FINAL EXAM REVISION PLATFORM: EXAMMASTERY

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ABSTRACT

This project addresses the issue faced by UKM students, particularly in the FTSM, who struggle to access past exam papers and relevant study materials. This is due to the lack of centralized platform that can retrieve these resources inefficient study practices, increased stress, and utmost difficulty in preparing for final exams. The solution proposed is the development of ExamMastery, a platform designed to offer convenient access to past papers and a mock exam system that simulates real exam conditions.

This project tackles this problem by designing a centralized database or website with a total collection of questions from all levels by their solution and marking varieties. Moreover, the platform will enable students to enter questions they do not understand or struggle with as right under its practice items. This feature is conducive for collaborative learning environment where student peers get opportunity to discuss, lecturers give more clarifications so student can enhance understanding with the help of interactive academic support.

The purposes of this project are to increase studying productivity, decrease the level of stress connected with examinations, and increase students' effectiveness. To manage the scope this project will use Waterfall methodology, a model which is sequential as it directs that one phase be finished before the next one is commenced. The platform will be developed using sublime, and programming language are HTML, CSS, JavaScript for the front end, and PHP or Python for the back end, with a MySQL database for data storage.

By implementation of ExamMastery, we expect to realize the benefits of providing better preparation for the exams, better time management while in the exam, and more confidence in the handling of the final scores. There will be a post-implementation User Acceptance Test to determine the effectiveness of the system providing a solution to the identified problem as well as its feasibility in terms of usage.

It will enable the improvement of students' performance at FTSM by providing them with clear, informative, easy to use tools that greatly improve the process of revision.

INTRODUCTION

Many students face difficulties getting ready for their exams because they need better study resources. Testing materials become hard to locate for UKM FTSM students late in the semester because the university must improve its system to distribute study material. Students experience unwanted anxiety when they must rely on teachers for test information because a collection center does not exist. Under UKM's grading policy you need effective exam preparation to achieve success.

Most platforms provide practice papers, but their materials are distributed randomly since they fail to offer mock tests or create customized learning tools. Under UKM's PTSL Website students can access study materials but will not find subject-specific practice papers. Research beginning in (2012) by Jeri L. Little and continuing

in (2022) with Nick Naujoks et al proves students achieve better results when they attempt mock exams.

ExamMastery gives FTSM students full access to official examination practice content and test-like examinations to bridge their study needs. ExamMastery helps students practice their knowledge through real exam simulations while getting quick feedback that strengthens their study process. ExamMastery helps students improve their study methods and study confidence which leads to improved results on their final tests.

METHODOLOGY

The Waterfall Model is used in this context to offer a more structured view of the development of the final exam preparation platform, required to give a certain set of pinpointed requirements and specifications. All the phases have clear deliverables and timeline marking that helps with easy monitoring and good control of the project. The model takes care to document all the aspects of the model so that in the future, someone is going to fix it, they are well informed; it also helps the developers and users through teaching them best practices in this context. On this basis, linear scheduling is convenient in terms of management and distribution of resources, which makes it more effective for small-scope projects with non-volatile demand. Thirdly, the straightforward approach minimizes the system's complexity; it is advantageous when working with relatively inexperienced teams familiarizing themselves with agile methodologies.
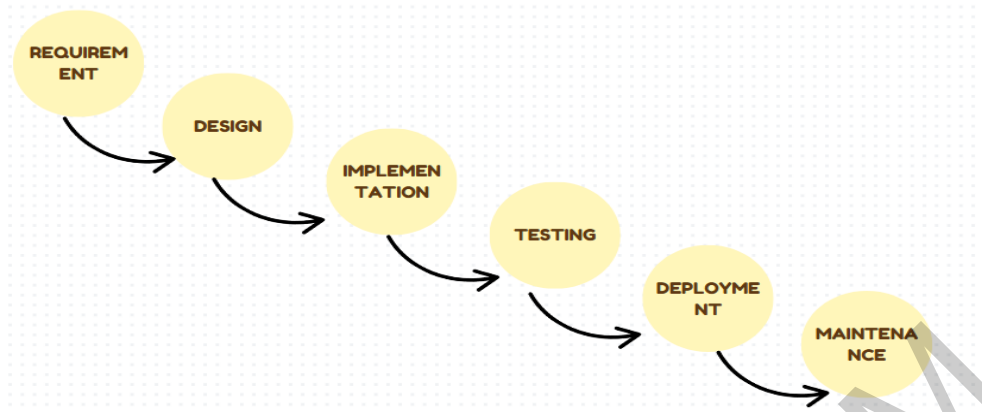
Figure 1 Waterfall model

Each phase in the model plays a critical role in the development of the ExamMastery system:

1) Requirements Analysis: Gather and document all requirements from stakeholders to define what the system should accomplish.

2) Design: Create detailed design specifications based on the requirements, including architecture, user interfaces, and data structures.

3) Implementation: Write the actual code based on the design specifications.

4) Testing: Verify that the system works as intended by identifying and fixing defects.

5) Deployment: Release the completed system to users.

6) Maintenance: Address any issues or updates needed after deployment.

SYSTEM DEVELOPMENT

Figure 2 shows what users will see when logging into EXAM MASTERY. Both students and staff can use this screen to log in with the ID and password they were assigned. The log-in box is in the center, with a lively academic backdrop which makes the page more appealing and user-friendly.

Figure 2 The Login page.

Figure 3 is the registration interface used by new users to join by adding their ID, full name, password and choosing their role, whether they are a student or administrator. It guarantees that access rights for each user are well-defined right at the start.

Figure 3 The Registration page.

The dashboard appears on screen after a successful login, as shown on Figure 4. The interface welcomes the learner with their name and sets out four key parts: Materials, Quizzes, Review and Forum. The modules are all visible with an icon and a brief description and the action button makes everything simple to do.
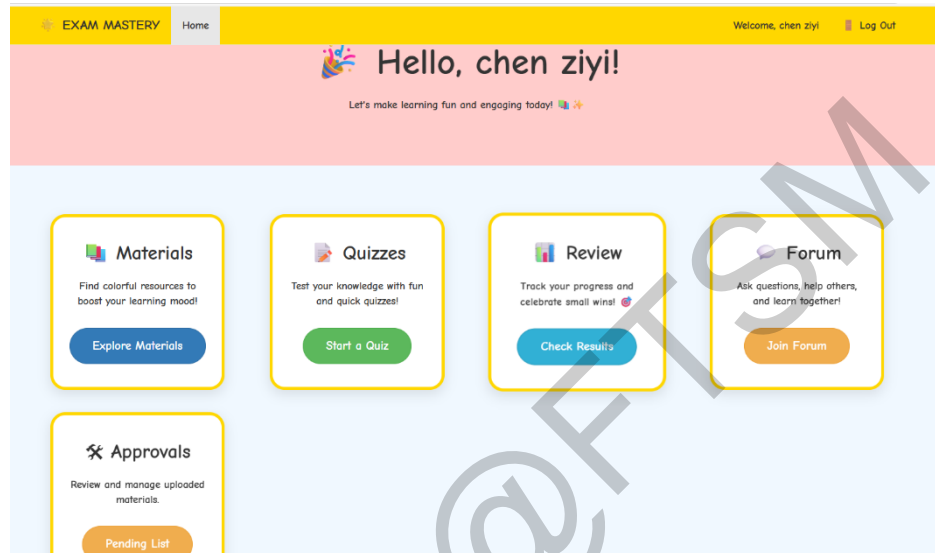

Figure 4 The Dashboard page.

Figure 5 displays the materials page which users can open, download from or (if you have access to admin tools) delete learning materials from. If you're an admin, you also get access to the upload interface, as demonstrated in Figure 3.12 with title, description, type of file and file upload button all shown in an easy-to-use format.
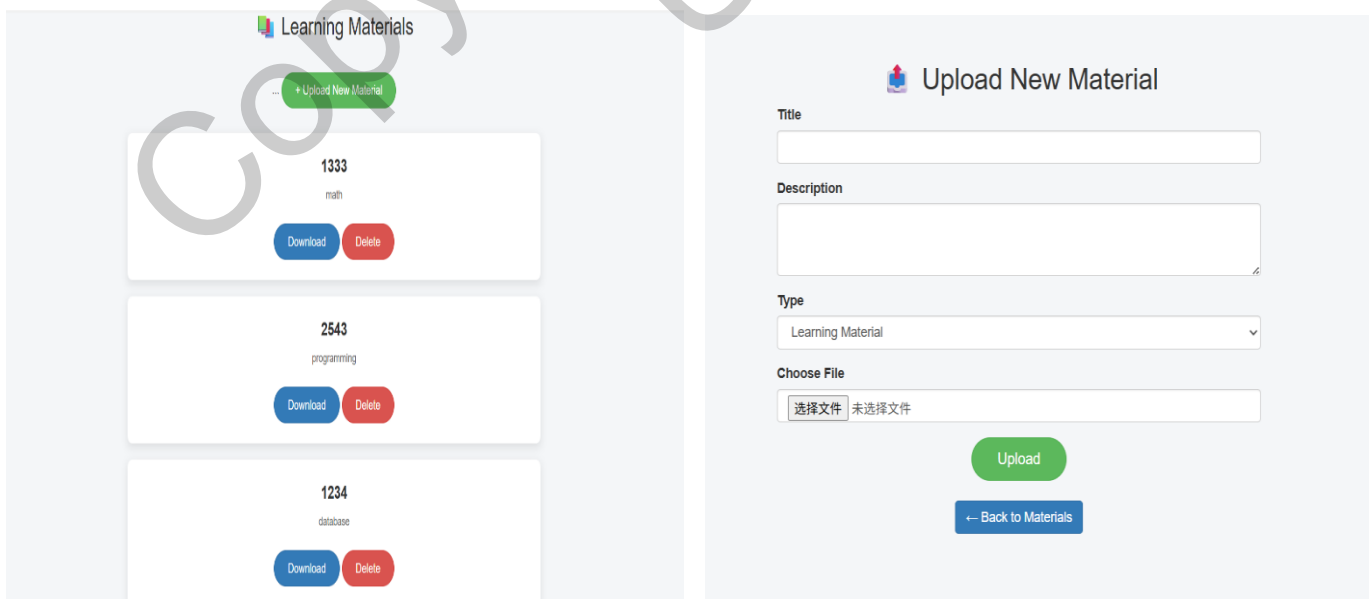

Figure 5 The Materials page.

You can see the quiz list interface in Figure 6. Each available quiz list includes its name and description; plus, a starting button users can hit to launch the quiz. Right after entry into the quiz, as shown in Figure 6, users face several repeated choice questions and a timer to help them stay focused.
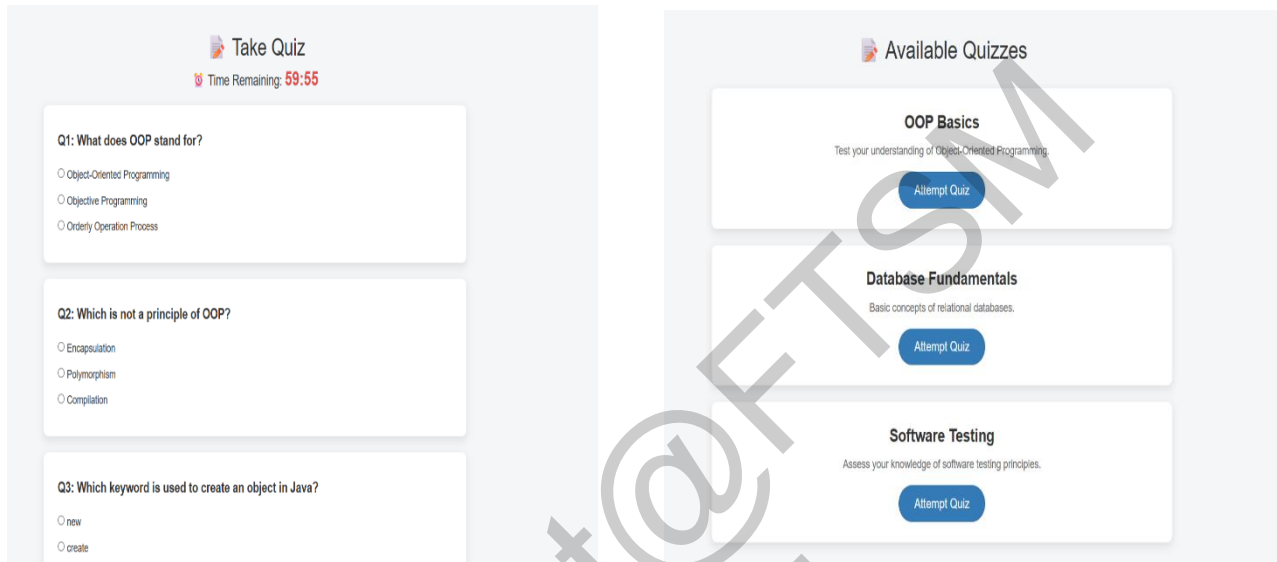

Figure 6 The Quiz page.

On Figure 7, the app displays the result, with your score and the time you successfully answered the quiz questions. Because the layout is simple, users pay more attention to their accomplishments.
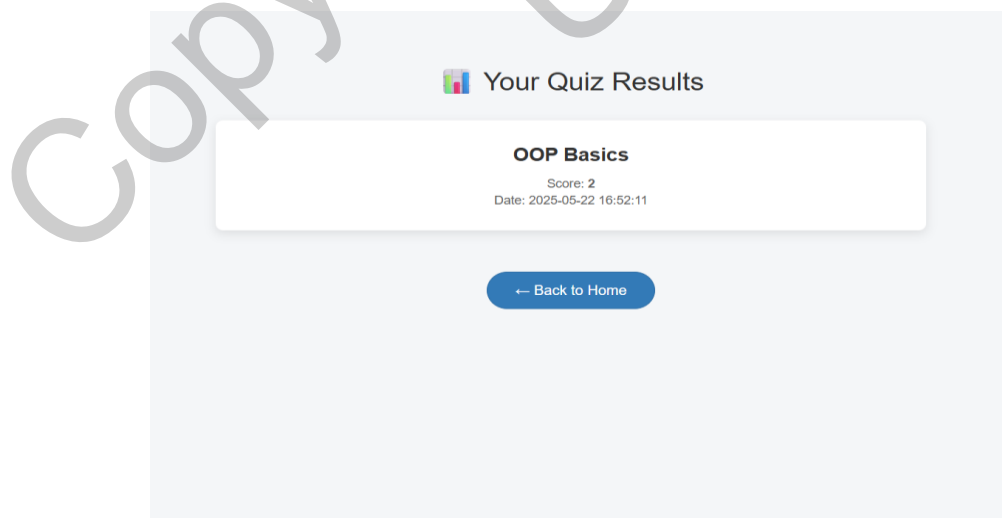

Figure 7 The Review page.

Figure 8 is where the forum module sits and here users can review active discussion threads and enter each thread themselves. The post creation interface displayed by Figure 8 has a title and content section for input. As a result, students can cooperate and interact with other students in the system.
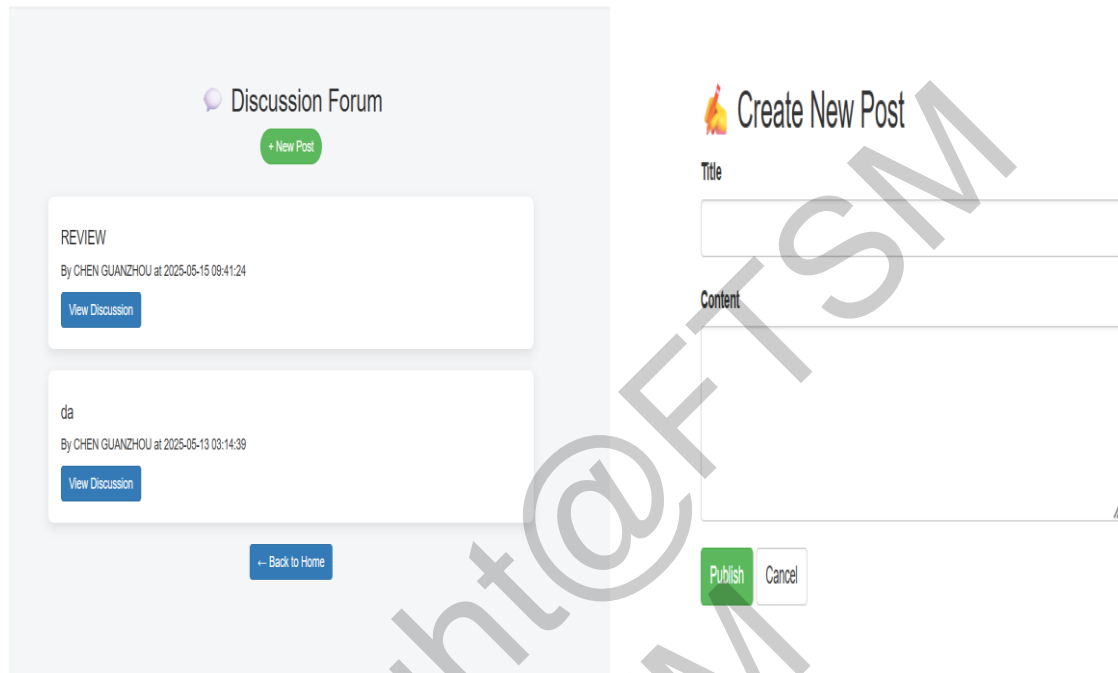

Figure 8 The Forum page.

Figure 9 shows the pending material approval page, where admins can preview, approve, or reject newly uploaded materials. Each item includes its ID, subject name, and action buttons. This helps ensure only appropriate content is published to the system.
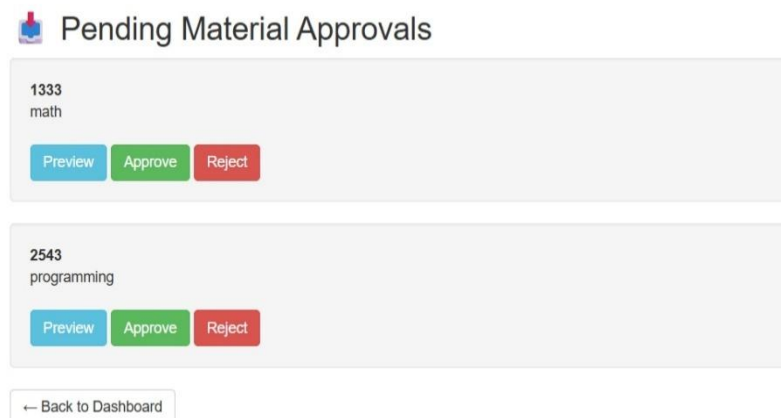

Figure 9 The Pending List page.

TEST RESULTS

The types of testing that were carried out on the UKM ExamMastery system were to prove the functionality, usability and reliability of the system according to the requirements. Several test methods were used such as black-box testing, boundary value testing, and user acceptance testing (UAT). These tests gave the following results:

a.   functional test outcome

14users completed the test, and the functionality results are compiled and presented as follows:

Test Case ID	Content of the test	Pass/Fail	Remark
Case_001_1	Invalid ID or password (length < 8) cannot be registered	Pass	-
Case_001_2	Valid accounts can be registered	Pass	-
Case_001_3	Duplicate registration with the same ID is not allowed	Pass	-
Case_002_1	Can't log in with a non-existent account	Pass	-
Case_002_2	Registered accounts can successfully log in	Pass	-
Case_003_1	Users can upload materials with title, file, and description	Pass	-
Case_003_2	Users can download approved learning materials	Pass	-
Case_004_1	Quiz can be completed and submitted with all answers	Pass	-
Case_004_2	Quiz auto-submits when the timer runs out	Pass	-
Case_005_1	Users can post new discussions in	Pass	-

	the forum		
Case_005_2	Users can reply to an existing forum post	Pass	-
Case_006_1	Admin access is required to view the pending material list	Pass	-
Case_006_3	Admin can approve a pending material and make it downloadable	Pass	-
Case_006_4	Admin can reject a material and remove it from the list	Pass	-
Case_007_1	Users can view overall quiz scores in the result review section	Pass	-
Case_007_2	Users can access detailed quiz answer history with correct indicators	Pass	-
Case_007_3	Review answers match actual quiz submissions	Pass	-

Table 1 Software Functionality Test Results

Table 1 summarizes the functional testing feedback from 14 users after using the ExamMastery. The feedback results indicate that each major function. of the ExamMastery can be smoothly implemented.

b.   User Acceptance Testing (UAT)

After 14 users completed the ExamMastery, they filled out the feedback questionnaire. Figures 10 to 19 below show the 10 questions in the questionnaire and the statistics of the feedback results given by the 14 users.

1. How satisfied are you with the overall ExamMastery system? [Multiple choice].

Forms Pie-shaped Ring Columnar Bar Polyline

0%

14.29%

85.71%

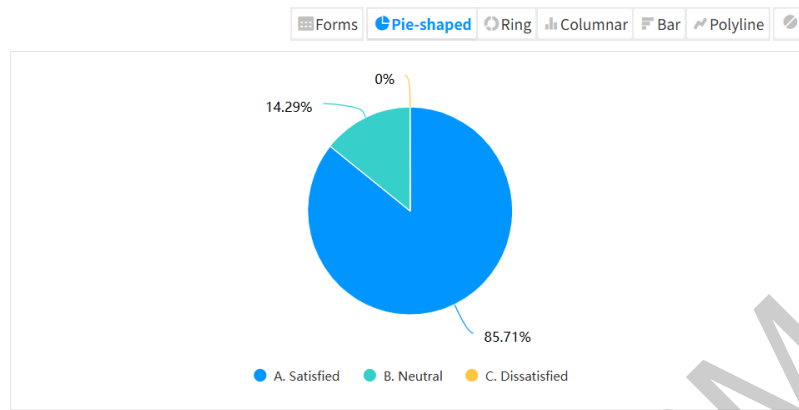● A. Satisfied   ● B. Neutral   ● C. Dissatisfied

Figure 10 System efficiency Feedback

Figure 10 illustrates user satisfaction with the overall ExamMastery system. A significant majority of respondents 85.71% reported being satisfied with the system, while 14.29% expressed a neutral opinion. Notably, none of the users reported dissatisfaction. These results indicate a generally positive user experience and suggest that the system is well-received by its users.

2. Did you encounter any problems during registration and login? [Multiple choice].

Forms Pie-shaped Ring Columnar Bar Polyline

B. Minor: 14.29%   C. Yes: 0%
B. Minor: 14.29%
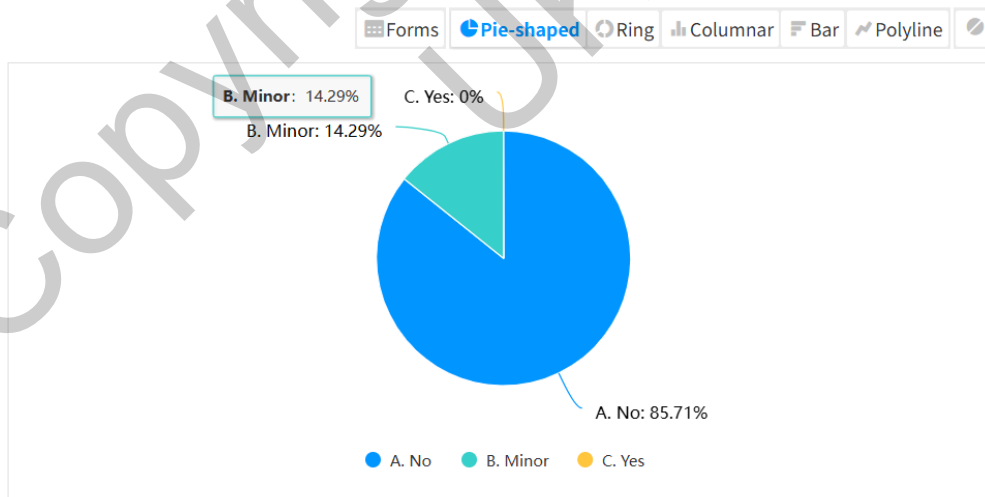
A. No: 85.71%

● A. No   ● B. Minor   ● C. Yes

Figure 11 Registration and Login Feedback

Figure 11 presents user responses regarding problems encountered during registration and login. A majority of 85.71% reported no issues, while 14.29% experienced minor problems. No respondents reported major issues. This indicates that

the registration and login process was generally smooth, with only a small proportion of users facing minor difficulties.

3. Were you able to upload and download learning materials successfully? [Multiple choice].
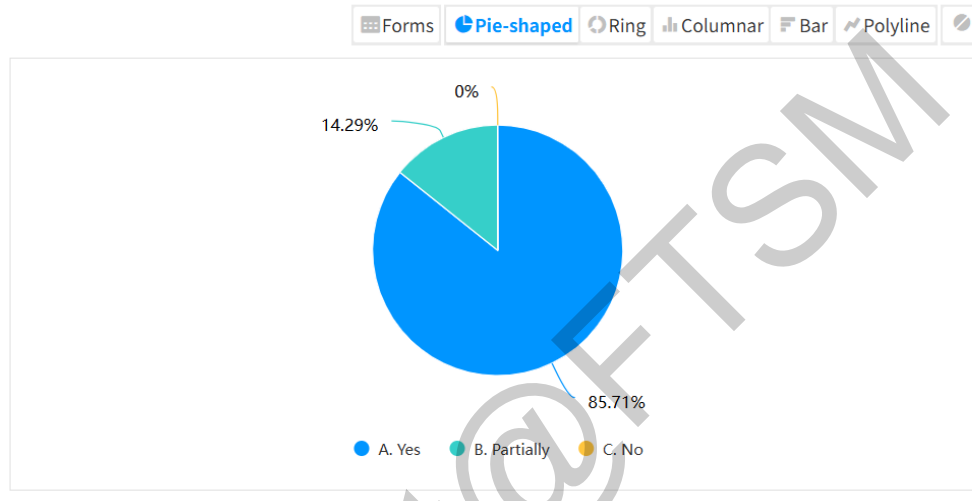

Figure 12 Upload and download Feedback

Figure 12 summarizes feedback on the ability to upload and download learning materials. 85.71% of users were able to complete the process successfully, while 14.29% indicated only partial success. No respondents reported complete failure. These results suggest that the file handling functionality of the system is reliable for most users.

4. Did the quiz feature function properly (display, timer, submission)?   [Multiple choice].
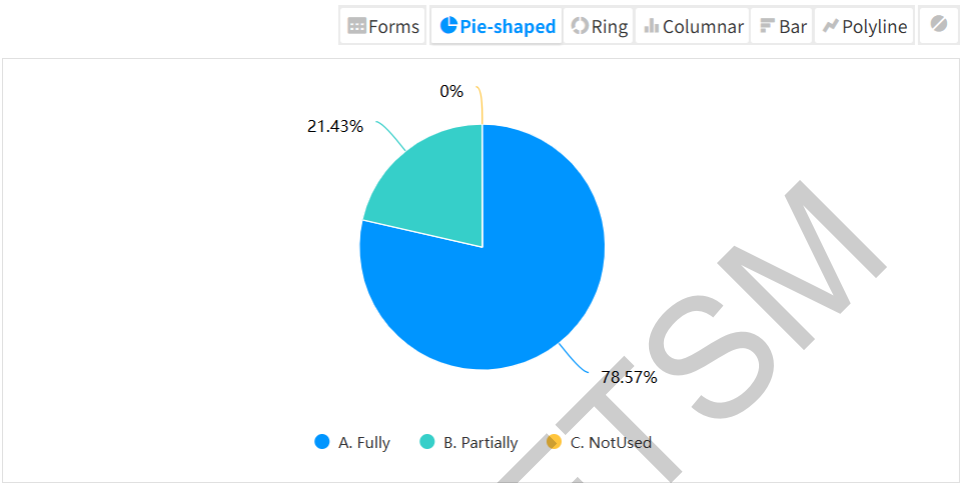

Figure 13 Quiz function Feedback

Figure 13 shows the evaluation of the quiz feature, including display, timing, and submission functionalities. A total of 78.57% of respondents confirmed full functionality, while 21.43% experienced only partial functionality. No respondents indicated that they did not use the quiz feature. This suggests that the quiz component is generally functioning well, though a minority of users encountered limitations.

5. Were the quiz scores and feedback displayed clearly and correctly?   [Multiple choice].
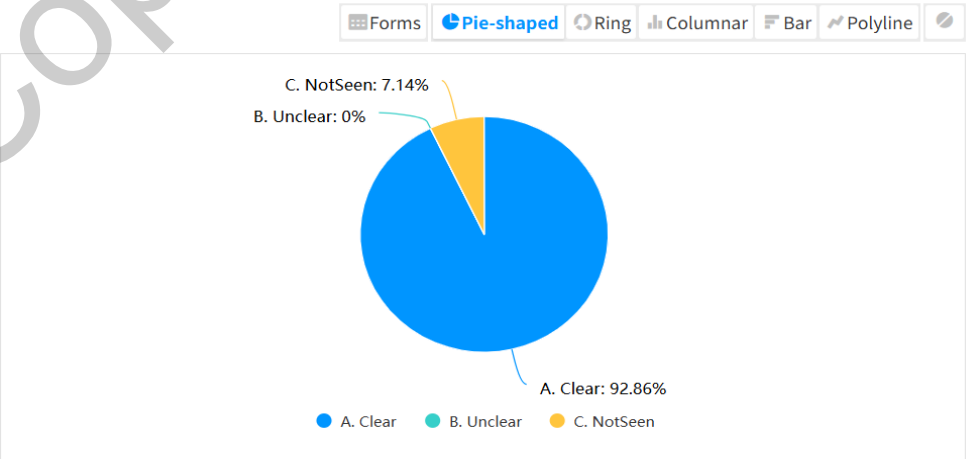

Figure 14 Review results function Feedback

Figure 14 shows users' perception of the clarity and correctness of quiz scores and feedback. A vast majority (92.86%) found the results clear, while 7.14% indicated that they had not seen the scores. No users reported unclear feedback. These findings indicate effective score presentation within the system.
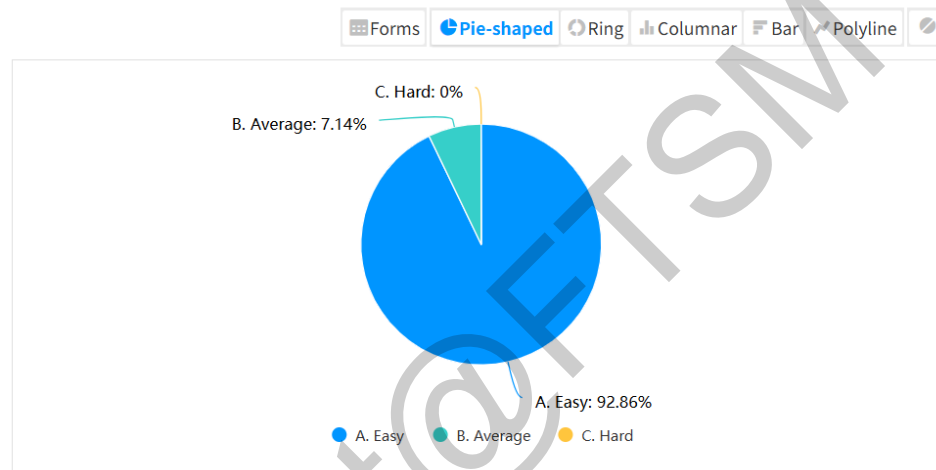

Figure 15 Interface design Feedback

Figure 15 presents feedback on the system interface's ease of use. Most users (92.86%) considered the interface easy to understand and navigate, while 7.14% rated it as average. No users reported difficulty. This indicates that the user interface is intuitive and user-friendly.

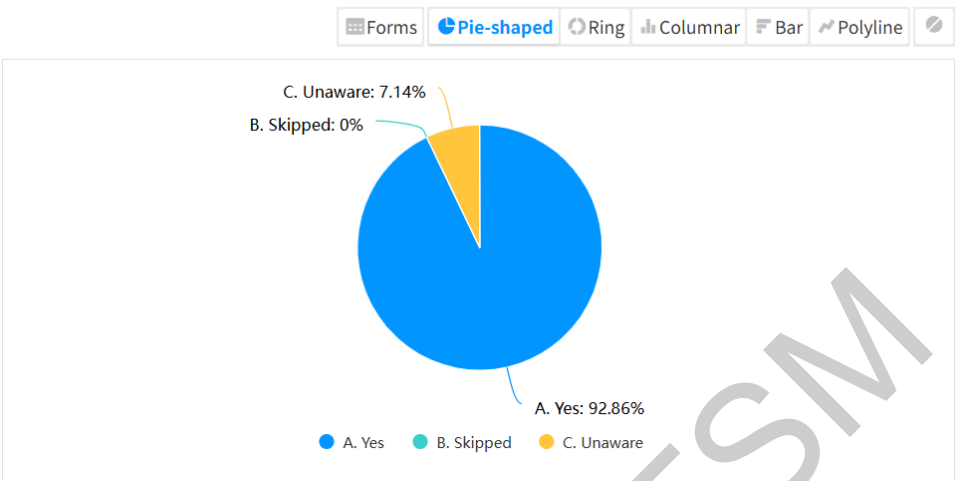7. Did you use the forum feature (posting or replying)?   [Multiple choice].

Figure 16 Forum function Feedback

Figure 16 summarizes usage of the forum feature. 92.86% of respondents used the forum to post or reply, while 7.14% were unaware of this feature. No users chose to skip it knowingly. This reflects high awareness and engagement with the forum tool.

8. How would you rate the system's speed and responsiveness?   [Multiple choice].
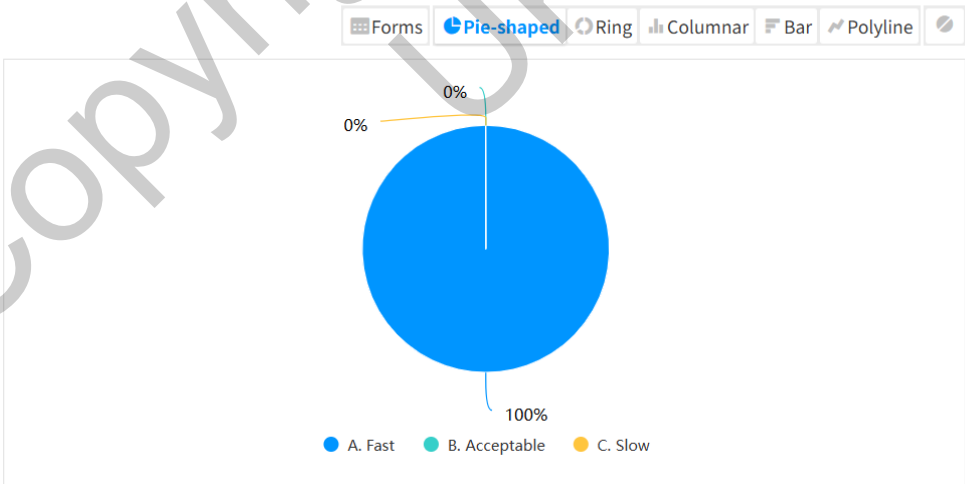

Figure 17 System performance Feedback

Figure 17 evaluates the system's performance in terms of speed and responsiveness. All users 100% rated the system as fast. No users selected "Acceptable" or "Slow." This implies that the system runs efficiently under current load conditions.
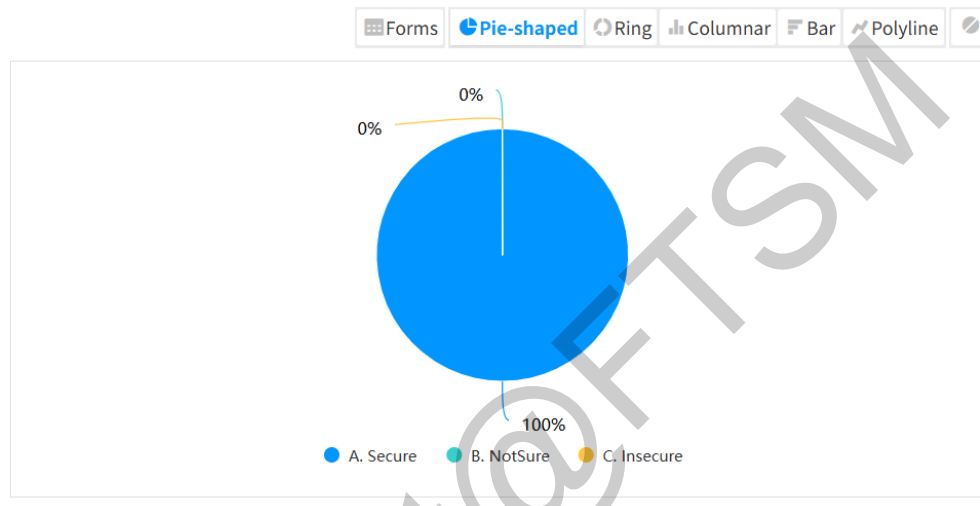

Figure 18 Data Privacy Feedback

Figure 18 shows user perception of data security within the system. All respondents (100%) felt their data was secure, with no one indicating uncertainty or insecurity. This demonstrates a high level of trust in the system's data protection measures.
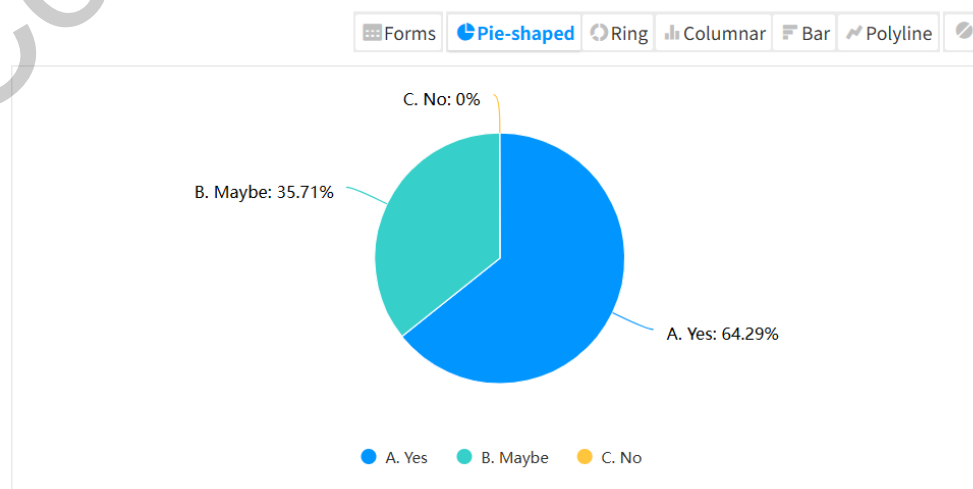

Figure 19 System satisfaction

Figure 19 illustrates users' willingness to recommend the ExamMastery system to others. A majority (64.29%) would recommend it, while 35.71% responded "Maybe." No users indicated a negative recommendation. These results suggest a positive overall reception of the system.

SUMMARY

In summary, the development and testing of the UKM ExamMastery system successfully addressed the core requirements for supporting exam preparation among FTSM students. Each module was carefully designed, implemented, and validated to ensure smooth functionality, security, and user experience. Testing results confirmed that the system is stable, user-friendly, and meets both functional and non-functional expectations. This chapter establishes that ExamMastery is ready for deployment as a reliable academic support tool within the UKM learning environment.

CONCLUSION

With the increasing demand for accessible and efficient academic support systems. This web-based service was created to help FTSM students to prepare for final exams by combining the main functions of sharing learning material, taking mock quizzes, reviewing performance, and discussion in forums. The idea is to make the system less stressful in terms of the scattered resources and to make studying more efficient with a structured and intuitive interface. The project was developed through a complete development process- requirement analysis to the implementation and testing of the system to provide a viable and implementable academic support system to the FTSM community.

ADVANTAGES OF THE DEVELOPED SYSTEM

ExamMastery is formulated as a centralized web-based program, where access to mock quiz and learning materials is much more organized than the traditional sources that are scattered. ExamMastery provides a mock quiz model that mimes the real exam environment and thus students can be assisted to be more time-efficient and face exams with confidence. ExamMastery provides the instant feedback and result reviewing functions, which helps to self-assess and improve. The collaborative learning experience is improved in ExamMastery because the discussion forum is an element where students can pose questions and communicate with other students. The interface of ExamMastery is simple, easy to navigate and can be used even by a first-time user, something that enhances usability and experience.

LIMITATIONS OF THE DEVELOPED SYSTEM

ExamMastery currently only supports selected subjects, which limits the range of academic content available to students. The forum module is basic in design, which limits the depth of interaction and discussion among users. The system does not yet support multimedia resources such as video or audio files, which limits the richness of study materials. The platform is only available in a web version, which limits its accessibility for users who prefer mobile applications.

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