Faculty of Computer Science and Information Technology

Succession Planning System

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Bachelor of Computer Science with Honours (Network Computing)

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SUCCESSION PLANNING SYSTEM

CHONG JIA RONG

This project is submitted in partial fulfilment of the

requirements for the degree of

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UNIVERSITY MALAYSIA SARAWAK

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SISTEM PERANCANGAN PENGGANTIAN

CHONG JIA RONG

Projek ini merupakan salah satu

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I also want to take this opportunity to say thank you to my family and friends for their support and motivation, which give me encouragement and determination to succeed. Lastly, I extend my appreciation to all individuals and authors whose work provided insight and inspiration during the completion of my project.

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Abstract

Planning for the successor to replace the important role of retired people is essential to maintain organizational sustainability and effective leadership changes. The goal of the project is to develop a system to enhance the process of human resource management in selecting suitable people for the replacement of critical roles based on employees' competencies. The system is designed to track the performance of employees for readiness for critical roles and identify the leadership gaps of the employees.

In the development process of the succession planning system, PHP, JavaScript and MySQL are implemented to have functionalities such as competency analysis and performance monitoring. In addition, user feedback will also be collected to improve the system to fulfil the requirements of the users and testing will also be done to ensure that the front-end development can interact effectively with back-end development.

The developed system not only simplifies the traditional process of selecting the potential successor manually but also enhances the transparency of the process through data-driven approaches. With the assistance of the system, it contributes to the sustainability of the leadership in an organization.

Abstrak

Perancangan untuk pengganti bagi menggantikan peranan penting orang bersara adalah penting untuk mengekalkan kemampanan organisasi dan perubahan kepimpinan yang berkesan. Matlamat projek ini adalah untuk membangunkan sistem untuk meningkatkan proses pengurusan sumber manusia dalam memilih orang yang sesuai untuk menggantikan peranan kritikal berdasarkan kecekapan pekerja. Sistem ini direka bentuk untuk mengesan prestasi pekerja bagi kesediaan peranan kritikal dan mengenal pasti jurang kepimpinan pekerja.

Dalam proses pembangunan sistem perancangan penggantian, PHP, JavaScript dan MySQL dilaksanakan untuk mempunyai fungsi seperti analisis kecekapan dan pemantauan prestasi. Selain itu, maklum balas pengguna juga akan dikumpul untuk menambah baik sistem bagi memenuhi keperluan pengguna dan ujian juga akan dilakukan untuk memastikan pembangunan bahagian hadapan dapat berinteraksi secara berkesan dengan pembangunan bahagian belakang.

Sistem yang dibangunkan bukan sahaja memudahkan proses tradisional untuk memilih bakal pengganti secara manual tetapi juga meningkatkan ketelusan proses melalui pendekatan dipacu data. Dengan bantuan sistem, ia menyumbang kepada kemampanan kepimpinan dalam sesebuah organisasi.

Chapter 1: Introduction

1.1 Introduction/Background

Succession planning system plays an important role in maintaining the continuity of key position in an organization. Therefore, succession planning is crucial to identify suitable individuals to hold the key position based on their leadership skills and talent. Thus, leadership monitoring is carried out to keep track of the current performance of the employee which helps decision maker to select a suitable person who has ability to hold the position of retired person. Selecting a qualified successor is a challenge that most of the organizations will face after a person with an important role retires. Therefore, choosing the best successor might be a time-consuming process in the absence of an organized approach. Consequently, this results in decreased productivity and instability inside the organization. If a manual recommendation is made, this will face a problem that the decision-maker may become biased which might make the decision-making inaccurate.

1.2 Problem Statement

Effective succession planning is crucial to ensure the continuity of leadership in an organization. However, the conventional approach which relies on subjective evaluations in selecting the successor may lead to bias and lack of transparency. Currently, many organizations, especially small to medium-sized enterprises lack this structural framework to help them identify the accurate successor for critical positions. Mostly, they often choose the leaders or successors based on majority voting among employees in the organization. This causes the people who have the ability but have not yet been known by most of the people to lose the majority of the votes. Apart from that, without the quantitative measures for accessing and rating employees' leadership preparedness as supportive evidence, this might cause the potential employee lost chances to hold the important roles and the position might be replaced by inability people. This is because the selection might be made based on favoritism in which the employee who has a close relationship with the decision maker, especially human resource management, has a high probability to be selected as the successor.

To solve the problem, the proposed well-structured succession planning system is needed to ensure fairness in the selection process by using quantitative data in defining objectives. For example, the criteria used in evaluating leadership ability should be clearly stated to evaluate leadership ability. The competency rated based on the employees' skill and ability is evaluated and can be used as supportive evidence for their leadership competency.

Apart from using the quantitative measurement, the qualitative input also needs to be integrated in analysis of employees' competency gaps. Through this, the employees can be able to discover their areas of skill development to close the competency gap which improves the alignment with company objectives.

1.3 Aim and Objectives

- To perform user requirement analysis in building an effective succession planning system.
- To design a user-friendly web-based succession planning system.
- To implement and perform testing the succession planning system within an organization.

1.4 Project Scope

The scope of the project is developing a system that provides user roles and access level features. For example, the privileges of the users based on their roles such as HR administrator, Manager of department, and employees can be set. By having this, the access to the system such as the permissions and the functionalities available can be restricted to ensure that the sensitive information only can be accessed by the authorized user only.

Besides that, the system provides talent readiness tracking features to track the readiness of employees towards important positions and identify potential successors. A dashboard that includes the scores, and development milestones will be implemented to monitor the employees' performance. Furthermore, the dashboard also provides features about the overview of talent progression in the organization.

In addition, the system developed also provides real-time monitoring and reporting features. For instance, the competency gap analysis will be generated which allows Human Resource Management to plan the strategy to develop the talent of employees. Besides, the competency report generated is presented in graphical visualization can provide appealing insight for them to make decisions in selecting successors for important positions.

1.5 Brief Methodologies

The development approach of the system uses the Software Development Life Cycle (SDLC) which includes the following phases:

1. Planning: The scope and the objective of the project is identified in the earlier stage. Besides, the Gantt Chart also will be used to keep track of the project's progress later.
2. Requirement Analysis: The requirements that are needed in the system will be collected. For example, the role that exists inside the system and its functionalities also will be identified.
3. System Design: The process flow in the system will be identified and a flowchart also will be designed. The prototype of the system also will be created based on the flowchart as guidance to give a brief insight into how the system will look. The database also will be designed to store and search the data effectively.
4. Implementation: The coding and programming will be conducted using the front-end language such as HTML, CSS, JavaScript and back-end language such as MySQL. The privilege also will be set up to ensure that the users can access functionalities based on their roles.
5. Testing: The integration testing also will be conducted to ensure that the front end can interact effectively with the back end. Besides, the Unit testing also will be conducted by third parties to evaluate the system to ensure its usability and reliability. Feedback for the system also will be collected to improve the system to fulfill their additional requirements.
6. Deployment: A platform such as Infinity Free will be chosen as the hosting environment for the system. The hosting environment provides resources, storage and network capabilities to run the system.

7. Maintenance: For the maintenance of the system, a platform for user complaints also will be provided to report any bugs that occur in the system. This allows us to be able to fix the bugs that exist and troubleshooting the problem occurs to enhance the users' experience.

1.6 Significance of Project

The project will provide a data-driven approach to succession planning which helps the Human Resource Management team to make evidence-based decisions in selecting the successor for important positions in an organization through the summary of employees' readiness, skills and development needs. Through this, it reduces the biases and promotes transparency which builds trust among employees as the promotion and leadership readiness are assessed objectively.

Apart from that, the project also helps to enhance leadership continuity. The system developed will address the critical need for leadership continuity by identifying the preparation of employees for key roles. This reduces the risk of leadership gaps which ensures the organization has qualified successors ready for smooth role transitions when a person is retired.

In addition, this project also helps to simplify the Human Resource process. The system helps in centralizing the succession planning process by saving the human resource team's time and effort in tracking employees' competencies and their achievements. This further improves the efficiency of human resources and allows them to focus more on talent development among the employees.

1.7 Project Schedule

Table 1. Project Schedule for FYP 1 and FYP 2

Planning Date	Event
14 November 2024	Submission of the Approved Brief Proposal
21 November 2024	Feedback and Comment from Reviewer/Examiner
28 November 2024	Submission of Full Proposal
5 December 2024	Submission of Chapter 1
13 December 2024	Submission of Chapter 2
5 January 2025	Submission of Chapter 3
17 January 2025	Submission of FYP1 Final Report and Paper for Assessment
1 April 2025	Submission of proposed/revised structure of FYP report, Title and Gantt Chart
15 May 2025	Submission of First Draft for Chapter 4
31 May 2025	Submission of First Draft for Chapter 5, 6 and Abstract for Paper
10 Jun 2025	Submission of First Draft for FYP 2 Full Report and Paper
23 Jun 2025	Submission of Final Report, Source Code, Installation Kits, User Manual and Paper for Assessment
30 Jun – 1 July 2025	FYP Symposium
4 July 2025	Final Date for examiner to give comment and feedback
15 July 2025	Final Date for Submission of assessment mark to FYP Management System
1 – 18 July 2025	Amendment and Modification Period for FYP
28 July 2025	Submission of Final Report

Table 1 above shows the planning date allocated to different tasks that need to be done for the completion of FYP 1 and FYP 2.

ID		Task Mode	Task Name	Duration	Start	Finish
1			**Phase 1: Submission of the Approved Brief**	19 days	Mon 10/21/24	Thu 11/14/24
2			Task 1: Seek for lecturer as supervisor for	5 days	Mon 10/21/24	Fri 10/25/24
3			Task 2: Propose the project that need to be done	4 days	Mon 10/28/24	Thu 10/31/24
4			Task 3: Seek for supervisor on agreement of	4 days	Fri 11/1/24	Wed 11/6/24
5			Task 4: Write a brief report of the project	5 days	Thu 11/7/24	Wed 11/13/24
6			Milestone: Complete Approved Brief	0 days	Thu 11/14/24	Thu 11/14/24
7			**Phase 2: Feedback and Comment from**	4 days	Mon 11/18/24	Thu 11/21/24
8			Task 1: Receive feedback and comment from reviewer/exami	1 day	Mon 11/18/24	Mon 11/18/24
9			Task 2: Do the modification based on reviewer/exami feedback	2 days	Tue 11/19/24	Wed 11/20/24
10			Milestone: Complete correction done based on	0 days	Thu 11/21/24	Thu 11/21/24
11			**Phase 3: Submission of Full**	7 days	Fri 11/22/24	Thu 11/28/24
12			Task 1: Submission of Full proposal to	2 days	Fri 11/22/24	Sat 11/23/24
13			Task 2: Collect feedback from supervisor and examiner	2 days	Sun 11/24/24	Mon 11/25/24
14			Task 3: Perform modification based on	2 days	Tue 11/26/24	Wed 11/27/24
15			Task 4: Submission of final version of	1 day	Thu 11/28/24	Thu 11/28/24
16			Milestone: Complete and submit the full	0 days	Thu 11/28/24	Thu 11/28/24
17			**Phase 4: Submission of**	8 days?	Fri 11/29/24	Fri 12/6/24
18			Task 1: Review the proposal	2 days	Fri 11/29/24	Sat 11/30/24
19			Task 2: Drafting of Chapter 1 (Introduction)	2 days	Sun 12/1/24	Mon 12/2/24
20			Task 3: Ask review and feedback from	1 day?	Tue 12/3/24	Tue 12/3/24
21			Task 4: Make modification based on review of supervisor	2 days	Wed 12/4/24	Thu 12/5/24
22			Milestone: Complete and submit Chapter	0 days	Fri 12/6/24	Fri 12/6/24
23			**Phase 5: Submission of**	8 days	Sat 12/7/24	Sat 12/14/24
24			Task 1: Collect information about background and importance of	1 day	Sat 12/7/24	Sat 12/7/24
25			Task 2: Review the existing succession	2 days	Sun 12/8/24	Mon 12/9/24
26			Task 3: Make comparison between the existing systems and identify the area of	1 day	Tue 12/10/24	Tue 12/10/24
27			Task 4: Compile information collected and	1 day	Wed 12/11/24	Wed 12/11/24
28			Task 5: Request review and feedback from supervisor for Chapter 2	1 day	Thu 12/12/24	Thu 12/12/24
29			Task 6: Make correction based on feedback of	1 day	Fri 12/13/24	Fri 12/13/24
30			Milestone: Complete and submit Chapter 2 (Literature	0 days	Sat 12/14/24	Sat 12/14/24
31			**Phase 6: Submission of**	19 days	Sun 12/15/24	Mon 1/6/25
32			Task 1: Review and decide the method need to use for conducting the	4 days	Sun 12/15/24	Wed 12/18/24
33			Task 2: Identify the requirements	5 days	Thu 12/19/24	Wed 12/25/24
34			Task 3: Request for the review and feedback of Chapter 3 from	4 days	Thu 12/26/24	Mon 12/30/24
35			Task 4: Make modification based on	4 days	Tue 12/31/24	Fri 1/3/25
36			Milestone: Submit Chapter 3 (Research Methodology)	0 days	Sat 1/4/25	Sat 1/4/25
37			**Phase 7: Submission of FYP1 Final Report**	13 days	Mon 1/6/25	Sun 1/19/25
38			Task 1: Compile all Chapter 1-3 and write into Final Report of	5 days	Mon 1/6/25	Fri 1/10/25
39			Task 2: Request review and feedback from	2 days	Sat 1/11/25	Mon 1/13/25
40			Task 3: Make modification based on supervisor	3 days	Tue 1/14/25	Thu 1/16/25
41			Task 4: Submission of FYP1 final report	1 day	Fri 1/17/25	Fri 1/17/25
42			Task 5: Proceed to complete the FYP paper	1 day	Sat 1/18/25	Sat 1/18/25
43			Task 6: Proceed to video recording of presentation of FYP1 and upload	1 day	Sat 1/18/25	Sat 1/18/25
44			Task 7: Submit both paper and recording to the	1 day	Sun 1/19/25	Sun 1/19/25
45			Milestone: Complete submission of Final Report and	0 days	Sun 1/19/25	Sun 1/19/25

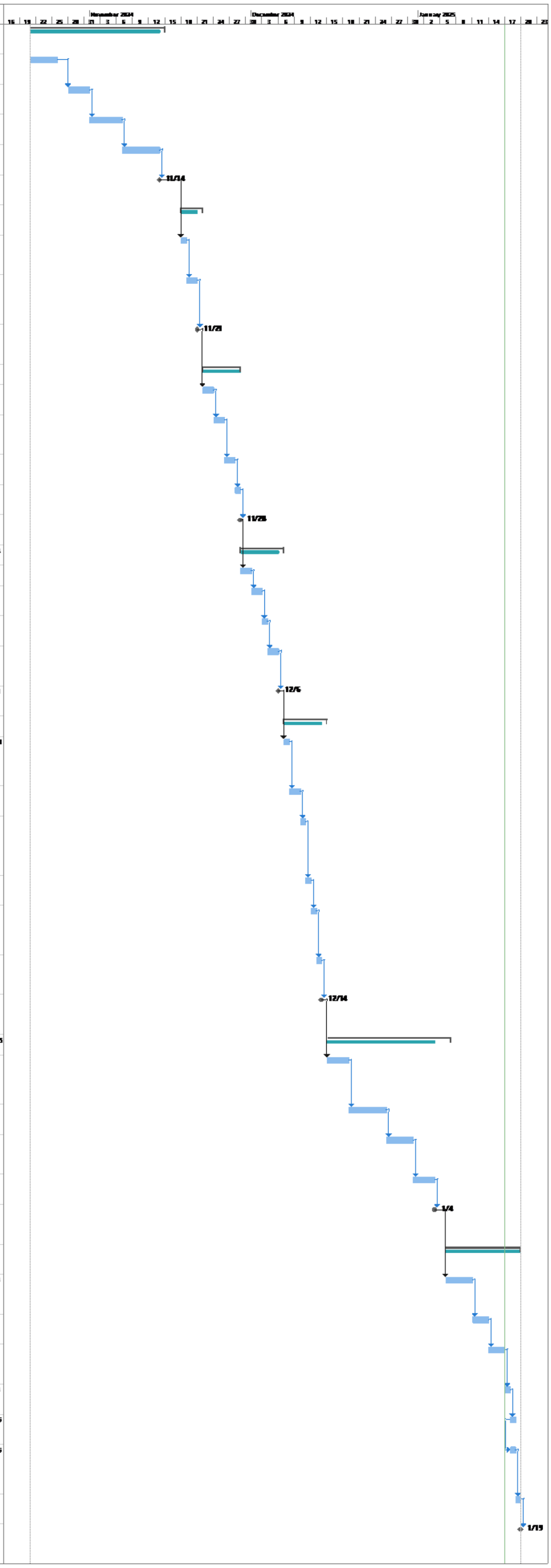


Figure 1. Gantt Chart of the Final Year Project 1 using Microsoft Project

The Figure above shows the Gantt Chart of the Final Year Project 1. The tasks that need to be done is specified for each stage of completion of Final Year Project 1.

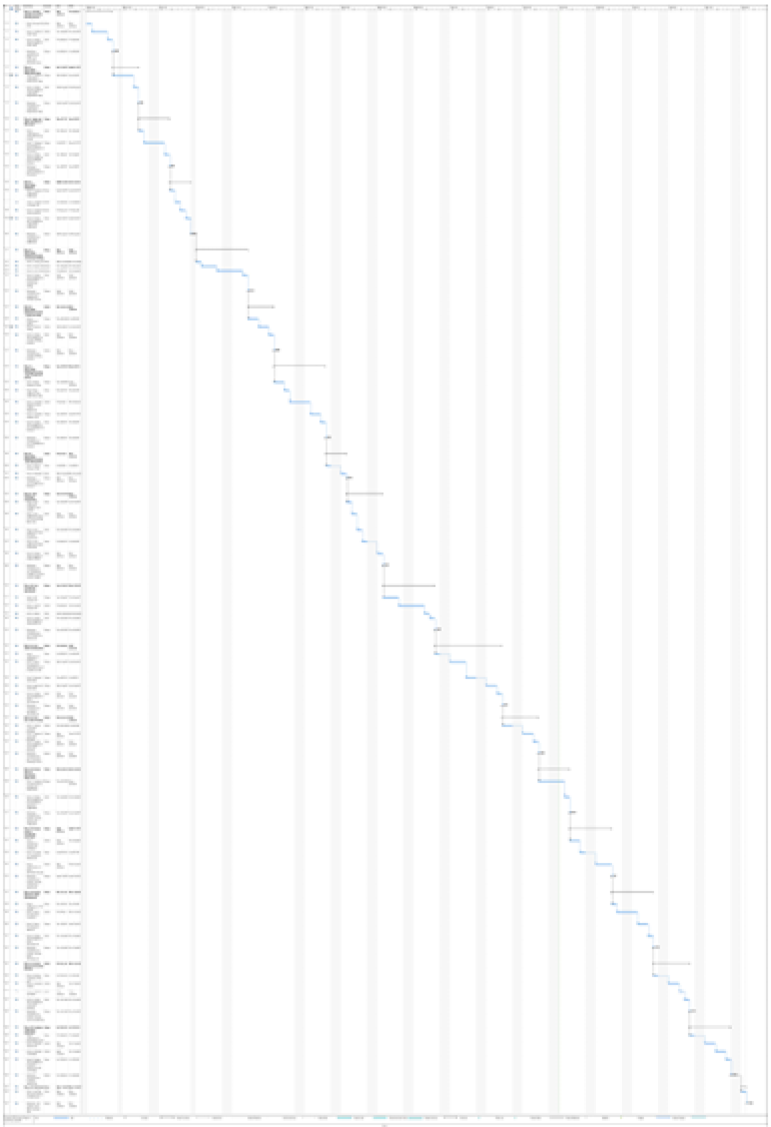


Figure 2. Gantt Chart of the Final Year Project 2 using Microsoft Project

The Figure above shows the Gantt Chart of the Final Year Project 2. The tasks that need to be done is specified for each stage of completion of Final Year Project 2.

1.8 Expected Outcome

The expected outcome of the project is producing a well data management and secure role-based access control system. For example, the normalization technique is used in the construction of the databases to reduce the redundancy of the system. Besides, privacy is also protected in which sensitive data access is controlled based on privilege.

Furthermore, the project is also expected to build a data-driven succession planning system. Throughout this, the system allows fairness in decision-making without prejudice because the selection of successors is based on the competency analyzed as evidence.

In addition, the project is also expected to keep track of the readiness of the employees in critical positions. For instance, the system provides insight that enables Human Resource management to monitor their employees' preparation for critical roles by identifying and addressing their skill gaps.

1.9 Report Outline

The report of the project consists of 5 chapters below:

1.9.1 Chapter 1: Introduction

Chapter 1 of the project describes the introduction of the proposed system, which is succession planning. It highlights the project background, identifying the problem statement, and defining the project objectives and scope. This chapter also provides a brief overview of the method used, highlights the significance of the project, and outlines the project schedule for the completion of the project.

1.9.2 Chapter 2: Background Study / Literature Review

In the literature review, the existing system is examined, and the research publications are also analyzed. The reviewed system is used to identify their strengths and weaknesses. The limitations of the system referenced can be used in generating ideas about the area of improvement to apply in the proposed system.

1.9.3 Chapter 3: Requirement Analysis and Design

The method used in the development of a succession planning system is covered in this chapter. The System Development Life Cycle (SDLC) is used and the activities done for the 7 stages are explained in detail in this section.

1.9.4 Chapter 4: Implementation

This chapter explains how the suggested system was created using the design from Chapter 3. It covers the choice of programming languages, tools, and technology. The database structure, user interfaces, and system modules are described using relevant images and code. This chapter systematically implements the main system components, such as database design and integration, frontend and backend implementation, and web hosting with InfinityFree. The functional modules such as competency assessments, talent development plans, and succession planning are described in this chapter also.

1.9.5 Chapter 5: Testing

This chapter describes how the system was tested to make sure it satisfies the requirements. It contains a description of the prerequisites and post-requisite for every test performed. The system's accuracy, performance, usability, and dependability are assessed through both functional and non-functional tests. Actions taken, inputs used, expected results of actions taken, practical results obtained, and feedback on the testing are all included in the content of each test.

1.9.6 Chapter 6: Conclusion and Future Work

This chapter examines the outcomes of the system development and gives a summary of the entire project. It highlights the system's major achievements and its role in addressing the issues raised by succession planning. Future upgrade opportunities are analyzed to improve the system's scalability and utility. An overview of the objectives achieved, an analysis of the weaknesses of the system, recommendations for further improvement, and the project's contribution are all included in this chapter.

Chapter 2: Background Study/Literature Review

2.1 Background Study

Succession Planning is a vital activity that supports organizational sustainability by planning for leadership transition in a systematic and effective approach. According to Estedadi et al. (2015), they mentioned that "The succession process, like other processes in the organization, becomes an important vehicle to communicate values and beliefs among employees as to what is necessary to be promoted.". This indicates that succession planning is important to convey the organization's core values to employees by helping them understand the criteria and expectations for promotion and aligning their personal goals with the organization's objectives. Therefore, it is important for the management to select a well-prepared individual for a crucial role to ensure the long-term stability of an organization.

Traditionally, succession planning was managed manually which relied heavily on subjective evaluations by the decision makers in selecting the successor of a retired person might lead to bias. Consequently, the critical role is filled by ill-prepared workers and causes a decrease in the quality of productivity because the workload that has been given cannot be afforded by the successor. Therefore, a data-driven succession planning system is important to build. This is to ensure the vacancies in the organization are selected without favoritism and based on the ability of employees (Mehrabani & Mohamad, 2011).

In addition, it is also important to keep track of employee readiness for the critical position. Based on Garg and Van Weele (2012), well-structured succession planning can greatly reduce the skill gap within companies as the management can identify the potential gaps of employees and develop them to hold critical positions. Hence, it is important to develop a system that provides real-time data to provide analytics to support decision-making in competency mapping and address the employees' gap effectively.

2.2 Review on Existing System

Below are the examples of existing succession planning systems. The limitation of the systems are specified and used in idea generation about area of improvement for the proposed system.

2.2.1 Cornerstone OnDemand and Saba

The Cornerstone OnDemand and Saba originally are separated companies which offers distinct talent management system including succession planning modules. In 22 April 2020, Cornerstone OnDemand acquired Saba and integrate the Saba's features into Cornerstone OnDemand's offerings.

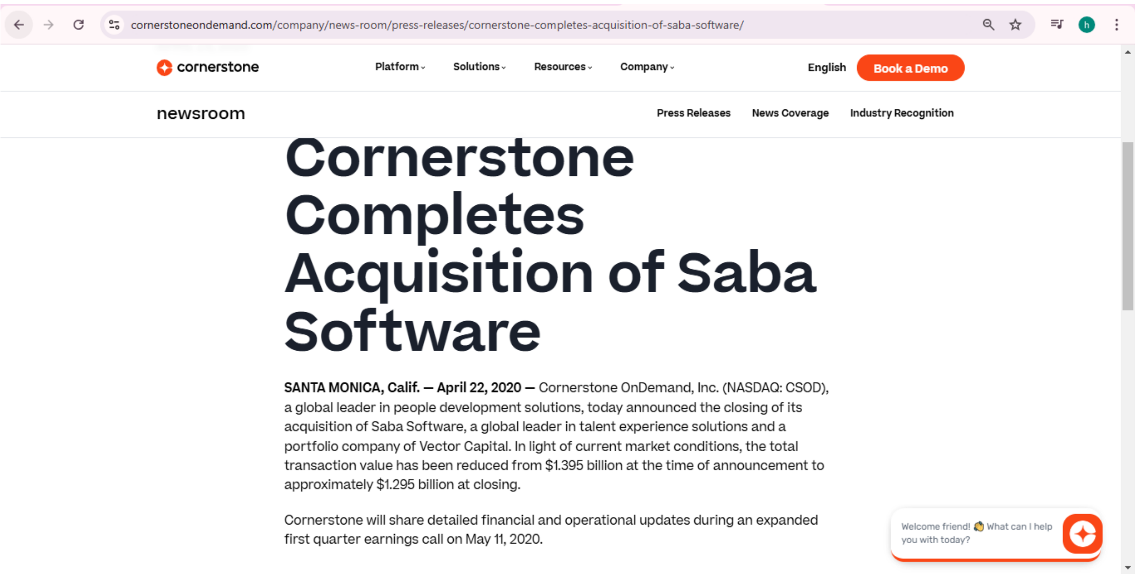


Figure 3. Acquisition of Saba Software by Conerstone.

Figure 3 above shows the acquisition of Saba Software by Cornerstone. (Retrieved from *Cornerstone Completes Acquisition of Saba Software*, n.d.)

The limitation of Cornerstone OnDemand and Saba is the complexity of the system. The interface of the succession planning is complex especially for Human Resource professionals who are new to advancing talent management systems. This causes the user to experience a steep learning curve to understand how to use the system. Besides that, the difficulty of navigation in succession planning also causes frustration especially setting up talent pools and competency models.

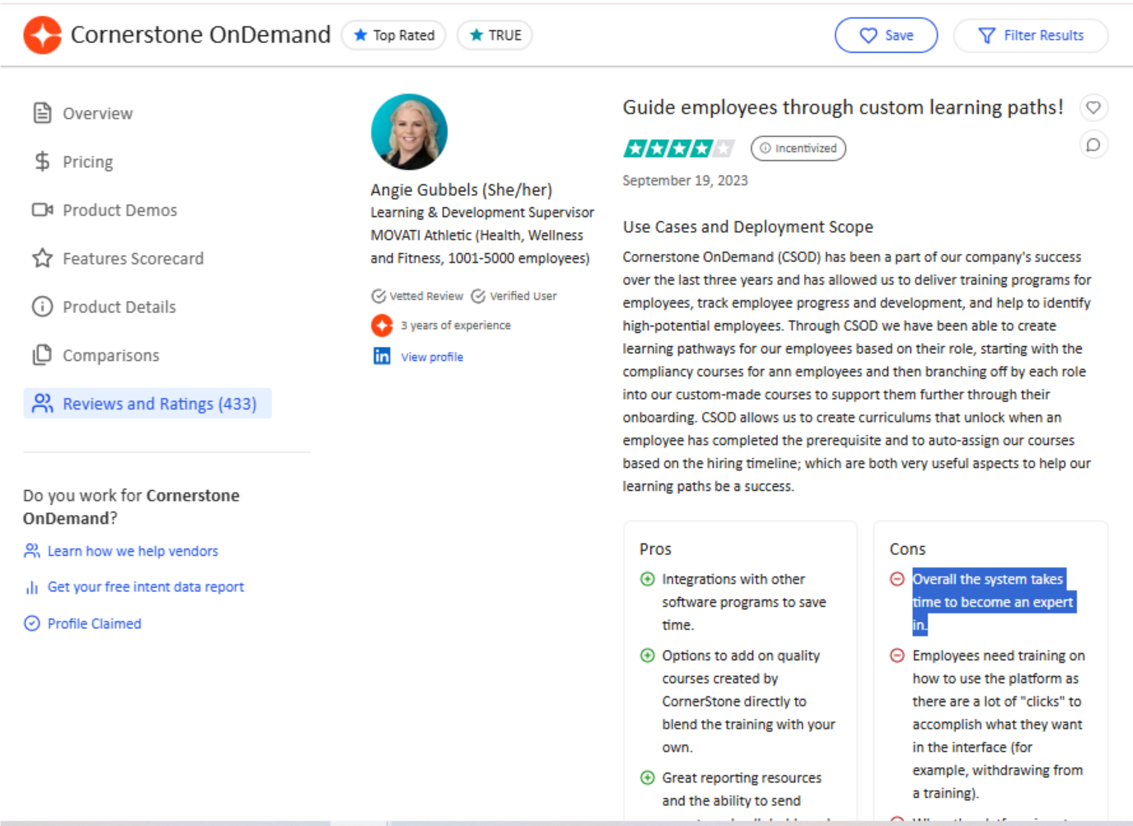


Figure 4. User feedback 1 on limitation of Cornerstone OnDemand

Figure 4 above shows the user feedback about the steep learning curve of the system. She stated that to become an expert using the system is time-consuming. (Retrieved from TrustRadius, n.d.-a)

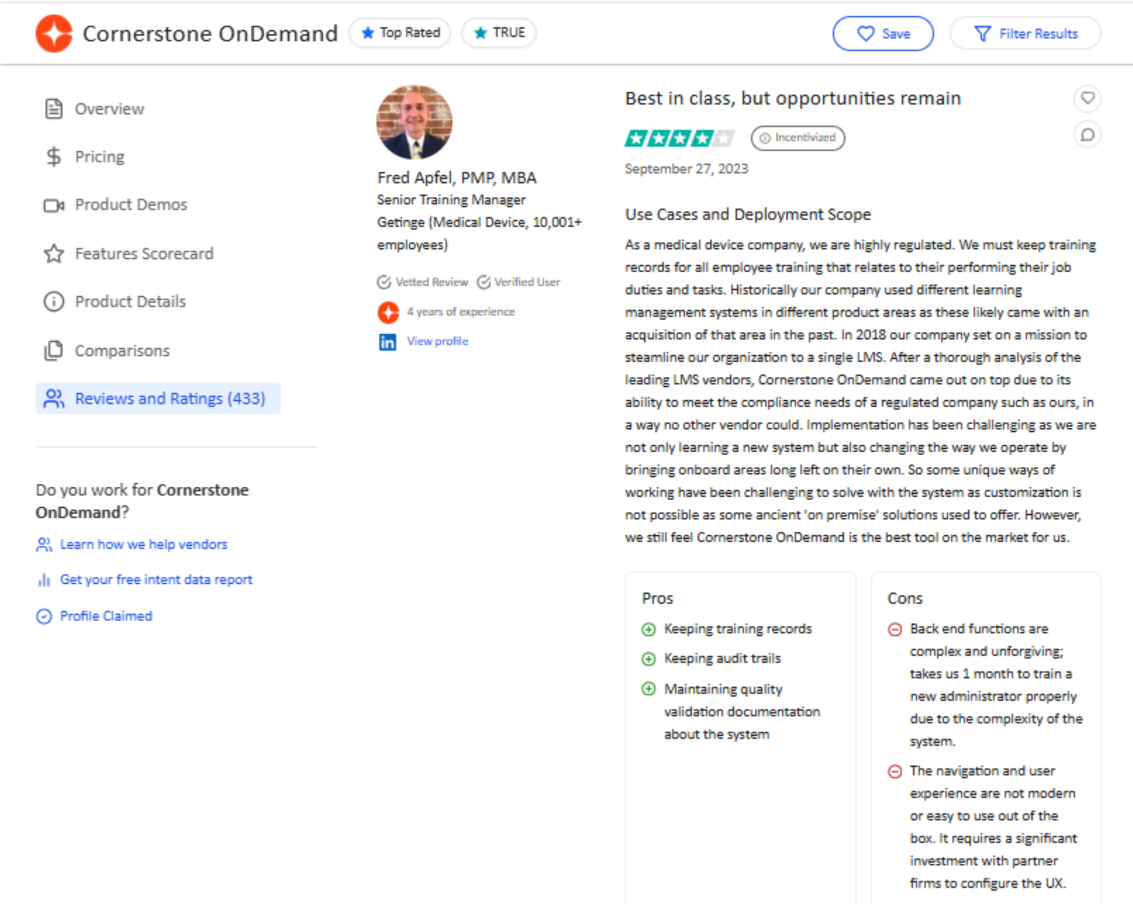


Figure 5. User feedback 2 on limitation of Cornerstone OnDemand

Figure 5 above shows the user feedback about the difficulties in using the navigation of the system which affect the user experience. (Retrieved from TrustRadius, n.d.-a)

The improvement that can be made and applied in the system development simplifies the navigation process of the system. The flow of the process can be set up as guidance so that the user will know what needs to be done next after the completion of a certain process. For instance, for the talent pool setup, the requirement that needs to be done before proceeding to this process is to register the employee to participate in the event organized.

2.2.2 TalentGuard

TalentGuard is a Software-as-a-service platform that provides talent management packages which include performance management, career planning, succession management and learning management.

The disadvantage of TalenetGuard is the user interface is not user-friendly. This might cause frustration to the user because the user will get stuck in certain processes when they do not understand how to use the feature provided. This lowers the user experience when using the system.

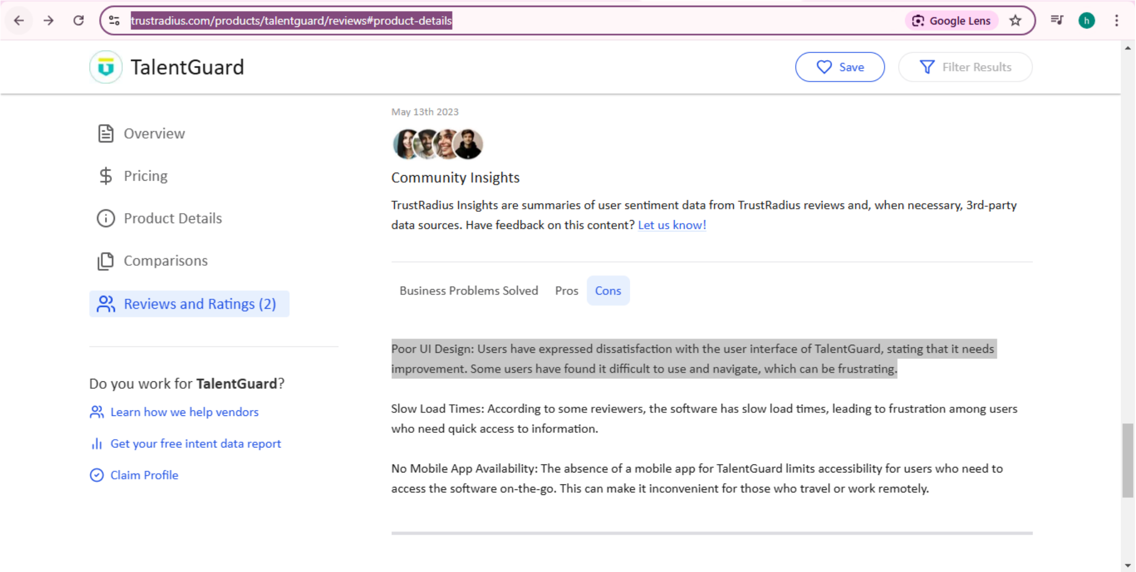


Figure 6. Community Feedback on TalentGuard

The figure 6 above proves that the community states that the system is difficult to use and navigate which makes them frustrated. (Retrieved from TrustRadius, n.d.-b)

For the improvement that can be done and applied to my system, the navigation guide to let the user get familiar with our system. Besides, a discussion forum also can be provided for the community to raise the problem about the system. Besides, the platform also can be used to collect user feedback and their requirements to improve our system.

2.2.3 PageUp Succession Planning

PageUp is a comprehensive talent management software platform that provides solutions for recruitment, talent management, and succession planning.

The limitation of the PageUp Succession Planning is having limited features of talent pool inside the system. The lack of detailed categorization or filtering options makes the identification of candidates become more difficult.

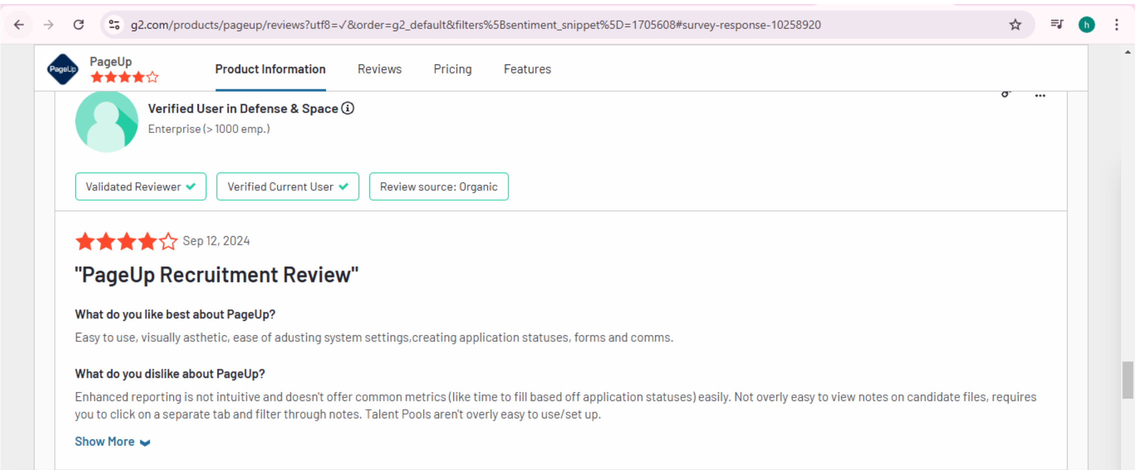


Figure 7. User feedback for PageUp

The figure 7 above proves that the user has mentioned that the talent pool is not easy to use and set up. (Retrieved from G2, n.d.)

For improvement, the filtering capabilities can be provided and applied in my system to identify the candidates based on competencies or readiness level quickly. Besides, analytics tools also can be provided to assess talent gaps and strengths within the talent pool.

2.3 Comparison of the existing systems and proposed system

Below is the comparison made between the three existing systems and the proposed system that will be developed.

Table 2. Comparison of three existing system with proposed system

Aspect	Cornerstone OnDemand & Saba	TalentGuard	PageUp	Proposed System
Price	High	Moderate	High	Free
Navigation Tag	Not available	Not Available	Not Available	Available
Process Flow	Not available	Not Available	Not Available	Available
Reporting and Analytics	Advanced	Moderate	Moderate	Advanced
User-Friendly Interface	Complex	Moderate	Complex	Simple and Intuitive
Subscription Model	Subscription-based	Subscription-based	Subscription-based	Free
Feedback Mechanism	Available	Moderate	Moderate	Comprehensive

The table 2 above shows the comparison of Cornerstone OnDemand and Saba, TalentGuard, PageUp and the proposed system based on different aspects such as price, availability of navigation tour, availability of process flow, reporting and analytics features, the complexity of the interface, requirements of subscription to use the system, and availability of feedback mechanism.

Chapter 3: Requirement Analysis and Design

3.1 Introduction

Before developing a succession planning system, I begin by conducting the literature review by exploring the existing framework of succession planning system. I have collected information about the challenges met by many organizations in identifying a suitable successor and implementing of effective succession planning through journals. Besides, I also review how the integration of succession planning with technology by transforming the traditional method of selecting succession based on a majority vote to a data-driven succession planning system which provides transparency in the organization. In addition, I also analyze the existing succession planning systems to identify their weakness and strengths based on user feedback. The user feedback about the weakness of the existing system provides me with an idea about further improvements that can be done and applied in the development of my system. After having the idea about the insight of the succession planning system, I plan to design a prototype of a secure system with features such as talent management, performance evaluation and leadership development. By having this, the succession planning system can help decision-makers select successors after the key role in the organization is retired.

The inability to choose suitable people to hold important positions causes talented people to be buried in the organization. This is because their strengths are not discovered by human resource management which causes them to lose the opportunity to prove themselves. This causes the strengths and talent of the employees cannot be fully utilized in an organization in this competitive working environment today. Thus, to prevent the situation from happening and make the contributions and achievements of the employees fully visualized by the decision maker when choosing the successor or vacancy for important roles, the data-driven succession planning system is required. By having an effective succession planning system, the tracking process for the talent development of the employees will become easier through the gap analysis. This further facilitates human resource management in more accurate decision-making and ensures the continuity of leadership in an organization.

3.2 Requirement Analysis

3.2.1 System Requirements

In the development of the succession planning system, it is important to ensure the security of the data with secure role-based access control. The system needs to ensure that the sensitive data is only can be accessible by authorized users. Besides, well-structured data management is also important. For example, the data stored in the databases need to be well organized by limiting the data redundancy to reduce the demand in consuming the storage.

3.2.2 User Requirements

3.2.2.1 Method Used

The questionnaire was designed to collect the user requirements and preferences for the development of a succession planning system. The goal is to identify the essential features required by the user to ensure that the system meets the user's needs. The questionnaire consists of 2 parts, each part consists of 5 sections and each section consists of 3 questions. For the first part, it is multiple choice-based questions. The questions asked are related to roles and responsibilities, challenges faced, required features of the system, preferences, and training and support. The second part is about scale-based questions. The question asked is related to current succession planning process evaluation, succession planning system features, succession planning reporting, challenges and concerns, and training and adoption. The questionnaire will be distributed online via Google Forms to ensure ease of access and quick response collection.

3.2.2.2 Analysis of Questionnaire

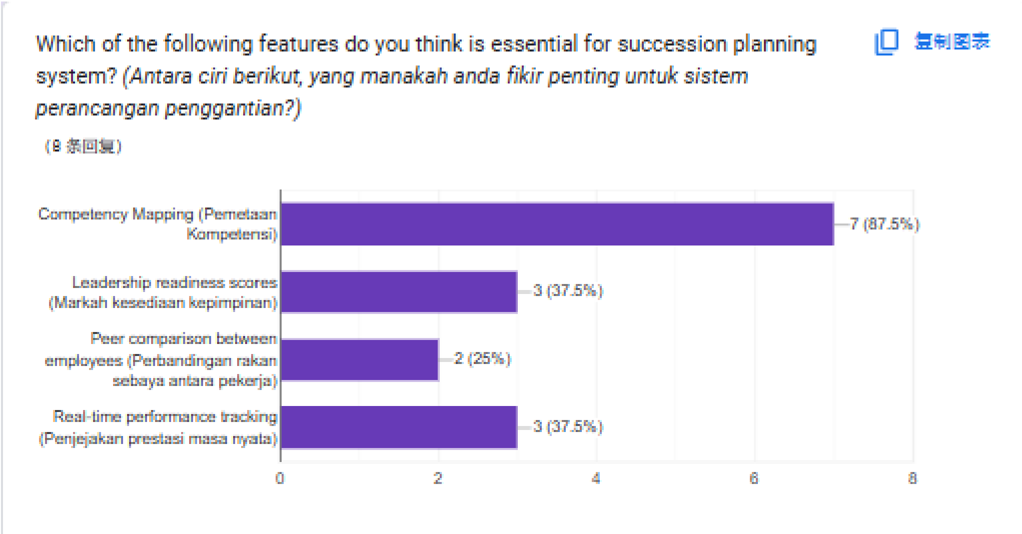


Figure 8. Functional Requirements of the respondents

Figure 8 shows the results of the functional requirements of the respondents. Based on the analysis, the majority of the respondents, which is 87.5% support that the essential features that need to be included in the succession planning system are competency mapping. However, there is still a minority of them, which is 25% support that the peer comparison between employees is an essential feature in the system. A same number of respondents, which are 37.5% support that leadership readiness score and real-time performance tracking are essential in the succession planning system.

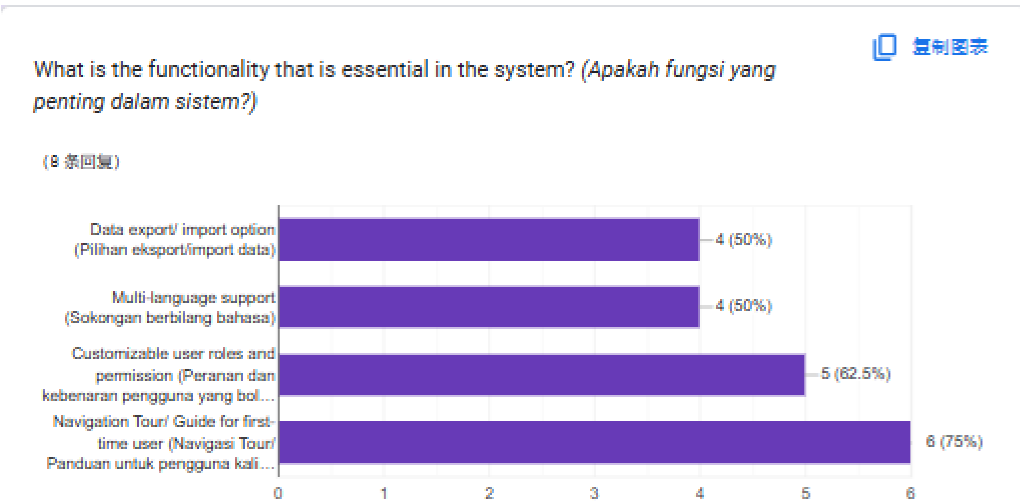


Figure 9. Non-functional Requirements of respondents

Figure 9 above shows the non-functional requirements of the respondents collected from the questionnaire. Based on the analysis about the functionalities that are required in the system, most of them, which are 75% require a navigation tour guide for the first-time user to let them get familiar with the system. Besides, 62.5% of them suggest that customizable roles and permissions are essential in the features to improve the system security so that some sensitive information should only be accessible by authorized people. Besides, half of the respondents support that data import and export and multi-language support should be one of the features included inside the system.

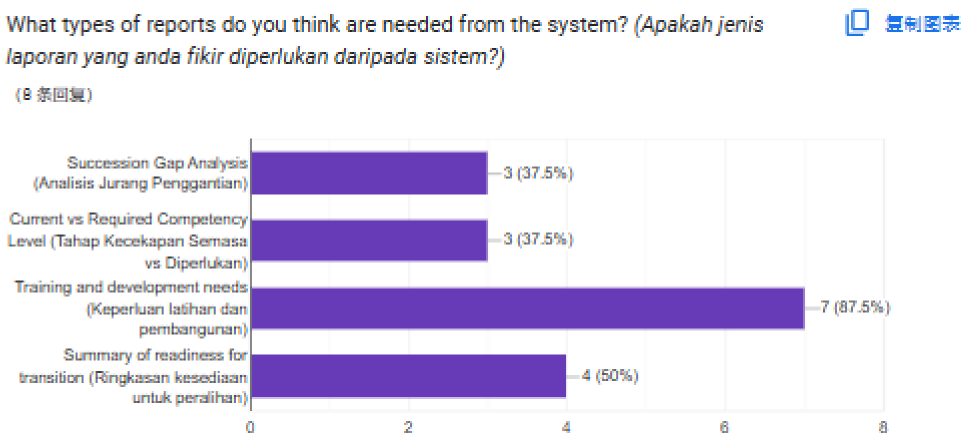


Figure 10. Report needed in the system

Figure 10 above shows the opinion of respondents about the reports that are needed in the succession planning system. The majority of them, which is 87.5% support the report about training and development needs required in the system. Half of them suggest that a report regarding the summary of readiness for transition is needed. In addition, 37.5% of them support the report about succession gap analysis and current vs required competency is essential in the system.

3.2.3 Environment Requirements

To develop the system, several languages need to be used for coding and programming purposes. Therefore, a suitable text editor is needed to write the code for HTML, CSS, JavaScript, PHP and other languages involved. The Visual Studio Code will be chosen as the preferred coding environment for system development. After coding and programming are done, it is necessary to find a hosting environment to host our system. The selected hosting environment will be InfinityFree because it is free.

3.3 System Design

3.3.1 Approach used

When creating a system for succession planning, the System Development Life Cycle (SDLC) approach will be used. During the planning stage, the problems of the succession planning process are identified such as manual handling is very time-consuming for analyzing the employees during the selection of successors, and lacking employees' development tracking. Besides, the goals are also identified in this stage such as creating a data-driven system to allow transparency and able to keep track of the readiness of employees towards key positions. In the requirements analysis phase, the survey which consists of several subjective questions will be carried out to ask the users' opinions about their requirements in the succession planning system. In the designing phase, the Class Diagram, Use Case Diagram, and Activity Diagram is constructed to provide the overview of the system and the prototype of the succession planning system also will be designed using PenPot to provide insight about the system and as guidance in system development. In the development phase, the system will be built by referencing the prototype made. For front-end development, languages such as HTML, CSS and JavaScript will be used while for backend development, PHP and MySQL will be used. During the testing phase, integration testing will be done to ensure that seamless communication can be done between the front end and back end. In addition, both functional testing and non-functional testing is carried out to ensure that the features available meet their requirements. In the deployment phase, Infinity Free will be chosen as the preferred platform as the hosting environment. For the maintenance phase, the user feedback on system satisfaction and improvement is collected as a reference for system updates to fulfill their needs for the system.

3.3.2 System Architecture

For the proposed project, a three-tier system architecture is the suggested design. The Presentation Layer, Application Layer, and Data Layer are the three layers that make up the three-tier architecture. The presentation layer is responsible for managing user interaction via web applications and other web interfaces. Business logic, such as getting information from a database or handling user requests, is handled by the application layer. Data including development, competency, and personal information are stored at the data layer. The 3-tier architecture was chosen because it encourages scalability. For instance, more servers or load balancers can be added to reduce network congestion problems when the number of users increases without impacting the data and application layers. The same applies to the application layer; when the bandwidth demand is increasing, high specifications of the server can be duplicated to boost processing power. In addition, when the data layer requires more storage, the database can be extended horizontally through replication or vertically by adding extra resources on individual servers. In addition, the proposed project will apply the client-server architecture.

Besides, the client-server architecture is also applied to the proposed succession planning system. In a client-server architecture, the client will handle the majority of front-end tasks, whereas the server handles the majority of back-end tasks. For instance, the link address will be sent as a request to the server for processing after the user enters the succession planning URL. After processing, the server will perform the necessary tasks, like retrieving data and replying to the client. After getting the response from the server, the client will use specified HTML and CSS to transform the response into an interactive format after getting it from the server.

3.3.3 Class Diagram

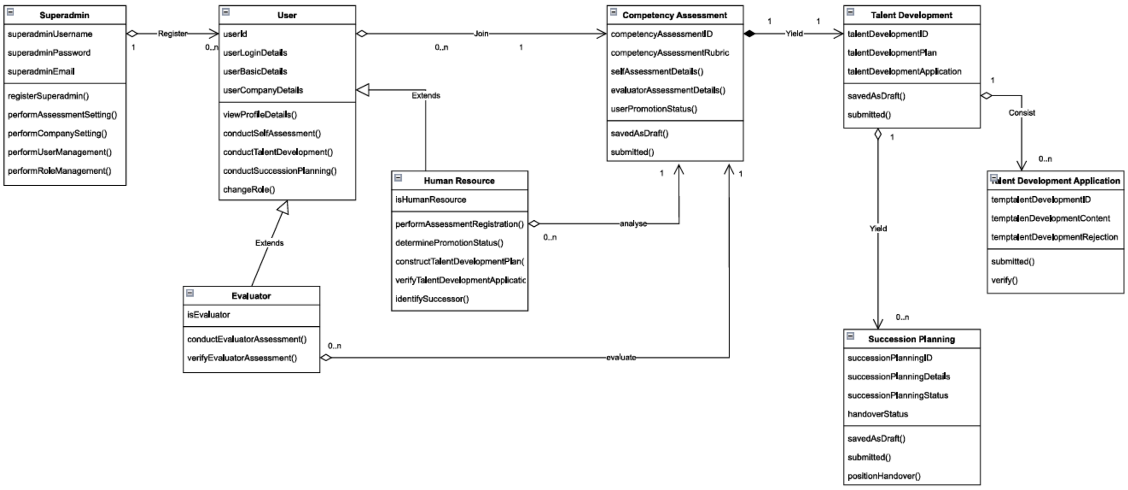


Figure 11. Class Diagram of Succession Planning System

Figure 11 above shows the class diagram of the proposed succession planning system.

Based on the Class Diagram constructed, the class Superadmin consists of basic information about superadmin role inside an organization which includes superadminUsername, superadminPassword and superadminEmail. The entity specifies some operations that can be done by the superadmin which include superadmin registration after the owner obtained the system, perform assessment setting, perform company setting, perform user management and perform role management.

For the User class, it includes all the information about the users. The attributes of the user are userId, userLoginDetails, userBasicDetails and userCompanyDetails. In this system, the user can view their profile details, conduct self-assessment after registered by human resource, conduct talent development by submitting the list of programs joined which aligned with development plan constructed and conduct succession planning which handover the assigned position and change role to either evaluator or human resource.

For the Evaluator class the activity that can be performed is conduct evaluator assessment and verify evaluator assessment. For the Human Resource class, the action that can be done are perform assessment registration for user to join competency assessment, determine promotion status of the user either promoted or remain after analyze the competency assessment conducted by the evaluator, construct talent development plan based on user’s current competency, verify talent development application to verify that the program joined by the user really improve their competencies and identify successor to replace the resigned person or retired person.

For the competency assessment class, it consists of competencyAssessmentID, competencyAssessmentRubric which consists of evaluation criteria used to evaluate the user, selfAssessmentDetails used to store the self-assessment result performed by the user, evaluatorAssessmentDetails used to store the evaluation data done by the evaluator and userPromotionStatus which store the result of the user is either to be promoted or remained. The competency assessment made by the user or evaluator can be saved as draft or submit.

For the talent development, the talentDevelopmentPlan is used to store the development plan that already constructed by the human resource. The talentDevelopmentApplication is used to store the accepted list of programs joined by the user which have been verified helps to develop the competency of the user. However, for the rejected application, it will store in temptalenetDevelopmentContent to be view by the user why their application is rejected and the related data will be deleted after the application is accepted.

For the succession planning, the successionPlanningDetails is used to store the details constructed by the human resource if the user status is promoted after evaluator assessment. The user can view the submitted succession planning constructed and prepare to handover the assigned position after the person is resigned or retired.

3.3.4 Use Case Diagram

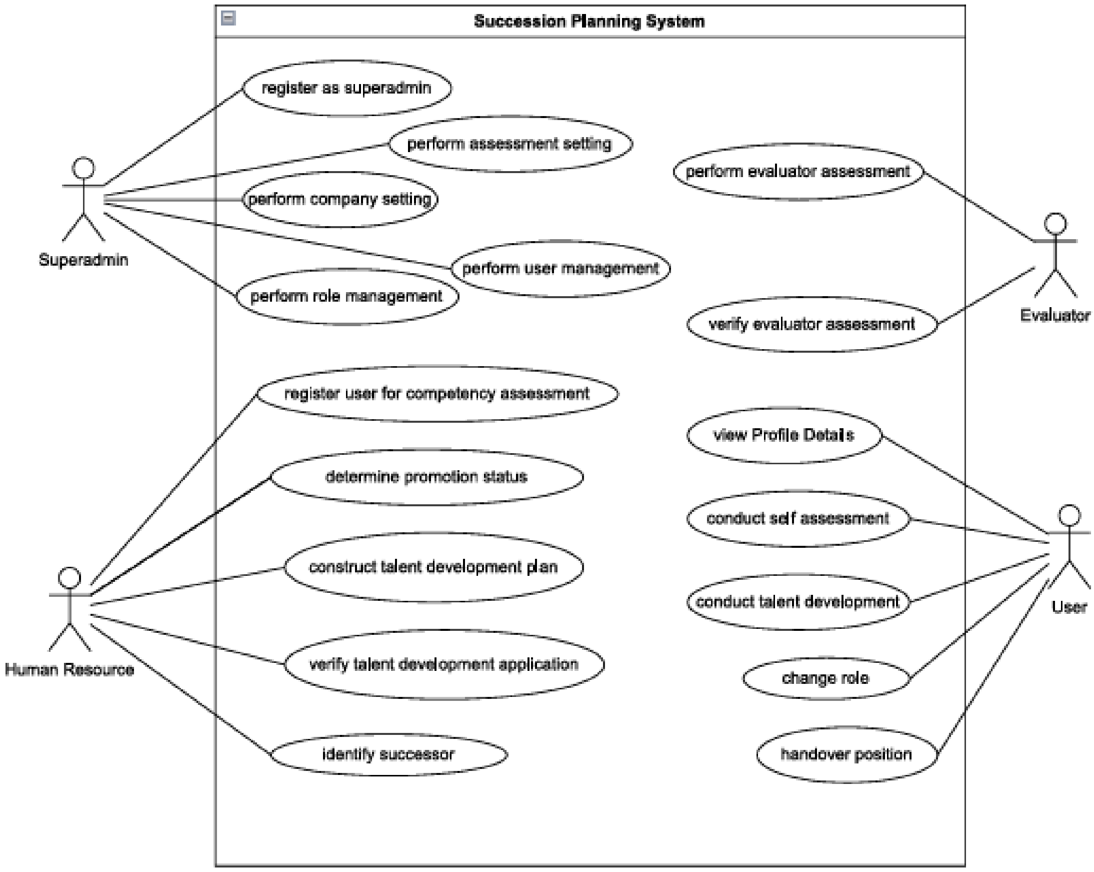


Figure 12. Use Case Diagram of Proposed Succession Planning System

Figure 12 above shows the use case diagram of the proposed succession planning system.

In the proposed succession planning system, the roles of the user and activities that will be carried out by them are identified. For example, the actors involved are superadmin, evaluator, human resource and user. The responsibility of the superadmin is perform registration as superadmin after obtained the system, perform assessment setting, perform company setting, perform user management and perform role management. The human resource is responsible for registering user to join the competency assessment, determine the promotion status of the user evaluated, construct talent development plan, verify talent development application submitted by the user and identify successor for available position. For the evaluator, the can perform evaluator assessment and verify the evaluated assessment. For the user, they can view their profile details, conduct self-assessment after registered by human resource, conduct talent development which submit the program joined application for verification by human resource, change role to either human resource or evaluator and handover the position when the position become vacant.

3.3.5 Activity Diagram

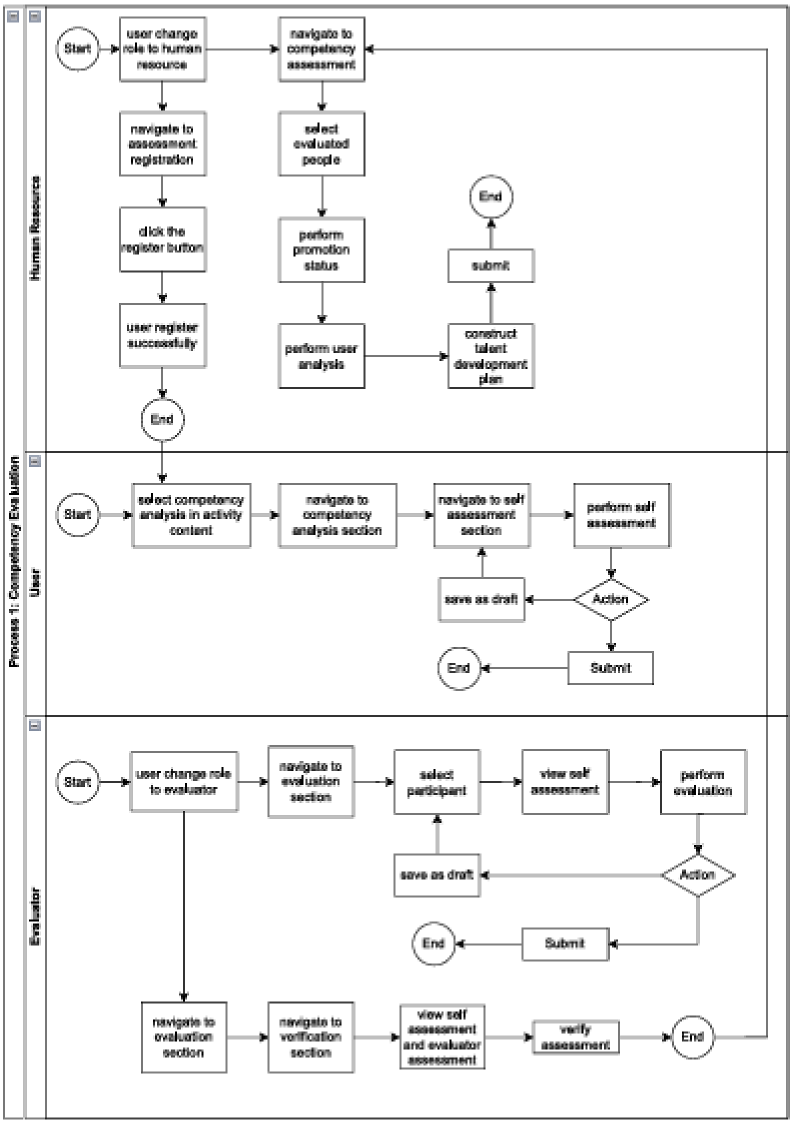


Figure 13. Activity Diagram of Process 1 -Competency Evaluation

Figure 13 above shows the activity diagram of the competency evaluation process in the proposed succession system.

In competency evaluation, the human resource will register available user to join the competency assessment. After the user is successfully registered by the human resource, the user can perform competency assessment by starting with the self-assessment. After completion and submit the self-assessment, the activity will proceed with evaluator assessment. In this stage, the evaluator can review the self-assessment that have been made by the user. Then, they need to provide the comment about the scoring evaluated. After the evaluator complete and submit the evaluation made, the evaluation need to be verified by other evaluator who performed the assessment together. After verification, the assessment is received by the human resource. Human resource can analyze the assessment that have been done by both user and evaluator. From the evaluation made, they need to perform analysis on this user to identify their strength and area of improvements. After that, they need to construct a development plan to help user improves their competencies.

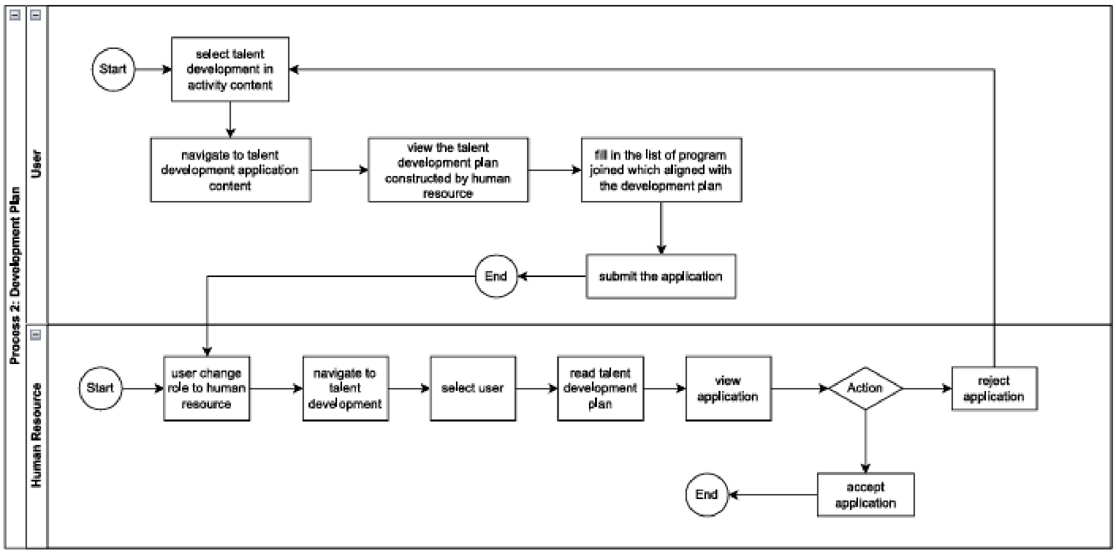


Figure 14. Activity Diagram of Process 2 – Development Plan

Figure 14 above shows the activity diagram of the development plan process in the proposed succession planning system.

After the development plan has been constructed by the human resource, the users need to fill in the application which requires user to give the details about the list of programs joined. Then the user needs to submit the application for the human resource the verify the application.

After submit, the human resource will retrieve the application that have been submitted by the user. In this activity, human resource can review the constructed talent development that need to be done by the user. Then, they can view the application that have been submitted by the user for verification. Next, human resource need to verify if the program details joined which has listed by user really help the user to improve their competency. If the human resource chooses to reject the application because of considered as developed, then they need to provide the rejection reason. Through this, the user is able to know what is the reason causing the application to be rejected. This can help them in joining the correct program related with talent development plan and resubmit the application again. If the application is accepted by human resource, meaning that the user has been developed and meets the required competencies. Then, the user no longer needs to submit the application of that development plan anymore.

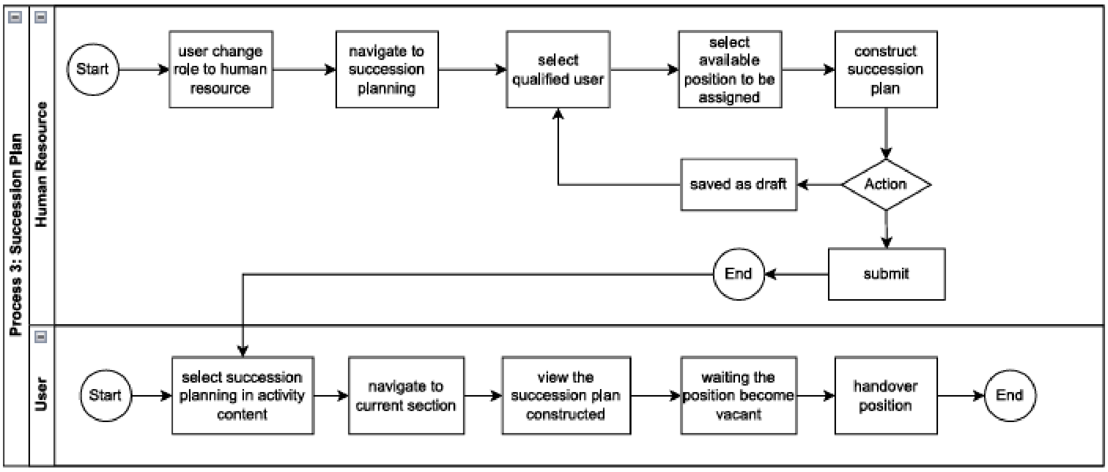


Figure 15. Activity Diagram of Process 3 – Succession Plan

Figure 15 above shows the Activity Diagram of the succession plan process in the proposed succession planning system.

For the succession plan, if the user promotion status is set to promote by human resource after evaluator assessment, then the user will be listed as qualified user to proceed with succession plan. In this activity, human resource will select the qualified user and assigned available position for them to be replaced. After submitting the succession plan, the user can able to review the succession plan that have been constructed by human resource and know which position is assigned. Then, the user needs to wait until the person who hold this position resigned or retired and left the position available. After that, the user can handover the position and replace the vacant position.

3.3.6 User Interface Design

For the UI design, the prototype created can be used as a guide. The PenPot is used as a preferred application. This is because, compared to other applications such as Figma, it allows unlimited pages in designing the prototype; however, Figma limits it to only 3 pages. Compared with MockFlow, it allows a simple design with less attractive interfaces compared to PenPot. In addition, in comparison with InVision Studio, we need to download InVision Studio to use it, which might need to consume our local machine storage; however, PenPot can be directly used in web browsers, which do not need to prepare for extra space for physical storage of our work.

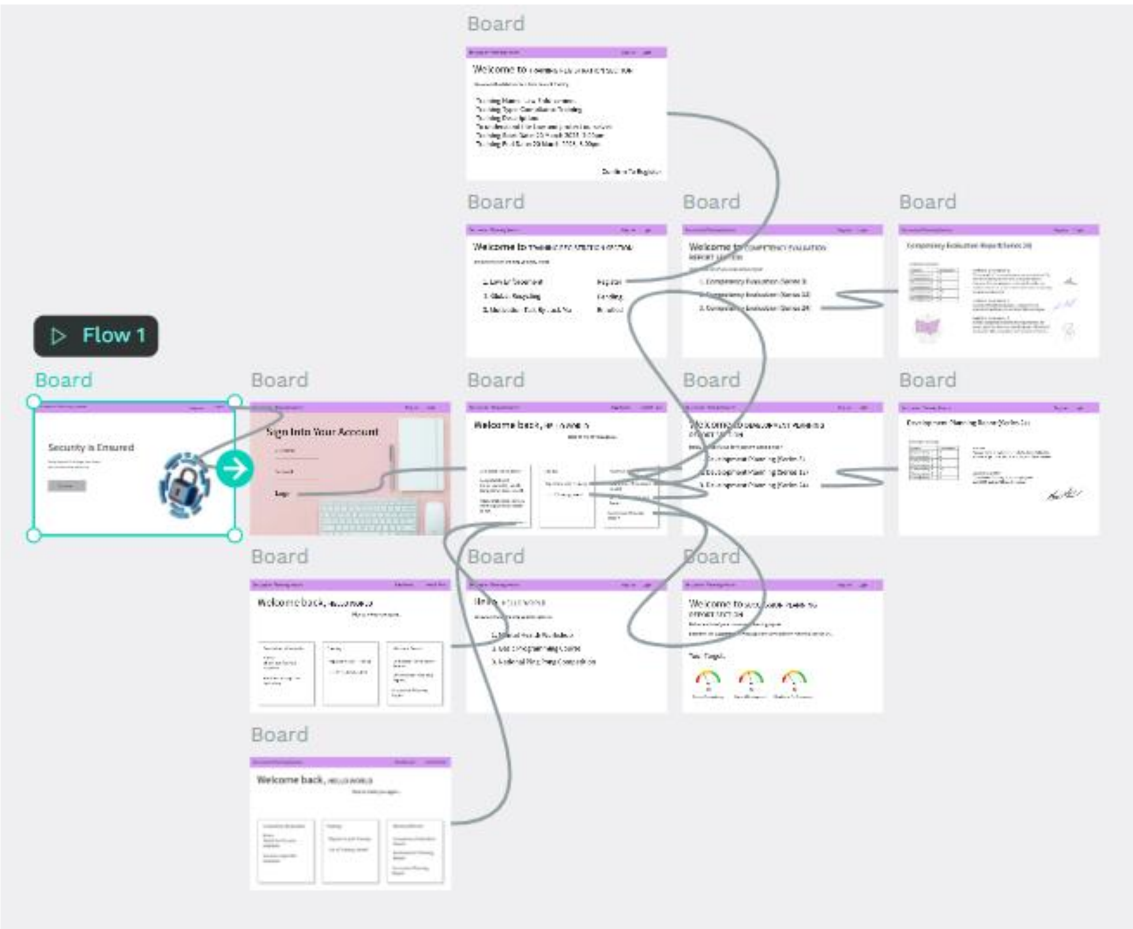


Figure 16. Prototype of succession planning system (Employee View)

Figure 16 shows the prototype of the employee view in the proposed succession planning system.

From the prototype, after the user navigates to the succession planning system using the URL, the user will log in as an employee after the successful verification of username and password. Inside there are 3 sections, which are Competency Evaluation, Training and Historical Record. For Competency Evaluation, if the user is invited to join the competency evaluation program, the invitation is received. The user can choose the accept the invitation or reject it. For the training section, there are 2 parts. Part 1 allows user to register for the training to join for their skill development purpose. After clicking this section, several trainings offered will be listed. The user may click the "register" to register for the training offered. The details of the training will be specified and will ask the confirmation of the user for registration of that training. After the user clicks "confirm to register", the pending status will be displayed to wait for approval from the HR manager. After getting the approval, the status will change to enrolled. For the historical record, is the generation of reports. 3 types of reports are available, which are Competency Evaluation Report, Development Planning Report and Succession Planning Report. After the user clicks on Competency Evaluation Reports, several series of evaluation programs joined by the user will be displayed and the user can select which report to view. After making the selection, the report which includes the level of competency evaluated, and feedback from the evaluators will be displayed. Similar to the Development Planning Report, the planning constructed by the HR will be displayed. For the succession planning report, the development progress of the user to reach the target for the readiness toward the important position set by HR will be displayed.

3.4 Summary of chapter

Theoretically, the succession planning system helps in shifting the traditional manual approach which causes inaccuracy in selecting a successor to a more accurate approach which provides evidence when deciding the successor. Not only that, but the system also provides real-time tracking of the employees' contributions and achievements in the organization. Furthermore, the system also allows human resource management to take action to develop the employees' skills to meet the requirements of important roles for effective transition in the future. Practically, the system can provide interactive competency analysis of employees through graphical methods such as graphs. Besides, the report about gap analysis also will be generated to allow easier identification of skills gaps. With the above advancement, the time spent on human resource management on manual tasks can be further reduced and increase efficiency. This is because searching the employee data manually like paper is time-consuming and might face the challenge of missing records or outdated data.

Chapter 4: Implementation

4.1 Installation and Configuration

4.1.1 Database Creation

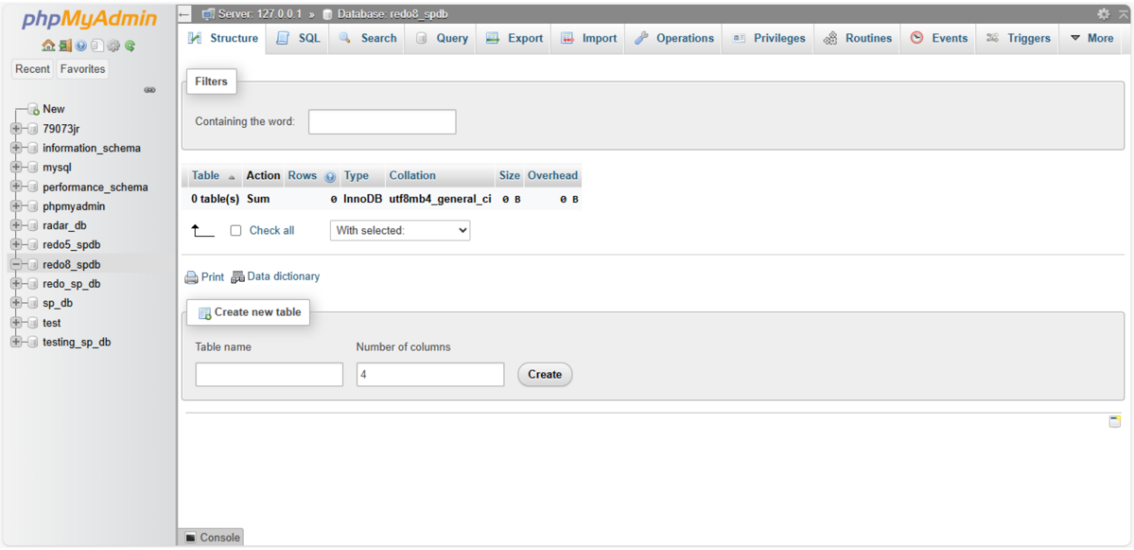
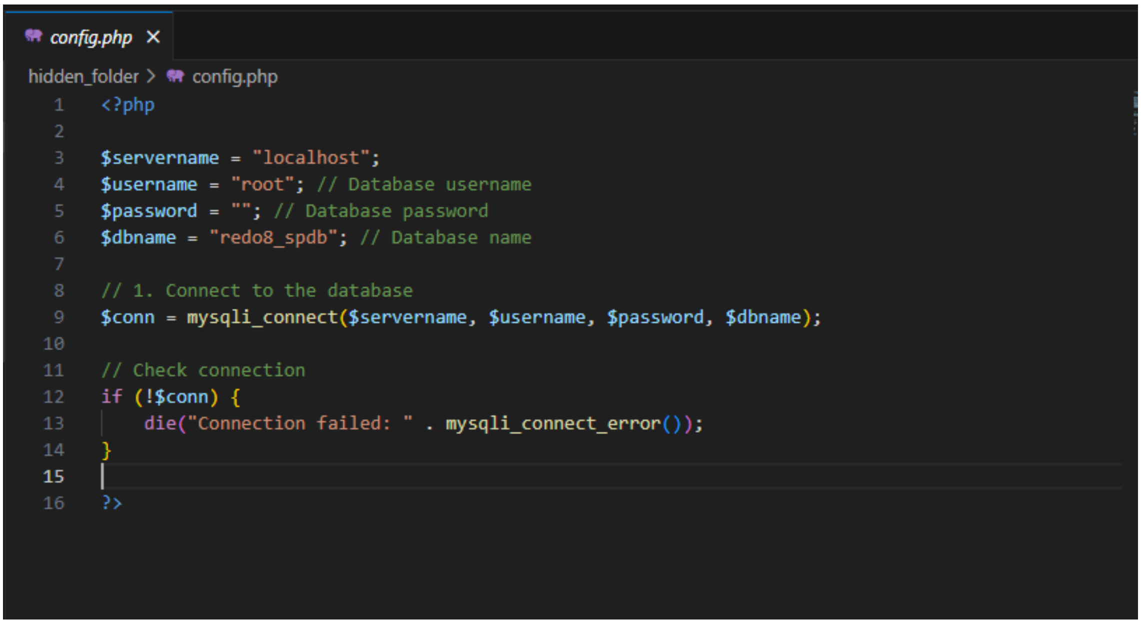


Figure 17. Database Creation

Figure above shows the database name is created in phpMyAdmin.

In implementation of the succession planning, the database needs to be created. This is to ensure that the system is set up properly with the correct database name, structure and access credentials.

4.1.2 Coding Configuration



config.php

hidden_folder > config.php

```php
<?php

$servername = "localhost";
$username = "root"; // Database username
$password = ""; // Database password
$dbname = "redo8_spdb"; // Database name

// 1. Connect to the database
$conn = mysqli_connect($servername, $username, $password, $dbname);

// Check connection
if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}

?>
```

Figure 18. Coding Configuration

Figure above shows the code of config.php which used to connect the database created.

In order to establish connection with the database created, we need to include this file which specifies the server's name, username, password and database name.

4.2 Implementation of system (System Interface)

4.2.1 Superadmin Registration Page

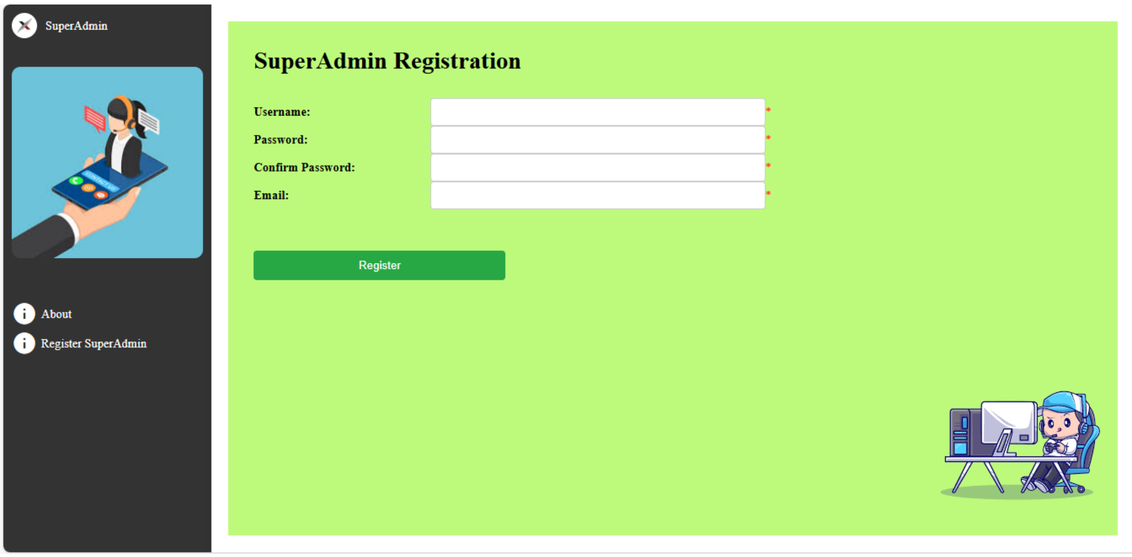


Figure 19. Superadmin Registration Page

Figure above shows after the owner of the system obtained the system, they need to perform superadmin registration to create a superadmin account in the system first.

Superadmin registration is a crucial step in a succession planning system because it establishes the highest-level authority responsible for monitoring and maintaining the system. Without a superadmin, there would be no centralized control, which might result in improper handling of private employee development and assessment data, unauthorized changes, and uncoordinated access. Superadmin registration ensures that the system is launched with a trustworthy administrator who can immediately enforce proper governance.

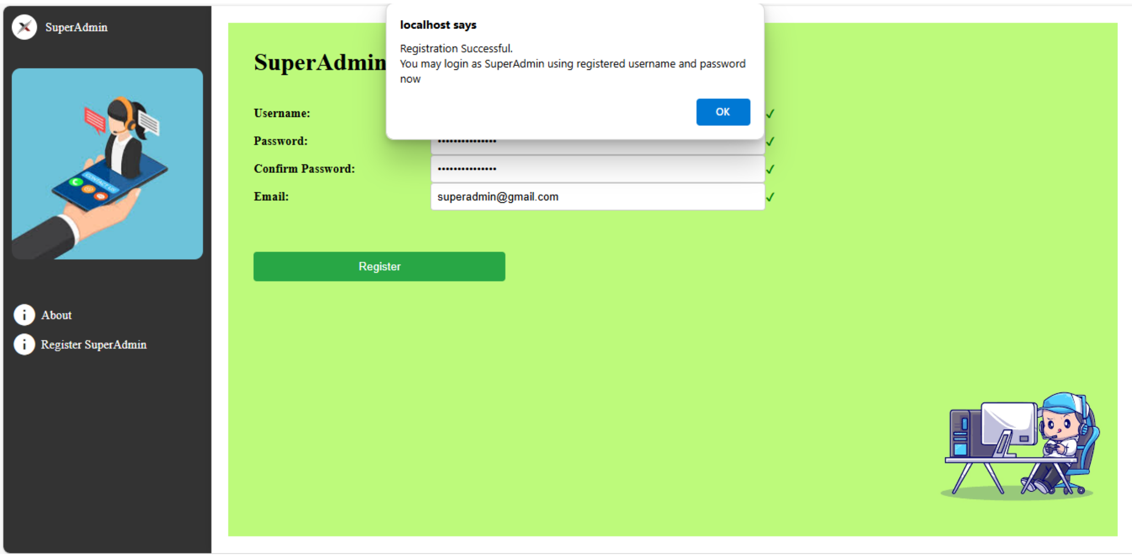


Figure 20. Successfully Admin Registration

Figure above shows after the user successfully registered a superadmin account, they can login as superadmin role using the username and password registered.

4.2.2 Index Page

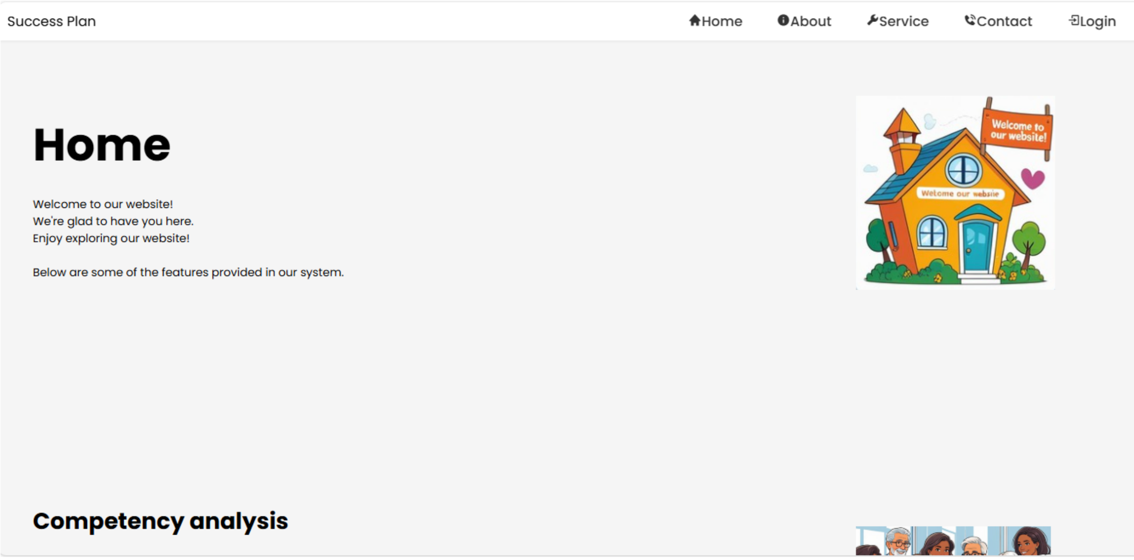


Figure 21. Index Page

The picture above shows the index page of the succession planning system. In this page, the user can view the information such as home, about, service, and contact of succession planning system. Besides, after the login navigation selection is click, it will navigate user to login page.

4.2.3 Login Page

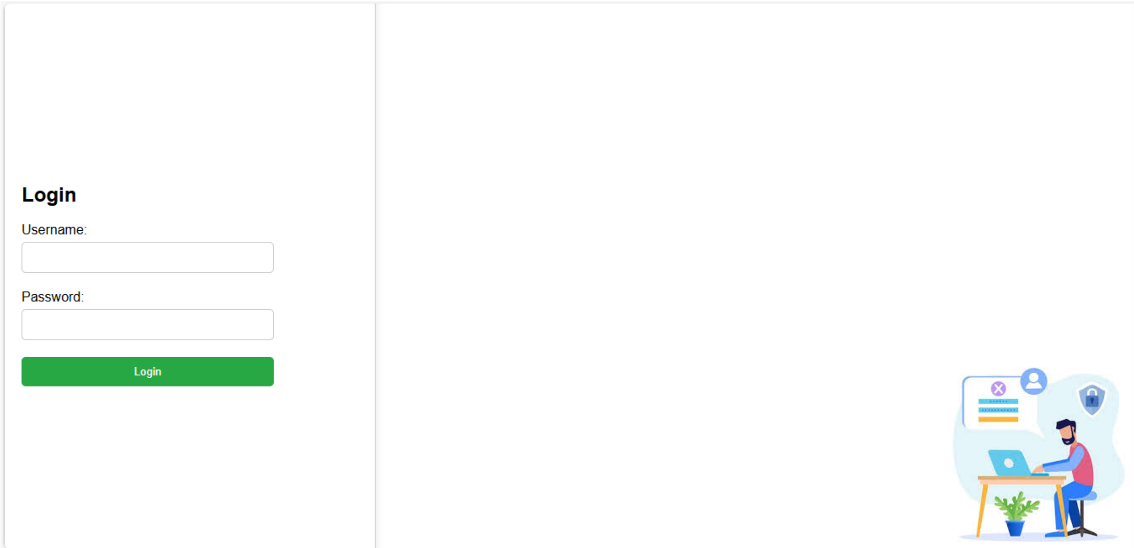


Figure 22. Login Page

Figure above shows the login page of the succession planning system. The superadmin need to login to superadmin dashboard using superadmin account with username and password registered while user need to provide their username and password of user account to login to user dashboard.

4.2.4 Superadmin Dashboard

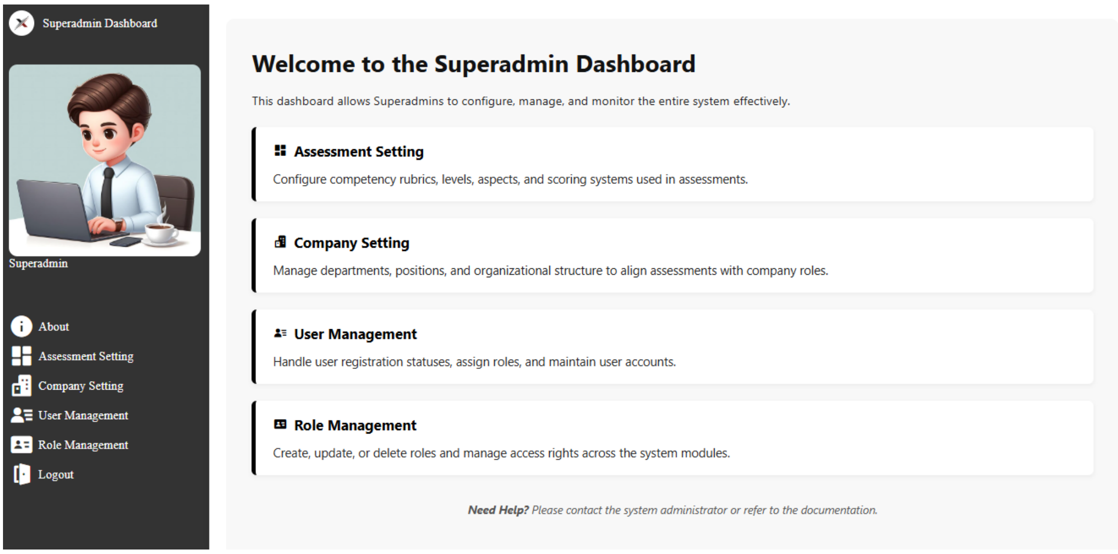


Figure 23. Superadmin Dashboard

Figure above shows the superadmin dashboard after user login as the role of superadmin. Based on the navigation bar, the activity that can be performed by the superadmin are assessment setting, company setting, user management and role management. In assessment setting, superadmin performs some setting for the competency assessment. In company setting, superadmin performs structural setting of the company. In user management, the superadmin manage the account of the user in succession planning. In role management, the superadmin define the role of user account for evaluator and human resource.

4.2.4.1 Assessment Setting

4.2.4.1.1 Scoring setting

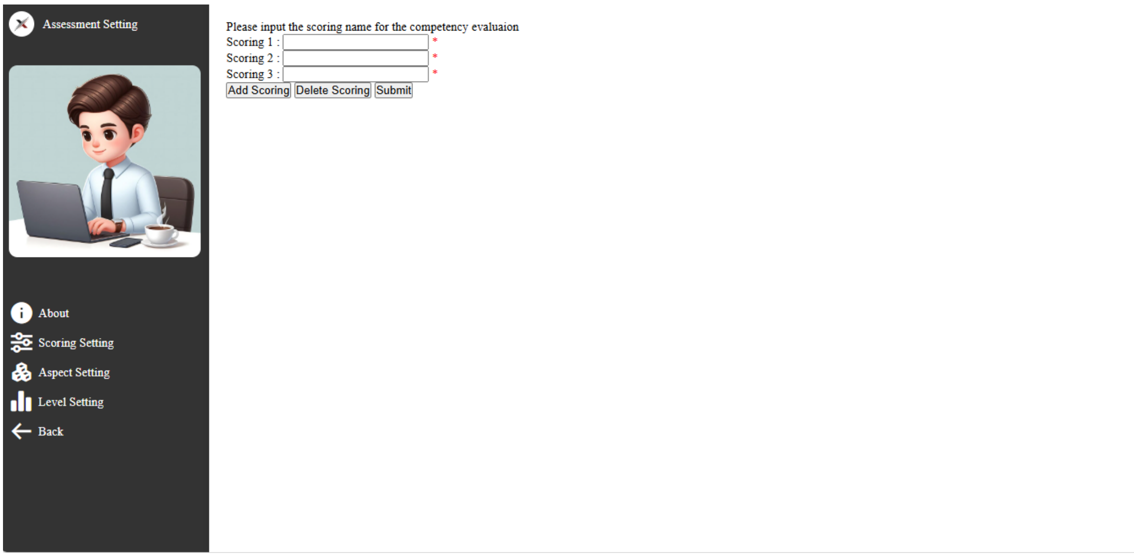


Figure 24. Scoring Setting in Assessment Setting

Figure above shows the scoring setting of assessment setting. In this section, superadmin need to defined what is the scoring range need to be used in competency evaluation. For example, scoring 1 until 3 (Bad, Moderate, Good) or scoring 1 until 5 (Below Expectation, Needs Improvement, Meets Expectation, Exceed Expectation, Outstanding). This allows the scoring of the evaluation can be customized based on company's assessment preferences.

4.2.4.1.2 Aspect setting

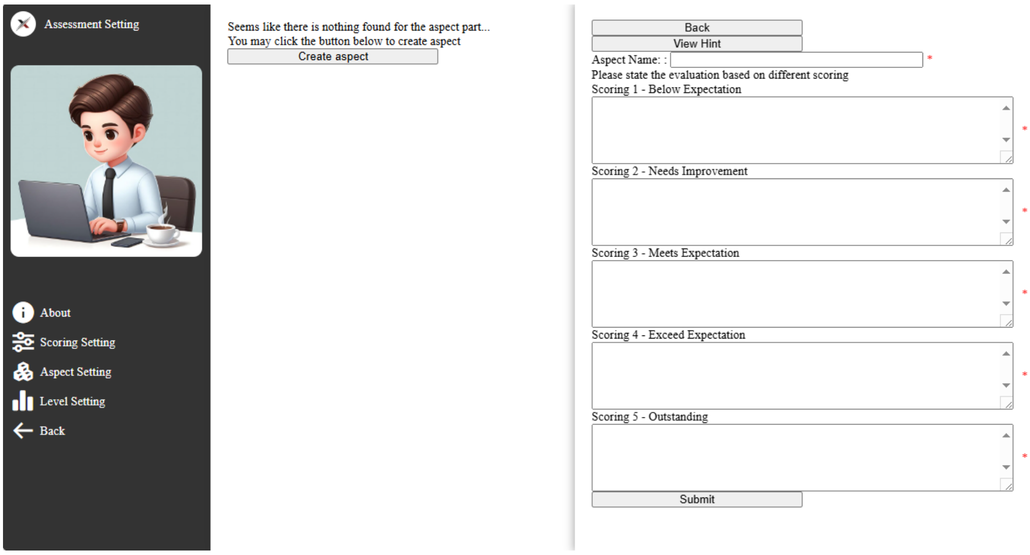


Figure 25. Aspect Setting in Assessment Setting

Figure above shows the aspect setting of the assessment setting after the scoring setting is done. In this section, superadmin can create the aspects to be evaluated in competency assessment. Besides, they also can specify the criteria need to fulfilled by the user for each scoring as a guideline for evaluator in assessment.

4.2.4.1.3 Level setting

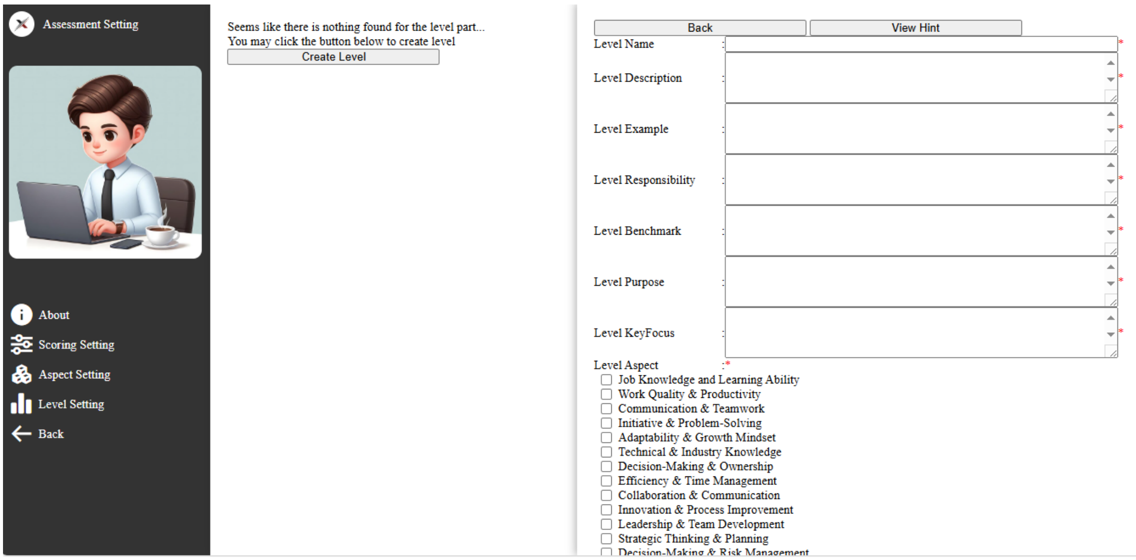


Figure 26. Level Setting in Assessment Setting

Figure above shows the level setting of the assessment setting after the aspect setting is done. In this section superadmin specifies the level of company structure such as (Entry level, Mid Level, Senior Level, High Level, Expert Level or C-Level) by adding them to the system in ascending order.

4.2.4.2 Company Setting

4.2.4.2.1 Department setting

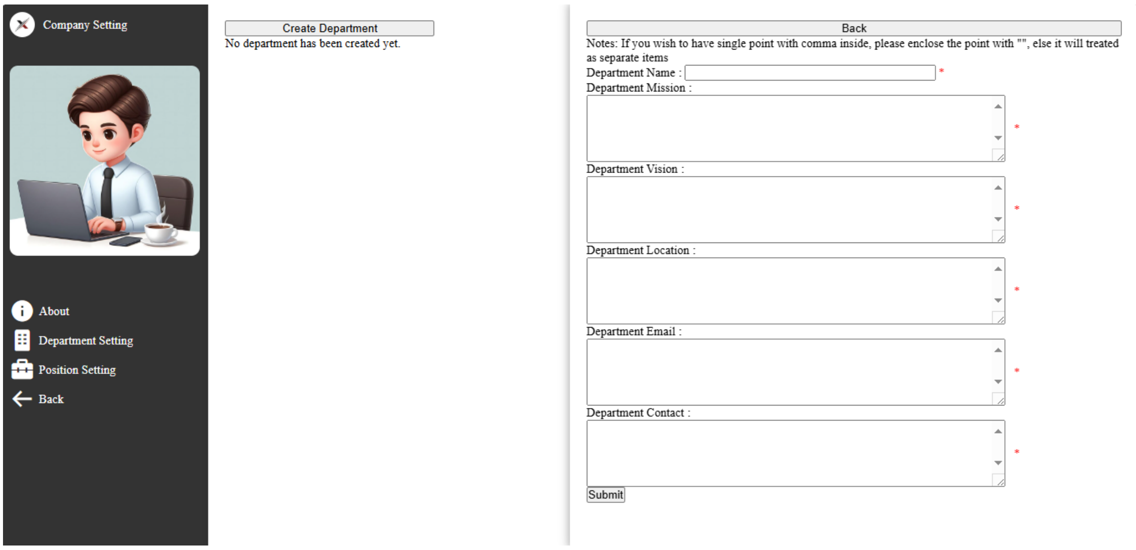


Figure 27. Department Setting in Company Setting

The figure above shows the department setting of the company setting. In this section superadmin can specify the list of departments and the departments' details of the company.

4.2.4.2.2 Position setting

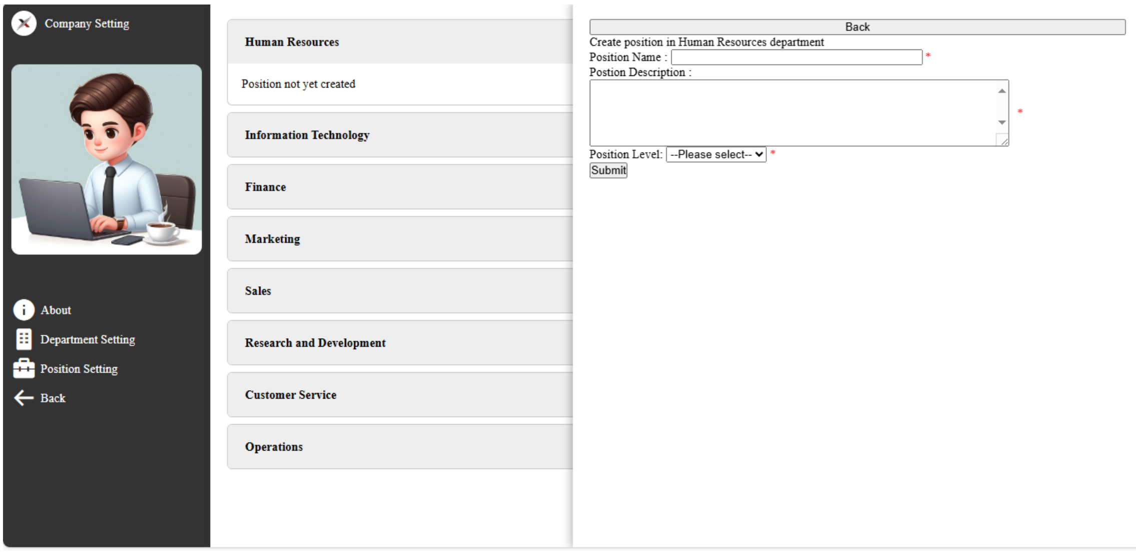


Figure 28. Position Setting in Company Setting

Figure above shows the position setting of the company setting after department setting is done. In this section, superadmin can add the different positions available inside each department.

4.2.4.2 User Management

4.2.4.2.1 Newly Registered User

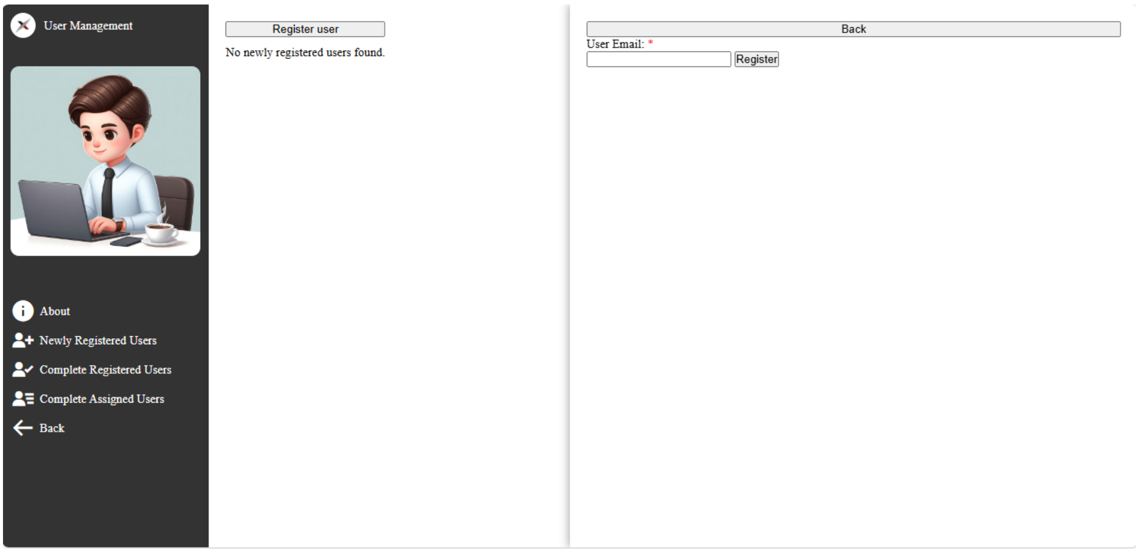


Figure 29. Newly Registered User in User Management

Figure above shows the newly registered user content of the user management. Inside this section, superadmin can helps the employee to create an account by using the email of the user. Through this, only the email of the employee is stored in the database which save the database storage by eliminating the possibility of unauthorized email.

4.2.4.2.2 Complete Registered User

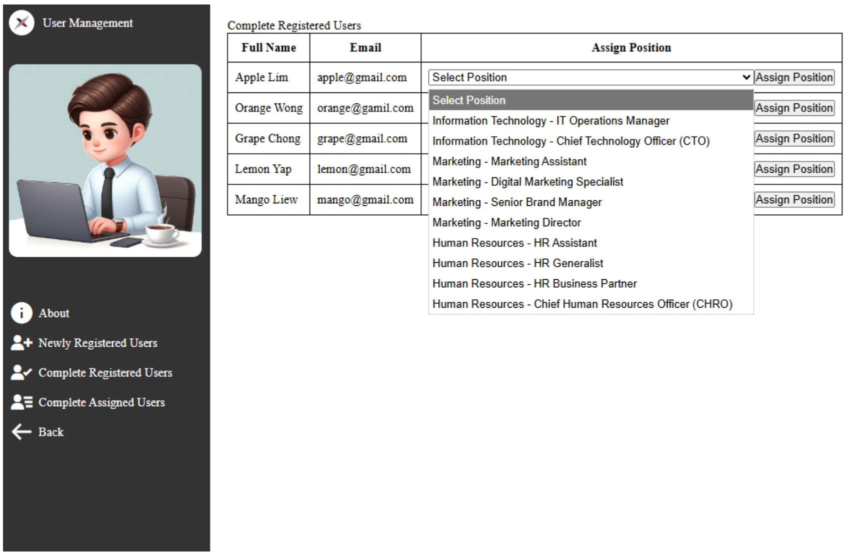


Figure 30. Complete Registered User in User Management

Figure above shows the list of complete registered users. Initially, the user will be registered by superadmin through their email. After getting the temporary username and password, the user will perform user registration by login through temporary username and password. After the registration, the user is ready for position assignment by the superadmin.

4.2.4.2.3 Complete Assigned User

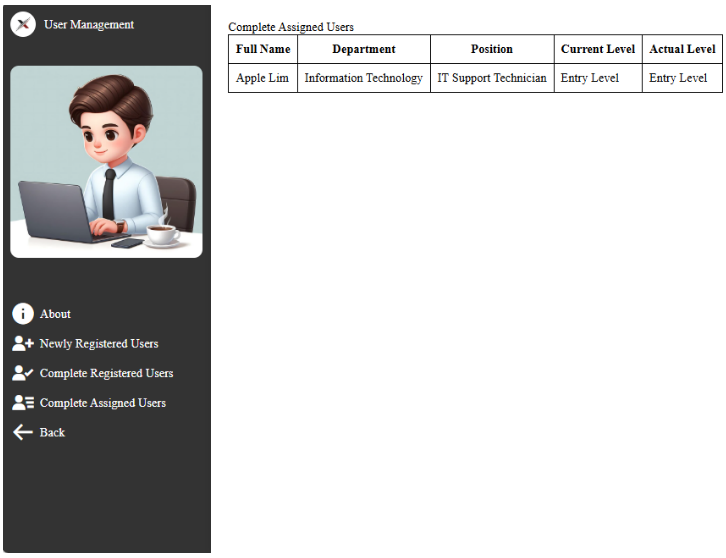


Figure 31. Complete Assigned User in User Management

Figure above shows after the position assignment by superadmin, the details of the position assignment will be displayed here.

4.2.4.2 Role Management

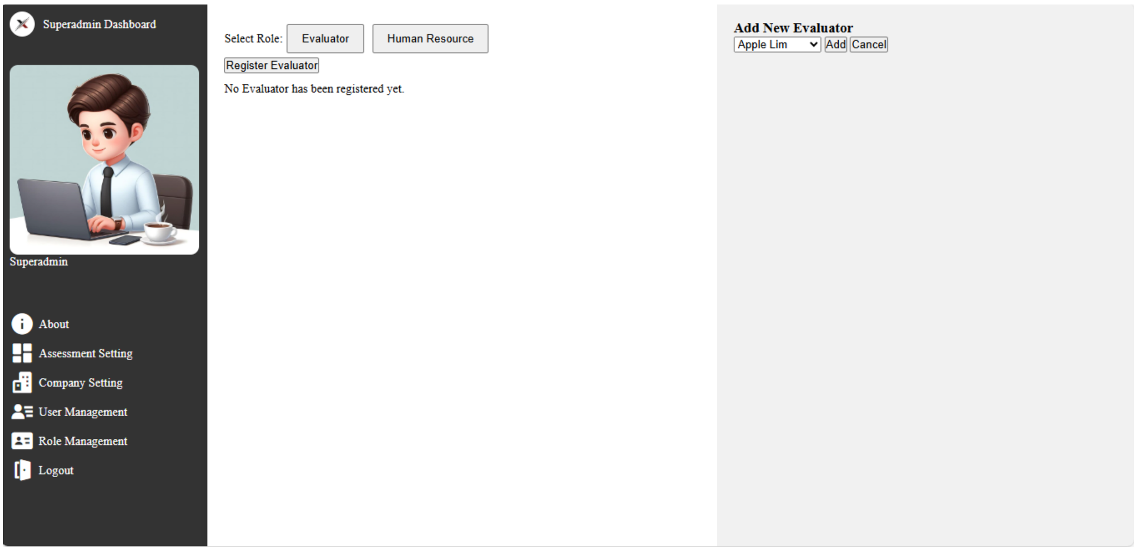


Figure 32. Role Management in Superadmin Dashboard

Figure above shows the superadmin perform the role management of the user to control the access of the user for evaluator and Human Resource role.

4.2.5 Newly Registered User Dashboard

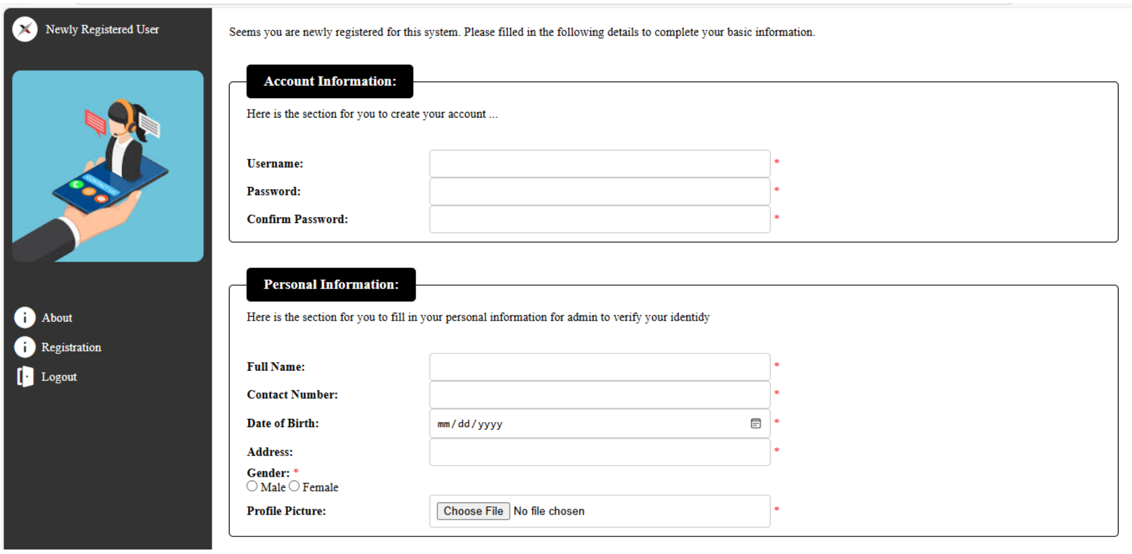


Figure 33. Newly Registered User Registration Page

Figure above shows after the user email is used to be registered by superadmin and login using the temporary username and password, the user will navigate to newly registered user dashboard to fill in the details for registration.

4.2.6 User Dashboard

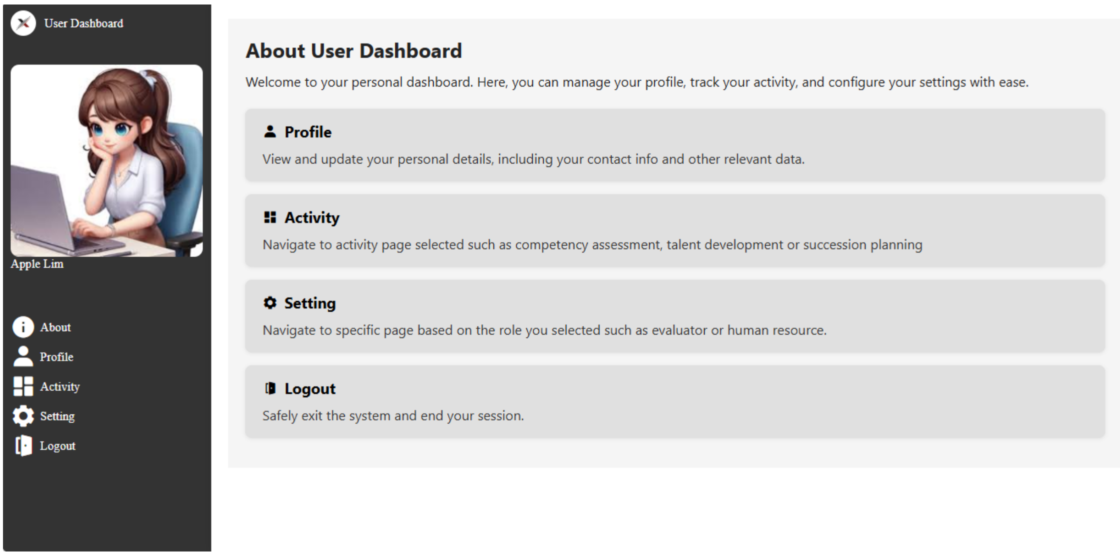


Figure 34. User Dashboard

Figure above shows after the user has finished registration, they can login using the new username and password registered. Based on the navigation bar, the activity that can be performed by the user are profile (view the profile details), activity (competency analysis, talent development, succession planning), setting (change the role to human resource or evaluator), and logout.

Figure 35. Profile Details

Figure above shows the content of the user profile. The content displays the user details such as account information, basic information, working experience and educational background.

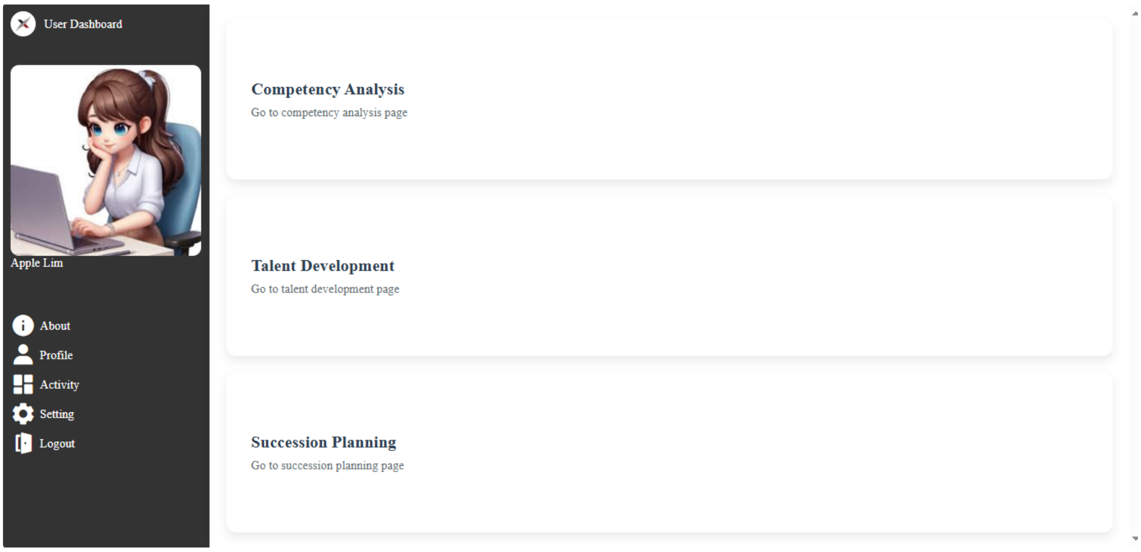


Figure 36. Activity

Figure above shows the activities that can be performed by the user such as competency analysis, talent development or succession planning.

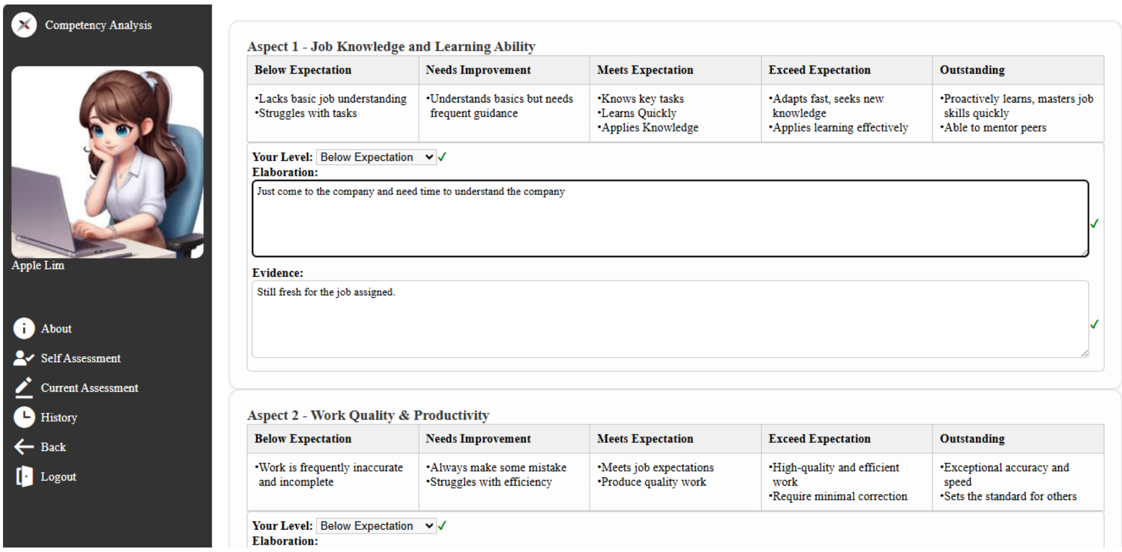


Figure 37. Self-Assessment

Figure above shows the self-assessment of the competency evaluation after human resource has register user to join the competency assessment. In this section, user need to evaluate their own competencies. Several aspects are evaluated based on the user current level.

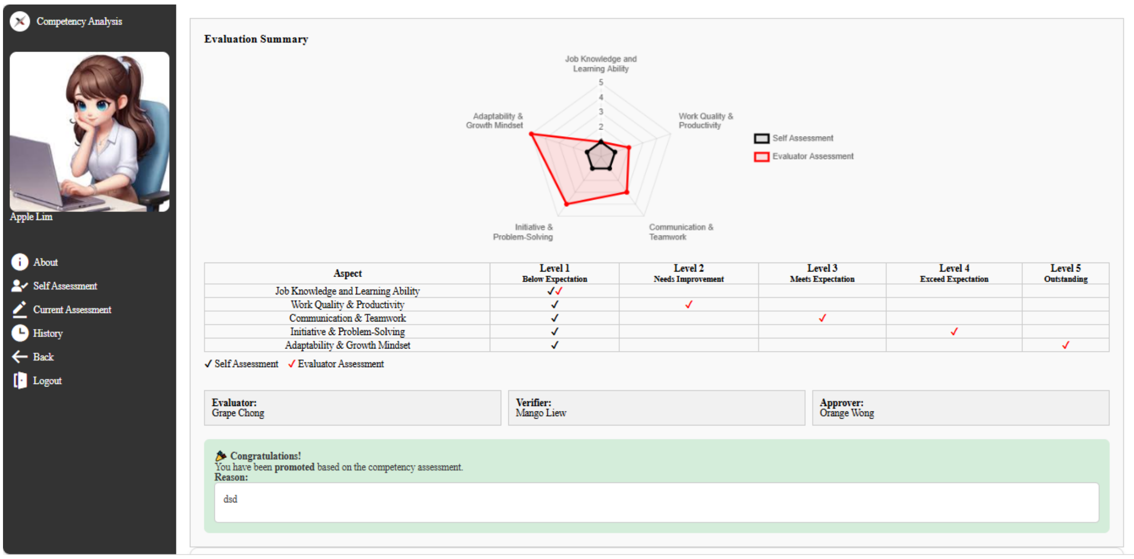


Figure 38. Competency Assessment Report

Figure above shows the current competency assessment of the user. The radar chart constructed shows the evaluation made between the user and evaluator. Through this, the user can realize the difference of the assessment made and know the competency gap.

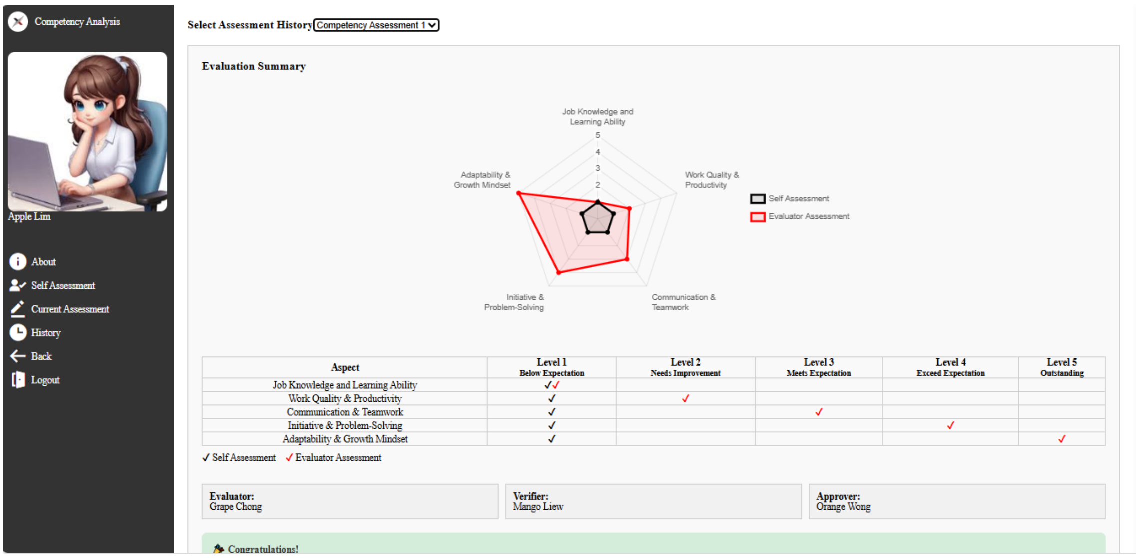


Figure 39. History of competency assessment report

Figure above shows the history of competency assessment that have been done. Through this, the user can search the report regarding their competency assessment through the dropdown selection.

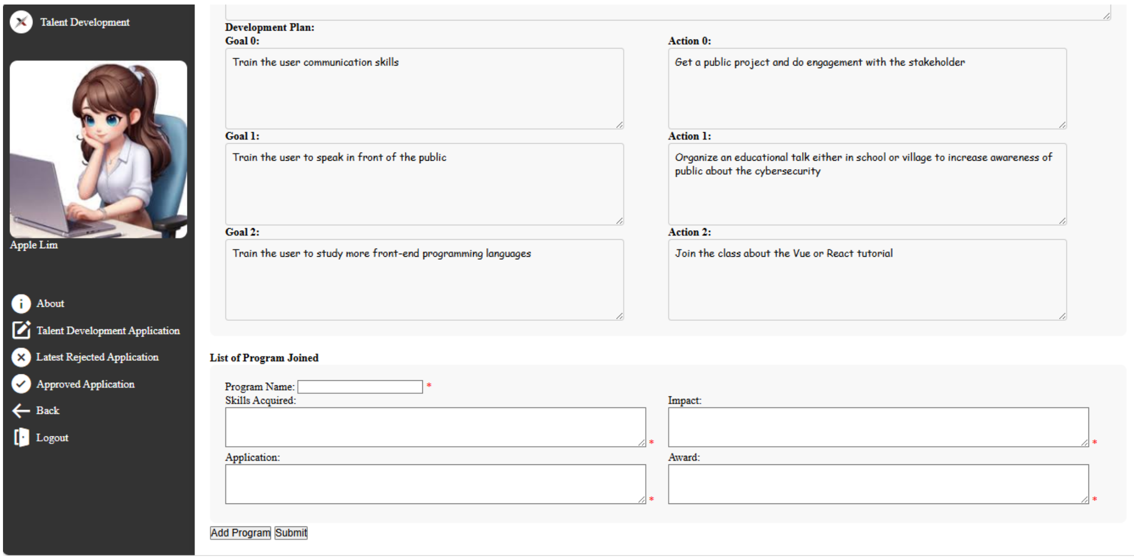


Figure 40. Talent Development

Figure above shows the talent development application after the talent development plan is constructed by the human resource. In this section, the constructed talent development is displayed and user need to list down the program that have been joined recently for the human resource to verify that the program joined has help to improve the competency of the user.

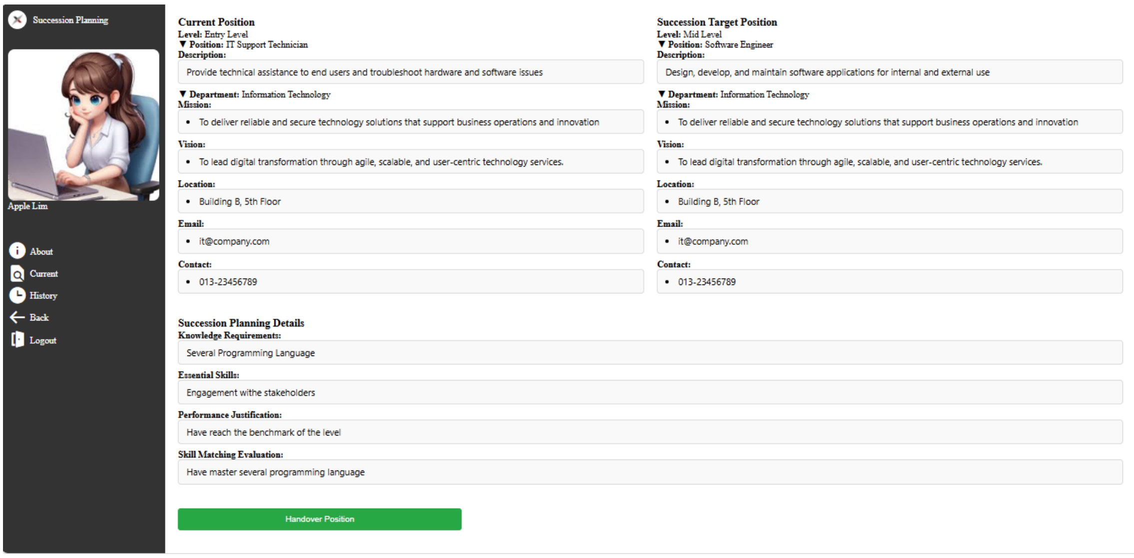


Figure 41. Succession Planning

Figure above shows the succession planning of the user after assigned by the human resource if the promotion decision is made after reviewing the evaluator competency assessment about this user. The user is currently prepared to handover the position that was assigned by the human resource. From this section, the user can know about the position details that need to be replace from current position. Besides, from the succession planning details, the user can know about the knowledge requirement and essential skills required to hold the assigned position. In addition, the user also can know why the position is assigned to the user to be replaced through the performance justification and skill matching evaluation stated by human resource.

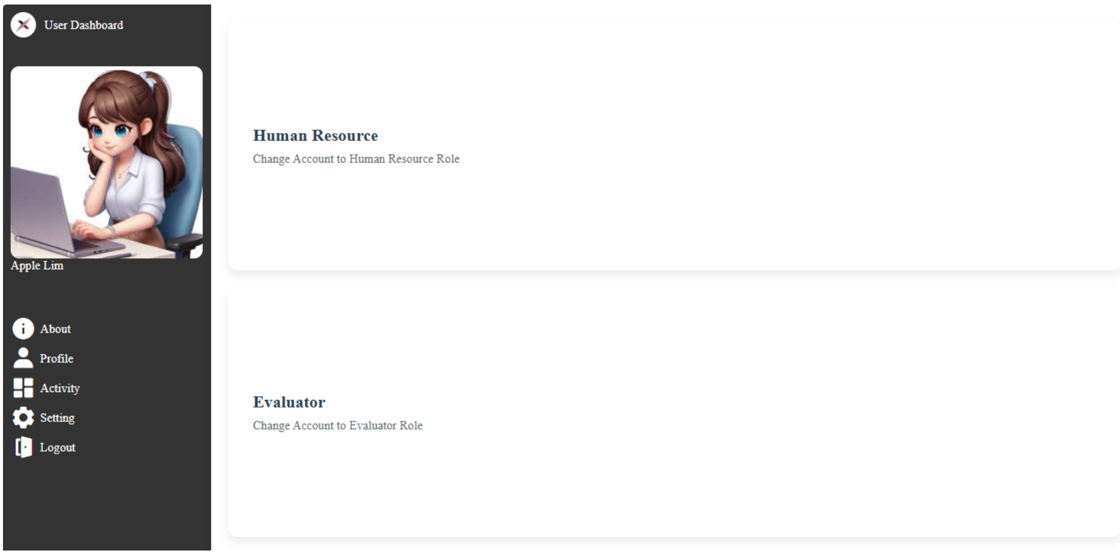


Figure 42. Change Role

Figure above shows the user can change their role either to human resource or evaluator based on privilege set by superadmin in role management setting.

4.2.7 Human Resource Dashboard

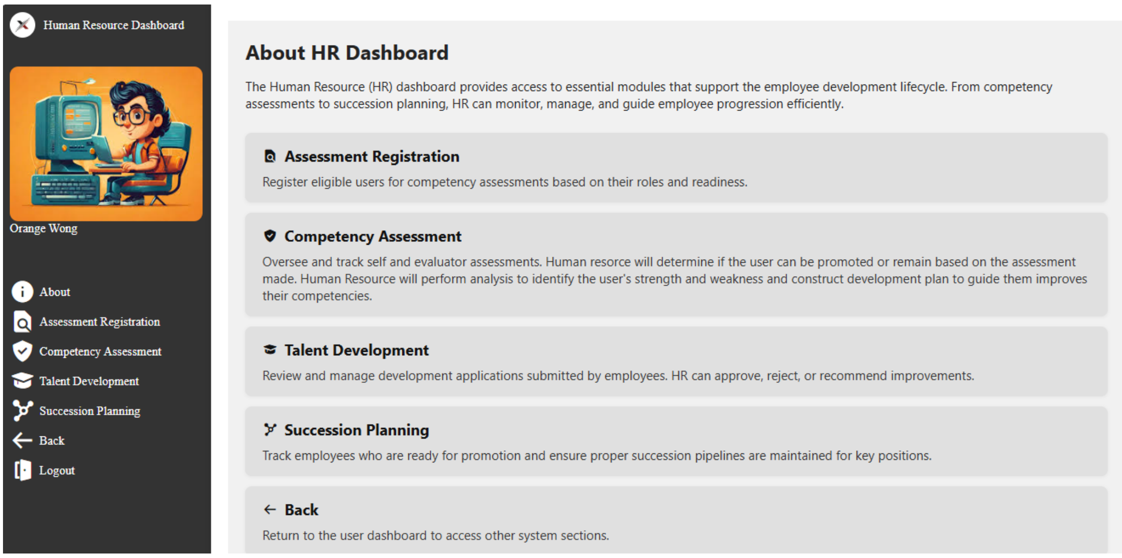


Figure 43. Human Resource Dashboard

Figure above shows the Human Resource Dashboard after the user successfully change the role to Human Resource. Based on the navigation bar, the human resource can perform the activities such as assessment registration (register available user for competency assessment activity), competency assessment (make decision if the user can be promoted or remain based on the evaluation done by the evaluators and construct the development plan for user to guide them improves their competencies), talent development (review the application related to the list of programs joined, make decision to verify or reject the application submitted, used to determine if the programs joined is matching with the talent development plan constructed), succession planning (after talent development application is verified, if the user status is promoted, based on decision made in competency assessment, the user will be listed as qualified user to proceed with succession planning. In this process, human resource will identify the suitable and available position for user to be prepared for replacement)

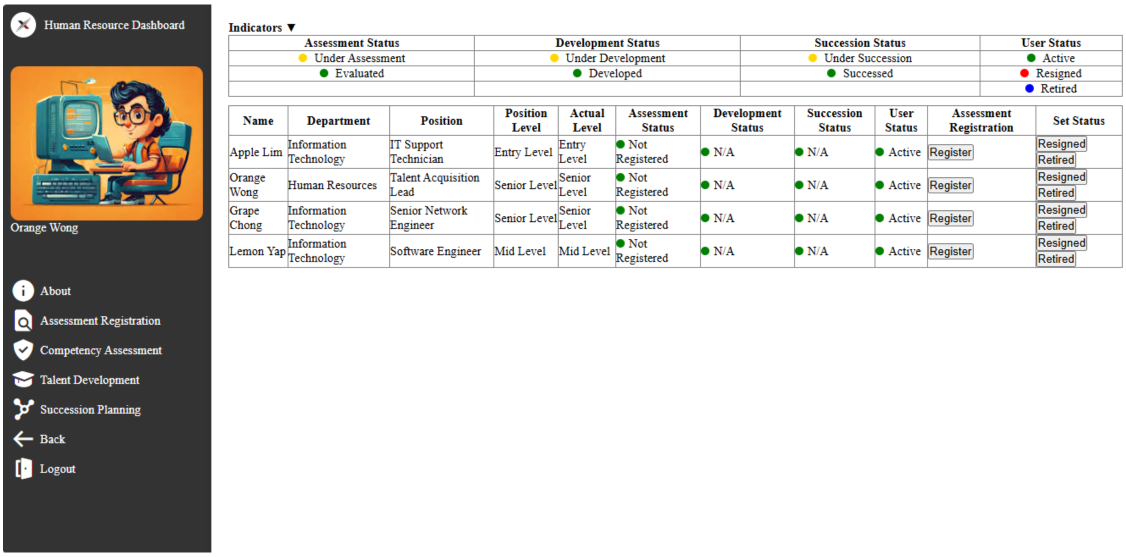


Figure 44. Assessment Registration

Figure above shows the assessment registration performed by the human resource in human resource dashboard. In this section, the human resource can view the development status of the users. Besides, human resource also can register the available user to join the competency assessment.

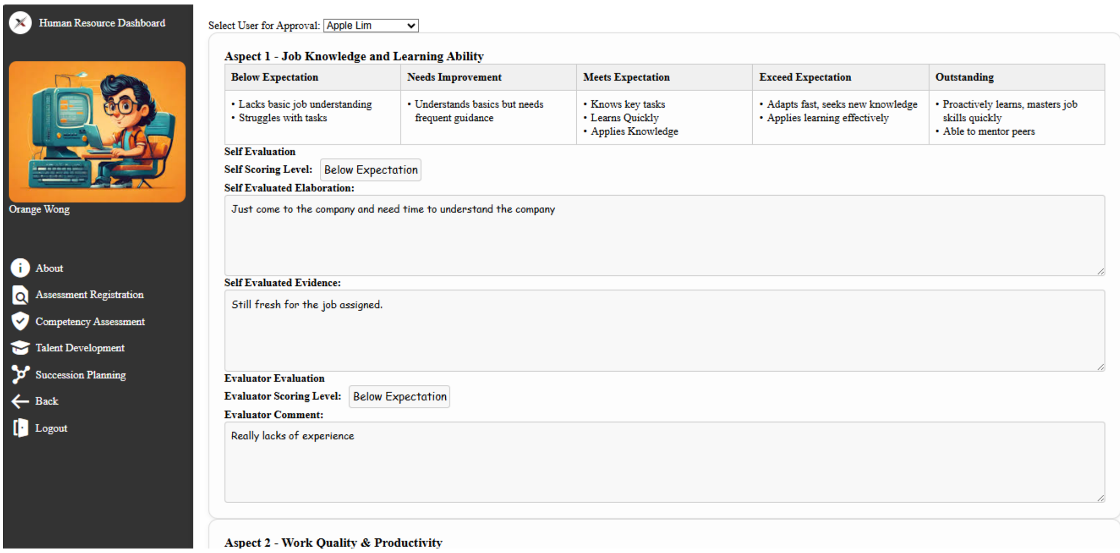


Figure 45. View User's Self-Assessment and Evaluator Assessment

Figure above shows the competency assessment in human resource dashboard. In this section, human resource can view the competency assessment that have been done by the user (through self-assessment) and evaluator (through evaluator assessment).

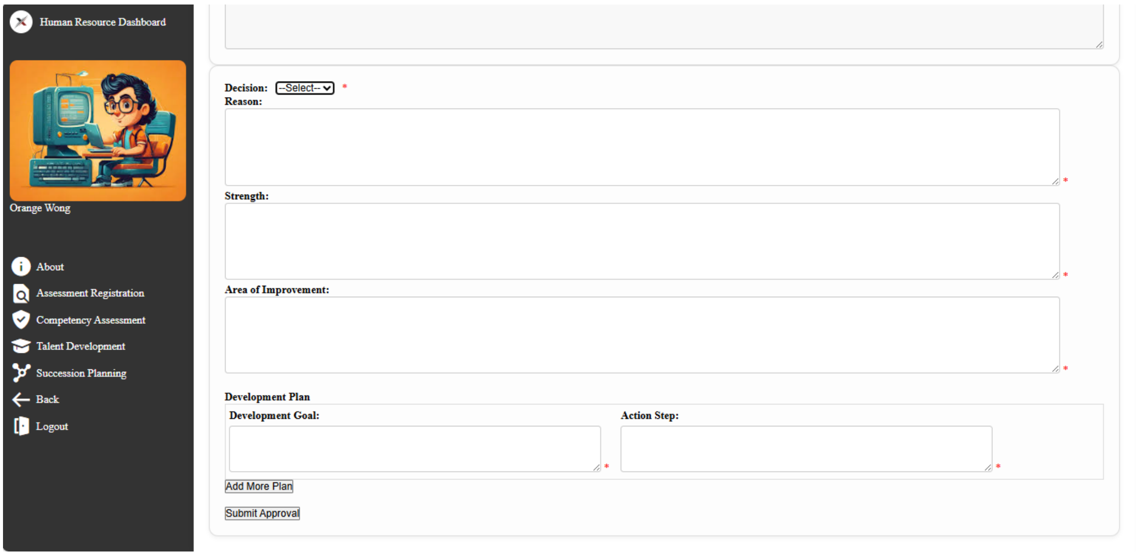


Figure 46. Assessment Decision

Figure above shows the continuation of competency assessment in human resource dashboard. After reading the competency assessment of both user and evaluator, the human resource make decision whether the user level can be promoted or keep remain. Besides, human resource needs to specify the reason about the decision made. Not only that, human resource needs to perform analysis on this user to identify their strength and area of improvement. In addition, human resource needs to construct the development plan for this user to help them improve their competencies.

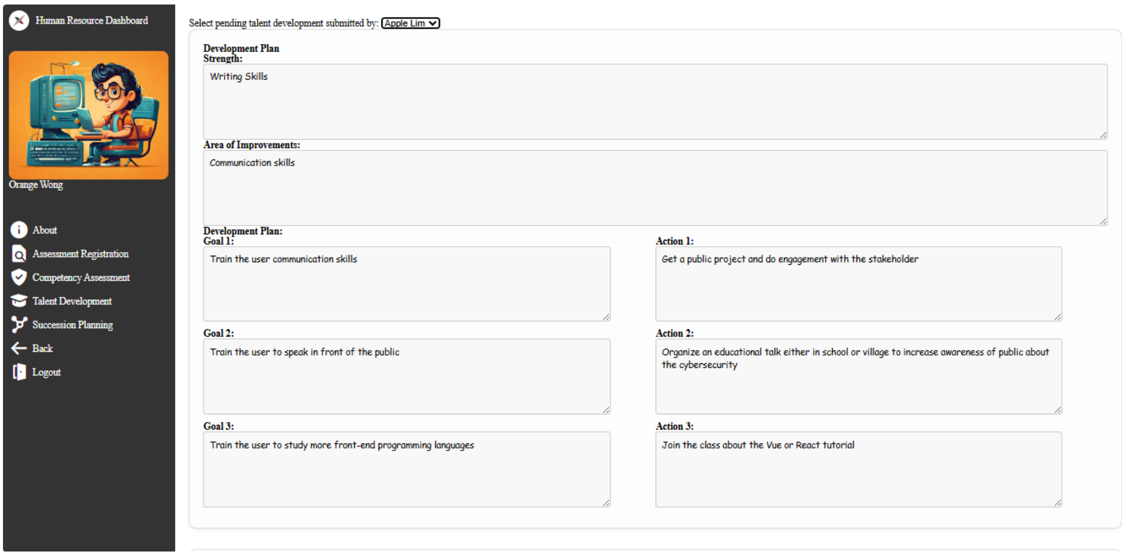


Figure 47. Talent Development Verification

Figure above shows the talent development of the human resource dashboard. In this section, the submission of application about the list of programs joined by the user according to talent development plan constructed. In this section, human resource can view the development plan that has been constructed for this user.

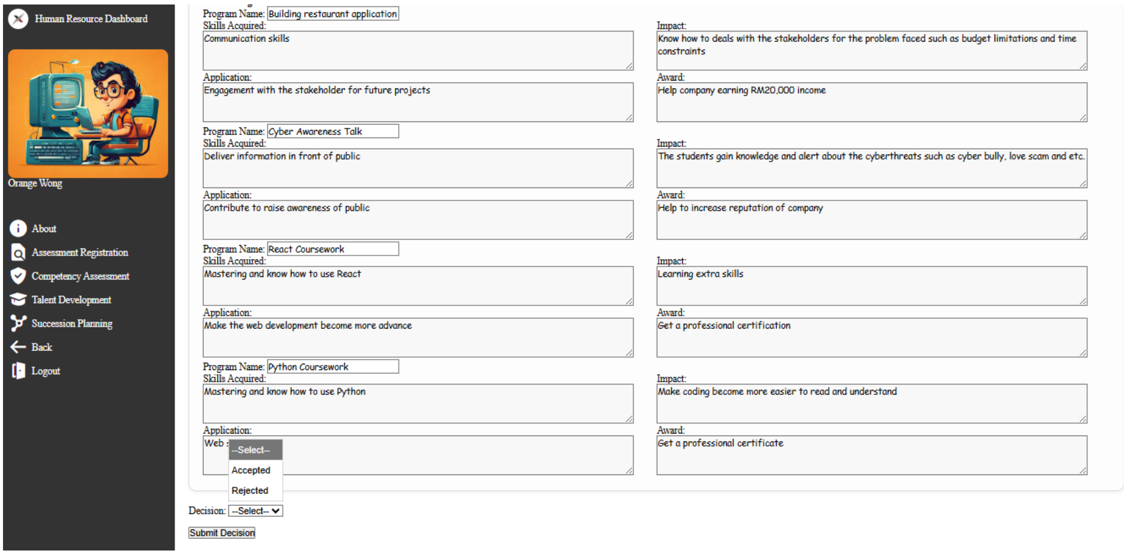


Figure 48. Talent Development Verification Decision

Figure above shows the continuation of talent development in human resource dashboard. Below the talent development plan displayed the list of programs joined by the user. Then, human resource needs to make decision to either reject the application or accept the application. If the rejection is made, human resource need to specify the reason of rejection (for example, some development goals have not reached based on list of programs joined). Then, the user needs to resubmit the application after several new programs joined to meet the development goals until human resource accept the application.

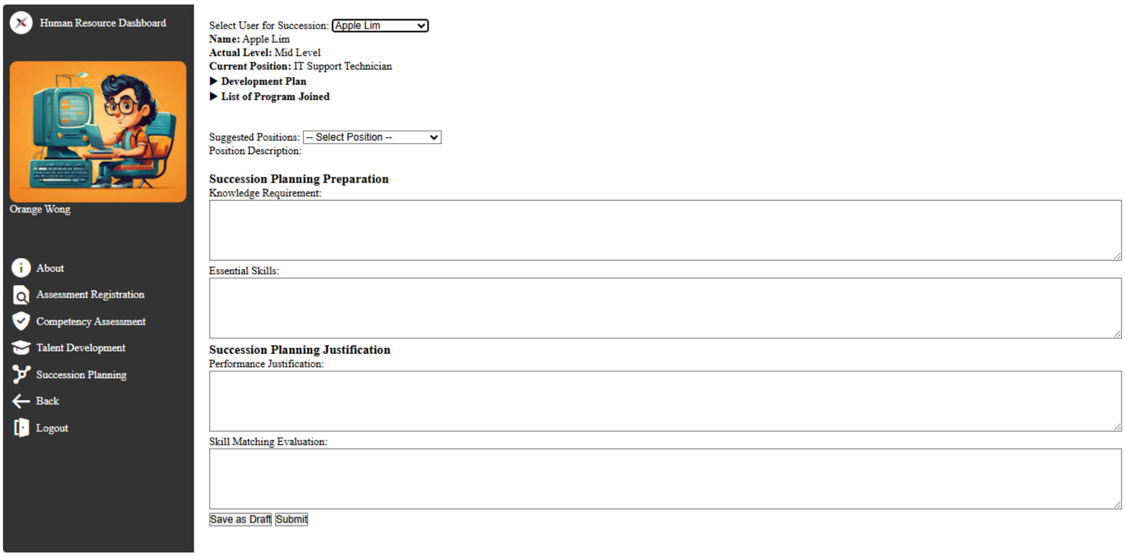


Figure 49. Succession Plan Creation

The figure above shows the Succession Planning in human resource dashboard. If the user's promotion status is promoted instead of remain and the user development application is accepted by human resource, they are qualified for human resource to construct the succession plan for them. In this section, human resource will choose the available position to be replaced. Besides, human resource also needs to fill in the succession planning preparation (Knowledge Requirement and Essential Skills) and succession planning justification section (Performance Justification and Skill Matching Evaluation).

4.2.8 Evaluator Dashboard

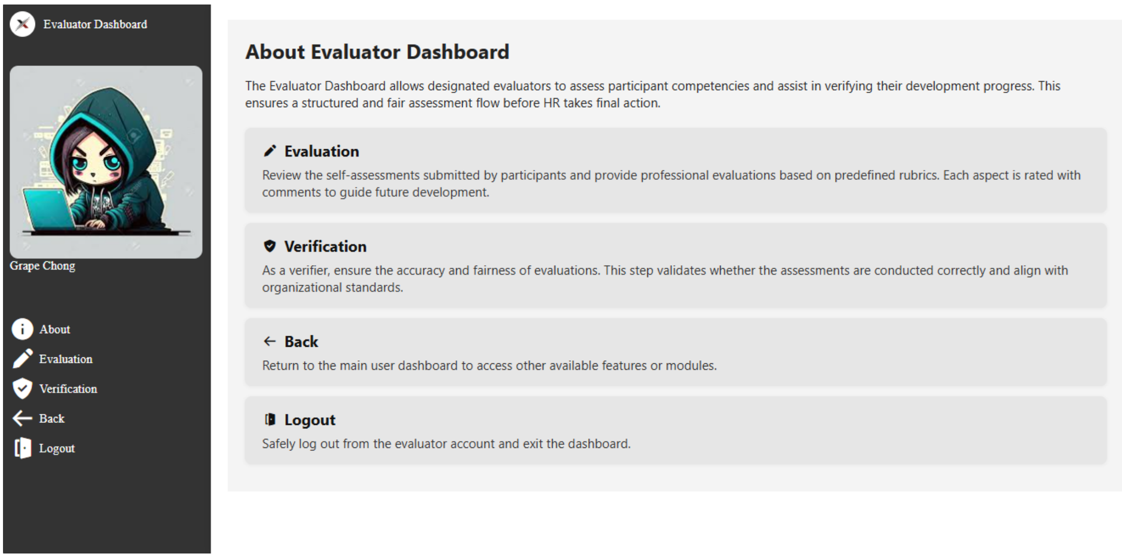


Figure 50. Evaluator Dashboard

Figure above shows the Evaluator Dashboard after the user successfully change the role to evaluator. Based on the navigation bar, the evaluator can perform the activities such as evaluation (make the evaluation for the user and stating the comment for the evaluation made), verification (another evaluator make the verification about the evaluation made).

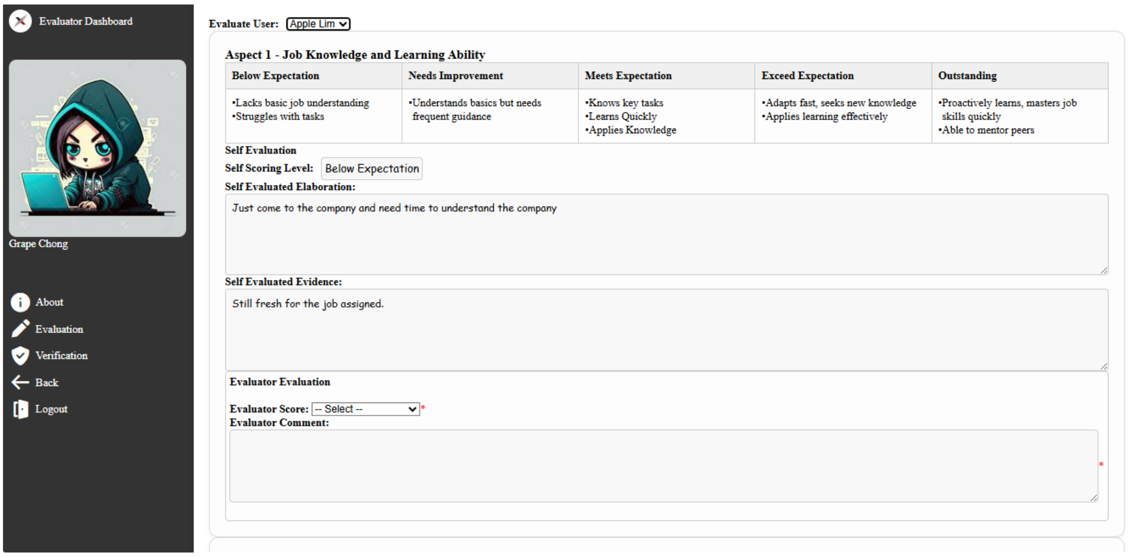


Figure 51. Evaluator Assessment

Figure above shows the evaluation in the evaluator dashboard. In this section, the evaluator can view the self-assessment of this user and perform the evaluator assessment for this user as well. The evaluator needs to provide the evaluation score and evaluator comment for every aspect evaluated.

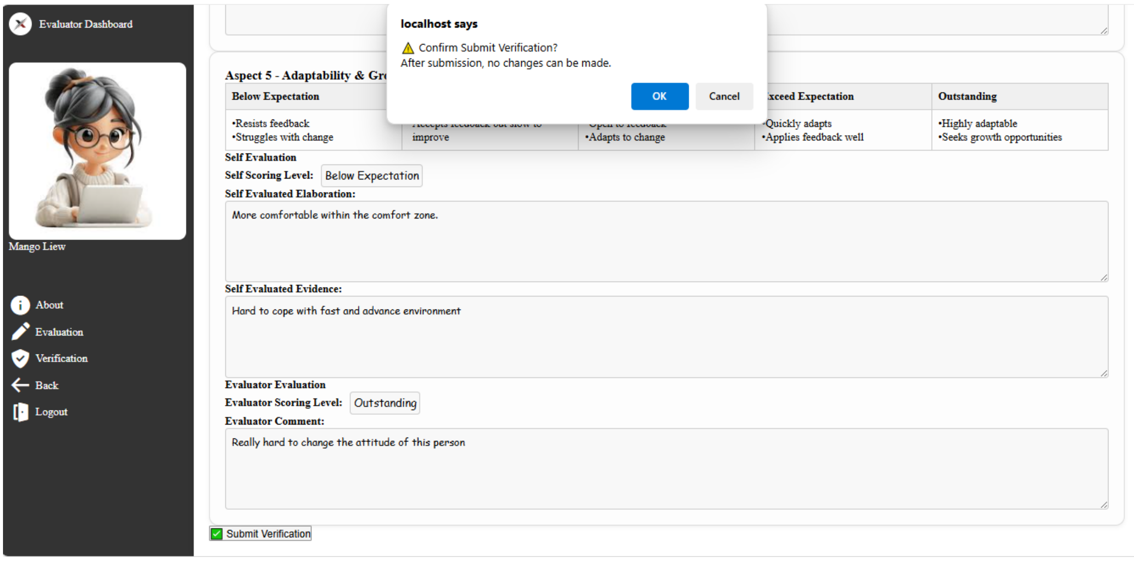


Figure 52. Evaluator Verification

Figure above shows the verification of the evaluator dashboard. In this section, the evaluator can read the self-assessment and evaluator assessment by another evaluator. Besides, the verification will be done by the evaluator to verify the evaluator assessment of the selected user.

4.3 Database Implementation

4.3.1 Table Creation Coding

```php
// login details of the superadmin
$createSuperAdminTable = "CREATE TABLE IF NOT EXISTS superadmin (
    superAdminId INT(11) AUTO_INCREMENT PRIMARY KEY,
    superAdminUsername VARCHAR(50) NOT NULL,
    superAdminPassword VARCHAR(255) NOT NULL,
    superAdminEmail VARCHAR(100) NOT NULL,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
)";
mysqli_query($conn, $createSuperAdminTable);

// login details of the registered users
$createTableSQL = "CREATE TABLE IF NOT EXISTS userlogininfo (
    userId INT(6) UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    userEmail VARCHAR(50) NOT NULL,
    userUsername VARCHAR(50) NOT NULL,
    userPassword VARCHAR(255) NOT NULL,
    userStatus ENUM('Active', 'Resigned', 'Retired') DEFAULT 'Active',
    userRegisterDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    userUpdateDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
)";
mysqli_query($conn, $createTableSQL);
```

Figure 53. Table Creation using SQL

Figure above shows the creation of table in database using SQL.

4.3.2 List of table created

Table	Action	Rows	Type	Collation	Size	Overhead
competencyassessment	Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	96.0 KiB	-
departmentinfo	Browse Structure Search Insert Empty Drop	8	InnoDB	utf8mb4_general_ci	16.0 KiB	-
evaluatorrole	Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	32.0 KiB	-
hrrole	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
positioninfo	Browse Structure Search Insert Empty Drop	14	InnoDB	utf8mb4_general_ci	32.0 KiB	-
successionplanning	Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	48.0 KiB	-
superadmin	Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	16.0 KiB	-
talentdevelopment	Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	64.0 KiB	-
temptalentdevelopment	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	48.0 KiB	-
useradditionalinfo	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
userbasicinfo	Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_general_ci	32.0 KiB	-
usercompanyinfo	Browse Structure Search Insert Empty Drop	4	InnoDB	utf8mb4_general_ci	48.0 KiB	-
userlogininfo	Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_general_ci	16.0 KiB	-
13 tables	Sum	41	InnoDB	utf8mb4_general_ci	512.0 KiB	0 B

Check all   With selected:

Figure 54. List of tables created

Figure above shows the list of tables that have been created for succession planning system.

4.4 Web Hosting Implementation

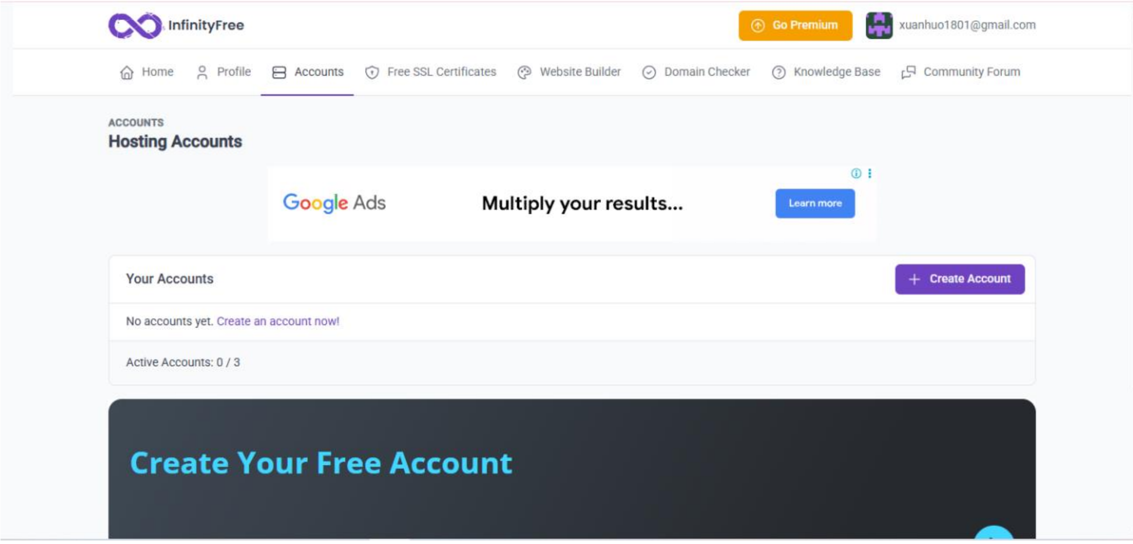


Figure 55. Web Hosting Implementation

Figure above shows the hosting platform used to host the succession planning system, InfinityFree.

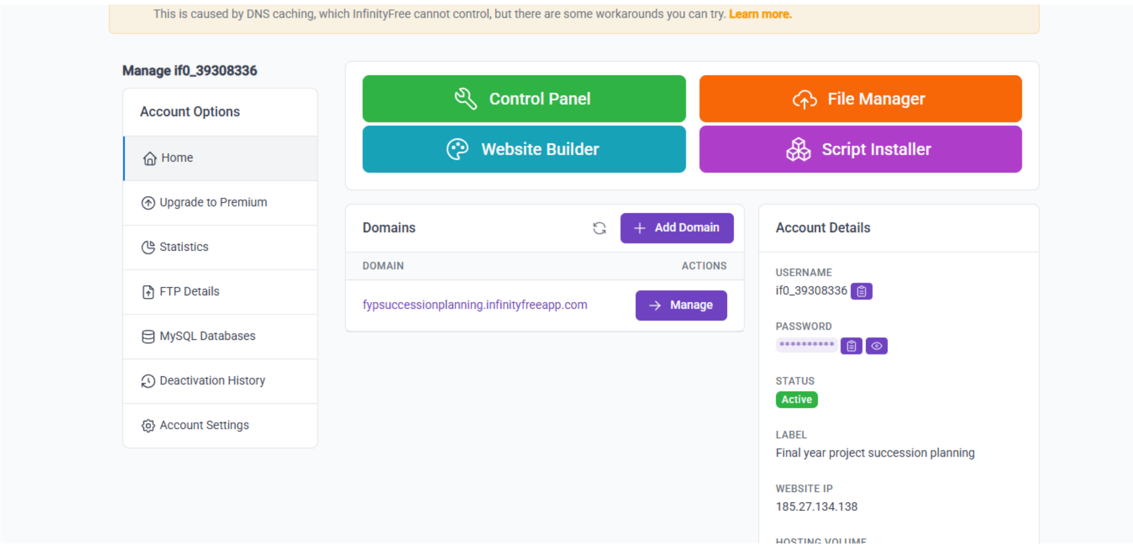


Figure 56. Web Hosting Configuration

Figure above shows the domain name is created to host the succession planning system using infinityFree, which is fypsuccessionplanning.infinityfreeapp.com. In order to host the system in InfinityFree, some configuration is needed to be done.

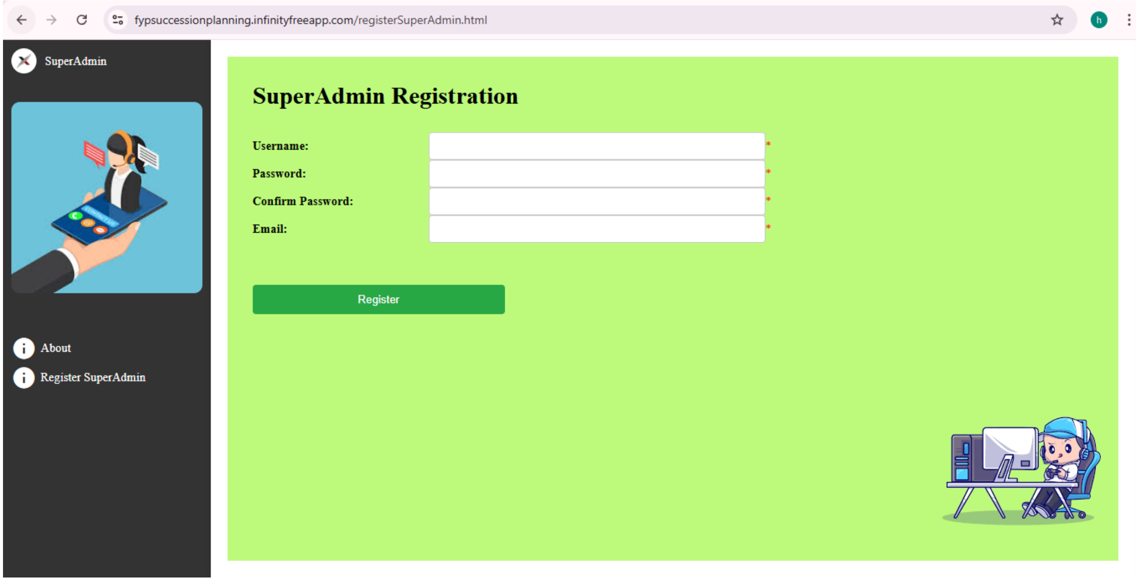


Figure 57. Open the system using domain name created

Figure above shows that the system can be opened using the domain name created which is fypsuccessionplanning.infinityfreeapp.com after the configuration has been done. This indicates that the system developed is successfully hosted using infinityFree.

Chapter 5: Testing

5.1 Functional Testing

5.1.1 Superadmin Registration

Table 3. Functional Testing for Superadmin Registration

<table>
<tr><td colspan="3">Test Scenario:
Superadmin Registration</td><td colspan="3">Pre-requisite:
Owner gets the succession planning system and opens the system using domain name of the system</td></tr>
<tr><td colspan="3">Test Description:
Register superadmin account for succession planning system</td><td colspan="3">Post-requisite:
Owner can login to the system as superadmin role successfully</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1	Owner opens the succession planning system	Domain name of the system	The user will navigate to superadmin registration if superadmin account is firstly created	Pass	The user navigates to superadmin registration page
2	Owner needs to provide the details in the form	Not filling username, password, confirm password and email	The (*) will be marked beside the input field to indicate required field	Pass	The (*) mark is successfully displayed to indicate user about the required field to be filled

		Username: - Less than 8 characters - Consists of characters other than letters, number and underscore Password: - Does not contain at least one uppercase,	The error message will be displayed to inform user about the error made	Pass	The error is displayed below the submit button for the user to verify their inputs before submission

		one lowercase, one number and one special character - Less than 8 characters Confirm Password: - Does not match with password Email:			

		- Invalid email format			
		Valid input following the requirements	The alert “Registration Successful. You may login as SuperAdmin using registered username and password now.” is pop out to indicate the successful admin registration.	Pass	After the submit button is clicked, if the input field does not have any error, then registration is successful.

3.	Owner will navigate to index page	Click the login button	The owner will navigate to login page	Pass	The owner is navigating to login page
4.	Owner login as superadmin	Input the username and password registered	The owner able to login into Superadmin Dashboard	Pass	The owner is navigating to superadmin Dashboard

5.1.2 Assessment Setting (Scoring Setting)

Table 4. Functional Testing for Assessment Setting (Scoring Setting)

<table>
<tr><td colspan="3">Test Scenario:
Assessment Setting – Scoring Setting</td><td colspan="3">Pre-requisite:
User login as superadmin role and click the assessment setting in navigation bar</td></tr>
<tr><td colspan="3">Test Description:
Specify the scoring name used during the evaluation</td><td colspan="3">Post-requisite:
Scoring to be used in competency assessment is successfully set</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
<tr><td>1.</td><td>Clicks the scoring setting in navigation bar</td><td>Blank inputs</td><td>The (*) is marked beside the inputs</td><td>Pass</td><td>The (*) mark is successfully displayed to indicate user about the</td></tr>
</table>

					required field to be filled
2.	Fill in all the fields marked with (*)	Input scoring name to be used	The (*) changed to (✔)	Pass	This indicates that the input field has been filled in.
3.	Click the add scoring button if the assessment scoring is more than 3	Click the add scoring button	Extra scoring input is added and marked with (*)	Pass	The input field is added to allow user to input extra scoring name
4.	Click the delete scoring if	Click the delete scoring button	The scoring input field will be start deleting from the	Pass	Minimum 3 scoring is needed to be used for the evaluation

	accidentally add more scoring		latest one until there only left the first 3 scoring input		
5.	Click the submit button	Blank input field existed	The alert “Please fill in all scoring fields” pops out	Pass	This indicates the required field needs to be filled in and cannot be left empty.
		Blank input not existed	The alert “Successfully submitted and processed” pops out	Pass	This indicates that the scoring is successfully set.

5.1.3 Assessment Setting (Aspect Setting)

Table 5. Functional Testing for Assessment Setting (Aspect Setting)

Test Scenario: Assessment Setting – Aspect Setting			**Pre-requisite:** Scoring name has been set in scoring setting section		
Test Description: Specify the aspects to be evaluated during the evaluation			**Post-requisite:** Aspect to be used in competency assessment is successfully set		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Clicks the aspect setting in navigation bar	Aspect Setting tab	The aspect setting content page is displayed	Pass	The button “Create aspect” is displayed for user to create the aspects

2.	Clicks the "Create Aspect" button	Blank Input	A form to create the aspect will be appear and all the input are marked with (*)	Pass	The form slide from the right to request user to fill in the aspect details
3.	Fill in the details	Input the requested details	The (*) beside the input change to (✔)	Pass	This indicate the input is already filled in and not left empty
4.	Click the submit button	Either one of the inputs is empty	Reject the user to proceed submission	Pass	The alert “Please fill in all aspect fields” is pop out to request user to fill in all the fields.

		None of the input fields is left empty	Allows user to proceed submission	Pass	The alert "Successfully submitted and processed" pops out to indicate that the submission is processed and stored. The filled details also displayed.
5.	Click the add aspect button	Add Aspect button	A form to create the aspect will be appear and all the input are marked with (*)	Pass	The user can add more aspects.

5.1.4 Assessment Setting (Level Setting)

Table 6. Functional Testing for Assessment Setting (Level Setting)

Test Scenario: Assessment Setting – Level Setting			**Pre-requisite:** Aspect has been set in aspect setting section		
Test Description: To set the level in ascending order and specify the aspects that will be evaluated based on the user level during the evaluation			**Post-requisite:** Aspect to be used to evaluate employee based on their level is successfully set		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Clicks the level setting in navigation bar	Level setting tab	The level setting content page is displayed	Pass	The button “Create level” is displayed for

					user to create the levels
2.	Clicks the "Create Level" button	Blank Input	A form to create the level will be appear and all the input are marked with (*)	Pass	The form slide from the right to request user to fill in the level details
3.	Fill in the details	Input the requested details	The (*) beside the input change to (✔)	Pass	This indicate the input is already filled in and not left empty
4.	Click the submit button	Either one of the inputs is empty	Reject the user to proceed submission	Pass	The alert "Please fill in all level fields"

					pops out to request user to fill in all the fields.
		None of the input fields is left empty	Allows user to proceed submission	Pass	The alert “Successfully submitted and processed” pops out to indicate that the submission is processed and stored. The filled details are also displayed.

5.	Click the add level button	Add Level button	A form to create the aspect will be appear and all the input are marked with (*)	Pass	The user can add more levels.
6.	Click Re-order Level button	Move level input is same as place after input	Re-ordering rejection	Pass	The alert “Invalid selection: cannot place a level after itself.” pops out.
		Move level input is different with place after input	Re-ordering accepted and processed	Pass	The alert “Order updated successfully!” pops out.

5.1.5 Company Setting (Department Setting)

Table 7. Functional Testing for Company Setting (Department Setting)

Test Scenario: Company Setting – Department Setting			**Pre-requisite:** User login as superadmin and click the company setting in navigation bar		
Test Description: To set the department exists in the company			**Post-requisite:** The department of the company is set		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Clicks the department setting in navigation bar	Department Setting tab	The department setting content page is displayed	Pass	The button "Create department" is displayed for user to

					create the department
2.	Clicks the "Create Department" button	Blank Input	A form to create the department will be appear and all the input are marked with (*)	Pass	The form slide from the right to request user to fill in the department details
3.	Fill in the details	Input the requested details	The (*) beside the input change to (✔)	Pass	This indicate the input is already filled in and not left empty

4.	Click the submit button	- Either one of the inputs is empty - Invalid department email format - Invalid department contact format	Reject the user to proceed submission	Pass	The alert “Please correct the highlighted errors and fill in all fields.” pops out to request user to fill in all the fields.
		- None of the input left empty	Allows user to proceed submission	Pass	The alert “Department Information successfully

		- Department email follows the valid email format - Department contact follows the valid contact format			submitted” pops out to indicate that the submission was successful. The filled details are also displayed.
5.	Click the create department button	Create Department button	A form to create the department will be appear and all the input are marked with (*)	Pass	The user can add more departments.

5.1.6 Company Setting (Position Setting)

Table 8. Functional Testing for Company Setting (Position Setting)

Test Scenario: Company Setting – Position Setting			**Pre-requisite:** Completion of department setting		
Test Description: To set the available positions in each department			**Post-requisite:** Available position in each department is set		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Clicks the position setting in navigation bar	Position Setting tab	The position setting content page is displayed	Pass	The button "Create position" is displayed for user to create the

					position in that specific department
2.	Clicks the "Create position” button	Blank Input	A form to create the position in selected department will be appear and all the input are marked with (*)	Pass	The form slide from the right to request user to fill in the position details in selected department
3.	Fill in the details	Input the requested details	The (*) beside the input change to (✔)	Pass	This indicate the input is already filled in and not left empty

4.	Click the submit button	Either one of the inputs is empty	Reject the user to proceed submission	Pass	The alert “Please fill in all required fields.” pops out to request user to fill in all the fields.
		None of the input left empty	Allows user to proceed submission	Pass	The alert “Position successfully added.” pops out to indicate that the submission was successful. The filled details are also displayed.

5.	Click the create position button	Create Position button	A form to create the position for selected department will be appear and all the input are marked with (*)	Pass	The user can add more positions in selected departments.

5.1.7 User Management (Newly Registered User)

Table 9. Functional Testing for User Management (Newly Registered User)

Test Scenario: User Management – Newly Registered User			**Pre-requisite:** User login as superadmin and click the user management in navigation bar		
Test Description: To register an account for employee of the company			**Post-requisite:** The temporary user account is created for user to proceed with employee's registration		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Clicks the "Newly Registered User" in navigation bar	Newly Registered User tab	The Newly Registered User	Pass	The button "Register user" is displayed for user to create the

			content page is displayed		temporary user account for the employee
2.	Clicks the "Register User" button	Blank Input	A form to register the user will be appear and all the input are marked with (*)	Pass	The form slide from the right to request user to fill in the email of the registered user
3.	Fill in the details	Input the requested details	The (*) beside the input change to (✔)	Pass	This indicate the input is already filled in and not left empty

4.	Click the submit button	The input is empty or invalid email format	Reject the user to proceed submission	Pass	The alert “Email is required.” pops out to request user to input the valid email.
		None of the input left empty and valid email format	Allows user to proceed submission	Pass	The alert “User registered successfully.” pops out to indicate that the submission was successful. The registered emails are also displayed.

5.	Click the register user button	Register User button	A form to register the user will be appear and all the input are marked with (*)	Pass	The form slide from the right to request user to fill in the email of the registered user

5.1.8 Newly Registered User (Registration)

Table 10. Functional Testing for Newly Registered User (Registration)

<table>
<tr><td colspan="3">Test Scenario:
Newly Registered User - Registration</td><td colspan="3">Pre-requisite:
The registered employee login to the system using the temporary username and password created after the employee’s email is registered</td></tr>
<tr><td colspan="3">Test Description:
To register the employee account of the registered email</td><td colspan="3">Post-requisite:
The employee can register their account</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Login to the system using temporary username and password created after employee’s email is registered by superadmin	Temporary username and password	The employee can login to the system using temporary username and password as newly registered user	Pass	The user is navigating to newly registered user page
2.	Clicks the Registration of the navigation bar	Blank Input	The content of the registration page is displayed	Pass	The form is displayed and ask user to fill in the account information and personal information

3.	Fill in the details	Input the requested details	The (*) beside the input change to (✔)	Pass	This indicate the input is already filled in and not left empty
4.	Click the submit button	The input is empty or invalid input	Reject the user to proceed submission	Pass	The alert “Error occurs when registering.” pops out and error is specified in the alert box.
		None of the input left empty and all the input are in valid format	Allows user to proceed submission	Pass	The alert “User basic info registered successfully. You may login using your new username and

					password" pops out to indicate that the registration was successful.
5.	Relogin using new registered username and password	Registered username and password	The user can login to the user dashboard using registered username and password	Pass	The user dashboard is displayed after the user login using registered username and password

5.1.9 Company Setting (Complete Registered User)

Table 11. Functional Testing for Company Setting (Complete Registered User)

Test Scenario: Company Setting – Complete Registered User			**Pre-requisite:** Completion of user registration of the registered employee's email		
Test Description: To set the available positions in each department			**Post-requisite:** Available position in each department is set		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Clicks the complete registered user in navigation bar	Blank input	The complete registered user page is displayed with the	Pass	The list of users who complete the registration is listed

			list of complete registered user		and waiting for the position assignment
2.	Clicks the select position dropdown	Select the position that want to be assigned to the user	The value of dropdown changes from select position to position selected	Pass	The value of the select position changed
3.	Click the assign position button	The value of the dropdown is select position	Reject the position assignment action	Pass	The alert “Error: Invalid position selected.” pops out to request user to select available position.

		The value of the dropdown is the position selected	Process the position assignment action	Pass	The alert “Position assigned successfully!” pops out to indicate that the position assignment of the user is successful
4.	Clicks the complete assigned user in navigation bar	Complete Assigned User tab	The list of assigned users and their assignment details are displayed.	Pass	The position assignment details are displayed

5.1.10 User Dashboard (Profile)

Table 12. Functional Testing for User Dashboard (Profile)

Test Scenario: User Dashboard - Profile			**Pre-requisite:** The user login using the registered username and password		
Test Description: To view the profile details of the user			**Post-requisite:** The user can be able to view their own profile details		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Login to the system using registered username and password	Registered username and password	The employee can login to the system using registered	Pass	The user is navigating to user dashboard content

			username and password		
2.	Clicks the profile of the navigation bar	Profile tab	The content of the profile of the user is displayed	Pass	The profile details such as account information, basic information, working experience and education are displayed
3.	Click the account information	Account information tab	The content of the account information of the user is displayed	Pass	The email and username of the user is displayed

4.	Click the basic information	Basic information tab	The content of the basic information of the user is displayed	Pass	The full name, contact number, date of birth, address and gender is displayed
5.	Click the working experience	Working experience tab	The content of the working experience of the user is displayed	Pass	For the first time login after the registration user, the working experience have not been set, the update working experience button is available for user to update these details

	Click the update working experience button	Blank input	Working Experience form is slide from the right to collect the information about the user's working experience	Pass	The working experience form is displayed, and the input are marked with (*) indicate the required field
	Click add working experience button	Blank input	Additional fieldset is created to allow user to add additional working experience	Pass	New working experience fieldset is created to allow user to add multiple working experience

	Click the delete button beside the legend of the fieldset	Blank input	The selected fieldset will be deleted	Pass	If the user accidentally adds too more working experience fieldset, they can delete it using delete button
	Click the submit button of working experience	Either one of the inputs is empty or invalid input format	Rejection of submission	Pass	The alert “Validation error occurred. Please check your inputs.” pops out indicate submission is rejected.

		None of the input is empty and all the input formats are valid	Successful Submission	Pass	The alert “Success submitting” is pops out indicate the submission is successful
	Click the working experience	Working experience tab	The updated content of the working experience of the user is displayed	Pass	After update the working experience, the record is displayed
6.	Click the education	Education tab	The content of the education of the user is displayed	Pass	For the first time login after the registration user, the education has not

					been set, the update education button is available for user to update these details
	Click the update education button	Blank input	Education form is slide from the right to collect the information about the user's educational background	Pass	The education form is displayed, and the input are marked with (*) indicate the required field
	Click add education button	Blank input	Additional fieldset is created to allow user	Pass	New education fieldset is created to

			to add additional education		allow user to add multiple education
	Click the delete button beside the legend of the fieldset	Blank input	The selected fieldset will be deleted	Pass	If the user accidentally adds too more education fieldset, they can delete it using delete button
	Click the submit button of education	Either one of the inputs is empty or invalid input format	Rejection of submission	Pass	The alert “Validation error occurred. Please check your inputs.” pops out indicate

					submission is rejected.
		None of the input is empty and all the input formats are valid	Successful Submission	Pass	The alert “Success submitting” is pops out indicate the submission is successful
	Click the education	Education tab	The updated content of the education of the user is displayed	Pass	After update the education, the record is displayed

5.1.11 User Dashboard (Activity)

Table 13. Functional Testing for User Dashboard (Activity)

<table>
<tr><td colspan="3">Test Scenario:

User Dashboard – Activity</td><td colspan="3">Pre-requisite:

The user login using the registered username and password</td></tr>
<tr><td colspan="3">Test Description:

To select the activity that can be done by the user</td><td colspan="3">Post-requisite:

Able to navigate to the activity available</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
<tr><td>1.</td><td>Login to the system using registered username and password</td><td>Registered username and password</td><td>The employee can login to the system using registered</td><td>Pass</td><td>The user is navigating to user dashboard content</td></tr>
</table>

			username and password		
2.	Clicks the activity of the navigation bar	Activity tab	The content of the activity available in succession planning system is displayed	Pass	The available activities of succession planning system are displayed, such as competency analysis, talent development and succession planning
3.	Clicks the Competency Analysis tab	Competency Analysis tab	Navigates user to competency analysis page	Pass	The user can navigate to competency analysis page

4.	Clicks the Talent Development tab	Talent Development tab	Navigates user to talent development page	Pass	The user can navigate to talent development page
5.	Clicks the Succession Planning tab	Succession Planning tab	Navigates user to succession planning page	Pass	The user can navigate to succession planning page

5.1.12 User Dashboard (Setting)

Table 14. Functional Testing for User Dashboard (Setting)

<table>
<tr><td colspan="3">Test Scenario:

User Dashboard – Setting</td><td colspan="3">Pre-requisite:

The user login using the registered username and password</td></tr>
<tr><td colspan="3">Test Description:

To select the role that can be changed by the user</td><td colspan="3">Post-requisite:

Able to change role</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
<tr><td>1.</td><td>Login to the system using registered username and password</td><td>Registered username and password</td><td>The employee can login to the system using registered</td><td>Pass</td><td>The user is navigating to user dashboard content</td></tr>
</table>

			username and password		
2.	Clicks the setting of the navigation bar	Setting tab	The content of the roles available in succession planning system is displayed	Pass	The available roles of succession planning system are displayed, such as human resource and evaluator
3.	Clicks the Human Resource tab	Human Resource tab	Navigates user to Human resource dashboard	Pass	The user can navigate to human resource dashboard and perform activities

					available for this role
4.	Clicks the Evaluator tab	Evaluator tab	Navigates user to Evaluator dashboard	Pass	The user can navigate to evaluator dashboard and perform activities available for this role

5.1.13 Human Resource Dashboard (Assessment Registration)

Table 15. Functional Testing for Human Resource Dashboard (Assessment Registration)

<table>
<tr><td colspan="3">Test Scenario:
Human Resource Dashboard – Assessment Registration</td><td colspan="3">Pre-requisite:
The user change role to human resource</td></tr>
<tr><td colspan="3">Test Description:
To add the available user to join the competency assessment</td><td colspan="3">Post-requisite:
The registered user can be able to perform competency assessment activity</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
<tr><td>1.</td><td>Change the user role to human resource in the setting of user dashboard</td><td>Click the human resource tab of the setting content in user dashboard</td><td>The user can navigate to the human resource dashboard</td><td>Pass</td><td>The user is navigating to human resource dashboard content</td></tr>
</table>

2.	Clicks the assessment registration of the navigation bar	Assessment Registration tab	The status of the users is displayed. For the user who is available for the assessment registration, the register button is displayed. For the action part, the human resource can set the status of the user is either retire or resign.	Pass	The status of the users is displayed and the register button, retire button and resigned button existed.

3.	Clicks the resigned button	Resigned button	The user status column changes to resigned for the selected user	Pass	The user status of the selected user is changed from active to resigned
4.	Clicks the retired button	Retired button	The user status column changes to retired for the selected user	Pass	The user status of the selected user is changed from active to retired User registered successfully
5.	Click the register button	Register button	The selected user is successfully	Pass	The assessment status of the user change to

			registered to join the competency assessment		under assessment and the register button disappear and replace with the work registered

5.1.14 Competency Analysis (Self Assessment)

Table 16. Functional Testing for Competency Analysis (Self Assessment)

<table>
<tr><td colspan="3">Test Scenario:

Competency Analysis – Self Assessment</td><td colspan="3">Pre-requisite:

The user is registered by the human resource to join the competency assessment</td></tr>
<tr><td colspan="3">Test Description:

The user can preform self-assessment</td><td colspan="3">Post-requisite:

The self-assessment is submitted to be viewed by the evaluator to proceed with evaluator assessment</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Select the competency analysis in the activity of the user dashboard	Click the competency analysis tab of the activity content in user dashboard	The user can navigate to the competency analysis page	Pass	The user is navigating to competency analysis page
2.	Clicks the self-assessment of the navigation bar	Self-Assessment tab	The aspects that need to be evaluated based on user current level is displayed	Pass	The aspects that need to be evaluated is filtered based on user current level
3.	Perform the self-assessment	Blank input	All the required input are marked with (*)	Pass	The user needs to select the level dropdown based on evaluation of themselves. Besides,

					they need to provide elaboration and evidence about the evaluation made.
		No blank input	The (*) changed to (✔)	Pass	This indicates that the input field has been filled in.
4.	Assessment is saved as draft	Saved as Draft button	The current input about the self-assessment is saved as draft	Pass	The alert “Draft saved” pops out. The latest input of the user is display and user can still make any modification

5.	Submit the assessment	Either one of the inputs is blank	Rejected for submission	Pass	The alert “Please complete all required fields before submitting.” pops out and reject user for submission before complete filling up all the inputs
		None of the input is blank	Proceed to submission	Pass	Ask the user for submission confirmation. If cancel, the user goes back to the

					assessment and makes any changes they want. If OK, the submission is processed, and no changes can be made if the process is successful.

5.1.15 Evaluator Dashboard (Evaluation)

Table 17. Functional Testing for Evaluator Dashboard (Evaluation)

Test Scenario: Evaluator Dashboard – Evaluation			**Pre-requisite:** The evaluated user finish and submit their self-assessment		
Test Description: The evaluator can perform assessment for the user that have submitted their self-assessment			**Post-requisite:** The evaluator assessment is submitted to be viewed by another evaluator to proceed for the evaluation verification		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Change the user role to evaluator in the	Click the evaluator tab of the setting	The user can navigate to the evaluator dashboard	Pass	The user is navigating to

	setting of user dashboard	content in user dashboard			evaluator dashboard content
2.	Clicks the evaluation of the navigation bar	Evaluation tab	In the select user dropdown section, the evaluator can choose the available user to be evaluated	Pass	The submitted self-assessment users can be found from the dropdown selection
3.	Select the user that want to be evaluated	Blank input	All the aspects that are evaluated by the selected user in self-assessment are displayed. All the required input that	Pass	The self-assessment of the selected user is displayed, and evaluator need to performed evaluation of the evaluated user

			needs to be filled by evaluator are marked with (*)		by inputting the scoring and comment
		No blank input	The (*) changed to (✔)	Pass	This indicates that the input field has been filled in.
4.	Assessment is saved as draft	Saved as Draft button	The current input about the evaluator assessment is saved as draft	Pass	The alert "Draft saved" pops out. The latest input of the evaluator is display and evaluator can still make any modification

5.	Submit the assessment	Either one of the inputs is blank	Rejected for submission	Pass	The alert "Please complete all evaluator scores and comments before submitting." pops out and reject evaluator for submission before complete filling up all the inputs
		None of the input is blank	Proceed to submission	Pass	Ask the user for submission confirmation. If canceled, the

					evaluator goes back to the assessment and makes any changes they want. If OK, the submission is processed. If the process is success, the “Evaluation submitted!” pops out and no changes can be made anymore.

5.1.16 Evaluator Dashboard (Verification)

Table 18. Functional Testing for Evaluator Dashboard (Verification)

<table>
<tr><td colspan="3">Test Scenario:
Evaluator Dashboard – Verification</td><td colspan="3">Pre-requisite:
The evaluator assessment is submitted</td></tr>
<tr><td colspan="3">Test Description:
Another evaluator can perform verification on the assessment done by the evaluator</td><td colspan="3">Post-requisite:
The evaluator verification is done, and evaluator assessment is submitted to be viewed by the human resource to proceed promotion or remain position of the evaluated user</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Change the user role to evaluator in the setting of user dashboard	Click the evaluator tab of the setting content in user dashboard	The user can navigate to the evaluator dashboard	Pass	The user is navigating to evaluator dashboard content
2.	Clicks the verification of the navigation bar	Verification tab	In the select user dropdown section, the evaluator can choose the available user to be verified	Pass	The users who's the evaluator assessment is submitted can be found from the dropdown selection
3.	Select the user that want to be verified	Dropdown selection	All the self-assessment of the user, evaluator	Pass	The self-assessment and evaluator assessment of the

			assessment can be viewed by the evaluator		selected user is displayed. The submit verification button is displayed for another evaluator to perform verification on the evaluator's assessment made.
4.	Clicks submit verification button	Submit button	Ask confirmation for the verification submission	Pass	Ask the evaluator for verification confirmation. If canceled, the process is returned. If OK,

					the verification is processed. If the process is success, the “Verification done successfully!” pops out and no changes can be made anymore.

5.1.17 Human Resource Dashboard (Competency Assessment)

Table 19. Functional Testing for Human Resource Dashboard (Competency Assessment)

<table>
<tr><td colspan="3">Test Scenario:
Human Resource Dashboard – Competency Assessment</td><td colspan="3">Pre-requisite:
Verification of evaluator assessment</td></tr>
<tr><td colspan="3">Test Description:
To make the decision whether the evaluated user level can be promoted or remain. Besides, the analysis on the evaluated user is done and a talent development plan is constructed.</td><td colspan="3">Post-requisite:
The evaluated user is promoted based on the evidence of evaluators' evaluation. And a talent development plan is constructed to guide the user to improve their competencies.</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Change the user role to human resource in the setting of user dashboard	Click the human resource tab of the setting content in user dashboard	The user can navigate to the human resource dashboard	Pass	The user is navigating to human resource dashboard content
2.	Clicks the competency assessment of the navigation bar	Competency Assessment tab	The competency assessment content of the human resource section is displayed	Pass	Human resources can choose the user to analyze.
3.	Select available user from the dropdown	Dropdown selection	Human Resource able to view the self-assessment and evaluator assessment of the evaluated user.	Pass	The self-assessment and evaluator assessment of the selected user is displayed. The talent

			From this, they can perform user analysis and construct talent development plans for this user.		development form aslo displayed for Human resource to make analysis and construct development plan on selected user
4.	Clicks the add more plan button	Add Plan button	Extra development goals and action steps is added	Pass	The extra section which requests new development goals and action steps is created.

5.	Clicks the delete button for the additional plan created	Delete button	The additional plan will be deleted	Pass	The selected section consists of development goals and action steps is deleted.
6.	Input required data	Input data	The (*) changed to (✔)	Pass	This indicates that the input field has been filled in.
7.	Click the submit approval button to submit the form	Either one of the inputs is empty	Rejected from submitting	Pass	The alert “Please fill in all required fields” pops out to inform user to fill in all required input

		None of the input is empty	Proceed with submission and ask human resource for the submission confirmation	Pass	The alert “Are you sure want to submit? After submission no changes can be made” pops out. If canceled, the process is returned. If OK, and the process is success, the “Approval and development plan saved successfully.” pops out and no

					changes can be made anymore.

5.1.18 Talent Development (Talent Development Application)

Table 20. Functional Testing for Talent Development (Talent Development Application)

Test Scenario: Talent Development – Talent Development Application			**Pre-requisite:** The human resource has made analysis and construct the talent development plan		
Test Description: The user needs to fill in the list of programs joined details to prove that the user has develop their skills and competency based on talent development plans			**Post-requisite:** The details filled in by the user will be submitted to human resources to determine if the program joined by the user really helps the user to improve their competencies and align with the talent development plan constructed.		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**

1.	Select the talent development in the activity of the user dashboard	Click the talent development tab of the activity content in user dashboard	The user can navigate to the talent development page	Pass	The user is navigating to talent development page
2.	Clicks the talent development application of the navigation bar	Talent Development Application tab	The talent development plan constructed by human resources is displayed. The user needs to fill in the list of programs joined.	Pass	Constructed talent development is displayed and the form about the program joined is also displayed to collect the user development progress

3.	Click the add program button	Add Program button	A new program section has been added to collect extra programs added by the user.	Pass	The user can add the details of the extra program joined.
4.	Click the remove program button	Remove Program button	The selected program section will be deleted	Pass	The selected program is removed
5.	Input required data	Input data	The (*) changed to (✔)	Pass	This indicates that the input field has been filled in.
6.	Click the submit button to submit the form	Either one of the inputs is empty	Rejected from submitting	Pass	The alert "Please fill in all required fields before submitting."

					pops out to inform user to fill in all required input
		None of the input is empty	Proceed with submission and ask human resource for the submission confirmation	Pass	The alert “Confirm Submit? After submission no changes can be made” pops out. If canceled, the process is returned. If OK, and the process is success, the “T alent Development Application

					submitted successfully!" pops out and no changes can be made anymore.

5.1.19 Human Resource Dashboard (Talent Development)

Table 21. Functional Testing for Human Resource Dashboard (Talent Development)

Test Scenario: Human Resource Dashboard – Talent Development	**Pre-requisite:** Submission of talent development application by the user
Test Description: To make the decision whether to reject or accept the application submitted by the user	**Post-requisite:** If the user development application is rejected, meaning that the competencies of the user based on talent development have not reached the standard of human resource. Therefore, they need to join more programs and submit applications again. Else if the application is accepted, it needs to determine the promotion status of the user. If the user is set to be promoted, the user might

			proceed with succession planning. Else if the user is set to remain, the user will be prepared to join the competency assessment again.		
Test Execution Step:					
S.No:	**Action:**	**Inputs:**	**Expected Output:**	**Test Result:**	**Test Comment:**
1.	Change the user role to human resource in the setting of user dashboard	Click the human resource tab of the setting content in user dashboard	The user can navigate to the human resource dashboard	Pass	The user is navigating to human resource dashboard content
2.	Clicks the talent development of the navigation bar	Talent Development tab	The talent development content of the human resource section is displayed	Pass	Human resources can choose the user to view and make decisions on their application.

3.	Select available user from the dropdown	Dropdown selection	Human Resource able to view the talent development application submitted by the user and make decision whether to accept the application.	Pass	The Human Resource is able to view the application submitted by the user and make the decision whether to accept or reject the application of the user.
4.	Human Resource make decision	Reject	The reason for rejection is requested	Pass	After the user selects to reject the application of the user, the input to collect the reason of

					rejection will be requested.
		Accept	The decision about user application is set to approve	Pass	The decison input is set to approve
5.	Submit Decision	Decision is not selected	Rejected for submission	Pass	The alert “Please select a decision.” is pop out and request user to fill in
		Reason for rejection is empty	Rejected for submission	Pass	The alert “Please provide a reason for rejection.” is pop out

					and request user to fill in
		None of the required input is left empty	Proceed with submission and ask submission confirmation	Pass	The alert “Confirm Submit? After submission no changes can be made” pops out. If canceled, the process is returned. If OK, and the process is success, the “Talent development rejected.” pops out for rejected decision

					and “Talent development accepted.” pops out for accepted decision and no changes can be made anymore.

5.1.20 Talent Development (Latest Rejected Application)

Table 22. Functional Testing for Talent Development (Latest Rejected Application)

<table>
<tr><td colspan="3">Test Scenario:
Talent Development – Latest Rejected Application</td><td colspan="3">Pre-requisite:
The human resource has rejected the application submitted by the user</td></tr>
<tr><td colspan="3">Test Description:
The user can view the details of submitted application and the rejected reason stated by Human Resource</td><td colspan="3">Post-requisite:
The user can refill the application and submit the new application again</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Select the talent development in the activity of the user dashboard	Click the talent development tab of the activity content in user dashboard	The user can navigate to the talent development page	Pass	The user is navigating to talent development page
2.	Clicks the latest rejected application of the navigation bar	Latest Rejected Application tab	The submitted application and reason for rejection is displayed	Pass	The details of submitted application and reason of rejection stated by the huamn resource is displayed

5.1.21 Talent Development (Approved Application)

Table 23. Functional Testing for Talent Development (Approved Application)

<table>
<tr><td colspan="3">Test Scenario:

Talent Development – Approved Application</td><td colspan="3">Pre-requisite:

The human resource has accepted the application submitted by the user</td></tr>
<tr><td colspan="3">Test Description:

The user can view the details of submitted application which accepted by the Human Resource</td><td colspan="3">Post-requisite:

-</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Select the talent development in the activity of the user dashboard	Click the talent development tab of the activity content in user dashboard	The user can navigate to the talent development page	Pass	The user is navigating to talent development page
2.	Clicks the approved application of the navigation bar	Approved Application tab	The application details accepted by the Human Resource is displayed	Pass	The detail of accepted application is displayed

5.1.22 Human Resource Dashboard (Succession Planning)

Table 24. Functional Testing for Human Resource Dashboard (Succession Planning)

<table>
<tr><td colspan="3">Test Scenario:
Human Resource Dashboard – Succession Planning</td><td colspan="3">Pre-requisite:
The human resource has accepted the application submitted by the user and the user promotion status is promote instead of remain</td></tr>
<tr><td colspan="3">Test Description:
Human Resource can construct the succession planning for the qualified users</td><td colspan="3">Post-requisite:
The selected qualified user is waiting for succession</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Change the user role to human resource in the setting of user dashboard	Click the human resource tab of the setting content in user dashboard	The user can navigate to the human resource dashboard	Pass	The user is navigating to human resource dashboard content
2.	Clicks the succession planning of the navigation bar	Succession Planning tab	The talent development content of the human resource section is displayed	Pass	Human resources can choose the qualified user
3.	Select available user from the dropdown	Dropdown selection	Human Resource able to view user current details and construct the	Pass	The current detail of the user is displayed and form used to construct the

			succession planning for the selected user.		succession planning is prepared
4.	Constructed Succession Planning is saved as draft	Click saved as draft button	The current input about the succession planning is saved as draft	Pass	The alert "Draft updated successfully." pops out. The latest input of the user is display and user can still make any modification
5.	Submit the constructed succession planning	Click the submit button	The inputs about the succession planning	Pass	The alert "Succession plan submitted

			will be submit and process		successfully.” pops out.

5.1.23 Succession Planning (Current)

Table 25. Functional Testing for Succession Planning (Current)

<table>
<tr><td colspan="3">Test Scenario:
Succession Planning – Current</td><td colspan="3">Pre-requisite:
The human resource has submitted the succession planning of selected user</td></tr>
<tr><td colspan="3">Test Description:
The constructed succession planning by Human Resource can be viewed by the user and once the replaced position becomes available, then the user proceeds with succession</td><td colspan="3">Post-requisite:
User waiting for the retirement or resignation of the person and procced with succession</td></tr>
<tr><td colspan="6">Test Execution Step:</td></tr>
<tr><td>S.No:</td><td>Action:</td><td>Inputs:</td><td>Expected Output:</td><td>Test Result:</td><td>Test Comment:</td></tr>
</table>

1.	Select the succession planning in the activity of the user dashboard	Click the succession planning tab of the activity content in user dashboard	The user can navigate to the succession planning page	Pass	The user is navigating to succession planning page
2.	Clicks the current of the navigation bar	Current tab	The succession planning details constructed by the Human Resource is displayed	Pass	The details of constructed succession planning are displayed. If the replaced position is available, then handover button appeared for the user to click for succession.

5.2 Non-functional Testing

5.2.1 Security

5.2.1.1 Password storage for the database

For the user registration, the password registered by the user is stored inside the database is using the hashed value

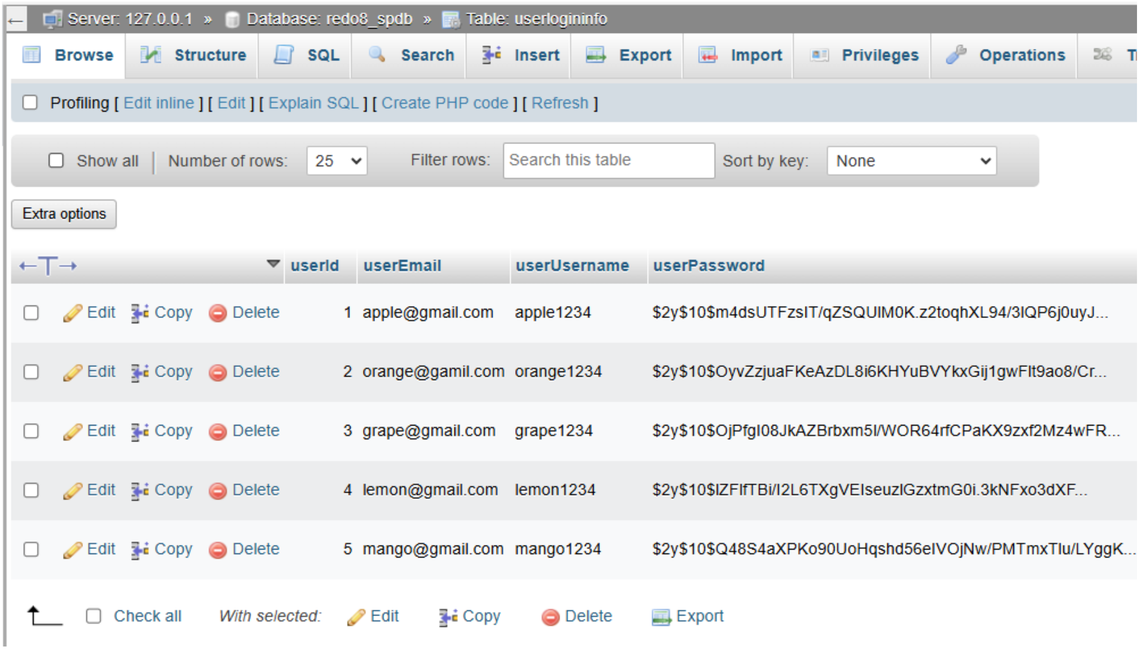


Figure 58. Password Hashing in database

Figure above shows in the database, the user's password is stored in hashed value which helps to improve the security of the system.

5.2.1.2 Role-based access control

With the same login page, if the superadmin login using superadmin username and password. The user will navigate to superadmin dashboard and take the role as admin. Else if the user login with registered username and password, they will navigate to user dashboard.

Figure 59. Login of Superadmin

Figure above shows the user login as superadmin role

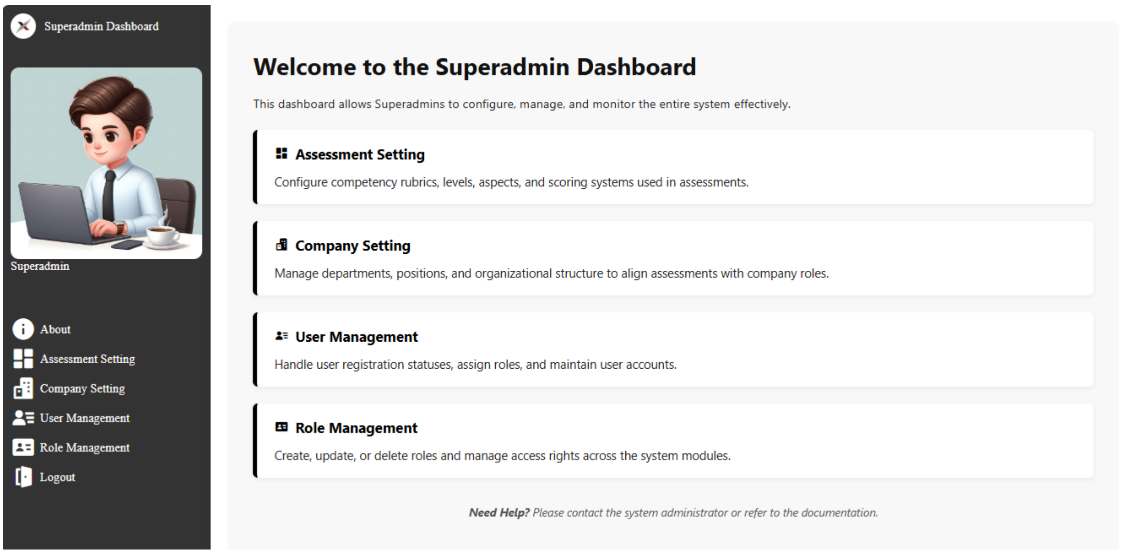


Figure 60. Superadmin Dashboard after Login using superadmin username and password

Figure above shows after the submit button is clicked, the user navigates to superadmin dashboard.

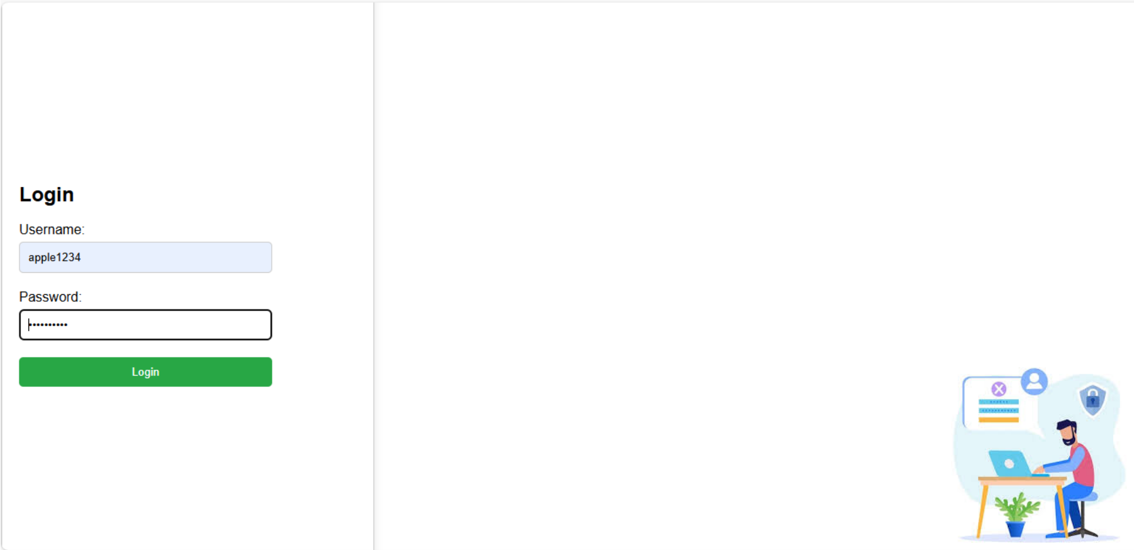


Figure 61. Login of user

Figure above shows the user login using registered username and password

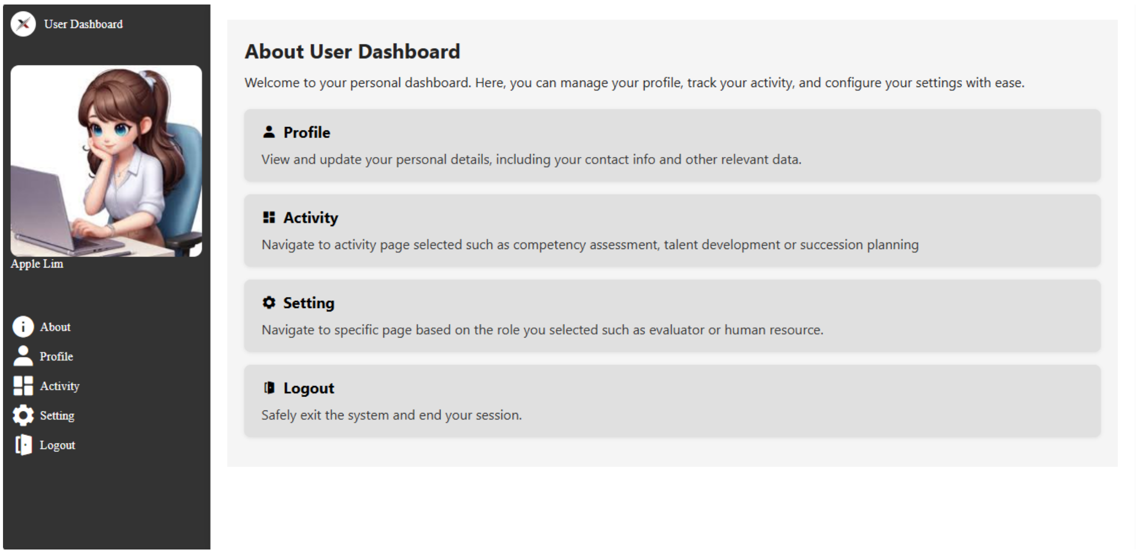


Figure 62. User Dashboard after Login using user's username and password

Figure above shows after login button is click, the user navigates to the user dashboard.

5.2.1.3 Unauthorized registration of superadmin account

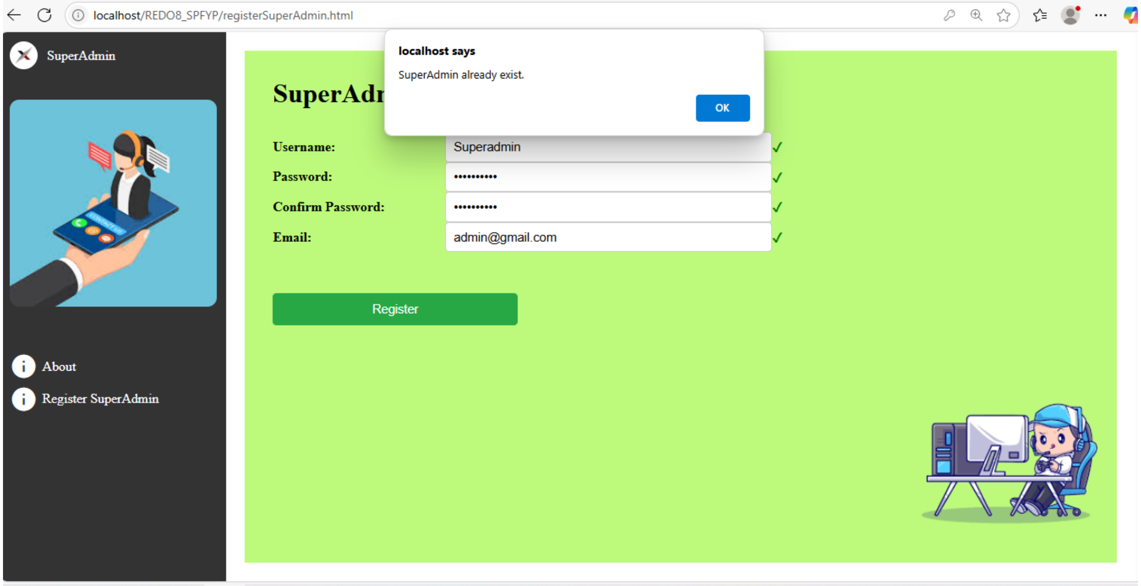


Figure 63. Unauthorized registration of superadmin

Figure above shows the prevention for unauthorized user to in recreation of superadmin account.

5.2.1.4 Role Management

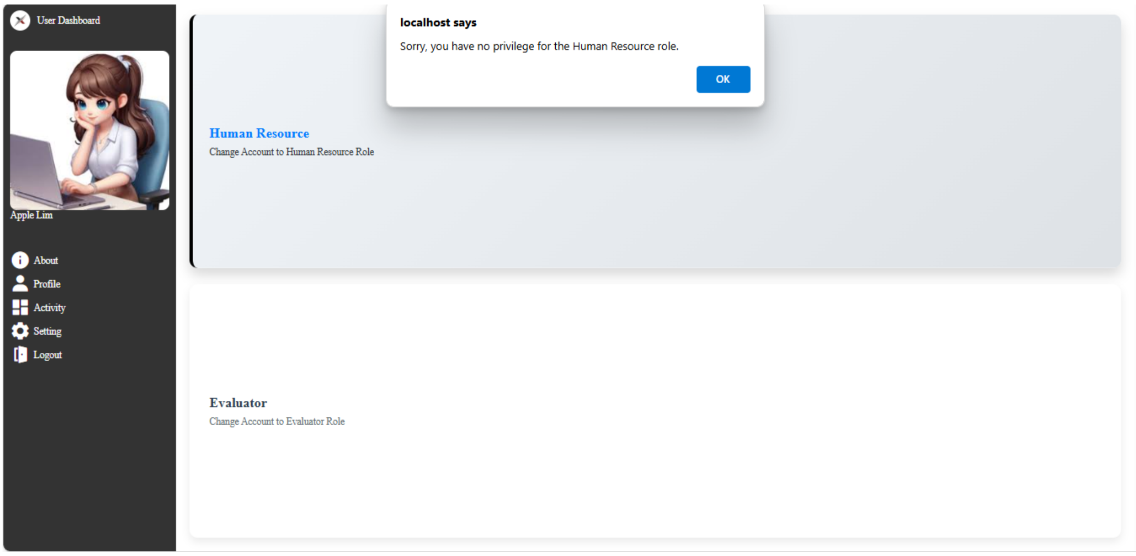


Figure 64. Human Resource Role (no privilege)

Figure above shows the user is prevented to navigate to human resource dashboard due to no privilege given by superadmin.

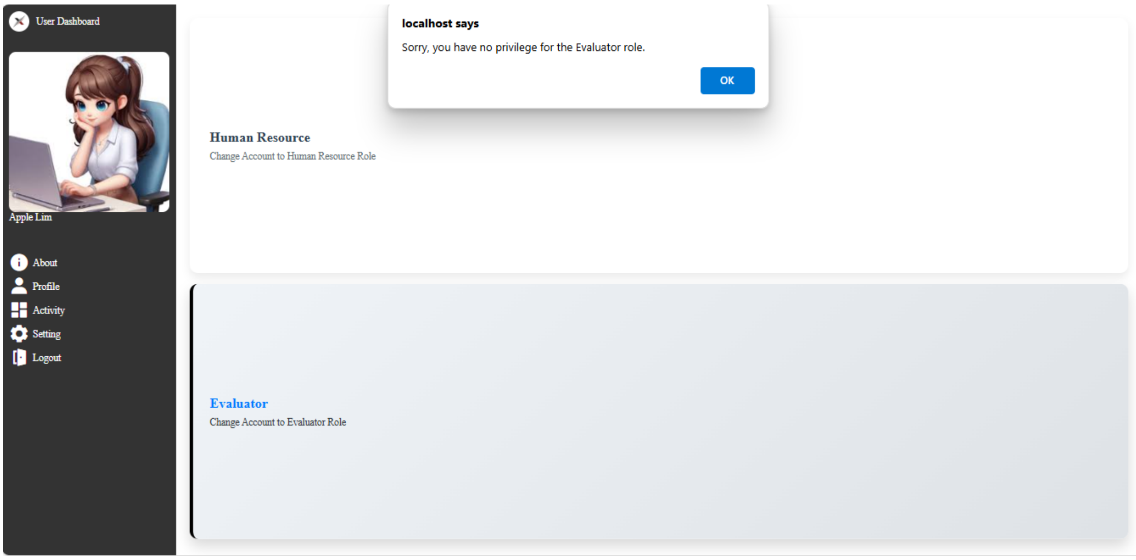


Figure 65. Evaluator Role (no privilege)

Figure above shows the user is prevented to navigate to evaluator dashboard due to no privilege given by superadmin.

5.2.2 Input Validation

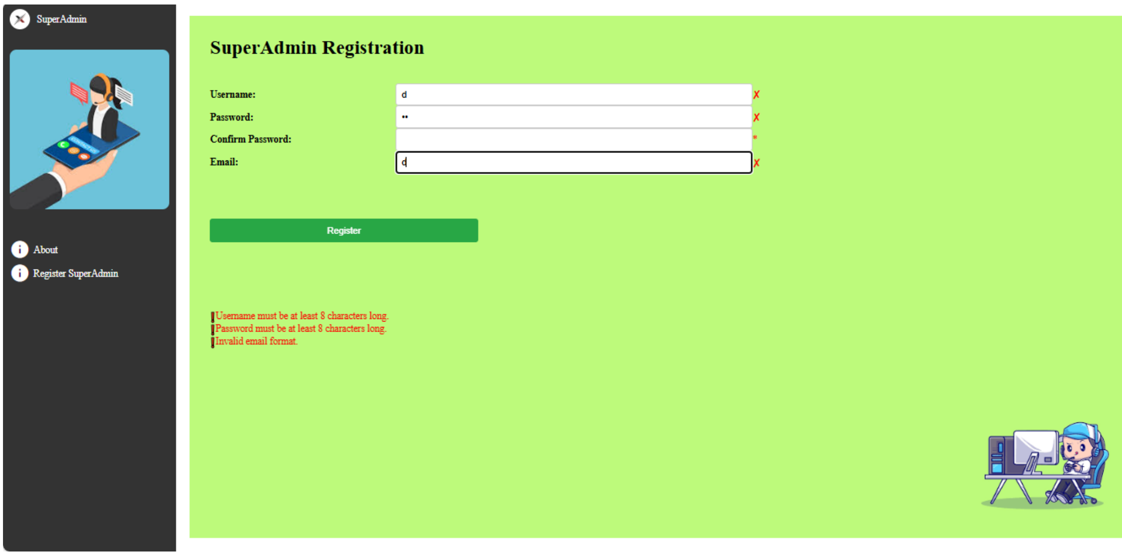


Figure 66. Superadmin Registration Input

Figure above shows the superadmin registration form that need to be filled by the superadmin to be submitted and processed. Based on the picture, we can observe that the form input is mark with (*) which indicates the required field. Besides, the input mark with (✗) means the input is invalid and the error message is displayed to guide user to provide valid input. This is to ensure the form is filled correctly and completely.

5.2.3 Data Integrity

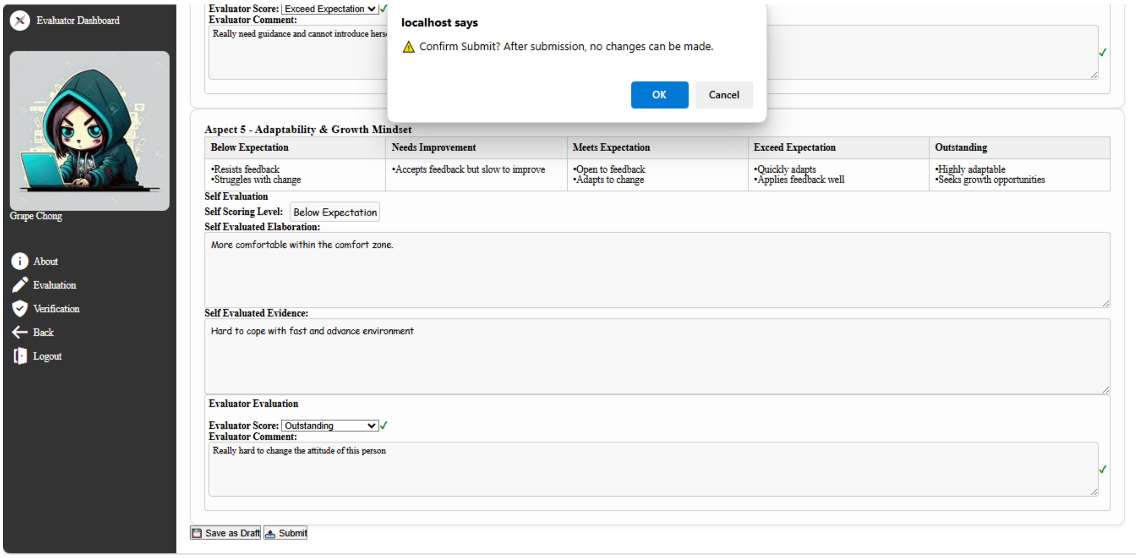


Figure 67. Evaluator Assessment Submission

For the process which cannot be reversable, like evaluator assessment, the submission confirmation will be prompt out to ask user whether confirm to submit. Figure above shows the alert is pop out to ask the confirmation regarding to submission of evaluator assessment from the evaluator. This is to prevent accidental submission of irreversible actions by giving the user a chance to confirm. Besides, this process supports data integrity by avoiding unintended changes after assessment is confirmed to be submitted.

5.2.4 Storage Efficiency

In talent development activity, once the talent development application is approved, the rejected application will be deleted. For the talent development application, after submission, if the application is rejected by Human Resources, the rejected reason and application will be stored inside the temporary table (named temptalentdevelopment). The rejected application will be retrieved from this table, after the application is accepted by Human Resources, the related rejected application will be deleted and accepted application details will be stored in real table (named talentdevel)

Chapter 6: Conclusion and Future Work

6.1 Project Achievement

Table 26. Project Achievement

Objectives	Achievement
To perform user requirement analysis in building an effective succession planning system.	Successfully conducted requirement analysis by identifying key users' roles (such as participants, evaluators, verifiers, approvers, human resource) and their specific needs in the succession planning process. The insights shaped the system features, assessment flow and role-based access.
To design a user-friendly web-based succession planning system	Designed and developed a user-friendly, web-based interface with dynamic evaluation forms, clear navigation, and streamlined workflows. The system accommodates different levels of assessment, including self-evaluation, evaluator input, verification, and final approval.
To implement and perform testing the succession planning system within an organization	Implemented the system using PHP, MySQL, and JavaScript technologies. Comprehensive testing was carried out to ensure functional correctness across modules such as user management, level-based rubric generation, assessment of submissions, talent development planning, and succession planning.

6.2 Project Limitation

1. Customizable but rigid scoring structure in competency assessment

The system constructed allows superadmin to define the scoring range used to evaluate competency of the user, for example, 3 scoring range (Bad, Moderate, Good) or 5 scoring range (Below expectation, Needs Improvement, Meets Expectation, Exceed

Expectation, Outstanding). However, the limitation is after the configuration is set, the scoring range no longer been changed and all the evaluation is using this scoring range to ensure the consistency of the evaluation. If the scoring range needs to change to another range in the future, they need to reconstruct the evaluation structure and all their dependencies. This makes structural changes complex and time-consuming, especially after the system is in use. This brings difficulties for organizations that might want to evolve their competency frameworks or adopt new scoring methodologies.

2. Limited analytical features.

While the current succession planning system effectively captures evaluation data (e.g., competency scores, self-assessment, evaluator inputs, and promotion decisions), it lacks advanced analytical tools to transform this data into actionable insights. For example, the system currently lacks advanced analytical capabilities to support strategic HR decisions. It does not provide visual insights into key metrics such as talent trends, readiness level, and succession risks to interpret and act upon the data efficiently.

3. Restricted Integration Capability

The system operates as a standalone platform without connectivity to existing enterprise systems like Human Resource Management Systems (HRMS), cloud-based document storage, or organizational authentication services (e.g., LDAP, SSO). This isolation limits the system's adoption in enterprise environments

6.3 Future Works

1. Dynamic Scoring System

Design a versioned rubric structure where legacy assessments (e.g., using 1–3 scale) can still be viewed or exported even after upgrading to a 1–5 scale, maintaining data integrity and historical consistency. For example, loading the current scoring scale from a database or scoring.json and rendering rubrics accordingly.

2. Integration of AI-based recommendations

The integration of artificial intelligence in promotion decisions or training suggestions to provide data-informed recommendations for promotion and development actions. This helps to enhance the process by generating smart, data-driven insights for both promotions and development actions.

3. API Development for HRMS Integration:

Currently, the system operates in isolation, requiring manual data entry for employee records, evaluation details, and development plans. This disconnect increases administrative workload and risks data inconsistency across platforms. To solve this problem, building RESTful APIs to synchronize employee records, assessment results, and promotion outcomes with external HR platforms is proposed.

6.4 Contribution

1. Provides a practical framework for implementing competency-based succession planning digitally

This project delivers a fully functional digital framework that organizations can adopt to shift from informal or paper-based succession practices to a structured, data-driven system. By using competency-based rubrics aligned with position levels, the system allows organizations to evaluate employees objectively based on measurable performance rather than personal sensibilities and feelings.

2. Promotion Transparency

One of the most important contributions of the system is its promotion of transparency and fairness in internal advancement decisions. Traditionally, succession decisions may be influenced by subjective judgment or personal bias. With this system, every candidate goes through the same evaluation process in which the scores, comments, and development plans are recorded and auditable.

3. Assessment, development, succession Linkage

The succession planning system is able to bridge the gap between assessment, development, and succession through structured feedback and planning. For example, data collected in competency assessment is used to feed into development planning and the development progress supports succession decision-making. This integration encourages a holistic approach to talent management, supporting long-term workforce planning and leadership continuity.

4. Adaptable model

The succession planning system constructed offers a customizable and reusable model suitable for adaptation in other institutions or industries. The system provides customizable scoring and dynamic addition of new position levels and aspects of evaluation. This makes it a sustainable and transferable solution beyond its original context.

6.5 Conclusion

The Succession Planning System addresses a critical organizational need: identifying, assessing, and developing internal talents for key roles. By combining structured assessment workflows with development planning, it ensures a transparent and data-driven promotion process. While limitations exist in terms of integration and analytics, the project lays a strong foundation for continuous improvement and future expansion. It proves that effective succession planning can be supported and enhanced by thoughtfully designed digital solutions.

References

Garg, A., & Van Weele, E. (2012). Succession Planning and Its Impact on the Performance of Small Micro Medium Enterprises within the Manufacturing Sector in Johannesburg. *International Journal of Business and Management*, *7*(9). https://doi.org/10.5539/ijbm.v7n9p96

G2. (n.d.). *PageUp Reviews 2025: Details, Pricing, & Features | G2*. PageUp Reviews & Product Details. https://www.g2.com/products/pageup/reviews?utf8=%E2%9C%93&order=g2_default&filters%5Bsentiment_snippet%5D=1705969#survey-response-10240233

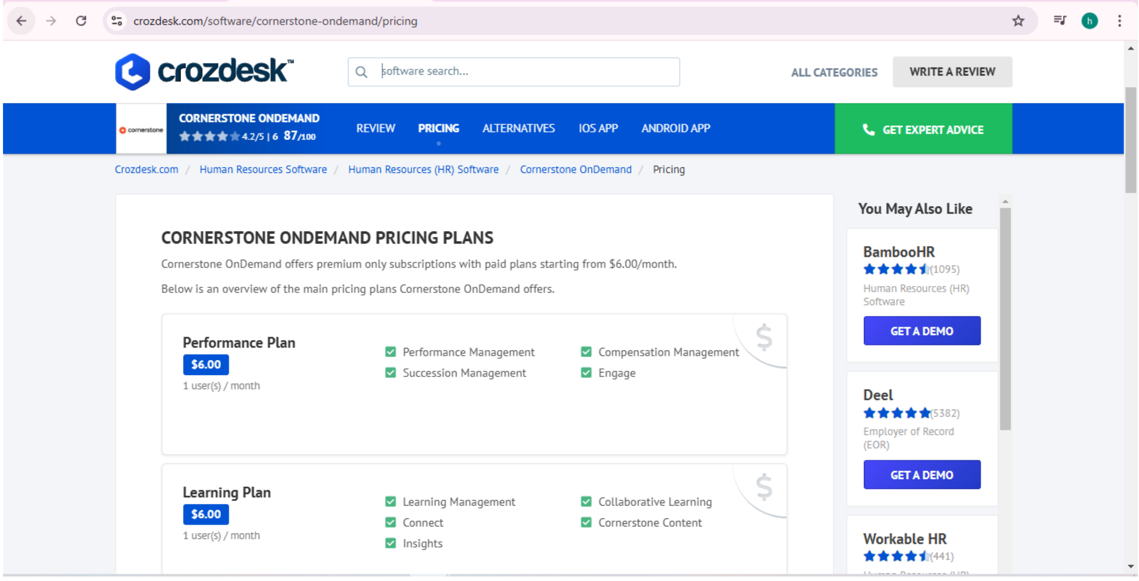
Mehrabani, S. E., & Mohamad, N. A. (2011). Succession Planning: A Necessary Process in Today's Organization. In International Journal of e-Education, e-Business, e-Management and e-Learning, *International Journal of e-Education, e-Business, e-Management and e-Learning* (Vols. 1–5).

TrustRadius. (n.d.-a). *Cornerstone Unified Talent Management* [Video]. TrustRadius. https://www.trustradius.com/products/cornerstone-ondemand/reviews

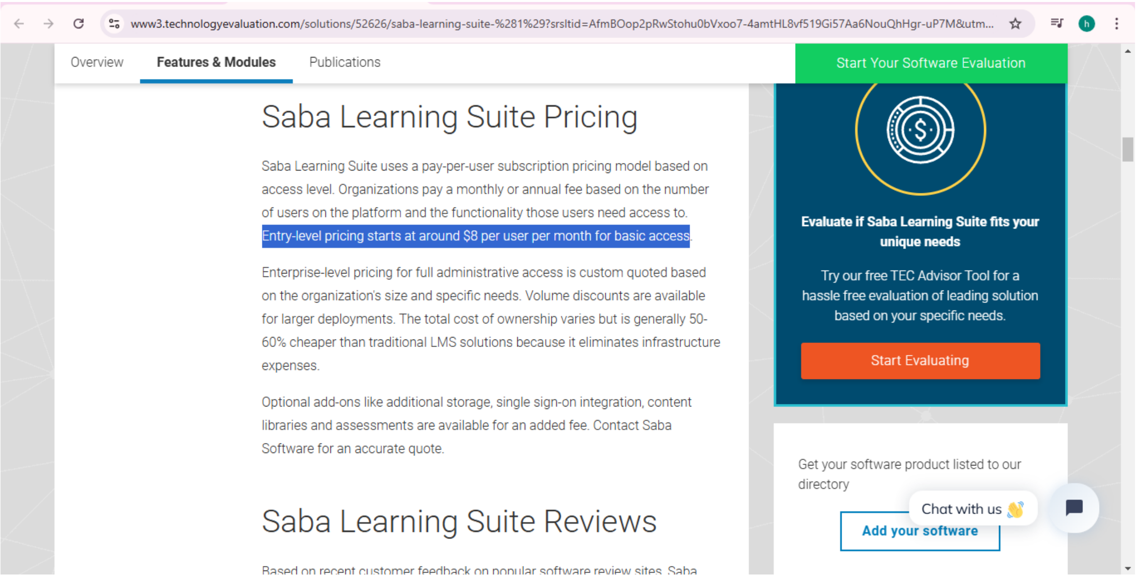
TrustRadius. (n.d.-b). *TalentGuard Reviews & Ratings 2025*. https://www.trustradius.com/products/talentguard/reviews#product-details

Appendices

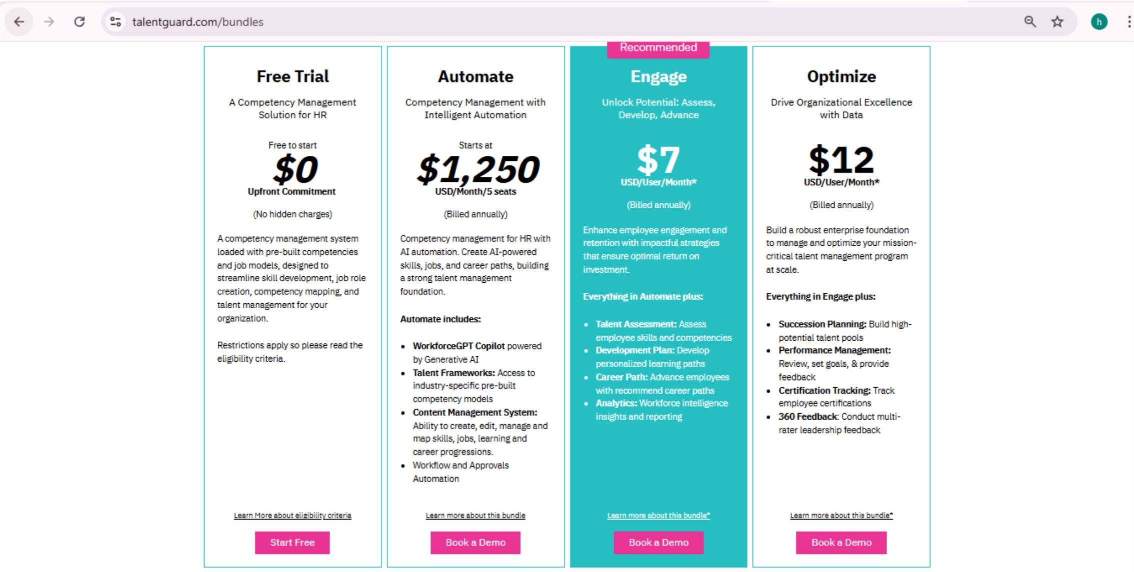
Appendix A: Evidence of Existing system referenced



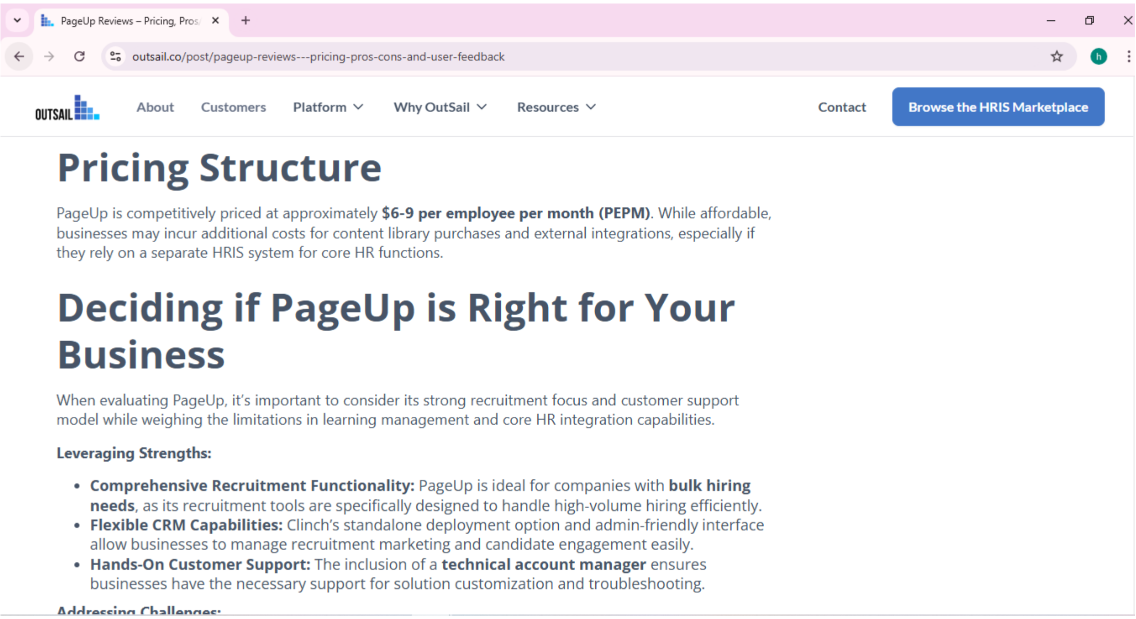
The figure above shows the pricing of Conerstone OnDemand pricing on succession planning which is $6 per month for a user. For the learning plan, you need to pay an extra $6. (Retrieved from https://crozdesk.com/software/cornerstone-ondemand/pricing)



The figure above shows Saba offers custom pricing based on organization's needs and the entry level pricing is around $8 per month for a user. (Retrieved from https://www3.technologyevaluation.com/solutions/52626/saba-learning-suite-%281%29?srsltid=AfmBOop2pRwStohu0bVxoo7-4amtHL8vf519Gi57Aa6NouQhHgr-uP7M&)



The figure above shows the price of Talent Guard, which is $7 per user for a month with required features like talent assessment, development plan, career path and analytics. (Retrieved from https://www.talentguard.com/bundles)



The figure above shows the price of PageUp, which is $6-9 per user for a month. If the external integration is needed, extra costs will be charged (Retrieved from https://www.outsail.co/post/pageup-reviews---pricing-pros-cons-and-user-feedback)

Appendix B: Google Form

Final Year Project: Questionnaire on the Succession Planning *(Projek Tahun Akhir: Soal Selidik Mengenai Perancangan Penggantian)*

Declaration of Confidentiality and Voluntary Participation

Thank you for your willingness to participate in this questionnaire. Your valuable feedback is appreciated in contributing to the development of the succession planning system for the improvement of talent and leadership management processes.

Please take note of the following:

1. Your participation is entirely voluntary.
2. All your responses will be handled with confidentiality and utilized only for Final Year Project purposes.
3. Your submitted information will be anonymized and will not be disclosed with other parties.
4. The expected time taken for completion of the questionnaire is about 15 minutes.

By proceeding, you agree on your participation in this study and agree to the terms stated above.

Instructions

The questionnaire consists of 3 parts. Part 1 is to collect the demographic information of respondents. Part 2 contains the Multiple-Choice Questions where users can select their answers based on the options provided. For the questions having the 'other' option, users may express their opinion that do not appear in the listed options. Part 3 includes Scale-based Questions where users can make decisions based on their level of agreement. To help us collect accurate results, please respond with the following statements using the scale provided.

Scale:

1 - Strongly Disagree

2 - Disagree

3 – Neutral

4 - Agree

5 – Strongly Agree

Please:

1. Read the statement carefully
2. Tick the answer box that best represents your opinion
3. There are no right or wrong answers

Pengisytiharan Kerahsiaan dan Penyertaan Sukarela

Terima kasih kerana sudi mengambil bahagian dalam soal selidik ini. Maklum balas anda yang berharga dihargai dalam menyumbang kepada pembangunan sistem perancangan penggantian untuk penambahbaikan proses pengurusan bakat dan kepimpinan.

Sila ambil perhatian perkara berikut:

1. Penyertaan anda adalah secara sukarela sepenuhnya.
2. Semua maklum balas anda akan dikendalikan dengan kerahsiaan dan digunakan hanya untuk tujuan Projek Tahun Akhir.
3. Maklumat anda yang diserahkan akan dirahasiakan dan tidak akan didedahkan dengan pihak lain.
4. Jangkaan masa yang diambil untuk menyiapkan soal selidik adalah kira-kira 15 minit.

Dengan meneruskan, anda bersetuju dengan penyertaan anda dalam kajian ini dan bersetuju dengan terma yang dinyatakan di atas.

Arahan
Soal selidik mengandungi 2 bahagian. Bahagian 1 adalah untuk mengumpul maklumat demografi responden. Bahagian 2 mengandungi Soalan Pelbagai Pilihan di mana pengguna boleh memilih jawapan mereka berdasarkan pilihan yang disediakan. Untuk soalan yang mempunyai pilihan 'lain', pengguna boleh menyatakan pendapat mereka yang tidak muncul dalam pilihan yang disenaraikan. Bahagian 3 termasuk Soalan berasaskan Skala di mana pengguna boleh membuat keputusan berdasarkan tahap persetujuan mereka. Untuk membantu kami mengumpul hasil yang tepat, sila balas dengan pernyataan berikut menggunakan skala yang disediakan.
Skala:
1 - Sangat Tidak Setuju
2 – Tidak setuju
3 – Berkecuali
4 – Setuju
5 – Sangat Setuju

Sila:

1. Baca pernyataan dengan teliti
2. Tandakan pada kotak jawapan yang paling sesuai mewakili pendapat anda
3. Tiada jawapan betul atau salah

Part 1: Basic Demographic Information *(Bahagian 1: Maklumat Asas Demografi)*

Age ***(Umur)*** *

- ◯ 17 and below (17 dan ke bawah)
- ◯ 18–24
- ◯ 25–34
- ◯ 35–44
- ◯ 45–54
- ◯ 55 and above (55 dan ke atas)

Gender ***(Jantina)*** *

- ◯ Male (Lelaki)
- ◯ Female (Perempuan)

Highest Educational Background ***(Latar Belakang Pendidikan Tertinggi)*** *

- ◯ High school or equivalent (Sekolah Menengah atau setaraf)
- ◯ Bachelor's degree (Ijazah Sarjana Muda)
- ◯ Master's degree (Ijazah Sarjana)
- ◯ Doctorate (Kedoktoran)
- ◯ 其他: ______________________

Part 2: Multiple-Choice Questions *(Bahagian 2: Soalan Pelbagai Pilihan)*

Section 1: Roles and Responsibilities *(Peranan dan Tanggungjawab)*

What are your roles in the organization? *(Apakah peranan anda dalam organisasi?)* *

- ☐ Human Resource Manager (Pengurus Sumber Manusia)
- ☐ Department Manager (Pengurus Jabatan)
- ☐ System Administrator (Pentadbir Sistem)
- ☐ Employee (Pekerja)
- ☐ 其他: ____________

How often are you involved in succession planning system? *(Berapa kerap anda terlibat dalam sistem perancangan penggantian?)* *

- ◯ Frequently - almost every day (Kerap - hampir setiap hari)
- ◯ Occasionally - Once a week (Sekali-sekala - Seminggu sekali)
- ◯ Rarely - Once a month (Jarang - Sebulan sekali)
- ◯ Never at all (Tidak pernah)

Can you provide your experience in using the succession planning tools or systems? *(Bolehkah anda memberikan pengalaman anda dalam menggunakan alat atau sistem perancangan penggantian?)* *

- ◯ Beginner (Pemula)
- ◯ Intermediate (Pertengahan)
- ◯ Advanced (Peringkat Lanjutan)
- ◯ None (Tiada)
- ◯ 其他: ____________

Section 2: Challenges Faced *(Cabaran Yang Dihadapi)*

What are the challenges you faced in succession planning? *(Apakah cabaran yang anda hadapi dalam perancangan penggantian?)* *

- ☐ Lack of Transparency (Kurang Ketelusan)
- ☐ Time-consuming process (Proses yang memerlukan masa yang panjang)
- ☐ Difficulties in identifying suitable successor (Kesukaran dalam mengenal pasti pengganti yang sesuai)
- ☐ Lack of inadequate data or insights (Kekurangan data atau cerapan yang tidak mencukupi)
- ☐ 其他:

What are the obstacles that limit the effectiveness of the succession planning process? *(Apakah halangan yang mengehadkan keberkesanan proses perancangan penggantian?)* *

- ☐ Limited visibility on employee's competencies (Keterlihatan terhad pada kecekapan pekerja)
- ☐ Lack of structured process (Kekurangan proses berstruktur)
- ☐ Insufficient data for decision making (Data tidak mencukupi untuk membuat keputusan)
- ☐ Resistance to leadership changes (Penentangan terhadap perubahan kepimpinan)
- ☐ 其他:

What areas of the process need improvement in the current succession planning system? *(Apakah bidang proses yang memerlukan penambahbaikan dalam sistem perancangan penggantian semasa?)* *

- ☐ Data collection and Analysis (Pengumpulan dan Analisis data)
- ☐ Employee readiness evaluation (Penilaian kesediaan pekerja)
- ☐ Leadership development programs (Program pembangunan kepimpinan)
- ☐ System usability (Kebolehgunaan sistem)
- ☐ 其他:

Section 3: Required Features ***(Ciri yang Diperlukan)***

Which of the following features do you think is essential for succession planning system? *(Antara ciri berikut, yang manakah anda fikir penting untuk sistem perancangan penggantian?)* *

- [ ] Competency Mapping (Pemetaan Kompetensi)
- [ ] Leadership readiness scores (Markah kesediaan kepimpinan)
- [ ] Peer comparison between employees (Perbandingan rakan sebaya antara pekerja)
- [ ] Real-time performance tracking (Penjejakan prestasi masa nyata)
- [ ] 其他: ______

What types of reports do you think are needed from the system? *(Apakah jenis laporan yang anda fikir diperlukan daripada sistem?)* *

- [ ] Succession Gap Analysis (Analisis Jurang Penggantian)
- [ ] Current vs Required Competency Level (Tahap Kecekapan Semasa vs Diperlukan)
- [ ] Training and development needs (Keperluan latihan dan pembangunan)
- [ ] Summary of readiness for transition (Ringkasan kesediaan untuk peralihan)
- [ ] 其他: ______

What is the functionality that is essential in the system? *(Apakah fungsi yang penting dalam sistem?)* *

- [ ] Data export/ import option (Pilihan eksport/import data)
- [ ] Multi-language support (Sokongan berbilang bahasa)
- [ ] Customizable user roles and permission (Peranan dan kebenaran pengguna yang boleh disesuaikan)
- [ ] Navigation Tour/ Guide for first-time user (Navigasi Tour/ Panduan untuk pengguna kali pertama)
- [ ] 其他: ______

Section 4: Preferences *(Keutamaan)*

What would you prefer to use in accessing the system? *(Apakah yang anda lebih suka gunakan untuk mengakses sistem?)* *

- [ ] Desktop Application (Aplikasi Desktop)
- [ ] Mobile Application (Aplikasi Mudah Alih)
- [ ] Web-based Application (Aplikasi berasaskan web)
- [ ] 其他: ______

What is the preferred mode of the system in handling the notification? *(Apakah mod pilihan sistem dalam mengendalikan pemberitahuan?)* *

- [ ] Email notification (Pemberitahuan e-mel)
- [ ] In-app alerts (Makluman dalam aplikasi)
- [ ] Pop-up real-time notification (Pemberitahuan masa nyata pop timbul)
- [ ] Calendar Integration notification (Pemberitahuan Integrasi Kalendar)
- [ ] 其他: ______

What is the interface design you preferred in the system? *(Apakah reka bentuk antara muka yang anda pilih dalam sistem?)* *

- [ ] Text-based menu (Menu berasaskan teks)
- [ ] Icon-based navigation (Navigasi berasaskan ikon)
- [ ] Help guidance for unknown features (Panduan bantuan untuk ciri yang tidak diketahui)
- [ ] Workflow stated for process involved in the section (Aliran kerja dinyatakan untuk proses yang terlibat dalam bahagian)
- [ ] 其他: ______

Section 5: Training and support *(Latihan dan sokongan)*

What is the type of training would you require to learn and master the system? *(Apakah jenis latihan yang anda perlukan untuk mempelajari dan menguasai sistem?)* *

- ☐ In-person training session (Sesi latihan secara peribadi)
- ☐ Online tutorials or recorded videos (Tutorial dalam talian atau video yang dirakam)
- ☐ User manual or documentation (Manual pengguna atau dokumentasi)
- ☐ On-demand support - WhatsApp Chat, Email (Sokongan atas permintaan - Sembang WhatsApp, E-mel)
- ☐ 其他: ______

What is the approach you preferred to reach us for complaint purposes, suggestion of improvement for the system and guidance when stuck? *(Apakah pendekatan yang anda pilih untuk menghubungi kami untuk tujuan aduan, cadangan penambahbaikan untuk sistem dan panduan apabila tersekat?)* *

- ☐ Email (E-mel)
- ☐ Customer Service (Perkhidmatan Pelanggan)
- ☐ Direct Call (Panggilan Terus)
- ☐ Community Discussion/ Forum (Perbincangan/ Forum Komuniti)
- ☐ 其他: ______

How long is the time you willing to spend in learning and understanding the new features or functionality available inside the system? *(Berapa lamakah masa yang anda sanggup luangkan untuk mempelajari dan memahami ciri atau fungsi baharu yang tersedia di dalam sistem?)* *

- ○ Less than 1 hour (Kurang 1 jam)
- ○ 1 hour (1 jam)
- ○ 2 hours (2 jam)
- ○ More than 2 hours (Lebih 2 jam)

Part 3: Sacle based Questions *(Bahagian 3: Soalan berasaskan skala)*

Section 1: Current Succession Planning Process Evaluation *(Penilaian Proses Perancangan Penggantian Semasa)*

The current succession planning process meets the organizational needs. *(Proses perancangan penggantian semasa memenuhi keperluan organisasi.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

The current succession planning process is easy to follow and implement. *(Proses perancangan penggantian semasa adalah mudah untuk diikuti dan dilaksanakan.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

The current succession planning process is able to identify the right talent for key positions. *(Proses perancangan penggantian semasa mampu mengenal pasti bakat yang sesuai untuk jawatan penting.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Section 2: Succession Planning System Features *(Ciri Sistem Perancangan Penggantian)*

Competency mapping is a key feature for succession planning. *(Pemetaan kecekapan adalah ciri utama untuk perancangan penggantian.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Leadership readiness is essential to identify potential leaders. *(Kesediaan kepimpinan adalah penting untuk mengenal pasti bakal pemimpin.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Notification is required in the system. *(Pemberitahuan diperlukan dalam sistem.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Section 3: Succession Planning Reporting *(Pelaporan Perancangan Penggantian)*

Data visualization like charts and graphs are helpful for decision making. *(Visualisasi data seperti carta dan graf berguna untuk membuat keputusan.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Role-specific reports evaluated should be role-specific, eg. HR manager, Department Manager, Employee. *(Laporan untuk peranan yang dinilai hendaklah khusus peranan, mis. Pengurus HR, Pengurus Jabatan, Pekerja.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

The auto generation of report able to save time in succession planning process. *(Penjanaan laporan secara automatik dapat menjimatkan masa dalam proses perancangan penggantian.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Section 4: Challenges and Concerns *(Cabaran dan Kebimbangan)*

Data security is one of the concerns in succession planning systems. *(Keselamatan data adalah salah satu kebimbangan dalam sistem perancangan penggantian.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

The system should be accessible on both desktop and mobile devices. *(Sistem ini harus boleh diakses pada kedua-dua desktop dan peranti mudah alih.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

The long learning curve in understanding the system causes people to easily lose interest in using the system. *(Keluk pembelajaran yang panjang dalam memahami sistem menyebabkan orang ramai mudah hilang minat menggunakan sistem.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	○	○	○	○	○	Strongly Agree (Sangat setuju)

Section 5: Training and Adoption *(Latihan dan Pengangkatan)*

Training sessions and online tutorial are required for learning the system. *(Sesi latihan dan tutorial dalam talian diperlukan untuk mempelajari sistem.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	◯	◯	◯	◯	◯	Strongly Agree (Sangat setuju)

The development of succession system will improve talent management significantly. *(Pembangunan sistem penggantian akan meningkatkan pengurusan bakat dengan ketara.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	◯	◯	◯	◯	◯	Strongly Agree (Sangat setuju)

I am open to adopting a new succession planning system. *(Saya terbuka untuk menerima pakai sistem perancangan penggantian baharu.)* *

	1	2	3	4	5	
Strongly Disagree (Sangat tidak setuju)	◯	◯	◯	◯	◯	Strongly Agree (Sangat setuju)

Acknowledgement and Appreciation *(Pengakuan dan Penghargaan)*

You have reached the end of the questionnaire. You may click the submit button to submit your response. Thank you for being willing to spend some time completing the questionnaire. Your responses will contribute in designing an efficient succession planning system. If you have any questions or concerns about the questionnaire, feel free to contact me at 79073@siswa.unimas.my. Your comments will be kept private, and results will only be applied to academic and research purposes.

Anda telah sampai ke penghujung soal selidik. Anda boleh mengklik butang hantar untuk menghantar jawapan anda. Terima kasih kerana sudi meluangkan sedikit masa untuk mengisi borang soal selidik. Respons anda akan menyumbang dalam mereka bentuk sistem perancangan penggantian yang cekap. Jika anda mempunyai sebarang pertanyaan atau kemusykilan tentang soal selidik, sila hubungi saya di 79073@siswa.unimas.my. Komen anda akan dirahsiakan dan keputusan hanya akan digunakan untuk tujuan akademik dan penyelidikan.

Appendix C: Additional User Interface of succession planning system

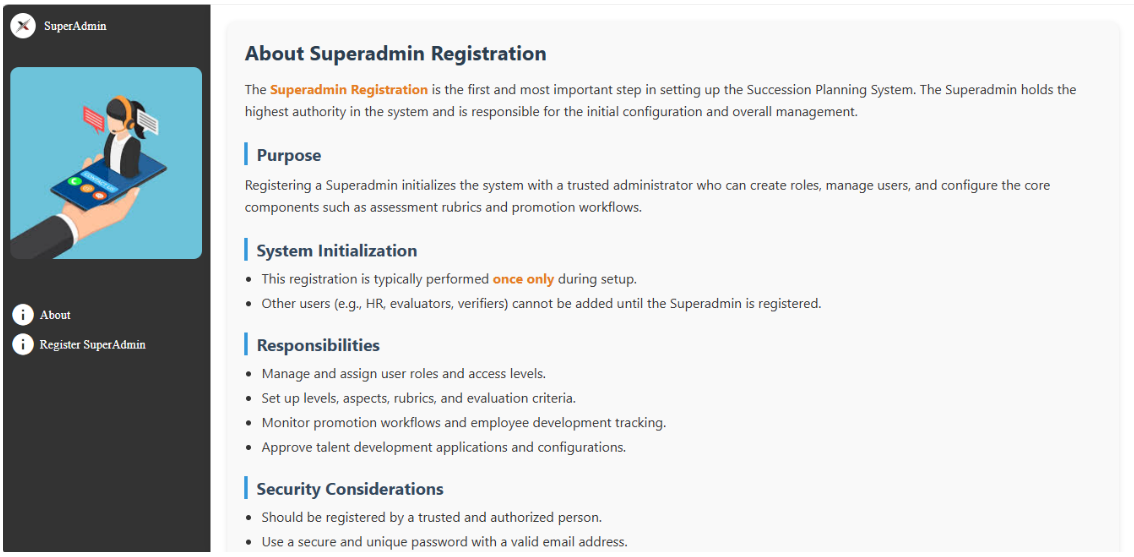


Figure above shows the about section of superadmin registration. The section specifies the importance and the purpose of superadmin registration. Besides, the responsibility of the superadmin in the system and security consideration also stated in this section.

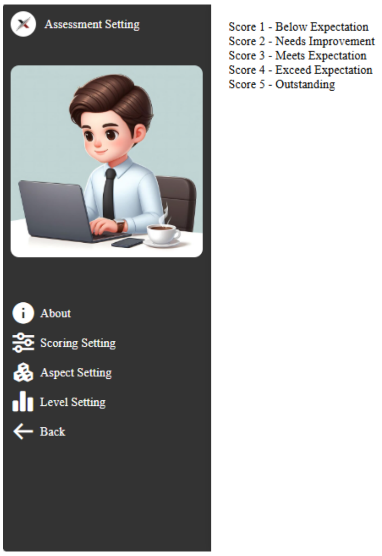


Figure above shows the sample of scoring setting that have been done by the superadmin. Based on the figure, the evaluated will be rated from 1 (Below Expectation) until 5 (Outstanding).

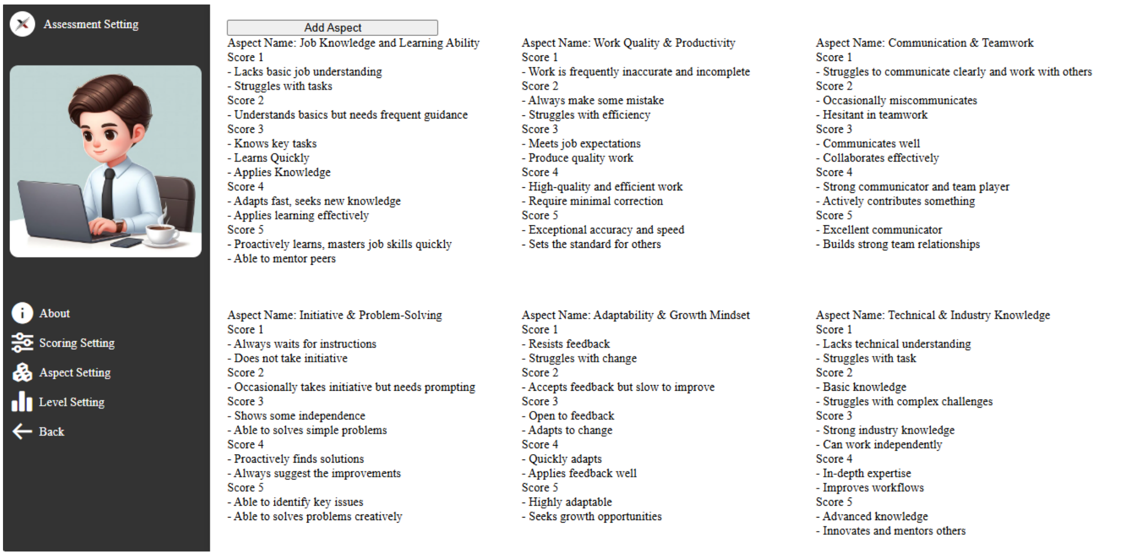


Figure above shows the sample of aspect setting. Based on the figure, several aspects are created to evaluate the competencies of the employee. The criteria need to be fulfilled for each score in each aspect also defined as a guideline for assessment process.

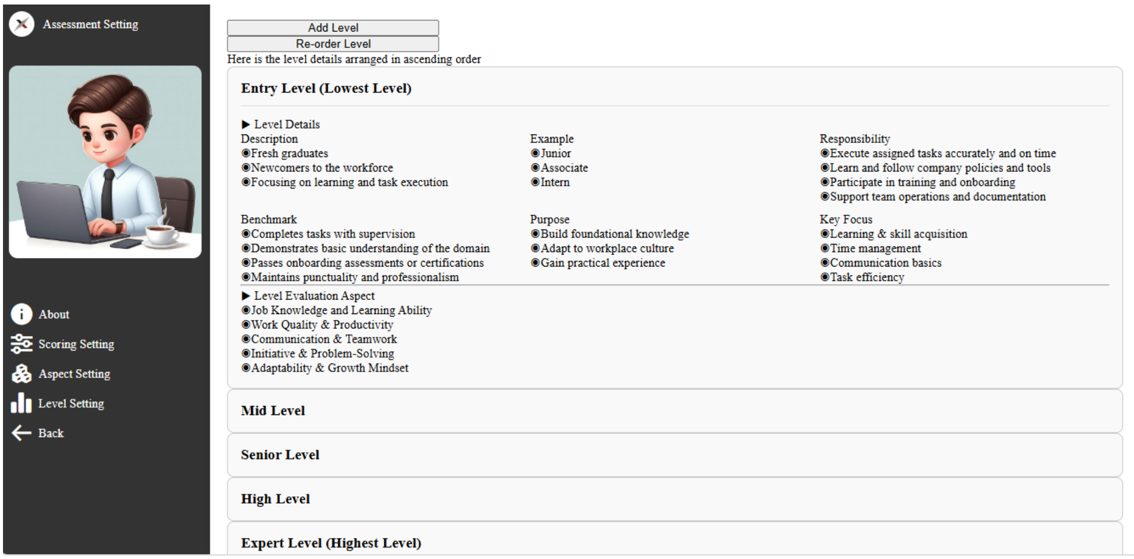


Figure above shows the sample of level setting. Based on the figure, several levels in the organization are defined such as entry level (lowest level), mid level, senior level, high level and expert level (highest level). Furthermore, the details related to each level created also defined such as description, example, responsibility, benchmark, purpose, key focus. Apart from that, the level evaluation aspect (refers to aspects that is created and will be used to evaluate employee based on their current level) also defined. Besides, superadmin also can make re-ordering if found that the level created is not arranged in the sequence.

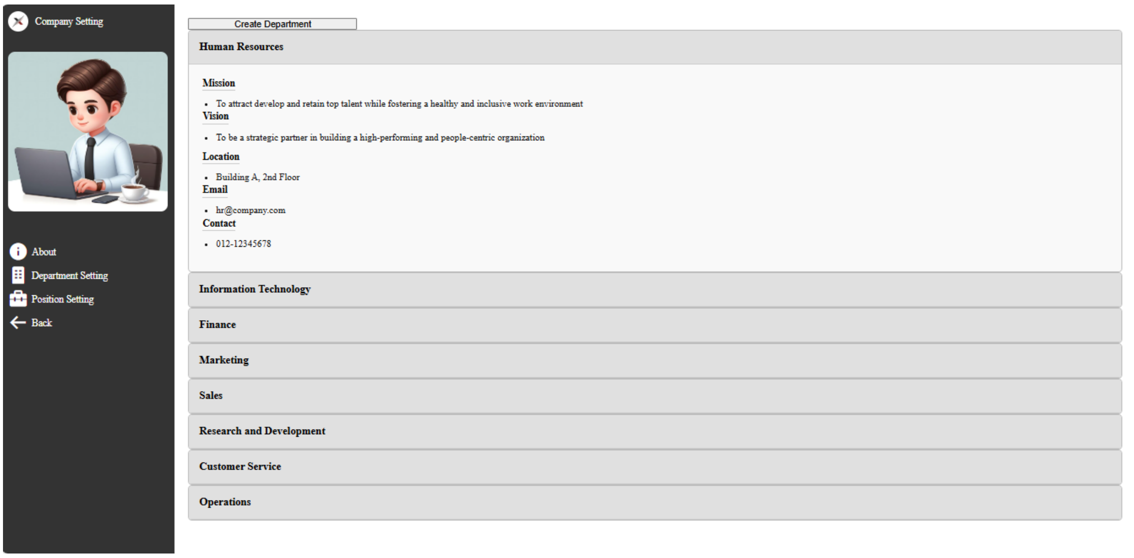


Figure above shows the sample of department setting. Based on the figure, several departments in the organization are created. The department details for each department such as mission, vision, location, email and contact also stated.

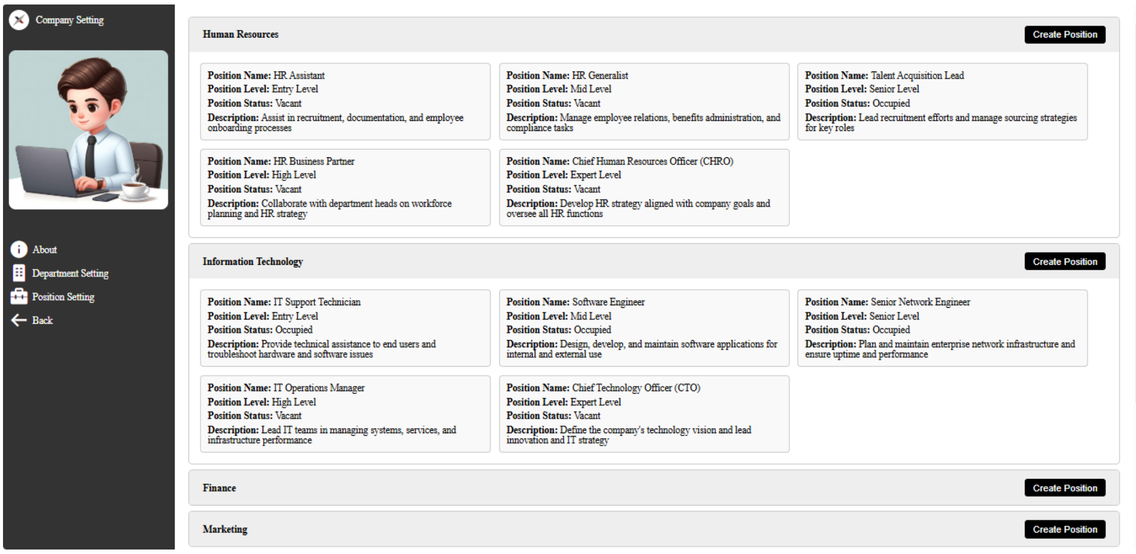


Figure above shows the sample of position setting. Based on the figure above, several positions available in each department are created. The details of the position created also displayed such as position name, level, status and description.

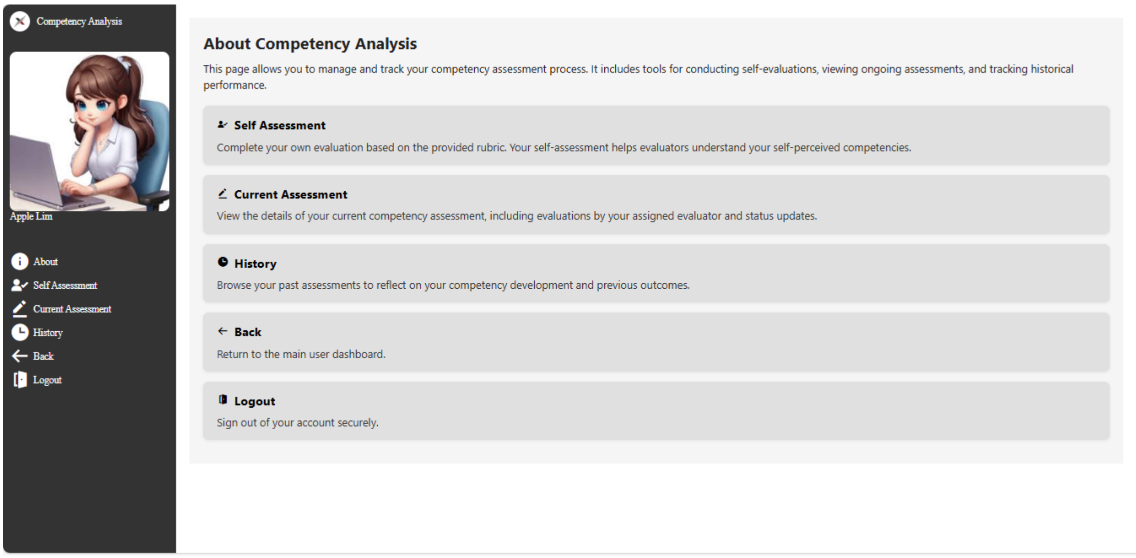


Figure above shows the about of competency analysis. In this section, the navigation tab available in this page is introduce to user so that they understand the features available in this page. For example, self-assessment (user make evaluation about themselves and used it to compared with the result of evaluator assessment to understand their competency gap), current assessment (user can view the result of the competency assessment and review the comment made by evaluator for each aspect), history (user can review the history of the competency assessment that have been done before).

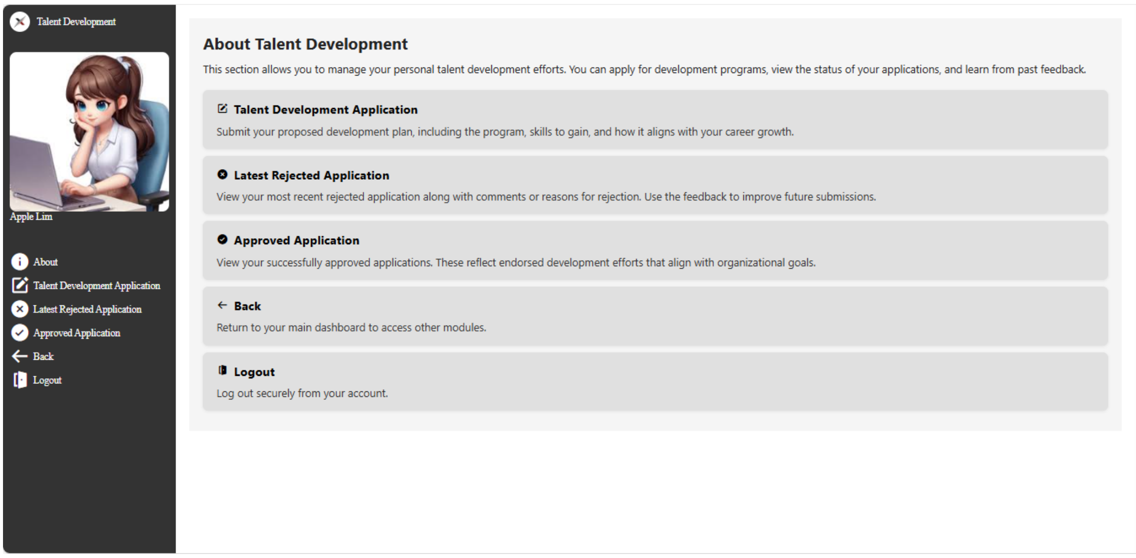


Figure above shows the about of talent development. In this section, the navigation tab available in this page is introduce to user so that they understand the features available in this page. For example, talent development application (allows user to submit the application regarding the list of programs joined for human resource to verify), latest rejected application (allows user to know the reason about the rejection of application by human resource), approved application (allows user to review the applications that have been approved by human resource).

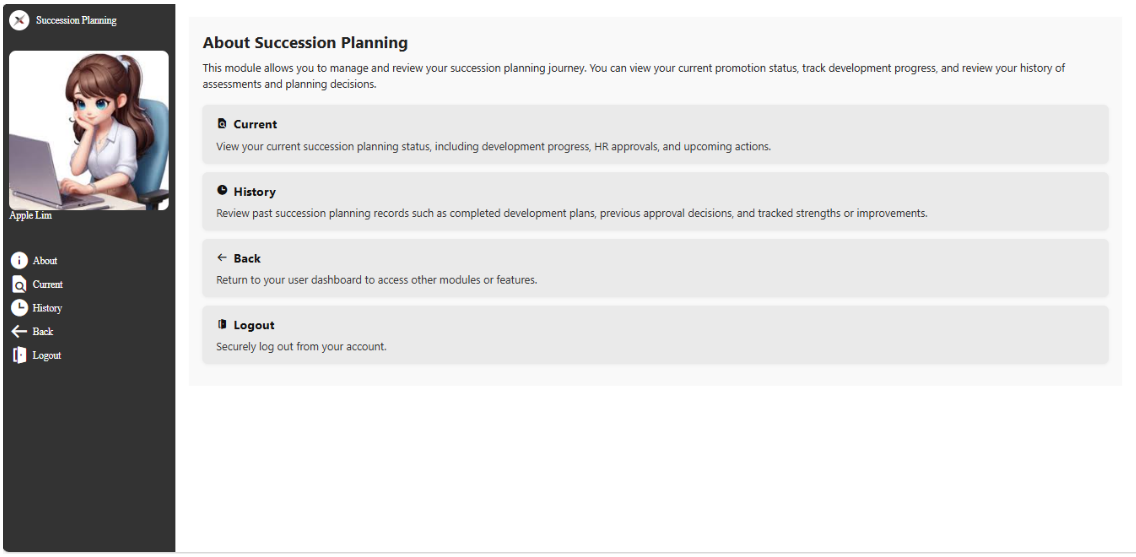


Figure above shows the about of succession planning. In this section, the navigation tab available in this page is introduce to user so that they understand the features available in this page. For example, current (allows user to know which position that have been assigned by human resource to be replaced), history (allows user to review the position that have been replaced in history).

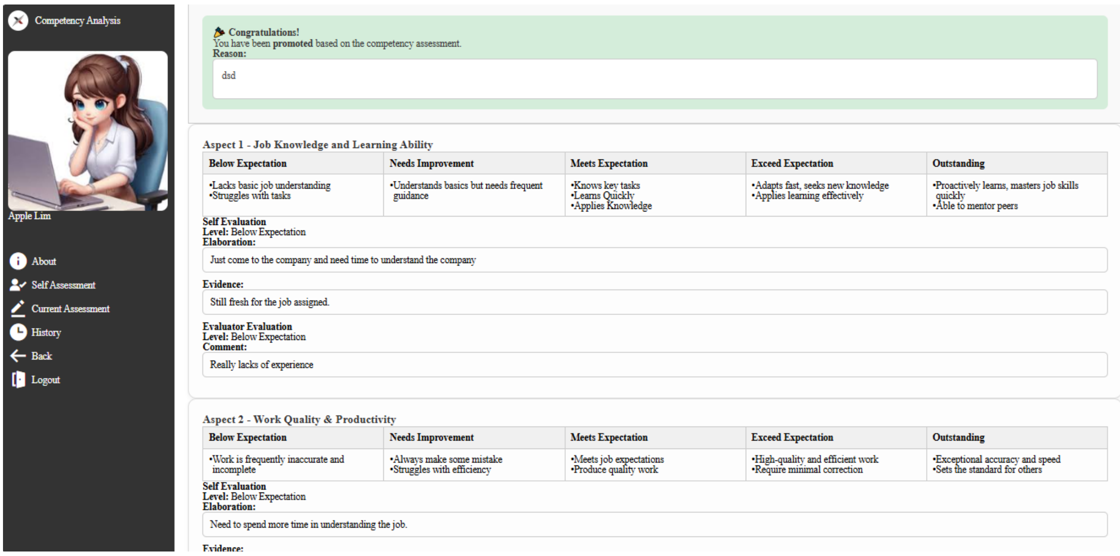


Figure above shows the details of the current assessment. After the user review the radar chart that have been generated for the current assessment and after the user scroll down, the details regarding the comment related to the assessment made by evaluator is stated.

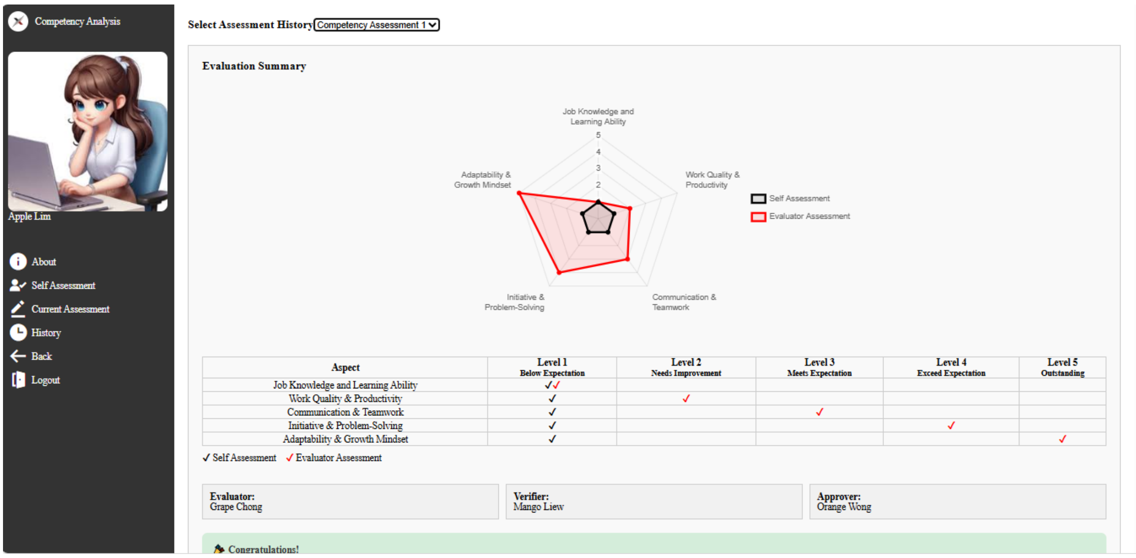


Figure above shows the details related to history of competency assessment made. The full report regarding the history of competency assessment that have done can be search through here.

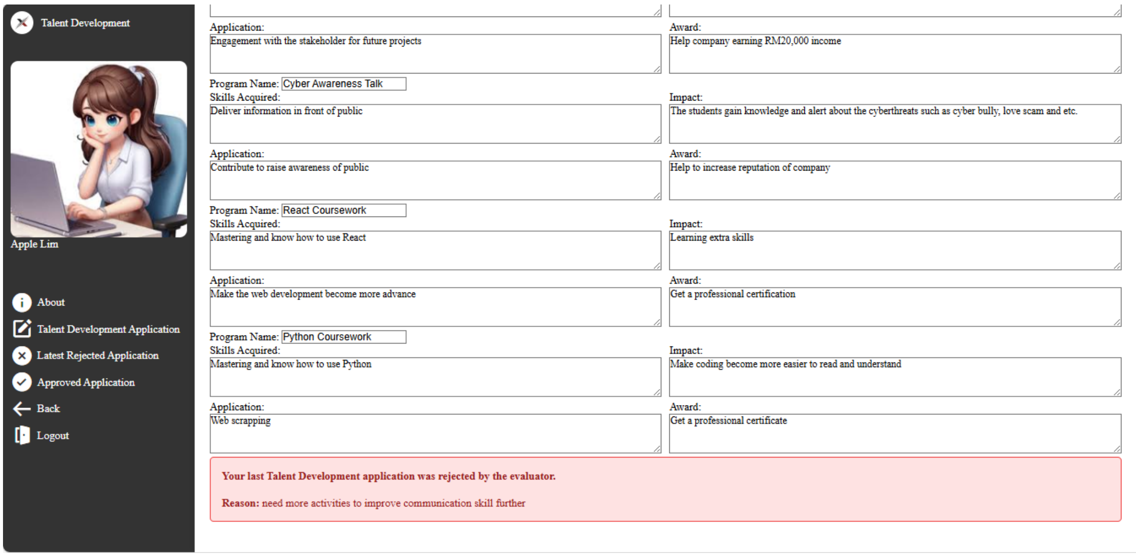
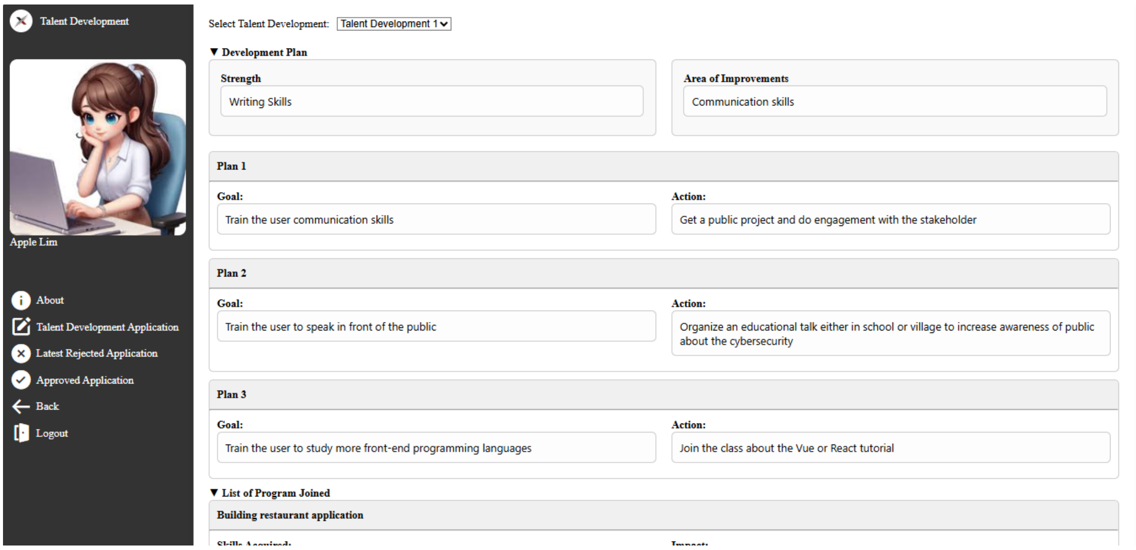
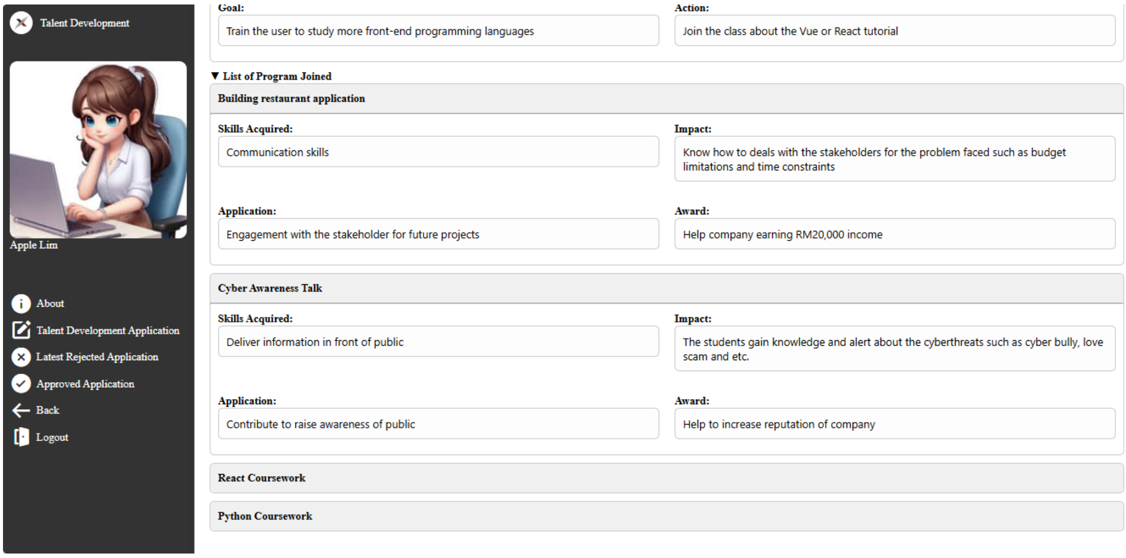
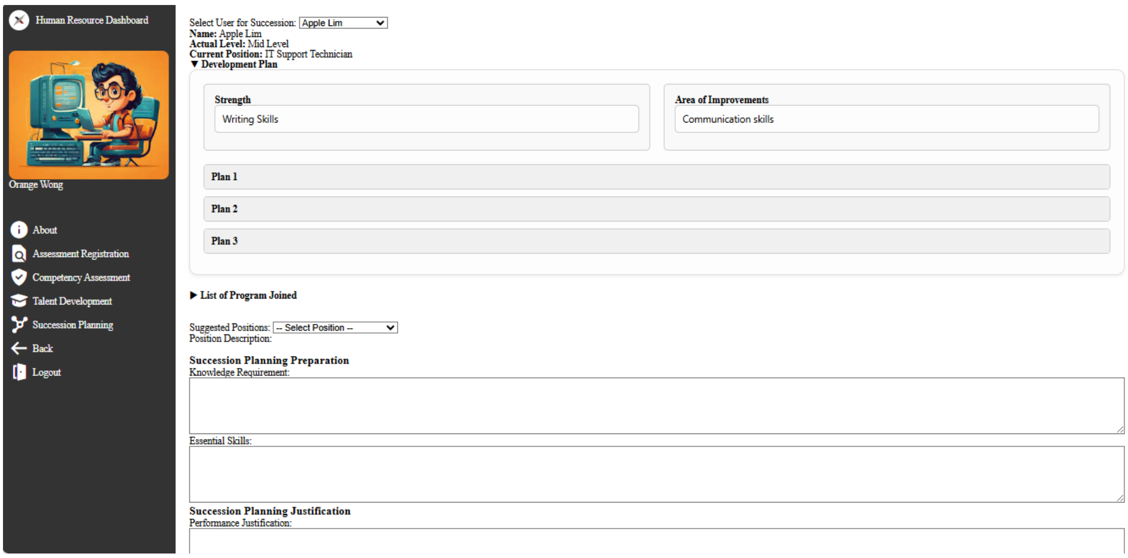


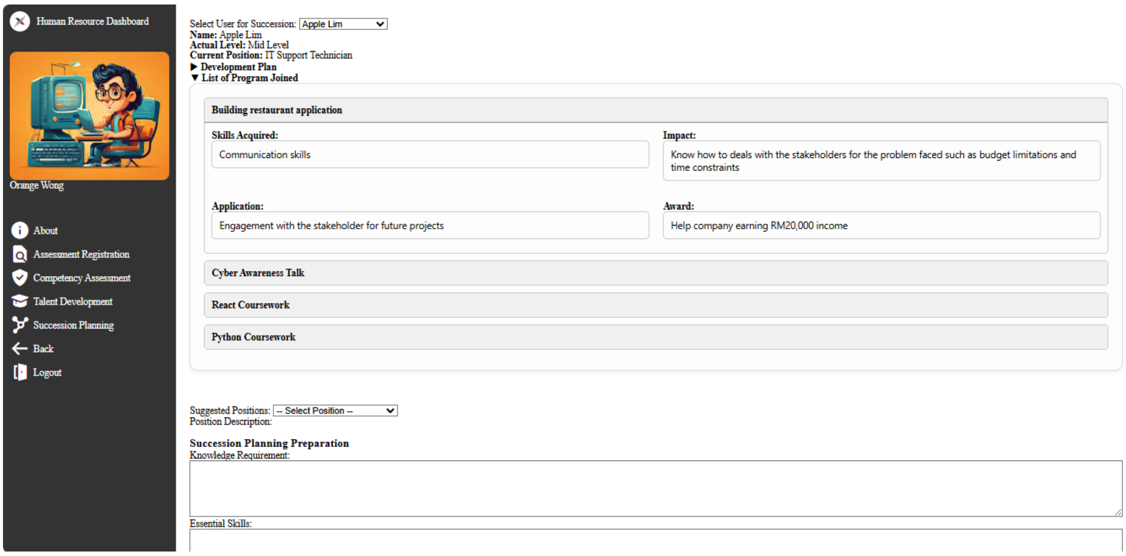
Figure above shows the rejected application of talent development by human resource. By scrolling down until the end, the user can know the reason why the application is rejected.

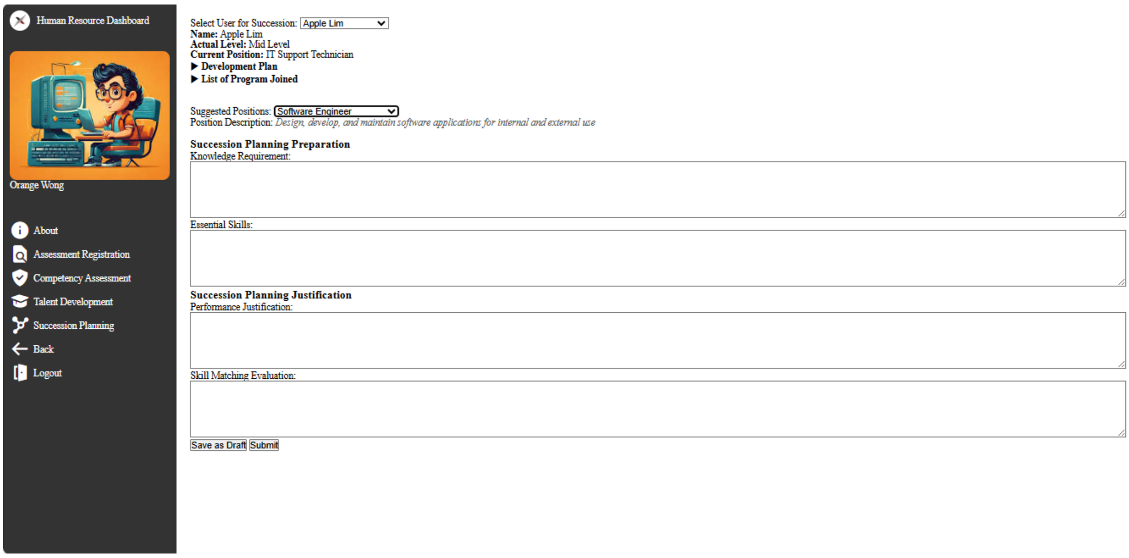




The 2 figures above show the approved application of talent development by human resource. After the submitted application is accepted, this indicate that the programs joined are matching with the talent development plan constructed. The user can search the list of approved talent developments that have been done.







The 3 figures above show the extra information can be retrieved for the selected user when perform the succession planning for selected user. Based on the first picture, human resource can review the development plan that have been constructed. Based on second picture, human resource can review the list of programs joined by the selected user and the details of the programs joined. Based on third picture, for the suggested position selected, the position description also will be displayed to helps the human resource to identify the suitable position that match with the user's competencies.

Appendix D: Structure of tables in database of succession planning system

```
$createSuperAdminTable = "CREATE TABLE IF NOT EXISTS superadmin (
    superAdminId INT(11) AUTO_INCREMENT PRIMARY KEY,
    superAdminUsername VARCHAR(50) NOT NULL,
    superAdminPassword VARCHAR(255) NOT NULL,
    superAdminEmail VARCHAR(100) NOT NULL,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
)";
mysqli_query($conn, $createSuperAdminTable);
```

A table named superadmin is created to store the superadmin information such as id, username, password, email and creation date.

```
$createTableSQL = "CREATE TABLE IF NOT EXISTS userlogininfo (
    userId INT(6) UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    userEmail VARCHAR(50) NOT NULL,
    userUsername VARCHAR(50) NOT NULL,
    userPassword VARCHAR(255) NOT NULL,
    userStatus ENUM('Active', 'Resigned', 'Retired') DEFAULT 'Active',
    userRegisterDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    userUpdateDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
)";
mysqli_query($conn, $createTableSQL);
```

A table named userlogininfo is created to store the login information about the user such as user’s id, email, username, password, status, registration date, update date.

```
$createUserBasicInfoTableSQL = "CREATE TABLE IF NOT EXISTS userbasicinfo (
    basicId INT AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    fullname VARCHAR(255) NOT NULL,
    contactNumber VARCHAR(15) NOT NULL,
    dateOfBirth DATE NOT NULL,
    address VARCHAR(255) NOT NULL,
    gender ENUM('Male', 'Female', 'Other') NOT NULL,
    profilePicture VARCHAR(255),
    createdAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createUserBasicInfoTableSQL);
```

A table named userbasicinfo is created to store the basic information about the user such as user’s full name, contact number, date of birth, address, gender, profile picture, creation date, update date.

```
$createUserAddtionalInfoTableSQL = "CREATE TABLE IF NOT EXISTS useradditionalinfo(
    additionalId INT AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    workingExperience JSON DEFAULT NULL,
    educationInfo JSON DEFAULT NULL,
    createdAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createUserAddtionalInfoTableSQL);
```

A table named useradditionalinfo is created to store the additional information about the user such as working experience, educational information, creation date, update date.

```
$createDepartmentInfoTableSQL = "CREATE TABLE IF NOT EXISTS departmentinfo (
    departmentID INT AUTO_INCREMENT PRIMARY KEY,
    departmentName VARCHAR(100) NOT NULL,
    departmentMission TEXT,
    departmentVision TEXT,
    departmentPhysicalLocation TEXT,
    departmentOfficialEmail TEXT,
    departmentOfficialContactNumber TEXT,
    departmentCreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    departmentModifiedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
)";
mysqli_query($conn, $createDepartmentInfoTableSQL);
```

A table named departmentinfo is created to store the information about the departments in the organization, such as id, name, mission, vision, physical location, official email, official contact number, creation date, update date.

```
$createPositionInfoTableSQL = "CREATE TABLE IF NOT EXISTS positioninfo (
    positionID INT AUTO_INCREMENT PRIMARY KEY,
    departmentID INT NOT NULL,
    positionName VARCHAR(100) NOT NULL,
    positionDescription TEXT,
    positionLevel VARCHAR(100) NOT NULL,
    positionStatus ENUM('Vacant', 'Occupied', 'Cancelled') DEFAULT 'Vacant',
    positionCreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    positionModifiedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (departmentID) REFERENCES departmentinfo(departmentID)
)";
mysqli_query($conn, $createPositionInfoTableSQL);
```

A table named positioninfo is created to store the information about each position in a department such as name, description, level, status, creation date and modified date of the position.

```
$createUserCompanyInfoTableSQL = "CREATE TABLE IF NOT EXISTS usercompanyinfo(
    companyID INT AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    positionID INT NOT NULL,
    userActualLevel VARCHAR(100) NOT NULL,
    createdAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (positionID) REFERENCES positioninfo(positionID),
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createUserCompanyInfoTableSQL);
```

A table named usercompanyinfo is used to store the information about the user in the company, such as the position id (user position in the company), actual level, creation date, update date.

```
$createEvaluatorRoleTableSQL = "CREATE TABLE IF NOT EXISTS evaluatorrole (
    evaluatorId INT AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    evaluatorStatus ENUM('active', 'inactive') DEFAULT 'active',
    createdAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createEvaluatorRoleTableSQL);
```

A table named evaluatorrole is created to set privilege of user to access to evaluator dashboard. The user who stored in this table are allows to access to evaluator dashboard if the status is active.

```
$createHrRoleTableSQL = "CREATE TABLE IF NOT EXISTS hrrole (
    hrId INT AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    hrStatus ENUM('active', 'inactive') DEFAULT 'active',
    createdAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createHrRoleTableSQL);
```

A table named hrrole is created to set privilege of user to access to human resource dashboard. The user who stored in this table are allows to access to human resource dashboard if the status is active.

```
$createCompetencyAssessmentTableSQL = "CREATE TABLE IF NOT EXISTS competencyassessment (
    competencyAssessmentId INT UNSIGNED AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    assessmentRubric TEXT,
    selfAssessment TEXT,
    selfAssessmentStatus ENUM('Pending', 'Drafted', 'Submitted') DEFAULT 'Pending',
    evaluatorAssessment TEXT,
    evaluatorId INT(6) UNSIGNED,
    evaluatorAssessmentStatus ENUM('Pending', 'Drafted', 'Submitted') DEFAULT 'Pending',
    verifiedId INT(6) UNSIGNED,
    approvedId INT(6) UNSIGNED,
    decision ENUM('Pending', 'Remain', 'Promote') DEFAULT 'Pending',
    decisionReason TEXT,
    createdBy INT(6) UNSIGNED,
    createdAt DATETIME DEFAULT CURRENT_TIMESTAMP,
    updatedAt DATETIME DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId),
    FOREIGN KEY (evaluatorId) REFERENCES userlogininfo(userId),
    FOREIGN KEY (verifiedId) REFERENCES userlogininfo(userId),
    FOREIGN KEY (approvedId) REFERENCES userlogininfo(userId),
    FOREIGN KEY (createdBy) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createCompetencyAssessmentTableSQL);
```

A table named competencyAssessment is created to store the information about the competency assessment that has been done by the user.

```
$createTalentDevelopmentTableSQL = "CREATE TABLE IF NOT EXISTS talentdevelopment (
    talentDevelopmentId INT AUTO_INCREMENT PRIMARY KEY,
    competencyAssessmentId INT UNSIGNED NOT NULL,
    developmentPlan TEXT,
    createdBy INT(6) UNSIGNED NOT NULL,
    developmentResult TEXT,
    verifiedBy INT(6) UNSIGNED DEFAULT NULL,
    createdAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
    FOREIGN KEY (createdBy) REFERENCES userlogininfo(userId),
    FOREIGN KEY (verifiedBy) REFERENCES userlogininfo(userId),
    FOREIGN KEY (competencyAssessmentId) REFERENCES competencyassessment(competencyAssessmentId)
)";
mysqli_query($conn, $createTalentDevelopmentTableSQL);
```

A table named talentdevelopment is created to store the information about the development of the user.

```
$createTempTalentDevelopmentTableSQL = "CREATE TABLE IF NOT EXISTS temptalentdevelopment (
    tempTalentDevelopmentId INT AUTO_INCREMENT PRIMARY KEY,
    referredTalentDevelopmentId INT NOT NULL,
    tempTalentDevelopmentContent TEXT,
    tempTalentDevelopmentStatus ENUM('Pending','Rejected') DEFAULT 'Pending',
    tempTalentDevelopmentRejectedReason TEXT,
    tempTalentDevelopmentRejectedBy INT(6) UNSIGNED DEFAULT NULL,
    FOREIGN KEY (referredTalentDevelopmentId) REFERENCES talentdevelopment(talentDevelopmentId),
    FOREIGN KEY (tempTalentDevelopmentRejectedBy) REFERENCES userlogininfo(userId)
)";
mysqli_query($conn, $createTempTalentDevelopmentTableSQL);
```

A table named temptalentdevelopment is created to store the temporary record such as talent development application submitted by the user or application that have been rejected by the human resource. Once the application is approved, the related record in this temporary table will be deleted.

```
$createSuccessionPlanningTableSQL = "CREATE TABLE IF NOT EXISTS successionplanning (
    successionPlanningId INT AUTO_INCREMENT PRIMARY KEY,
    userId INT(6) UNSIGNED NOT NULL,
    successionPosition INT NOT NULL,
    successionPlanningDetails TEXT,
    successionPlanningStatus ENUM('drafted', 'submitted') DEFAULT 'drafted',
    handoverStatus ENUM('pending', 'handovered') DEFAULT 'pending',
    FOREIGN KEY (userId) REFERENCES userlogininfo(userId) ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY (successionPosition) REFERENCES positioninfo(positionID) ON DELETE CASCADE ON UPDATE CASCADE
)";
mysqli_query($conn, $createSuccessionPlanningTableSQL);
```

A table named successionplanning is created to store the information about the succession information about the user to replace the assigned position.