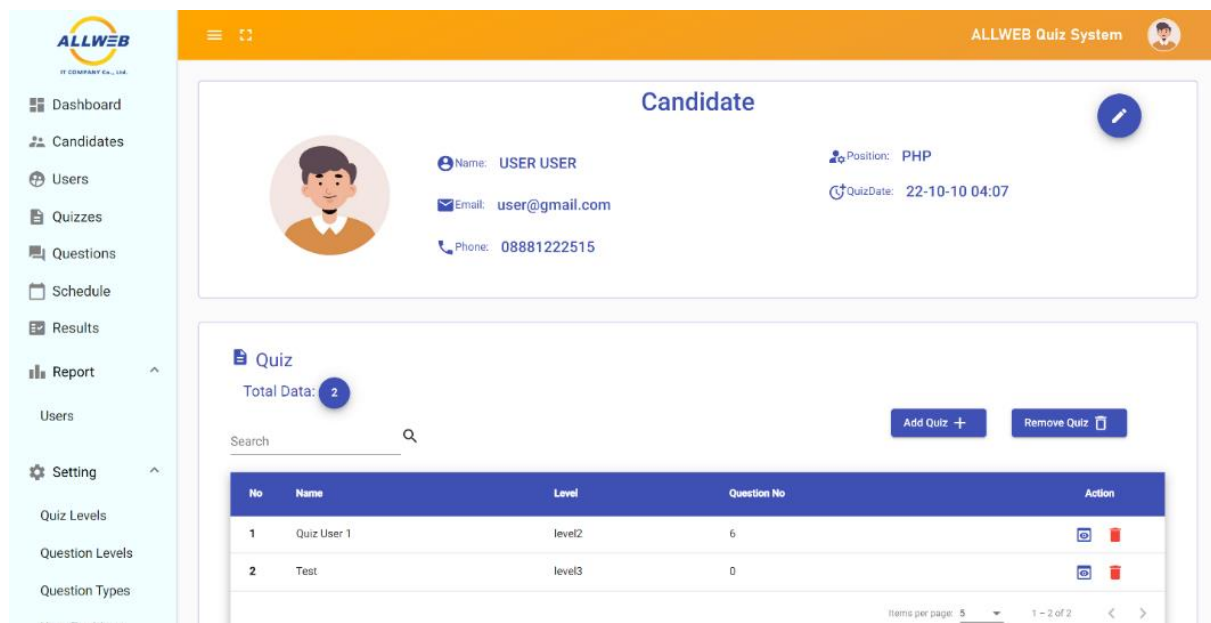


Figure 47: Candidate detail page

**New User**

First Name \* ✕  
First name is required

Last Name \* ✕

Gender: ☒ Male ☐ Female

Email \* ✕

Phone \* ✕

Quiz date \*  
10/12/2022, 23:15:46

User position  
PHP

User Role  
user

Cancel Submit

Figure 48: Create user dialog

**Edit User**

First Name \* ✕  
user

Last Name \* ✕  
user

Gender: ☒ Male ☐ Female

Email \* ✕  
user@gmail.com

Phone \* ✕  
08881222515

Choose a date \*  
10/10/2022, 16:07:00

User position  
PHP

User Role  
user

Cancel Submit

Figure 49: Edit user dialog



**ALLWEB Quiz System**

**New Question**

Enter each blank input box as a letter enclosed in square brackets, such as: **The quick brown [a] jumped over the lazy [b]**

Fill in gaps

Name \*

Hello [a] welcome to [b]

Show Preview Question ☒

Preview: Hello [ ] welcome to [ ]

Timeout (min) \*

1

Score \*

1

Question Level

question\_level2

Cancel Submit

Figure 50: Create question dialog

**ALLWEB Quiz System**

**Add Question**

☒ Please check question below

Total Data: 0 + 0 = 0

Search

No	Name	Timeout	Score	Type	Level
1	What is your name ?	600	5	Single Choice	question_level2
2	Please select two choice	600	5	Multiple Choices	question_level2
3	What is your name?	600	5	Question	question_level2
4	Hello [a] welcome to [b]	600	5	Fill in gaps	question_level2
5	Please match question	600	5	Matching Question	question_level2

Items per page: 5 1 - 5 of 11

Cancel Submit

Figure 51: Add question for quiz dialog

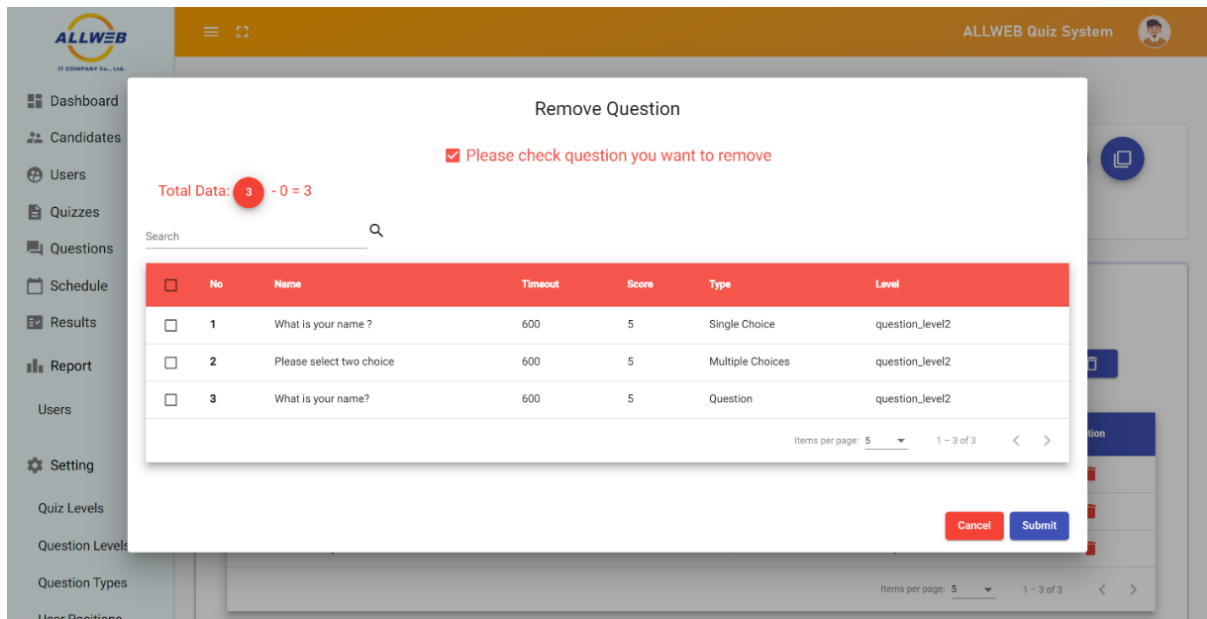


Figure 52: Remove question from quiz dialog

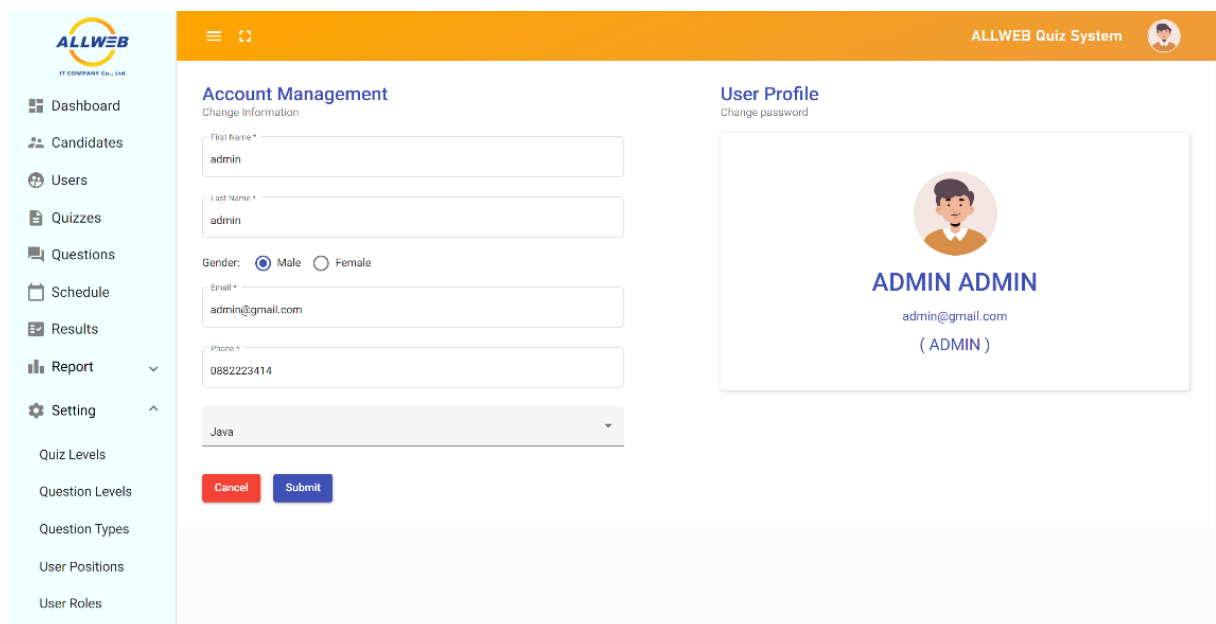


Figure53: Edit profile page

**Account Management**  
Change password

Old Password \*

New Password \*

Confirm Password \*

Cancel Submit

**Remark**  
Change password

After you change your password. You can using system but when you close, you have to login with your new password.

Figure 54: Change password page

**User**  
Total user: 9

USER RECRUITER ADMIN All

Search

Add User +

No	First Name	Last Name	Gender	Role	Position	Quiz No	Action
1	user	user	Male	USER	PHP	2	[Icons]
2	ravit	Hun	Female	USER	PHP	0	[Icons]
3	ravit	Hun	Female	USER	PHP	0	[Icons]
4	ravit	Hun	Male	USER	PHP	0	[Icons]
5	Sopheea	Test	Male	USER	PHP	0	[Icons]

Items per page: 5 1 - 5 of 9

Figure 55: Confirm delete dialog

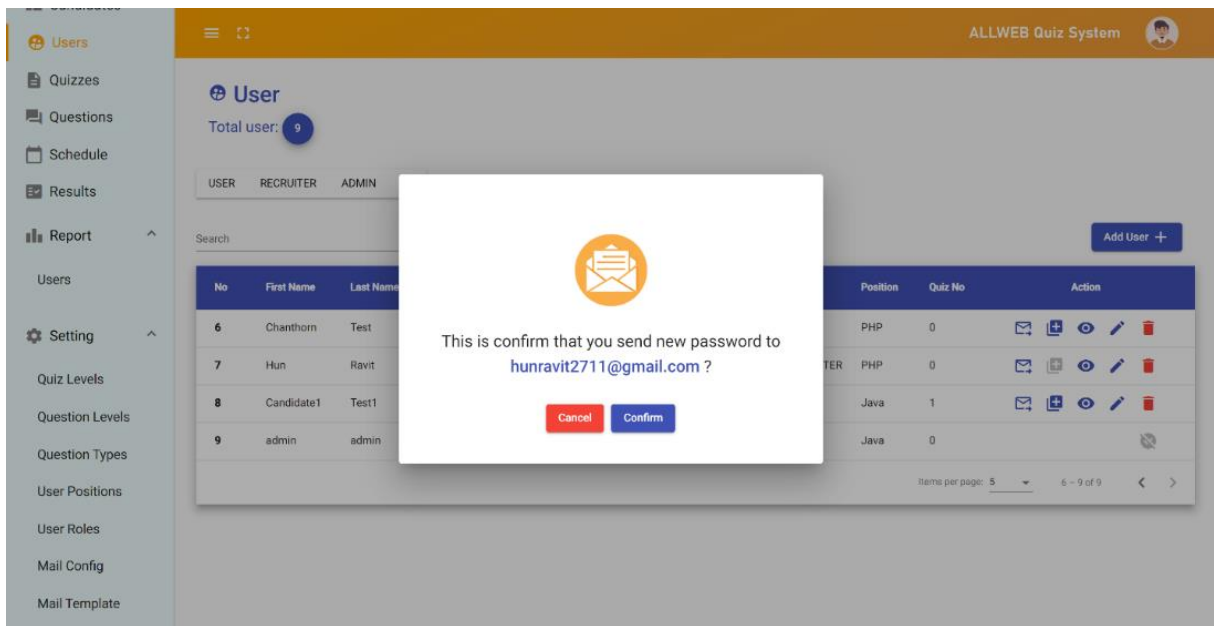


Figure 56: Confirm mail send dialog

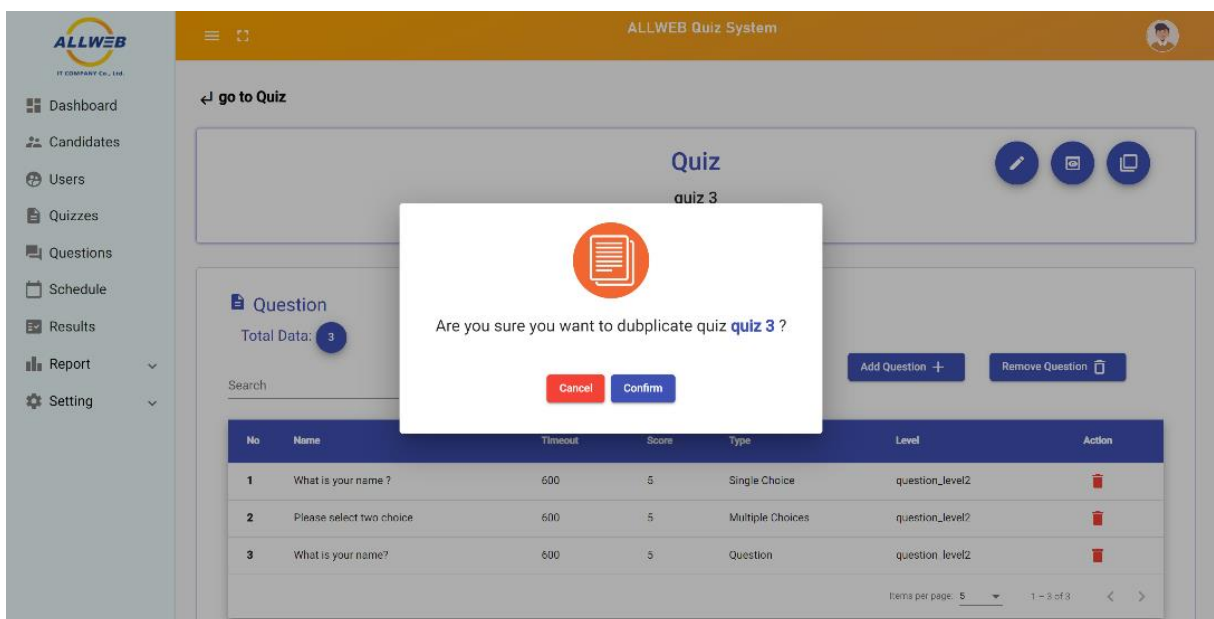


Figure 57: Confirm duplicate quiz dialog

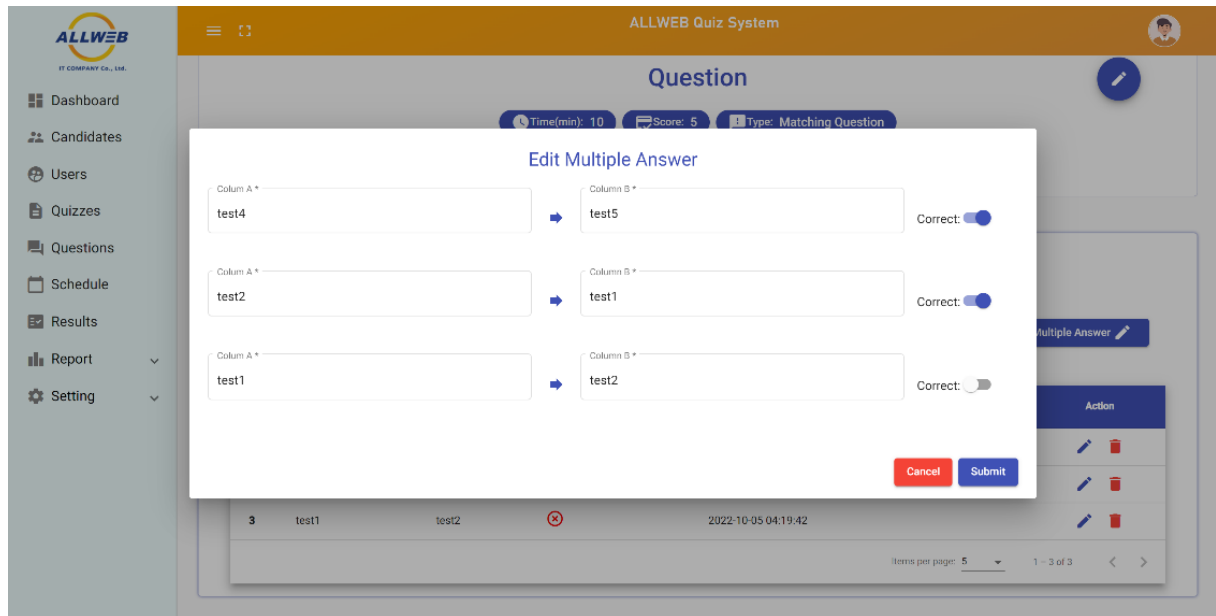


Figure 58: Edit multiple answer