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Development of Final Year Project Supervisor Selection System for FSKTM, UTHM

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Abstract

The Faculty of Computer Science and Information Technology at University Tun Hussein Onn currently relies on manual selection methods for supervisor-student pairing, which leads to time-consuming and mismatched student research and supervisor expertise. Therefore, a comprehensive website is developed to handle the student's application request and the supervisor's response while simplifying the process of finding a supervisor. The development of the system is highly dependent on the agile methodology, which focuses on stakeholders' requirements and involvement. This system was developed in a client-server structure using the CodeIgniter framework for the backend, HTML, CSS, JavaScript for the frontend, and MySQL for the database. The project outcomes show that the system significantly improves the user experience during supervisor selection and confirmation. Based on the system testing phase, all modules are functioning satisfactorily for the target users.

1. Introduction

Selecting an appropriate and suitable supervisor is a critical step of the final-year project process in higher education. Supervisors play a pivotal role in a student's academic success and professional development to ensure that the student can follow up on the learning outcome defined by the faculty, able to achieve the project's objectives and deliver a quality final-year project [1]. Despite the importance of this process, many institutions still rely on traditional methods for supervisor selection, which are manual matching or first-come-first-served systems. These approaches often lead to suboptimal pairings from lecturer expertise areas, limited transparency, and inconsistent communication, and can be inefficient and time-consuming for both students and faculty. With the increasing demand for more efficient academic processes, there is a growing need for a systematic system that facilitates the selection of final-year project supervisors based on specific criteria such as area of expertise, availability slot, and student preferences area.

The objectives for this project are to design a Final Year Project Supervisor Selection System based on a client-server approach, based on the design to develop a web-based Final Year Project Supervisor Selection System based on a structural approach and test the system to ensure that the system is usable and user-friendly. The target users of the developed system in this project are students, coordinators, and lecturers of University Tun Hussein Onn (UTHM) who are looking to simplify the process of selecting final-year project supervisors. The proposed system includes user authentication and management modules for different system roles, personal profile management, project proposal management, supervisor application module, application review module,

accepted student management, registered supervisor management, announcement dashboard management and communication chat. This project helps students save a lot of time by exploring potential supervisor contact methods and the process of conducting them. Students can get real-time information from the lecturer about the available slot and consider requirements. Furthermore, the system also helps lecturers simplify the process of student choosing and gathering the student's request in a centralised platform. Lastly, the coordinator can more easily manage the list of students and lecturers in the system and post announcements to provide more information to students.

2. Related Work

This section discussed the literature review related to the basic domain background of the project, the technology that will used in the project, and the existing system used to compare with the proposed system.

2.1 Domain Background for Faculty of Computer Science and Information Technology, UTHM

The Faculty of Computer Science and Information Technology (FSKTM) is a faculty at the University Tun Hussein Onn, Parit Raja campus, which started in September 2000 and already has almost 25 years of history. FSKTM includes five undergraduate programmes, which are Bachelor of Computer Sciences (Software Engineering) with Honours, Bachelor of Computer Sciences (Information Technology) with Honours, Bachelor of Computer Sciences (Web Technology) with Honours, Bachelor of Computer Sciences (Multimedia) with Honours, and Bachelor of Information Technology.

All third-year students in FSKTM are required to complete a final-year project with guidance from a supervisor to ensure that every student can match the skills for real jobs. Therefore, every student needs to brainstorm a few potential and creative project titles as their initial idea. In the current process, FSKTM uses the manual supervisor selection system, with the students holding some brief ideas and approaching the potential lecturer with a discussion using a communication application or face-to-face meeting. After discussing the idea with the lecturer, the lecturer will decide whether to accept or reject the student based on the feasibility of the title. If rejected, students need to prepare another idea or try to contact another lecturer.

2.2 Hash Algorithm

Hash algorithms are employed as a vital protective safeguard technology to enhance password security. A hash algorithm is a cryptographic technique that transforms input data, such as user passwords, into a fixed-length string called a hash value. Effective hash algorithms have three main features; the primary characteristics of effective hash algorithms include pre-image resistance, which uses the concept of one-way functions where the content can easily be computed in one direction, but it is difficult to reverse the output back to the input. The second characteristic is second pre-image resistance; this property refers to the attacker having computation infeasibility to find the same hash algorithm output by giving an input and its hash. This allows the hash algorithm to protect data from attackers who try to replace a new value for the original value and hash. Lastly is collision resistance, which says the algorithm should find it hard to identify two inputs with any length that can produce the same hash.

Bcrypt is one of the cryptographic hash algorithms specifically designed to hash passwords securely. Bcrypt will generate and insert a random piece of string data into each password field to create a unique string; this step is known as salt. This significantly reduces the risk of pre-computed attacks, such as rainbow tables cracking passwords. Since Bcrypt operates as a one-way hash function, it is challenging to reverse the password hashing and recover the original input. Once a user logs in, Bcrypt hashes the submitted password and compares it to the stored hash for verification, ensuring that the original passwords remain protected even if a database is threatened [2]. Its design effectively counters various attack vectors, making Bcrypt one of the most secure algorithms for password hashing available today.

2.3 PHP Framework: CodeIgniter4

CodeIgniter is a web application framework that is used to develop dynamic PHP web applications and is claimed to have the fastest execution compared to other frameworks. CodeIgniter4 develops an application using the Model, View, and Controller concept (MVC) [3]. The MVC is a concept that aims to distribute the structure of the database model, logic, and user view segment to enhance code organisation and make maintenance easier.

2.4 Review of Existing Systems

This section discusses the existing final-year project system used in three different universities, which are University Kebangsaan Malaysia (UKM), University College Sedaya International (UCSI), and University Tunku Abdul Rahman (UTAR).

2.4.1 UKM Final Project Management System

The UKM Final Project Management System [4] is a previous FYP topic that aims to examine undergraduate students with essential research skills by managing final-year project activities. This system includes three modules: students, lecturers, and administrators. The management system enables students and lecturers to manage their personal profiles, such as phone numbers and email addresses. It provides a timetable module where students can make an appointment with lecturers to discuss the FYP title. The lecturers can set weekly timeslots and unplanned timeslots so students know which period is free. This module helps the student to identify their supervisor's free time for project discussion. The administrator can monitor the student-supervisor assignment, ensuring each student is matched with a suitable supervisor based on department criteria and document submission training by recording the submission of the report and the required documentation that needs to be submitted to the office.

2.4.2 UCSI Final Year Portal

The second comparison system is the University College Sedaya International (UCSI) Final Year Project Portal [5]. This FYP portal was designed using the WordPress CMS to streamline information delivery for FYP activities. The portal dashboard provides some important resources, such as important dates for FYP, assessment links, progress reports, and presentation dates. Then, the student can submit their FYP title through the system by embedding a Google Form. The system also provides a list of recommended journals that provide convenience to students in exploring the quality of journals.

2.4.3 UTAR FYP Portal

The third system is the FYP Portal used at the University Tunku Abdul Rahman (UTAR) [6]. The introduction and announcement module provides important support for students, like an overview of FYP expectations or recent updates to help students track the latest information. In the resource and guidelines module, students can access and download some PDF documents, including guidelines and necessary forms, to simplify the process of obtaining documents from the department office. The third module in this system is project II submission; it offers the submitting the final report and includes a complete checklist for students to ensure all necessary documents are properly accounted for. The last module is the FYP equipment module, which lists all resources like AR devices and Android devices that are available for student borrowing for testing applications during project development.

2.5 Comparison of Reviewed Systems and the Proposed System

Table 1 compares ten features between three final-year project management systems used by different universities and the proposed systems.

Table 1 Comparison table for the reviewed system and the proposed system

Feature/Module	UKM Final Project Management System	UCSI FYP Portal	UTAR FYP Portal	Proposed System
Log In / Register	✓	✗	✓	✓
Personal Profile Management	✓	✗	✗	✓
Proposal Idea Submission	✗	✓	✗	✓
Communication chat	✗	✗	✗	✓
Announcement Dashboard	✓	✓	✓	✓
List of Supervisor	✗	✗	✗	✓
Search Function on Supervisor List	✗	✗	✗	✓
Email Notification	✓	✗	✗	✓
Selection of Student Application	✓	✗	✗	✓
Reporting Module	✓	✗	✗	✓

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3. Methodology

The project methodology is a set of guidelines or procedures that help the project managers evaluate, analyse, and execute the project [7]. This is a crucial part that will lead the project to be on track and successful by achieving all objectives.

3.1 Agile Methodology

The agile methodology is currently the most prominent and widely used methodology in the world [8]. Agile methodology distributes a project into several dynamic phases, which are known as spirit, as shown in Fig 1. The agile methodology is suitable for the project, as it requires high stakeholder involvement during all stages to ensure the project has met the stakeholders' expectations and reduces the risk of project failure.

Fig. 1 System Development Life Cycle for Agile Methodology [9]

3.2 System Development Workflow

Table 2 shows the system development workflow for each phase of the SDLC for the project system. The system development workflow defines all activities and corresponding outputs required for each phase.

Table 2 Task and output of each phase

Phase	Task	Output
Planning	- Generate idea for Final Year Project - Discussion ideas with the supervisor - Research the project title - Determine the problem statement, objective, and project scope	- Project Proposal Gantt chart
Design	- Illustrate data flow diagram (DFD) - Illustrate entity relationship diagram (ERD) - Design wireframe	- System design - Database design - Wireframe
Implementation	- Develop database - Develop system modules	- Developed system
Testing	- Functional testing on the developed system - Conduct user acceptance testing	- User evaluation results and feedback - Improve the system with fix all bugs
Deployment	- Release the final version system - Finalize documentation	- Release the final system - Complete the final report
Maintenance and Support	- Update system - Fix bugs	- System be upgraded - System issue be solved

3.3 System Requirement

Requirement analysis is a process that includes analysing the system requirements, helping the developer understand stakeholders' demands. Conducting an interview or observing the current workflow is the most common information-gathering technique.

3.3.1 Functional Requirements

Functional requirements are a list of requirements that mention all specific features and behaviours a system must implement to allow users to accomplish a task. Table 3 describes the functional requirements of the Final Year Project Supervisor Selection System for FSKTM.

Table 3 Functional requirements of the developed system

No	Function	Functionalities
1.	User authentication modules	- Users can log in to the system based on their specific user roles, and users cannot view other user view pages besides their role access. - The coordinator can create and delete a new account for the supervisor after logging into the system. - Students can self-register a new account at the registration page.
2.	Profile management	- The student and supervisor can create, read, update and delete the personal information and details.
3.	Project Proposal Management	- Students can create, update and delete the proposed title and description information for a final year project. - Students can upload the proposal PDF files to the system.
4.	Supervisor Application Management	- Students can view the list of supervisors and know the currently available slots for supervisors. - Students can submit a request to supervisors to ask them to become their supervisor. - Students can view the result of the supervisor application.
5.	Communication chat	- Students can join the supervisor's chatroom once a supervisor accepts them. - Students and supervisors can send messages in the chatroom.
6.	Application Review Management	- The supervisor can view the list of students who are sending requests. - Supervisor can see the student details and proposed title. - Supervisor can reply to the student application either accept or reject. - The supervisor can give feedback to the student when rejecting an application.
7.	Accepted Student Management	- Supervisor can view all accepted student lists. - The supervisor can delete an accepted student, and the supervisor's quota can be refreshing and able to accept other students' applications.
8.	Announcement Dashboard Management	- The coordinator can create, update and delete announcements and postings to the student and supervisor. - Students and supervisors can view the posted announcement.
9.	Student Management	- The coordinator can register a new student or register a batch of students. - The coordinator can view the list of students who have no supervisor in the current batch. - The coordinator can view the list that contains all students.
10.	Supervisor Management	- The coordinator can register a new supervisor or register a batch of new supervisors. - The coordinator can view supervisor details.
11.	Request Management	- The coordinator can view the request sent by the student to the selected supervisor and the current status, either accepted, rejected or pending.

Table 3 Functional requirements of the developed system (continued)

No	Function	- Functionalities
12.	Supervision Management	- The coordinator can view the current supervision status and record the supervisor and his accepted student. - The coordinator can modify the available quota for each supervisor for current batch.
13.	System Control	- The coordinator can toggle the selection for registration period limit, and if open, set the date range for student registration. - The coordinator can toggle the email notification selection. - The coordinator can start a new batch for new registration student.

3.3.2 Non-Functional Requirements

Non-functional requirements define characteristics that are non-behavioural aspects of system modules. The non-functional requirements include some properties such as performance, speed, portability, reliability and user experience. Table 4 shows the non-functional requirements of the Final Year Project Supervisor Selection System for FSKTM.

Table 4 Non-functional requirement for the developed system

No	Requirement	Functionalities
1	Performance	The system response time should be less than 2 seconds.
2	Security	The system information should be secured, and user passwords should be non-visible, whether in the database or any system modules.
3	Compatibility	The system should able to access any web browser and screen width
4	Usability	The system should be easy to use and understand and provide a user-friendly interface.

4. Result and Discussion

This section reviews the achievements and work that have been done in Final Year Project 1 (FYP 1). This semester, the project requirements were successfully collected by interviewing an experienced supervisor and observing the system used in FSKTM. Based on the requirements, a comprehensive system architecture design outlines overall system modules for several users, students, supervisors and coordinators. The design of the database structure has also been done this semester to support the functionality of the developed system. Moreover, a few system modules have been completed, which are the user management module, proposal management module, registration supervisor management module and announcement dashboard module.

4.1 System Analysis

4.1.1 Context Diagram (CD)

Context Diagram (CD) is a high-level diagram that outlines the interaction between external entities and the internal system. It shows the input and output data flow that passes between entities and the system. The purpose of a context diagram is to use a visual summary to communicate with non-technical stakeholders to ensure an understanding of the system. Appendix A shows the context diagram for FSKTM for the Final Year Project Supervisor Selection System.

4.1.2 Data Flow Diagram Level 0

Data Flow Diagram (DFD) level 0 is the highest level view in the DFD structure, which states an overview of the entire system. The DFD level 0 states the important processes, data flows, external entities and data stores in the system. In the DFD level 0 of the developed system, there are five processes in level 0, which are user management, project proposal management, supervisor application management, communication chat, and announcement dashboard management. Three external entities interact with the processes including the student, supervisor and coordinator. Six data stores are used to properly store and manage the data during each process which are student details, supervisor details, coordinator details, proposal, application details, message details, and announcement

details. Appendix B depicts the complete dataflow diagram level 0, which describes all data flow between the entities, processes and data store.

4.1.3 Entity Relationship Diagram

An Entity Relationship Diagram (ERD) is a structural diagram used in database design. It is used to describe the database in a visual representation and illustrate the interactions between entities within the system like object or people [10]. Many elements can be seen in ERD, like relationships, cardinality, connecting lines and attributes. Appendix C illustrates the ERD for the developed system.

4.2 Implementation of Module

The implementation phase is the critical and longest time in the overall SDLC, where the proposed system is developed, tested and deployed. The Final Year Project Supervisor Selection System for FSKTM consists of several modules, including the user management module, student proposal module, supervisor application module, communication chat module, supervisor accepted student management module, system control module, and announcement management module.

4.2.1 User Management Module

The user authentication module provides a user registration form to allow new students to register for the system, as shown in Fig. 2. After filling in all fields and clicking the register button, the system will validate the input and register if everything is correct.

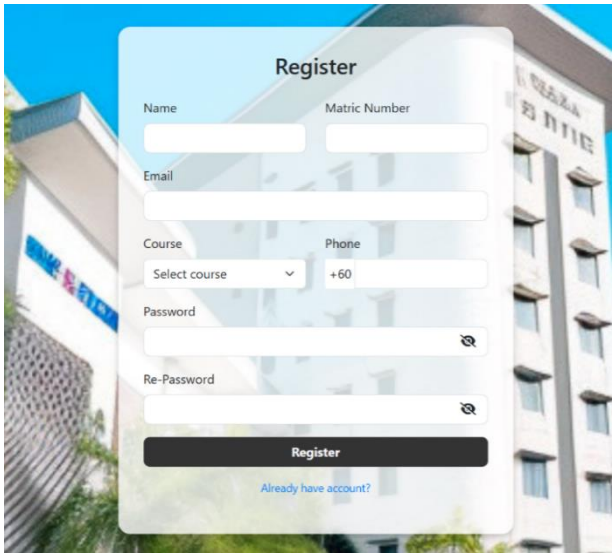

Fig. 2 Registration form

Fig 3 shows the login form interface; user can log in to their account by entering their email address and password. Once the email address and password are validated and correct, the user can navigate to the corresponding role interface, either student, supervisor or coordinator.

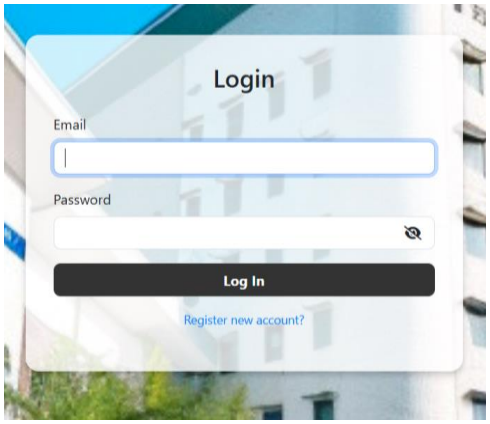

Fig. 3 Login form interface

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Fig 4 shows the personal profile interface for the student, and Fig 5 shows the personal profile interface for the supervisor role. This module enables students and supervisors to fill in the personal information and supervisor requirements to simplify the process of selecting a supervisor and a student.

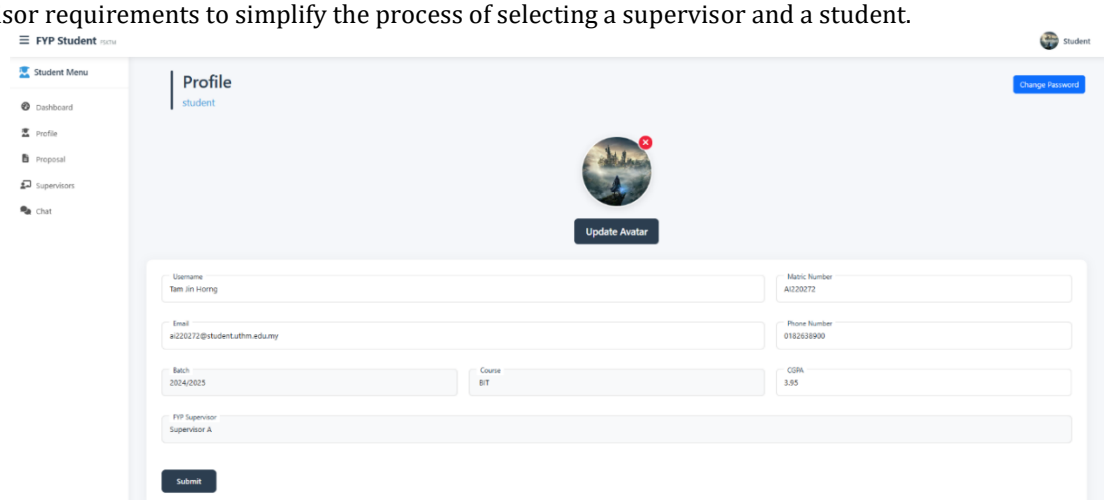

Fig. 4 Student profile interface

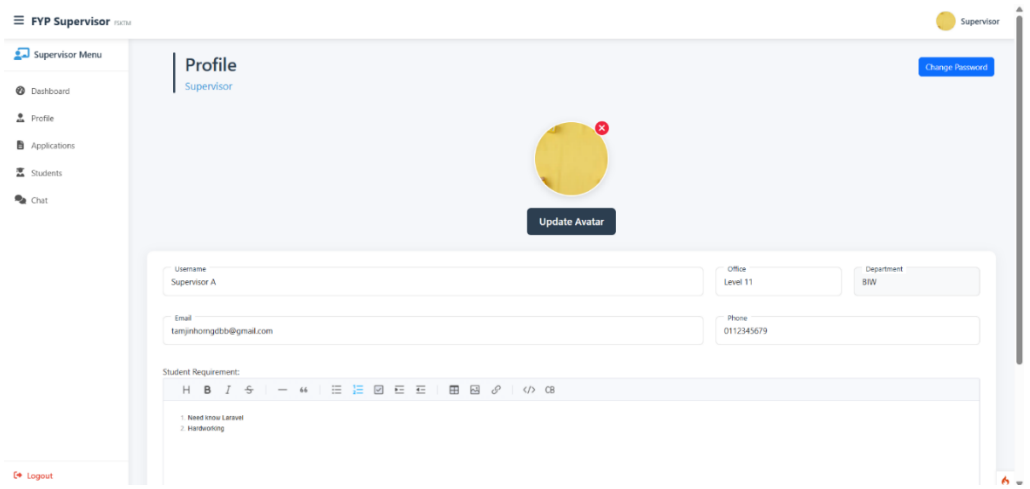

Fig. 5 Supervisor profile interface

4.2.2 Student Proposal Module

Fig 6 shows the student proposal management interface, which enables students to describe their Final Year Project title, description, and upload a proposal PDF if available.

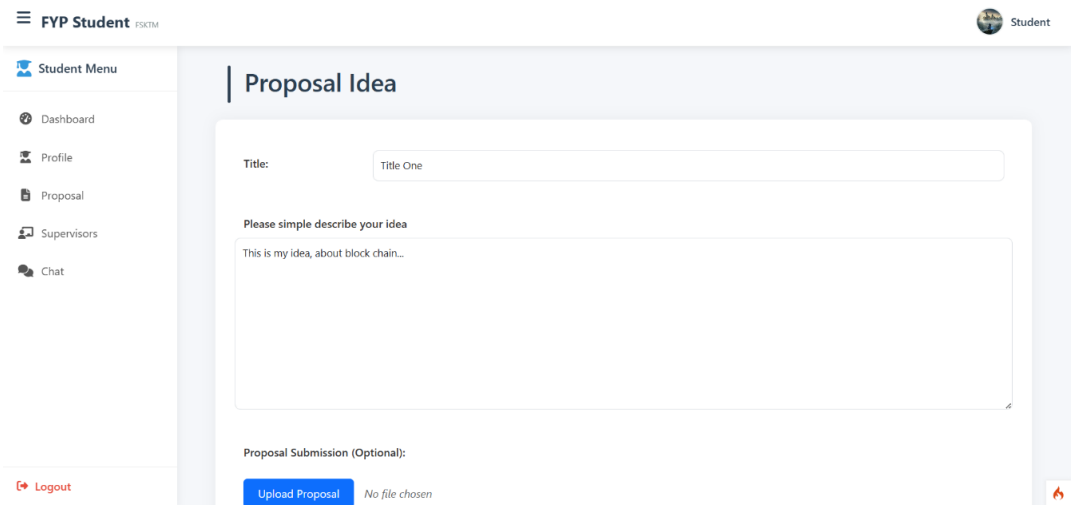

Fig. 6 Student proposal interface

4.2.3 Supervisor Application Management Module

Fig 7 shows the student application module where students choose the preferred supervisor for their course, view the supervisor's current quota and send the application request to the supervisor. The student can only send an application request once at a time and will automatically reject the application if there is no reply within one week. Then, the student can choose another supervisor.

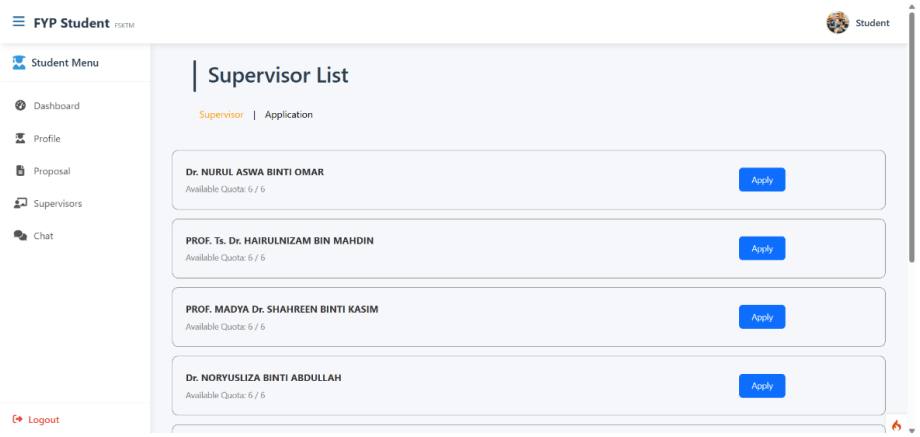

Fig. 7 Student application interface

Besides that, the student can click on the “Application button” to view the application history and result. The student can click the container if the result is rejected to view the rejection reason and make improvements. Fig 8 shows the application result history interface

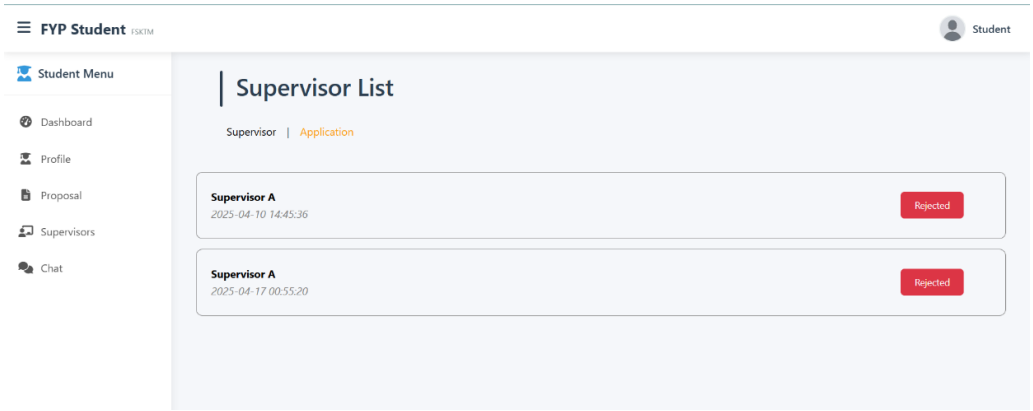

Fig. 8 Application result history interface

Fig 9 shows the supervisor application management interface. The supervisor can monitor the accepted student application, view student information, the student's proposed idea and select the student to accept or reject.

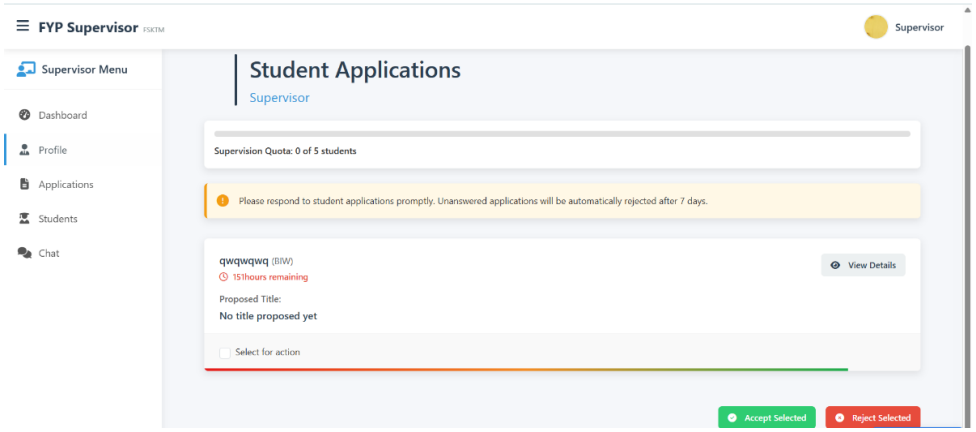

Fig. 9 Supervisor application request interface

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4.2.4 Communication Chat Module

Fig 10 shows the communication chat interface for students and the supervisor. The student are allowed to join the supervisor's chat room after being accepted. Supervisor can choose the chat room according to the different academic years and semesters, like 2024/2025 Semester 2. The chat room participants can have a simple conversation within the chat room.

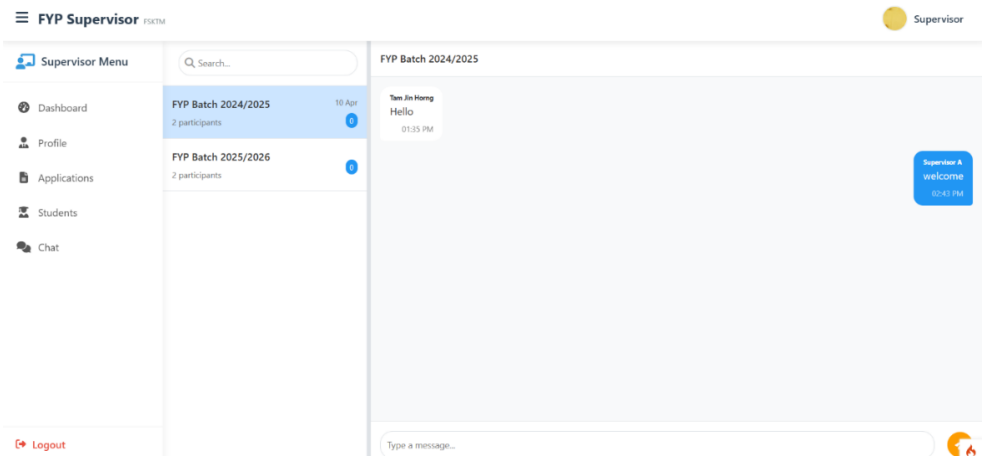

Fig. 10 Communication chat interface

4.2.5 Accepted Student Management Module

Fig 11 shows the accepted student management module for the supervisor role, where a supervisor can manage the accepted students by viewing the student list, viewing student information and removing certain students with a provided reason.

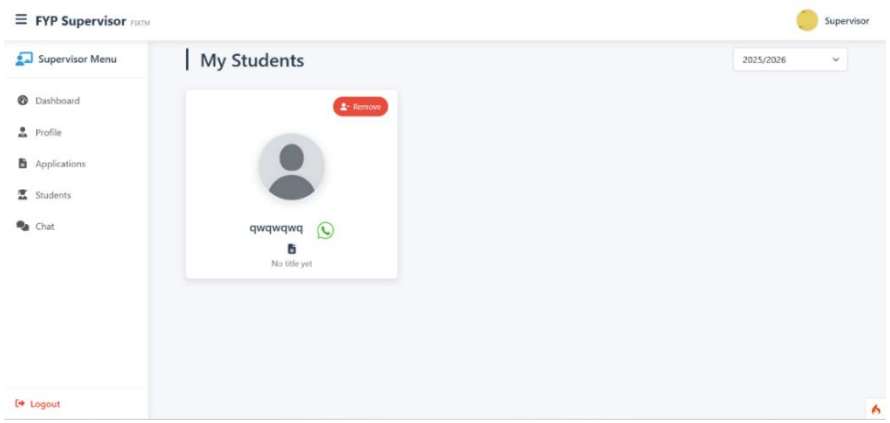

Fig. 11 Accepted student management interface

4.2.6 Announcement Management Module

Fig 12 shows the announcement management dashboard interface, which is controlled by the faculty coordinator role. The coordinator can view all of the posted announcements and is able to delete or edit them. When there is new information, coordinators can click on the "Post" button to create a new post. After the coordinator posts a new announcement, an email is sent to all recipients' emails as a notification.

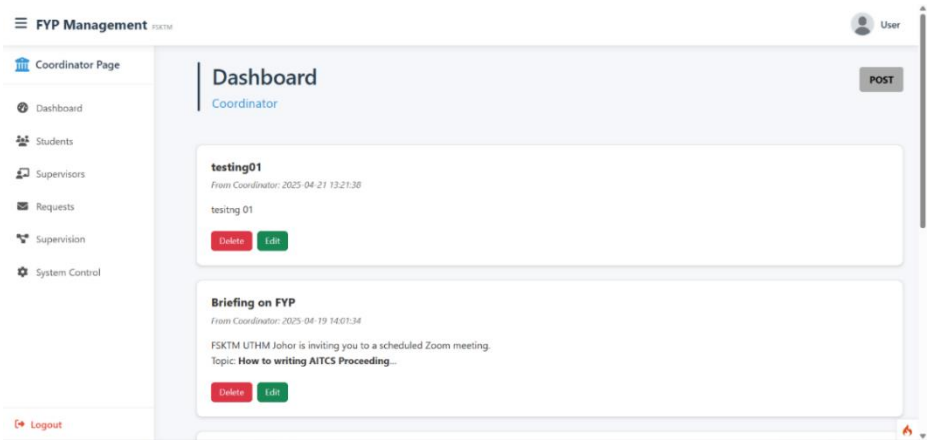

Fig. 12 Announcement management dashboard

Fig 13 shows the new announcements interface where the coordinator can enter the title, select the announce target audience and announcement content.

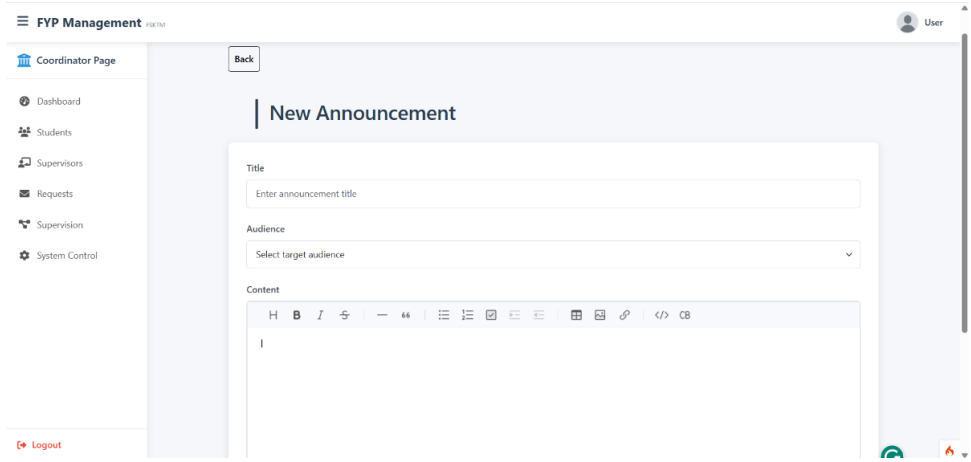

Fig. 13 New Announcements interface

Fig 14 shows the announcement dashboard interface for students and supervisors, enabling students or supervisors to view the post announcements ordered by the announcement posted date and click the announcement to view detailed information.

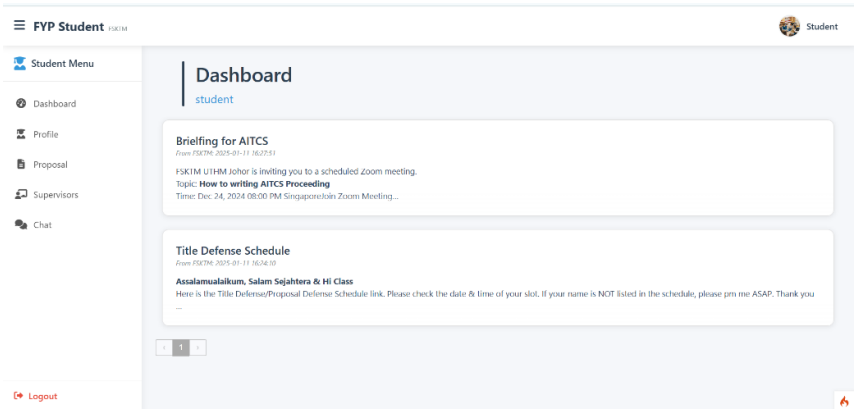

Fig. 14 Announcement dashboard interface

4.2.7 System Control Module

Fig 15 shows the system control module that is managed by the coordinator role. The coordinator can manage the student registration time, set a date limit, enable email notifications, and generate a new batch or semester for future students.

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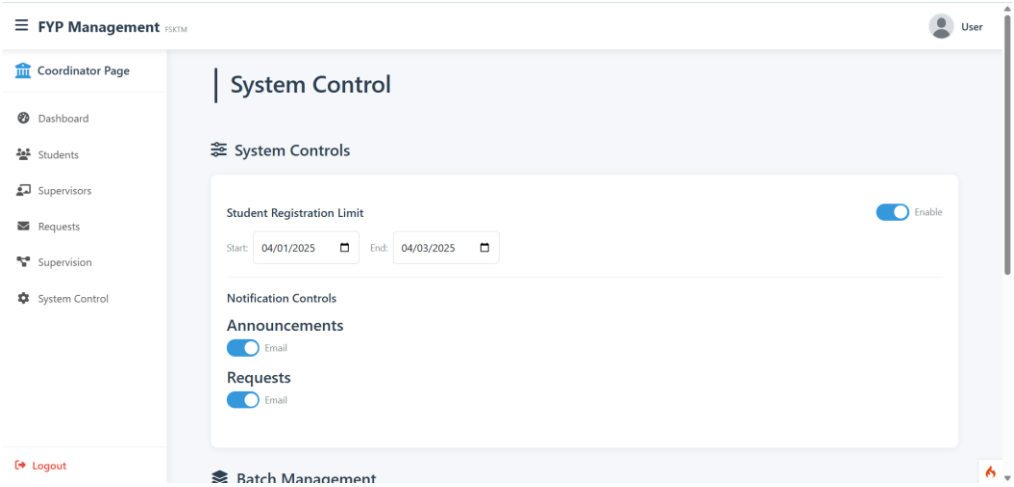

Fig. 15 System control interface

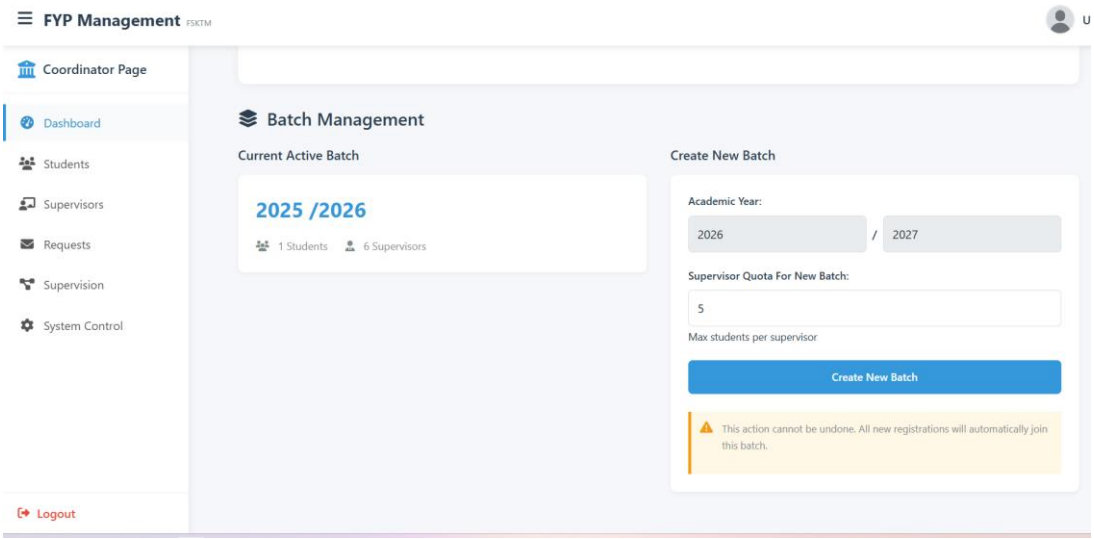

Fig. 16 System control interface (continued)

4.3 Functional Testing

The functional testing of software is mainly used to test functional requirements and module specifications. The functional testing process involves executing the application and checking whether the output matches the expected result. Table 5 shows the test category for the developed system, and Table 6 shows the function testing for the develop system, which records all testing activities and results for the Final Year Project Supervisor Management System for FSKTM.

Table 5 Test category for the developed system

Test Category	Description
1	Test the functionality of the system in the student's role
2	Test the functionality of the system in the supervisor role
3	Test the functionality of the system in the coordinator role

Table 6 Functional testing of the developed system

Module	Test Category	Description	Expected Result	Actual Result
User Management	1	Register a new student account	• Display a student registration form. • Data is validated after clicking the submit button. • Data is stored in the database after being validated.	Pass
	1,2,3	Log into system	• The system validates the user's email and password input and then navigates to the correct homepage.	Pass
	1,2,3	Log out from the system	• The system logs the user out of the system once they click the log-out button.	Pass
Profile Management	1,2	View and update student's profile details	• The user can view their own profile details. • The user can upload a new image. • The student and supervisor can update profile details.	Pass
Project Proposal Management	1	Create, view and update the student's proposal details	• Students can create, update and delete the proposed title and description information for a final year project. Students can upload the proposal PDF files to the system. •	Pass
Supervisor Application Management	1	View the supervisor's list	• The student can view the supervisor list of who is still available to apply. • The student can view the supervisor profile information.	Pass
	1	Send the request to a supervisor	• The student can send an application request to a supervisor. • The student can view the application result.	Pass
Application Review Management	2	View all students' applications	• The supervisor can view the list of application requests. • The supervisor can view the requested student profile..	Pass
	2	Feedback to the student's application	• The supervisor can provide feedback on the student's requests, either accept or reject.	Pass
Accepted Student Management	2	View accepted student	• The supervisor can view the batch's accepted students. • The supervisor can view the student's profile.	Pass
	2	Manage accepted students	• The supervisor can remove the accepted student.	Pass

Table 6 Functional testing of the developed system (continued)

Module	Test Category	Description	Expected Result	Actual Result
Communication chat	1,2	Send message	• The student and supervisor can send a new message. • The message is stored in the database.	Pass
	1,2	Read message	• The student supervisor can get and read messages that another user sends.	Pass
Registration Supervisor Management	3	View registered supervisor	• The coordinator can view the list of supervisors. • The coordinator can view the student who the supervisor currently accepts.	Pass
	3	Create a new supervisor account	• The coordinator can register a new supervisor account once there is a new supervisor.	Pass
Announcement Dashboard Management	1,2	View the announcement	• The student and supervisor can view the list of posted announcements by a coordinator. • The student and supervisor can view the announcement content.	Pass
	3	Create and manage the announcement	• The coordinator can create a new announcement. • The new announcement can stored in the database. • The coordinator can edit the information on the posted announcement. • An email notification is sent when a new announcement is posted.	Pass
Student Management	3	View the student information	• The coordinator can view the list of students who are without a supervisor and the list of all students. • The coordinator can change the selection batch to view a different batch of students.	Pass
	3	Register new student	• The coordinator can register one or multiple student in the developed system.	Pass
Supervisor Management	3	View all supervisor information	• The coordinator can view the list of supervisors.	Pass
	3	Register new supervisor	• The coordinator can register a new supervisor by insert basic information	Pass

Table 6 Functional testing of the developed system (continued)

Module	Test Category	Description	Expected Result	Actual Result
Supervision Management	3	Update each supervisor's quota	• The coordinator can change the supervisor's quota and save it in the database.	Pass
System Control	3	Modify the system control	• The coordinator can modify the system control selection, like setting the registration period limit or changing the enablement of email notification.	Pass

4.4 User Acceptance Testing

User Acceptance Testing (UAT) is an important testing phase in the project lifecycle where the software is tested in a real-world scenario by the intended audience. It is normally the last testing in the software testing before being released to the market [11]. During UAT, stakeholders perform structured test cases to verify usability, functionality, and performance before final deployment. Table 7 shows the result of user acceptance testing for the student role, Table 8 shows the user acceptance testing for the supervisor role, and Table 9 shows the user acceptance testing for the coordinator role.

Table 7 User Acceptance Testing for student role

No	Features	Marks					Total
		1	2	3	4	5	
1	Register a new account				4	6	4.6
2	Login account				4	6	4.6
3	View all announcements				5	5	4.5
4	View announcement details				6	4	4.4
5	View personal profile				3	7	4.7
6	Update personal profile				3	7	4.7
7	Update new password				3	7	4.7
8	View the current proposal idea				4	6	4.6
9	Update the proposal idea				2	8	4.8
10	Remove the posted proposal PDF				4	6	4.6
11	Browse the supervisor list				4	6	4.6
12	View selected supervisor details				5	5	4.5
13	Send an application request to the supervisor				3	7	4.7
14	View application history and details				4	6	4.6
15	Able to join the supervisor's chat room				3	7	4.7
16	Send a message in the chat room				4	6	4.6

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Table 8 User Acceptance Testing for supervisor role

No	Features	Marks					Total
		1	2	3	4	5	
1	Login account					✓	5
2	View all announcements					✓	5
3	View announcement details					✓	5
4	View personal profile					✓	5
5	Update the new password					✓	5
6	View all students' requests					✓	5
7	View student details and the proposed idea					✓	5
8	Reply to the student application, either accept or reject					✓	5
9	View all accepted students					✓	5
10	Remove the student with the provided reason					✓	5
11	Send a message in the chat room					✓	5

Table 9 User Acceptance Testing for coordinator role

No	Features	Marks					Total
		1	2	3	4	5	
1	Login account					✓	5
2	View all announcements					✓	5
3	Remove a certain announcement					✓	5
4	Edit announcement details					✓	5
5	Create a new announcement					✓	5
6	Register a new student					✓	5
7	View all non-supervisor students					✓	5
8	View all students, either current or previous batch					✓	5
9	Download student information in PDF and Excel					✓	5
10	View all supervisor information					✓	5
11	Update the supervisor quota for the current batch					✓	5
12	View all student-to-supervisor requests and results					✓	5
13	View all accepted students for each supervisor					✓	5
14	Download the supervisor-accepted student in PDF format					✓	5
15	Modify the system to enforce a registration limit within a specified date range					✓	5
16	Modify the system control to allow enabling or disabling email notifications					✓	5

5. Conclusion

The Final Year Project Supervisor Selection System for FSKTM has successfully achieved its objectives by providing a centralised and efficient platform for students, supervisors, and coordinators. The system simplifies the supervisor selection process, enabling students to submit proposals, browse supervisors, and send applications, while supervisors can manage requests and communicate with students. Additionally, coordinators can monitor activities and send notifications, ensuring a smooth workflow. Overall, the project fulfils its goal of centralising and transparentising the supervisor selection process within FSKTM.

The system offers several advantages, including student and supervisor account management, project proposal submission, application handling, and real-time communication through a chat feature. It also supports coordinator oversight through announcements and email notifications. However, some limitations exist, such as the lack of mobile accessibility and automated supervisor-student matching suggestions based on research interests. These drawbacks highlight areas where the system could be enhanced for better usability and efficiency. Future improvement could include a password recovery feature in the login interface, multi-factor authentication (MFA), and expanded notification methods like through WhatsApp or Telegram. Developing a mobile app would improve accessibility, while an automated matching algorithm could optimise supervisor-student pairings. These enhancements would further strengthen the system's functionality, security, and user experience, making it even more reliable for FSKTM's needs.

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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: Tam Jin Horng, Noryusliza Binti Abdullah; data collection: Tam Jin Horng; analysis and interpretation of results: Tam Jin Horng, Noryusliza Binti Abdullah; draft manuscript preparation: Tam Jin Horng, Noryusliza Binti Abdullah. All authors reviewed the results and approved the final version of the manuscript.

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Appendix A: Context Diagram

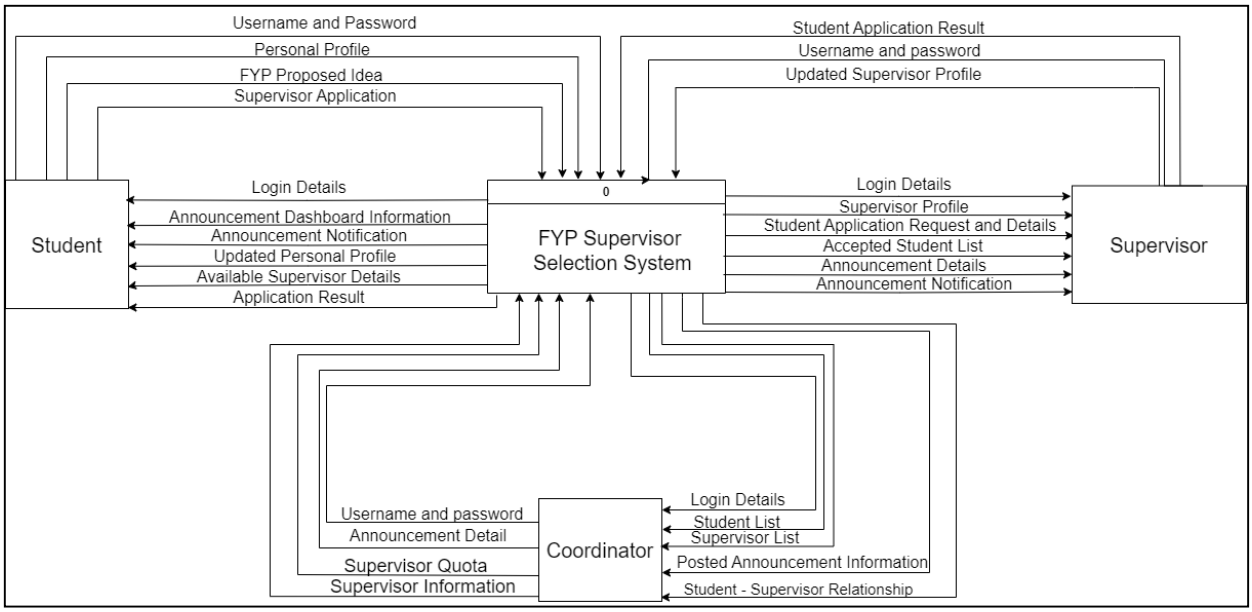

Fig A.1: Context Diagram for

Appendix B: Data Flow Diagram Level 0

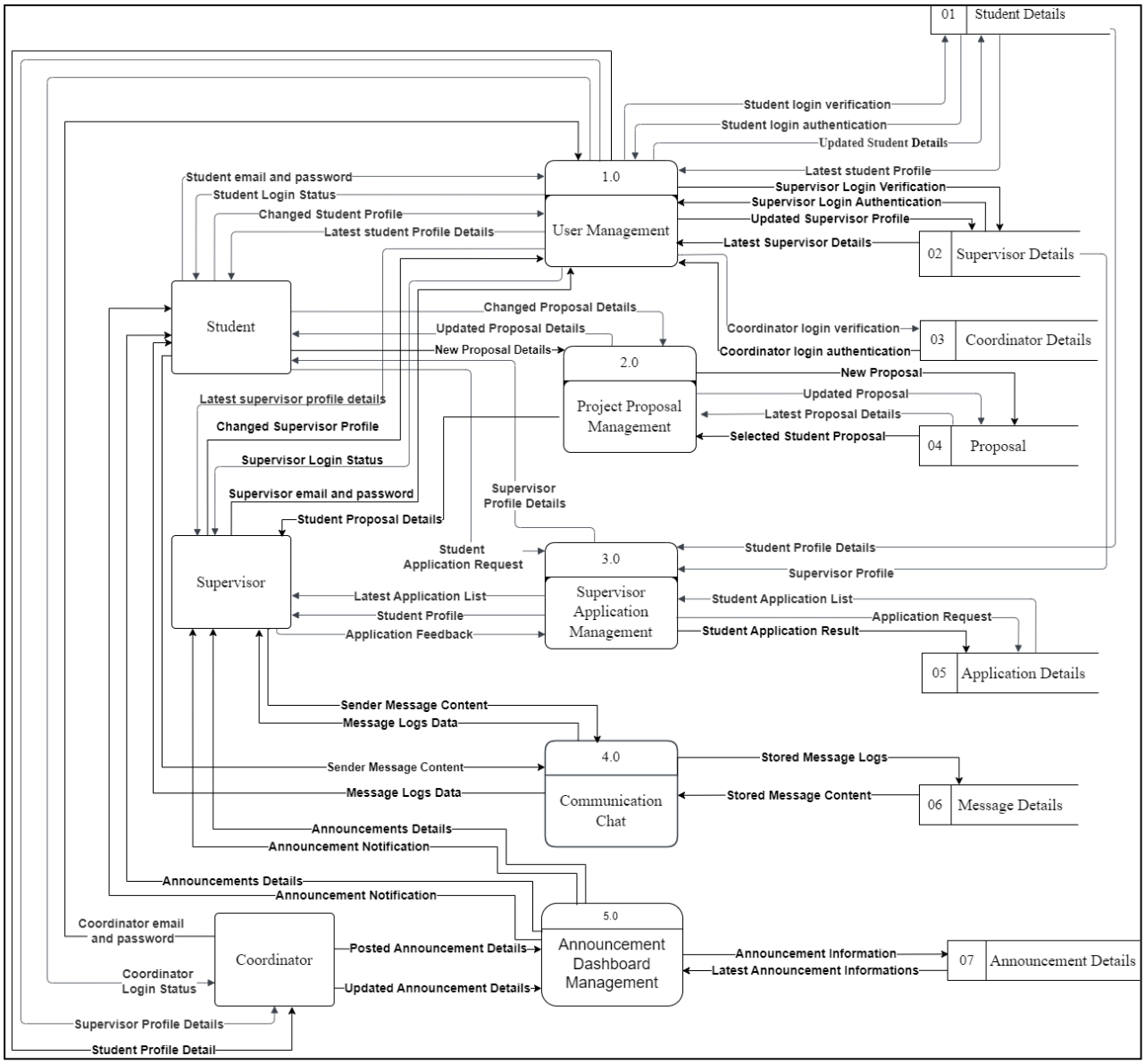

Fig B: DFD Level 0

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Appendix C: Entity Relationship Diagram

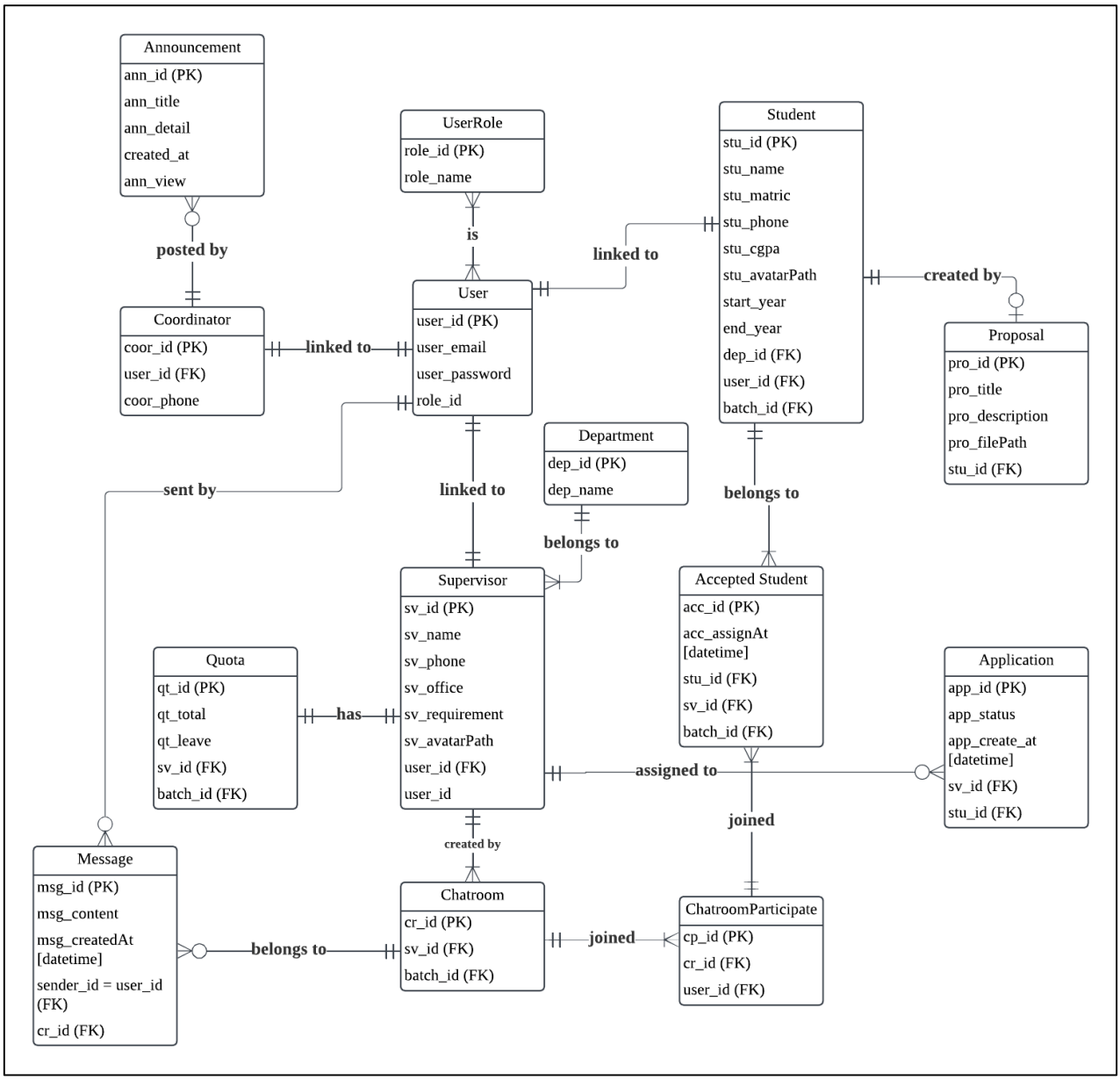

Fig C: ERD