

The Development of Tahfiz Integrated Module System

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Abstract

The Tahfiz Integrated Module System was developed to enhance task management and educational monitoring efficiency within Tahfiz institutions, specifically SMKA Putrajaya, under the TMUA program. The current manual system at TMUA suffers from fragmented data storage, a lack of centralized tracking, and minimal communication support between stakeholders, which negatively impacts performance assessment and data integrity. To address these issues, the system was built using a structured Waterfall methodology. The front end of the application was developed using Flutter and Dart within Android Studio, providing a mobile interface tailored for Android devices. For the backend, MySQL database integration was handled through SQLite, supporting centralized and secure data handling. Key modules include personnel registration and login, task and exercise management, analysis reporting, and extracurricular scheduling, all governed by role-based access for admins, teachers, and students. The system was evaluated through alpha and beta testing phases, with 92% User Acceptance Test (UAT) satisfaction indicating that the system effectively meets user expectations. Aligned with Malaysia's Digital Education Policy, the system contributes to digital transformation in Quranic education and improves institutional task administration, data centralization, and teaching outcomes.

1. Introduction

Tahfiz Model Ulul Albab (TMUA) is the initiative taken by the Ministry of Education of Malaysia (KPM) to accomplish the goal of Malaysia's education development plan (PPPM) 2013-2025 in providing high-quality education to equip students with relevant knowledge and skills to succeed in the job market based on strong Islamic values [1]. The idea initiated by the Minister of Education Malaysia II, YB Datuk Seri Idris bin Jusoh was officially implemented at SMK Agama Kuala Lumpur starting on 16 January 2014 with the first intake of 150 students and 15 teachers. TMUA combines the national curriculum, the *Tahfiz* Integrated Curriculum (KBT), and the *Ulul Albab* Program based on the Quranic, Encyclopaedic, and *Ijtihadik* approach. Until 2023, TMUA expanded its implementation to 11 *Sekolah Menengah Kebangsaan Agama* (SMKA) [1].

One of the most significant issues that needs to be addressed in the existing system is the lack of a centralized data system, resulting in a scattered data structure. Currently, students submit physical workbooks to their assigned teachers periodically to monitor Quran memorization and understanding progress. This creates challenges for teachers, as they must collect and analyse data from various unconnected sources without a single repository for all student information. As a result, it becomes difficult to thoroughly assess student performance, monitor development effectively, and provide personalized feedback. These findings highlight the

need to enhance awareness and provide greater encouragement to promote the use of technology-assisted teaching aids effectively.

This project develops an application-based system where students can record the completion of their tasks, manage exercises given by teachers, answer quizzes assigned by teachers, view the progress of their activities, and view the schedule for their extracurricular activities. Teachers could also manage the approval of students to complete each task, quiz, and exercise given to them, and analyse students' performances through the system. Admin is responsible for registering personnel into the system, maintaining system functionality, implementing updates, and ensuring data security. Table 1 describes the module used in the system development.

Table 1 The modules involve in the application

Application module	Description
Authentication module	In this module, personnel, including students and teachers, will be registered into the system by the admin. The personnel registration details include email, password, and personnel details. Personnel need to be registered to gain access to the system. This module also prompts personnel to enter their email and password to log into their account. Personnel could not access the application if not registered by the admin.
Marking and Assignment module	This module allows students and teachers to manage student exercises and task completion. It also allows teachers to evaluate student performance. Students are required to complete exercises, tasks, and quizzes, while the teacher is responsible for evaluating the materials. Students could: 1. Upload, delete, and edit exercise, 2. Answer the quiz given by the teacher, and 3. Update task completion. The teacher could: 1. Evaluate the exercise uploaded by the student. 2. Assign quizzes to students, and 3. Review tasks completed by the student.
Analysis report module	Through this model, a summarization of student progress is based on: 1. Overall student performance, and 2. Individual student performance is displayed. This model helps teachers in presenting their students' performance to the principal and parents.
Extra-curricular scheduling module	Students and teachers can view the scheduling through a calendar-type display where only the teacher can edit the content of the calendar by entering curricular specifications. With this, the teacher could structure the lesson plan more efficiently.

2. Literature Review

The TMUA program consists of two tahfiz subjects and other extra-curricular activities (i.e. horse riding, archery, and swimming) embedded in the TMUA curriculum. One of the two additional subjects is hifz Quran, which requires students to memorize all 30 juz' of the Quran in a range of five years of secondary school term under the supervision of a TMUA teacher who owns a government-accredited tahfiz certificate. According to him, the subject involves writing new verses that will be memorized or tahriri (exercise), reciting memorized verses in front of a TMUA teacher or tasmik (task 1), reciting and understanding verses of fiqh al-ayat (task 2), and repeating memorized verses or murajaah (task 3). Upon completing tasks, quizzes, and exercises, TMUA teachers need to analyze students' data and make a report of students' progress annually. Fig. 1 shows the as-is use case of the existing manual approach [2].

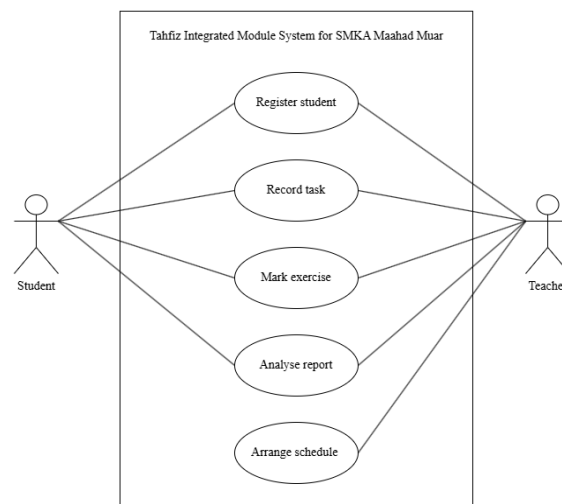


Fig 1 As-is use case of the existing manual approach

2.1 Literature Review

The Tahfiz Integrated Module System is a centralized digital platform designed to modernize and enhance the educational processes of the Tahfiz Model Ulul Albab (TMUA) program. This system aims to address the limitations of the existing manual processes, including fragmented data management, inefficiency, and lack of analytics, by providing an intuitive and user-friendly interface for students, teachers, and administrators. The *Tahfiz* Integrated Module System introduces several advanced features to address the limitations of the current manual processes. The Authentication Module enables administrators to register students and teachers securely, with role-based access ensuring that only authorized users can access specific features. Complementing this, this module also provides a secure login system with multi-level access and session management, creating a personalized and safe user experience. The Marking and Assignments module serves as the core of the system, allowing students to record task completions, upload exercises, and access quizzes while enabling teachers to assign quizzes, evaluate exercises, and approve task completions efficiently. The system's analysis report module enhances decision-making, providing real-time progress tracking and customizable performance reports, enabling teachers to identify trends and focus on areas that need improvement. Additionally, the extra-curricular scheduling module offers a calendar-based interface for managing activities, with teachers having the ability to create and update schedules, which are instantly visible to students. Lastly, the communication module enables students and teachers to receive notifications regarding updates that occur in the system.

2.2 Comparison between Reviewed Applications with the Proposed Application

To identify and evaluate current gaps in existing applications related to Quranic memorization and Islamic education management, three mobile applications were reviewed: MyTadika by Yayasan Pahang, BeHafizh by Gudeg Barakah, and Hafalan Quran by Tim Anak Saleh. These systems were analyzed and compared with the proposed Tahfiz Integrated Module System. The analysis considers their intended users, task management capabilities, progress reporting, user interaction, and educational alignment.

2.2.1 MyTadika

MyTadika is an application developed to support early childhood Islamic education, focusing primarily on preschoolers, their parents, and teachers. It provides features such as learning modules, assessments, and basic communication tools. While effective in its domain, it lacks scalability and robustness for secondary-level Tahfiz programs. It does not support centralized data handling or task-specific Quranic memorization modules such as tahriri or tasmik, making it unsuitable for institutional TMUA-level applications [4].

2.2.2 BeHafizh

BeHafizh is designed for individual Quranic memorization with motivational and gamified elements. It is user-friendly and includes features such as reminders and self-tracking progress. However, it lacks educational structure, role-based access, and integration with school-level administration. There is no teacher-student interaction or centralized system to handle curriculum-specific requirements or schedule management, making it inadequate for the formal TMUA environment [5].

2.2.3 Hafalan Quran

Hafalan Quran targets general users seeking personal memorization support. Its simplistic interface supports individual tracking but lacks teacher supervision, institutional scheduling, and reporting capabilities. It does not offer role-based access or align with national education policies, which limits its use in school-based programs such as TMUA [6].

2.2.4 Proposed Tahfiz Integrated Module System

The proposed Tahfiz Integrated Module System addresses the limitations of the aforementioned applications by providing centralized task management, role-based access for Admin, Teachers, and Students, and alignment with the Digital Education Policy of Malaysia. It integrates Quranic memorization tracking (tahriri, tasmik, murajaah, fiqh al-ayat), task uploads, real-time analytics, and extracurricular scheduling. This system is tailored specifically for institutional use, especially in SMKA under the TMUA initiative.

Table 2 Comparison table between reviewed applications with the Proposed application

Application Features	MyTadika [4]	BeHafizh [5]	Hafalan Quran [6]	Tahfiz Integrated Module System
Target Audience	Preschoolers, parents, and teachers in early childhood education	Individuals aiming to memorize the Quran	For general users, focusing on individuals without institutional settings.	Teachers and students in TMUA programs at secondary schools.
Task Management function	/	/	x	/
Progress Reporting feature	/	x	/	/
Student-Teacher Interaction	x	x	x	/
Extra-curricular Scheduling	x	x	x	/
Quizzes feature	/	x	/	/
System Accessibility	/	x	x	/
Centralized Database	/	x	x	/
Educational Alignment	Focuses on early childhood development aligned with the Malaysian preschool curriculum.	Aims to assist users in memorizing the Quran at their own pace, focusing on personal goals.	Helps general users memorize the Quran without institutional or personal goals.	Strong alignment with TMUA objectives, focusing on Quranic, academic, and critical skills development.
Strengths	Ideal for preschool education with emphasis on parent-teacher collaboration.	User-friendly for individual Quran memorization with engaging reminders and progress tracking.	Simplistic design ideal for beginners or casual users focusing solely on memorization.	Tailored for institutional use, integrates Quranic memorization with academics and extra-curriculars.

Table 2 shows a structured comparison that highlights the strengths and limitations of existing systems while emphasizing the unique capability of the proposed application to support Quranic education in a formal institutional setting.

3. Methodology

Methodology is a set of steps that can be created and applied at a specific occasion. In developing a project, these steps may be a set of strategies and activities that help in planning and executing a project. It could also be in the shape of specific approaches, templates, forms, and even checklists used during the project lifecycle. In a formal project, methodology will assist the team members throughout the project's lifecycle, and all team members need to be familiar with the project methodology [3].

The Waterfall method is a suitable choice for developing the Tahfiz Integrated Module System due to its structured and sequential approach, which aligns with the system's requirements and complexity. The system has well-defined functionalities for Admin, Teacher, and Student roles, such as managing tasks, exercises, quizzes, and schedules, as well as tracking progress. These requirements are clear and unlikely to change significantly during development, making the linear Waterfall model ideal. The requirement analysis phase in the Waterfall method ensures comprehensive documentation of functional and non-functional requirements, which is critical for a system that integrates multiple user roles and databases. The method's emphasis on completing each phase (e.g., analysis, design, implementation, testing, and deployment) before moving to the next ensures a systematic approach to development, reducing the likelihood of errors or incomplete features. Additionally, the detailed design phase, including UML diagrams, database diagrams, and user interface design, aligns well with the Waterfall model's focus on upfront planning. Given that the system is intended for institutional use, with specific goals like aligning with Malaysia's Digital Education Policy, the Waterfall method provides the necessary structure and predictability to meet these goals effectively. The rigorous testing phase ensures that all functionalities work as expected before deployment, minimizing risks and ensuring reliability in a system critical for managing educational activities. The Waterfall model's clear milestones and deliverables also facilitate effective communication with stakeholders, ensuring the final product meets their expectations.

3.1 System Requirements Analysis

The Waterfall Development Model is a structured, sequential approach where each phase of the project must be completed before the next phase begins. Table 3 shows the task and output of each phase.

Table 3 Functional requirements for the development application

Phase	Task	Output
Requirement Analysis	-Gather functional and non-functional requirements from stakeholders. -Identify system goals. -Analyze user needs using surveys and questionnaires. -Define system scope and limitations.	-Requirement Specification. User description of how users interact with the existing system. -Use Case Model -Class Diagram
Design	- Create system architecture and define module interactions. -Design database schema. -Develop a wireframe for the application interface. -Specify technical design elements, including software and hardware specifications.	-System design specification, detailed architectural and database design. - UI/UX prototypes.
Implementation	-Develop the application modules. -Code the backend for database connectivity and business logic. -Build the front end of the application. -Conduct internal code reviews and integrate feedback.	-Application Source Code. Integrated modules.
Testing	-Perform unit testing for individual modules. -Conduct automated UI testing for front end validation. -Execute integration testing. -Carry out alpha testing. -Gather user feedback in beta testing.	-Test cases. -Reports covering application's functionality, usability and performance.
Maintenance	-Monitor system performance and address user feedback. -Fix bugs and release updates. -Optimize features for improved usability and scalability. -Plan for system upgrades aligned with future requirements.	-Bug tracking logs. -Maintenance logs. -System updates.

Table 4 describes how the system should perform and address the quality attributes expected of the *Tahfiz* Integrated Module System.

Table 4 describes what the system should do, which is expected of the *Tahfiz* Integrated Module System.

Participant	Role in Product	User Requirement
Admin	-Register Personnel: Adding new users to the system, including students and teachers, and assigning appropriate roles. -List Personnel: Viewing a list of all registered users for management and oversight.	-The system must allow the admin to register new personnel (students and teachers). -The admin must be able to view a list of all registered personnel.

Student	-Log in: Accessing their account using credentials. -Record tasks: Submitting tasks for approval by teachers. -Manage Exercises: Uploading, deleting, and printing exercises for study and evaluation. -Completing quizzes assigned by teachers to assess their understanding. -View progress: Tracking their academic performance and understanding areas of improvement. -View schedules: Access their schedules to stay organized with lessons, tasks, and deadlines.	-Students must be able to log in using their credentials. -Students should be able to record tasks and submit them for approval. -The system must allow students to upload, delete, and print exercises. -Students must be able to answer quizzes and submit their responses. -Students should be able to view their academic progress and schedules.
Teacher	-Approving tasks: Reviewing and approving or rejecting tasks submitted by students. -Mark Exercises: Evaluating student exercises and providing feedback or grades. -Manage Quizzes: Creating, updating, and deleting quizzes for student assessment. -Manage Schedules: Creating and modifying schedules to organize lessons, exams, or other activities. -View Schedules: Accessing and managing the schedules assigned to students. -Monitor Progress: Viewing students' progress and performance to identify areas needing improvement.	-Teachers must be able to log in to access their accounts. -Teachers should be able to approve or reject student tasks. -The system must allow teachers to mark and evaluate exercises. -Teachers should be able to create, update, and delete quizzes. -Teachers must be able to manage schedules, including creating, updating, and deleting entries. -Teachers should be able to view their schedules.

3.2 Use Case Diagram

The *Tahfiz* Integrated Module system is designed to streamline administrative, educational, and task management processes involving three primary actors: Admin, Student, and Teacher. The admin is responsible for registering new personnel (student and teacher) and listing all registered personnel for oversight and organization. The students interact with the system to manage their learning activities. They can log in the system, record tasks for self-management, upload and delete exercises, print exercises for review, answer quizzes to assess learning, and view their progress and schedule for better planning and tracking of their co-curricular activities. The Teacher, on the other hand, has a more supervisory and interactive role. They can log in to manage their responsibilities, approve students' tasks, mark exercises, and print exercises for evaluation. Teachers are also involved in managing quizzes and schedules; they can insert, delete, and update quizzes and schedules as needed. Additionally, teachers can display schedules to ensure alignment with teaching plans and student learning activities. This integrated system enables seamless coordination between Admins, Students, and Teachers, ensuring an efficient and effective learning environment. The use case for the developed application is described in Fig. 2.



Fig 2 Use-case Diagram for *Tahfiz* Integrated Module System

3.3 Class Diagram

Figure 3 shows the class diagram of the *Tahfiz* Integrated Module System. This class diagram describe the relationship between objects in the system architecture.

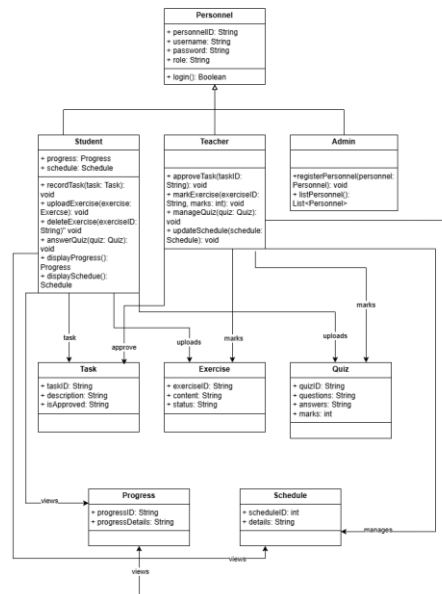


Fig 3 The *tahfiz* integrated module system class diagram

4. Results and Discussion

This section will present the design of the system and the implementation of the developed system, which was developed using the Dart language, Flutter Framework, Android Studio, Visual Studio Code and SQLite.

4.1 System Interface

4.1.1 Register and Sign In Interface

Fig 4 to Fig 7 show the interface and code segments for the Register module, which is available only to admins. Fig 4 mainly shows the admin interface where the admin can register a new teacher, while Fig 5 is for registering a new student, and Fig 6 is for registering a new admin. This register action happens when the admin logs into the system and navigates to the register user page through the bottom navigation bar to the Add page.

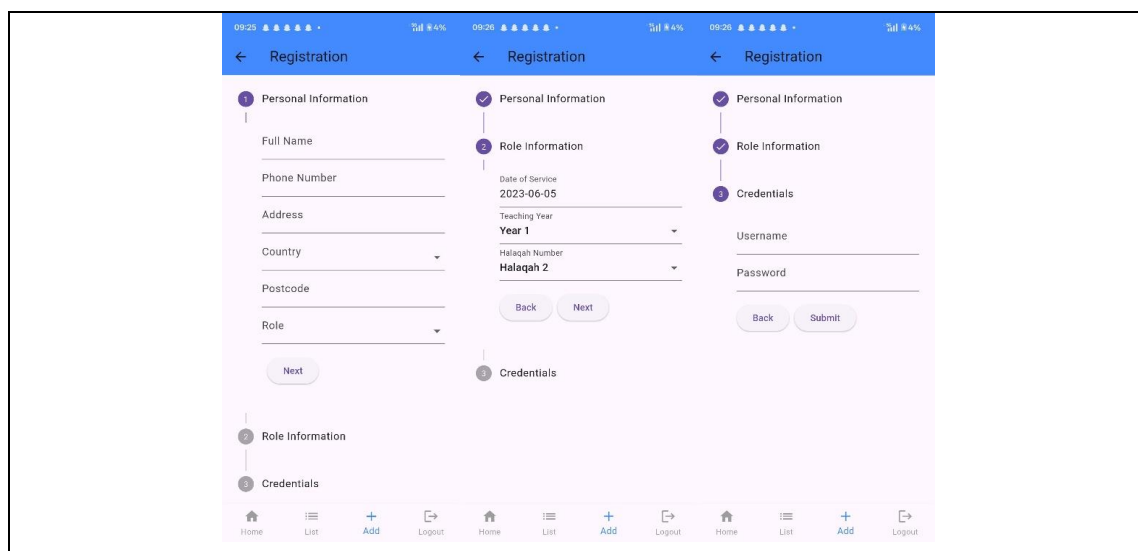


Fig 4 Teacher Register

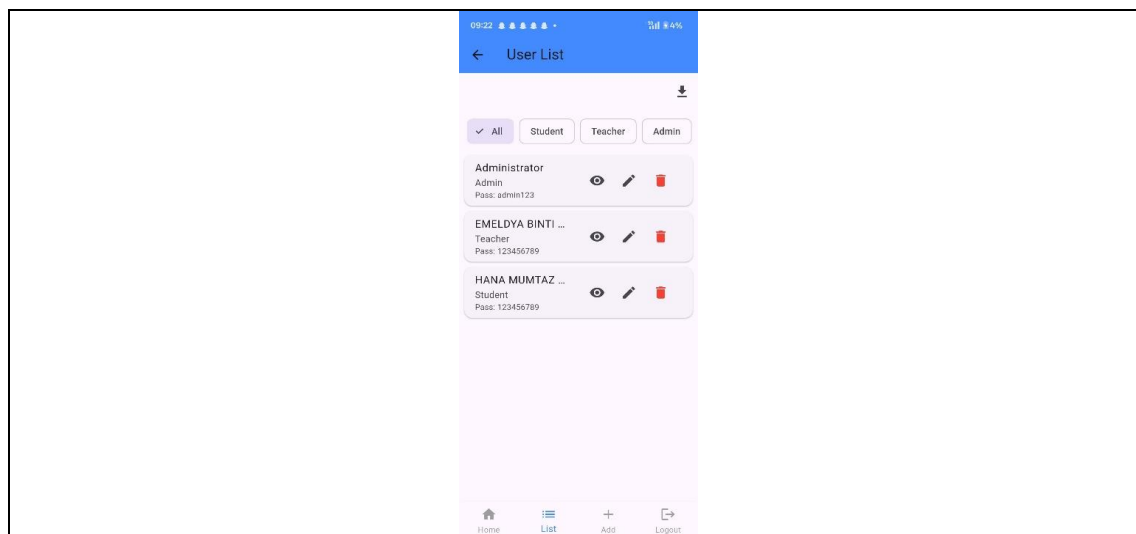
Fig 5 Student Register

Fig 6 Admin Register

Fig 7 shows the login interface for the registered user. Here, the user is required to input their username and password. If the credentials are correct, the user will be directed to use homepage according to their role.

Fig 7 Login Page

Fig 8 shows the list of users that have been registered into the system. This function allows the admin to view users by role and also download the list of users into an .xlsx file to allow the admin to provide a list of usernames and passwords, and also user details to the school management. It also allows admins to edit or update user information when needed.

**Fig 8 User List Page**

4.1.2 Manage Task Interface

Fig 9 to 10 shows the interface and code segments for the Marking and Assignment module, which is available to teachers and students. Fig 9 mainly shows the teacher interface to manage exercise while Figure 10 is the interface for students to manage exercise. This exercise function can be accessed when the teacher and student log into the system and navigate to the Exercise page through the bottom navigation bar.

Fig 9 shows the interface for students to manage exercises. Upon clicking the camera icon on the bottom right side of the page, permission to access the device camera will appear. Then, after clicking the allow button, the system will access the camera function to take a picture of the exercise. After taking a picture, the system will prompt for input of exercise details. Upon clicking the save button, the exercise details will be stored in the database, and the exercise details will be displayed in a tab list according to their page number. On this page, students can click on the three-dot button to view the picture in the form of a PDF or delete the exercise. Students can also export the overall exercises uploaded in one PDF by clicking the PDF icon at the top right of the page.

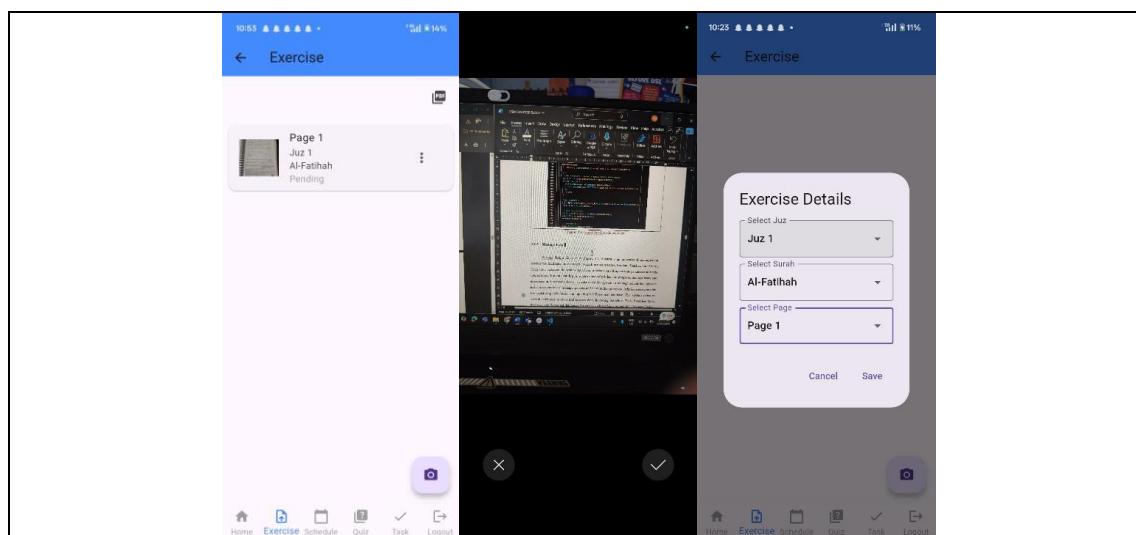
**Fig 9 Student Manage Exercise Page**

Fig 10 shows the interface for the teacher to manage exercises. To view the student's exercise, the teacher needs to select the student from the select student drop-down. After that, the student's exercise detail list will appear. From this page, the teacher can change the status of the exercise using the action dropdown at the

exercise tab. Same as a student, the teacher could also export the overall exercises uploaded in one PDF by clicking the PDF icon at the top right page. Other than that, the teacher could also mark the student's exercise by clicking on the exercise tab. After clicking the tab, the teacher will be directed to the mark exercise page. From the mark exercise page, the status of the exercise can be changed. After saving the marked exercise, the marked exercise will be returned to students, replacing the original exercise that students have submitted.

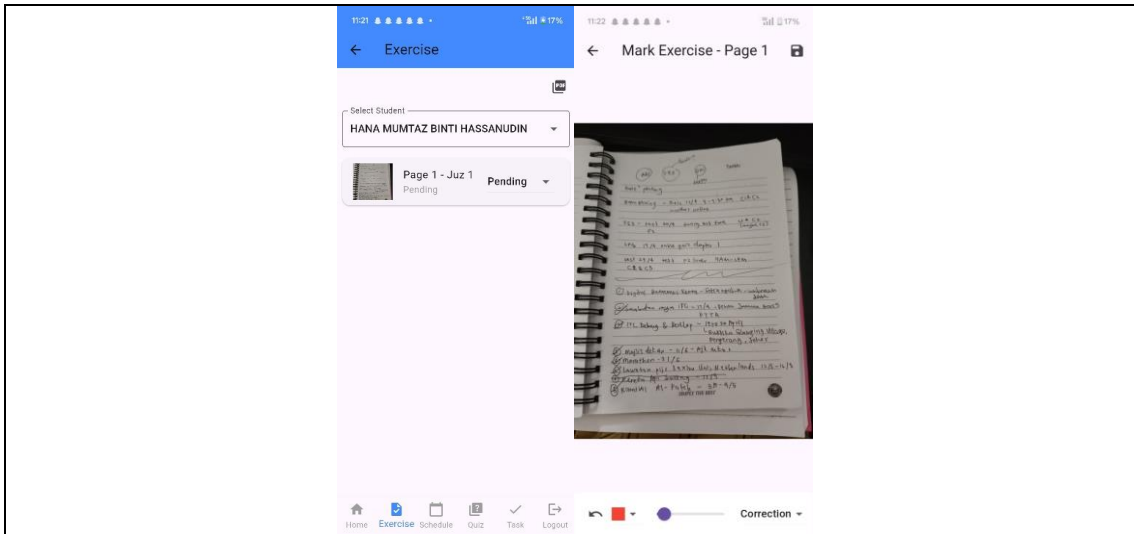


Fig 10 Teacher Manage Exercise Page

4.1.3 Manage Schedule Interface

Fig 11 to 12 shows the interface and code segments for the Extra-Curricular Scheduling Module, which is available to teachers and students. Fig 11 mainly shows the teacher interface where the admin can add new events and view the created events by clicking the date marked with an event, while Fig 12 displays events for the student interface. In this module, only teachers are able to create new events on the calendar. The creating event function can be accessed by clicking the pop-up button at the bottom right of the page. Upon successfully creating an event, the date of the event will be marked with a red marker. If a date is selected, the event details will appear below the calendar in tab form.

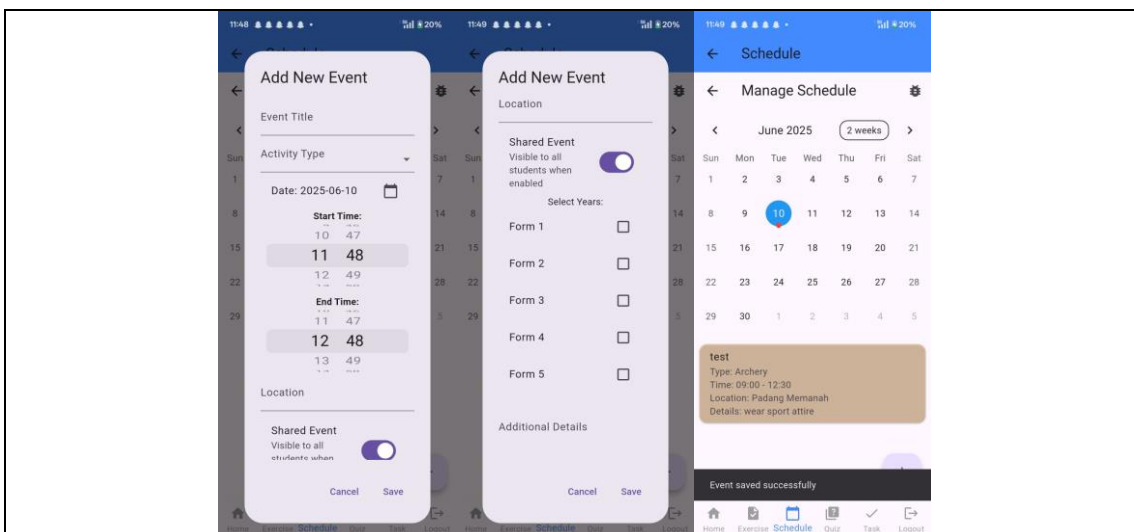


Fig 11 Teacher Scheduling Page

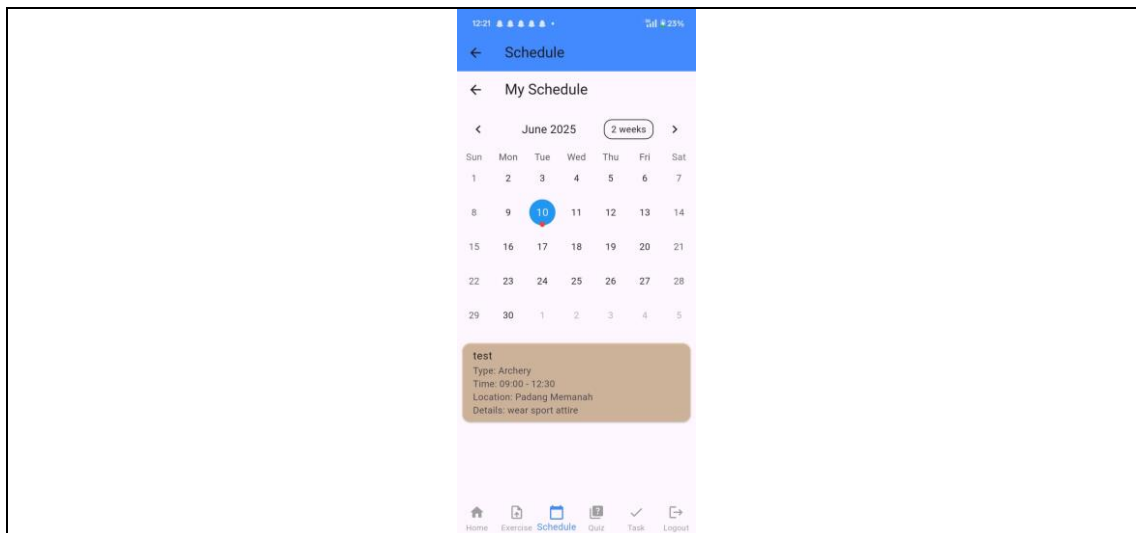


Fig 12 Teacher Scheduling Page

4.1.4 Manage Task Interface

Fig 13 to 14 shows the interface and code segments for the Marking and Assignment module, which is available to teacher and student. Fig 13 mainly shows the student interface to manage tasks while Fig 14 is the interface for the teacher to manage tasks. This task function can be accessed when the teacher and student log into the system and navigate to the Task page through the bottom navigation bar.

Fig 13 shows the interface for students to manage exercises. Upon clicking the add icon on the bottom right side of the page, the student is directed to a create task page. After input of exercise details. Upon clicking the save task button, the task details will be stored in the database, and the task details will be displayed in the tab list according to their page number. On this page, students can click on the three-dot button to filter the list to view the overall task list or to view only pending tasks.

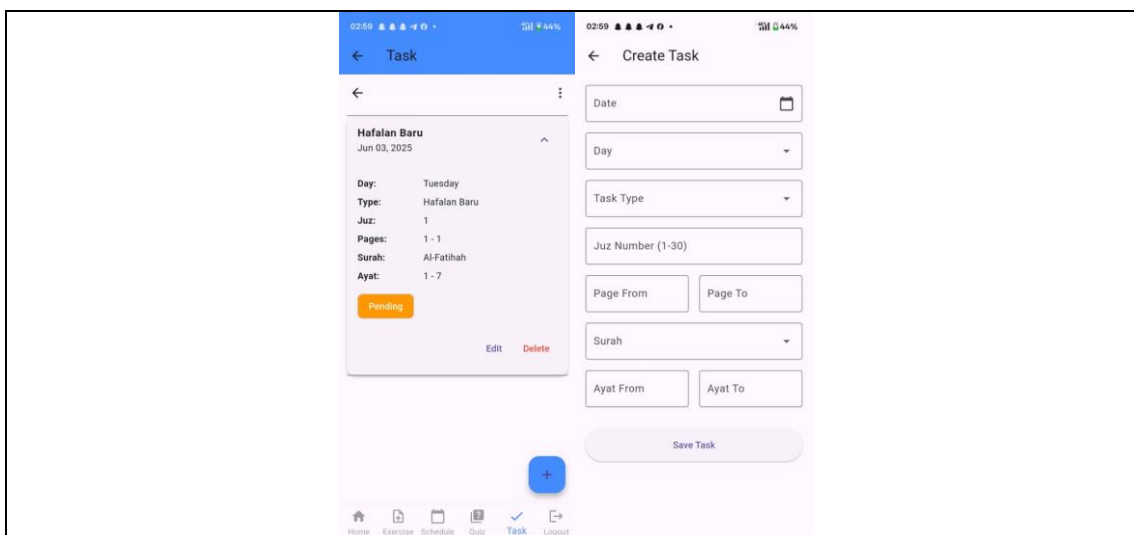


Fig 13 Student Task Page

Fig 14 shows the interface for teacher to manage exercises. Upon selecting a student from the select student dropdown, the selected student's list of tasks will appear in the teacher task page. The teacher can view the details of the task, assign a mark for the task, write feedback regarding the task, and approve the task.

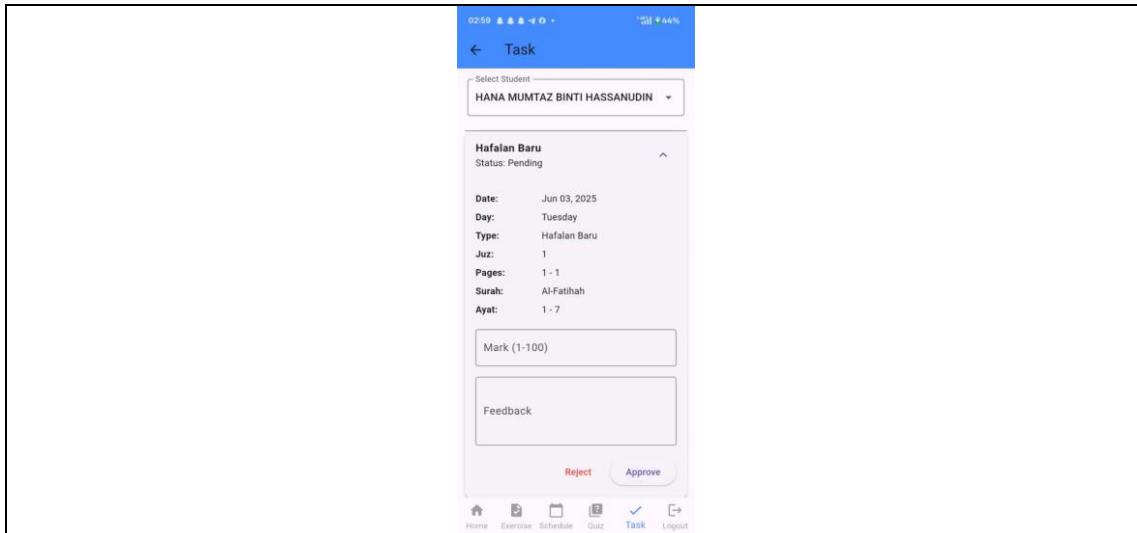


Fig 14 Teacher Task Page

4.1.5 Student Progress Interface

The progress functionality in the system utilizes data from the tasks table to visually represent a student's memorization journey through dynamic charts and statistics. Each task entry records details such as the type (e.g., Hifz, Murajaah), status (Approved, Pending, Rejected), Juz, Surah, Ayat range, and submission date. This data is aggregated and categorized to compute performance metrics, such as the number of approved tasks per type, total completed tasks, and progress distribution across Quranic sections. These statistics are displayed in summary cards and visualized using bar charts and pie charts, helping students and teachers easily understand areas of strength and those needing improvement.

For teachers, the progress page offers additional capabilities to analyze and compare student performance over time. By selecting a specific student, the system fetches and processes all related task entries, filters them by status, and compiles meaningful insights such as the volume of each task type completed and their approval rates. The charts provide a quick visual overview of learning patterns, while the statistics reinforce detailed tracking of Quranic memorization. This data-driven approach enhances transparency, motivates students, and aids teachers in making informed pedagogical decisions based on each student's individualized learning history.

4.2 Testing

In this section, the system the test cases of the websites are created to ensure all the functionality is developed according to the requirements. User Acceptance Testing (UAT) was conducted with key stakeholders at SMKA Putrajaya, including teachers and students. Table 5 shows the test cases of the system.

Table 5 List of Test Cases

Case ID	Description	Actual Result
TC_100_01	Admin registers a new teacher via the Register interface.	Teacher details are saved in the database, and a confirmation message appears.
TC_100_02	Admin registers a new student via the Register interface.	Student details are saved, and a teacher-student relationship is established if applicable.
TC_100_03	Admin exports the user list to an Excel file.	An Excel file is generated and saved with all user details.
TC_101_01	Student logs in with valid credentials.	Student is redirected to the Student homepage.
TC_101_02	Teacher logs in with valid credentials.	Teacher is redirected to the Teacher homepage.
TC_101_03	Admin logs in with valid credentials.	Admin is redirected to the Admin homepage.
TC_102_01	Student uploads an exercise (image + details) via the Exercise module.	Exercise is saved to the database, and the list updates.
TC_102_02	Teacher marks a student's exercise and updates the status.	Marked exercise replaces the original, and the status is updated.
TC_102_03	Student exports their exercises as a	A PDF file is generated with all exercise

TC_103_01	PDF. Teacher creates a new event in the Extra-Curricular Scheduling module.	details. Event is saved, and the date is marked on the calendar.
TC_103_02	Student views their schedule for a selected date.	Events for the selected date are displayed.
TC_104_01	Student creates a new task (Hifz/Murajaah) via the Task module.	Task is saved with "Pending" status.
TC_104_02	Teacher approves/rejects a student's task and provides feedback.	Task status and feedback are updated in the database.
TC_105_01	Student views their progress statistics (charts and metrics).	Progress data is displayed correctly based on completed tasks.
TC_105_02	Teacher compares progress metrics for multiple students.	Charts and statistics are generated for selected students.
TC_106_01	Admin edits an existing user's details.	Updated details are saved to the database.
TC_106_02	Admin deletes a user from the system.	User is removed from the database, and the list updates.

User acceptance testing (UAT) was conducted by students and teachers of SMKA Putrajaya. Overall, the testing was successfully completed, indicating the system meets users' expectations and requirements. The UAT was carried out through an online platform using Google Forms. A total of 15 questions were presented to assess the user's perception, usability experience, and overall satisfaction with the system, as presented in the Appendix. The summary of the user acceptance testing is shown in Table 6.

Table 6 Summary of User Acceptance Testing

Question	Answer
What is your role?	1. Student – 13 people 2. Teacher – 6 people
How easy was it to register/login to the system?	1. Very Easy – 17 people 2. Easy – 2 people 3. Neutral - 0 4. Difficult – 0
How secure do you feel the login process is?	5. Very Difficult - 0 1. Very Secure – 18 people 2. Secure – 1 people 3. Neutral - 0 4. Insecure - 0
Were you able to upload an exercise (image + details) successfully?	1. Yes – 19 people 2. No - 0
How intuitive was the process of marking exercises (for teachers)?	1. Very Intuitive – 9 people 2. Intuitive – 4 people 3. Neutral – 1 people 4. Confusing - 0
Were you able to view/edit/delete exercises without errors?	1. Yes – 19 people 2. No – 0
Did the calendar display events correctly on the schedule page?	1. Yes – 19 people 2. No - 0
Were you able to create/view events in the Scheduling module?	1. Yes – 19 people 2. No – 0
How useful is the event reminder feature?	1. Very Useful – 11 people 2. Useful – 5 people 3. Neutral – 2 people 4. Not Useful – 0

Satisfy with Task Management	5. Never Used – 1 people 1. Very Satisfied – 14 people 2. Satisfied – 5 people 3. Neutral – 0 4. Dissatisfied – 0
How satisfied are you with the system's loading speed?	1. Very Satisfied – 11 people 2. Satisfied – 6 people 3. Neutral – 1 people 4. Dissatisfied – 1 people 5. Very Dissatisfied - 0
Overall Usability Rating	1. Excellent – 15 people 2. Good – 3 people 3. Average – 1 people 4. Poor – 0 5. Very Poor - 0
Rate the clarity of the system's navigation menu.	1. Excellent – 16 people 2. Good – 2 people 3. Average - 1 people 4. Poor – 0 5. Very Poor – 0
Were the icons/buttons self-explanatory in navigation?	1. Yes – 19 people 2. No – 0
Are there any improvement needed to be made? What is the improvement needed?	1. No 2. I think maybe you can include the maharat al-quran flash card for register. 3. Yes, can make it in computer 4. Nothingg 5. Yes 6. Can add chat with teacher 7. Nothing girl 8. Maybe make website? 9. Change the color 10. All great

5. Conclusion

In conclusion, the progress functionality of the Tahfiz Integrated Module System effectively transforms raw task data into insightful, visual representations that support both learning and teaching processes. By utilizing the tasks table as the primary data source, the system captures each student's Quranic memorization activities—including Hifz, Murajaah, and other task types—along with statuses and timestamps. This data is then analyzed to generate real-time charts and statistical summaries that reflect a student's progress, highlight learning trends, and identify areas needing improvement. The result is a clear, actionable overview of each student's academic journey, presented through intuitive graphs and metric cards.

This approach empowers students to monitor their own development while giving teachers a robust tool to evaluate performance, compare student outcomes, and tailor feedback. The integration of progress visualization into the system not only increases transparency but also encourages accountability and continuous improvement. Ultimately, the progress feature supports the TMUA program's mission to combine religious and academic excellence, leveraging technology to enhance traditional Tahfiz education with structured performance tracking and data-driven pedagogy.

Acknowledgement

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

*The authors confirm contribution to the paper as follows: **study conception and design:** Hana Mumtaz Binti Hassanudin, Nur Ariffin Mohd Zin; **data collection:** Hana Mumtaz Binti Hassanudin; **analysis and interpretation of results:** Hana Mumtaz Binti Hassanudin, Nur Ariffin Mohd Zin; **draft manuscript preparation:** Hana Mumtaz Binti Hassanudin, Nur Ariffin Mohd Zin. All authors reviewed the results and approved the final version of the manuscript.*

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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Appendix:

E.1 A User Acceptance Testing (UAT) for Tahfiz Integrated Module System in teacher's and student's perspective.

This UAT has been conducted via a Google Form, which consists of 16 questions. The questionnaire has been divided into two parts, which are the role of the respondent and functionality experience in using the Tahfiz Integrated Module System. The Google Form can be accessed through the link: <https://forms.gle/8ci9BxUkNYyx9kq28>

Section A: Role of Respondent

Question 1: What is your role?

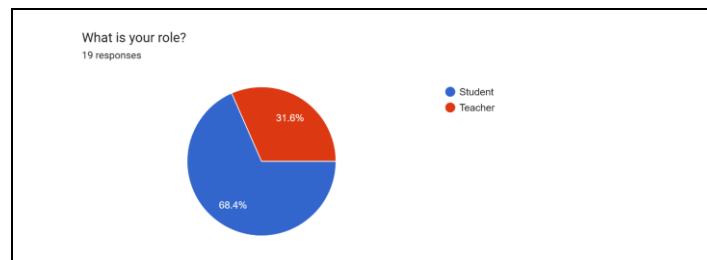


Figure E.1: Role of Respondent

Figure E.1 shows the role of the respondent. There are 68.4% student which is equal to 13 students and the other 31.6% are teacher which is equal with 6 students.

Section B: Functionality

Question 2: How easy was it to register/login to the system?

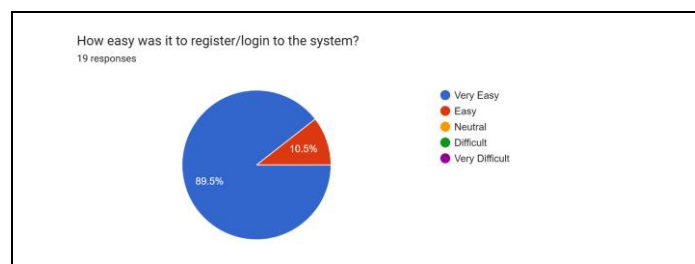


Figure E.2: Login Review

Figure E.2 shows the Login functionality review. There are five options ranging from easy: Very Easy, Easy, Neutral, Difficult, and Very Difficult. 89.5%, which equals 17 respondents, who chose Very Easy, while another 10.5% of the respondents chose Easy.

Question 3: How secure do you feel the login process is?

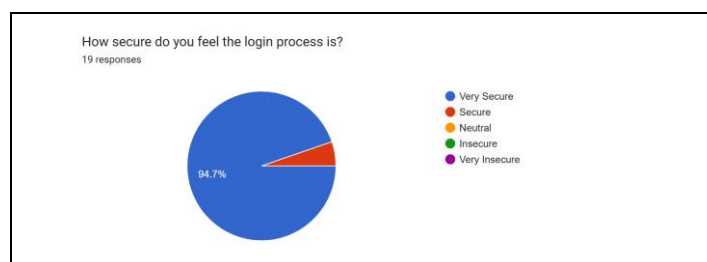


Figure E.3: Login Secure Review

Figure E.3 shows the login security review of the respondent. Like the previous question, this question provides five options ranging from security: Very Secure, Secure, Neutral, Insecure, and Very Insecure. 94.7% of respondents, which is equal to 18 respondents, chose Very Secure while the other respondents chose Secure.

Question 4: Were you able to upload an exercise (image + details) successfully?

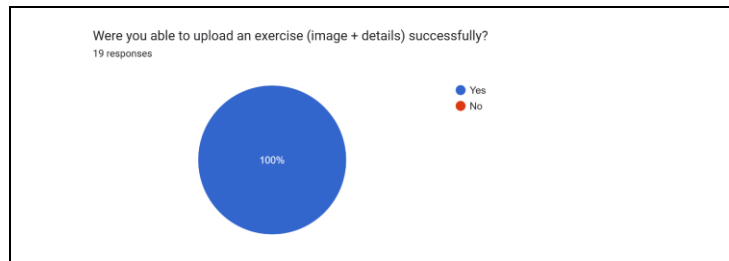


Figure E.4: Exercise Review

Figure E.5 shows the exercise review for the system. The question is a polar question with two answer options, which are yes and no. 100% of the respondent chose yes.

Question 5: How intuitive was the process of marking exercises (for teachers)?

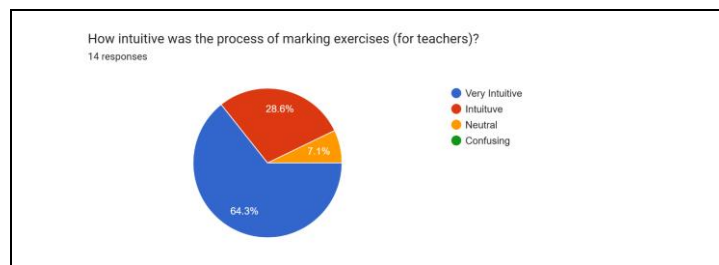


Figure E.5: Marking Exercise Review

Figure E.5 shows the result of the marking exercise review. Even though the question has been specifically required to answer, a number of eight students have answered it too, considering there are only six teachers from the overall respondents. The question offers four options ranging from intuitivity: Very Intuitive, Intuitive, Neutral, and Confusing. 64.3%, which are 9 respondents, chose Very Intuitive, 28.6%, which are 4 respondents, chose Intuitive, while the remaining 7.1% respondent, chose Neutral.

Question 6: Were you able to view/edit/delete exercises without errors?

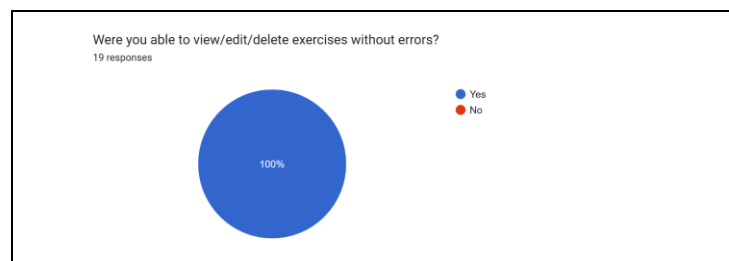


Figure E.6: View/edit/delete exercises review

Figure E.6 shows the view/edit/delete exercises review. The question is a polar question where there are two possible answers: yes or no. 100% of the respondents answered yes.

Question 7: Did the calendar display events correctly in schedule page?

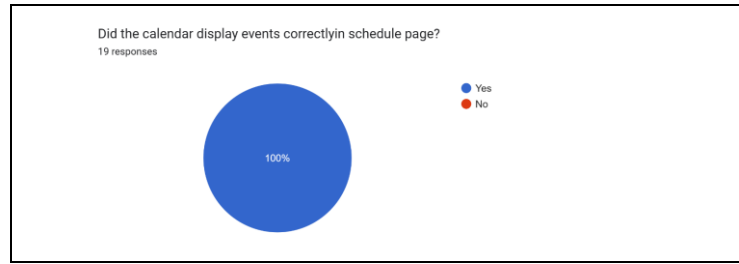


Figure E.7: Display Event Review

Figure E.7 shows the view/edit/delete exercises review. The question is a polar question where there are two possible answers: yes or no. 100% of the respondents answered yes.

Question 8: Were you able to create/view events in the Scheduling module?

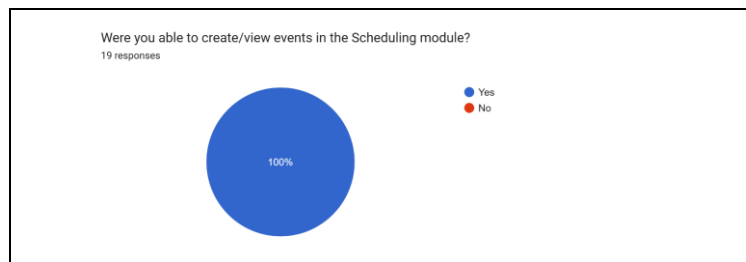


Figure E.8: create/view events review

Figure E.8 shows the view/edit/delete exercises review. The question is a polar question where there are two possible answers: yes or no. 100% of the respondents answered yes.

Question 9: How useful is the event reminder feature?

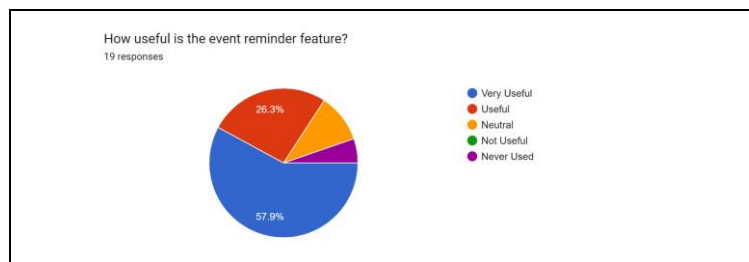


Figure E.9: event reminder review

Figure E.9 shows event reminder review. There are five options ranging from usefulness: Very Useful, Useful, Neutral, Not Useful, and Never Used. 57.9% of respondents, which is equal to 11 respondents, chose Very Useful, 26.3% of respondents equal to 5 respondents chose Useful, 10.5% of respondents equal to 2 respondents chose Neutral, 5.3% of respondents equal to 1 respondent chose Not Useful, and 0% of respondents chose Never Used.

Question 10: Satisfied with Task Management

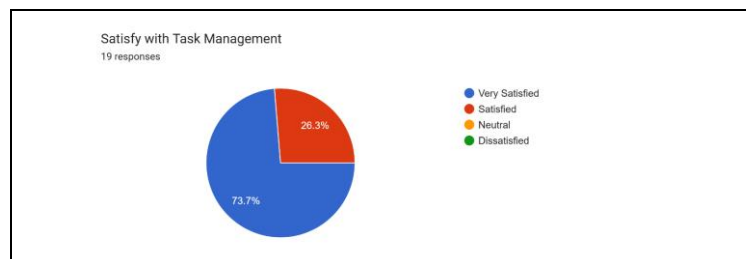


Figure E.10: Task Management Review

Figure E.10 shows the task management review. There are four options, ranging from satisfaction: Very Satisfies, Satisfied, Neutral, and Dissatisfied. 73.7% of the respondents, equal to 14 respondents, chose Very Satisfied, and another 26.3% of the respondents, equal to 5 respondents chose Satisfied.

Question 11: How satisfied are you with the system's loading speed?

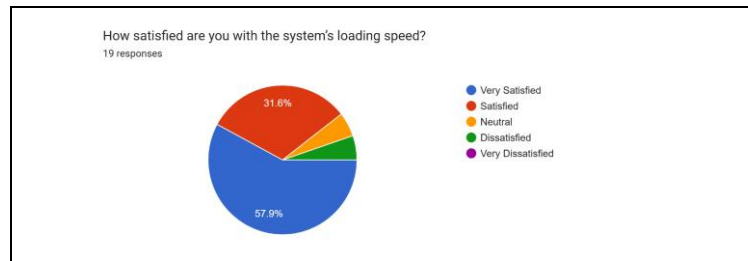


Figure E.11: System Loading Review

Figure E.11 shows the system loading review. There are five options, ranging from satisfaction: Very Satisfies, Satisfied, Neutral, Dissatisfied, and Very Dissatisfied. 57.9% of the respondents, equal to 11 respondents, chose Very Satisfied, 31.6% of the respondents, equal to 6 respondents, chose Satisfied, 5.3% of the respondents, equal to 1 respondent, chose Neutral, and another 5.3% of the respondents, equal to 1 respondent, chose Dissatisfied.

Question 12: Overall Usability Rating

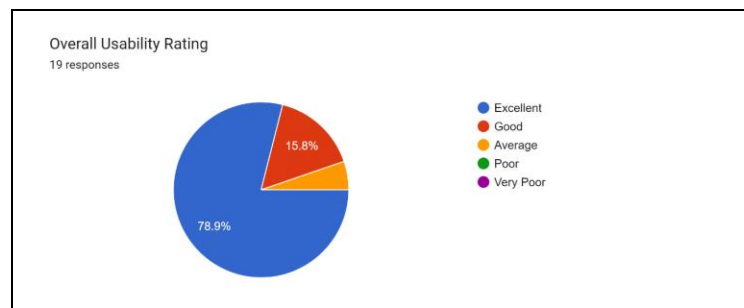


Figure E.12: Usability Review

Figure E.12 shows the usability review. There are five options, ranging from excellent to Very Poor. 78.9% respondents, which equals 15 respondents, chose Excellent, 15.8% of respondents, which equals 3 respondents, answered Good, while another one respondent answered Average.

Question 13: Rate the clarity of the system's navigation menu.

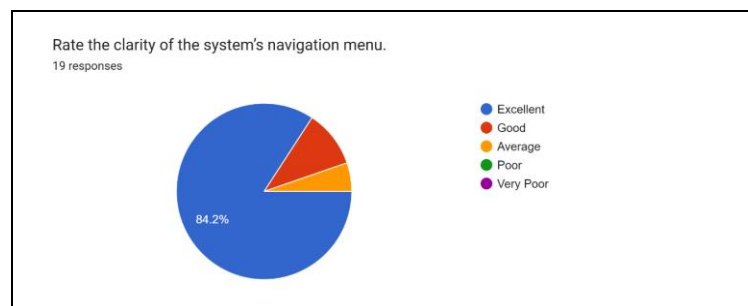


Figure E.13: Navigation Review

Figure E.13 shows the navigation review. There are five options, ranging from excellent to Very Poor. 84.2% of the respondent which equal to 16 respondent answers Excellent, 10.5% of the respondents which are 2 respondents answers Good, while another one respondent answers Average.

Question 14: Were the icons/buttons self-explanatory in navigation?

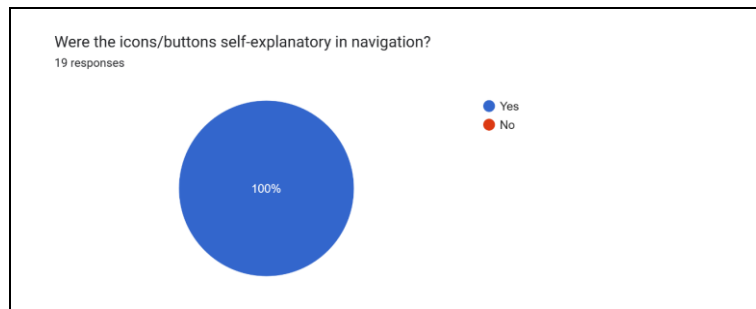


Figure E.14: icons/buttons self-explanatory review

Figure E.14 shows a self-explanatory review of icons/buttons. The question is a polar question where there are two possible answers: yes or no. 100% of the respondents answered yes.

Question 15: Are there any improvements that need to be made? What improvement is needed?

No
-
-
I think maybe you can include the maharat al-quran flash card for register.
Yes, can make it in computer
Nothingg
Yes
Can add chat with teacher
Nothing girl
Maybe make website?
Maybe change the color
All great

Figure E.15: Improvement Suggestion

Figure E.15 shows the improvement suggestions by respondents. After cleaning the irrelevant answers, there are a total of five suggestions extracted from the questionnaire, which are: addition of a flash card feature, application of a versioning system to the desktop version, application of a versioning system to the website version, and change of user interface colors.