

UNIVERSITI POLY-TECH MALAYSIA

**UPTM AI ENHANCED FINAL YEAR
PROJECT MANAGEMENT SYSTEM**

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UPTM AI ENHANCED FINAL YEAR PROJECT MANAGEMENT SYSTEM

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Abstract

The world now has advanced in different directions, be it the transportation system, online banking and mobile applications that are conveniently available to the people. As the internet is available to a large number of people, and digital literacy is on the rise, developers are enabled to create systems that can help them in easing their lives and also address the current issues. Specifically, web apps have become much more popular likely because of their convenience, their speed and the fact that as apps they do not need installing and thus they save the storage of the user operating device. With the help of the current frameworks, it is now possible to develop at enterprise level web apps effectively and in a shorter period of time. Consistent with these developments, the project to be undertaken is the UPTM AI Enhanced Final Year Project Management System, a web based system developed as a specific solution to Universiti Poly-Tech Malaysia (UPTM) to enhance the management of final year projects by the coordinators and examiners among the student.

Implementation of this project will follow the Agile approach where there will be iterative development within the feedback of the entire UPTM stakeholders, such as the coordinators and lecturers. The flow starts by gathering the user requirements carried out by sending out questionnaires to the students and interviewing the FYP coordinators. Designing user interfaces and system architecture, feature implementation through PHP, Laravel, HTML, CSS, JavaScript and MySQL, proper testing to correct errors as soon as possible are the other subsequent phases. The main system functions will be automation of the assignment of supervisors, AI-based recommendations of supervisors according to student interests, an assessment configurator that will use a rubric, in-depth reporting, and role-specific dashboards of supervisors, coordinators, and students. Tests of usability and functionality of each feature will be carried out prior to their implementation to make sure that the feature can address the needs and expectations of users.

Among the anticipated benefits of the UPTM AI Enhanced FYPMS are that much less time shall be wasted on an administrative task, absence of manual calculations errors, increased transparency, and communication among the stakeholders due to the use of automated alerts and real-time updates. The system will make project schedules, appointing or removing supervisor, project title, student evaluation and reporting a more productive process through a centralized site with pathways to faculty, the central office of university, and student offices. It will improve consistency in grade calculations and give the students and faculty a more comfortable experience. The whole idea of this project is to change and streamline the whole process of undertaking the final year project at the UPTM, which is in line with the ambition by the university to use technology in achieving excellence in academics.

Table of Contents

- 1 INTRODUCTION 15**
 - 1.1 Introduction 15**
 - 1.2 Project Background..... 15**
 - 1.3 Problem Statement 16**
 - 1.3.1 Risk of Duplicate Supervisors 16
 - 1.3.2 Inefficient Assignment of Examiners to Students 16
 - 1.3.3 Incomplete Final Year Report Mark Calculation 16
 - 1.3.4 Difficulty for Students in Generating Project Titles Due to Time Constraints 17
 - 1.4 Project Objectives 17**
 - 1.4.1 To develop a system that can enforce One-to-One Supervisor Assignment..... 17
 - 1.4.2 To automate the Assignment of Examiners to Students for FYP coordinator ... 17
 - 1.4.3 To Generate Total Final Year Project Marks Automatically 17
 - 1.4.4 To implement AI feature that can suggest FYP title based on keywords input . 18
 - 1.5 Scope and Target User..... 18**
 - 1.5.1 Project Scope 18
 - 1.5.2 Product Scope 18
 - 1.5.3 Target User..... 19
 - 1.6 Overview of This Report..... 20**
- 2 LITERATURE REVIEW..... 21**
 - 2.1 Introduction 21**
 - 2.2 Investigation 21**
 - 2.2.1 What is Artificial Intelligence 21
 - 2.2.2 The Management System 22
 - 2.2.3 The Documentation Review Process 22
 - 2.3 Related Works..... 23**
 - 2.3.1 UPTM Final Year Project Management System 23
 - 2.3.2 UiTM Final Year Project Management System..... 28
 - 2.3.3 UNIMAS Final Year Project Supervisor Management System 29
 - 2.4 Comparison 31**
 - 2.5 Discussion 32**
 - 2.6 Conclusion..... 32**
- 3 METHODOLOGY 34**
 - 3.1 Introduction 34**
 - 3.2 Agile Methodology..... 34**
 - 3.3 Phases in Agile Methodology 35**
 - 3.3.1 Phase 1 35
 - 3.3.2 Phase 2 35
 - 3.3.3 Phase 3 35
 - 3.3.4 Phase 4 35
 - 3.3.5 Phase 5 36

- 3.3.6 Phase 6 36
- 3.4 Conclusion..... 36**
- 4 REQUIREMENTS 37**
- 4.1 Introduction 37**
- 4.2 Data Gathering Techniques 37**
 - 4.2.1 Interview 37
 - 4.2.2 Questionnaire 38
- 4.3 Functional Requirement..... 38**
- 4.4 Non-Function Requirement..... 39**
- 4.5 System Requirement 40**
 - 4.5.1 Software requirement – Visual Studio Code..... 40
 - 4.5.2 Hardware requirement – Server 40
 - 4.5.3 Hardware requirement – Remote client development..... 41
- 4.6 Conclusion..... 41**
- 5 ANALYSIS 41**
- 5.1 Introduction 41**
- 5.2 Data Gathering Analysis 42**
 - 5.2.1 Questionnaire Analysis 42
 - 5.2.2 Interview Analysis 50
 - 5.2.3 Interviewee 1 50
 - 5.2.4 Interviewee 2 53
 - 5.2.5 Interviewee 3 57
- 5.3 Use Case Model 61**
- 5.4 Flowchart 62**
- 5.6 Conclusion 66**
- 6 DESIGN..... 67**
- 6.1 Introduction 67**
- 6.2 Interface Design..... 67**
 - 6.2.1 Login Page 67
 - 6.2.2 Home dashboard page 68
 - 6.2.3 Data table and search layout 68
 - 6.2.4 Add and edit dialog layout..... 69
 - 6.2.5 FYP Title Registration page 69
 - 6.2.6 AI Title generated dialog form 70
 - 6.2.7 Automatic examiner assignments 70
 - 6.2.8 User menu control 71
- 6.3 Database Design..... 72**
 - 6.3.1 Data Dictionary 72
 - 6.3.1.1 Users table 72
 - 6.3.1.2 Roles table..... 72
 - 6.3.1.3 Role user table..... 73
 - 6.3.1.4 Titles table 73
 - 6.3.1.5 Supervisions table 74

- 6.3.1.6 Subjects table 74
- 6.3.1.7 Programs table 75
- 6.3.1.8 Academic sessions table 75
- 6.3.1.9 Students table 76
- 6.3.1.10 Lecturers table 76
- 6.3.1.11 Settings table 77
- 6.3.1.12 Recommended titles table 77
- 6.3.1.13 Project categories table 77
- 6.3.1.14 Fields table 78
- 6.3.1.15 Examiners table 78
- 6.3.1.16 Feature accesses table 78
- 6.3.1.17 Rubrics table 79
- 6.3.1.18 Rubric criteria table 79
- 6.3.1.19 Rubric duplications table 80
- 6.3.1.20 Rubric grade comments table 80
- 6.3.1.21 Rubric grade items table 81
- 6.3.1.22 Rubric grades table 81
- 6.3.1.23 Rubric levels table 82
- 6.3.1.24 Rubric types table 82
- 6.3.1.25 Student submissions table 83
- 6.3.1.26 Submission types table 83
- 6.3.1.27 User activity logs table 84
- 6.3.2 Data Flow Diagram (DFD) 85
- 6.3.3 Entity Relational Diagram (ERD) 86
- 6.4 Flow of the System 89**
 - 6.4.1 Login flow 89
 - 6.4.2 AI FYP title generation flow 90
 - 6.4.3 Automatic examiner assignment flow 91
 - 6.4.4 Automatic marks calculation flow 92
- 6.5 Conclusion 93**
- 7 IMPLEMENTATION 94**
 - 7.1 Introduction 94**
 - 7.2 Execution Platform 94**
 - 7.2.1 Windows 11 94
 - 7.2.2 Ubuntu Server 95
 - 7.3 Implementation Tools 95**
 - 7.3.1 Implementation Tools 95
 - 7.3.1.1 Laravel 95
 - 7.3.1.2 Next.JS (React) 96
 - 7.3.1.3 Docker 97
 - 7.3.1.4 MySQL 97
 - 7.3.2 Hardware tools 98
 - 7.4 System Interface 98**
 - 7.4.1 Login page 98
 - 7.4.2 Dashboard page 99
 - 7.4.3 Data table and search page 99
 - 7.4.4 Add and edit dialog component 100
 - 7.4.5 FYP title registration page 100

- 7.4.6 AI Title generated component 101
- 7.4.7 Automatic examiner assignment page 102
- 7.4.8 User menu control component 102
- 7.5 Significant Functions 103**
 - 7.5.1 Google authentication 103
 - 7.5.2 Overlapping supervisor prevention 104
 - 7.5.3 Automatic examiner assignment 104
 - 7.5.4 FYP AI title generation 105
- 7.6 Conclusion 105**
- 8 TESTING 106**
 - 8.1 Introduction 106**
 - 8.2 Unit Testing 106**
 - 8.3 Integration Testing 109**
 - 8.4 System Testing 109**
 - 8.4.1 Functional Testing 109
 - 8.4.2 Non-Functional Testing 110
 - 8.5 Acceptance Testing 111**
 - 8.5.1 Client testing and result 111
 - 8.5.2 Testing and result – Functionality Feedback (Coordinator FYP) 113
 - 8.5.3 Testing and result – Functionality Feedback (FYP Lecturer) 114
 - 8.5.4 Testing and result – Functionality Feedback (Student) 116
 - 8.6 Conclusion 122**
- 9 PROJECT MANAGEMENT 123**
 - 9.1 Introduction 123**
 - 9.2 Project Schedule 123**
 - 9.2.1 Work Breakdown Structure 124
 - 9.2.2 Gantt Chart 125
 - 9.3 Risk Management 126**
 - 9.4 Conclusion 126**
- 10 CONCLUSION 127**
 - 10.1 Introduction 127**
 - 10.2 Achievement 127**
 - 10.2.1 To develop a system that can enforce One-to-One Supervisor Assignment... 127
 - 10.2.2 To automate the Assignment of Examiners to Students for FYP coordinator . 128
 - 10.2.3 To Generate Total Final Year Project Marks Automatically 129
 - 10.2.4 To implement AI feature that can suggest FYP title based on keywords input 129
 - 10.3 Constraint and Limitation 130**
 - 10.4 Future Work and Recommendation 130**
 - 10.4.1 Digital drawing and direct save to server 130
 - 10.4.2 Fully use self hosted AI instead of using API services 130
 - 10.4.3 Provide more configurable settings 130
 - 10.5 Conclusion 131**

Appendix A – Requirements Specification Document 132
Appendix B – User Manual..... 136
Appendix C – Turnitin Result..... 151
Appendix D – Log Book 153
..... 153
References 156

List of Figures

Figure 2.1: UPTM Final Year Project Management System..... 23

Figure 2.2: Home page of UPTM FYPMS..... 24

Figure 2.3: Users page..... 25

Figure 2.4: Supervision page..... 26

Figure 2.5: Title approval page..... 26

Figure 2.6: Report list..... 27

Figure 2.7: UiTM FMS..... 28

Figure 2.8: UNIMAS FYPSMS..... 29

Figure 3.1: Agile Methodology Diagram (Asana, 2025)..... 34

Figure 4.1: Visual Studio Code (Visual Studio Code, 2025)..... 40

Figure 5.1: Questionnaire question 1..... 42

Figure 5.2: Questionnaire question 2..... 43

Figure 5.3: Questionnaire question 3..... 43

Figure 5.4: Questionnaire question 4..... 44

Figure 5.5: Questionnaire question 5..... 44

Figure 5.6: Questionnaire question 6..... 45

Figure 5.7: Questionnaire question 7..... 45

Figure 5.8: Questionnaire question 8..... 46

Figure 5.9: Questionnaire question 9..... 46

Figure 5.10: Questionnaire question 10..... 47

Figure 5.11: Questionnaire question 11..... 47

Figure 5.12: Questionnaire question 12..... 48

Figure 5.13: Questionnaire question 13..... 48

Figure 5.14: Questionnaire question 14..... 49

Figure 5.15: Questionnaire question 15..... 49

Figure 5.16: Interview session with Mdm. Noraliza Binti Azizan..... 50

Figure 5.17: Interview session with Ms. Fatanah Syazana Zuraine Binti Ahmad..... 53

Figure 5.18: Interview session with Mdm. Norfazlina Binti Johar..... 57

Figure 5.19: Use Case Diagram..... 61

Figure 5.20: UPTM AI Enhanced FYPMS Flowchart 1..... 62

Figure 5.21: UPTM AI Enhanced FYPMS Flowchart 2..... 63

Figure 5.22: UPTM AI Enhanced FYPMS Flowchart 3..... 64

Figure 5.23: UPTM AI Enhanced FYPMS Flowchart 4..... 65

Figure 6.1: Wireframe 1 - Login Page..... 67

Figure 6.2: Wireframe 2 - Home dashboard page..... 68

Figure 6.3: Wireframe 3 - Data table and search layout..... 68

Figure 6.4: Wireframe 4 - Adding data form..... 69

Figure 6.5: Wireframe 5 - FYP Title Registration page..... 69

Figure 6.6: Wireframe 6 - AI Title generated dialog form..... 70

Figure 6.7: Wireframe 7 - Automatic examiner assignments to students..... 70

Figure 6.8: Wireframe 8 - User menu control..... 71

Figure 6.9: Data flow of UPTM AI Enhanced FYPMS..... 85

Figure 6.10: ERD UPTM AI Enhanced FYPMS Page 1..... 86

Figure 6.11: ERD UPTM AI Enhanced FYPMS Page 2..... 87

Figure 6.12: ERD UPTM AI Enhanced FYPMS Page 3..... 88

Figure 6.13: Login flow..... 89

Figure 6.14: AI titles student submission flow..... 90

Figure 6.15: Automatic examiner assignment flow..... 91

Figure 6.16: Automatic marks calculation and grading flow 92

Figure 7.1: Windows 11 with code editor 94

Figure 7.2: Ubuntu server accessed through SSH..... 95

Figure 7.3: Laravel logo..... 95

Figure 7.4: Next.JS logo 96

Figure 7.5: Docker logo 97

Figure 7.6: MySQL command line 97

Figure 7.7: Login page 98

Figure 7.8: Dashboard layout 99

Figure 7.9: Data table and search page..... 99

Figure 7.10: Add and edit dialog component 100

Figure 7.11: FYP title registration page 100

Figure 7.12: AI Title generated component..... 101

Figure 7.13: Automatic examiner assignment page 102

Figure 7.14: User menu control 102

Figure 7.15: Google Auth backend controller..... 103

Figure 7.16: Supervisee approval controller 104

Figure 7.17: Automatic examiner assignment snippet 104

Figure 7.18: FYP title generation with AI services 105

Figure 8.1: Interviewee picture 111

Figure 8.2: Interviewee picture 112

Figure 8.3: Interviewee picture 112

Figure 8.4: Questionnaire student question 1 116

Figure 8.5: Questionnaire student question 2 116

Figure 8.6: Questionnaire student question 3 117

Figure 8.7: Questionnaire student question 4 117

Figure 8.8: Questionnaire student question 5 118

Figure 8.9: Questionnaire student question 6 118

Figure 8.10: Questionnaire student question 7 119

Figure 8.11: Questionnaire student question 8 119

Figure 8.12: Questionnaire student question 9 120

Figure 8.13: Questionnaire student question 10 120

Figure 8.14: Questionnaire student question 11 121

Figure 8.15: Questionnaire student question 12 122

Figure 9.1: Work Breakdown Structure (WBS) 124

Figure 9.2: Gantt chart 125

Figure 10.1: Supervisee approval controller 127

Figure 10.2: Automatic examiner assignment page 128

Figure 10.3: Report with total marks calculated 129

Figure 10.4: AI Title generated component..... 129

List of Tables

Table 2.1: Comparison of Existing Project.....	31
Table 4.1: Functional requirements table for coordinators	38
Table 4.2: Functional requirements table for supervisor/examiner	39
Table 4.3: Functional requirements table for student	39
Table 4.4: Non-functional requirements table	39
Table 4.5: Server Hardware Requirement	40
Table 4.6: Remote client development Hardware Requirement.....	41
Table 5.1: Interviewee 1 Question 1 Feedback Analysis	50
Table 5.2: Interviewee 1 Question 2 Feedback Analysis	51
Table 5.3: Interviewee 1 Question 3 Feedback Analysis	51
Table 5.4: Interviewee 1 Question 4 Feedback Analysis	52
Table 5.5: Interviewee 1 Question 5 Feedback Analysis	52
Table 5.6: Interviewee 1 Question 6 Feedback Analysis	52
Table 5.7: Interviewee 2 Question 1 Feedback Analysis	53
Table 5.8: Interviewee 2 Question 2 Feedback Analysis	54
Table 5.9: Interviewee 2 Question 3 Feedback Analysis	55
Table 5.10: Interviewee 2 Question 4 Feedback Analysis.....	55
Table 5.11: Interviewee 2 Question 5 Feedback Analysis.....	55
Table 5.12: Interviewee 2 Question 6 Feedback Analysis.....	56
Table 5.13: Interviewee 3 Question 1 Feedback Analysis.....	57
Table 5.14: Interviewee 3 Question 2 Feedback Analysis.....	58
Table 5.15: Interviewee 3 Question 3 Feedback Analysis.....	58
Table 5.16: Interviewee 3 Question 4 Feedback Analysis.....	59
Table 5.17: Interviewee 3 Question 5 Feedback Analysis.....	59
Table 5.18: Interviewee 3 Question 6 Feedback Analysis.....	60
Table 6.1: Table users.....	72
Table 6.2: roles table.....	72
Table 6.3: role_user table.....	73
Table 7.1: Hardware specifications.....	98
Table 8.1: Unit testing table	106
Table 8.2: Integration testing table	109
Table 8.3: Functional system testing table.....	109
Table 8.4: Non functional system testing table	110
Table 8.5: UAT Feedback Coordinator FYP question 1	113
Table 8.6: UAT Feedback Coordinator FYP question 2	113
Table 8.7: UAT Feedback Coordinator FYP question 3	113
Table 8.8: UAT Feedback Coordinator FYP question 4	114
Table 8.9: UAT Feedback FYP lecturer question 5.....	114
Table 8.10: UAT Feedback FYP lecturer question 5.....	114
Table 8.11: UAT Feedback FYP lecturer question 5.....	115
Table 8.12: UAT Feedback FYP lecturer question 5.....	115

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1 INTRODUCTION

1.1 Introduction

This part presents the project that is to be done. It describes the background of the project, provides a list of problems statements and mentions the objectives. The reason why these parts are important is that they ensure that the project has an idea of what it intends to achieve and what it is supposed to have capability wise so as to address the actual needs of the users very well.

Scope of the project is also discussed in the introduction. It provides a list of the tools, technologies and the time frame that is required in developing the UPTM AI Enhanced Final Year Project Management System. The product scope is presented, where the key characteristics of the system will be revealed, including supervisor assignment, automation of examiners, submission of reports, and rubric-based marking.

In this section, the target users of the system are named: namely the coordinators who run final year projects, supervisors/examiners who verify the work of students and students themselves who are required to provide the system with their project names and proposals as well as the final reports. This section makes the project focused as well as aligns the needs of all the stakeholders on the UPTM final year project. This is achieved by outlining the scope and the intended users early in the documentation.

1.2 Project Background

A plan, which is the route and order through the different activities specified to produce its products, serves as the foundation for a project's lifecycle. Under the supervision of the organization's senior management, project management is the controlled execution of the project plan. A project is considered successful if it has met overall business objectives and produced its goods or services in accordance with the project plan. Delivering anticipated business benefits or the capability needed for benefits delivery within the company are now increasingly considered as indicators of project success (The Northern Ireland Executive, 2024).

A management system is a collection of guidelines that an organization uses to help it achieve specific quality standards across various management domains. These systems address a number of business operations, such as finances, customer relations, employee satisfaction, and adherence to safety and quality standards. Management systems come in a wide variety of forms, including software and hardware systems.

In terms of software, these can be a single program or a collection of programs that assist an organization in efficiently managing its systems, thereby making the process of upholding its standards easier. There are several software programs available to automate the operation of different systems within an organization (Indeed, 2025).

One of the primary problems in the majority of organizations is the existence of manual handling in their administration processes. It is an antiquated approach that forms a chain of problems, including inefficiency brought about by repetitive tasks, increased susceptibility to human error during data processing and entry, and poor data accuracy that erodes the ability to make informed decisions. Consequently, businesses are plagued by sluggish workflows, low productivity, and inability to scale, impacting their competitiveness and profitability.

In this project, we will develop a web application for the users at educational institutions, namely Universiti Poly-Tech Malaysia. The project developed is Universiti Poly-Tech Malaysia AI Enhanced Final Year Project Management System, or UPTM AI Enhanced FYPMS for short. This web application will be developed using a programming language that is mostly used by professional developers and provides important features to users at UPTM, namely coordinators, supervisors and students. In this project, it is capable of recording all students who will take the Final Year Project course and issuing the desired report. Each of these problems will be resolved and it is also considered the main objective of this project. Next, with the ability to display complete reports and calculate comprehensive automatic marks for all students, it is categorized as an AI function found in this project. At the same time, it facilitates users and avoids all methods that are done manually.

1.3 Problem Statement

1.3.1 Risk of Duplicate Supervisors

The manual system does not have adequate tracking or validation to guarantee that every student is assigned to a single supervisor. This puts a student at risk of having multiple supervisors by mistake, which could lead to confusion in project guidance, evaluation, and record management.

1.3.2 Inefficient Assignment of Examiners to Students

Examiners are currently assigned to students manually. One student at a time must be assigned to each examiner separately. Large student populations make this procedure laborious and prone to mistakes, which can cause scheduling conflicts or unequal workload distribution among examiners.

1.3.3 Incomplete Final Year Report Mark Calculation

Examiners manually enter rubric-based scores during the last evaluation stage. The final score is not, however, computed or shown automatically. This increases the possibility of human error and inconsistent grading by requiring coordinators or examiners to compute totals independently.

1.3.4 Difficulty for Students in Generating Project Titles Due to Time Constraints

Students are usually subjected to a lot of pressure to come up with project titles that are appropriate in very little time. This problem is aggravated when students are largely unfamiliar with their interests or when they were not given adequate directions in the process of title selection. The manual system lacks systematic help and guides on how to brainstorm or narrow down possible topics of development and writing the project. Hence, due to this, most students find it difficult to come up with a worthy and viable project value with the end result being that the project may either take long to be approved or the topic may not be within the ability or academic interests of the students respectively.

1.4 Project Objectives

1.4.1 To develop a system that can enforce One-to-One Supervisor Assignment

On this project, validation rules will also be put in place in the system such that any student will only be available with a single supervisor at a certain time. The system also avoids repetitive assignments thereby eliminating confusion of who supervises who. It will also keep list of supervisor-student match clear, easy to access, and it will be easy to make coordinators follow up on supervision matches during the semester.

1.4.2 To automate the Assignment of Examiners to Students for FYP coordinator

The project will provide an intelligent module which will assign students to examiners automatically according to some pre-set rules or depending on the availability of the examiners. This automation makes the distribution of the work even and less workload to be done manually by the coordinators. The system ensures fairness and efficiency since the approach to distributing the work in question is standardized and, thus, no examiner is overworked and all the learners are appraised correctly.

1.4.3 To Generate Total Final Year Project Marks Automatically

An automated calculation component will be implemented in the project so that to obtain total marks based on the scores input by the supervisors and examiners in digital rubrics. The system will use preset weightages on every rubric criterion to provide consistent and fair end grades. This avoids the mistakes in manual calculation procedures, aids in saving time by the lecturers, and makes students be duly assessed in fair and transparent evaluation.

1.4.4 To implement AI feature that can suggest FYP title based on keywords input

The current project is aimed at implementing an intelligent-based aspect that will help students create appropriate project titles according to keywords they insert when submitting their projects. The system will employ the methodology of natural language processing (NLP) in order to determine the context of the keywords and propose appropriate, creative, and academically feasible project titles. It assists students to avoid the outturn of resourcefulness in time-bound situations and better their project proposal quality. It also makes sure that students will get title ideas that pertain to their fields of interest and are already the current trends in the industry or research areas where there is a gap.

1.5 Scope and Target User

For this part, the project being developed must have an accurate and appropriate scope, and then have a clear target user so that the project being developed has the appropriate users and also helps to achieve the stated objectives.

1.5.1 Project Scope

The proposed project will be developed within three months and the final outcome of the project is the UPTM AI Enhanced Final Year Project Management System web application. During development the input of experienced FYP coordinators and lecturers will be sought to ensure that developed system is in line with the actual needs of the users. The application will be done on PHP to provide server logic programming, HTML, CSS, and JavaScript as the front end programming and MySQL as the database to house all the systems data. Laravel framework will also be employed to arrange and streamline the development of the project. At week 10, a complete operable prototype will be available and will be used to gather some feedback with users, which will be recorded to allow improvement.

1.5.2 Product Scope

The UPTM AI Enhanced FYPMS will support three primary user roles namely, coordinator/FYP lecturer, supervisor/examiner, and student. The system will come up with the logic necessary to have a one-to-one relationship between each of the supervisors and each of the students so that every student is allocated to a single supervisor and every supervisor would have a maximum of four students under its supervision. Moreover, students will automatically get examiners under pre-set rules to be assigned without manual labour and to be fairly distributed. The coordinators will be able to control students, supervisors, semesters, subjects, program and rubrics and can see overall reports of the student marks. The report marking process will be based on the use of rubrics that are outlined by the coordinator so that the grading becomes uniform and transparent.

1.5.3 Target User

This project only has 3 types of users. Namely coordinator, supervisor and student, it is a user from the University Poly-Tech Malaysia institution for the management of the final year project.

1.5.3.1 Coordinator/FYP Lecturer

This user is the most privileged user in the system acting as an administrator of the system. They take up the management and cleaning of the system, such as, maintenance of user accounts, creating academic semesters and programs, allocating supervisors and examiners to students, approval of project titles, assessment rubric and creation of comprehensive reports to be overseen by the institution.

1.5.3.2 Supervisor/Examiner

This is the user who is normally a lecturer and his mandate is to direct the students academically and to assess them in view of their performance. They are involved in approving or suggesting project titles, acceptance of students to be supervised, consider and give comments on proposals and evaluate received elements of the project. They become examiners where they are sent to certain students to assess the output of the final project to standard results in a fair standardized manner.

1.5.3.3 Student (CT203, CT204, CT206)

The target audience would be the student who would be interested in doing his final year project. They use the system to provide their project title to be approved, the uploading of their proposal and other necessary documents to be reviewed by the supervisor and individual grades and information on the same. The system is the primary source of the management and agreement of project milestones as well as official communication between them and their appointed supervisor and the FYP coordinator.

1.6 Overview of This Report

In this thesis last year project report or documentation, it has all the vital sections that are required to give a grand picture of the project like the introduction, literature review, methodology, and rationale of the development of the project, and user feedback or evaluation. The processes undertaken, decisions made, and results obtained will be well-explained and known in complete detail in each of the sections with none of the details of the project being overlooked. This will involve the clear definition of the purpose, scope, requirement and features of the UPTM AI Enhanced Final Year Project Management System, and the participation of stakeholders in form of interviews and questionnaires. The difficulty faced, the steps taken to counter them as well as the testing results of these steps would also be described on the documentation. This information is all that would be important when evaluating the success of the project today and in future reference to future developments or similar activities so that full understanding of the goals of this project is met.

2 LITERATURE REVIEW

2.1 Introduction

Literature review, a section that provides this project with how we study existing systems. By evaluating the available functions and determining the problems encountered. The study will be conducted on related systems that have similar functions. Project UPTM AI Enhanced Final Year Project Management System will be developed and features will be provided based on this study. It is important to get ideas and problem determination from existing systems.

A good literature review synthesizes, evaluates, summarizes, and analyzes the pertinent literature in a certain field of study. It sheds light on how the field's knowledge has developed, emphasizing what has already been done, what is widely acknowledged, what is new, and what the current consensus is on the subject. Reviews of the literature also point up topics that have not received enough attention or have not been thoroughly studied (Monash University, 2025).

2.2 Investigation

The following is a section to investigate the issues encountered and determine the problems that users will face. Each issue and problem will be explained in detail. The following study is conducted in detail on how the document marking system is carried out and marked by the people involved, such as lecturers marking student exams. Or giving final marks to assignments submitted by students, and how the marks are collected and stored.

2.2.1 What is Artificial Intelligence

Artificial intelligence is a branch of science concerned with developing computers and machines that can reason, learn, and act in ways that would normally require human intelligence, or that involve data on a scale that humans cannot handle (Google Cloud, 2025). AI requires specialized hardware and software to create and train machine learning algorithms. AI developers use a variety of programming languages, including Python, R, Java, C++, and Julia (Lev Craig, 2024).

However, the majority of AI practitioners, researchers, and news stories in 2024 center on advances in generative AI (gen AI), a technology that can produce original text, images, videos, and other types of content. Understanding machine learning (ML) and deep learning, the technologies that underpin generative AI tools, is crucial to comprehending generative AI in its entirety (Cole Stryker, 2024).

UPTM is set to revolutionize its Final Year Project Management System (FYPMS) with the integration of cutting-edge Artificial Intelligence. AI-based FYPMS will be distinguished by Gemini 2.0 Flash, a powerful and efficient AI model to be solely used for title suggestion. This innovative application will significantly ease the initiation, usually problematic, process of project ideation, making it much easier and faster for students to obtain suitable and interesting FYP titles that are in alignment with their fields of interest and capability.

2.2.2 The Management System

A management system explains how businesses set up their structures and procedures to act methodically, guarantee efficient operations, and produce desired outcomes. The Plan-Do-Check-Act (PDCA) cycle of planning, implementation, review, and improvement is typically followed by modern management systems. Processes that are optimized and structured form the foundation of an efficient management system. By defining clear roles, procedures, and rules, it thereby establishes the organization's systematic and ongoing improvement (DQS, n.d.).

Depending on business operates and what objectives need to be met, management systems can be used anywhere. This could be across industries or in a particular sector, like logistics and transportation, the automotive sector, or the healthcare sector (DQS, n.d.).

As regards to Universiti Poly-Tech Malaysia, efficient management system plays an essential role to manage the complexity of Final Year Project. UPTM AI Enhanced FYPMS is the contemporary approach to a management system because instead of speculating in vague definitions of users of the system should be, namely, coordinators, supervisors and students, it is defined. Also, the essential parts of the management system, such as supervisor appointment, examiner appointment and the calculation of the final mark have been automated. Within the framework of the PDCA cycle, ensuring the continuity of observation over time and improvement in activities of FYP, the system fits with the structure of workflow, access based on roles, and trustworthy tracking of progress. Automated notifications, extensive reporting, and AI-driven titles advice are some of the features used to make the functioning of student projects systematic, efficient, and qualify to meet the quality standards set in the university.

2.2.3 The Documentation Review Process

A documentation review is a process in which a document is reviewed by one or more reviewers, and the document is modified based on their comments. The process of document review improves the document's quality and accuracy as a result. One of the most time-consuming tasks when it comes

to end-user documentation is documentation review. It takes a lot of focus and concentration because it's not as easy as reading the document and identifying typos or grammatical errors (Kingson S, 2022).

It's actually far more intricate than that, requiring careful examination of each word, heading, sentence, and paragraph to make sure there are no informational gaps or logical inconsistencies. It must comprehend the document's structure, determine its main audience, assess its readability, spot any truncated sentences or parts that need to be expanded, and more (Kingson S, 2022).

In UPTM AI Enhanced FYPMS, a proper documentation review mechanism is necessary so as to achieve desired academic standards in proposals, reports and final submissions as well as ensuring that they comply with laid down guidelines. Integrated commenting, direct feedback tools, version tracking functionality are the examples of feature that allow supervisors and coordinators to review student documents systematically, give more detailed input and ask revision where necessary. This means that UPTM AI Enhanced FYPMS allows a complete and organized review process with minimal misunderstandings, better quality of documents, and makes sure that every submission made meets the standards the university has put on Final Year Projects.

2.3 Related Works

These three projects which is UPTM Final Year Project management system, UiTM Final Year Project Management System and UNIMAS Final Year Project Supervisor Management System were selected to study each existing function and feature, then make a comparison in terms of advantages and disadvantages, and a final discussion to use several ideas that can be integrated into the new project system, namely the UPTM AI Enhanced Final Year Project Management System.

2.3.1 UPTM Final Year Project Management System

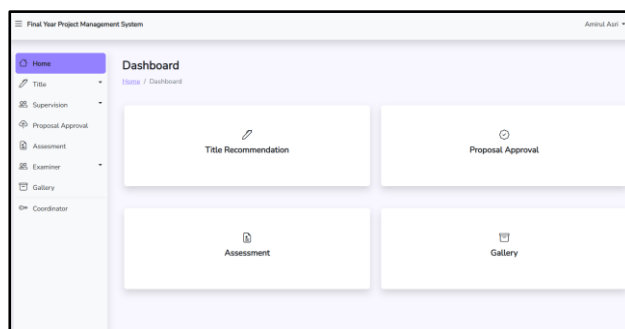


Figure 2.1: UPTM Final Year Project Management System

The final year project (FYP) is one of the major activities during a student academic period and thus requires a well-organized and effective management process. To this effect, universities are implementing the use of specialized system which is UPTM Final Year Project Management System (UPTM FYPMS). This literature review discusses the main features of such a system that it is planned to be implemented in Universiti Poly-Tech Malaysia (UPTM), and it is based on already conducted research and best practices in the sphere. The plan of review will be organized according to the major components of a complete FYPMS, such as the core of central dashboard placed on the home page to the particular roles and duties of lecturers.

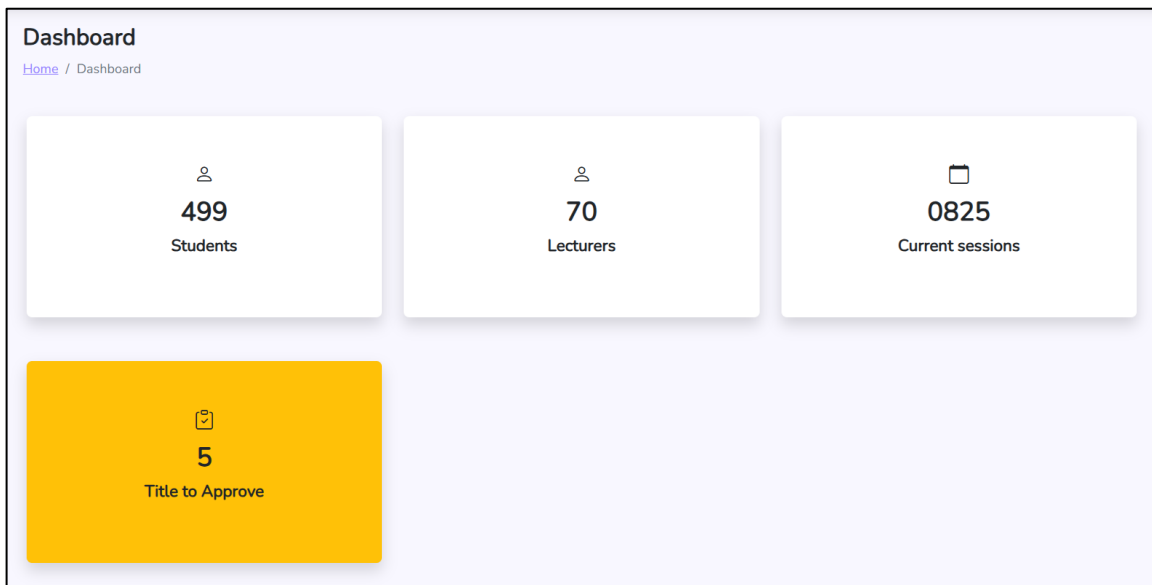


Figure 2.2: Home page of UPTM FYPMS

A good FYPMS brings a central dashboard on logging in, and this view will consist of a total picture of the current state of a project. An academic and project management system research emphasizes the significance of comprehensive informative homepage to all user roles. As far as administrators and coordinators are concerned, this normally features key performance indicators like the complete number of registered students, and participating lecturers, giving them an instant overview of the magnitude of the FYP ordeal at the present academic year. Moreover, another major characteristic is the display of outstanding items in most cases, the number of titles which have been submitted by students and which are still awaiting approval. This will imply that the important decision-making processes do not become shelved and that the earlier phases of the FYP pursuit will not be bogged down.

Name	Email	Matrix/Staff Id	Type	Status		
Admin One	admin1@test.com	N/A	Admin	Active	View	Edit
Edham Rabuan	ahmadaham99@gmail.com	N/A	Lecturer	Active	View	Edit
shuhadah	shuhadah85@gmail.com	12345	Student	Inactive	View	Edit
Nor Hafiza binti Abd Samad (Hjh)	hafiza@uptm.edu.my	N/A	Lecturer	Active	View	Edit
Nurshafinas binti Roslan	shafinas@uptm.edu.my	N/A	Lecturer	Inactive	View	Edit
Siti Faizah binti Miserom	faizah@uptm.edu.my	N/A	Lecturer	Active	View	Edit
Dr. Nadiyah Binti Yusof	nadiyah_y@uptm.edu.my	N/A	Lecturer	Active	View	Edit
Mohd Fitri Bin Yahya	fitri@uptm.edu.my	N/A	Lecturer	Active	View	Edit

Figure 2.3: Users page

Any secure and effective information system has to be supported by strong user management. In FYPMS, it can be held that one can not only see all registered users, but also filter the users, according to a given criteria. The literature on web-based academic systems insists on the need to implement role-based access control (RBAC), namely, students, lecturers, and a coordinator, who have a different permission and access information. The ability of the proposed UPTM system to filter players by any program, academic session, level (diploma or degree) and status (active or inactive) conforms to the best practice of specific administration and communication. Modification and deletion of user accounts by the authorized personnel are necessary to control the accuracy of data entered and to manage the life cycle of the user computer, such as issuing a new account to students and lecturers and removing that account once the project is completed or student has left the university.

The entire ability of an FYPMS to operate lies firmly in its successful control and versatile management of primary academic information. The capacity to add, edit, delete as well as view information about semesters, relevant subjects (like "Final Year Project 1" and "Final Year Project 2") and academic programs is a pre-condition to the successful implementation of the system. This is the ground information to support all other modules, including signing up a user and submitting a title, as well as assigning supervision and evaluating the same. With these core entities as the high-level structure of the system, the FYPMS stands a good chance of tightly contextualizing all the activities that are related to the project within the relevant period and program of study, hence ensuring both organizational and academic integrity.

Supervision Allocation
[Home](#) / [Supervision Allocation](#)

Search by Name

Name	Email	Program	Supervisor	
MUHAMMAD FAIZ HAKIMIN BIN SAHURI	kl2304013520@student.uptm.edu.my	CT206	Noraliza binti Azizan	<input type="button" value="Edit"/>
ZUL ISKANDAR BIN ZAINORHAN	kl2307013913@student.uptm.edu.my	CC101	DR. NOOR MAIZATULSHIMA BINTI MUHAMMAD SABRI	<input type="button" value="Edit"/>
ABDUL RASHEED BIN NORHAMIZAN	kl2307013889@student.uptm.edu.my	CC101	Wan Nor Asnida binti Wan Jusoh	<input type="button" value="Edit"/>
MUHAMMAD HAZRAL BIN HASSAN	kl2307013959@student.uptm.edu.my	CC101	Mohamad Nizam Adhaa bin Kamarudin	<input type="button" value="Edit"/>
NURNABIHAH BINTI MOHD AZAM	kl2307013917@student.uptm.edu.my	CC101	Norfazlina Binti Johar	<input type="button" value="Edit"/>

Figure 2.4: Supervision page

The melding of supervisors and students is one of the most important processes by the end of which the quality of the final year project experience may be really affected. The studies on supervisor allocation systems show the usefulness of centralized and transparent procedure. The proposed system enables the coordinator to allocate supervisors to students, which is important role in having more supervisors as compared to students. The first characteristic, as suggested by the literature, is that there is a possibility to place the limit on the number of the supervisees per lecturer. This avoids the situation of overwhelming the academic personnel and enhances better quality of supervision on each student. It is also possible to allow student choices and lecturer experience in such a system so that the right match can be achieved towards an eventual greater outcome in project work and in mentoring.

Title Approval
[Home](#) / [Title Approval](#)

All Subject All programs All sessions All users Search by Name

Name	Program	Type	Supervisor	Titles
shuhadah	CT205	Student	<input type="button" value="Assign"/>	View
Noraliza binti Azizan	-	Lecturer	-	View
Siti Fajar Bt Jalal	-	Lecturer	-	View
MUHAMMAD CHAIRYL ADAM BIN DAUD	CT204	Student	Siti Robaya binti Jantan	View
MUHAMMAD AMMAR SYAUQI BIN ABD HADI	CT204	Student	ASLIMARIAH AHMAD	View
ADAM FAIZUAN BIN RODZUAN	CT204	Student	Noraliza binti Azizan	View
MUHAMMAD ALEEF ADHAM BIN ROSLINORAZAM	CT204	Student	Mohd Akmal bin Mohd Azmer	View
EIREEN SELINA BT ZULKIFLI	CT204	Student	Noraliza binti Azizan	View
EZERA NUR EDAYU BINTI RAMLI	CT204	Student	Noraliza binti Azizan	View
NAZRUL FARHAN BIN ASPON	CT204	Student	Harlinawati binti Abdul Kadir	View

Figure 2.5: Title approval page

Approving of the proposed project title by a student is a milestone in shaping up the scope and direction of a student research. What may otherwise be a lengthy process administratively, streamlined with the process flow proposed in the UPTM system involving automated title approval. Literature on academic project management emphasizes the need of a well-defined and effective approval process. The system must not only enable the coordinator to read all the titles entered, but he or she should have the capability of confirming them or throwing them out. This is a centralised procedure that guarantees uniformity in the implementation of academic standards and research focus of departments. Moreover, it gives a proper documented response to the students and faculty on title approvals.

The screenshot shows a web interface for the 'ADMIN Final Year Project Management System'. The main content area is titled 'Degree Assessment List' and includes a 'Generate Report' button and search filters. Below is a table with the following data:

#	Matric No.	Name	Title	Proposal	Report Part A	Report Part B	Presentation	Report Part A (Examiner)	Report Part B (Examiner)	Presentation (Examiner)
1	AM2304013547	MUHAMMAD CHAIRYL ADAM BIN DAUD	SMART SIGNAGE ONLINE ORDERING SYSTEM	78	75	37.5	72.5	79	39.5	75
2	AM2304013374	MUHAMMAD AMMAR SYAUQI BIN ABD HADI	Driver Face Detection Sleepiness Prevention System	72	74	37	80	82	41	89
3	AM2304013645	ADAM FAIZUAN BIN RODZUAN	UPTM Map Navigation App	72	67	33.5	66	86	43	83
4	AM2304013358	MUHAMMAD ALEEF ADHAM BIN ROSLINORAZAM	UPTM DORMITARY SYSTEM	75	75	37.5	78	81	40.5	75
5	AM2304013221	EIREEN SELINA BT ZULKIFLI	CuBar Employee Attendance System	78	82	41	89	76	38	83

Figure 2.6: Report list

Production of detailed reports is a critical role of any management information system. Like a FYPMS, when a report can be generated at a student level (diploma or degree) then one will have the valuable data to carry out program level analysis. Such reports, which would normally display the student, his or her supervisor, the examiner assigned to him or her, as well as the academic session being undertaken, provide a clear picture of the whole FYP cohort. As such, it is priceless to the coordinators and academic management to monitor progress and find possible bottleneck areas to make decisions using data and enhance the overall FYP process in consecutive years of the academic year.

Importantly, lecturers are able to see proposals put forward by his or her supervisees and be able to approve them or provide a timely advice at a crucial phase of the project. The system also allows lecturers to access all uploaded assessments of their supervisees and examinee through which they can track their progress and even supply the formal evaluation of the online course. Lastly, availability of list of examinees selected by the coordinator will guarantee that lecturers know their assessment responsibilities. These combined features have been able to enable lecturers to easily mentor and

track their learners all the way through final year project, and this has helped to make the entire final year project meet the academic standards and complete the project successfully.

2.3.2 UiTM Final Year Project Management System



Figure 2.7: UiTM FMS

Final Year Project (FYP) is a compulsory course to undergraduate students, and an effective ordering and streamlining process is needed to handle the supervisor, submissions and assessments. The Final Year Project Management System (FMS) was designed by Universiti Teknologi MARA (UiTM) to overcome manual procedures due to some existing, inconsistent processes, inefficiencies and undefined processes in the Faculty of Computer and Mathematical Sciences (FSKM) in the conduct of FYP by students and lecturers. The FMS can be accessed through any browser in the laptops or computers that have access to the internet to make it convenient to all users. The system has three main user groups: admins (coordinators), students and lecturers, with separate interfaces and functions.

By incorporating effective lecturer information within the system, FMS will overcome the issue of difficulty in finding appropriate supervisors among the students. An integrated form allows students to see the profile of lecturers and apply to have supervisor. The lecturers can then either approve or deny these requests in the system providing a formal and transparent system of assigning supervisors. Admins will add and update information of lecturers so as to keep the database new and up-to-date to be used by the students.

The system allows the students to send the project titles and proposal directly online without using physical materials to send it and also without having to do scatter communication. Special extra feature is that admins can add new news and announcements, which means that students and lecturers are constantly updated regarding dates and submission deadlines, as well as any updates regarding the project. This major feature of centralized communication minimizes misunderstanding and helps to ensure that all the stakeholders remain in the same line of duty when FYP is carried out.

The creation of FMS was directed towards its functionality as well as usability. The functionality test confirmed that important functions, e.g. the supervisor requests, approval process, and update information capabilities, were not faulty in all three types of users. Usability analysis based on 30 responders consisting of students and lecturers analyzed the interface of the system in terms of simplicity of use and satisfaction. The average results were above 4 showing that the system was found to be intuitive, pleasant and effective in carrying out the tasks by the users.

The use of FMS is characterized by the reporting facilities that allow the coordinators to keep track of supervisor requests and the state of the students. The system also provides notifications to students and lecturers on the approval, rejection or pending tasks and eliminates delay in case of manual follow-up. The incorporation of such functions enhances effective communication between the institutions as well as improved monitoring of student performances by FMS.

FMS is a web application based on PHP language and Bootstrap framework of responsive design and PhpMyAdmin as a database management. With such technology stack, the system is able to expand as and when needed; is maintainable and is accessible to all users involved in the FYP process in the most user-friendly web realms that is without the multiple hassles of most web browsers.

UiTM FMS was able to change the system of FYP management that was previously human-burdened, labor-intensive, and prone to errors to an orderly, effective, and easy-to-use system. Direct approvals, centralized updates, and clear communication, FMS enhances the experience of students and lecturers to a great extent, as the activities of FYP are successfully completed, without missing accuracy and deadlines.

2.3.3 UNIMAS Final Year Project Supervisor Management System



Figure 2.8: UNIMAS FYPMS

Final Year Project (FYP) is a compulsory life course in a degree program (undergraduate) taught to the students of Universiti Malaysia Sarawak (UNIMAS), which is aimed at determining how skillful a student is in terms of his capability to apply his knowledge, design and develop and evaluate a project or a research in the field that a student has chosen. Final Year Project Supervisor Management

System (FYP Supervisor Management System) is created in response to the challenges which the students took to get the proper supervisors, the process of supervisor assignment in the Faculty of Computer Science and Information Technology (FCSIT) needs to be conducted.

The availability and the information about the supervisors: Increasing transparency and efficiencies Untrained students in UNIMAS usually used informal channels like emails, phone calls or walk-in visits to contact supervisors and would be ignorant on whether a supervisor has attained his quota in supervision or whether they were interested in the field of endeavor in his/her project. All this is centrally arranged by FYP Supervisor Management System which gives the student an online opportunity to see the background of each supervisor, their expertise and the time they are available. This means that students are able to sort supervisors according to quota and field of interest hence the process of finding a suitable supervisor is easier and less stressful as each student is able to view the relationship between supervisor and student.

Students are also in a position to post their project ideas and seek supervision of the selected lecturers, which is made possible via the system. The supervisors will subsequently have a chance where they can go and scan and inspect these requests, look at the submitted project briefs and approve or decline supervision requests through the same platform. This organisation removes the manual communication which has to be done outside the system and also provides a common, documented process among the students and the lecturers.

The FYP Supervisor Management System was produced based on Waterfall model of the Software Development Life Cycle (SDLC), which is composed of five stages, that is, requirement definition, system and software design, implementation and unit testing, integration and system testing, and operation and maintenance. Through this methodology, it was possible to have a logical process of extracting user requirements of students and lecturers, and mapping them to system design as well as strongly test the system before its actualization.

The system has been endowed with a number of features that will be of help to students and supervisors in course of the Final Year Project. The students are able to find possible supervisors through searches according to available supervision quota and areas of interest, as well as be able to see detailed profiles of available supervisors listing all the experience and areas of expertise in projects. They are to then send in their project briefs to the system which the supervisors are to see and reply. Meanwhile, the supervisors have the possibility to revise their interests and availability so that students can benefit of the rightful and current information to base their decision on it. The supervisors are also able to access the student requests and submissions of project brief as well as

they can inform the students about whether their supervision is accepted or denied through the platform and one can view all of it in one page.

2.4 Comparison

The following is a comparison of the three existing systems or applications, compared according to the features available, the level of ease of use, cost-effectiveness, suitable users and the level of security available in each of these applications.

Table 2.1: Comparison of Existing Project

Feature	UPTM FYPMS	UiTM FMS	UNIMAS FYP Supervisor MS
Supervisor Assignment Automation	Assigns supervisors automatically	Supervisors accept/reject student requests	Students request supervisors through system
Supervisor Information Directory	Includes supervisor details	Provides lecturer information	Displays supervisor info for students
Student-Supervisor Request Workflow	Online request and approval process	Students submit requests to supervisors	Students submit proposals and requests
Examiner Assignment	Coordinators assign examiners	Basic examiner management	Not supported
Rubric-Based Assessment	Coordinators manage rubrics for grading	Rubrics not included	Rubrics not included
Automated Mark Calculation	Calculates total marks automatically	Marks handled manually	Marks not calculated by system
Progress Tracking Dashboard	Progress bar available but unreliable	No tracking dashboard	No tracking dashboard
Comprehensive Reporting	Generates student and examiner reports	Comprehensive reports not available	Comprehensive reports not available
Title Submission & Approval Workflow	Automated title submission and approval	Students submit titles for approval	Students upload project briefs for review
Automated Notifications	Manual notifications via coordinator	Notifications not built-in	Notifications not included
File Upload for Reports/Proposals	Supports uploads with limited file size	Allows uploads for proposals	Uploads proposal briefs in system
Latest News/Announcements for Users	No announcement feature	Admins can post latest news	Announcements not included

Feature	UPTM FYPMS	UiTM FMS	UNIMAS FYP Supervisor MS
Lecturer Role Management (approve, track)	Lecturers approve, track, and evaluate	Lecturers approve student requests	Supervisors view and manage proposals
Supervisor Suggestion System	Planned AI-based supervisor suggestions	Supervisor suggestion not included	Recommends supervisors based on interests
Integrated Communication (comments/feedback)	Commenting and feedback features not included	In-system communication not available	Communication handled outside the system

2.5 Discussion

According to the conducted analysis and research, the present UPTM Final Year Project Management System (FYPMS) is of great use in the context of rubrics and student grading. The system allows coordinators and examiners to go through the reports and utilize uniform, orderly regime of assessment. The current functionality of rubric can be taken as a good foundation to increase the scoring functionality within the UPTM AI Enhanced FYPMS meaning there is uniformity and transparency of the grading and scoring process on both ends of the students and the lecturers.

Good ideas can equally be derived in the UiTM Final Year Project Management System (FMS) that has user-friendly contents like centred supervisor request and lecturer details. Some of the solutions include incorporating superior-minded concepts in the UPTM AI Enhanced FYPMS such as the appropriation of detailed supervisor profiles coupled with simplified request processes which will make the selection process of a supervisor more understandable to the students and will cut down on the time to obtain a supervisor significantly, especially in shorter semester cycles.

Also, feedback of the UNIMAS Final Year Project Supervisor Management System revealed that listing down clear and detailed information of the field of expertise of each potential supervisor and when they are available plays an important role in helping the student to select the relevant supervisor. The inclusion of this type of comprehensive information about supervisors in the UPTM AI Enhanced FYPMS can assist the students in making informed decisions and making sure they have better matches in where the students and supervisors are concerned. It is possible to merge all these characteristics to ensure that the new system would allow to improve communications, enhance the capacity of more effective supervision assignment, and streamline the final year project process in general.

2.6 Conclusion

With a detailed study done before the project is developed, it is very important to determine the specific shortcomings and advantages, so that we can avoid the same issues when the new system is built. Not only

that, we can also bring back existing functions into the new system. Meaning to maintain the functions that are very useful, and solve the issues encountered. The project developed must have a clear purpose, so that it can be tested on the appropriate users.

3 METHODOLOGY

3.1 Introduction

Contextual frameworks on methods provide a researcher with a way of investigating his or her subjects of interest in a logical manner. These structures of context also include values, beliefs and opinions besides providing direction to the users on a particular type of data gathering. Becoming well versed with the available research methods is one way of ensuring that maximum is obtained out of the research and in the end, it is possible to obtain more superior data. This paper establishes what methodologies are, analyses several examples of methodologies and gives suggestions on which methodology should be used in the research projects.

3.2 Agile Methodology



Figure 3.1: Agile Methodology Diagram (Asana, 2025)

The Agile approach is highly suitable in developing the UPTM AI Enhanced FYPMS due to its cyclical tendency in organizing the complexity of the project and meeting the changes that arise. According to the figure 3.1, the agile methodology entails 6 phases that should be well established and be adhered to during the development process. This method offers great flexibility, which enables the development team to meet the evolving university needs, and the experimental state of the AI elements through inclusion of the ongoing feedback of such stakeholders as coordinators, lecturers and students. The system gets constructed with the help of intensive cooperation and frequent check ups in small and operational packages like the user management module can be the first release, hence assuring the value to be delivered to the end-users within a shorter time period. The risk is also minimized by this mode of development and testing in short

cycles because the bugs or design flaws are detected and repaired early in the process without causing expensive and tedious problems that could have been created in this kind of project.

3.3 Phases in Agile Methodology

Agile process has six principal areas namely: plan where the purpose and requirements of the project are identified, the design involves the layout and interface of the system and the develop is aversion of innovating and putting forth the features. After the testing period that ensures the system will function correctly and that the bugs will be eliminated, there is deployment when the working system will be sent to the users and review during which the feedback will be gathered to improve the next version of the project.

3.3.1 Phase 1

During this Agile-preliminary step of every cycle, we are teaming up with UPTM stakeholders (such as our FYP Coordinator) in order to select a limited number of features out of the large project backlog. In the first one, perhaps we would concentrate on developing the main login and profile management by students and lecturers. To have another cycle later we may consider to create the AI-powered supervisor recommendation engine.

3.3.2 Phase 2

After coming up with the schedule of the cycle we get to come up with the design. This is where we develop user interface (UI) and user experience (UX) of the features that we have chosen. In case of the UPTM system, this would involve that we would design what the Title Approvals screen will appear like to the coordinator or even how a student will visualize his/her assessments outcomes. Here we also have a plan of the database structure and technical architecture of planned features.

3.3.3 Phase 3

This is the step in which we get to write the code in order to actualize our designs. In accordance with our approach, we develop the backend code, hook up with a database and develop the front-end-interface. As an example, we would come up with forms through which the students could insert the project titles and the dashboard widgets to indicate the counts of the students and the lecturers. During this step as well, we code the AI algorithm, i.e., the one that identifies the performance of the students or even plagiarism before it could have been detected.

3.3.4 Phase 4

We are sensitive to question of quality assurance. This is the stage where we thoroughly establish the functions created in the second step and identify bugs to clear them. We will actively destroy the system by means of bad data obtained and entering in forms and trying the various ways in which user allocations are operating and to ensure that all the links and buttons are operating as desired. As it regards the AI parts, we check the sample data with the algorithms to approve their correctness and rectitude.

3.3.5 Phase 5

Once we have tested the features and nailed that they are working, we then go ahead and deploy them, as a working increment of the system. This may imply that we deploy the new features in a real server to a sampling group of users (e.g. one faculty) or to all UPTM users. We intend to bring the working software into the users soon.

3.3.6 Phase 6

The last stage of the cycle implies that we present the freshly implemented functionality to the stakeholders. This is a decisive circle of feedbacks to our team. An example would be that we would then demonstrate to the FYP Coordinator the currently operable examiner management module. The stakeholders are then asked to give their feedback concerning what is good and what can be better. This feedback is the direct translation of what will go into our Plan of the next cycle so that we constantly develop the UPTM AI Enhanced FYPMS to the needs of the university.

3.4 Conclusion

In a nutshell, the Agile approach offers a framework that is systematic, and loosely integrated thus fitting the requirements of the UPTM AI Enhanced FYPMS. We can reduce the complexity, accommodate the changing needs and insure gradual delivery of usable parts through implementation of the project in six iterative steps which are plan, design, develop, test, deploy and review. In every cycle, it is possible to concentrate on developing features that are of high priority with continuous input by the stakeholders. This will make sure that the system will be developed according to the actual needs so that a more efficient, user centered and intelligent is deployed which will serve the students, lecturers and coordinators in the Final Year Project process.

4 REQUIREMENTS

4.1 Introduction

The process of determining the precise needs for project from the beginning to the end is called requirements gathering. Although we will continue to monitor the project needs for the duration of the project, this procedure takes place at the project commencement phase (Team Asana, 2025). Learn the project's broad goals, parameters, and constraints before delving into the specifics. This prepares the ground for deep conversations with interested parties.

Having a clear understanding of the requirements that must fulfill in order to construct the final product of the project can aid in assigning tasks and establishing expectations. Getting these requirements can also help us figure out how to best accomplish project's objectives. Effective task planning and delegation, on-time project completion, and shared expectations between team members and stakeholders are all made possible by this (Indeed, 2024).

4.2 Data Gathering Techniques

For this project, there are two techniques used in obtaining user feedback, namely through surveys and interviews. Appropriate questions are provided to obtain answers from users to determine the status of the effectiveness of the current system.

4.2.1 Interview

To get a balanced perspective from the management's point of view, a series of interviews with three UPTM Final Year Project Coordinators - Pn. Noraliza Binti Azizan, Miss Fatanah Syazana Zuraine Binti Ahmad, and Madam Norfazlina Binti Johar - were conducted. Interviews were done in order to identify the workflow of the system in place, hear current problems, and discover potential improvements for the proposed AI Enhanced FYPMS.

The interviews began with a question to every coordinator about how the FYP system is being operated currently, i.e., how the reports are being submitted and how they are interacting with the system. The second query was to identify which of the existing processes of the current system are slow or inefficient. The third question concerned usual issues or grievances from students regarding the existing system.

Next, the coordinators were asked to give their views on the most significant issues that must be addressed in the new system if it is to address root issues. Question five asked whether it is simple for lecturers to monitor student progress in the current setup. Lastly, the coordinators were

asked to give any other idea or point that they believe must be incorporated in the future system in order to make it more effective and convenient.

4.2.2 Questionnaire

In addition to the interview, a questionnaire was also designed to collect opinions from students who are currently studying Final Year Project courses at UPTM. The targeted respondents were students of three programs that were selected: CT204, CT206, and CT203. The questionnaire was distributed through Google Forms and required at least 50 responses so that the collected information would be meaningful and representative.

The questionnaire contained 15 questions in four broad categories. Section A gathered demographic information such as program, year of study, and gender. Section B asked questions regarding students' behavior and experience in the current FYP system, such as ease of access, submission processes, and satisfaction levels. Section C asked questions regarding students' preferences for system features and changes, such as alert features, track facilities, or AI facilities. Section D left room for open comments and feedback by the students about what they would like in the new or enhanced system.

This blend of interviews and questionnaires offered a detailed insight into the expectations and needs of the users, thus providing a sound foundation for the new design and development of AI Enhanced FYPMS.

4.3 Functional Requirement

The functional requirement section provides which the function on the UPTM AI Enhanced FYMS are able to do based on the required features.

Table 4.1: Functional requirements table for coordinators

Function	Result
Login	Allows coordinators to securely access the system by entering their credentials.
Register	Allows the coordinators to create accounts based on selected roles.
Profile customization	Profile customisation allows coordinators to edit personal information and preferences.
FYP title approval	Coordinator must be able to approve title that submitted by students.
Examiners auto assign to student	Examiners are automatically assigned to students using predetermined rules.
View student marks report	Provides a summary of student assessment outcomes.
Manage students	Coordinators can add, update, and remove student records.

Manage semester	Allows coordinators to configure and track academic semesters.
Manage subject	Allows coordinators to handle subject-specific data.
Manage programs	Allows coordinators to add and update program information.
Manage rubric	Allows coordinator to create and amend assessment rubrics for grading.

Table 4.2: Functional requirements table for supervisor/examiner

Function	Result
Login	Allows supervisor/examiner to securely access the system by entering their credentials.
Register	Allows the supervisor/examiner to create accounts based on selected roles.
Profile customization	Profile customisation allows supervisor/examiner to edit personal information and preferences.
FYP title approval	Supervisor/examiner must be able to approve title that submitted by students.
Supervisee approval	Supervisor/examiner can approved student request as a supervisee.
View submitted proposal	Supervisor/examiner can view proposal submitted by student for approval.
View submitted assessment	Supervisor/examiner can view assessment submission by student which is contain all assessment FYP task.

Table 4.3: Functional requirements table for student

Function	Result
Login	Allows students to securely access the system by entering their credentials.
Register	Allows the students to create accounts based on selected roles.
Profile customization	Profile customisation allows students to edit personal information and preferences.
Title submissions	Student must be able to write and submit their title to supervisor and coordinator for approval.
Proposal submissions	Student must be able to submit the proposal and can be reviewed by supervisor and coordinator for approval.
Assessment submissions	Provides students with the ability to upload all necessary FYP reports for examiners to mark and grade.

4.4 Non-Function Requirement

Non-functional requirements outline standards for assessing a system's performance of a function, not the function itself. Non-functional requirements specify elements such as scalability, performance, security, usability, and dependability, while functional requirements outline certain system functions (Rome, 2020).

Table 4.4: Non-functional requirements table

Non-functional requirements	Result
Security	Assures that user data is safeguarded by data encryption, authorization, and authentication.
Performance	The system needs to load rapidly and be able to support numerous users without experiencing any slowdown.
Reliability	There should be little error or downtime and the system should function consistently.
Usability	All roles must find the interface easy to use and intuitive.
Privacy	User data must be kept private and available to only those who are permitted access.

4.5 System Requirement

System requirements list the entire system requirements for this project. It is very important to ensure that the UPTM AI Enhanced FYPMS web application can be built and used by users. For this part, it is divided into two, namely Software requirements and Hardware requirements.

4.5.1 Software requirement – Visual Studio Code

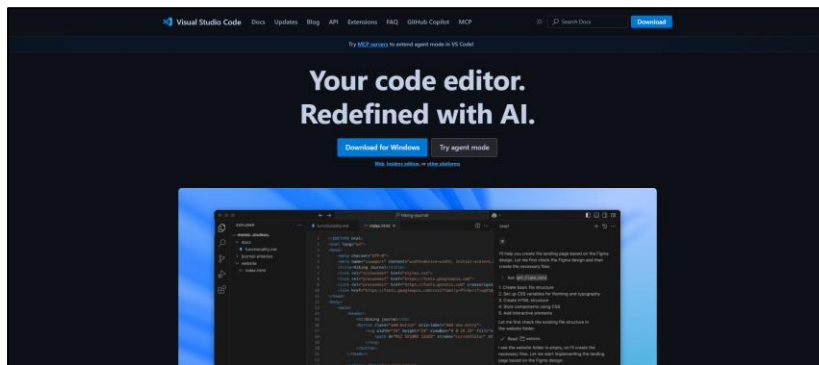


Figure 4.1: Visual Studio Code (Visual Studio Code, 2025)

Microsoft created the integrated programming environment known as Visual Studio Code, or VS Code, for web browsers, Linux, macOS, and Windows. Among the features are code refactoring, snippets, intelligent code completion, syntax highlighting, debugging, and integrated version control with Git. Users can install extensions that add functionality, modify the theme, and alter keyboard shortcuts and preferences.

Developed by Microsoft and made accessible on GitHub, Visual Studio Code is a proprietary program released under the "Microsoft Software License." It is based on the MIT-licensed program "Visual Studio Code – Open Source" (also called "Code – OSS").

4.5.2 Hardware requirement – Server

Table 4.5: Server Hardware Requirement

Device	Minisforum Eyertec AD650i
Operating system	Ubuntu Server 24.04.2 LTS
Processor	Intel Core i7-12650H
Memory (RAM)	64GB DDR4
System Type	64-bit operating system

4.5.3 Hardware requirement – Remote client development

Table 4.6: Remote client development Hardware Requirement

Device	Asus Vivobook Flip 14
Operating system	Windows 11 Home
Processor	AMD Ryzen 5 5500U
Memory (RAM)	20GB DDR4
System Type	64-bit operating system

4.6 Conclusion

In conclusion, the requirements analysis stage has identified the most important functional and non-functional requirements of the UPTM AI Enhanced FYPMS from the inputs obtained through interviews and questionnaires. The requirements cover the system's ability to satisfy the coordinators, supervisors, examiners, and students requirements through well-defined features such as automated assignment of examiners, monitoring of submissions, and report handling. In addition, non-functional properties such as security, reliability, and usability are emphasized to ensure a smooth and secure user experience. The identified software and hardware requirements ensure the feasibility of the system and its preparedness to be developed and implemented within the university environment.

5 ANALYSIS

5.1 Introduction

This analysis chapter will give an in-depth study of the requirements and procedures that will be used to develop the UPTM AI Enhanced Final Year Project Management System successfully. It starts with an analysis of data collection both through questionnaires and interviews to make out the needs of the users and the issues that exist. The next step is the chapter that presents the models to describe the way the system will operate with use case diagrams depicting the key interactions between users and the system, flowcharts to describe the process flow, and BPMN diagrams to make the business processes represented

in standardized manner. These models and analyzes are necessary to explain the structure of the system, specify its functional requirements, and the final product should be built according to the user expectations and the objectives of the project.

5.2 Data Gathering Analysis

This section allows analyzing data obtained via questionnaires and interviews with users to see their needs, problems as well as expectations. The results of the two techniques aid in determining the UPTM AI Enhanced Final Year Project Management System functional and non-functional requirements. Through this data, the project can make sure that the features of the system are designed to overcome the actual user challenges and enhance the process of final year project management.

5.2.1 Questionnaire Analysis

The section of Questionnaire Analysis which represents the UPTM AI Enhanced FYPMS project is a research made up of 15 questions filled by more than 50 respondents. This part graphically depicts the information gathered in form of the graphs in which each graph has percentage report of questions answered in the form of options that one can select. It is a good visual tool, which allows stating the general preferences, opinions, and feedback of the users, and therefore offers a quantitative data to comprehending user needs and justifies design choices in the project.

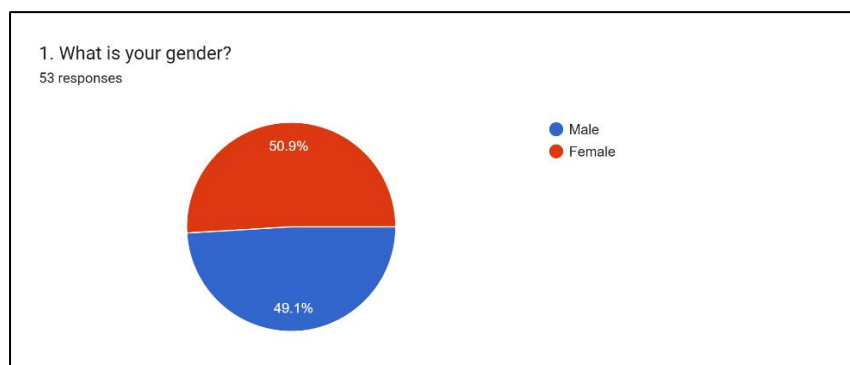


Figure 5.1: Questionnaire question 1

The gender among the 53 respondents to the questionnaire is represented through a pie chart. It indicates that there is almost an equal share with a majority of females being 50.9 percent and that of males being 49.1 percent.

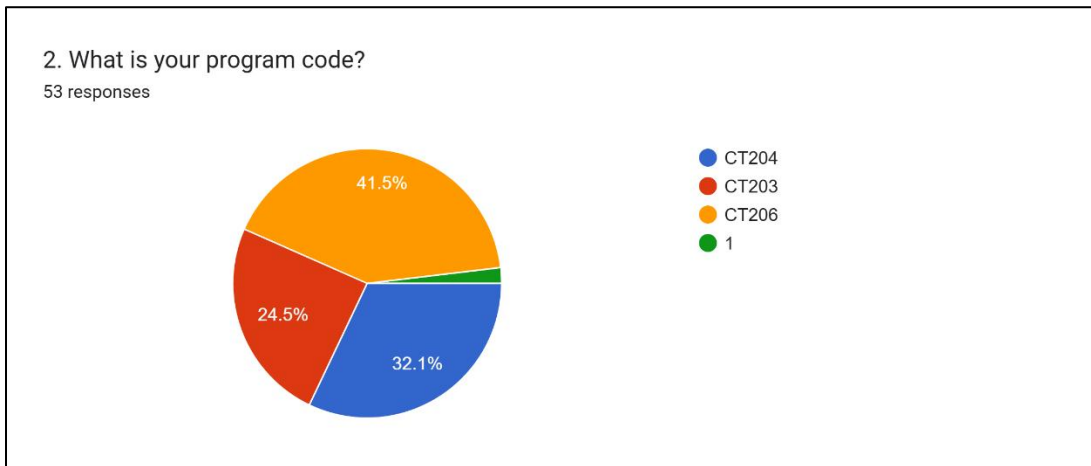


Figure 5.2: Questionnaire question 2

The pie chart shows the spread of the program codes among the 53 respondents. The proportion of the respondents which is the highest is 41.5% in the program code CT206, and 32.1% and 24.5% respectively is in CT204 and CT203 program codes respectively.

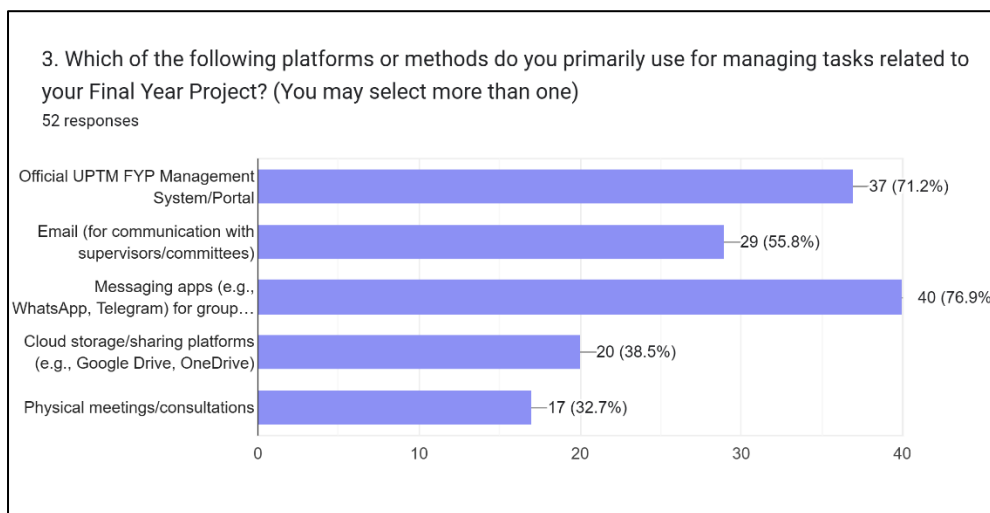


Figure 5.3: Questionnaire question 3

The bar graph can be used to depict the platforms and approaches that 52 people mostly employed to handle activities concerning their Final Year Project, and one can make several choices. The most popular messaging apps are WhatsApp and Telegram, and 76.9 percent of respondents use one of them. Official UPTM FYP Management System/Portal is adopted by 71.2 percent of the respondents and the use of Email in communication with the supervisors / committee is 55.8 percent. 38.5 percent of the respondents use the cloud storage/sharing platforms, 32.7 use physical meetings/ consultations.

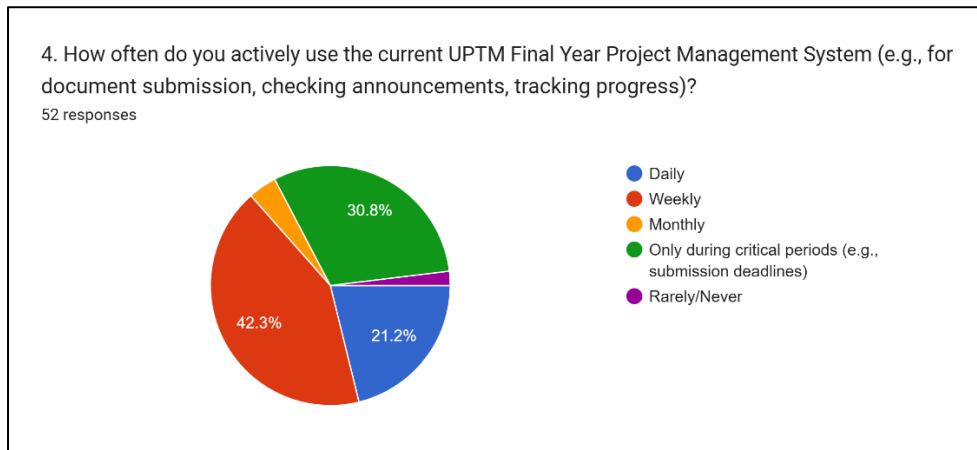


Figure 5.4: Questionnaire question 4

The pie chart represents the frequency of the active use of the current UPTM Final Year Project Management System by 52 respondents. Most of them, or 42.3 percent, utilise it on a weekly basis. The number of people using it daily is 21.2 per cent and 30.8 per cent of them will use it only in cases of emergency such as deadlines of submitting assignments. The percentage rate of its use is repaid by a small percentage consumption amounting to 3.8%, monthly and a small 1.9% consumption of those who rarely or do not use the system.

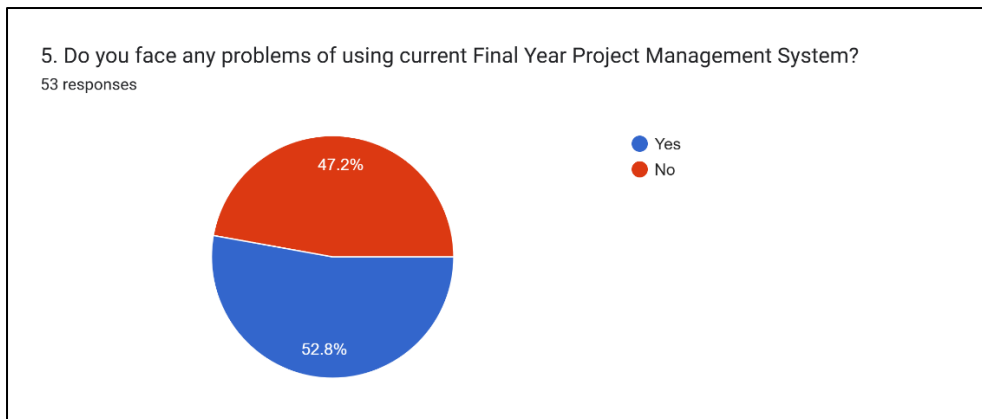


Figure 5.5: Questionnaire question 5

Pie chart results indicate that out of the 53 respondents one percent are not experiencing any problems using the current Final Year Project Management System and the 52.8 percent express that they are experiencing problems using the current Final year Project Management System. On the other hand, 47.2 percent of the polled say that the system does not present problems to them.

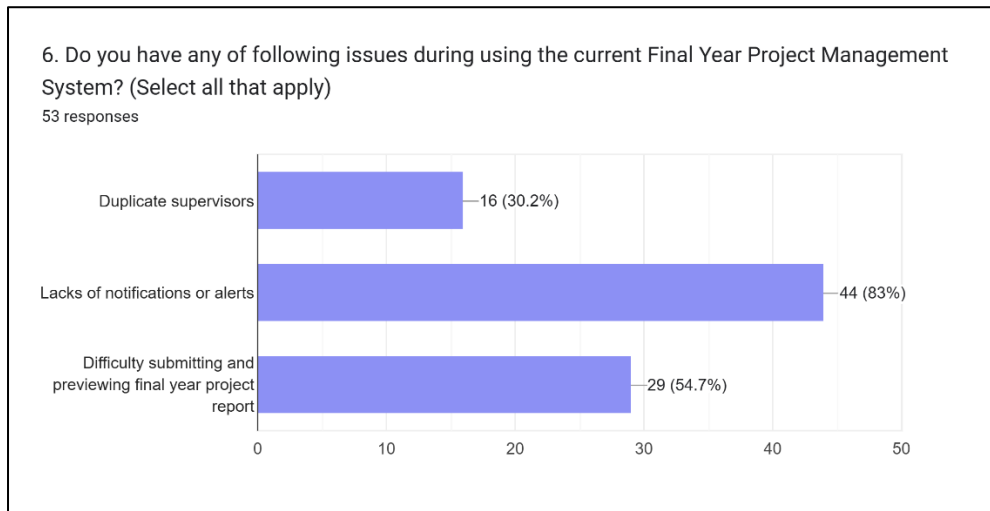


Figure 5.6: Questionnaire question 6

The bar chart shows problems most commonly happening to 53 respondents as far as working with the current Final Year Project Management System is concerned with several answers possible. The most common one is the lack of notifications or alerts, which is identified by a major part of the respondents, 83 percent (44 people). Another important issue is that of challenging ease of submitting and previewing final year project report (54.7 %), which concerns 29 people. Finally, 30.2 percent of the respondents (16 people) have the problem of duplicate supervisors.

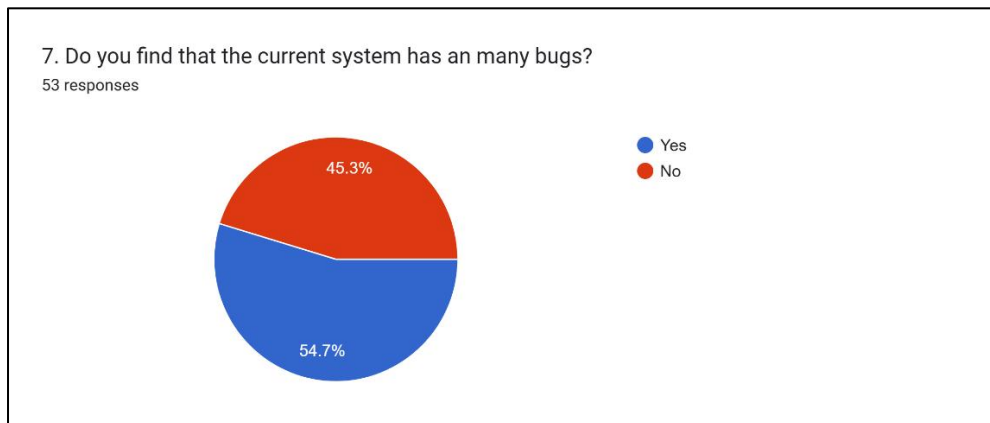


Figure 5.7: Questionnaire question 7

The pie chart shows that when presented with 53 respondents that 54.7 percent of them believe that the current system contains a lot of bugs. On the contrary, 45.3 percent of the respondents do not view the system as being buggy.

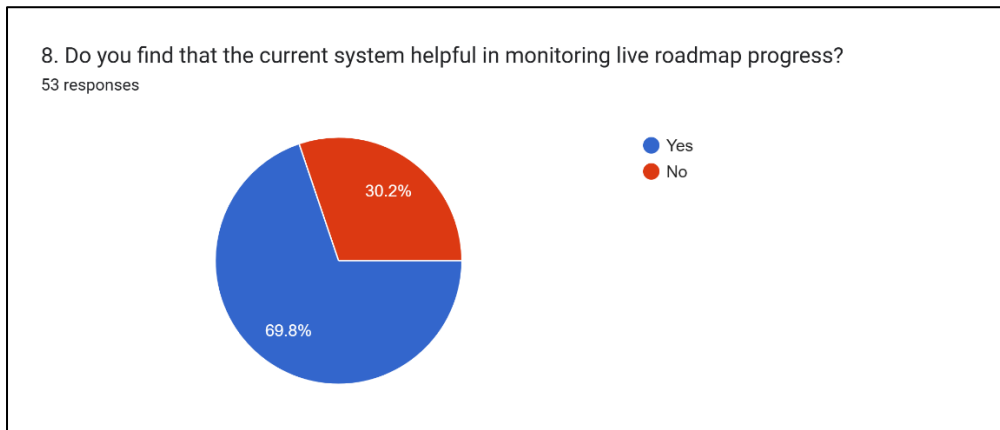


Figure 5.8: Questionnaire question 8

As presented in the pie chart, 69.8 percent of the 53 respondents consider the existing system as useful in tracking real-time roadmap. On the other hand, of the respondents, 30.2 percent does not find it useful in this regard.

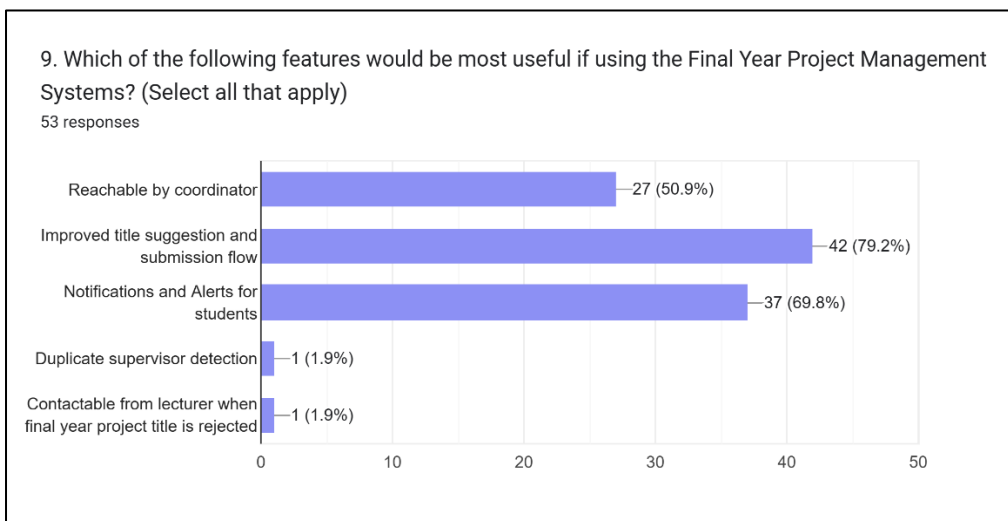


Figure 5.9: Questionnaire question 9

The bar chart bespoke what 53 respondents considered to be the most handy features of a Final Year project management system with an option of multiple choice. The most common was the idea of improved title suggestion and submission flow chosen by 79.2 percent of the participants (42 persons). The high desire of both the parents and the students was also towards the use of Notifications and Alerts to students with 69.8% (37 of respondents) stating it useful. The most selected option was the fact that it is reachable by the coordinator, and 50.9 percent (27 people) chose the given answer. And indeed the two answers, namely, both "Duplicate supervisor detection" and also "Contactable by lecturer when final year project title is rejected" were chosen by only a minimum of 1.9 percent (1 each).

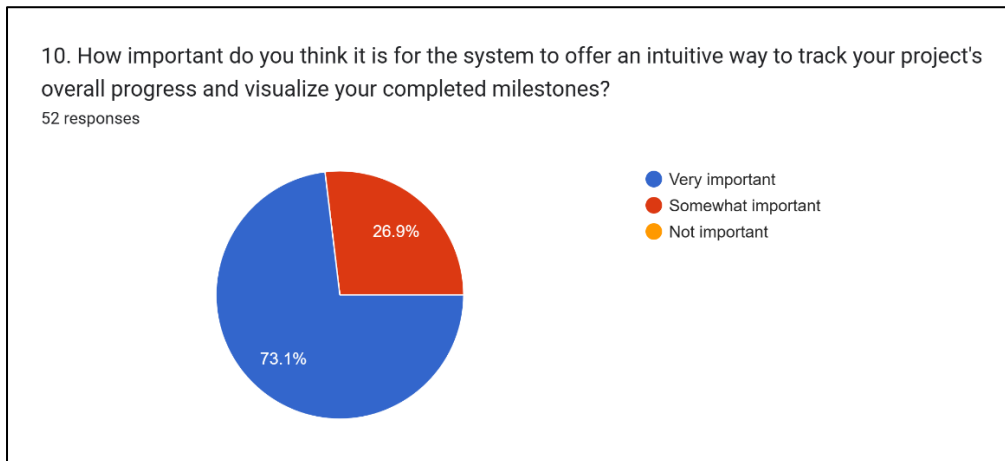


Figure 5.10: Questionnaire question 10

According to the pie chart, 73.1 percent of the 52 respondents find it to be a Very important aspect that the system should provide a straightforward method of checking the project progress and displaying the achieved milestones. The rest 26.9 respondents regarded it as "Somewhat important", and none as "Not important". This points out to an overall agreeability on the needs of a good progress tracking tool.

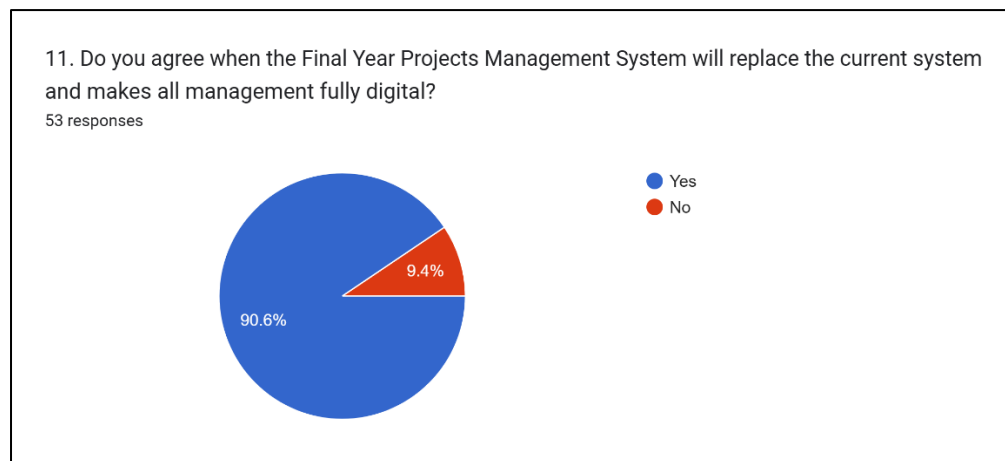


Figure 5.11: Questionnaire question 11

These are using the pie chart which depicts that, the respondents (53 of them) preferred a totally digital Final Year Projects Management System quite significantly. To be more exact, 90.6 percent of the respondents voted that the present system has to be changed to a new one and all management be fully computerized, with just 9,4 percent saying no.

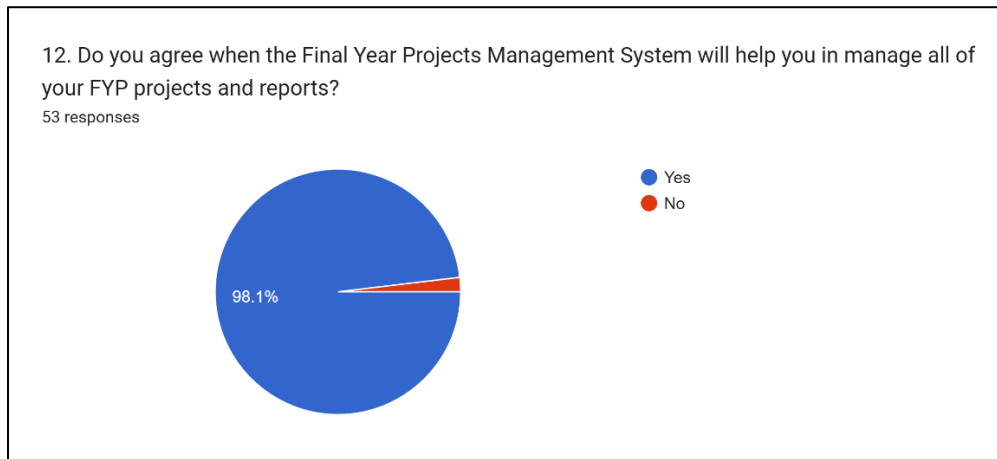


Figure 5.12: Questionnaire question 12

As shown in the pie chart there is an emphatic that a new Final Year Projects Management System will assist the 53 respondents get all their FYP projects and reports managed. Two thirds of respondents agreed with this statement in a significant 98.1 percent whereby 1.9 percent disagreed.

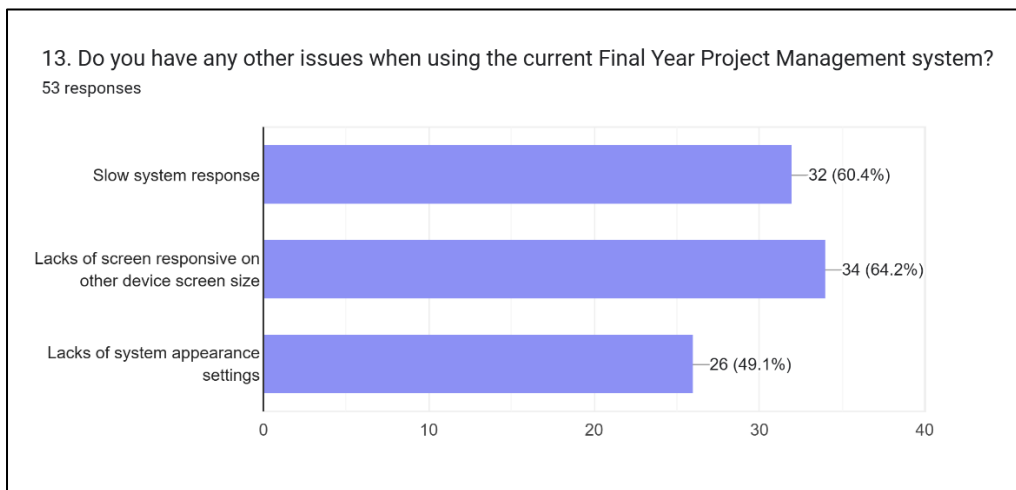


Figure 5.13: Questionnaire question 13

The bar graph shows the other problems that were faced by 53 respondents in addressing the existing Final Year Project Management system and more than one choice of the answers may be given. The most mentioned is the lack of screen responsive on other device screen size (64.2 percent of responders or 34 people). Giving slow response to the system is also a great issue according to 60.4 percent of respondents (32 people). Finally, 49.1% of the respondents (26 people) have the problem of the lack of the settings of system appearance.

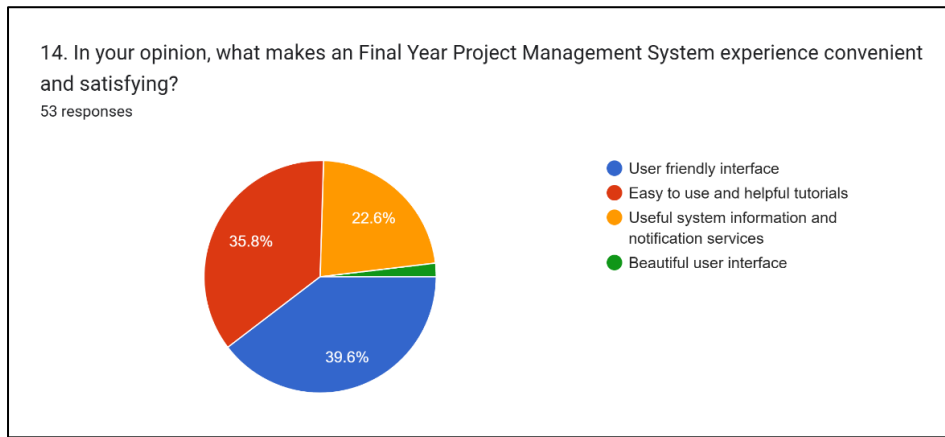


Figure 5.14: Questionnaire question 14

The pie chart shows the belief of 53 respondents on how a Final Year Project Management System experience can be convenient and satisfactory. A majority of 39.6 percent points to a particularly important factor of a "User friendly interface." The second is 35.8% on the topic, easy to use and helpful tutorials. The option that comes first is 22.6% of respondents and it reads; "Useful system information and notification services". Most important, a rare 1.9 percent users term a Beautiful user interface.

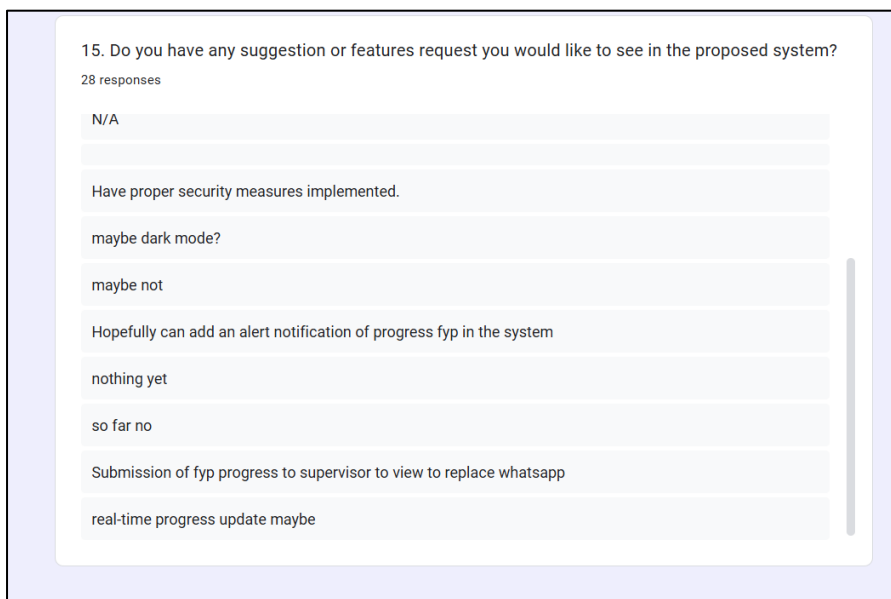


Figure 5.15: Questionnaire question 15

The proposals and feature suggestions of the proposed system illustrate that the improvement of progress tracking and notifications functions are in high demand with direct references to such features as claims about the existence of the classlike feature of the alert of the progress fyp and real time progress update and the insistence on the implementation of such functions as Submission of fyp progress to supervisor to view to replace whatsapp. In addition to progress management, the advances of user interface that included the possibility of user interface available in dark mode and necessary establishment of security measures in general were also raised by the users as well as lack of concrete proposals at this point was also reflected by a certain number of respondents.

5.2.2 Interview Analysis

The aim of the interview is to obtain in-depth information by the people directly involved in the area being investigated, i.e. the coordinators of Final Year Projects at UPTM. Three coordinators were interviewed: Noraliza Binti Azizan, Fatanah Syazana Zuraine Binti Ahmad and Norfazlina Binti Johar. The focus of these interviews was to determine issues, elicit needs and expectations of the UPTM AI Enhanced Final Year Project Management System, in order to meet the needs of the new system to make the lives of coordinators easy in their job requirements.

5.2.3 Interviewee 1

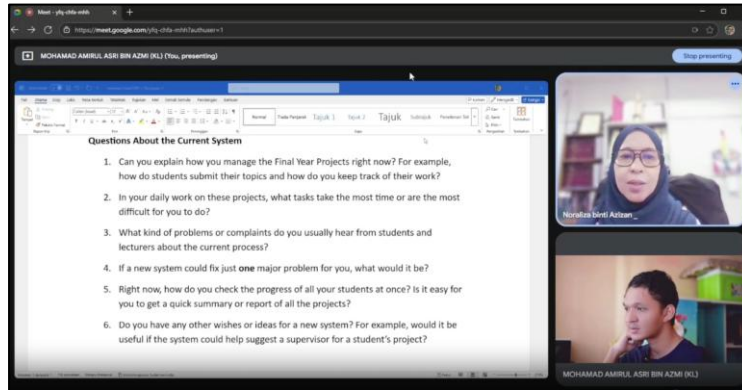


Figure 5.16: Interview session with Mdm. Noraliza Binti Azizan

Interview details:

- Name: Noraliza Binti Azizan
- Position: Coordinator of Final Year Project / Lecturer UPTM
- Location: Jalan 6/91, Tmn. Shamelin Perkasa KM 5 Jalan Cheras 56100 Kuala Lumpur
- Date: 24 June 2025

Feedback analysis:

Noraliza Binti Azizan, the Final Year Project Coordinator at UPTM, was interviewed in order to get more information about the current challenges in the FYP process management. The six questions provided were aimed at learning how to submit the current method, what steps take much time and what suggestions there are to add the features to enhance tracking reports and monitoring the student progress.

Table 5.1: Interviewee 1 Question 1 Feedback Analysis

Question 1	Can you explain how you manage the Final Year Projects right now? For example, how do students submit their topics and how do you keep track of their work?
Answer	The current Final Year Project Management System (FYPMS) at UPTM is used to assign supervisors and examiners, and to check project titles. While the system helps with these assignments, tracking student work is

	<p>primarily the supervisor's responsibility. Some tasks, like assigning examiners and calculating final marks, still require manual intervention. For instance, marks are downloaded from the system and then manually calculated, which is time-consuming for over 200 students. A significant issue is that if multiple supervisors approve a student's supervision request, the latest approval overwrites previous ones, leading to unintended supervisor assignments. The system also has a "progress bar" that can be unreliable if students skip steps. There are reports for student and supervisor lists, but not for examiner lists.</p>
Analysis	<p>The system's inability to prevent multiple supervisor approvals and the lack of automated notifications for title acceptance or rejection create inefficiencies. The manual calculation of marks and the absence of a comprehensive examiner report further add to the coordinator's workload. Direct communication methods within the system are also lacking.</p>

Table 5.2: Interviewee 1 Question 2 Feedback Analysis

Question 1	<p>In your daily work on these projects, what tasks take the most time or are the most difficult for you to do?</p>
Answer	<p>The most time-consuming and difficult tasks are assigning examiners and calculating final marks. Assigning examiners is challenging due to the high volume of students, especially from diploma and CT206 programs. The issue of multiple lecturers approving the same student, overwriting previous assignments, causes significant problems. For final marks, the coordinator has to download marks and manually set up a new template to calculate the average from both supervisor and examiner scores before including it in the mark distribution report.</p>
Analysis	<p>The manual nature of examiner assignment and mark calculation, coupled with the system's flaw in handling multiple supervisor approvals, are major bottlenecks in the daily workflow. These tasks consume a substantial amount of time and effort.</p>

Table 5.3: Interviewee 1 Question 3 Feedback Analysis

Question 1	<p>What kind of problems or complaints do you usually hear from students and lecturers about the current process?</p>
Answer	<p>The main problems and complaints revolve around the time-consuming nature of assigning examiners, especially with the issue of redundant supervision where multiple approvals overwrite previous ones. There's also difficulty in contacting students directly when their titles are rejected due to the lack of an automated notification feature. Finally, the manual</p>

	calculation of final marks, which requires downloading data and using a separate template, is a source of complaint.
Analysis	The current system's shortcomings lead to frustration for both coordinators and potentially students and lecturers. The lack of automation for critical tasks like notifications and mark calculation, combined with the problematic supervisor assignment process, creates inefficiencies and communication gaps.

Table 5.4: Interviewee 1 Question 4 Feedback Analysis

Question 1	If a new system could fix just one major problem for you, what would it be?
Answer	The single most important problem to fix is the redundant supervision, where a student can ask for multiple supervisors, leading to overwriting issues where only the latest approval stands. This causes confusion and disruption in the supervision process.
Analysis	Addressing the redundant supervision issue is critical for streamlining the FYP process and ensuring clear and consistent supervisor assignments. This highlights a fundamental flaw in the current system's logic.

Table 5.5: Interviewee 1 Question 5 Feedback Analysis

Question 1	Right now, how do you check the progress of all your students at once? Is it easy for you to get a quick summary or report of all the projects?
Answer	Student progress is tracked via a "progress bar", but it can be unreliable if students skip steps. The system provides "student list" and "supervisor list" reports, but a report listing students with their assigned examiners is currently unavailable and has to be done manually. For assessment marks, the lecturer downloads the marks and then manually sets up a template to calculate the average from supervisor and examiner marks for the final report, adding two extra steps. The lecturer wishes the system could directly calculate and display total marks.
Analysis	While a progress bar exists, its unreliability hinders effective overall progress tracking. The absence of a comprehensive examiner report and the manual steps required for mark calculation make it difficult to get a quick and accurate summary of all projects.

Table 5.6: Interviewee 1 Question 6 Feedback Analysis

Question 1	Do you have any other wishes or ideas for a new system? For example, would it be useful if the system could help suggest a supervisor for a student's project?
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Answer	The coordinator wishes for an automated system for immediate notification of title rejections, eliminating manual contact. They also desire streamlined supervisor assignments that prevent multiple approvals from overwriting previous ones. Direct mark calculation within the system is a key wish to avoid manual processes. Comprehensive report generation, specifically for examiner lists, is also desired. Finally, an improved progress tracking system that is consistently accurate, even if students skip steps, is needed.
Analysis	The coordinator's wishes highlight a strong need for automation, improved data integrity, and comprehensive reporting in a new system. These features would significantly reduce manual effort, improve communication, and provide better oversight of the FYP process.

5.2.4 Interviewee 2

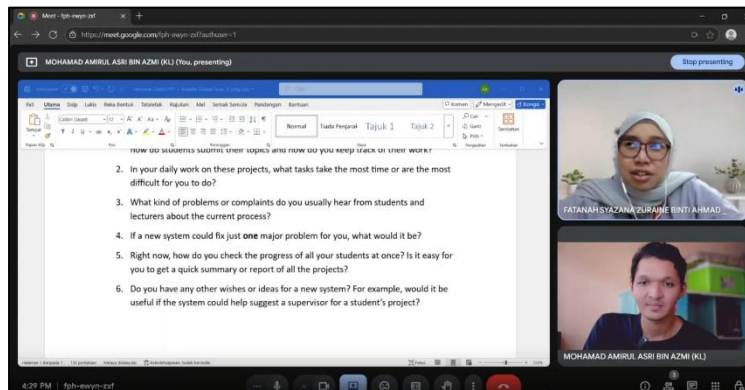


Figure 5.17: Interview session with Ms. Fatanah Syazana Zuraine Binti Ahmad

Interview details:

Name: Fatanah Syazana Zuraine Binti Ahmad
 Position: UPTM FYP Lecturer
 Location: Jalan 6/91, Tmn. Shamelin Perkasa KM 5 Jalan Cheras 56100 Kuala Lumpur
 Date: 24 June 2025

Feedback analysis:

Fatanah Syazana Zuraine Binti Ahmad, the Final Year Project lecturer at UPTM, was interviewed in order to get more information about the current challenges in the FYP process management. The six questions provided were aimed at learning how to submit the current method, what steps take much time and what suggestions there are to add the features to enhance tracking reports and monitoring the student progress.

Table 5.7: Interviewee 2 Question 1 Feedback Analysis

Question 1	Can you explain how you manage the Final Year Projects right now? For example, how do students submit their topics and how do you keep track of their work?
Answer	I handle the submission of FYP and monitor the progress of students yet I also struggle with quite a number of problems. I am a coordinator of the FYPMS system but I am unable to use my UPTM official email account therefore I end up using my personal account. It is through this that I am forced to manually request an approval of the submissions by another coordinator. I take advantage of the features in FYPMS to keep a track, but I also use Google Classroom, as a backup and of course due to university requirements. LMS submission is also a requirement of the students. Besides, I have a second backup option with Google drive since the system has a limit on the size of each submission. It becomes tedious to make three different submissions and this is required of the students. The size of files that can be stored in the current system is limited especially multimedia projects that can even attain 1GB. I have little functionality as a coordinator in the FYPMS. I have the right to approve the title, submission and choice of supervisor, I cannot access student proposals, view proposals and check individual proposals and whether lecturers have viewed them. It has no messages or ways to track submissions, whether a lecturer or supervisor has read them, and it has no options to comment or send submissions back to make corrections. I find myself reminding other lecturers verbally so that they can approve the work of students.
Analysis	The existing FYPMS system is practical but greatly restricted in the areas of user accessibility, storage of files and feature balance among coordinators hence requires multiple outside applications as well as follow-ups.

Table 5.8: Interviewee 2 Question 2 Feedback Analysis

Question 2	In your daily work on these projects, what tasks take the most time or are the most difficult for you to do?
Answer	The storage of the data is a major concern since students upload extremely huge files, including the final animation videos which are nearly a one-gigabyte file as well as other files like slides and character development letters. This requires the use of numerous backups. Also, the functionality of the system is too basic. There is no direct comments to leave and receipts of the submissions back in order to obtain corrections. She is forced to remind students and lecturers verbally to

	accept and approve on each piece of work and is rather a burden. The available features are only mostly about approval and viewing, and there is little opportunity to elaborate on issues.
Analysis	Most of the existing features permit approval and viewing with insufficient opportunities to give detailed feedback.

Table 5.9: Interviewee 2 Question 3 Feedback Analysis

Question 3	What kind of problems or complaints do you usually hear from students and lecturers about the current process?
Answer	Students even grumble that they have to submit their projects in three locations including Google Classroom, LMS, and in some cases, even a G-Drive since it is impossible to upload massive files onto the FYPMS system. This makes the students upload very huge files.
Analysis	Most of the student complaints relate to the fact that they are expected to do and deliver their work on many platform. Google Classroom, LMS, and, in some cases, Google Drive, which repeats the process and makes it time-consuming. This is attributed mostly to the fact that there is a limitation on file size in the FYPMS system, particularly in large work such as the videos. An additional problem is on the side of lecturers and coordinators, as we lack efficient and dedicated means of handling large submissions on our current system, the usage of different platforms creates confusion and additional workload among the students and staff.

Table 5.10: Interviewee 2 Question 4 Feedback Analysis

Question 4	If a new system could fix just one major problem for you, what would it be?
Answer	One of the few major issues that a new system would have to solve in my case is to have right tracking and notification capabilities. At this moment, I am not sure if students submitted their papers or supervisors read those documents. There is no system telling or any clear indication indicating when an item was submitted or approved so I get to remind lecturers manually and checking with the students which is time consuming and inefficient. An automated system that helps me stay aware when a student handed in a file or a lecturer viewed or acknowledged it would make handling FYPs a lot easier.
Analysis	Assuming that the new system could offer clear tracking and automated notification of every submission and review stage, it would save a lot of manual action in the follow up with the students as well as the lecturers. This would enhance communication, eliminate delays and ensure that the various parties know the current status of the submissions making the process of coordinating Final Year Projects much easier and efficient.

Table 5.11: Interviewee 2 Question 5 Feedback Analysis

Question 5	Right now, how do you check the progress of all your students at once? Is it easy for you to get a quick summary or report of all the projects?
Answer	At this point I do not have an easy way to get a quick overview or report on the progress of all my students in one single location. The tracking capability of the present system is poor, and it does not furnish me with details of the status of individual students proposal/submission. Being a coordinator, I will not be able to see the student proposals personally, they are available to supervisors only. Due to it, I will have to create another submission system based on Google Classroom or LMS to be able to see the proposals personally. I also need to send reminders to the lecturers to reject and accept the student submissions manually as no automatic notification or status is reported. This complicates and consumes much time in monitoring the progress of every one efficiently.
Analysis	It is difficult to track and follow progress due to the absence of a comprehensive tracking system as well as the fact that the coordinators are not able to see the proposals directly made by the students. Consequently, coordinators are to employ the extra platforms, such as Google Classroom or LMS, to collect the required information, thus causing even more manual labor and creating efficiency issues.

Table 5.12: Interviewee 2 Question 6 Feedback Analysis

Question 6	Do you have any other wishes or ideas for a new system? For example, would it be useful if the system could help suggest a supervisor for a student's project?
Answer	I would actually prefer a new system that has functions to remind the lecturers of the pending tasks such as approving the submission of the students. This would save me much time since at the moment I manually need to remind them. I also believe that it is quite significant that the system is more user-friendly and has improved commenting options and an option to send submissions back to students in case they make errors to provide them with appropriate feedback. It got to my mind that one of my deepest wishes is that, I and other coordinators should have the same level of access as the supervisors, in particular, to see the proposals of the students directly in the system, instead of requiring them to send them to us again via Google Classroom or LMS. The next significant feature would be the file size increase where students will have the ability to upload files such as 3D animation videos without wasting time to partition and upload the video into other external sites such as Google Drive and

	then linking the video to FYPMS. This would make the process easier and save additional work on the side of students as well as lecturers.
Analysis	The use of a new system must enable the coordinators to access student proposals with direct access to FYPMS and do not require more postings on other websites. It also ought to allow huge uploads of files with no restrictions on the size of the files so that all material can be presented and stored on the same platform. Such optimizations would promote efficiency in the workflow process, eliminate redundancy, and allow giving timely feedback and monitor the progress of students.

5.2.5 Interviewee 3

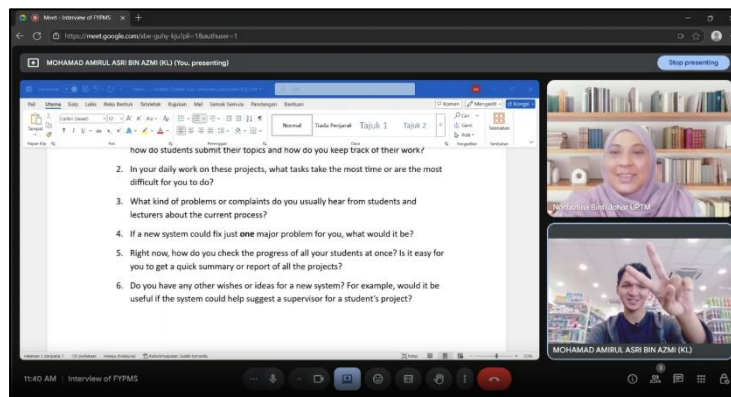


Figure 5.18: Interview session with Mdm. Norfazlina Binti Johar

Interview details:

Name: Norfazlina Binti Johar
 Position: UPTM FYP Lecturer
 Location: Jalan 6/91, Tmn. Shamelin Perkasa KM 5 Jalan Cheras 56100 Kuala Lumpur
 Date: 25 June 2025

Feedback analysis:

Norfazlina Binti Johar, the Final Year Project lecturer at UPTM, was interviewed in order to get more information about the current challenges in the FYP process management. The six questions provided were aimed at learning how to submit the current method, what steps take much time and what suggestions there are to add the features to enhance tracking reports and monitoring the student progress.

Table 5.13: Interviewee 3 Question 1 Feedback Analysis

Question 1	Can you explain how you manage the Final Year Projects right now? For example, how do students submit their topics and how do you keep track of their work?
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Answer	At this moment, students should be able to register themselves in the FYPMS before asking to be provided with a title. As they progress to the FYP 2, they must as well update their semester details and subject at the system. Once that is done students can go ahead and submit their proposals, reports and other necessary documents straight into FYPMS.
Analysis	The existing procedure will make sure that the students enroll and update their records prior to submitting their projects. Nevertheless, the system allows registration and delivering documentation, but does not refer to more advanced tracking options and facilities allowing coordinators to keep track of the progress of the students further than these routine tasks. This implies that the system deals more with the administrative registration than with the assisting tools to manage and evaluate the work of students.

Table 5.14: Interviewee 3 Question 2 Feedback Analysis

Question 2	In your daily work on these projects, what tasks take the most time or are the most difficult for you to do?
Answer	Verification of the titling of the projects of the students is the most time-consuming task to me. To get all the details of the Final Year Project title, description, and where a student is in terms of the progress, I have to click on each student individually. In case of numerous students, the process is lengthy because it requires checking each one by one.
Analysis	The present system does not integrate a convenient method of accessing student information on bulk. The necessity to access the record of individual student individually is quite taxing in terms of time when one is handling a number of students. This shows a definite requirement of a dashboard or a summary view that would enable the coordinators to view the titles, description, and progress of all the students in a single go.

Table 5.15: Interviewee 3 Question 3 Feedback Analysis

Question 3	What kind of problems or complaints do you usually hear from students and lecturers about the current process?
Answer	A lot of students complain that they have submitted their proposals and the progress in the system does not change telling them that they have not submitted successfully. In fact, the progress will be updated only when the proposal is approved by the supervisor. The other problem is that the progress bar is confusing at times, and when the students complete only their proposal, the system falsely indicates that the final report and

	presentation is already marked as completed, which causes misunderstandings as to what the students still have to do.
Analysis	The progress indicators of the existing system are misleading and ambiguous to the students. Lack of conveying to their students the status of their submission immediately and most importantly accurately can make them confused and/or assume that their work is not submitted correctly. Also, inaccurate updates on the progress bar, like ticking off subsequent sections once only the proposal is uploaded, may result in a considerable miscommunication and overall workflow impairment of not only students but also lecturers.

Table 5.16: Interviewee 3 Question 4 Feedback Analysis

Question 4	If a new system could fix just one major problem for you, what would it be?
Answer	However, the ability to view the proposals submitted by the students by the coordinators was one thing that a new system could resolve since currently only the supervisors can see it and this is a big problem on my part since I want to track the progress in an application. It also occurs to me that the student list is to be rectified, as it is not correcting, i.e. it does not display all the students of a program such as CT206. Finally, I would prefer the progress bar to be stable that will allow students to keep track of their actual progress without unnecessary and inaccurate updates.
Analysis	The failure of the coordinator to see all student proposals, the unreliability of student lists does not show all students registered, and perhaps above all is the inaccuracy of the progress indicators are the most important. A new system should solve these issues, which would significantly enhance the coordinators capacity to track students along the line, minimise student confusion as well streamline project control on the part of all the involved parties.

Table 5.17: Interviewee 3 Question 5 Feedback Analysis

Question 5	Right now, how do you check the progress of all your students at once? Is it easy for you to get a quick summary or report of all the projects?
Answer	At this moment, the report in the system is not entirely there, which means that I cannot have a fast and accurate overview of the progress of my all students. Rather, I must retrieve available reports manually and make manual reports in excel. This would require me to send the marks manually to Excel in order to compute the actual marks and final grades

	of each student so this would consume a lot of unnecessary time, as well as effort.
Analysis	The missing feature of the complete and trusted reporting compels the coordinators to depend on manual work, which is time-consuming to track the progress made by students and calculate their grades. This is a manual process and it is prone to errors, wastes a lot of time and decreases efficiency. The new system must give rise to comprehensive, accurate and exportable reports so that the coordinators may get a feel of the performance and progress of the students within very little time.

Table 5.18: Interviewee 3 Question 6 Feedback Analysis

Question 6	Do you have any other wishes or ideas for a new system? For example, would it be useful if the system could help suggest a supervisor for a student's project?
Answer	As far as I am concerned, I believe that the possibility to access a suggestion of a supervisor who can work with a student on his or her project would be quite helpful. Not all students understand how to select a proper supervisor by their own and they spend 2-3 weeks to find a supervisor. It is a major issue particularly when a semester is short since students are left with only a couple of weeks before they can finish their proposals among other requirements. They should not be wasting time looking to get allocated a supervisor and agree on their names of projects at this important phase.
Analysis	It would be more time-saving to have a system capable of recommending the right supervisors by depending on the proposed topic or interest of the student at the beginning of the project process. The supervisor from the multi-thousands of supervisors would be selected fast enough enabling the students to have more time to prepare their proposal and other things they are required to deliver hence as a whole it would be more efficient with less delays that are encountered due to supervisor selection process.

5.3 Use Case Model



Figure 5.19: Use Case Diagram

The use case diagram shows how the three key actors in this situation, namely Student, Coordinator/FYP Lecturer and Supervisor/Examiner, interact in a Final Year Project Management System (FYPMS). Students are able to register, sign in, submit idea, see suggested titles, log off and see dashboard. They can use the system to inquire about the status of approval and inquire about the project titles, which are the extended capabilities of the titling of a project. The Coordinator/FYP Lecturer has a wide control authority, such as the distribution/checking of supervisor allocation, creation/management of subjects, semester, program, checking and verification of student submissions, the general workflow of the project. Supervisors/Examiners mainly receive the submissions of students, which includes the process of marking reports and append grades, and can also add, update, or delete the proposed project titles. The most important features to both the students and the coordinators/lecturers are the login and the view dashboard.

5.4 Flowchart

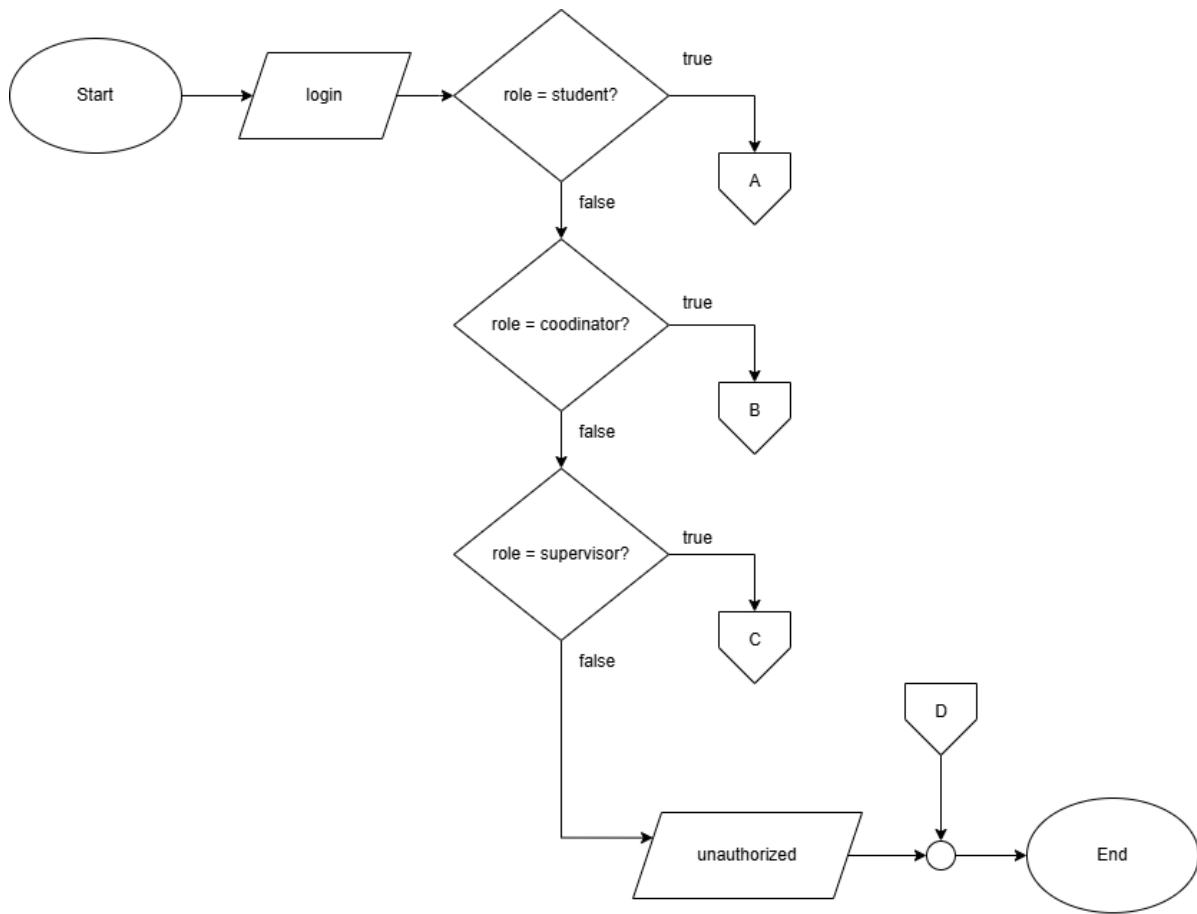


Figure 5.20: UPTM AI Enhanced FYPMS Flowchart 1

The flow diagram of the UPTM AI Enhanced FYPMS indicates the procedure in the user log in, where after the initiation and the log in allotted, the computer system verifies the user role. In case of the user being a student, coordinator or supervisor, they are accessed to their interface (A, B or C). Otherwise, when the position would not fit any of the ones listed, the user will be considered unauthorized and the operation will stop.

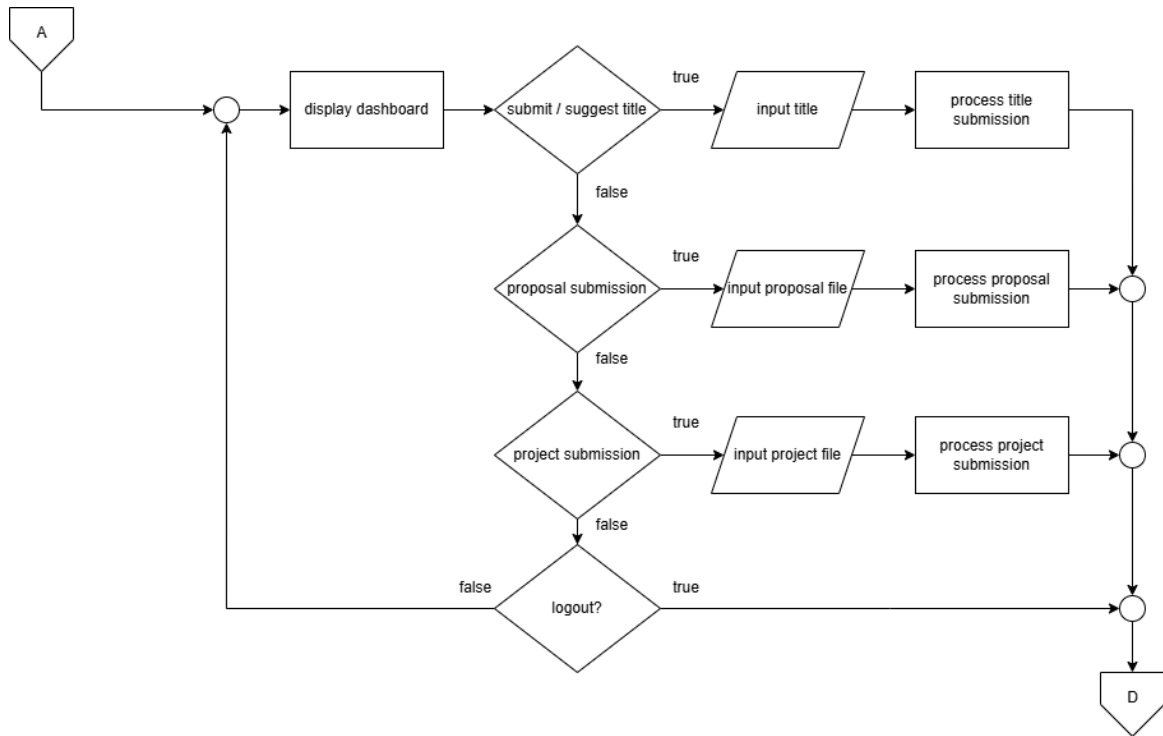


Figure 5.21: UPTM AI Enhanced FYPMS Flowchart 2

The figure above shows the UPTM AI Enhanced FYPMS flow of work in which the student gets to start at A. When a student reaches this stage, he or she can see a dashboard. Submitting a project title or an option of suggesting a project title can be done here through insertion of the title to be followed by its processing submission. After this, the student will be able to submit a proposal and this will necessitate it to enter a file with a proposal in it that will be processed. Afterwards, they are able to submit their final project which also entails the input of a project file in order to submit. The student may logout at any-time which takes him to point D, which is the presumed end of his/her session. This whole thing enables the students to handle their submissions to projects throughout its lifecycle.

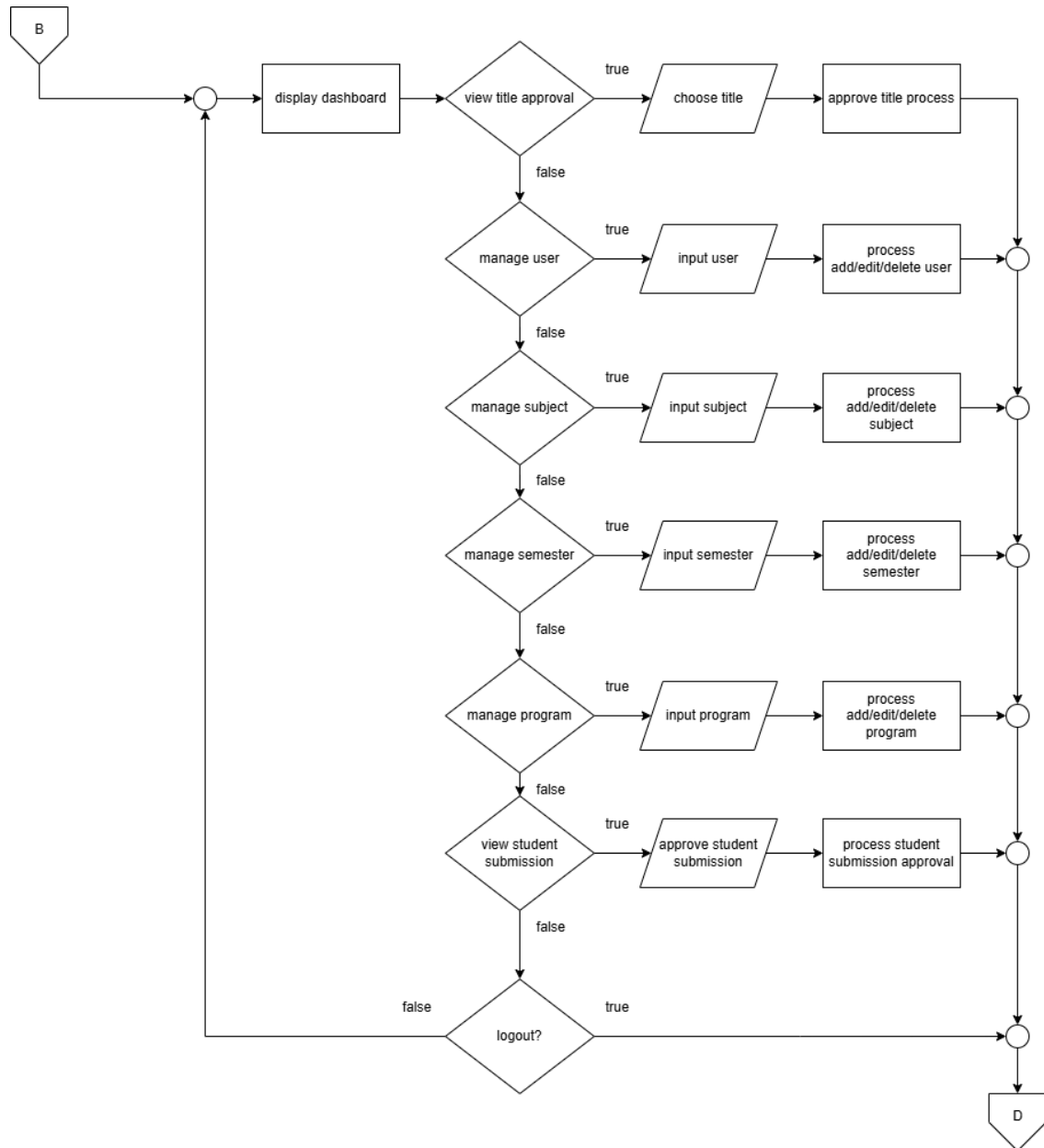


Figure 5.22: UPTM AI Enhanced FYPMS Flowchart 3

The diagram shows the workflow of the coordinator under the UPTM AI Enhanced FYPMS whose work flow starts at point B. The coordinator may attend to several administrative duties after logging in to their dashboard. These involve title approvals where they are able to select and accept project titles. They can also manage user, subject, semester, and program, each of which requires feeding into correspondingly-relevant data into the system to carry out the following additions, edits, or deletions. Additionally, the coordinator will be able to review submissions made by students and then approve the same. During this process, it can be noted that the coordinator still has the option of logging out so it becomes point D of the end of that session. This extensive range of operations enables the coordinator to monitor and take control of main features of the FYPMS.

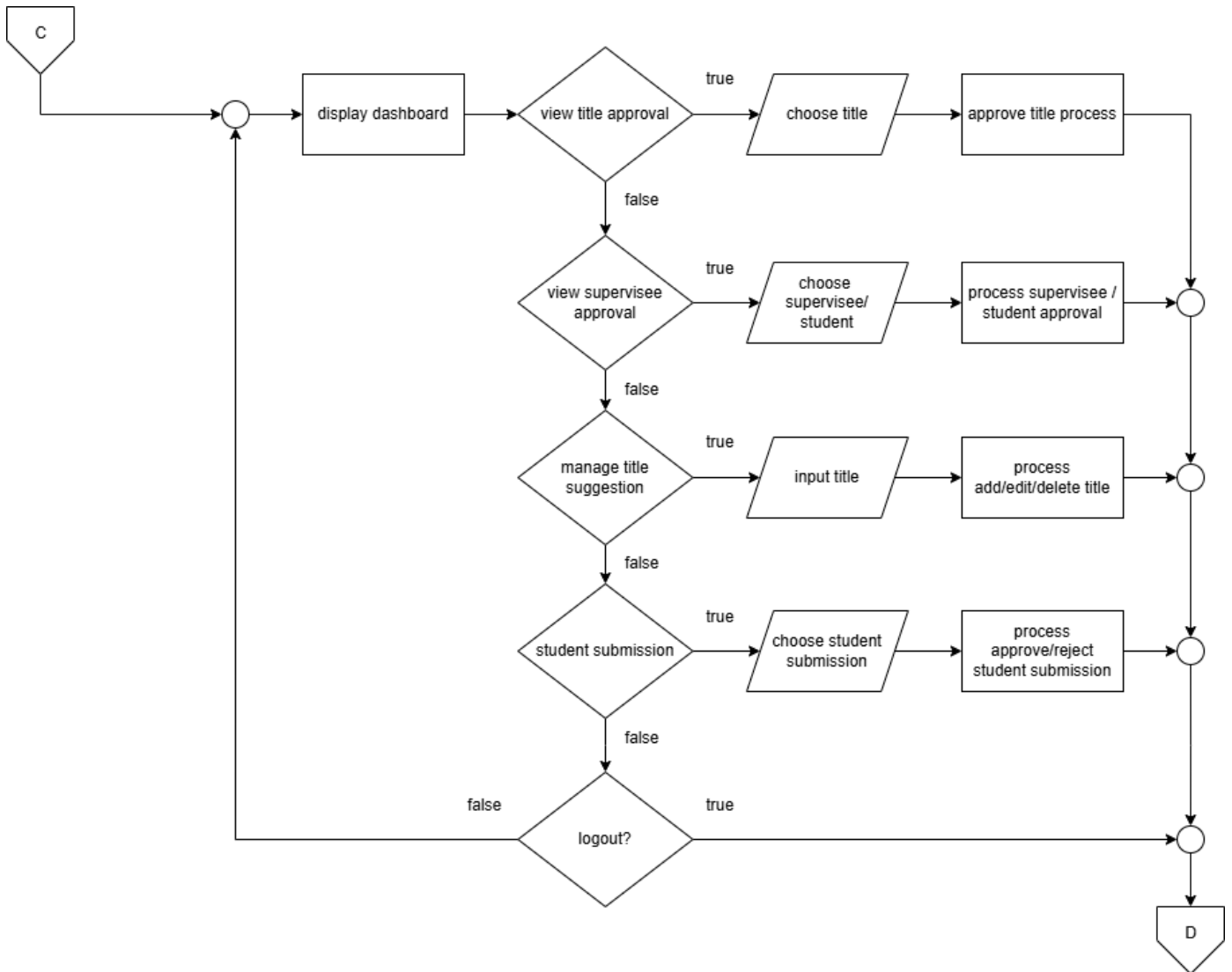


Figure 5.23: UPTM AI Enhanced FYPMS Flowchart 4

The diagram is the workflow of a supervisor or examiner in the UPTM AI Enhanced FYPMS beginning with the point C. When they land in their dashboard, they possess some functionalities. They are able to see title approvals whereby they are able to select and accept project titles. They also have the facility of viewing supervisee approvals- that requires selection of a supervisee or student whose approval needs to be done. The supervisor/examiner can also handle title suggestions where he/she can enter titles to handle addition, edit, or deletion. Moreover, they will be able to see the submissions by the students, select a particular one, and then approve or reject. The supervisor/examiner can then logout and on doing so, they get to point D ending their session. This workflow explains the important functions of supervisors and examiners in facilitating and assessing projects of students into the system.

5.6 Conclusion

The UPTM AI Enhanced FYPMS project analysis provides a clear picture of its user roles and functions, after a well-conducted data collection process. Particularly, the numbers of questionnaire responses (more than 50) and main thorough interviews employed (3 people) offered a well-rounded amount of data to design the system. On this information, a coherent cluster of use cases were elaborated, describing imaginations of the system, envisioned interactions. Lastly the flowcharts provided of students, coordinators and supervisors/examiners (as shown) indicate the logical sequence to be followed, and score points, in the interaction of each user with the system, successfully mapping the identified requirements to an actual system architecture.

6 DESIGN

6.1 Introduction

In developing a web application, it must have a very good design which can improve the user experience. So in this phase, we will first make a sketch to show how all the elements in the web application will be displayed to the user, using a Wireframe sketch. Next, this project has a database followed by the tables needed to store data. Therefore, this phase will also determine the tables and columns in each table along with details. In addition, other diagrams are also provided such as data flow diagrams, erd diagrams for tables in the database and system flow.

6.2 Interface Design

6.2.1 Login Page

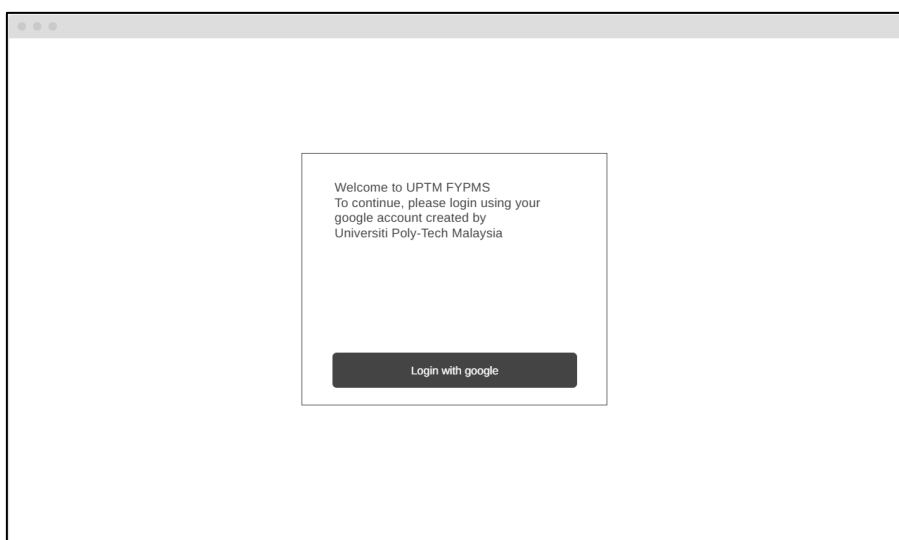


Figure 6.1: Wireframe 1 - Login Page

Here is the login page, this page only uses the google login method. It is very useful because Universiti Poly-Tech Malaysia has assigned an email to each student. So students can use the same email to log in to this system without having to create an additional account.

6.2.2 Home dashboard page

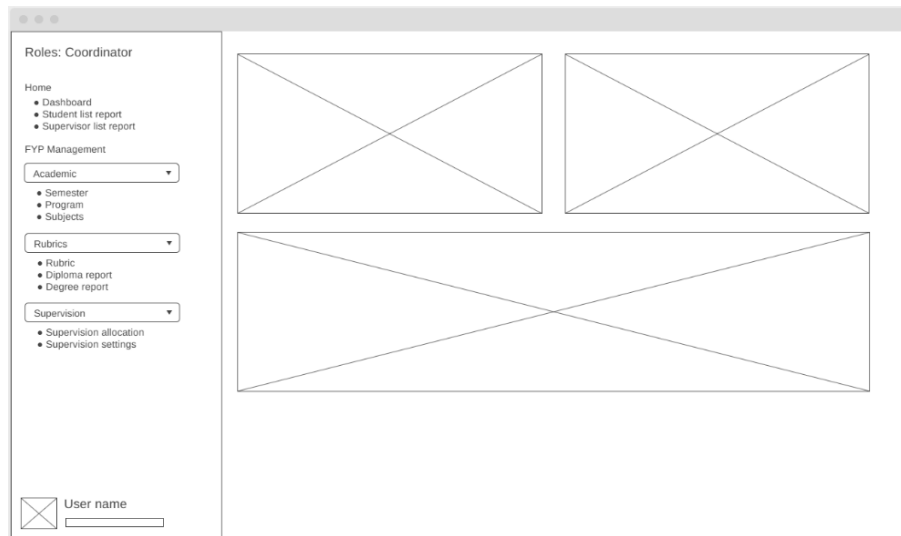


Figure 6.2: Wireframe 2 - Home dashboard page

Next is the dashboard display. Based on the figure above, that is the Home Dashboard for the coordinator which will display analytical data and other summary data. Not only that, it is also the determinant of the layout arrangement for this project.

6.2.3 Data table and search layout

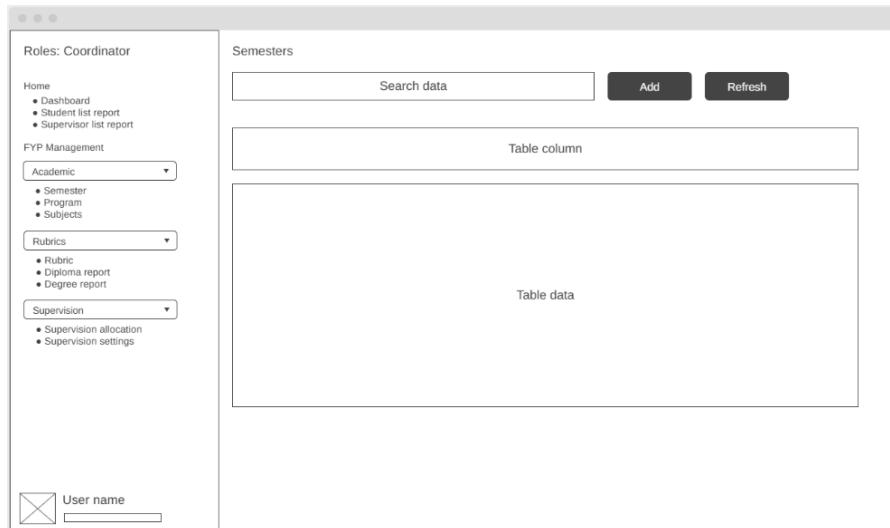


Figure 6.3: Wireframe 3 - Data table and search layout

Next is the data table display. UPTM AI Enhance FYPMS will use the same layout on each large data display as shown in the figure above. As well as a consistent search layout, it makes it easier for users to find and select data.

6.2.4 Add and edit dialog layout

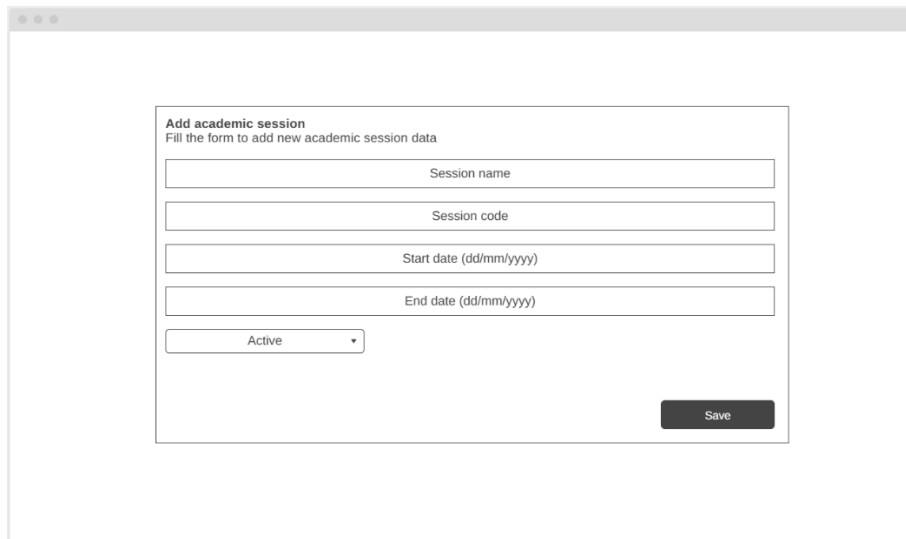


Figure 6.4: Wireframe 4 - Adding data form

The figure above shows the dialog display when adding, changing or deleting data. Every important process in the system will display a dialog like this for data management. Or it can be easily called as confirmation when deleting data.

6.2.5 FYP Title Registration page

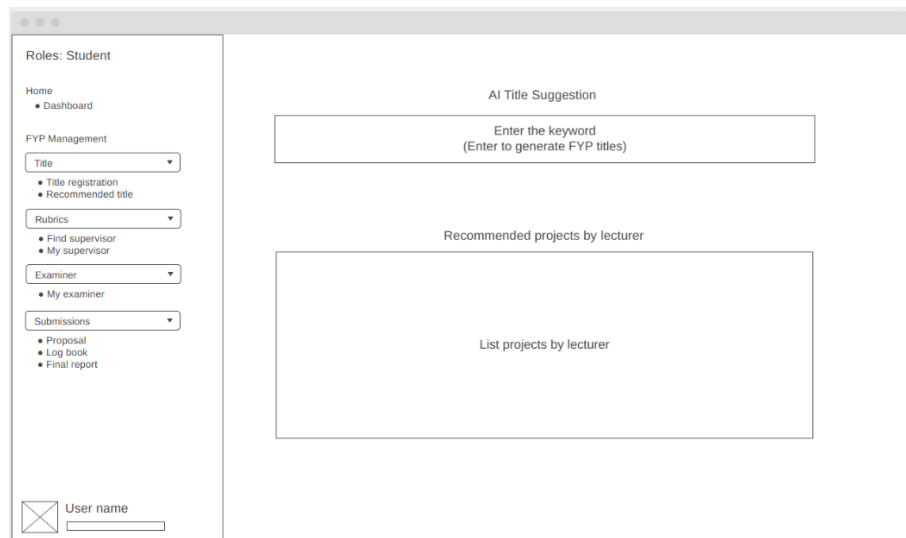


Figure 6.5: Wireframe 5 - FYP Title Registration page

The next figure is the design of the FYP title registration page. Students can fill in and submit the Final Year Project title into this system. Not only that, because of the Artificial Intelligence function that will be implemented into this system, this section provides space for students to fill in keywords only and then be able to generate the FYP title automatically.

6.2.6 AI Title generated dialog form

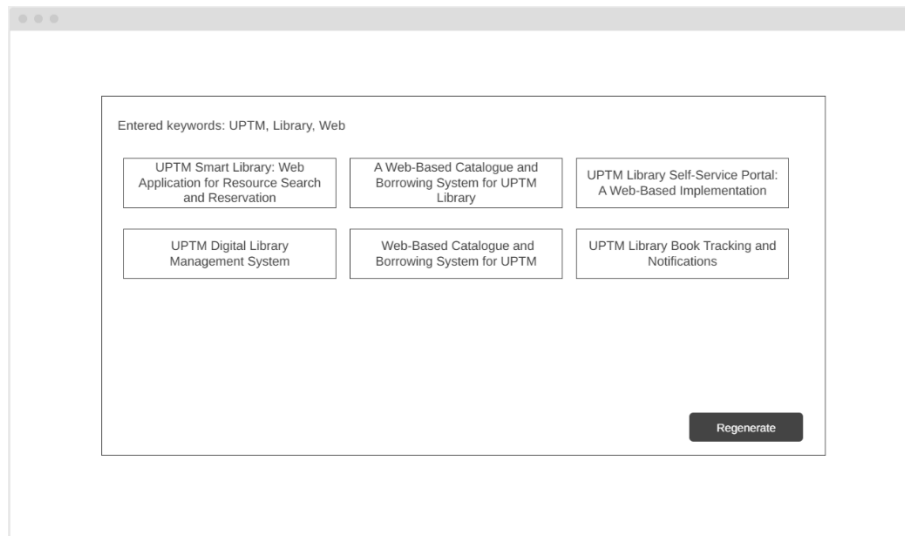


Figure 6.6: Wireframe 6 - AI Title generated dialog form

Next, after students fill in keywords into this system to generate FYP titles, the system will display a list of FYPs and then the student can select them before submitting. Based on this figure, the display of each FYP generated will be arranged in a grid for easy viewing and a neater display.

6.2.7 Automatic examiner assignments

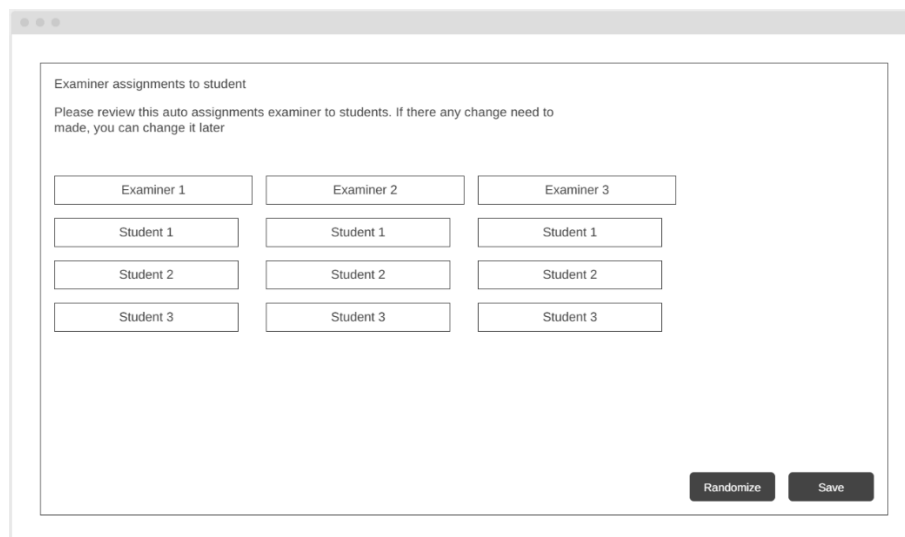


Figure 6.7: Wireframe 7 - Automatic examiner assignments to students

Based on the figure above, this is the layout for the coordinator when the automatic examiner assignment process to students is complete. It will display based on groups. And the coordinator has the ability to change students between lecturers (examiners)

6.2.8 User menu control

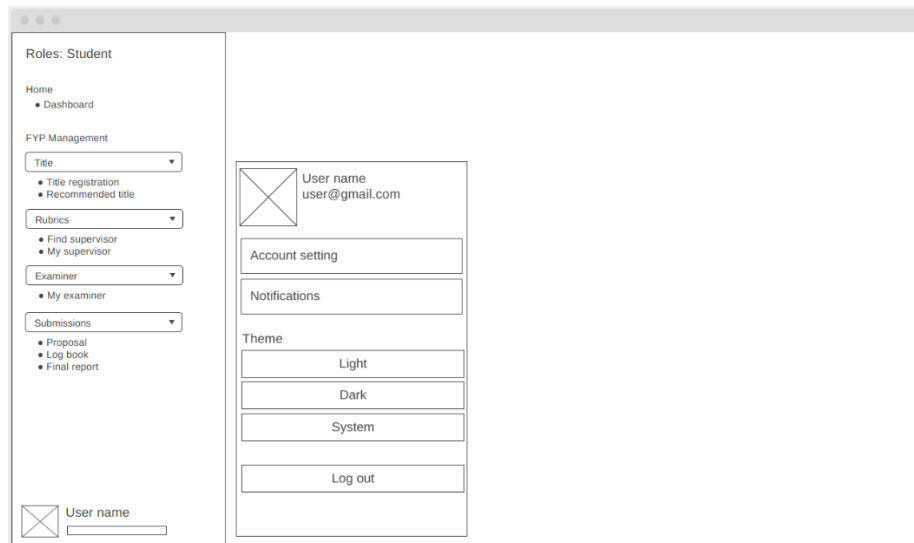


Figure 6.8: Wireframe 8 - User menu control

The last section is the user profile control section. According to the figure above, users can see the email used to log in to this system, and also have the ability to change the theme mode to dark or light. It provides eye comfort to users when seeing in the dark.

6.3 Database Design

6.3.1 Data Dictionary

6.3.1.1 Users table

Table 6.1: Table users

Column	Type	Null	Default
id (<i>Primary</i>)	bigint	No	
name	varchar(255)	No	
email	varchar(255)	No	
email_verified_at	timestamp	Yes	<i>NULL</i>
password	varchar(255)	No	
remember_token	varchar(100)	Yes	<i>NULL</i>
last_active_at	timestamp	Yes	<i>NULL</i>
created_at	timestamp	Yes	<i>NULL</i>
updated_at	timestamp	Yes	<i>NULL</i>
avatar	varchar(255)	Yes	<i>NULL</i>

This is the users table of UPTM AI Enhanced FYPMS project where we will keep all the account information, such as username, email, password and some optional fields such as email_verification status, avatar or timestamps for creating/updating the account and when was it last active.

6.3.1.2 Roles table

Table 6.2: roles table

Column	Type	Null	Default
id (<i>Primary</i>)	bigint	No	
name	varchar(255)	No	
created_at	timestamp	Yes	<i>NULL</i>
updated_at	timestamp	Yes	<i>NULL</i>

The roles table is used to describe the various user roles in the UPTM AI Enhanced FYPMS system, such as student, lecturer or admin. Every role is defined by an ID, a name, timestamps for when it was created and last modified.

6.3.1.3 Role user table

Table 6.3: role_user table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
user_id	bigint	No		users -> id
role_id	bigint	No		roles -> id
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The table is a pivot table that connects users to their roles, allowing for a user to have a many roles. It keeps the user id and role name directly referencing user and roles tables of users being able to have several roles or forcing a sliding timestamp on assignment.

6.3.1.4 Titles table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
project_category	varchar(255)	No		
title	varchar(255)	No		
description	text	Yes	NULL	
status	enum('Approved', 'Rejected', 'Pending')	No	Pending	
student_id	bigint	No		students -> id
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The titles table contains data related to the FYP Title proposed by students, which include project category, title name and a description. Every title is associated with a particular student via the student_id field, and they have one status which can be approved, rejected or pending. Timestamps are also present to indicate when a title was added or last modified.

6.3.1.5 Supervisions table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
student_id	bigint	No		students -> id
lecturer_id	bigint	No		lecturers -> id
status	enum('Approved', 'Pending', 'Rejected')	No	Pending	
academic_session_id	bigint	No		academic_sessions -> id
reject_reason	varchar(255)	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The supervisions table dictates what lecturers are to supervise which students on their Final Year Projects. It details under which lecturer a student wants to study, gives the academic period and includes information as to whether the supervision was approved. A rejection cause may be kept to take notes, and timestamps are used to log events for monitoring and workflow progression.

6.3.1.6 Subjects table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
subject_name	varchar(255)	No		
subject_code	varchar(255)	No		
program_id	bigint	No		programs -> id
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The subjects table – It holds the academic subject details available in that institution, for example: subject name and code. Each subject corresponds to one program, for adequate classification in the subjects. Timestamps have been added to track changes.

6.3.1.7 Programs table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
program_name	varchar(255)	No		
program_code	varchar(255)	No		
level	enum('Diploma', 'Degree')	No		
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The programs table lists the academic programs offered by name and program code, for example Diploma and Degree. It is the parent of subjects to organize students and academic elements under programs.

6.3.1.8 Academic sessions table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
session_name	varchar(255)	No		
session_code	varchar(255)	No		
start_date	date	No		
end_date	date	No		
status	enum('Active', 'Inactive')	No		
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The academic sessions table is used to keep information on term session of studies and it includes their name, code, start_date, end_date and a status field indicating whether the academic session is active or not. This facilitates the time-tabling and management of the FYP activities with respect to the actual semester duration.

6.3.1.9 Students table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
user_id	bigint	No		users -> id
student_id	varchar(255)	No		
phone	varchar(255)	Yes	NULL	
program_id	bigint	Yes	NULL	programs -> id
subject_id	bigint	Yes	NULL	subjects -> id
academic_session_id	bigint	Yes	NULL	academic_sessions -> id
section_number	varchar(255)	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The students table contains detail information about student by establishing a student with a user account, and maintains their student ID, contact number, academic program, subject current academic session and section number. This is to avoid misidentification and categorization of the students in the FYP management system.

6.3.1.10 Lecturers table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
user_id	bigint	No		users -> id
phone	varchar(255)	Yes	NULL	
qualification	varchar(255)	Yes	NULL	
field	varchar(255)	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The lecturers table associates a lecturer with a user account and optionally includes the phone number, qualification status and expertise. This data will be used to inform supervision assignment and system-based academic role management.

6.3.1.11 Settings table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
key	varchar(255)	No		
value	text	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The settings table contains configurable system preferences using key-value pairs, providing an approach to control dynamic features and behavior of the platform without changing code. It has timestamps for tracking setting changes.

6.3.1.12 Recommended titles table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
title_level	enum('Diploma', 'Degree')	No		
project_category	varchar(255)	No		
title	varchar(255)	No		
description	text	Yes	NULL	
lecturer_id	bigint	No		lecturers -> id
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

A table of project titles recommended to students by lecturers is full of pre-sanctioned suggestions for the names of projects. Each recommendation is provided with academic level, category, title and optional description and a link to the lecturer who suggested it so that students can more easily identify appropriate FYP topics.

6.3.1.13 Project categories table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
name	varchar(255)	No		
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The project category table provides a structured lookup over FYP titles, e.g. into different technology or research areas. These groups provide a context for title selection, and assist information categorization in the system.

6.3.1.14 Fields table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
name	varchar(255)	No		
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The fields table enumerates specialized areas or disciplines applied to categorize lecturer expertise or project relevance. Such levels of matching and assignment may then lead to more effective matching between the project needs of students and skill areas of lecturers.

6.3.1.15 Examiners table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
lecturer_id	bigint	No		lecturers -> id
student_id	bigint	No		students -> id
academic_session_id	bigint	No		academic_sessions -> id
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The examiners table assigns lecturers as examiners to evaluate specific students during a particular academic session. Each record connects a lecturer and a student, helping the system manage examination for rubric grading.

6.3.1.16 Feature accesses table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
user_id	bigint	No		users -> id
feature_key	varchar(255)	No		
enabled	tinyint(1)	No	0	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The feature accesses table controls which system features are need to be accessible for each user through a feature key. This allows for role-based or user-specific access to certain functionalities in the platform, supporting feature restrictions and configurable permissions for any users even lecturer and student.

6.3.1.17 Rubrics table

Column	Type	Null	Default	Links to
id (Primary)	bigint	No		
subject_id	bigint	No		subjects -> id
name	varchar(255)	No		
description	text	Yes	NULL	
visible_to	json	Yes	NULL	
report_identifier_key	varchar(255)	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	
rubric_type_id	bigint	Yes	NULL	rubric_types -> id

The rubrics table stores the evaluation criteria used for grading students' FYPs, linked to a specific subject. It includes the rubric name, description, visibility settings, and an optional report identifier key for define which rubric type it is. The rubric can also be associated with a rubric type to state how the rubric will rendered and display to the frontend.

6.3.1.18 Rubric criteria table

Column	Type	Null	Default	Links to
id (Primary)	bigint	No		
rubric_id	bigint	No		rubrics -> id
parent_id	bigint	Yes	NULL	rubric_criteria -> id
name	text	No		
description	text	Yes	NULL	
weight	int	No	0	
max_score	int	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric criteria table stores criteria data for the rubric. It supports sub-criteria structure using parent_id. It makes main criteria has a ability to have another sub-criteria, and includes fields like weight and maximum score to state the score on each criteria for student evaluation.

6.3.1.19 Rubric duplications table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
rubric_id	bigint	No		rubrics -> id
subject_ids	json	No		
status	varchar(255)	No	pending	
error_message	text	Yes	NULL	
user_id	bigint	Yes	NULL	users -> id
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric duplications table used to track copy progress for rubric to another subject. This helps coordinator to see how many progress complete for the copy process since the rubric data is large and need to be processed in the jobs background.

6.3.1.20 Rubric grade comments table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
rubric_grade_id	bigint	No		rubric_grades -> id
key	varchar(255)	Yes	NULL	
comment	text	No		
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric grade comments table stores additional comments given by examiners for specific rubric grade records. It allows labeling comment types with a key, helping to render to the frontend at the comment section.

6.3.1.21 Rubric grade items table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
rubric_grade_id	bigint	No		rubric_grades -> id
criterion_id	bigint	No		rubric_criteria -> id
score	decimal(8,2)	No	0.00	
calculated	decimal(8,2)	Yes	NULL	
comment	text	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric grade items table records the score entered by the supervisor and examiner for each rubric criterion during grading. It links to both the overall rubric grade and the specific criterion, also provided with total marks to prevent mark changes is anything changed on the original rubric.

6.3.1.22 Rubric grades table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
rubric_id	bigint	No		rubrics -> id
student_id	bigint	No		students -> id
total_score	decimal(8,2)	No	0.00	
meta	json	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric grades table stores the final grading results for a student based on a particular rubric. It includes the total score earned and additional metadata to support automated reporting and structured evaluation records.

6.3.1.23 Rubric levels table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
criterion_id	bigint	No		rubric_criteria -> id
label	varchar(255)	No		
score	int	No		
description	text	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric levels table defines scoring levels or performance descriptors for each criterion, such as Excellent, Good, or Poor. Each level includes a label, score value, and an optional description to guide consistent and fair grading across different evaluators.

6.3.1.24 Rubric types table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
key	varchar(255)	No		
name	varchar(255)	No		
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The rubric types table categorizes rubrics by defining different types through unique keys and names. This helps organize assessment structures, making it easier to apply appropriate rubrics depending on evaluation needs within the system.

6.3.1.25 Student submissions table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
student_id	bigint	No		students -> id
subject_id	bigint	No		subjects -> id
submission_type_id	bigint	No		submission_types -> id
file_path	varchar(255)	No		
original_name	varchar(255)	No		
mime_type	varchar(255)	No		
status	enum('processing', 'pending', 'reviewed', 'approved', 'rejected')	No	pending	
comment	text	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	
progress	tinyint	No	0	
process_id	int	Yes	NULL	

The student submissions table stores all uploaded project-related files from students, including details such as subject, submission type, file path, original filename, and file format. It tracks review status, progress, and examiner comments, ensuring a complete digital submission and evaluation workflow.

6.3.1.26 Submission types table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
key	varchar(255)	No		
name	varchar(255)	No		
description	text	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The submission types table defines the categories of files students must submit, such as proposals, reports, or videos. Each type has a unique key, name, and optional description, supporting structured submission requirements based on academic or project needs.

6.3.1.27 User activity logs table

Column	Type	Null	Default	Links to
id (<i>Primary</i>)	bigint	No		
user_id	bigint	No		users -> id
active_at	timestamp	No		
ip_address	varchar(255)	Yes	NULL	
user_agent	varchar(255)	Yes	NULL	
created_at	timestamp	Yes	NULL	
updated_at	timestamp	Yes	NULL	

The user activity logs table records user login activity, including the time they were active, their IP address, and browser details. This helps the coordinator dashboard at the frontend can display the student and lecturer data in graph based on the daily active usage.

6.3.2 Data Flow Diagram (DFD)

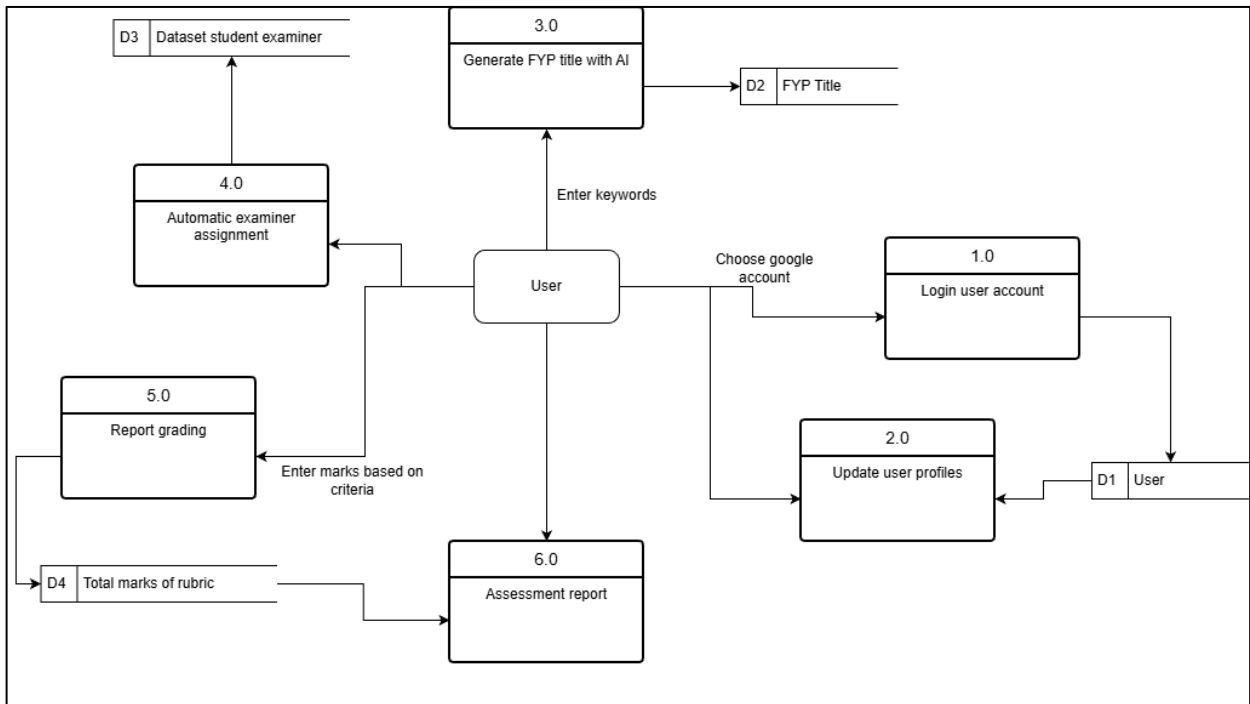


Figure 6.9: Data flow of UPTM AI Enhanced FYPMS

UPTM AI Enhanced FYPMS provides important functions for managing Final Year Project students easily. Based on the figure above, here is the basic flow for users, namely lecturers and students. Starting with logging in, users do not need to register such as filling in a username and password, just use the Google account provided by UPTM and you are ready to access all the functions available in this system. Next for students, students can generate FYP titles using AI. After the process is complete, the title will be saved in the database for review by the supervisor. Next is automatic examiner assignment. This is a function for the FYP coordinator to facilitate the process of assigning students to each examiner. Next is the grading report, where this function is used by FYP lecturers, namely examiners and supervisors, in marking and giving marks to students through the digital rubric displayed during grading.

6.3.3 Entity Relational Diagram (ERD)

The figure below shows all the entities in an ERD for the UPTM AI Enhanced FYPMS project. Each of these entities refers to a table in the database. Each table stores data related to the final year project and also certain important functions so that they can be used to display on the frontend.

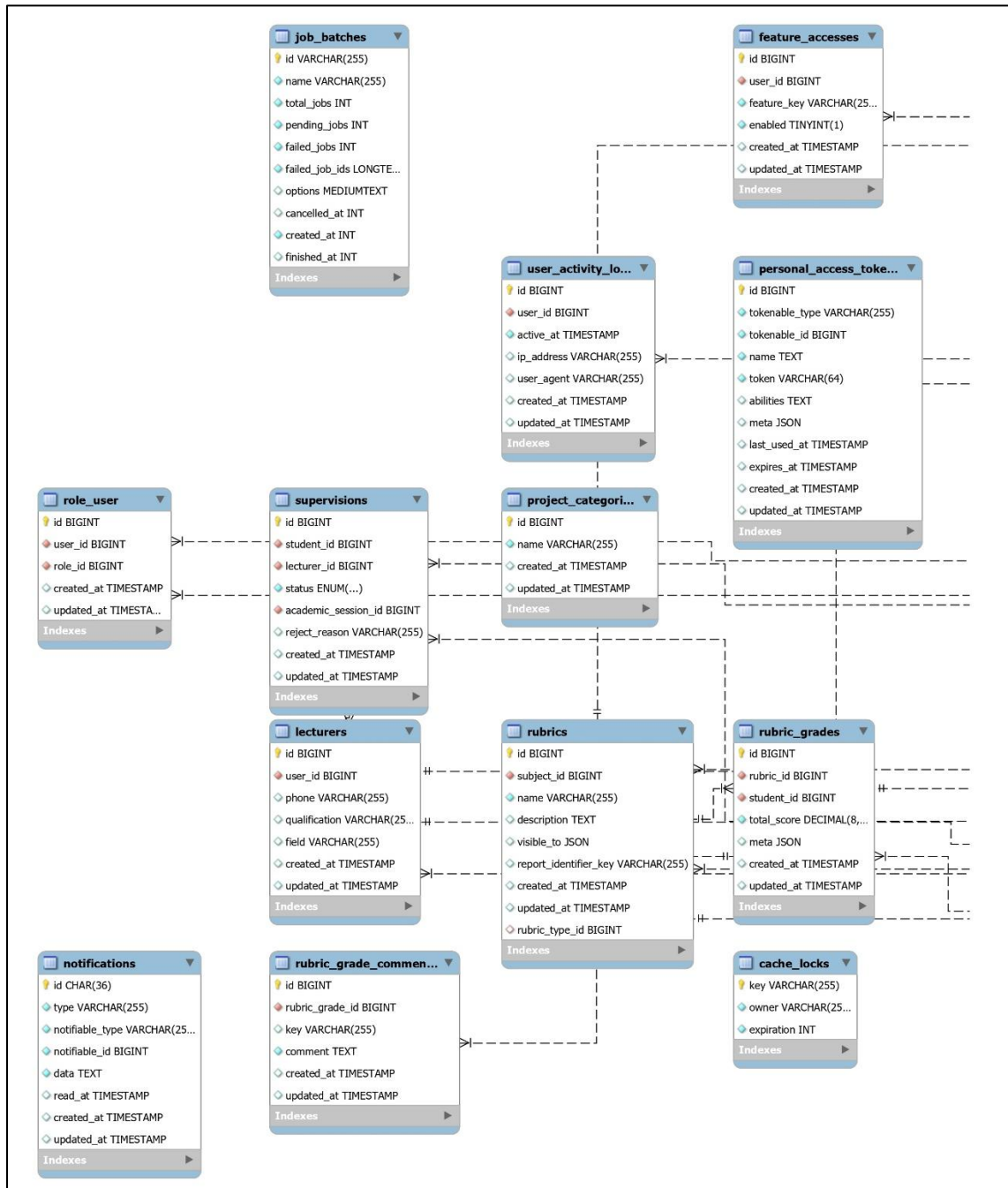


Figure 6.10: ERD UPTM AI Enhanced FYPMS Page 1

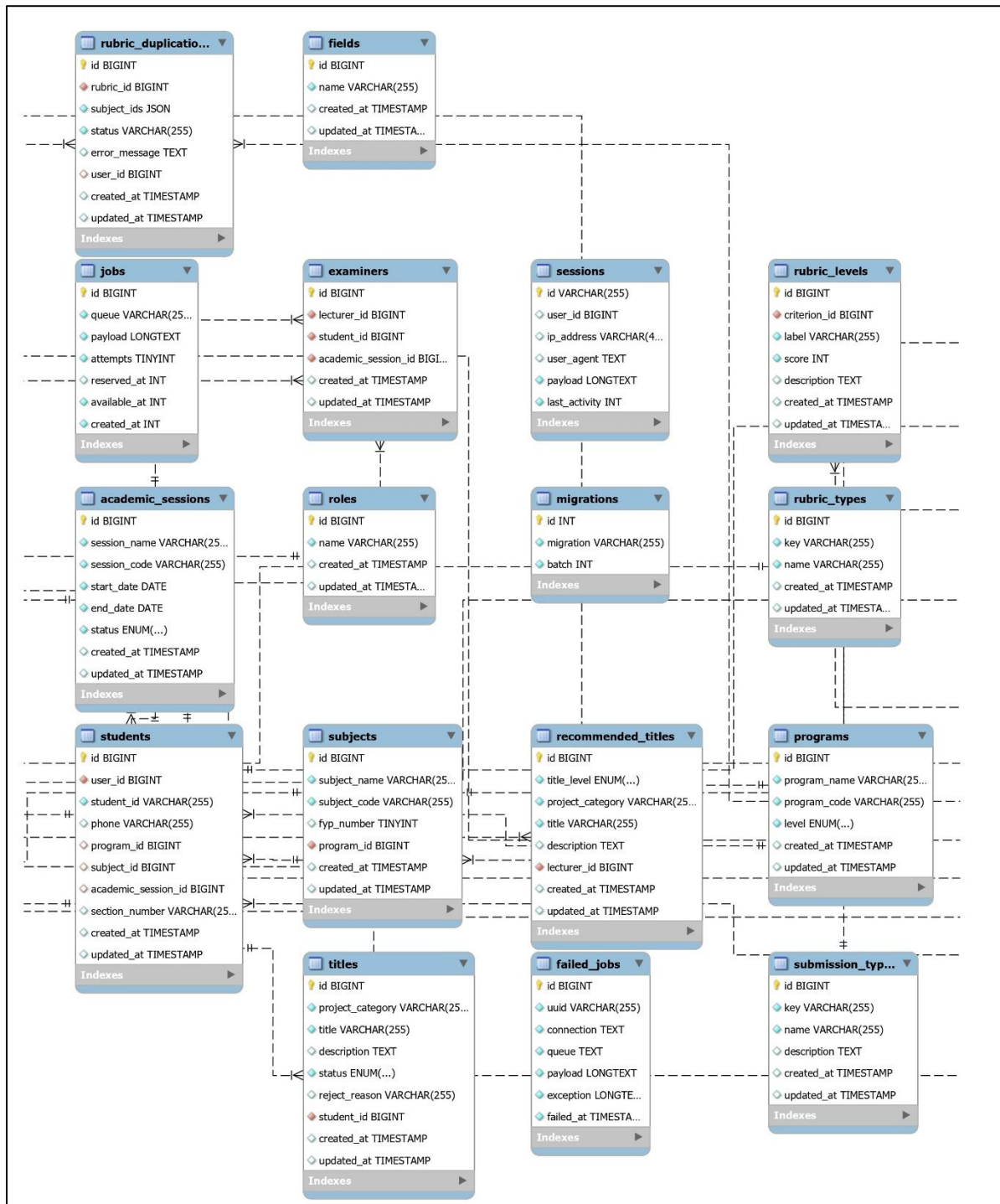


Figure 6.11: ERD UPTM AI Enhanced FYPMS Page 2

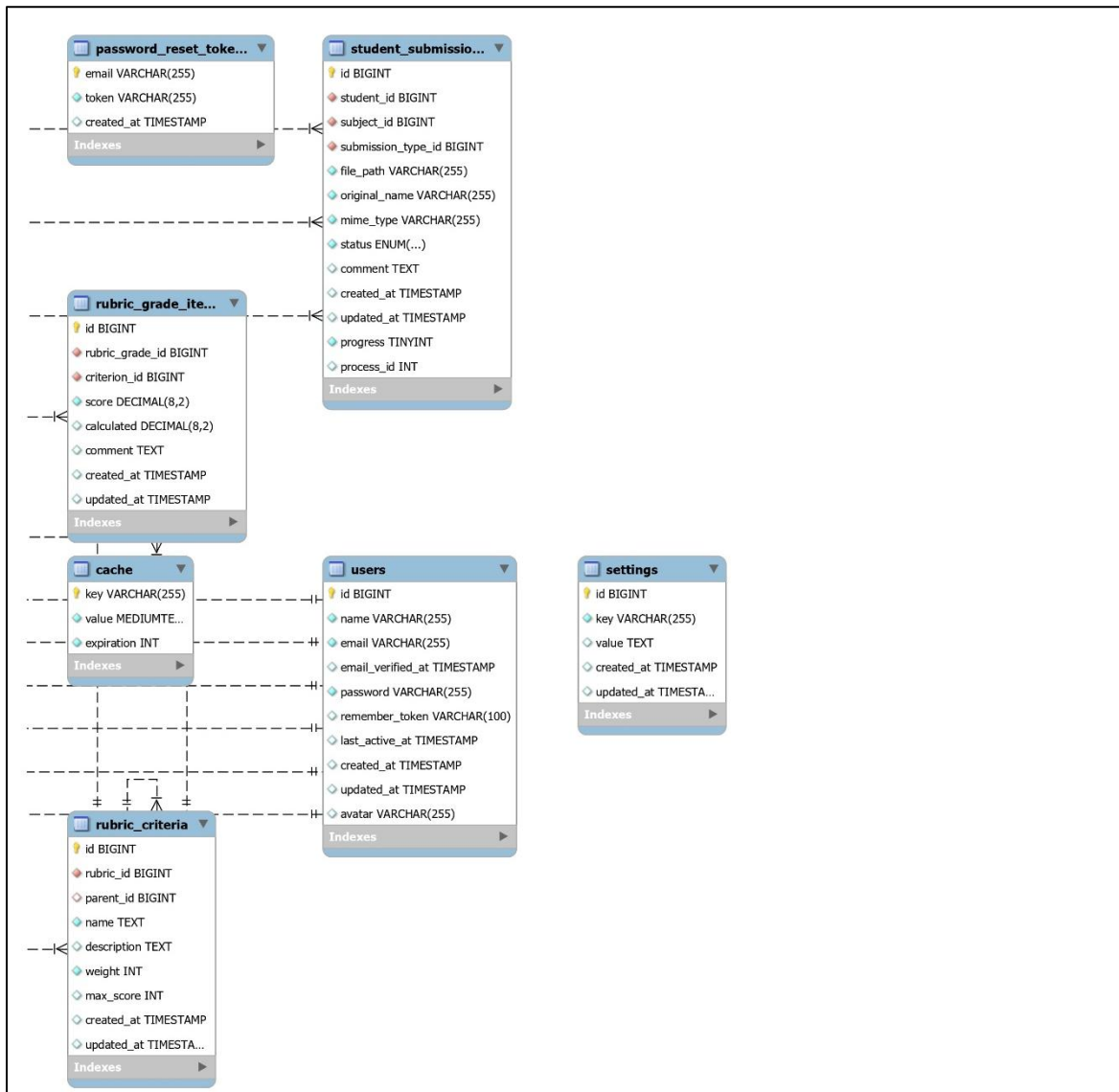


Figure 6.12: ERD UPTM AI Enhanced FYPMS Page 3

6.4 Flow of the System

6.4.1 Login flow

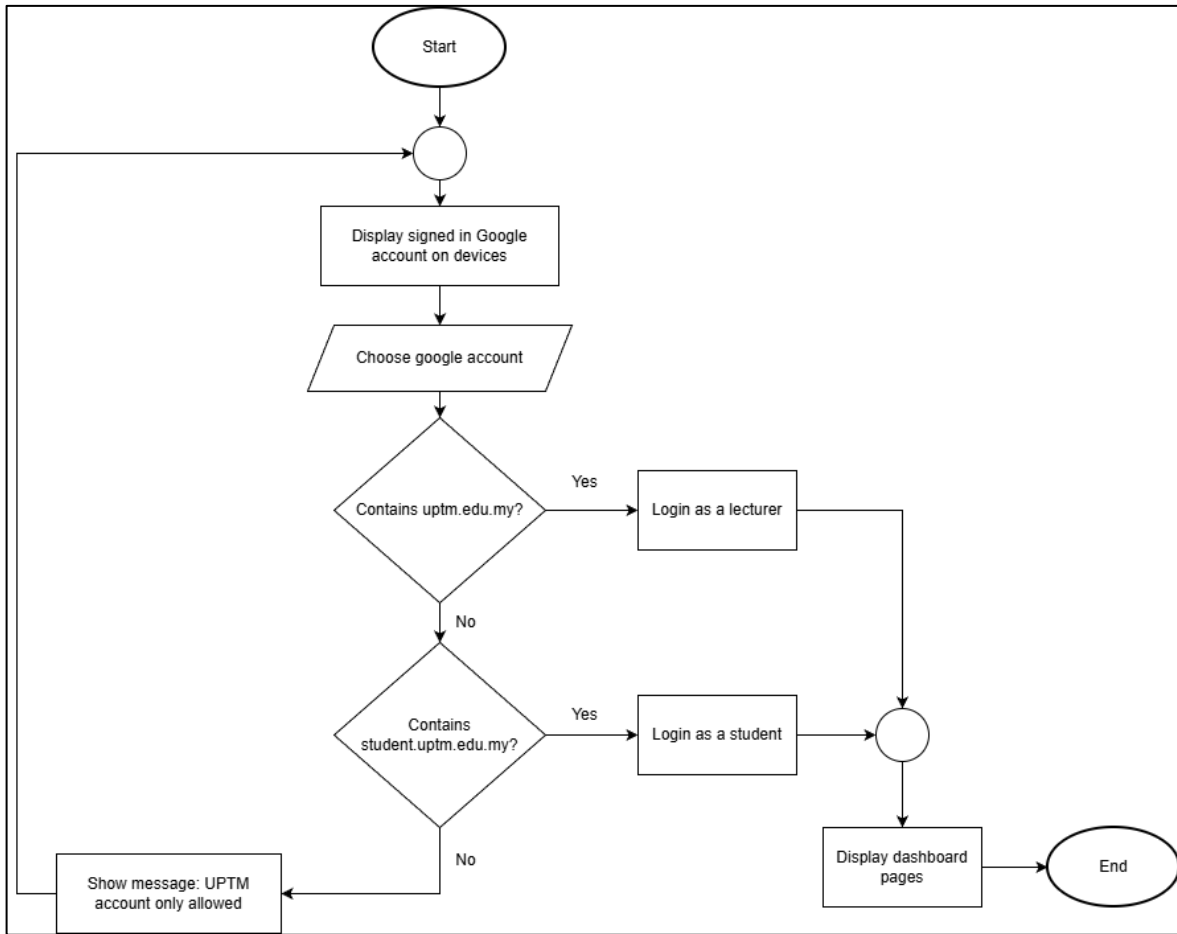


Figure 6.13: Login flow

The login function for this project, UPTM AI Enhanced FYPMS, does not require registration. It only requires linking a UPTM Google account and students or lecturers are ready to use this system. In the process at the back end, it is determined by the words found in the email such as .uptm.edu.my or student.uptm.edu.my. If there is no matching email form, it will return to the login page stating that this email is not allowed.

6.4.2 AI FYP title generation flow

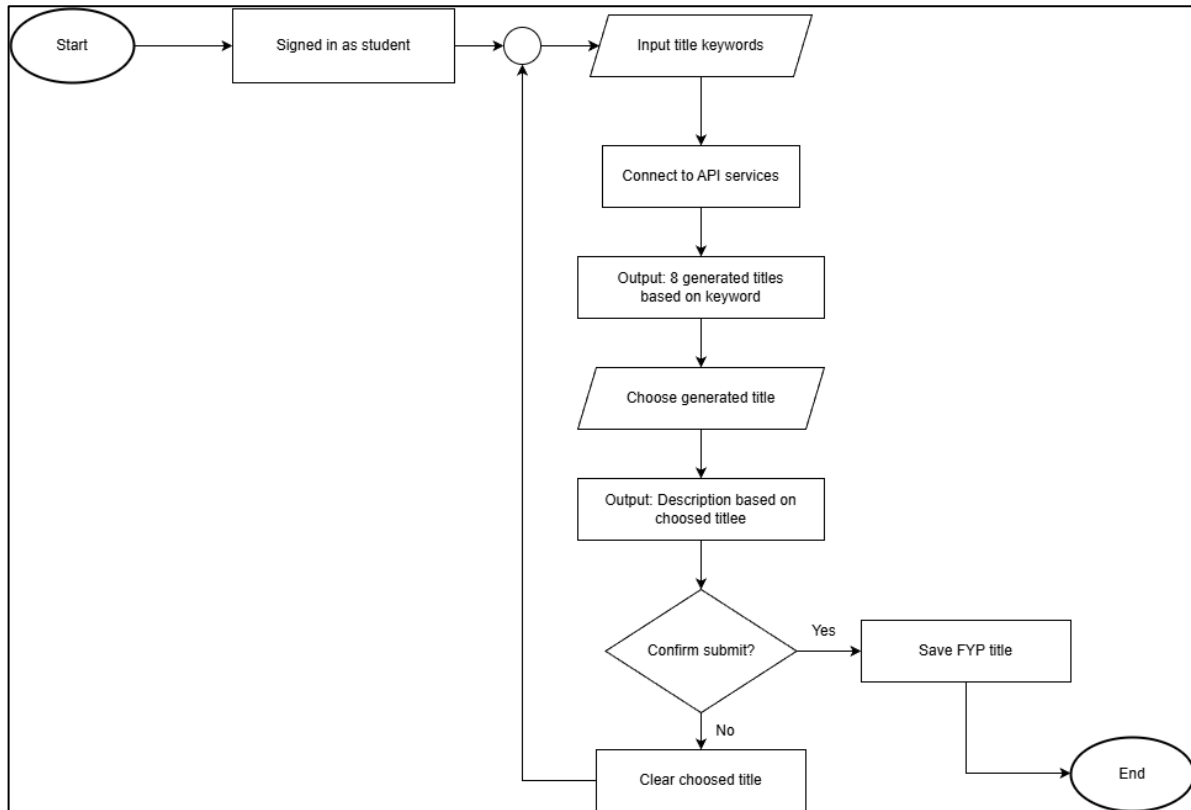


Figure 6.14: AI titles student submission flow

Next is an important flow that I want to highlight in this project, which is in terms of the use of artificial intelligence. Users, namely students, can generate titles through the specified keywords. Then a specific prompt will be sent to the AI service to obtain data regarding the FYP title and then displayed to the student. Students have the option to select and directly send it to be reviewed by a supervisor or examiner. Overall, it is very convenient for students and they do not have to take time to think about the FYP title. It is now assisted by AI.

6.4.3 Automatic examiner assignment flow

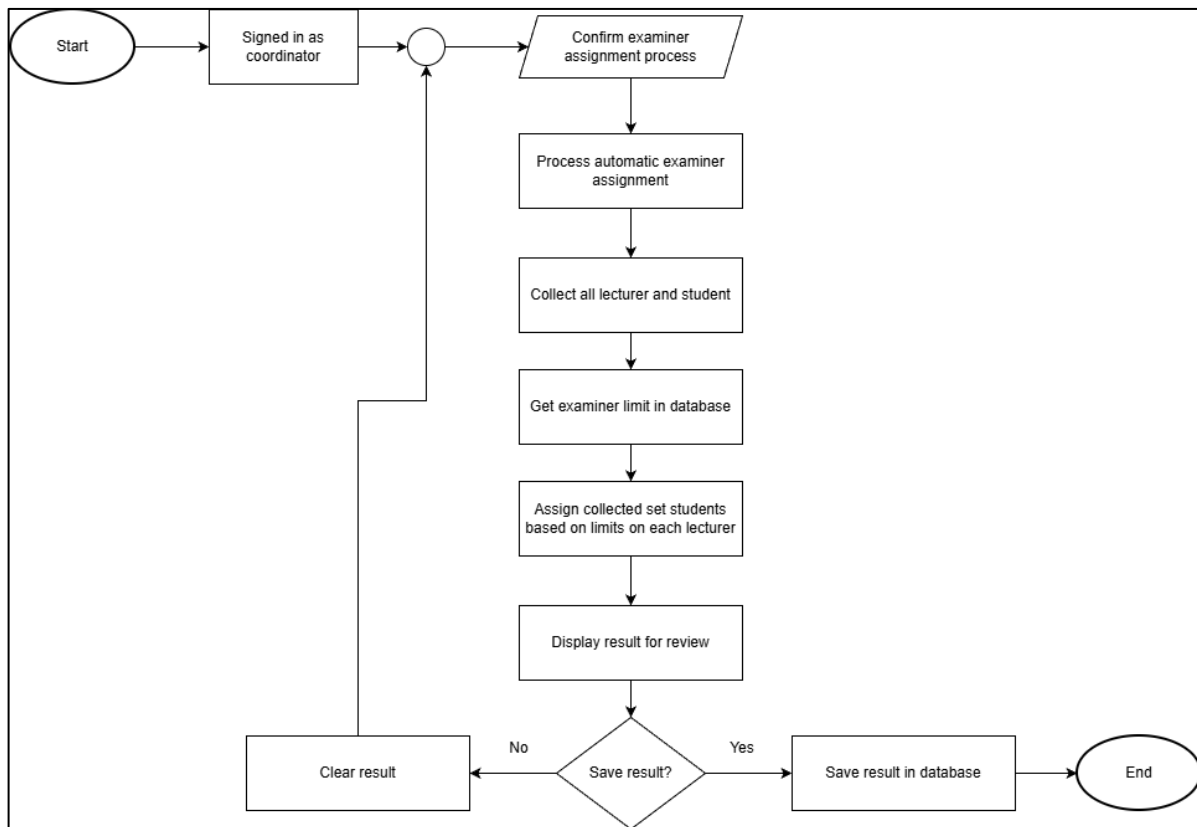


Figure 6.15: Automatic examiner assignment flow

Based on the figure above, this is the function available in the coordinator, namely the automatic examiner assignment function to students. Previously, the coordinator had to do it manually where he had to choose an examiner, then choose a student to assign. Now the process happens automatically for all students simultaneously, with just one click, the list of examiners and students will be displayed and the coordinator still has the option to change students between examiners. Then the result can be saved into the database directly.

6.4.4 Automatic marks calculation flow

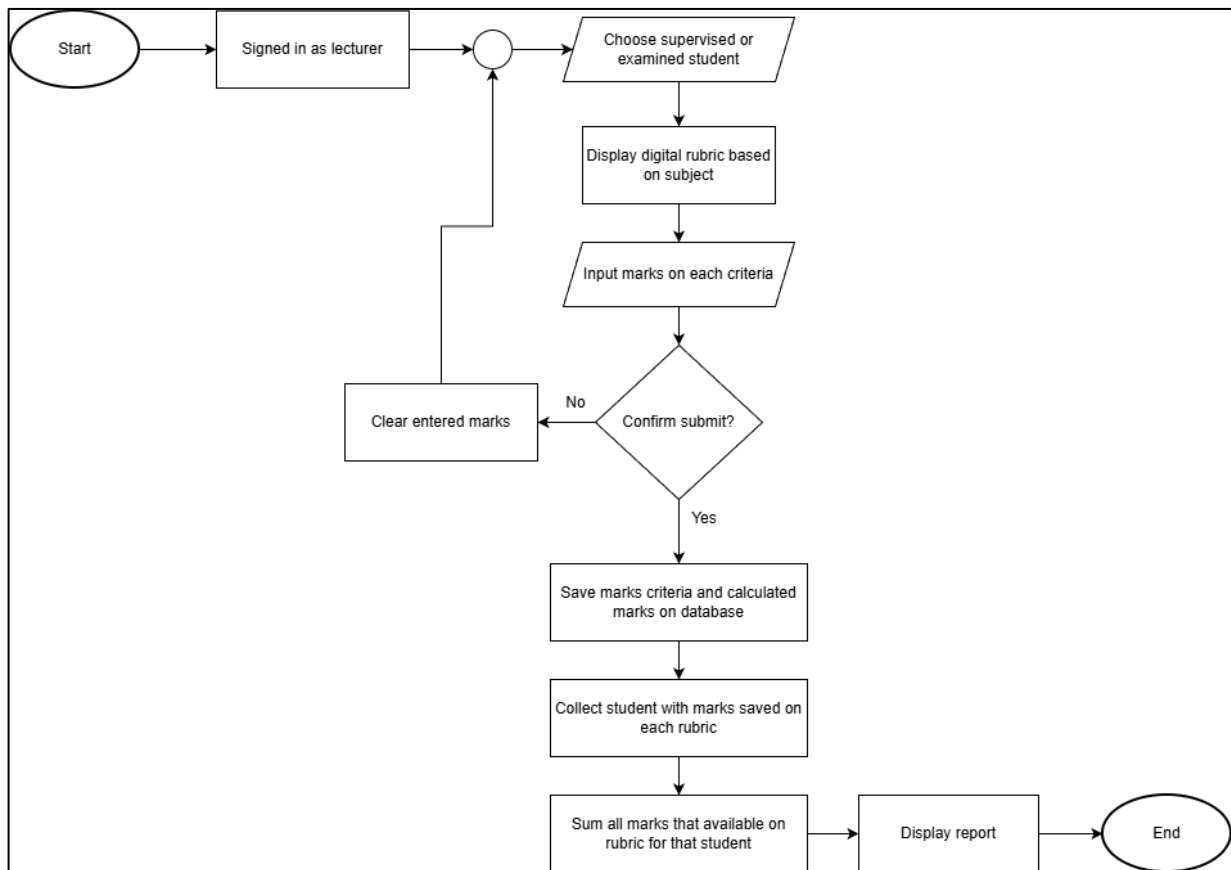


Figure 6.16: Automatic marks calculation and grading flow

Next is the automatic calculation of marks for each student. In a report for reference by the lecturer or coordinator, it is very important to have the final total marks for each student. However, before this report can be displayed, each student must have marks sent by the supervisor or coordinator. With these sent marks, they can be collected and can be displayed for each student for each row in the data table.

6.5 Conclusion

Overall summary that can be made in this section, we have determined the design idea for this system, the sketch provided can help build a website more organized and consistent on each page. Next, with the ERD provided can determine the tables in the database. Each of the following tables has its own function and is explained in detail. Data flow also helps in determining how data is carried to the end of the output.

7 IMPLEMENTATION

7.1 Introduction

This chapter explains each implementation phase in UPTM AI Enhanced FYPMS. Implementation or better known as actual development/code written using appropriate software for this project. The code written will be described in detail here to determine the actual function and also achieve the objectives set based on user needs. Each software used will be explained and linked to this project. Next, the actual design of the system will also be provided in this section to show that evidence from the wireframe sketch process to the actual system has been successfully produced.

7.2 Execution Platform

7.2.1 Windows 11

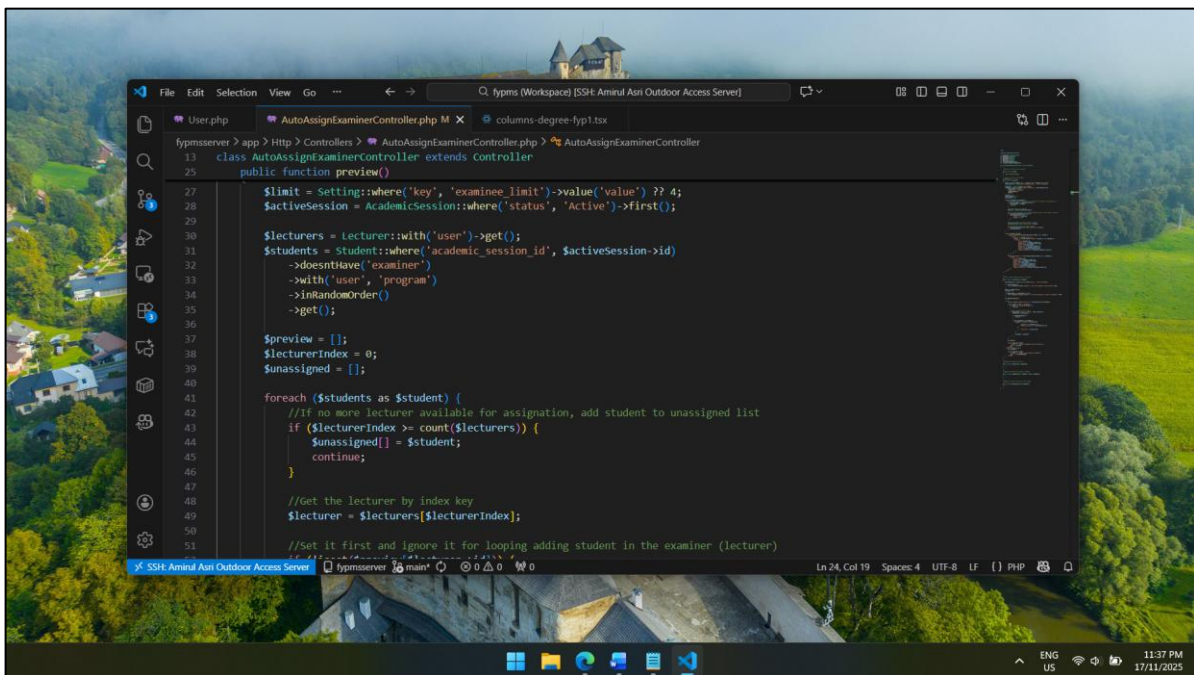


Figure 7.1: Windows 11 with code editor

The following figure shows the operating system, Windows 11, used for this project along with the editor, Visual Studio Code, for code editing purposes. The code written will be stored directly on the server, meaning this platform only needs to access the code remotely on the server for programming.

7.2.2 Ubuntu Server

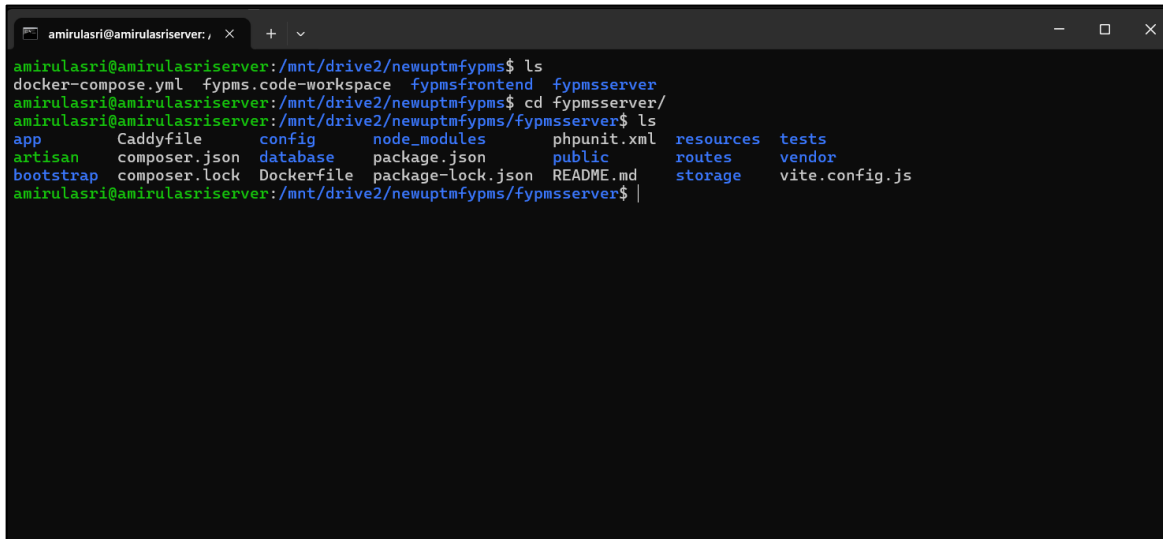


Figure 7.2: Ubuntu server accessed through SSH

Next is Ubuntu server. This operating system is very important for running all the code written and storing data. Not only that, it makes the UPTM AI Enhanced FYPMS system accessible 24/7 with more optimal for more users. This operating system has no UI and is only accessed remotely via SSH and needs to be controlled using the command line only.

7.3 Implementation Tools

7.3.1 Implementation Tools

7.3.1.1 Laravel



Figure 7.3: Laravel logo

Laravel is a framework for the web and it is used by many developers today. Laravel provides an elegant and secure syntax and is recommended for developing large-scale applications. UPTM AI Enhanced FYPMS uses this framework to process large data such as students, storing rubric data, FYP titles and scoring given by examiners and supervisors. Laravel will connect to a database, namely MySQL, for data storage. Laravel also uses the MVC concept, namely Model, View, Controller and makes it easy for developers to separate business logic and also connections to the database, making it easy to maintain and update for a longer period of time.

7.3.1.2 Next.JS (React)



Figure 7.4: Next.JS logo

Next.js is also a framework for the web but more for the frontend. This framework is also based on React where it provides syntax for more advanced controls such as state, useContext, component division and more. It makes UPTM AI enhanced FYPMS can be developed with a more interactive UI, has SPA functions which are Single Page Application for optimization and easy to deploy.

7.3.1.3 Docker

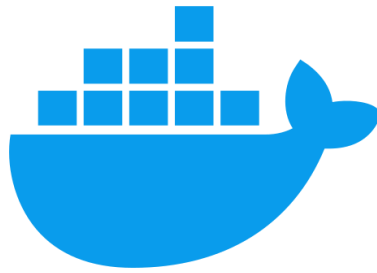


Figure 7.5: Docker logo

Instead of operating a distinct guest OS like in traditional virtualization, Docker is an OS-level virtualization (also known as containerization) platform that enables apps to share the host OS kernel. Docker containers are lightweight, quick, and portable thanks to this design, which also keeps them apart from one another.

7.3.1.4 MySQL

```
amirulasri@amirulasriserver:~$ sudo mysql
[sudo] password for amirulasri:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 392
Server version: 8.0.43-0ubuntu0.24.04.2 (Ubuntu)

Copyright (c) 2000, 2025, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> USE fypmserver
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_fypmserver |
+-----+
| academic_sessions  |
| cache               |
| cache_locks        |
| examiners           |
| failed_jobs         |
| feature_accesses    |
| fields              |
+-----+
```

Figure 7.6: MySQL command line

Based on the figure above, UPTM AI Enhanced FYPMS uses MySQL as the main data storage. MySQL is an open-source relational database management system (RDBMS) that manages and modifies data using Structured Query Language (SQL). Because of its speed, dependability, and user-friendliness, it is one of the most often used database systems in online applications. To create dynamic websites and apps, MySQL is frequently used in conjunction with programming languages like PHP, Java, and Python.

7.3.2 Hardware tools

Table 7.1: Hardware specifications

Device	Minisforum Eyertec AD650i
Operating system	Ubuntu Server 24.04.2 LTS
Processor	Intel Core i7-12650H
Memory (RAM)	64GB DDR4
System Type	64-bit operating system

7.4 System Interface

7.4.1 Login page

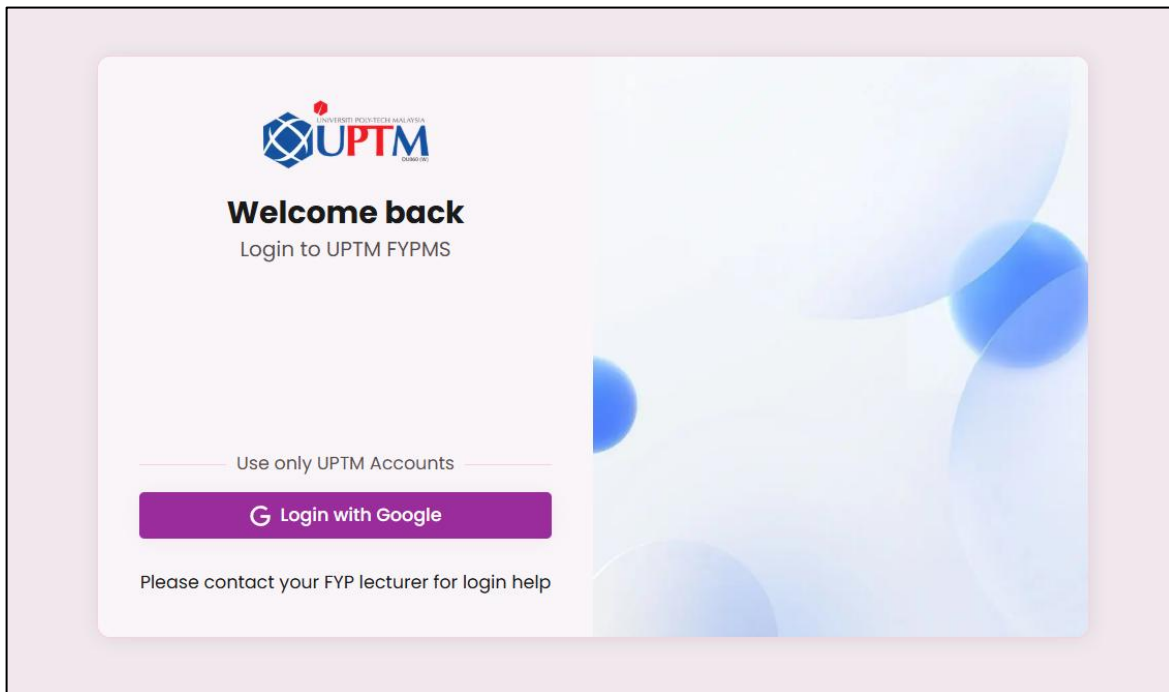


Figure 7.7: Login page

The following figure is the Login page for UPTM AI Enhanced FYPMS. It only has the function of logging in using a Google account which is linked with the UPTM Google account. It makes it easier for users, namely UPTM students and lecturers, to log in to this system without having to create an account first. Full name and email will automatically be registered into this system as soon as the user logs in using the Google account provided by UPTM.

7.4.2 Dashboard page

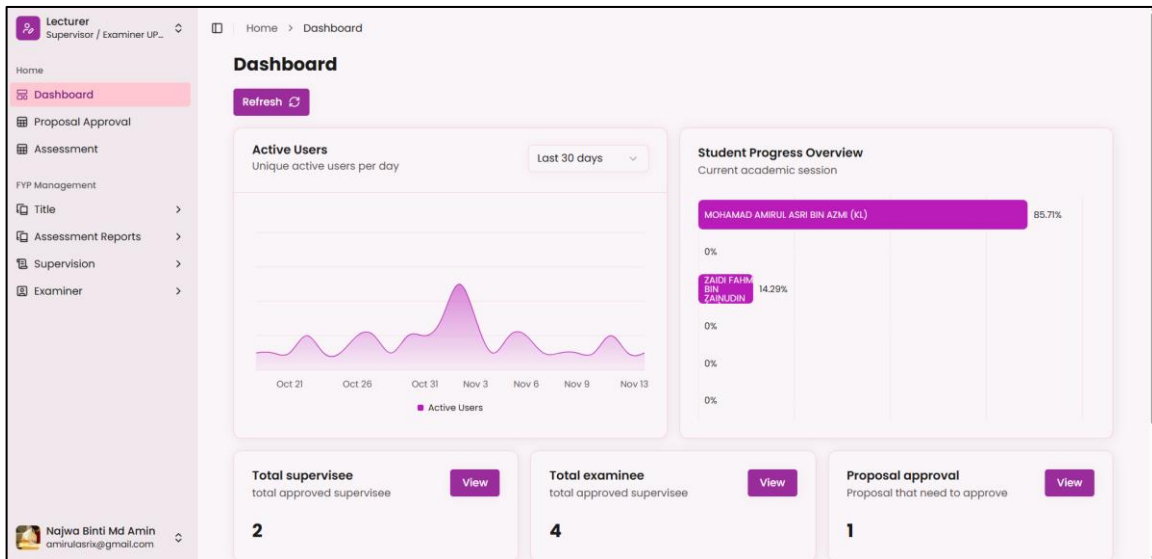


Figure 7.8: Dashboard layout

Based on the following figure, this is the dashboard layout that will be displayed to users. Users with different roles such as students, lecturers, coordinators will have different graph views. But in terms of sidebar layout, the basic design and colors remain consistent and the same across the entire page.

7.4.3 Data table and search page

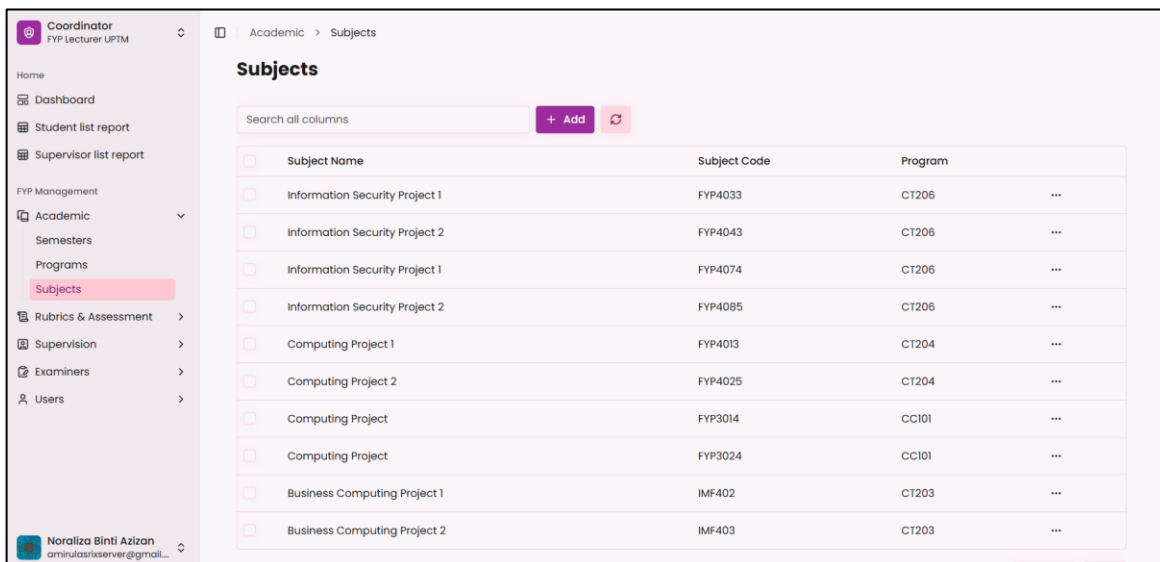


Figure 7.9: Data table and search page

Based on the figure above, the arrangement of each component is the same for every page that has a data table display and also a search. The data table will use the entire space on the page,

followed by the search bar which is located above the left side of the data table. If there are other functions such as a filter or refresh button, they will be displayed in line with the search bar.

7.4.4 Add and edit dialog component

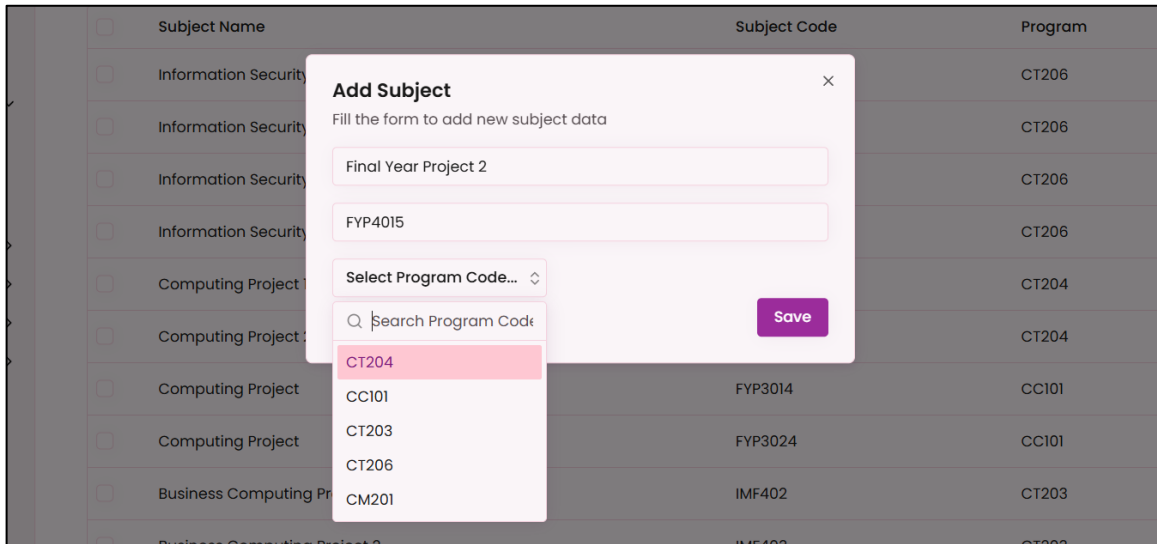


Figure 7.10: Add and edit dialog component

This figure shows the actual display when adding and changing data. It will be displayed in the form of a dialog without navigating to another page. It will improve the user experience level for this section because every process such as adding data, editing and deleting data only happens on the same page.

7.4.5 FYP title registration page

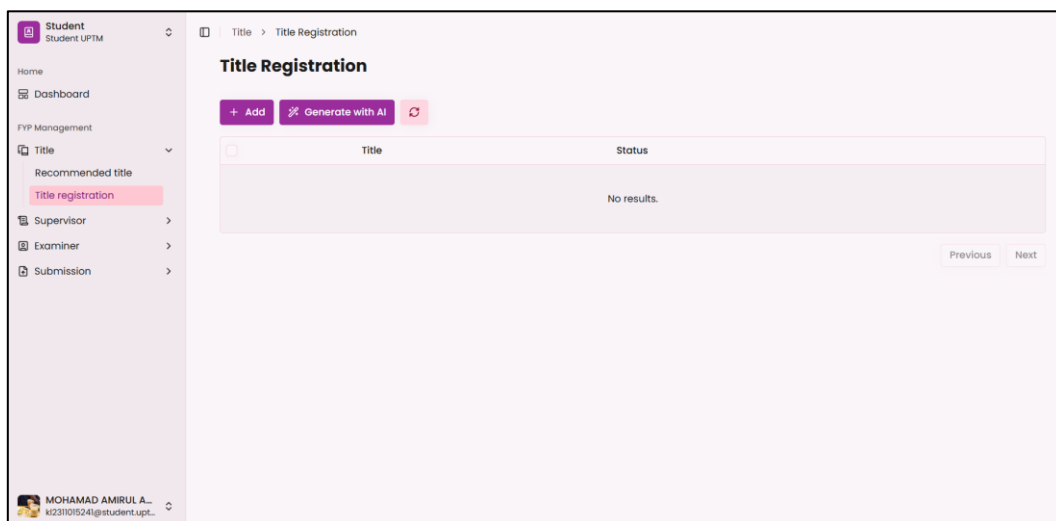


Figure 7.11: FYP title registration page

Next, the following figure is the final design for the FYP title registration page. This page is available to student users only and students can submit FYP titles through this page. Not only that, an artificial intelligence function is also provided to make it easier for students to choose FYP titles by just entering keywords into this system.

7.4.6 AI Title generated component

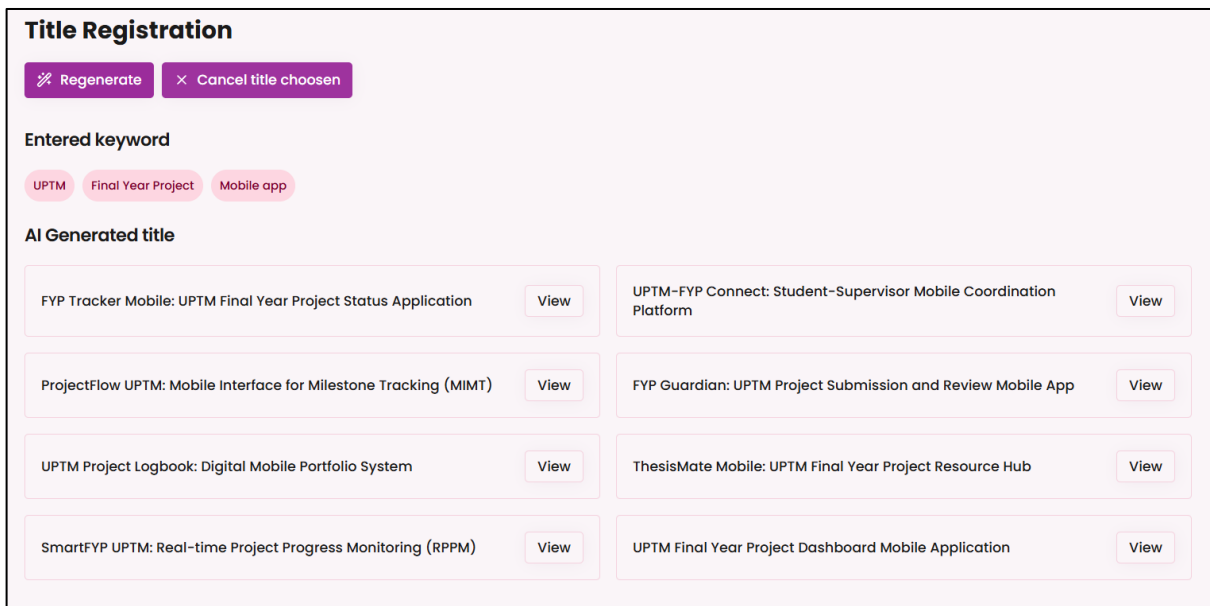


Figure 7.12: AI Title generated component

The following figure shows the actual design of the final year project title list that is displayed after the AI generation is complete. It is arranged in a grid to make it easier for students to select the title. Just click view and it is ready to be sent into the system for review and approval from the coordinator or supervisor.

7.4.7 Automatic examiner assignment page

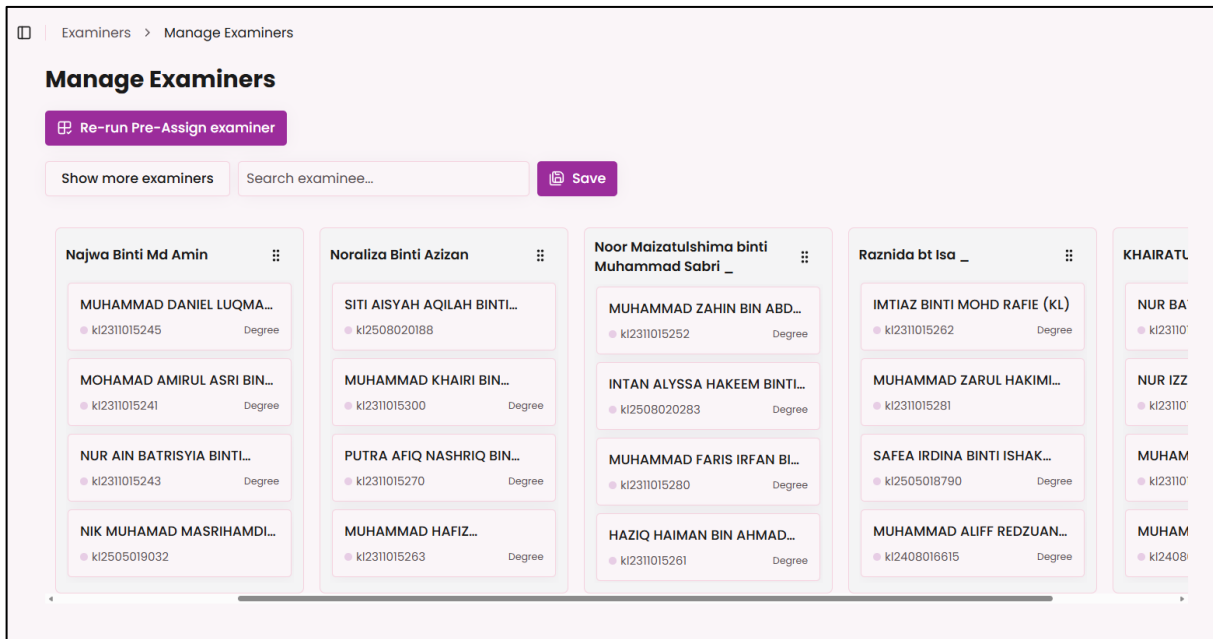


Figure 7.13: Automatic examiner assignment page

Next, the following figure shows the actual design of the examiner assignment page. The examiner assignment process to students is automatic and will be arranged in the form of a draggable list for each lecturer. The coordinator has the ability to change students and transfer them to other lecturers. Each student under each lecturer has a set limit. For example, the figure above is set to 4, so each lecturer has 4 students.

7.4.8 User menu control component

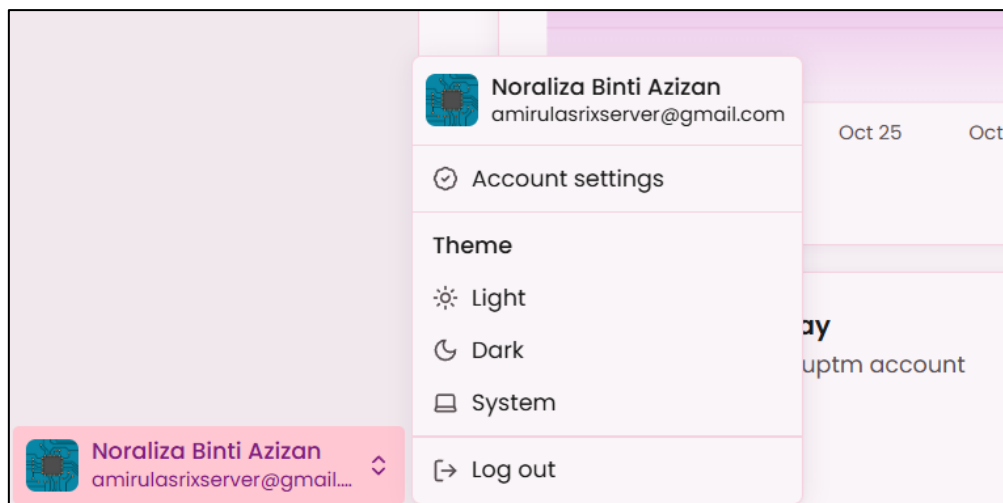


Figure 7.14: User menu control

Based on the figure above, this is a component found in all user roles, it displays the name, email and also basic functions such as changing the theme and also changing the account. It is very important to ensure that users can update their information when necessary.

7.5 Significant Functions

7.5.1 Google authentication

```
fypmserver > app > Http > Controllers > GoogleAuthController.php > GoogleAuthController > callback
15 class GoogleAuthController extends Controller
16 {
17     public function redirect()
18     {
19         /** @var \Laravel\Socialite\Two\GoogleProvider */
20         $driver = Socialite::driver('google');
21         return $driver->stateless()->redirect();
22     }
23
24     public function callback()
25     {
26         /** @var \Laravel\Socialite\Two\GoogleProvider */
27         $driver = Socialite::driver('google');
28         $googleUser = $driver->stateless()->user();
29
30         // Determine role from email domain
31         $email = $googleUser->getEmail();
32         if (Str::contains($email, '@student.uptm.edu.my')) {
33             $role = 'student';
34         } elseif (Str::endsWith($email, '@uptm.edu.my')) {
35             $role = 'lecturer';
36         } else {
37             $user = User::where('email', $email)->first();
```

Figure 7.15: Google Auth backend controller

Here is the logic for user login. UPTM AI Enhanced FYPMS only allows users to log in to the system using UPTM email only and is not allowed to use other emails. According to the code snippet provided. The system will first check whether the email has the word student.uptm.edu.my, followed by the next check, which is uptm.edu.my for lecturers, if not, continue with the last one, which is to check whether the email selected by the user is found in the database or not. If this condition is not met, an error message will be shown to the user and the login will not be successful.

7.5.2 Overlapping supervisor prevention

```

209     public function approve(Supervision $supervision)
210     {
211         $this->authorize('approve', $supervision);
212
213         $supervision->update(['status' => 'Approved']);
214
215         // Delete other supervision requests by the student
216         Supervision::where('student_id', $supervision->student_id)
217             ->where('id', '!=', $supervision->id)
218             ->delete();
219
220         return response()->json([
221             'message' => 'Supervision approved. Other requests deleted.',
222             'data' => $supervision->load(['student.user', 'lecturer.user']),
223         ]);
224     }
225

```

Figure 7.16: Supervisee approval controller

Based on the figure above, here is a special code for a lecturer to approve a student as a lecturer's supervisee. In this code we have solved a major problem, which is to avoid overlapping supervisors, meaning that when another lecturer approves this student, the student will change lecturers and it is considered a bug in the system. So in this code we can see in the figure line 216 of code where all the remaining requests made by the student will be deleted when the lecturer approves the student. It will help avoid bugs and overlapping problems that occur in student supervisors.

7.5.3 Automatic examiner assignment

```

41     foreach ($students as $student) {
42         //If no more lecturer available for assignation, add student to unassigned list
43         if ($lecturerIndex >= count($lecturers)) {
44             $unassigned[] = $student;
45             continue;
46         }
47
48         //Get the lecturer by index key
49         $lecturer = $lecturers[$lecturerIndex];
50
51         //Set it first and ignore it for looping adding student in the examiner (lecturer)
52         if (!isset($preview[$lecturer->id])) {
53             $preview[$lecturer->id] = [
54                 'lecturer' => $lecturer,
55                 'students' => [],
56             ];
57         }
58
59         //Add each student in lecturer based on config
60         $preview[$lecturer->id]['students'][] = $student;
61
62         //After reach the limit, go to next lecturer
63         if (count($preview[$lecturer->id]['students']) >= $limit) {
64             $lecturerIndex++;
65         }
66     }

```

Figure 7.17: Automatic examiner assignment snippet

Next, the following figure shows the code snippet for the process of assigning examiners to students automatically. This process occurs in a complex loop function where it is able to divide each student into each lecturer. The number of students for each lecturer is determined through a set limit, then, the lecturer will be filled in the defined object array. And finally, the lecturer will be filled with students until the set limit is reached. This process will end until the last student and lecturer. And ready to be displayed to the coordinator for further action.

7.5.4 FYP AI title generation

```

42 export async function generateDetails(
43   input: string,
44   context: string,
45   categories: ProjectCategory[]
46 ): Promise<{ titles?: string[]; description?: string; categoryId?: number }> {
47
48   let prompt: string;
49   let schema: object;
50
51   if (context === 'generate-titles-only') {
52     const keywords = input;
53     prompt = `
54     You are an expert academic advisor AI specializing in creating catchy and professional Final Year Project titles.
55     Your task is to generate project titles based on keywords provided by a student.
56
57     **Crucial Instructions:**
58     1. **Format:** The titles should be direct and sound like the name of an application or system. Avoid descriptive phrases like "Development of a...".
59     2. **Creativity:** Be creative. You can coin a project name (e.g., "SmartHealth", "MindCare") followed by a descriptive subtitle.
60     3. **Acronyms:** When appropriate, include a relevant acronym in parentheses at the end of the title, like "(UIMS)".
61     4. **Tone:** The titles must be professional, clear, and suitable for an academic final year project.
62     5. **Quantity:** Generate exactly 8 unique titles.
63
64     **Examples of GOOD titles (follow this style):**
65     - UPTM Internship Management System (UIMS)
66     - SmartHealth: Patient Monitoring and Advising Healthcare System
67     - FESSH Final Year Project Supervision Management System
68     - MindCare: A Personalized Mental Health Website for UPTM Student
69     - UPTM Exam Room Management System
70     - PeerSiswa : A Peer-to-Peer Learning Platform for Secondary School Student
71     - AI-Based Threat Level Classification for Network Logs
72
73     **Student's Keywords:** "${keywords}"

```

Figure 7.18: FYP title generation with AI services

The figure above shows the method of how FYP titles are generated using AI based on keywords provided by students. The keywords will be collected in the form of a string, then sent along with a special prompt to be sent to the AI services, namely the Gemini API. This AI services will output in a specific JSON format and the data is ready to be displayed to the frontend.

7.6 Conclusion

In summarizing this entire topic, the UPTM AI Enhanced FYPMS project was successfully integrated with the appropriate elements to achieve the set objective. Every development made in this system is quite complex but with detailed development and a well-maintained code structure, it is able to make this system quality and avoid any errors and mistakes before deploying to users for testing. The software used or referred to as implementation tools is very important to identify that this project is developed based on the needs of the developer. Design is also important because consistent, interactive and easy-to-use design needs to be an important requirement today in all applications that are built.

8 TESTING

8.1 Introduction

This chapter will explain how testing is done on UPTM AI Enhanced FYPMS. There are several types of testing that need to be done to ensure that this system is stable and can be deployed to production for users. Among the most basic testing is Unit Testing, followed by Integration testing and then System Testing for functional and non-functional requirements. Finally is Acceptance Testing where this test involves real users and evaluation will be given through a questionnaire, namely Google Form, and also an interview session.

8.2 Unit Testing

Table 8.1: Unit testing table

Test ID	Unit/Function	Description	Input	Output	Expected Error	Status
UT-01	Supervision request	Student should be able to request multiple supervisor is the student not have approved supervisor.	Student ID, Lecturer ID	The output will shows request success with pending approval from supervisor.	Error message will displayed if student already has an approved supervisor.	Pass
UT-02	Preview auto assigned examiner to student	Coordinator should be able to proceed to generate list of examiner with a list of examinees automatically.	No input, based on Active Academic Session and Limit number configured on database.	The output will shows the list of examiner and examinees in one page.	Error message will displayed if there is no active Academic Session configured.	Pass
UT-03	FYP title generation with AI	Student should be able to generate FYP title based on the keywords provided.	User enter the keywords as a input.	The output will shows the list of FYP title based on keywords submitted	Error message will displayed if failed to connect to AI API services.	Pass

UT-04	Create semester	Coordinator should be able to create academic session and make it active.	User enter the session code, session name and active state.	The output will shows the successful message with updated list of academic session.	Error message will displayed if something wrong when adding to database.	Pass
UT-05	Create program	Coordinator should be able to create program for storing the subjects.	User enter the program code, program name and level which is diploma or degree.	The output will shows the successful message with updated list of program data.	Error message will displayed if something wrong when adding to database.	Pass
UT-06	Create subject	Coordinator should be able to create subject.	User enter the subject code, subject name and FYP number which is 1 or 2.	The output will shows the successful message with updated list of subject data.	Error message will displayed if something wrong when adding to database.	Pass
UT-07	Display rubric	Rubric should be able to displayed based on the subjects.	Subject id	The output will shows the dataset of rubric.	Error message will displayed if failed to fetch from database.	Pass
UT-08	Save grading marks	Lecturer should be able to grade and submit marks for student assessment.	Criteria marks, total marks (auto calculated)	The output will shows success message after grading complete.	Error message will displayed if something wrong when adding to database.	Pass
UT-09	Logout	All user in the system should be able to logout and clear all tokens.	Bearer token	The output will shows success message after logout completed.	Error message will displayed if failed to validate token.	Pass

UT-10	Dashboard data	User should be able to fetch report data and used for display graph.	No input, based on user auth.	The output will show data array for rendering to charts.	Error message will displayed if failed to validate token or something wrong with database.	Pass
UT-11	Assessment report data	Lecturer should be able to view reports for that supervisee and examinee	No input, based on user auth.	The output will shows list of student based on supervisee and examinee available under that lecturer.	Error message will displayed if something wrong with the database.	Pass
UT-12	Student report data	Coordinator should be able to view all student report data.	No input, based on user auth.	The output will shows data student with supervisor and examiner with approved FYP title.	Error message will displayed if something wrong with the database.	Pass

8.3 Integration Testing

Table 8.2: Integration testing table

Test ID	Unit/Function	Description	Input	Output	Expected Error	Status
IT-01	Auto assign examiner & Save result in database	Coordinator should be able to preview examinees that auto assign on examiner before inserting into the database. Then submit it for storing examiners data.	Data list of examiner and examinee (auto generated)	Data table will diplayed with success message after complete.	The save result will shows error message if error occurred on preview auto assign examiner.	Pass
IT-02	AI Title generation & save title in database	Student should be able to save title in the database after the generation or title by AI complete.	User submit the Generated AI titles.	Data table will displayed with success message with pending title.	The save result will shows error if failed to generate title from AI services.	Pass

8.4 System Testing

8.4.1 Functional Testing

Table 8.3: Functional system testing table

Test ID	Test Function	Expected Result	Actual Result	Status
ST-01	Login	User should be able to navigate to dashboard after logged in.	The system navigates to the dashboard page based on the user roles.	Pass
ST-02	Overlapping student supervisor prevention	If the student already has supervision approved, the	The system shows that the student will only have one supervisor and if	Pass

		another request of lecturer must be invalid and not to replace the student with the new supervision.	another lecturer try to approve the request. It will show an error.	
ST-03	Automatic examiner assignments to students.	Coordinator must see the list result of assigned examinees (student) into each lecturer (examiner)	The system shows the complete list of examiner with examinees assigned.	Pass
ST-04	FYP title generation with Artificial Intelligence	Student must be able to generate titles based on keyword provided and can submit title directly for the review.	The system shows the suggested titles based on the keyword input by student.	Pass
ST-05	Automatic mark calculation	Coordinator must be able to view marks reports after grading complete by the lecturers.	The system shows the table data of calculated marks for all students.	Pass

8.4.2 Non-Functional Testing

Table 8.4: Non functional system testing table

Test ID	Test Function	Expected Result	Actual Result	Status
ST-06	Performance	The system should be able to serve and processed content faster less than 2 seconds.	The system processed and display the content in 1 second without any delays.	Pass
ST-07	Usability	The system must be able to interact, modify the data and display UI perfectly.	The system is able to interact, no lags and component that are clickable works.	Pass
ST-08	Reliability	The system should be online 24/7 and accessible on anywhere as well as having internet connection. And	The system is accessible everywhere with online internet connection and no downtime.	Pass

		also with 99% uptime.		
ST-09	Security	The system should be protected behind authentication with no bypass.	The system is secured and data is not accessible until the valid authentication.	Pass

8.5 Acceptance Testing

User acceptance testing has been done for the UPTM AI Enhanced FYPMS project. In this section, there are two ways to collect data. Namely through Interviews to UPTM lecturers and then Questionnaires, which are Google Forms to students. Each user will be given access to this system to test and gain experience in using the new system. And then these users will be given questions and need to answer to meet the requirements in acceptance testing.

8.5.1 Client testing and result



Figure 8.1: Interviewee picture

Name: Noraliza Binti Azizan
 Position: Coordinator of Final Year Project / Lecturer UPTM
 Location: Jalan 6/91, Tmn. Shamelin Perkasa KM 5 Jalan Cheras 56100 Kuala Lumpur
 Date: 6 November 2025



Figure 8.2: Interviewee picture

Name: Fatanah Syazana Zuraine Binti Ahmad
Position: UPTM FYP Lecturer
Location: Jalan 6/91, Tmn. Shamelin Perkasa KM 5 Jalan Cheras 56100 Kuala Lumpur
Date: 6 November 2025



Figure 8.3: Interviewee picture

Name: Norfazlina Binti Johar
Position: UPTM FYP Lecturer
Location: Jalan 6/91, Tmn. Shamelin Perkasa KM 5 Jalan Cheras 56100 Kuala Lumpur
Date: 6 November 2025

8.5.2 Testing and result – Functionality Feedback (Coordinator FYP)

Table 8.5: UAT Feedback Coordinator FYP question 1

Question 1	How effective do you find the system’s overlapped supervision prevention feature in ensuring fair distribution of supervisors among students?
Answer	Because of the available of overlapped supervision prevention. It should works well and become effective.

Based on the table above, the answers given by the interviewee in solving the problem of overlapping supervisors are very good and will not happen again in the future. This project successfully solved the problem based on user needs.

Table 8.6: UAT Feedback Coordinator FYP question 2

Question 2	To what extent does the automatic examiner assignment feature reduce manual workload and potential bias during examiner selection?
Answer	Yes, it speeds up grading and prevent error through automatic marks calculation.

Based on feedback from FYP coordinators, the automatic examiner assignment function has made it easier for users, namely coordinators, to manage a large number of students to each examiner, namely lecturer. Previously, the process was done manually for each student. Now it is only automatic and with one click, each student will be assigned to a lecturer automatically.

Table 8.7: UAT Feedback Coordinator FYP question 3

Question 3	How convenient and accurate do you find the digital rubric marking and automatic mark calculation in evaluating students’ projects?
Answer	Based on the demo and test, the total marks can calculated automatically and marks displayed correctly, but in future maybe the report needs more filter option

Furthermore, feedback for the question above shows that the automatic calculation of the final total marks has made it easier for users because there is no need to manually recalculate for each student. The marks will be collected in a data table and ready to be displayed to the coordinator.

Table 8.8: UAT Feedback Coordinator FYP question 4

Question 4	How have these new features collectively impacted the efficiency and transparency of the Final Year Project management process?
Answer	Yes, the system is efficient and transparent

Based on the table above, UPTM AI Enhanced FYPMS is able to provide functions that satisfy users because each feature solves problems and achieves the set objectives.

8.5.3 Testing and result – Functionality Feedback (FYP Lecturer)

Table 8.9: UAT Feedback FYP lecturer question 5

Question 1	How convenient and efficient do you find the full digital grading system for evaluating student submissions?
Answer	Yes. Its very convenient and very useful.

Based on the table above, users, namely lecturers, gave good feedback on the digital rubric grading function. Because each mark on the criteria is filled directly into the table in the system without having to download the rubric file to fill in. It guarantees accurate mark calculation and avoids file errors.

Table 8.10: UAT Feedback FYP lecturer question 5

Question 2	To what extent does the auto-calculated mark report feature save time and reduce human error in grading?
Answer	Of course, because no need to download and need to reupload the grading excel, all digital and reducing human error.

Furthermore, the feedback above shows that the report which displays the final mark function which is automatically calculated has helped in reducing human error as there is no longer a need to calculate it manually. The report will be displayed in a data table which can be viewed by the lecturer for the supervisee or examinee.

Table 8.11: UAT Feedback FYP lecturer question 5

Question 3	How useful is the compressed video submission feature in improving accessibility and eliminating the need for external links (e.g., YouTube)?
Answer	Yes because sometimes the link shared can be corrupted and also reduce page navigation.

UPTM AI Enhanced FYPMS also has a video compression function where students who upload large videos in this system will have their size reduced to avoid using large storage. Not only that, it will also reduce bandwidth usage because these videos will be downloaded or viewed by lecturers during grading. And based on this feedback, the lecturers are very satisfied because it has made this system able to accept all types of files including videos without having to upload them to other platforms.

Table 8.12: UAT Feedback FYP lecturer question 5

Question 4	How satisfied are you with these new lecturer-side features in enhancing your overall grading and supervision workflow?
Answer	Very satisfied, I hope this system will be available for all lecturer to use

The latest feedback shows that users, namely UPTM lecturers, hope that this system can be used in the near future because they want to use the new functions to replace the existing system at UPTM.

8.5.4 Testing and result – Functionality Feedback (Student)

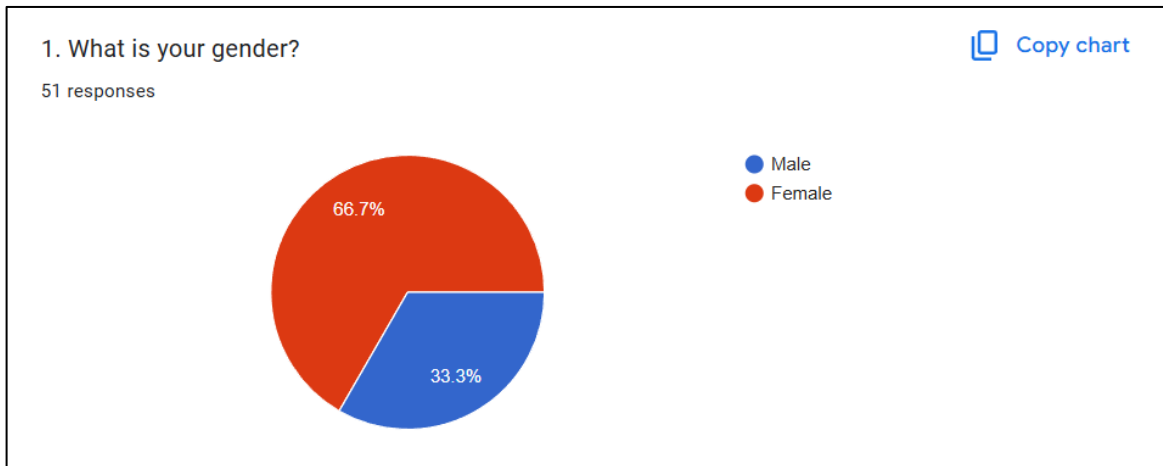


Figure 8.4: Questionnaire student question 1

The given pie chart shows the different responses relating to the question ‘What is your gender?’ from 51 survey responses. From the chart we can see that most respondents answered ‘Female’ which is 66.7% of the responses, while 33.3% of respondents answered ‘Male’. From this we can see that this sample of respondents has a higher portion of females than males.

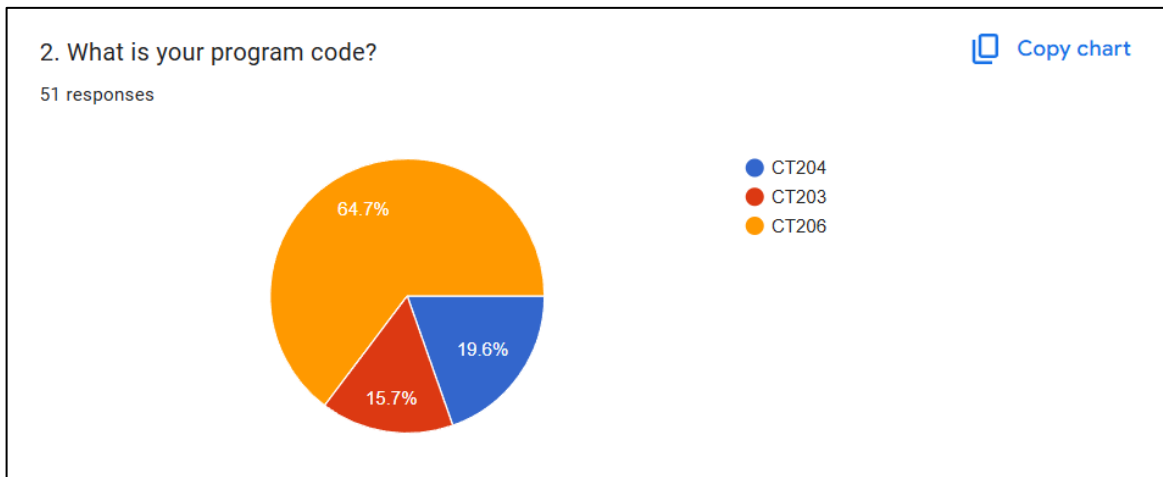


Figure 8.5: Questionnaire student question 2

The pie chart represents the respondents in total and a breakdown in three different program codes from the total of 51 respondents. Respondents in the program code CT206 were the most with 64.7% of the total respondents which is almost 2 out of 3 of the sample size. The next group of respondents CT204 were 19.6% and finally the smallest group was CT203 making up 15.7% of the total respondents.

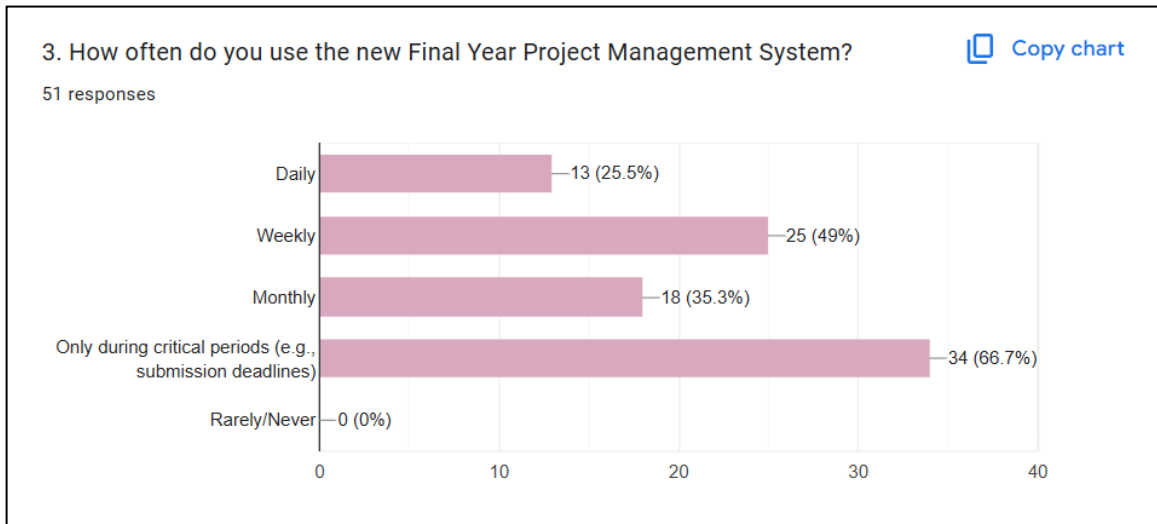


Figure 8.6: Questionnaire student question 3

Based on 51 responses, this bar chart describes the usage frequency of the new Final Year Project Management System. 34 respondents (66.7%) answered the most frequently, stating that they used the system "Only during critical periods (e.g. submission deadlines)". Also high were those who used it on a Weekly basis, 25 respondents (49%). 18 respondents (35.3%) used it on a Monthly basis. The least frequent usage was Daily, with 13 respondents (25.5%). Additionally, it is noteworthy that no respondents answered "Rarely/Never" (0%). Its worth mentioning that the total percentages add to over 100% because respondents were probably able to select more than one frequency option.

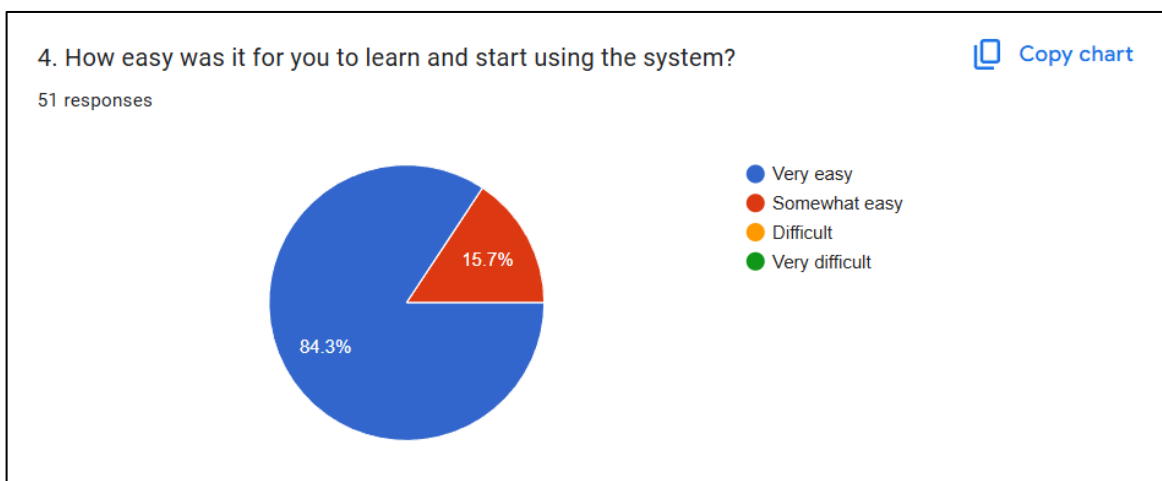


Figure 8.7: Questionnaire student question 4

By considering 51 responses of the sample, the pie chart clearly describes the system's learning process, and the ease of system usage. A clear majority, 84.3%, of the target audience, stated that the system was 'very easy' to use, while the other 15.7% stated that it was 'somewhat easy.' More

importantly, the respondents who stated that the system was 'difficult' or 'very difficult' ie the negative responses, were not part of the sample, hence the system is easy to learn, and use.

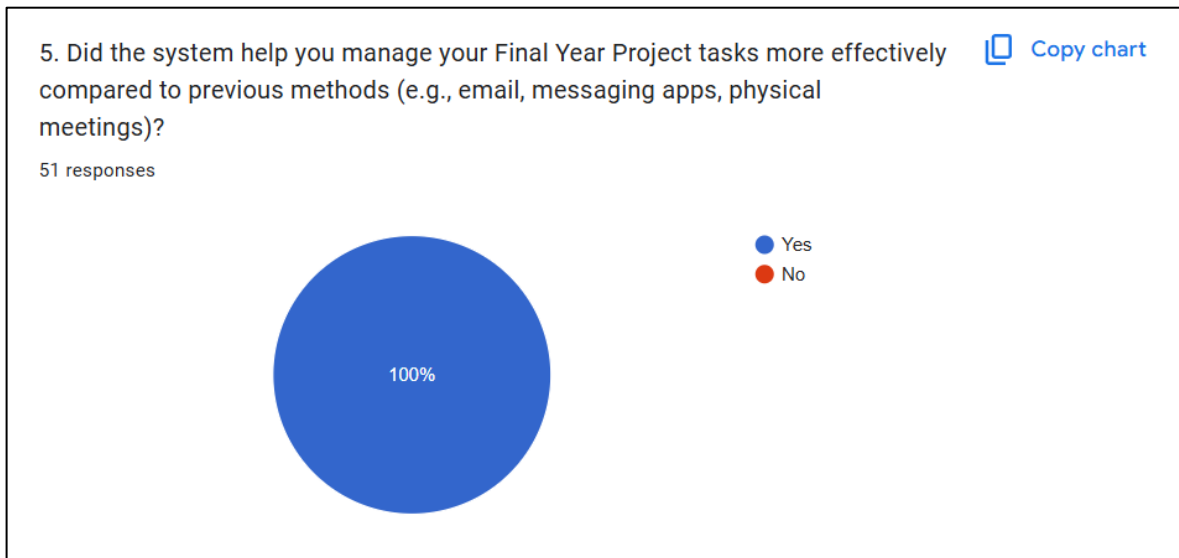


Figure 8.8: Questionnaire student question 5

Evaluating whether the system helped users manage their Final Year Projects more effectively than previous systems based on 51 responses the pie chart shows 100% response rate of Yes answers. It shows all of the users system helped manage their tasks more effectively than through email, messaging systems, and face to face meetings.

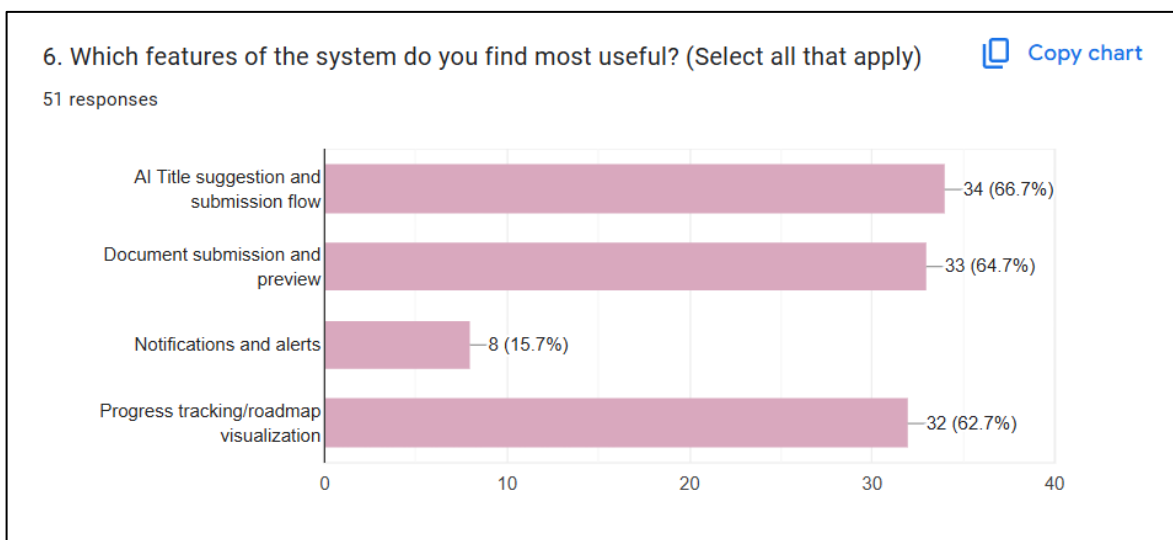


Figure 8.9: Questionnaire student question 6

Based on 51 users reponse, this bar chart captures the optional features of the system and displayed the highest responses on 'AI Title suggestion and submission flow functionality,' with 34

(66.7%) selections, compared to others. Next was Document submission and preview functionality,' garnering 33 (64.7%). Subsequently, the third was 'Progress Tracking/Roadmap Visualization functionality,' with 32 (62.7%) responses. The bottom of the list was Notifications and alerts functionality,' with less than 10 selections.

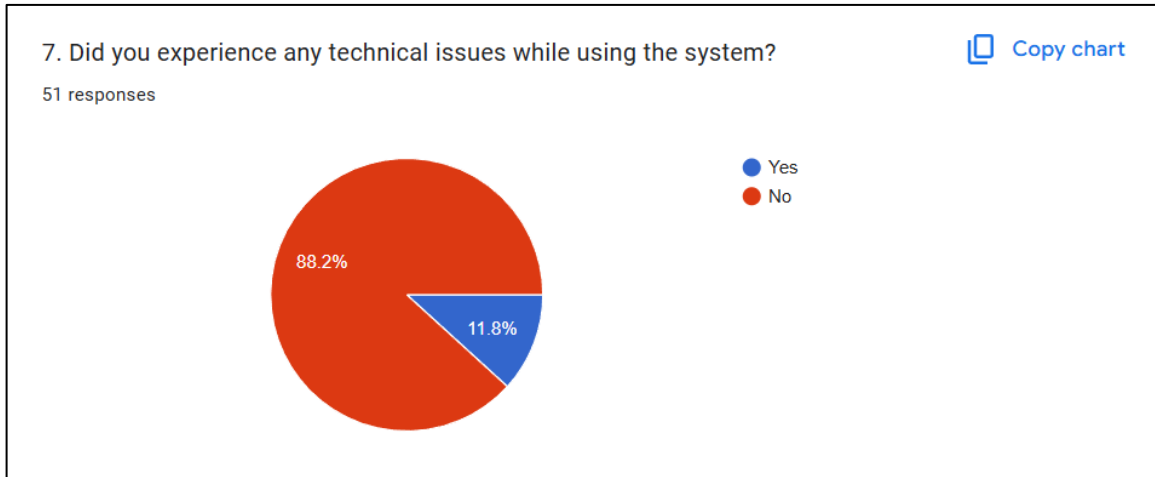


Figure 8.10: Questionnaire student question 7

This pie chart responds to the survey concerning any technical issues encountered during usage for the 51 survey respondents. The high proportion of users, 88.2%, reporting "No" to any technical issues, reflected very high operational stability and high performance of the system. In contrast, the low minority of users, 11.8%, reporting "Yes" to any technical issues.

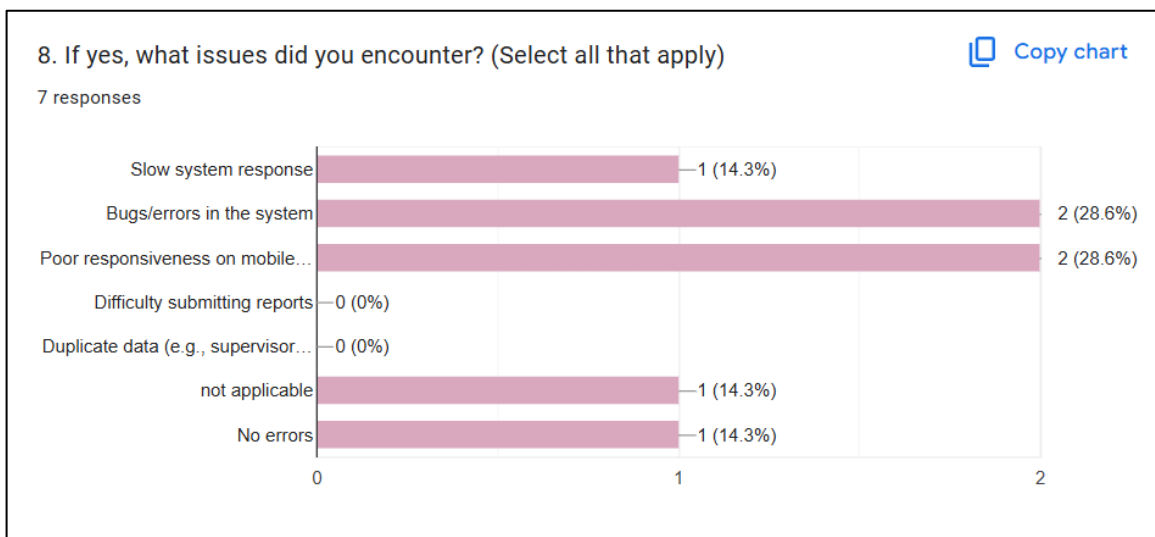


Figure 8.11: Questionnaire student question 8

The small number of users who reported having problems, (7 responses in total), are represented in a bar chart showing the kinds of technical problems encountered. The most reported

were bugs/errors in the system and poor responsiveness on mobile devices, both selected by 2 respondents (28.6%). 1 respondent (14.3%) reported slow system response. Critically, no respondents reported difficulty in submitting reports or duplicate data.

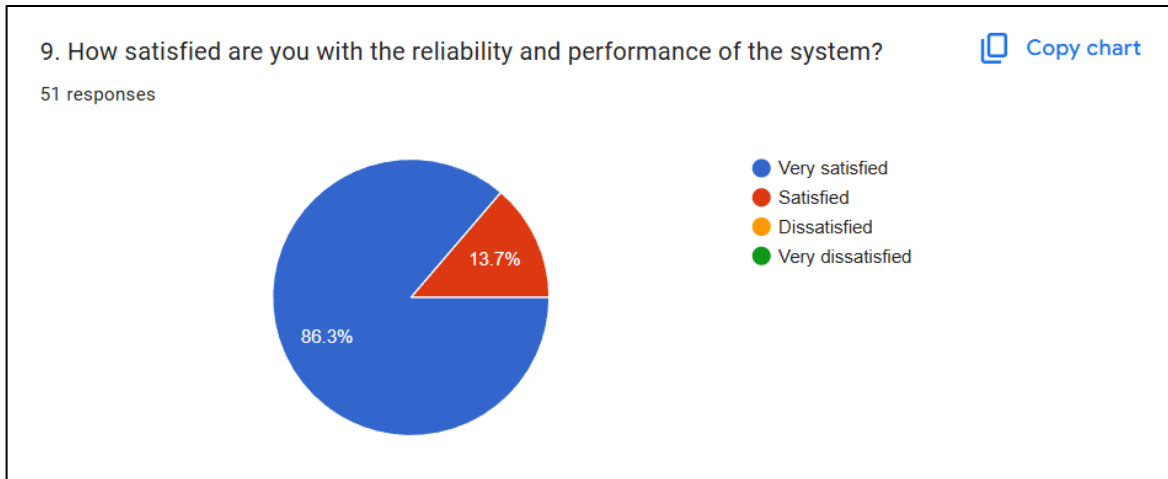


Figure 8.12: Questionnaire student question 9

This pie chart illustrates how satisfied users are regarding the system's reliability and performance from an overall 51 survey responses. Most users showed extreme satisfaction where "Very satisfied" was the answer of 86.3% of the users. The 13.7% of users were "Satisfied." Importantly, though, none of the users chose the options "Dissatisfied" or "Very dissatisfied." This shows there was excellent response satisfaction in regards to the system's reliability and performance.

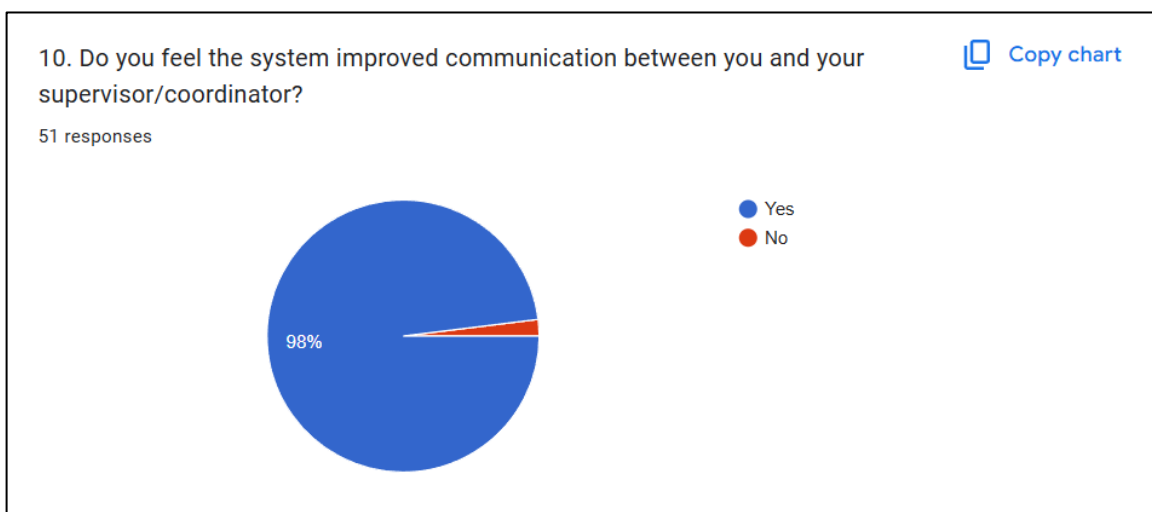


Figure 8.13: Questionnaire student question 10

This pie chart illustrates the responses of the users on the question of whether the system has improved communication between the users and their supervisor/coordinator, based on a total of 51

responses. Most users, 98%, responded positively, indicating that the system is great at bridging the communication gap. A very small number of users, 2%, responded negatively.

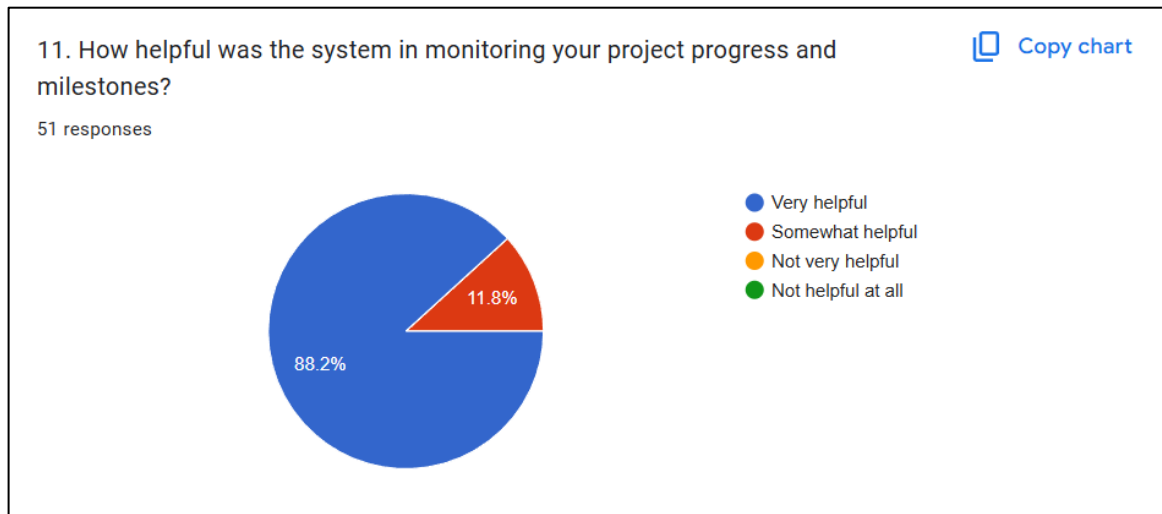


Figure 8.14: Questionnaire student question 11

This pie chart summarizes the feedback from 51 survey respondents regarding the usefulness of the system in tracking projects and project milestones. 88.2% of respondents found the system to be 'Very Helpful' and the remaining 11.8% considered it 'Somewhat Helpful', which means that there is an overall extremely positive assessment of the system. Not a single 'Not very helpful' or 'Not helpful at all' response on the questionnaire suggests that the system is very likely to be of use to users who are tracking their projects.

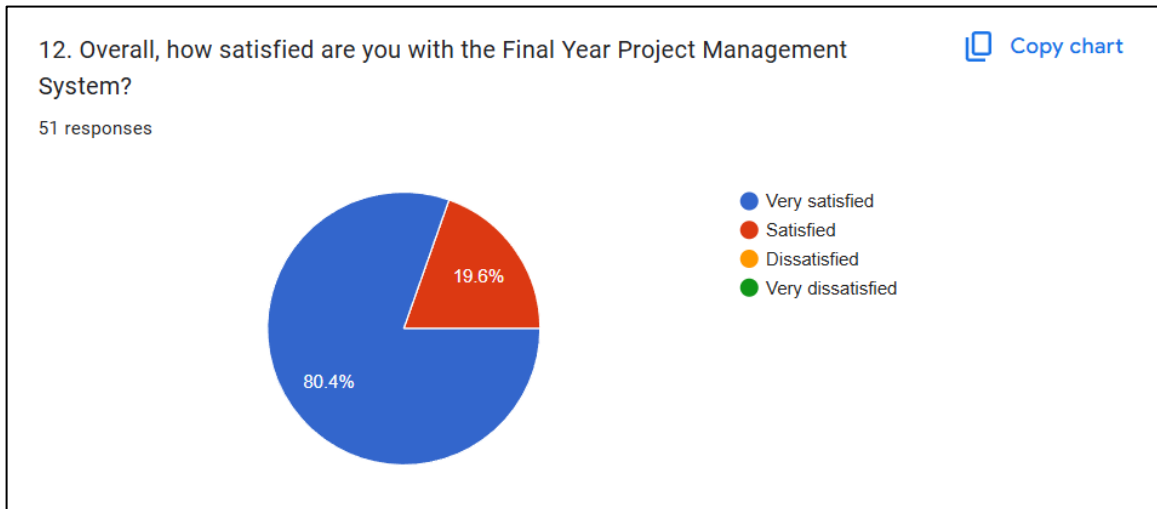


Figure 8.15: Questionnaire student question 12

The last pie chart describes the overall satisfaction concerning the Final Year Project Management System based on the 51 responses. The results show extremely high satisfaction with 80.4% stating they were, 'Very Satisfied.' The remaining 19.6% were, 'Satisfied.' Importantly, no one chose the responses 'Dissatisfied' or 'Very Dissatisfied'. Thus, a general agreement can be offered and strong approval on the system can be confirmed.

8.6 Conclusion

Feedback on UPTM AI Enhanced Final Year Project Management System (FYPMS) via the User Acceptance Testing (UAT) questionnaires and interviews from students and academic staff were responded to positively. Surveyed students were dissatisfied (more than 98% of students in this case) and, in particular, appreciate the system of communication and task management, ease in learning the system, and systems assistance in monitoring and tracking. Complaints centered on the systems AI Title suggestion and submission flow, and Document submission/preview. Response UAT interviews with the FYP Coordinator and FYP Lecturers offered strong evidence to support the system's observably enhanced functionality. Academic staff recognition of the system's new features was of efficiency and transparency, the full digital grading system was lauded as a convenience and utility, they affirmed the system's auto-calculated marks, and the automatic assignment of examiners mitigated (or eliminated) workload and control bias, errors of human inequity in the allocation of supervision. There was evidence of the system's reliability, with only 11.8% of the reports citing technical problems. The enhanced functionality of the system was most greatly suggested by the Coordinator, who suggested the development of reports with more filter options as well as ensuring grade reports were accessible to the lecturer after the grading was completed.

9 PROJECT MANAGEMENT

9.1 Introduction

This chapter will explain time management in developing the UPTM AI Enhanced FYPMS project. Every implementation that is made such as writing code, testing, and important parts are developed within a set period of time. This section will also provide a gantt chart to be able to see each progress more carefully, and also a Work breakdown structure to see each phase of the project in detail.

9.2 Project Schedule

In order to evaluate each constituent part of the UPTM AI Enhanced FYPMS, an elaborated systematized schedule is constructed. In the project design stream, the student-supervisor matching functionality is created to prevent supervisor overlaps, the automation of total marks computation is designed, an AI application that suggests relevant project titles from key words is developed, and an auto-assignment system for examiners is engineered.

Each segment of the schedule has been sequenced in such a way that, from the first requirement analysis to the last deployment of the system, the flow of work is unhindered while making sure that the schedule is flexible enough to accommodate unforeseen technical problems. Time has been set aside to accommodate testing of crucial components such as the AI generation, validation of marks, and the efficient working of the student-examiner matching system. The allocated system development time improves the effective utilization of system development resources while maintaining system development in accordance with the objectives. The system will therefore be delivered in accordance with the schedule. The system will deliver to the users a level of functionality that will bring a remarkable improvement in the work-flow of project evaluation to be carried out by faculty and the system users.

9.2.1 Work Breakdown Structure

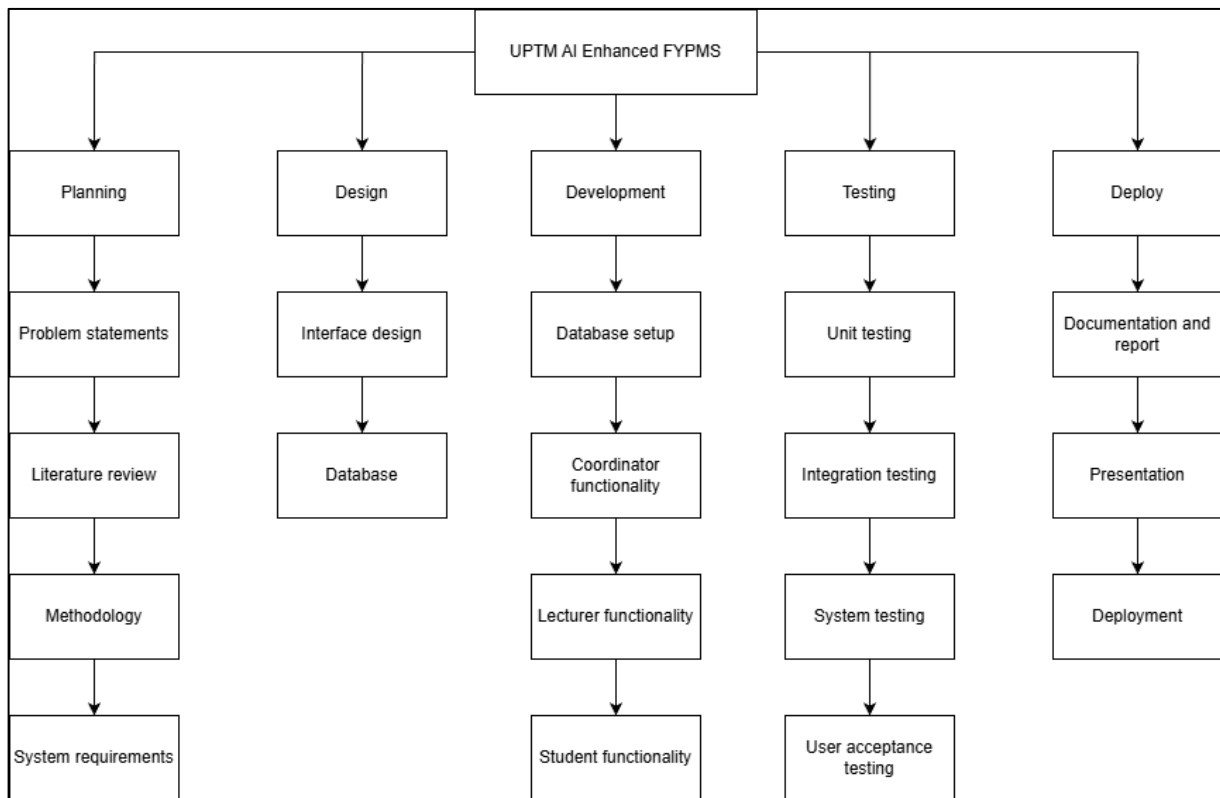


Figure 9.1: Work Breakdown Structure (WBS)

The Work Breakdown Structure (WBS) for UPTM AI Enhanced FYPMS describes the entire building cycle from the development initiation to deployment. The venture starts from the recognition of problem statements, the review of relevant literature, and the definition of the methodology and the system requirements. This is followed by the design phase of the system interface and the architecture of the database. The development phase comes next, which includes the configuration of the database and the realization of fundamental roles for coordinators, lecturers and students, employing Laravel for the backend and Next.js for the frontend. Testing is done in the stage to find out any issues which is done in unit, integration, system, and user acceptance tests, to guarantee that all the features work properly, which includes the AI title generation and the automatic grade calculation systems. The deployment phase is the final stage of the system development life cycle, which includes the preparation of system documentation, the presentation of the system, and the launching of the system for actual users.

9.2.2 Gantt Chart

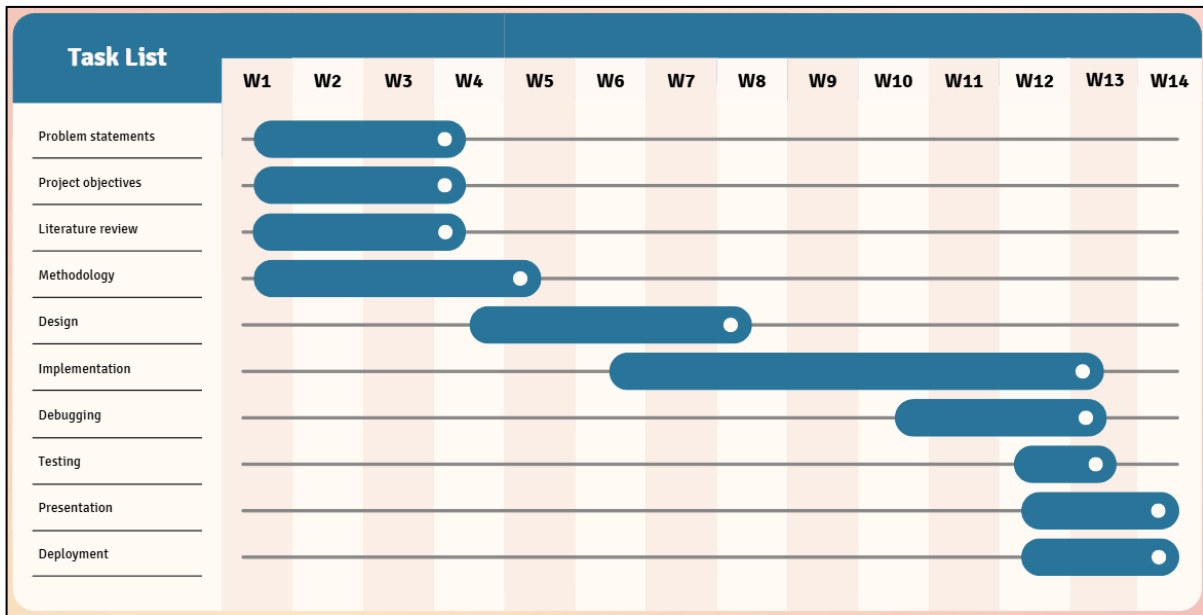


Figure 9.2: Gantt chart

The above Gantt chart illustrates project management for the UPTM AI Enhanced Final Year Project Management System (FYPMS) for a total of 14 weeks. Starting the project includes the planning stage wherein the problem statements, project objectives, literature review, and methodologies are carried out concurrently during the first four weeks to form a strong basis. Once the planning phase is complete, the design phase runs from week 4 to week 7, with concentration on the design of the system interface and the structure of the database.

Then, the implementation stage runs from week 6 to week 12, during which the core modules are developed for the student, lecturer, and coordinator roles, with the AI title suggestion feature and automated grading functions. System performance should be improved by debugging during weeks 10 to 13 which is scheduled to address and eliminate any existing issues. That is followed by a precisely allocated testing phase during weeks 12 and 13 to ascertain total system usability and functionality. Finally, the project wraps up with the presentation and system deployment during weeks 13 and 14 that ensures the system is adequately on-boarded and ready for actual users.

9.3 Risk Management

With regards to the creation of the UPTM AI Enhanced FYPMS, draft risks have been outlined based on specific system design requirements, the integrating of AI, as well as operational constraints. A significant quad is the bandwidth of the system, as the students upload large project files which can lead to slow performance and even incomplete submissions. This is especially true during peak upload periods. The system also utilizes a complex rubric shading table structures to perform automatic marks calculations which can result in the display and/or logic errors within the framework, confusing the examiners and supervisors, as well as the system, to produce calculations which are not accurate.

Further significant quad relates to the integrated AI features of the system such as automated title suggestions. This project component makes use of external AI services such as the Gemini API. Request limits, for example, the no. of requests per minute, can result in the AI capabilities becoming delayed, unavailable, or even suspended. This can happen during peak usage a. of the system by multiple students. Unstable performance and user experience can also result from interface integration between the AI system and backend services.

In order to tend to these risks accordingly, we will utilize a Risk Identification and Mitigation Plan and monitor it on a continuous basis. Proposed mitigations include file size validation and optimized upload mechanisms to alleviate bandwidth draining, implementing system testing overhead to guarantee stability of rubric calculation and UI, and fallback systems on AI request limit exceeds such as queues or cached suggestions. Consistent performance testing and robust error handling will prevent these risks from manifesting into uncontrollable operational disruptions. With the implementation of these mitigations, the system will be able to provide all users with the high level of service reliability and optimal performance.

9.4 Conclusion

As a result of the above, structures have been put in place in the UPTM AI Enhanced FYPMS for the management of final year projects. The development of the system aims to create a seamless transfer of the system from the development process to deployment. With the use of relevant technologies to increase FYP processes, the system intends to provide a net enhancement to the process using features like AI title generation and assessment automation. There have been effort to alleviate risks such as limited bandwidth and avoidance to displaying rubrics. The outline of the system is to create a seamless system for the management of final year projects that will accurately and easily provide guidance to students, linear to supervisors and coordinators of FYP projects in UPTM.

10 CONCLUSION

10.1 Introduction

This chapter is the conclusion and also a summary of this report. Not only that, but also wants to highlight the objectives that have been achieved in UPTM AI Enhanced FYPMS. Also included is evidence for each objective achieved so that you can briefly understand that the project developed meets the needs of users.

10.2 Achievement

UPTM AI Enhanced FYPMS has achieved the objective in solving problems such as student supervision overlapped, examiners assignment to students, provision of AI in generating FYP titles for students and finally automatic calculation of final marks. This objective is very important because it is a major critical part of the previous system. So with this new system, the implementation made solves the problem statement.

10.2.1 To develop a system that can enforce One-to-One Supervisor Assignment

In UPTM AI Enhanced FYPMS, this function helps in avoiding the issue of overlapped supervisors for students. This objective has been fully achieved by rewriting the syntax code that is dedicated to deleting the remaining request list when the student makes a request to several lecturers.

```

209     public function approve(Supervision $supervision)
210     {
211         $this->authorize('approve', $supervision);
212
213         $supervision->update(['status' => 'Approved']);
214
215         // Delete other supervision requests by the student
216         Supervision::where('student_id', $supervision->student_id)
217             ->where('id', '!=', $supervision->id)
218             ->delete();
219
220         return response()->json([
221             'message' => 'Supervision approved. Other requests deleted.',
222             'data' => $supervision->load(['student.user', 'lecturer.user']),
223         ]);
224     }
225

```

Figure 10.1: Supervisee approval controller

By using this method, it can resolve the issue of overlapped supervisors for students and guarantee the validity of data for each supervisee available to UPTM lecturers.

10.2.2 To automate the Assignment of Examiners to Students for FYP coordinator

This function is the most complex function in this project, where we need to determine how students will be filled in each lecturer according to the maximum number set. Previously, users had to assign each student in the examiner and it took a very long time for a lot of student data. So by using looping and collecting data in the form of an array, we can sort and arrange each student in the lecturer automatically and the user will only see the complete list display without having to assign students manually.

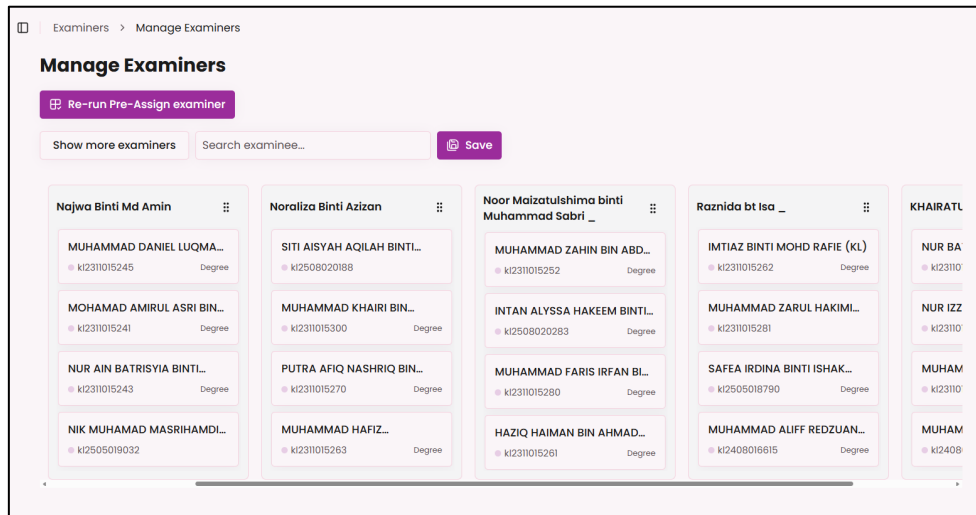


Figure 10.2: Automatic examiner assignment page

By using this method, the original function of the user having to assign students one by one becomes automatic and displayed again to the user, the coordinator, to view and change the student's position on the examiner.

10.2.3 To Generate Total Final Year Project Marks Automatically

This objective has also been achieved in this project where the system can display a complete report with automatically calculated marks to the coordinator. The report not only displays the total marks, but also other marks divided according to the rubric.

E-Portfolio (Part B)				Final Report (Part A)				
Supervisor	Examiner	Average	20%	Supervisor	Examiner	Average	50%	Total marks
100	100	100	20	100	100	100	50	100
N/A	100	100	20	N/A	100	100	50	88
N/A	100	100	20	N/A	94	94	47	87
N/A	100	100	20	N/A	81	81	40.5	76.5
N/A	85	85	17	N/A	75	75	37.5	73.5
N/A	95	95	19	N/A	81	81	40.5	77.5

Figure 10.3: Report with total marks calculated

Each column in the report, as in the diagram above, is carefully calculated before being sent to the end, which is the total marks. This ensures that the marks displayed are safe and free from errors.

10.2.4 To implement AI feature that can suggest FYP title based on keywords input

This is an important feature in UPTM AI Enhanced FYPMS. That is, students can generate FYP titles using the AI function in this system. How can this objective be achieved? It is through the integration of the AI service used, namely the Gemini API and can display data according to the special prompt sent. Then, the response received by the following AI will be displayed in this system for students to make a choice.

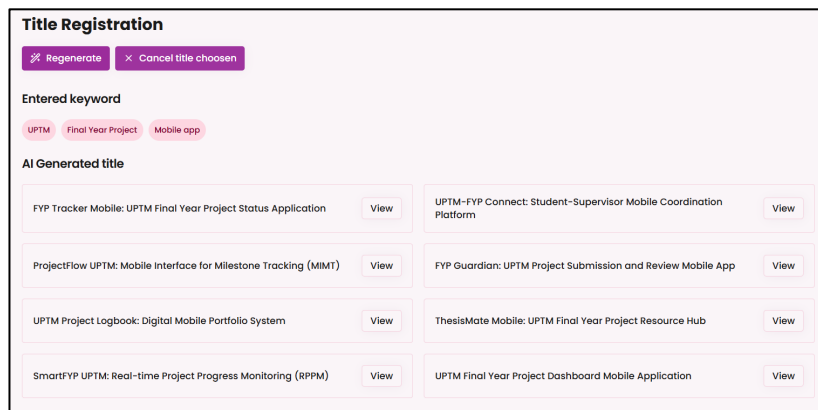


Figure 10.4: AI Title generated component

10.3 Constraint and Limitation

During the development of this system, there were several constraints that were difficult to avoid and other alternatives had to be found. First, after the automatic examiner assignment process was made, the following data was quite complex to display on the frontend because the UI on the frontend uses the typescript programming language which requires a clear and identical data type for the data received. Not only that, when the UI contains too many student lists, it will cause lagging and heavy to display. In addition, the PDF grading function such as drawing is still limited in this system because there is no open source library to implement digital drawing on PDF, it makes it difficult for lecturers to draw on the PDF and still need to download and open it on another platform. All of these constraints are very difficult to find solutions, but perhaps in the future when there are many libraries or plugins that can be used with this system, this constraint can be resolved.

10.4 Future Work and Recommendation

10.4.1 Digital drawing and direct save to server

The drawing function is a very complex feature in making a UPTM AI Enhanced FYPMS system fully digital in terms of marking. Although we still have not found a special library and code for this function. Maybe we can write our own code for this drawing function and hope to implement it in the near future.

10.4.2 Fully use self hosted AI instead of using API services

UPTM AI Enhanced FYPMS uses Gemini service as the main process in generating FYP titles for students. However, it is limited to Gemini AI by Google in terms of requests per minute and also limits in terms of tokens. Therefore, efforts to build our own special model for UPTM AI Enhanced FYPMS will be attempted to be fully hosted locally on the UPTM server so that there are no limits and can reduce costs.

10.4.3 Provide more configurable settings

In developing a web application, it is highly recommended to provide various control functions so that the user, the coordinator, can set settings such as AI usage limits, due dates for each work submission and more. This makes the application controlled and each function will depend on the settings. This method is the same as other platforms, where there are almost dozens of settings that can be selected and modified, and can be saved to the database.

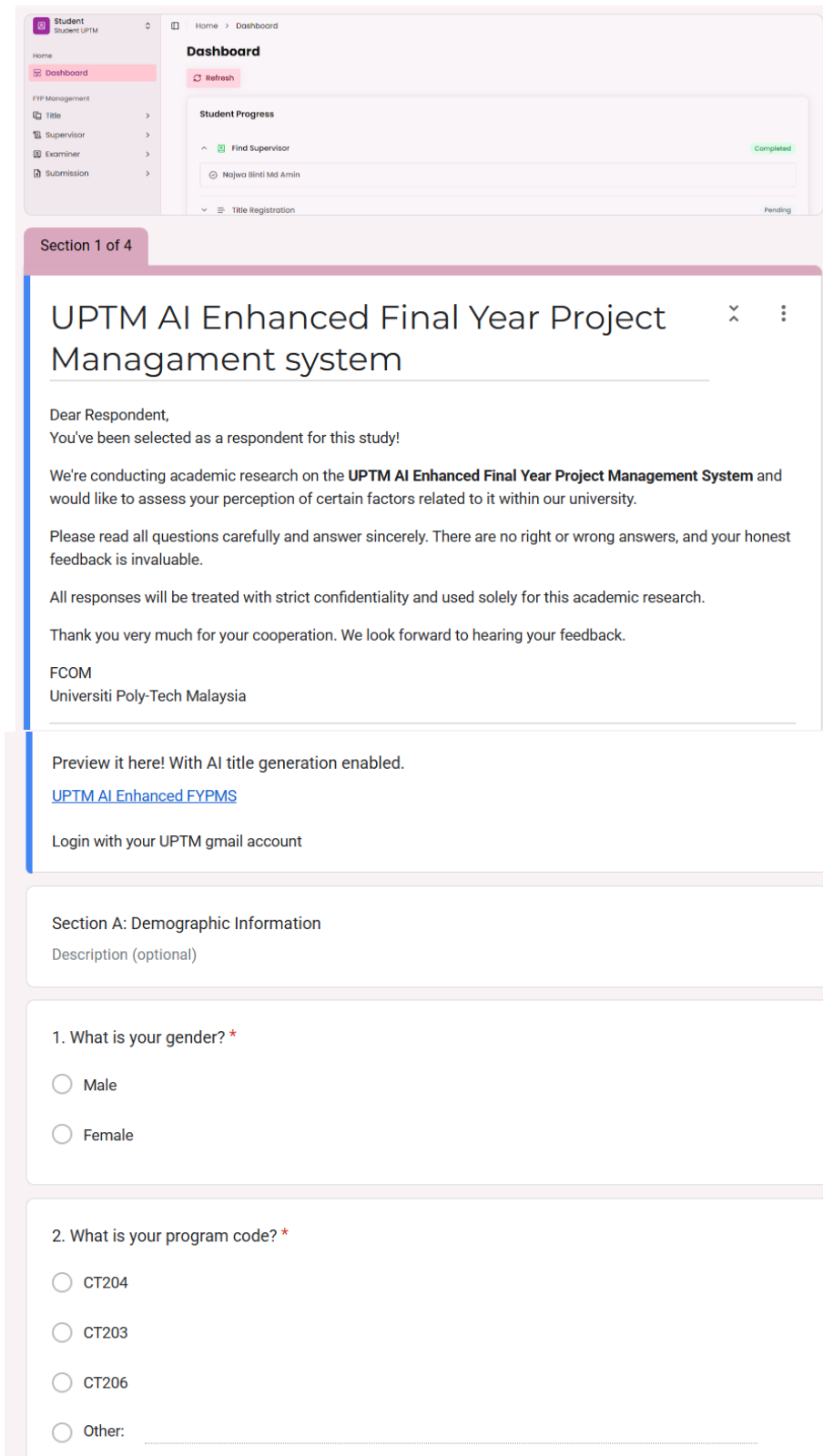
10.5 Conclusion

UPTM AI Enhanced FYPMS will replace the existing system and solve various problems that have been stated. Each function provided is based on interviews and questionnaires that have been made. Not only that, studies have also been made first on existing systems such as UPTM FYPMS and several other systems that have similar functions in order to obtain ideas and improve the problems faced.

In every implementation made, every code written must go through inspection functions such as security, performance, and many more to make this project optimal for all users. UPTM AI Enhanced FYPMS is developed based on two famous frameworks, namely Laravel and Next js and the use of the latest versions to ensure that every code is the latest and safe to deploy on the latest server today.

So as a conclusion to this explanation. The report produced from start to finish has explained everything about this system, namely UPTM AI Enhanced FYPMS, from collecting data from users, to development, and finally deployment and testing to users to get feedback. The system developed must have clear targets in order to be useful and meet user needs.

Appendix A – Requirements Specification Document



Section 2 of 4

Section B: Final Year Project system behaviour and experience ✕ ⋮

Description (optional)

3. How often do you use the new Final Year Project Management System? *

Daily

Weekly

Monthly

Only during critical periods (e.g., submission deadlines)

Rarely/Never

4. How easy was it for you to learn and start using the system? *

Very easy

Somewhat easy

Difficult

Very difficult

5. Did the system help you manage your Final Year Project tasks more effectively compared to previous methods (e.g., email, messaging apps, physical meetings)? *

Yes

No

6. Which features of the system do you find most useful? (Select all that apply) *

AI Title suggestion and submission flow

Document submission and preview

Notifications and alerts

Progress tracking/roadmap visualization

Section 3 of 4

Section C: System Preferences and Reliability ✕ ⋮

Description (optional)

7. Did you experience any technical issues while using the system? *

Yes

No

8. If yes, what issues did you encounter? (Select all that apply)

Slow system response

Bugs/errors in the system

Poor responsiveness on mobile devices

Difficulty submitting reports

Duplicate data (e.g., supervisors, titles)

Other: _____

9. How satisfied are you with the reliability and performance of the system? *

Very satisfied

Satisfied

Dissatisfied

Very dissatisfied

Section 4 of 4

Section D: Impact & Effectiveness ✕ ⋮

Description (optional)

10. Do you feel the system improved communication between you and your supervisor/coordinator? *

Yes

No

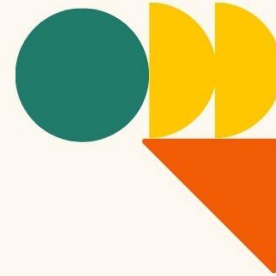
11. How helpful was the system in monitoring your project progress and milestones? *

- Very helpful
- Somewhat helpful
- Not very helpful
- Not helpful at all

12. Overall, how satisfied are you with the Final Year Project Management System?

- Very satisfied
- Satisfied
- Dissatisfied
- Very dissatisfied

Appendix B – User Manual



UPTM AI ENHANCED FYPMS USER MANUAL

Bringing Artificial Intelligence functions to FYPMS





UPTM AI Enhanced FYPMS



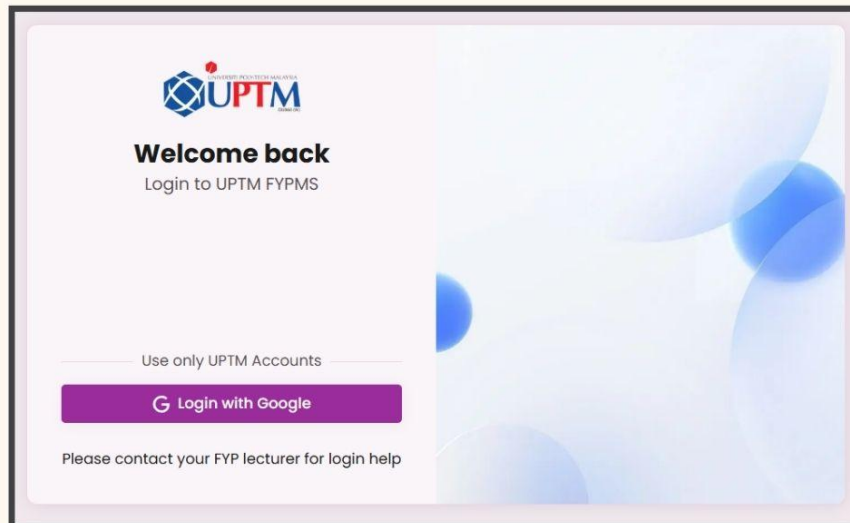
Table of Contents

- | | |
|---|--|
|  Login with Google |  Student: Request Supervisor |
|  Coordinator: Manage Semester |  Student: Generating title using AI |
|  Coordinator: Manage Programs |  Student: Submitting reports |
|  Coordinator: Manage Subjects |  Lecturer: Approving supervisee |
|  Coordinator: Auto Assign Examiner |  Lecturer: Rubric grading |
|  Coordinator: Viewing Reports |  Lecturer: Viewing reports |



UPTM AI Enhanced FYPMS

1. Login with Google

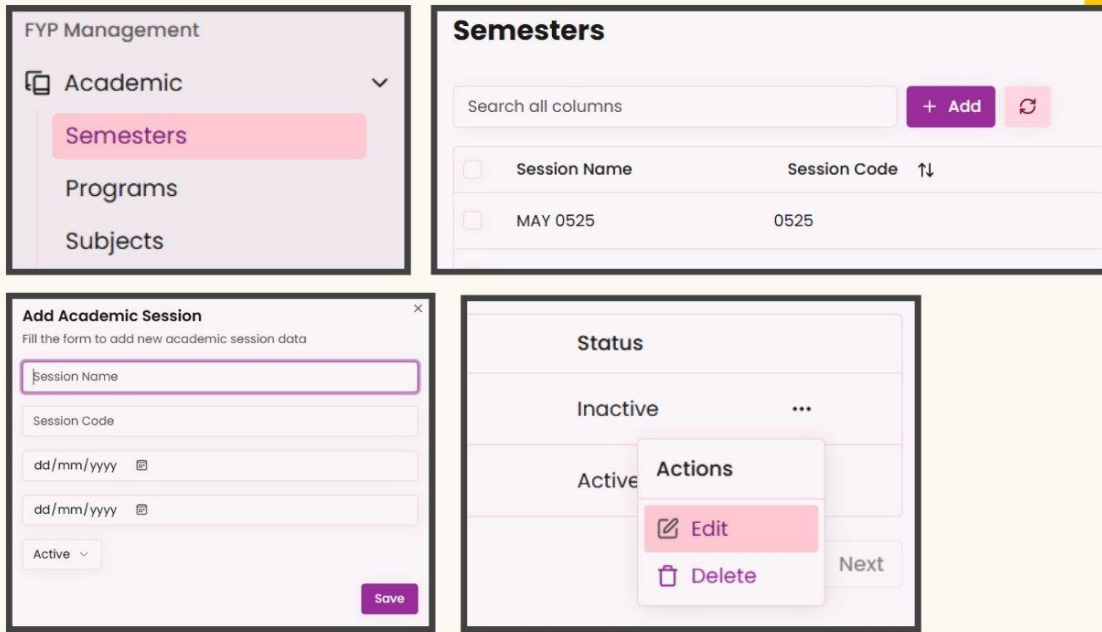


Steps

1. Click Login with Google
2. New Popup will shown that user need to choose Google account, choose email that given by UPTM
3. After that, user will redirect to Dashboard page

UPTM AI Enhanced FYPMS

2. Coordinator: Manage Semester



Add academic session

1. On data table of Semester Page, click Add
2. Fill academic session details
3. Choose the status if need to set as active
4. Click Save

Update academic session

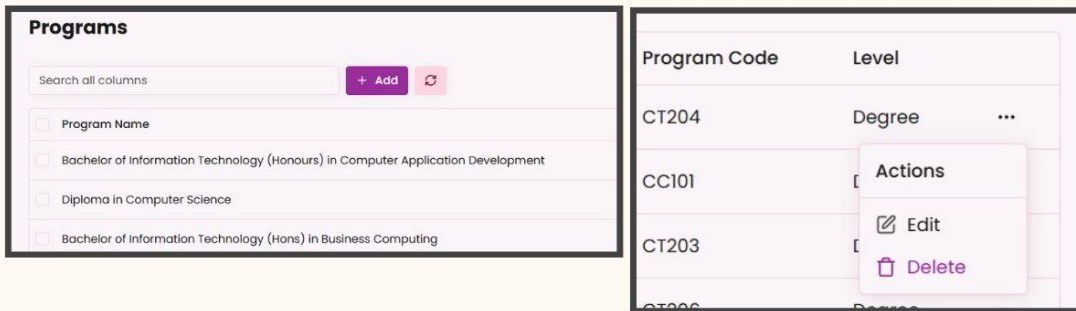
1. On data table of Semester Page, click menu icon on any semester that need to modify
2. Choose Edit
3. Fill with new details
4. Click save

Delete academic session

1. On data table of Semester Page, click menu icon on any semester that need to delete
2. Choose Delete
3. Click confirm

UPTM AI Enhanced FYPMS

3. Coordinator: Manage Program



Add programs

1. On data table of Program Page, click Add
2. Fill program details
3. Choose the level if the program is Diploma or Degree
4. Click Save

Update programs

1. On data table of Program Page, click menu icon on any program that need to modify
2. Choose Edit
3. Fill with new details
4. Click save

Delete programs

1. On data table of Program Page, click menu icon on any program that need to delete
2. Choose Delete
3. Click confirm

UPTM AI Enhanced FYPMS

4. Coordinator: Manage Subject

Subject Name	Subject Code
<input type="checkbox"/> Information Security Project 1	FYP4033
<input type="checkbox"/> Information Security Project 2	FYP4043
<input type="checkbox"/> Information Security Project 1	FYP4074
<input type="checkbox"/> Information Security Project 2	FYP4085

Program
CT206

Add subject

1. On data table of subject page, click Add
2. Fill subject details
3. Choose dropdown which program code need to assign
4. Click Save

Update subject

1. On data table of subject page, click menu icon on any subject that need to modify
2. Choose Edit
3. Fill with new details
4. Click save

Delete subject

1. On data table of subject page, click menu icon on any subject that need to delete
2. Choose Delete
3. Click confirm

UPTM AI Enhanced FYPMS

5. Coordinator: Auto Assign Examiner

The screenshot shows the 'Manage Examiners' interface. On the left, a message states 'No examiners data' with a 'Pre-Assign examiner' button. On the right, a 'Manage Examiners' panel includes a 'Re-run Pre-Assign examiner' button, a search bar, and a 'Save' button. Below these are three columns of examiner profiles, each with a name, ID, and 'Degree' label.

Examiner Name	ID	Degree
MUHAMMAD ALIFF REDZUAN	k12408016615	Degree
NIK MUHAMAD MASRIHAMDIL	k12505019032	Degree
NUR AIN BATRISYIA BINTL	k12311015243	Degree
MUHAMMAD KHAIRI BIN	k12311015300	Degree
IMTIAZ BINTI MOHD RAFIE (KL)	k12311015262	Degree
SITI AISYAH AQILAH BINTL	k12508020198	Degree
WAN MUHAMMAD ZAHEERUL	k12505018887	Degree
MOHAMAD AMIRUL ASRI BIN	k12311015241	Degree
SYAHIR IMRAN MOHAMAD	k12505019171	Degree
AHMAD HAIKAL BIN ZAKI (KL)	k12311015274	Degree
MUHAMMAD HAFIZ	k12311015283	Degree
NURULAIN BINTI ROSDI (KL)	k12311015218	Degree

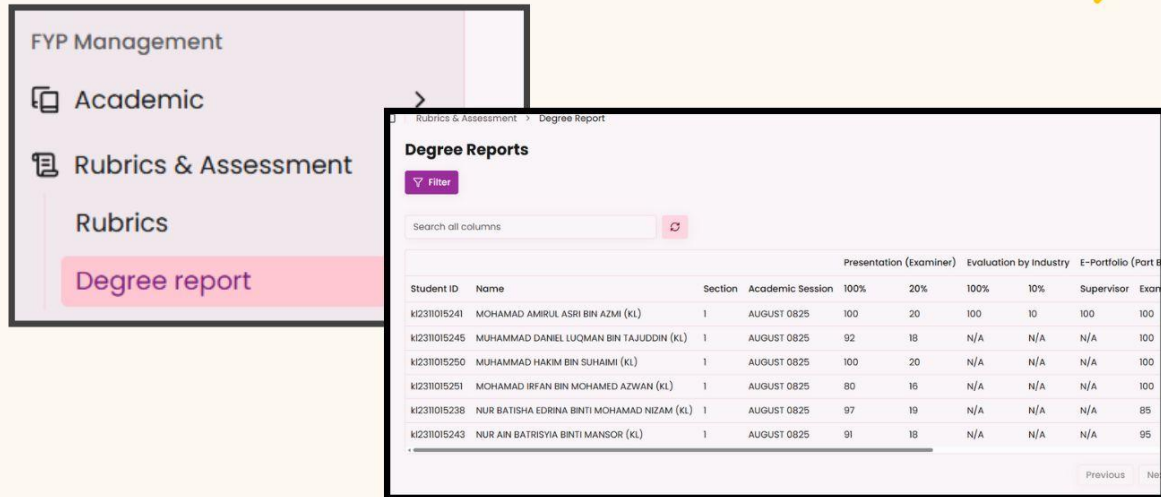
Below the main interface is a confirmation dialog box titled 'Save all arranged examiners?' with the text 'This will process all assigned examinee into each lecturer (examiners)'. It features 'Cancel' and 'Confirm' buttons.

Steps

1. On Manage Examiner page, click Pre-Assign Examiner
2. It will automatically shows all student assigned on the examiner.
Take note that this is only preview.
3. To save the changes, click Save button.

UPTM AI Enhanced FYPMS

6. Coordinator: Viewing reports

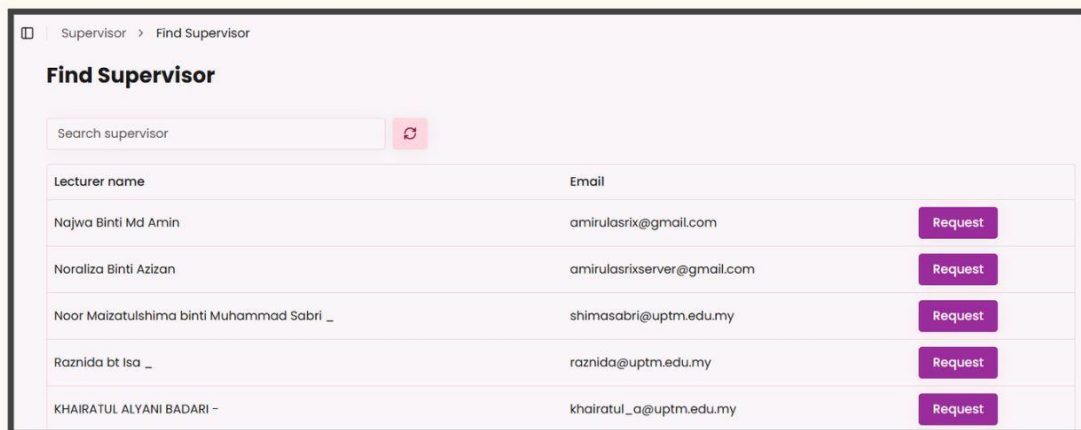


Steps

1. On Degree report page. It will display all student with final marks.
2. To display a specified student, user can use search bar at the top of data table
3. To filter based on the FYP number, course, program. Click the Filter button

UPTM AI Enhanced FYPMS

7. Student: Request supervisor



Lecturer name	Email	
Najwa Binti Md Amin	amirulasrix@gmail.com	Request
Noraliza Binti Azizan	amirulasrixserver@gmail.com	Request
Noor Maizatulshima binti Muhammad Sabri _	shimasabri@uptm.edu.my	Request
Raznida bt Isa _	raznida@uptm.edu.my	Request
KHAIRATUL ALYANI BADARI -	khairatul_a@uptm.edu.my	Request

Steps

1. Open Find Supervisor page
2. It will shows all lecturers with Request button
3. To request the lecturer as a supervisor, click Request
4. Student can make multiple request. If one of the lecturer is approve the student, another request will deleted.

UPTM AI Enhanced FYPMS

8. Student: Generating Title using AI

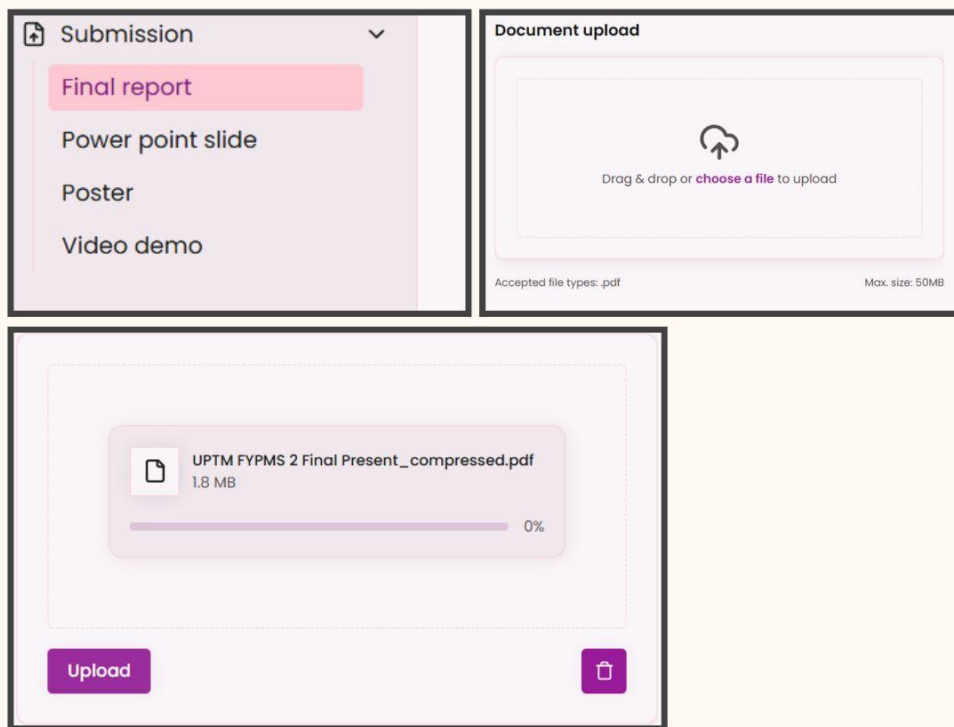
The screenshot displays the 'Title Registration' page with a '+ Add' button, a 'Generate with AI' button, and a 'Title' input field. A modal window titled 'Generate with AI' is open, showing the input field with 'Mobile App' and a 'Generate' button. Below, the 'Entered keyword' section shows 'UPTM', 'Library', and 'Mobile App'. The 'AI Generated title' section lists two suggestions: 'UPTM DigiLib: Mobile Library Management Application' and 'MobiLend: UPTM Library Resource Tracking App', each with a 'View' button.

Steps

1. Open Title Registration page
2. Click Generate with AI button
3. Enter the keywords
4. Click Generate button
5. The system will suggest FYP titles based on the keywords entered

UPTM AI Enhanced FYPMS

9. Student: Submitting Reports

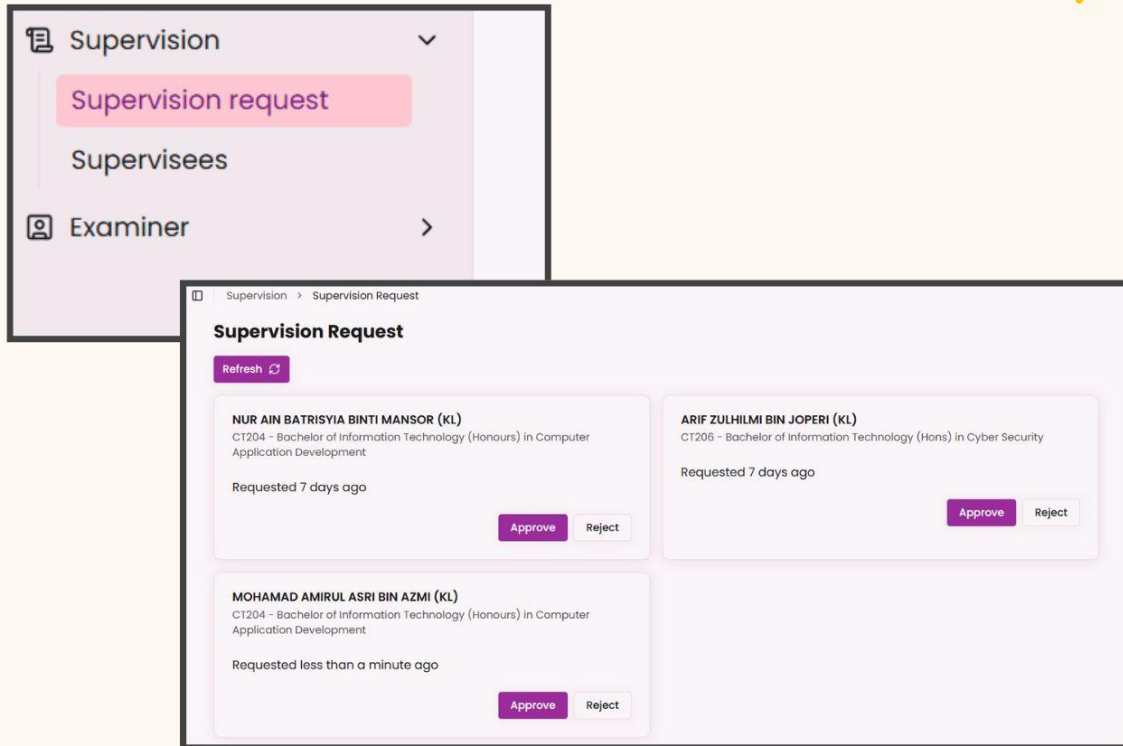


Steps

1. Open submission page
2. On the file picker, click it and it will show dialog for selecting files
3. After choosing the file, click Upload button
4. And it will submitted for the review

UPTM AI Enhanced FYPMS

10. Lecturer: Approve Supervisee

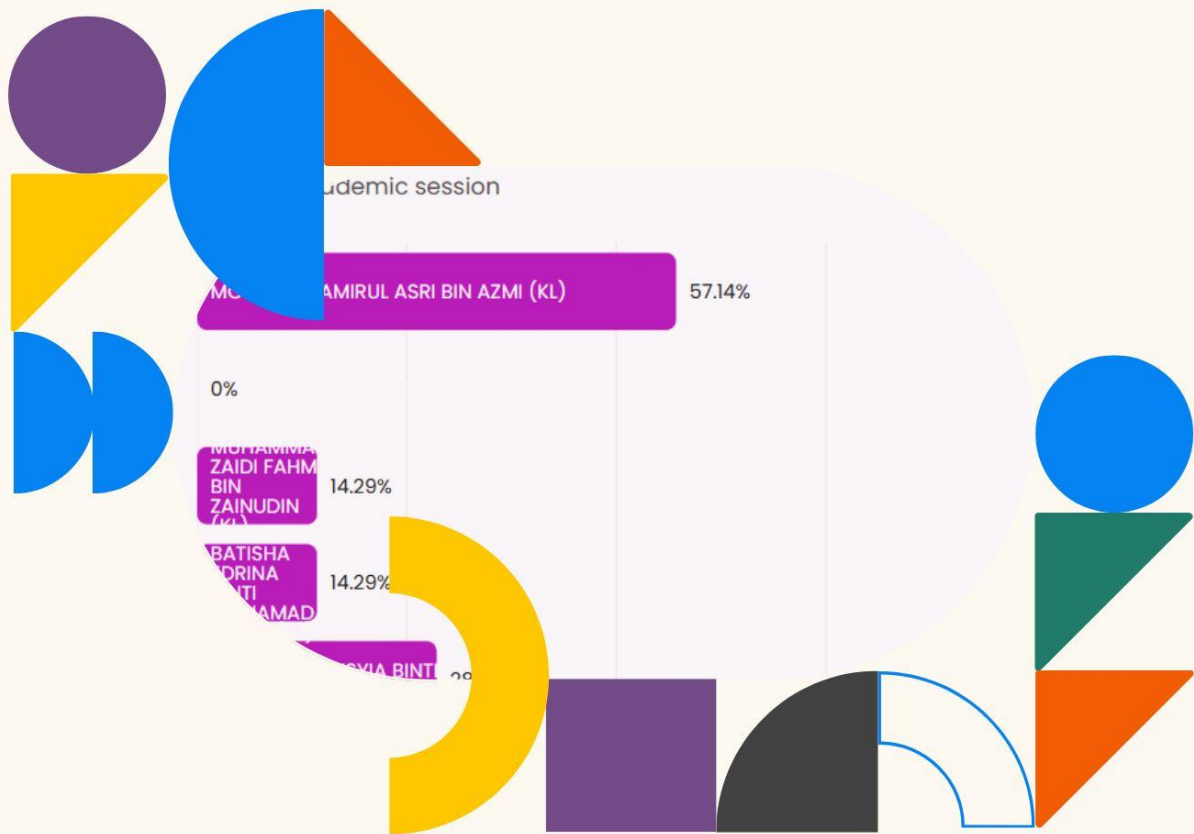


Steps

1. Open Supervision Request page
2. It will list all request from students
3. To approve the student, Click Approve button. Instead, click Reject button and provide with reason.
4. After student approved, it will become as a supervisee to that lecturer.



UPTM AI Enhanced FYPMS



Thank You!

Github URL:

Frontend code: https://github.com/najwamin79/AI_FYPMS

Backend code: https://github.com/najwamin79/AI_FYPMS_Server





Note: This repository is private and now it belongs to NOORNAJWA BINTI MD AMIN for UPTM Projects and its only accessible to Examiner github account for evaluation.

Appendix C – Turnitin Result




12% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Match Groups

-  **102 Not Cited or Quoted 12%**
Matches with neither in-text citation nor quotation marks
-  **0 Missing Quotations 0%**
Matches that are still very similar to source material
-  **0 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
-  **0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 8%  Internet sources
- 1%  Publications
- 11%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.



*% detected as AI

AI detection includes the possibility of false positives. Although some text in this submission is likely AI generated, scores below the 20% threshold are not surfaced because they have a higher likelihood of false positives.

Caution: Review required.

It is essential to understand the limitations of AI detection before making decisions about a student's work. We encourage you to learn more about Turnitin's AI detection capabilities before using the tool.

Disclaimer

Our AI writing assessment is designed to help educators identify text that might be prepared by a generative AI tool. Our AI writing assessment may not always be accurate (it may misidentify writing that is likely AI generated as AI generated and AI paraphrased or likely AI generated and AI paraphrased writing as only AI generated) so it should not be used as the sole basis for adverse actions against a student. It takes further scrutiny and human judgment in conjunction with an organization's application of its specific academic policies to determine whether any academic misconduct has occurred.

Frequently Asked Questions

How should I interpret Turnitin's AI writing percentage and false positives?

The percentage shown in the AI writing report is the amount of qualifying text within the submission that Turnitin's AI writing detection model determines was either likely AI-generated text from a large-language model or likely AI-generated text that was likely revised using an AI-paraphrase tool or word spinner.

False positives (incorrectly flagging human-written text as AI-generated) are a possibility in AI models.

AI detection scores under 20%, which we do not surface in new reports, have a higher likelihood of false positives. To reduce the likelihood of misinterpretation, no score or highlights are attributed and are indicated with an asterisk in the report (*%).

The AI writing percentage should not be the sole basis to determine whether misconduct has occurred. The reviewer/instructor should use the percentage as a means to start a formative conversation with their student and/or use it to examine the submitted assignment in accordance with their school's policies.

What does 'qualifying text' mean?

Our model only processes qualifying text in the form of long-form writing. Long-form writing means individual sentences contained in paragraphs that make up a longer piece of written work, such as an essay, a dissertation, or an article, etc. Qualifying text that has been determined to be likely AI-generated will be highlighted in cyan in the submission, and likely AI-generated and then likely AI-paraphrased will be highlighted purple.

Non-qualifying text, such as bullet points, annotated bibliographies, etc., will not be processed and can create disparity between the submission highlights and the percentage shown.



Appendix D – Log Book

CT204/BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN COMPUTER APPLICATION DEVELOPMENT



FACULTY OF COMPUTING & MULTIMEDIA (FCOM)

COMPUTING PROJECT 2
(FYP4025)

LOG BOOK

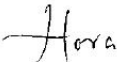
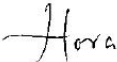
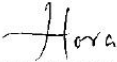

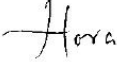
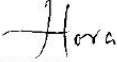
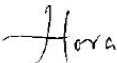
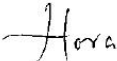
STUDENT'S NAME : MOHAMAD AMIRUL ASRI BIN AZMI

ID NO. : AM2311015241

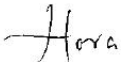
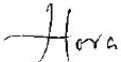
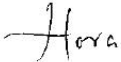
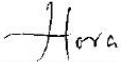
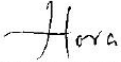
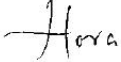
SUPERVISOR : NORALIZA BINTI AZIZAN

PROJECT TITLE : UPTM AI ENHANCED FYPMS

CT204/BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN COMPUTER APPLICATION DEVELOPMENT

Date/ Week		Agenda	Next Agenda	Signature (Supervisor / Coordinator)
7/8/2025	1	Get feedback from supervisor about previous FYP Report	Presenting the wireframe of the project	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
14/8/2025	2	Presenting the wireframe of the project	Showing progress to the supervisor (Feature: Supervision approve and overlap prevention)	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
21/8/2025	3	Showing progress to the supervisor (Feature: Supervision approve and overlap prevention)	Class lecturer	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
28/8/2025	4	Class lecturer	Presenting the progress in the class (basic system ui and interaction)	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
4/9/2025	5	Presenting the progress in the class (basic system ui and interaction)	Showing progress to the supervisor (Feature: automatic examiners assignments to students)	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
11/9/2025	6	Showing progress to the supervisor (Feature: automatic examiners assignments to students)	Showing Chapter 6 progress explaining the wireframe and database tables	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
25/9/2025	7	Showing Chapter 6 progress explaining the wireframe and database tables	Showing the progress of system feature: Rubric data system and basic dashboard functionality with today active users	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
2/10/2025	8	Showing the progress of system feature: Rubric data system and basic dashboard functionality with today active users	Continue to fast development on rubric and grading systems	 NORALIZA BINTI AZIZAN Kordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia

CT204/BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN COMPUTER APPLICATION DEVELOPMENT

10/10/2025	9	Continue to fast development on rubric and grading systems	Showing the progress of system feature: Rubric marks entry abilities with types supports and new stepper student design	 NORALIZA BINTI AZIZAN Koordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
16/10/2025	10	Showing the progress of system feature: Rubric marks entry abilities with types supports and new stepper student design	Continue with the fast development of full rubric system flow	 NORALIZA BINTI AZIZAN Koordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
23/10/2025	11	Continue with the fast development of full rubric system flow	Showing the prototype of the working system with finalized objective	 NORALIZA BINTI AZIZAN Koordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
30/10/2025	12	Showing the prototype of the working system with finalized objective	Class lecturer: Presentation preparation	 NORALIZA BINTI AZIZAN Koordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
6/11/2025	13	Class lecturer: Presentation preparation	Final presentation	 NORALIZA BINTI AZIZAN Koordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia
13/11/2025	14	Final present at LT5.1	Report submission	 NORALIZA BINTI AZIZAN Koordinator Projek Tahun Akhir Fakulti Pengkomputeran & Multimedia Universiti Poly-Tech Malaysia

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