



SOFTWARE REQUIREMENT SPECIFICATION

Sistem Akreditasi Program Akademik UMT

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TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Purpose	1
1.1.1	Intended Audience	1
1.2	Scope	2
1.3	Definition, Acronyms and Abbreviations	3
1.3.1	Definitions	3
1.3.2	Acronyms	3
1.3.3	Abbreviations	4
1.4	Overview	4
2	REQUIREMENT ELICITATION TECHNIQUES	5
2.1	Requirement Sources	5
2.1.1	Stakeholders	6
2.1.2	Documents	7
2.1.3	Existing Systems	8
2.2	Requirement Techniques	8
2.2.1	Brainstorming Techniques	9
2.2.2	Document-centric Techniques	11
3	SYSTEM REQUIREMENTS	12
3.1	Functional Requirements	12
3.1.1	PPPK Staff	12
3.1.2	Internal Evaluators	13
3.1.3	MQA	13
3.2	Non-functional Requirements	13
4	REQUIREMENT ANALYSIS	15
4.1	Use Case Diagram	15
4.2	Use Case Description	17
4.3	Activity Diagrams	27
4.4	Class Diagram	34
4.5	Sequence Diagrams	36
4.6	CRUD Matrix	43
5	SUMMARY	45
Appendices		47

APPENDICES	47
APPENDIX A: REFERENCE MATERIALS	48
.1 Referenced Documents	48
APPENDIX B: STAKEHOLDER MEETINGS	51
.2 Meeting Details	51
.3 Meeting Pictures	52

CHAPTER 1

INTRODUCTION

A software requirements specification (SRS) is a comprehensive description of the intended purpose and environment for software under development. The SRS fully describes what the software will do and how it is expected to perform. Nick (2024)

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a comprehensive description of the functional and non-functional requirements for the UMT Academic Programme Accreditation System. This document serves as a blueprint for the development, implementation, and validation of the system, ensuring that all stakeholders have a clear understanding of the system's scope, objectives, and features.

The SRS is designed to standardize and streamline the academic program accreditation process, enabling efficient registration, evaluation, and monitoring of accreditation-related activities within Pusat Pengurusan dan Penjaminan Kualiti (PPPK) at Universiti Malaysia Terengganu (UMT).

1.1.1 Intended Audience

The intended audience for this document includes:

- **Project Stakeholders:** To ensure the system aligns with organizational goals and operational needs.
- **Developer:** To use the document as a reference for designing, coding, and testing the system.
- **Quality Assurance Team:** To validate that the system meets the defined requirements.
- **PPPK Staff and End-Users:** To understand the functionality and limitations of the system for training and usage purposes.

This SRS is designed to be accessible to both technical and non-technical stakeholders, providing clear explanations to facilitate effective communication.

1.2 Scope

The **UMT Academic Programme Accreditation System** is a web application designed to streamline and manage the accreditation processes for academic programs at Universiti Malaysia Terengganu (UMT). This system is intended to facilitate internal workflows within Pusat Pengurusan dan Penjaminan Kualiti (PPPK), ensuring efficient registration, evaluation, and monitoring of academic program accreditation.

System Capabilities

The system will:

- Allow for the registration of new academic programs approved by the Ministry of Higher Education (MOHE).
- Facilitate the registration and management of internal evaluators for UMT programs.
- Track and record the internal evaluation of programs, with automated monitoring for key milestones and deadlines.
- Manage submissions for Provisional (PA) and Full Accreditation (FA) to the Malaysian Qualifications Agency (MQA).
- Provide functionality to record and update feedback from MQA, including resubmissions, penalty payments, and certificate payments.
- Enable the upload and tracking of accreditation certificates, along with compliance monitoring based on MQA requirements.
- Generate comprehensive reports summarizing accreditation statuses and activities.

The system will not:

- Handle interactions or approvals outside UMT, such as direct integration with MQA or other external agencies.
- Manage email communications or approval processes occurring through external platforms.
- Provide features unrelated to the accreditation processes, such as financial auditing or program curriculum design.

Application and Benefits:

This software is tailored for PPPK staff to improve operational efficiency, reduce manual errors, and centralize data storage and tracking. By automating key processes, the system ensures that deadlines and requirements are met, reducing the risk of oversight and improving transparency. The primary objectives include enhancing the accuracy of accreditation records, streamlining reporting, and providing a one-stop solution for academic program accreditation management within UMT.

1.3 Definition, Acronyms and Abbreviations

1.3.1 Definitions

Term	Definition
Academic Program	A course of study offered by UMT leading to a degree, diploma, or certificate.
Accreditation	The process of verifying that an academic program meets specific quality standards set by the Malaysian Qualifications Agency (MQA).
Evaluator	A qualified individual responsible for assessing and validating the quality of an academic program.

Table 1.1: Definitions

1.3.2 Acronyms

Acronym	Definition
MOHE	Ministry of Higher Education
MQA	Malaysian Qualifications Agency
PA	Provisional Accreditation
FA	Full Accreditation
PPPK	Pusat Pengurusan dan Penjaminan Kualiti (Center for Management and Quality Assurance)
UMT	Universiti Malaysia Terengganu
SRS	Software Requirements Specification

Table 1.2: Acronyms

1.3.3 Abbreviations

Abbreviation	Definition
ERD	Entity Relationship Diagram
UML	Unified Modeling Language
DB	Database
UI	User Interface
QA	Quality Assurance

Table 1.3: Abbreviations

1.4 Overview

This Software Requirements Specification (SRS) document is organized to provide a clear and comprehensive outline of the system's requirements.

The document is structured as follows:

- **Introduction (Section 1)** provides the purpose of the system, intended audience, scope, definitions, and a glossary of acronyms and abbreviations.
- **Requirement Elicitation Techniques (Section 2)** outlines the sources and techniques used for gathering system requirements from stakeholders, documents, and existing systems.
- **System Requirements (Section 3)** includes detailed functional and non-functional requirements, specifying what the system should do and the constraints it must operate under.
- **Requirement Analysis (Section 4)** presents various analysis diagrams including use case, activity, class, sequence, and CRUD matrix to model the system's functionality and behavior.
- **Summary (Section 5)** concludes the document by summarizing the key points and the direction for the system's development.

This SRS provides a structured and detailed account of the system's needs and serves as a reference for stakeholders throughout the project lifecycle.

CHAPTER 2

REQUIREMENT ELICITATION TECHNIQUES

Requirement elicitation is a crucial step in the development of the UMT Academic Programme Accreditation System, as it ensures the system meets the specific needs and expectations of stakeholders, such as PPPK staff and management. This process involves engaging stakeholders in detailed discussions to gather information about their goals, challenges, and the features required for effective accreditation management.

Through these discussions, the development team will identify key functionalities, such as the ability to register new academic programs, track accreditation deadlines, manage internal evaluators and etc. Additionally, the system will need to handle feedback from MQA, track accreditation certificate payments, and generate reports to monitor the status of academic programs. The elicitation process also aims to define non-functional requirements, such as system performance, security, and usability.

By documenting these requirements clearly and comprehensively, the system will be designed to meet user expectations from the start. Effective communication during the requirement elicitation phase ensures that the system addresses all relevant needs, making it an essential part of the overall software development lifecycle.

2.1 Requirement Sources

Requirement sources refer to the various channels through which the requirements for the UMT Academic Programme Accreditation System are gathered. The Sources of the requirement as below :

Source Type	Details/Reference
Stakeholder	Staff of PPPK Puan Fauzayani Binti Ibrahim
Documents	Garis Panduan Pembangunan Program Akademik Universiti Awam Surat Mesyuarat Saringan Awal
Existing Systems	National and International Accreditation Status ITS, UPM Accreditation Website

Table 2.1: List of Requirement Sources and it's source

2.1.1 Stakeholders

The stakeholders of the UMT Academic Programme Accreditation System are primarily the internal staff of Pusat Pengurusan dan Penjaminan Kualiti (PPPK) at UMT. Paspelava (2023). These stakeholders are directly responsible for ensuring the smooth operation of academic program accreditation processes and include:

- **Penolong Pendaftar Kanan (Senior Administrative Officer):** Responsible for overseeing the overall accreditation process, ensuring adherence to guidelines, and managing high-level administrative tasks such as reviewing and approving program submissions.
- **Deputy Directors:** Tasked with monitoring progress, providing guidance on complex issues, and ensuring that the accreditation process aligns with UMT's strategic objectives.
- **Administrative and Support Staff:**

Responsible for registering new academic programs approved by the Ministry of Higher Education (MOHE), assigning internal evaluators, managing program evaluation details, tracking feedback and compliance with the Malaysian Qualifications Agency (MQA), managing accreditation certificates, ensuring timely submissions, generating reports, and maintaining accurate system records.

Each of these groups interacts with the system according to their specific roles and responsibilities, making their involvement crucial for the success of the accreditation process. Their collaborative efforts help maintain a systematic, efficient, and compliant approach to managing academic program accreditations at UMT.

Name	Role	Responsibilities	Feedback Areas
Dr. Mohamad Nor bin Hasan	Timbalan Pengarah	Monitors overall accreditation progress, provides guidance on complex issues, and ensures alignment with institutional goals.	Content structure of forms, accreditation workflows.
Puan Fauzayani Binti Ibrahim	Penolong Pendaftar Kanan	Oversees the accreditation process, ensures adherence to guidelines, and manages communication with key stakeholders.	System design, UI/UX, ease of navigation.

Table 2.2: Stakeholders and Responsibilities

2.1.2 Documents

Documents are one of the key sources for gathering requirements for the UMT Academic Programme Accreditation System. These documents, provided by the PPPK staff, contain detailed guidance and information aligned with MQA guidelines.

Document Name	Source	Content Description
Garis Panduan Pembangunan Program Akademik Universiti Awam Edisi Ke-2	Bahagian Pengurusan Pembangunan Akademik, Jabatan Pendidikan Tinggi	Contains detailed guidelines for the registration of new academic programs
National Education Code (NEC-2020)	Ministry of Higher Education	Lists the NEC codes required to categorize academic programs
MSA-SM Sains Komputer (Keselamatan Komputeran Awam) dengan Kepujian	Puan Fauzayani Binti Ibrahim	Includes essential information for the registration of new academic program modules

Table 2.3: Documents Used as Sources for Requirements

The information from these documents is extracted, analyzed, and organized to develop a set of requirements and detailed specifications essential for the system's design and implementation. This process ensures that every aspect of the system aligns with the regulatory standards, operational needs, and strategic objectives of the UMT Academic Programme Accreditation System, ultimately enabling seamless functionality and compliance with MQA guidelines.

2.1.3 Existing Systems

The current system for managing accreditation processes relies on a legacy approach that uses physical files and Excel spreadsheets. These systems are used by staff to store, update, and retrieve accreditation-related data, such as program details, evaluator information, payment records, and accreditation certificates. While these tools have been sufficient for basic data management, they highlight areas that require improvement for a more modern, integrated solution.

To gather requirements for the new system, an analysis of the existing processes and workflows is necessary. Key considerations include:

- **Data Types:** Identifying the types of data stored in physical files and Excel sheets, such as program information, feedback, evaluator details, and payment records, to ensure these are migrated and managed effectively in the new system.
- **Processes:** Understanding the workflows followed by staff using the current system, such as how data is entered, updated, shared, and retrieved, to replicate and optimize these processes in the new design.
- **Stakeholder Roles:** Determining the roles and responsibilities of staff who interact with the legacy system, including administrators and evaluators, to tailor system access and functionalities to their needs.
- **Pain Points:** Gathering input from stakeholders on the limitations and challenges faced with the current tools to define the features and functionalities required in the new system.
- **Data Volume and Structure:** Analyzing the volume of existing data and its organization to ensure a smooth transition to the new system, including data import and normalization requirements.
- **Existing Reports and Outputs:** Reviewing reports, summaries, and outputs generated from Excel and physical files to maintain continuity in reporting while improving accuracy and efficiency.

By thoroughly analyzing the existing system, its processes, and stakeholder needs, the new system can be designed to address current limitations while maintaining familiar workflows for ease of adoption.

2.2 Requirement Techniques

Several techniques were used to gather the requirements for the UMT Academic Programme Accreditation System. These methods were carefully chosen to ensure the system meets the needs of the users and stakeholders.

The process began with **conversational technique** with key stakeholders, such as Puan Fauzayani Binti Ibrahim. During these conversations, she shared important information about the accreditation process, the current challenges, and the specific features that the system needs to include. This helped us understand the workflow and the main problems that the system should solve.

We also conducted **brainstorming sessions** with Dr. Mohamad Nor and Puan Fauzayani. These discussions allowed us to share ideas, identify key requirements, and clearly define what the system should do. This helped ensure that no important details were missed.

Another key method was **document analysis**. We studied important documents, such as the *Garis Panduan Pembangunan Program Akademik Universiti Awam Edisi Ke-2* and *National Education Code (NEC-2020)*. These documents provided useful guidelines and information that helped us understand the rules and details that the system must follow.

By combining interviews, brainstorming, and document analysis, we were able to gather all the necessary requirements to build a system that is user-friendly, meets stakeholder expectations, and follows the required standards.

Conversational Techniques

Conversational techniques involve direct interaction with stakeholders to gather requirements. These techniques typically include in-depth face-to-face discussions, which allow for a clear understanding of the needs, goals, and challenges faced by the stakeholders. For this project, interviews were conducted with Puan Fauzayani Binti Ibrahim, the Penolong Pendaftar Kanan at PPPK, to gather detailed information on the accreditation process, the existing system's limitations, and the specific requirements for the new UMT Academic Programme Accreditation System.

The interview sessions with Puan Fauzayani provided valuable insights into the current workflows and expectations. These interactions helped to identify the critical features needed for the system to streamline the accreditation process, manage program evaluations, and ensure compliance with MQA guidelines. The following table highlights some of the key questions asked during the interview to better understand her needs and requirements for the system.

2.2.1 Brainstorming Techniques

Brainstorming is a collaborative technique that involves gathering a group of stakeholders, developers, and domain experts to generate ideas and identify potential solutions. In this case, brainstorming sessions were used to discuss the requirements of the UMT Academic Programme Accreditation System with key stakeholders, such as Puan

Question	Purpose
What are the main challenges faced during the accreditation process?	To understand the existing bottlenecks and areas that require improvement in the accreditation workflow.
What specific features do you think the new system should have to make the accreditation process more efficient?	To identify the essential functionalities needed to streamline the accreditation process.
How do you currently track the progress of accreditation and what improvements are needed?	To gather insights on the tracking and monitoring capabilities required for effective accreditation management.
What kind of reports do you generate regularly, and what additional reporting capabilities would be helpful?	To ensure the new system supports all necessary reporting features, including customizable and automated reports.
What are the most important user roles and permissions that should be included in the system?	To clarify the role-based access control and user management needs for the system.

Table 2.4: Questions Asked During Interview with Puan Fauzayani

Fauzayani Binti Ibrahim and Dr. Mohamad Nor bin Hasan. This technique encouraged creative thinking and allowed the team to explore various perspectives on how the system could best serve the needs of the PPPK staff and the accreditation process.

During the brainstorming sessions, various features, system functionalities, and potential challenges were discussed. Ideas were proposed, built upon, and refined, ensuring that the system's design would meet both the practical needs of the users and the technical constraints of the project. Brainstorming helped uncover requirements that might not have been immediately obvious through other methods, such as document reviews or one-on-one interviews.

Examples of topics covered during the brainstorming sessions include:

- Identifying key features needed to streamline the program registration process.
- Exploring how to track accreditation progress effectively and ensure timely compliance.
- Evaluating the user interface and design to ensure it is intuitive for all users.

Brainstorming proved to be a valuable technique for refining and clarifying the system's requirements, ensuring that all necessary features were identified and that the stakeholders' expectations were addressed.

2.2.2 Document-centric Techniques

Document-centric techniques involve analyzing and extracting relevant information from various types of documentation, such as guidelines, reports, and existing system code. This technique is crucial for understanding the requirements of the system, especially when stakeholders are unable to directly provide detailed input or when existing systems already cover some of the desired functionalities. For the UMT Academic Programme Accreditation System, document-centric techniques were used to review internal PPPK documents, regulatory guidelines, and accreditation standards to ensure that the system aligns with both internal needs and external compliance requirements.

The following table provides examples of key documents that were reviewed to gather insights for the system requirements. These documents offered valuable information on the necessary steps, regulatory requirements, and workflows involved in the accreditation process, helping to define the functional and non-functional requirements for the system.

Document Name	Purpose
Garis Panduan Pembangunan Program Akademik Universiti Awam Edisi Ke-2	Provides detailed guidelines for registering new academic programs at UMT, outlining the necessary documentation and process steps required for program accreditation.
National Education Code (NEC-2020)	Lists the NEC codes needed to categorize academic programs for accreditation. This document ensures that all programs are classified correctly and comply with national education standards.
MSA-SM Sains Komputer (Keselamatan Komputeran Awam) dengan Kepujian	Details the information required for the registration of specific academic programs, including module requirements, course structure, and accreditation criteria for Computer Science programs.

Table 2.5: Documents Reviewed for System Requirements

The information extracted from these documents helped identify the specific needs for the system, including features related to program registration, categorization, and compliance with accreditation standards. By reviewing these documents, the development team ensured that the system design aligns with UMT's internal processes and external regulatory guidelines.

CHAPTER 3

SYSTEM REQUIREMENTS

3.1 Functional Requirements

Functional requirement are features that the system must be possessed to ensure it fulfilled the stakeholder needs and the systems needs. These requirements define the system must have function and the basic system behaviour ‘ ‘

- **Necessary:** Every functional requirement must relate to a specific business goal or user need, such as registration of academic programs or management of accreditation processes.
- **Concise:** Use clear, simple language to avoid confusion or misinterpretations. Avoid unnecessary jargon.
- **Attainable:** Requirements must be realistic, considering time and budget constraints.
- **Granular:** Requirements should be precise, without combining many tasks into one, making them easier to manage.
- **Consistent:** Requirements must be internally consistent, using consistent terminology and avoiding contradictions.
- **Verifiable:** It should be possible to determine if a requirement has been fulfilled at the end of the project.

Here are some examples of functional requirements for the **UMT Academic Programme Accreditation System**:

3.1.1 PPPK Staff

- **R1:** The system shall allow PPPK staff to register new academic programs approved by the Ministry of Higher Education (MOHE).

- **R2:** The system shall provide a user-friendly interface for staff to manage internal evaluators, including selecting and assigning eligible lecturers as evaluators.
- **R3:** The system shall track the progress of accreditation for each program, including the submission of documents and feedback from MQA.
- **R4:** The system shall allow PPPK staff to manage accreditation payments, including payments for accreditation certificates and penalties.
- **R5:** The system shall allow PPPK staff to generate reports on program status, evaluator appointments, and payment records.

3.1.2 Internal Evaluators

- **R6:** The system shall allow PPPK staff to send email notifications to internal evaluators regarding their appointment to evaluate a program.
- **R7:** The system shall allow evaluators to view the details of the programs they are assigned to evaluate, including the timeline and required documents.

3.1.3 MQA

- **R8:** The system shall track feedback from MQA and automatically update the accreditation status based on their feedback.
- **R9:** The system shall allow PPPK staff to manage and respond to MQA feedback, including the resubmission of documents and addressing any issues identified by MQA.

3.2 Non-functional Requirements

Non-functional requirements (NFRs) describe how well the UMT Academic Programme Accreditation System will operate, imposing constraints on its functionality and ensuring that the system meets the user needs in terms of quality and performance. These requirements address aspects such as system performance, security, reliability, and usability, all of which are critical for supporting the accreditation process at UMT.

To define non-functional requirements for the UMT system, the following questions should be considered:

- **Performance and Scalability:** How quickly will the system process the registration of new academic programs, manage internal evaluator assignments, and track accreditation statuses? Can the system handle increasing numbers of programs, evaluators, and MQA feedback without significant performance

degradation? What is the expected response time for generating reports and managing accreditation workflows, especially during peak submission periods?

- **Portability and Compatibility:** On which hardware, operating systems, and browsers will the system run? The system should be compatible with UMT's internal infrastructure, such as servers, desktop computers, and network environments, and support major web browsers used by PPPK staff, evaluators, and MQA officers. Does the system integrate smoothly with UMT's existing systems for document management, payment processing, and communication tools?
- **Reliability, Maintainability, and Availability:** How often does the system experience downtime or critical failures, and how quickly can the development team restore service? What is the expected system uptime to ensure that the accreditation process is not disrupted? The system should have built-in redundancy, regular backups, and a clear maintenance schedule to minimize downtime.
- **Security:** How will the system ensure the confidentiality and integrity of program data, evaluator assignments, and MQA feedback? Security protocols must prevent unauthorized access to sensitive information related to program evaluations and accreditation. The system should comply with relevant data protection laws, such as Malaysia's Personal Data Protection Act (PDPA), and use encryption for storing and transmitting sensitive data.
- **Localization:** The system should support localization for UMT's specific accreditation process, which includes handling Bahasa Malaysia for the primary language of operation. Additionally, the system should be able to manage local time zones and regulatory compliance specific to UMT and the Malaysian Qualifications Agency (MQA) accreditation process. Any legal or administrative changes to the accreditation process should be easily integrated into the system.
- **Usability:** How intuitive and user-friendly is the system for PPPK staff, evaluators, and MQA officers? The system must have an easy-to-use interface with clear navigation for tasks such as program registration, evaluator management, accreditation tracking, and feedback management. Users should be able to quickly learn how to use the system, reducing training time and minimizing user errors.

CHAPTER 4

REQUIREMENT ANALYSIS

4.1 Use Case Diagram

The use-case diagram for the UMT Academic Programme Accreditation System provides an overview of the system's interactions with its primary actors: the PPPK staff and the system administrator. It illustrates key functionalities such as registering new academic programs, managing internal evaluators, tracking accreditation progress, handling accreditation documentation, and generating necessary reports. The system administrator oversees user roles, access permissions, and overall system maintenance to ensure seamless functionality. This diagram reflects the collaborative engagement between the PPPK staff and the system, streamlining accreditation processes while adhering to the guidelines set by the Malaysian Qualifications Agency (MQA).



Figure 4.1: Use case diagram of UMT Academic Programme Accreditation System

4.2 Use Case Description

Use-case descriptions provide a means to document the different aspects of each individual use case. The use-case descriptions are based on the identified requirements, use-case diagram, and the activity diagram descriptions of the business processes. Below is the use-case description for "Create New Program":

Table 4.1: Use Case: Create New Program

Use Case Name: Registration of New Program	ID: UC1	Importance Level: High
Primary Actor: PPPK Staff	Use Case Type: Primary, Essential	
Stakeholder and Interests:		
PPPK Staff - Responsible for ensuring that all required program details align with MQA and UMT guidelines.		
Administrator - Oversees the process and ensures the system records the necessary program data accurately.		
Brief Description: This use case describes the process of creating a new program in the UMT Accreditation System, including inputting program details and ensuring alignment with guidelines.		
Trigger: A new academic program needs to be registered in the system.		
Type: External		
Relationship:		
Normal Flow of Events:		
<ol style="list-style-type: none"> 1. PPPK Staff logs into the system with valid credentials. 2. PPPK Staff selects "Create New Program" from the menu. 3. Staff enters the program details, including program name, National Education Code (NEC), description, and other required fields. 4. The system validates the entered data. 5. PPPK Staff submits the program details for registration. 6. The system stores the program details 7. PPPK Staff logs out of the system. 		
Sub-Flows:		
1a. If PPPK Staff enters invalid data, the system prompts an error and allows re-entry of correct information.		
Alternate/Exceptional Flows:		
1a. If the system encounters a failure during submission, the program details are saved in draft mode, and the staff is notified to retry later.		

Table 4.2: Use Case: Registration of the internal Evaluators

Use Case Name: Registration of the internal Evaluators	ID: UC2 Importance Level: High
Primary Actor: PPPK Staff	Use Case Type: Primary, Essential
Stakeholder and Interests:	
PPPK Staff - Responsible for ensuring that all required program details align with MQA and UMT guidelines.	
Administrator - Oversees the process and ensures the system records the necessary program data accurately.	
Brief Description:	This use case describe the process of registration of the internal evaluators, including sending email and updating confirmation of the candidate of the internal evaluators.
Trigger:	Registered program need to be evaluated internally before being evaluated by the MQA.
Type:	External
Relationship:	
Normal Flow of Events:	
	<ol style="list-style-type: none"> 1. PPPK Staff logs into the system with valid credentials. 2. PPPK Staff selects "Register Internal Evaluators" from the Navigation Bars. 3. Staff choose the programme that need to be evaluated . 4. The Staff choose 4-5 UMT Staff to be the panel of the internal evaluators . 5. PPPK Staff Send email to the candidate for the panel. 6. The staff update the respond from the email to the system 7. Staff send letter of appointment and the detail of the new programme to the panel of evaluators 8. PPPK Staff logs out of the system.
Sub-Flows:	
1a.	If the candidate reject, the PPPK staff need to select others candidate .
Alternate/Exceptional Flows:	
1a.	If the system encounters a failure during submission, the evaluators details are saved in draft mode, and the staff is notified to retry later.

Table 4.3: Use Case: Record Accreditation Certificate Payment Records and details

Use Case	Name: Record Accreditation Certificate Payment	ID: UC3	Importance Level: High
Accreditation Records and details			
Primary Actor: PPPK Staff	Use Case Type: Primary, Essential		
Stakeholder and Interests:			
PPPK Staff -Responsible for ensuring the payment details and the receipt records . Timbalan Pengarah Kualiti - Oversees the process and make sure all the payment details and receipts are uploaded.			
Brief Description:	This use case describes the process of completing the programme certification payment records .		
Trigger:	A new Accreditation certificate need to be paid and been paid.		
Type: External			
Relationship:			
Normal Flow of Events:			
1. PPPK Staff logs into the system with valid credentials.			
2. PPPK Staff selects "Payments" from the menu.			
3. PPPK Staff choose "Certificate Payment" from the menu			
4. PPPK Staff select the program that need to be paid			
5. Staff enters all the required fields.			
6. Staff upload the receipt or checks.			
7. The system stores the payment details			
8. PPPK Staff logs out of the system.			
Sub-Flows:			
1a. If PPPK Staff enters invalid data, the system prompts an error and allows re-entry of correct information.			
Alternate/Exceptional Flows:			
1a. If the system encounters a failure during submission, the program details are saved in draft mode, and the staff is notified to retry later.			

Table 4.4: Use Case: PA and FA Submission Details

Use Case Name: PA and FA ID: UC4 Importance Level: High	
Submission Details	
Primary Actor: PPPK Staff	Use Case Type: Primary, Essential
Stakeholder and Interests:	
PPPK Staff - Ensures that the Program Accreditation (PA) and Full Accreditation (FA) documents are accurately uploaded and submitted for review.	
Brief Description: This use case describes how PPPK Staff uploads and submits PA and FA details into the UMT Accreditation System to complete the accreditation process.	
Trigger: Accreditation submission is required for a program.	
Type: External	
Relationship:	
Normal Flow of Events:	
<ol style="list-style-type: none"> 1. PPPK Staff logs into the system with valid credentials. 2. PPPK Staff navigates to the "Accreditation Submissions" section. 3. Staff selects the relevant program from the list. 4. Staff uploads the required PA or FA documents (e.g., accreditation forms, supporting materials). 5. The system validates the uploaded documents (e.g., file size, format). 6. PPPK Staff submits the documents. 7. PPPK Staff logs out of the system. 	
Sub-Flows:	
4a. If the uploaded document format or size is invalid, the system prompts the staff to re-upload with valid criteria.	
Alternate/Exceptional Flows:	
6a. If the system is unavailable during submission, the documents are saved in draft mode, and PPPK Staff is notified to retry later.	

Table 4.5: Use Case: Update Observation and Feedback by MQA

Use Case Name:	Update Observation and Feedback by MQA	ID: UC5 Importance Level: High
Primary Actor: PPPK Staff	Use Case Type: Primary, Essential	
Stakeholder and Interests:		
PPPK Staff - Ensures that the feedback provided by MQA is properly recorded and updated for program improvement.		
Administrator - Oversees the process to ensure all feedback is documented and addressed.		
Brief Description: This use case describes how PPPK Staff records and updates MQA's observations and feedback in the UMT Accreditation System to improve program compliance and quality.		
Trigger: Feedback from MQA needs to be addressed and recorded for a program.		
Type: External		
Relationship:		
Normal Flow of Events:		
<ol style="list-style-type: none"> 1. PPPK Staff logs into the system with valid credentials. 2. PPPK Staff navigates to the "Feedback and Observations" section. 3. Staff selects the relevant program from the list. 4. Staff enters or updates MQA's feedback and observations in the provided fields. 5. Staff attaches any supporting documents. 6. The system validates the entered feedback and documents. 7. PPPK Staff submits the updated feedback for recordkeeping. 8. The system confirms the update. 9. PPPK Staff logs out of the system. 		
Sub-Flows:		
5a. If the attached document format or size is invalid, the system prompts the staff to re-upload with valid criteria.		
Alternate/Exceptional Flows:		
6a. If feedback entry cannot be completed due to a system error, the system saves the changes in draft mode, and PPPK Staff is notified to retry later.		

Table 4.6: Use Case: Update MQA Fine Record Payment

Use Case Name: Update MQA Fine	ID: UC6	Importance Level: High
Record Payment		
Primary Actor: PPPK Staff	Use Case Type: Primary, Essential	
Stakeholder and Interests:		
PPPK Staff - Ensures that all fine payments related to MQA are accurately recorded for compliance and audit purposes.		
Administrator - Oversees the process to ensure all fine records are updated and managed correctly.		
Brief Description: This use case describes how PPPK Staff updates the fine payment records issued by MQA to maintain accurate financial records.		
Trigger: A fine payment related to an MQA decision needs to be updated in the system.		
Type: External		
Relationship:		
Normal Flow of Events:		
<ol style="list-style-type: none"> 1. PPPK Staff logs into the system using valid credentials. 2. PPPK Staff navigates to the "Fine Payment Records" section. 3. Staff selects the relevant fine record to update from the list. 4. Staff enters the payment details, including the payment date, amount, and reference number. 5. Staff uploads a copy of the payment receipt as supporting documentation (if applicable). 6. The system validates the entered payment details and receipt. 7. PPPK Staff submits the updated payment record for confirmation. 8. The system confirms the update. 9. PPPK Staff logs out of the system. 		
Sub-Flows:		
5a. If the uploaded payment receipt is invalid (e.g., incorrect format or missing information), the system prompts the staff to re-upload a valid document.		
Alternate/Exceptional Flows:		
6a. If the payment details fail validation, the system displays an error message, and the staff must correct the information before proceeding.		

Table 4.7: Use Case: View Program

Use Case Name: View Program	ID: UC7 Importance Level: High
Primary Actor: Administrator	Use Case Type: Primary, Essential
Stakeholder and Interests:	
Administrator - Needs to access detailed information about academic programs for tasks such as accreditation tracking, evaluation, and reporting.	
PPPK Staff - can view back the program to check back what they insert before.	
PPPK Staff - Needs to access detailed information about academic programs for tasks such as accreditation tracking, evaluation, and reporting.	
Brief Description: This use case describes how Administrator and the Staff can view details of existing academic programs within the UMT Accreditation System.	
Trigger: Administrator and PPPK staff requires information on an academic program.	
Type: External	
Normal Flow of Events:	
<ol style="list-style-type: none"> 1. Users logs into the system using valid credentials. 2. User navigates to the "Programs" section. 3. The system displays a list of all registered academic programs. 4. PPPK staff selects a specific program from the list. 5. The system retrieves and displays detailed information about the selected program, including its name, code, status, accreditation details, and associated evaluators. 6. PPPK staff reviews the information and may choose to navigate back to the program list or perform other actions. 7. PPPK staff logs out of the system after completing their tasks. 	
Sub-Flows:	
4a. If the program is not found or inactive, the system notifies the user and suggests possible reasons.	
Alternate/Exceptional Flows:	
5a. If the system encounters an error retrieving program details, it displays an error message and logs the issue for resolution.	

Table 4.8: Use Case: Registration of New PPPK Staff

Use Case Name: Registration of New PPPK Staff	ID: UC8	Importance Level: High
Primary Actor: Administrator Use Case Type: Primary, Essential		
Stakeholder and Interests:		
Administrator - Ensures that all new PPPK staff are registered into the system with the correct roles and access privileges.		
PPPK Staff - Gains access to the system after successful registration to perform their respective roles.		
Brief Description: This use case describes how the administrator registers new PPPK staff into the UMT Accreditation System to provide them with access and functionality.		
Trigger: A new PPPK staff member needs to be added to the system.		
Type: External		
Relationship:		
Normal Flow of Events:		
<ol style="list-style-type: none"> 1. Administrator logs into the system using valid credentials. 2. Administrator navigates to the "User Management" section. 3. Administrator selects the "Register New Staff" option. 4. Administrator enters the new staff member's details, such as name, position, department, email address, and phone number. 5. Administrator assigns appropriate roles and access privileges to the new staff member. 6. Administrator submits the registration form. 7. The system validates the details and creates a new user profile for the staff member. 8. The system sends an automated email to the new staff member containing their login credentials and a temporary password. 9. Administrator logs out of the system. 		
Sub-Flows:		
7a. If mandatory fields are left blank, the system prompts the administrator to fill in the missing details.		
Alternate/Exceptional Flows:		
8a. If the email address is already associated with an existing user, the system notifies the administrator to verify and resolve the duplication.		

Table 4.9: Use Case: Upload Accreditation Certificate

Use Case Name:	Upload Accreditation Certificate	ID: UC9 Importance Level: High
Primary Actor: PPPK Staff		Use Case Type: Primary, Essential
Stakeholder and Interests:		PPPK Staff - Needs to upload official accreditation certificates for academic programs to maintain proper records and ensure compliance with MQA requirements.
Brief Description: This use case describes how PPPK staff uploads accreditation certificates into the UMT Accreditation System for approved academic programs.		
Trigger: An academic program has received accreditation, and its certificate needs to be uploaded.		
Type: External		
Relationship:		
Normal Flow of Events:		
<ol style="list-style-type: none"> 1. PPPK staff logs into the system using valid credentials. 2. PPPK staff navigates to the "Certificates" section in the system. 3. The system displays a list of academic programs requiring certificate uploads. 4. PPPK staff selects the specific program for which the certificate will be uploaded. 5. PPPK staff uploads the accreditation certificate file in the required format (e.g., PDF). 6. The system validates the uploaded file (e.g., checks file type, size, and completeness). 7. Upon successful validation, the system stores the certificate and associates it with the selected academic program. 8. The system confirms the successful upload to the PPPK staff and updates the program's status. 9. PPPK staff logs out of the system after completing the upload. 		
Sub-Flows:		
6a. If the uploaded file is invalid, the system notifies the PPPK staff and prompts for a re-upload.		
Alternate/Exceptional Flows:		
5a. If the program is not listed, the system notifies the PPPK staff that the program may not be eligible for certificate upload or may need verification.		

The use case above represent the main functions that must have in the accreditation system. The main use case for this system is Registration of the new program which. Alternate flows highlight potential issues and system responses ensuring all the error and problem will be handled properly to avoid the system from crash.

4.3 Activity Diagrams

Activity diagrams describe how UMT accreditation System's activities are coordinated to provide a service which can be at different levels of abstraction. The diagrams illustrate the logical sequence of activities, decisions, and interactions among system components or actors. They provide a visual representation of the key workflows in the UMT Academic Program Accreditation System. Paradigm (2024)

- **Activity Diagram for registration of PPPK Staff**

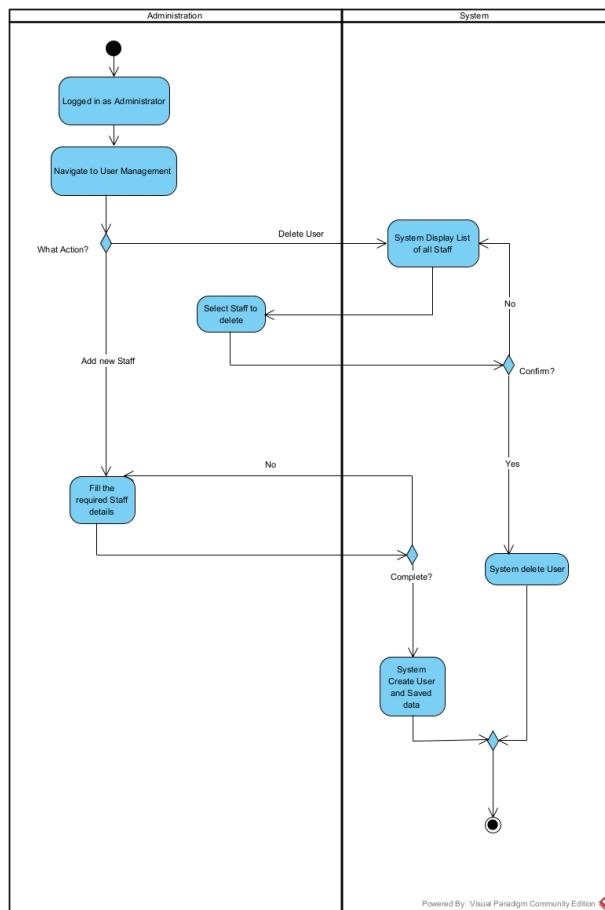


Figure 4.2: Activity Diagram for Staff Registration

Activity diagram above shows how the administrator can create, update or delete the staff's profile. The diagram begin with the administrator logged in as administrator. Then, they navigate to use management. There, the administrator can choose to

add or delete staff .If the administrator want to add staff , they are required to fill in the staff's information.then the system will validate the data. If there is something wrong the system will prompt the user to fix or fill the required field.If everything is correct than the system will create the profile for the staff. If the administrator want to delete user, the system will display all the staff, the administrator then choose which staff to delete. After that, the system will ask the administrator if they want to confirm deleting the staff, if yes than the system will delete the staff.

- **Activity Diagram for view program**

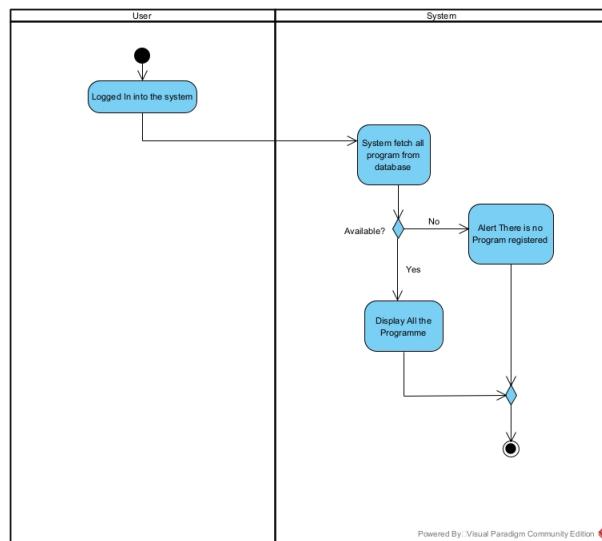


Figure 4.3: Activity Diagram for View Program

The activity diagram above shows the process of viewing program. The user will log in into the system. Then, the system will try to fetch the data from database. If there is no program in database, the system will alert the user that there is no program registered in database. Else, the system will display the data from the database.

- **Activity Diagram for Registration of Internal Evaluators**

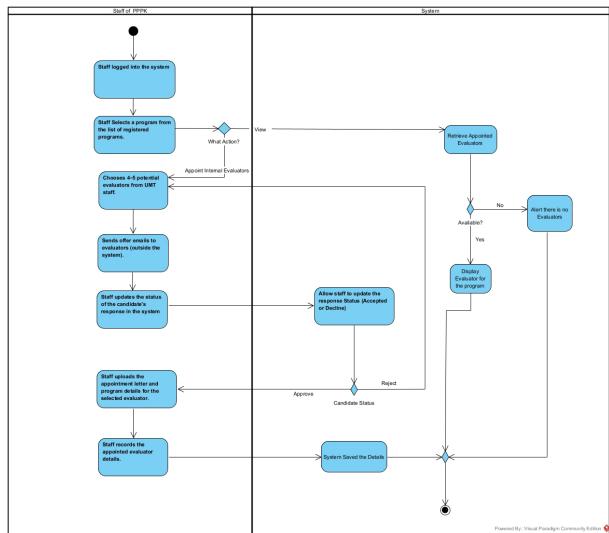


Figure 4.4: Activity Diagram for Registration of Internal Evaluators

The activity diagram above shows the process of registration internal evaluators. The process begin with the staff logged in into the system. Then the staff will navigate to the internal evaluators registration. Then,they will selects a program from the list of registered programs. Then, the staff can choose whether they want to view evaluators or appoint new Evaluators. If they want to appoint internal evaluators, then they chooses 4-5 potential evaluators from UMT Staff, then they send offer emails to evaluators using email. Staff then update the status of the candidate in the system.If the candidate of the evaluators reject or accept the staff updates the decisions in the systems. If candidate approve staff uploads the appointment letter and program details for the evaluators and then records the appointed evaluators details.If the candidate rejects than the system prompt the staff to choose another candidate. If the staff chose to view the appointed evaluators the system will try to retrieve the evaluators for the program if there is no evaluators the system will alert the staff there is no evaluators. If there are evaluators the system will display them to the user.

- **Activity Diagram for Registration of New Program**

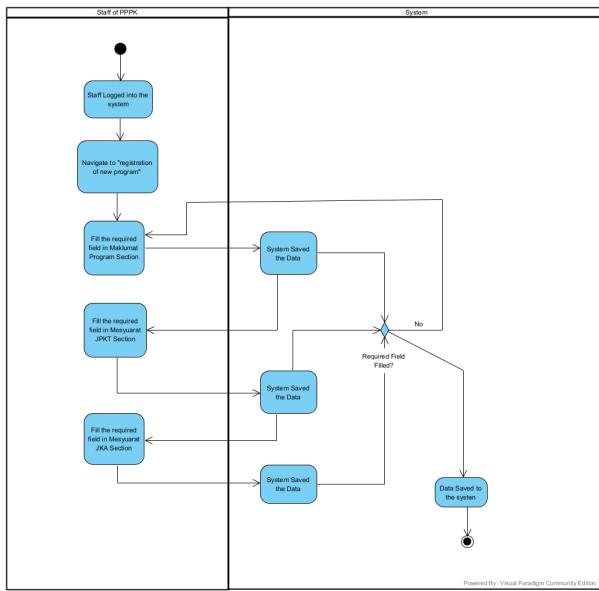


Figure 4.5: Activity Diagram for Registration of New Program

The activity diagram above shows the step by step of the process of registration of new program. It's start with the staff logged into the system, than they will navigate to "Pendaftaran Program" section. There, firstly they need to fill the section of maklumat program, then they require to fill the JKPT Section and lastly the JKA Section then the system will check if all the required field is filled if no the system will prompt the user to fill the required field. Else, the system will save the data into the database

- **Activity Diagram for PA and FA Submission Details**

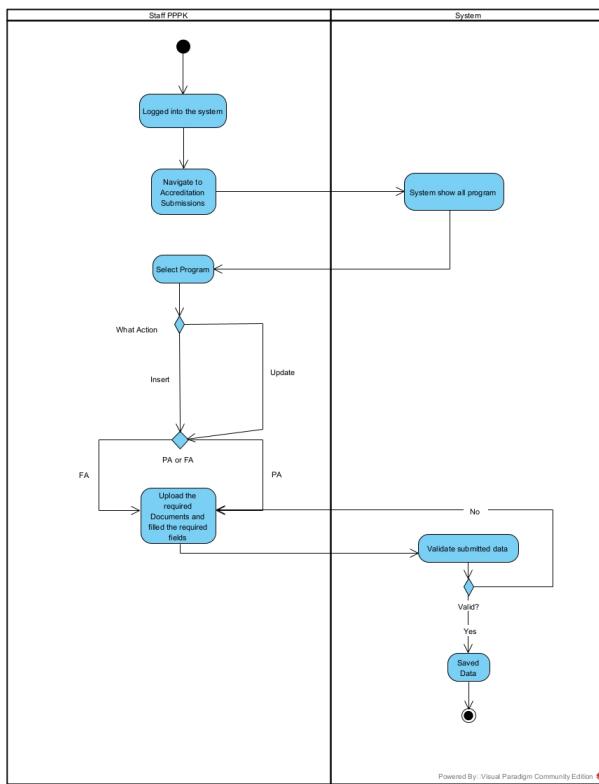


Figure 4.6: Activity Diagram for PA and FA Submission Details

The activity diagram above shows the process of PA and FA submission details. It starts with the staff logged into the system. Then they will navigate to "Accreditation Submission" section. Then the system will show the list of all program. The staff then select program and chose whether to insert or to update after that the user also need to choose which accreditation details which is for FA or PA. Then, the staff upload the required documents and filled the necessary fields. Systems than validate the submitted data whether it's valid or not. If not valid the system prompt the user to correct the forms and then resubmit. Then if it is valid the system will save the data to the database.

- **Activity Diagram for Observation from MQA**

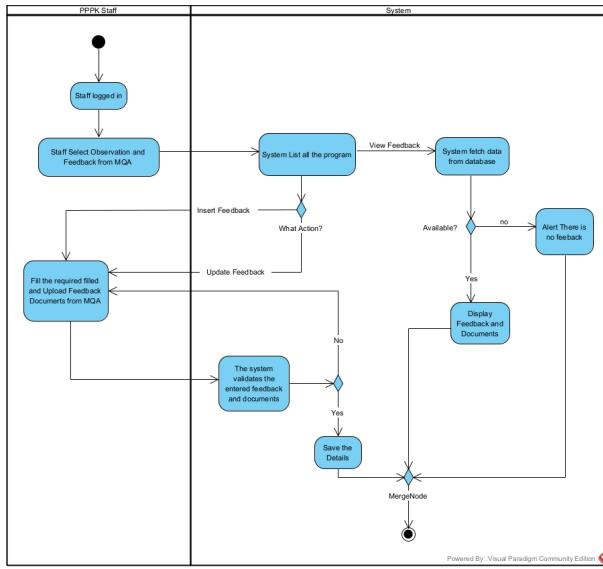


Figure 4.7: Activity Diagram for Observation from MQA

The activity diagram above show the process of observation and Feedback from MQA. After the staff logged and navigate to "Observation and feedback" section, the system will list all the program available. Then, the staff can choose to insert feedback or update feedback . then they required to fill the required field and upload the feedback documents from MQA. The system than will validate the entered feedback and the documents. If not valid then the system will ask the user to refilled and correct the forms and documents. If the documents is valid then the system will saved details. If the staff want to view feedbacks the system will fetch from the database, if there is no feedback the system will prompt the user that there is no feedback available. If available it will display the feedback and the documents.

- **Activity Diagram for Payment Records**

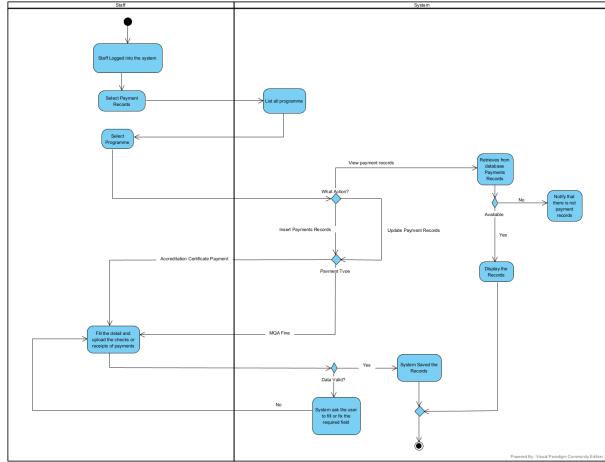


Figure 4.8: Activity Diagram for Payment Records

The above diagram shows the step by step process of payment records process. After the staff logged in and navigate to the "Payment Records" section, The system will list all the program available. The staff then will select the program from the list. The user than can choose whether they want to view, insert or update payment records. If they want to insert or update payment they can chose to insert into MQA Fine or Accreditation Certificate Payment. Then they need to fill the detail and upload the checks or receipts of payments. The system than will validate the forms if the required field is filled or not. If not valid then the system will ask the user to refilled and correct the forms .If the documents is valid then the system will saved details. If the user want to view the payment records, the user will select the program from the list and then the systems will retrieve it from the database if the data is not available it will prompt the user that there is no payment records. If payment records is available it will display all the records.

- **Activity Diagram for Upload Accreditation Certification**

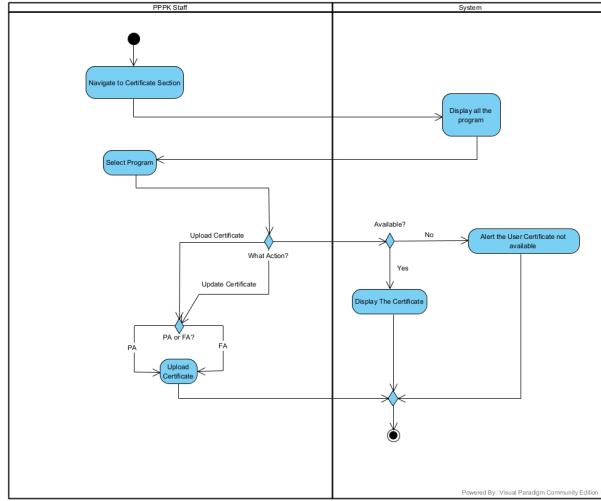


Figure 4.9: Activity Diagram for Upload Accreditation Certification

Activity diagram above show the process of upload accreditation certificate. After user logged in and navigate to Certificate Section, the system will fetch and display all the program. The user will select program and will choose whether to upload certification , update or view the certification if the user want to upload or update the user need to choose to update or upload for PA or FA. Then, the user will upload the certificate. If the user want to view the certificate the system will check whether the certificate is available or not if yes the system will display else it will prompt the user that the certificate for that program is not available.

4.4 Class Diagram

According to geeks for geeks website class diagrams are a type of UML (Unified Modeling Language) diagram used in software engineering to visually represent the structure and relationships of classes within a system i.e. used to construct and visualize object-oriented systems. This diagram is important in understanding the system's design, offering insights into its foundational architecture and ensure the proper organization of functionality.

For the UMT Academic Program Accreditation System, the class diagram will highlight the key components, such as users, utilities, and databases, along with their relationships and their behaviour. By examining this diagram, developers will get clear idea and overview of overall projects.

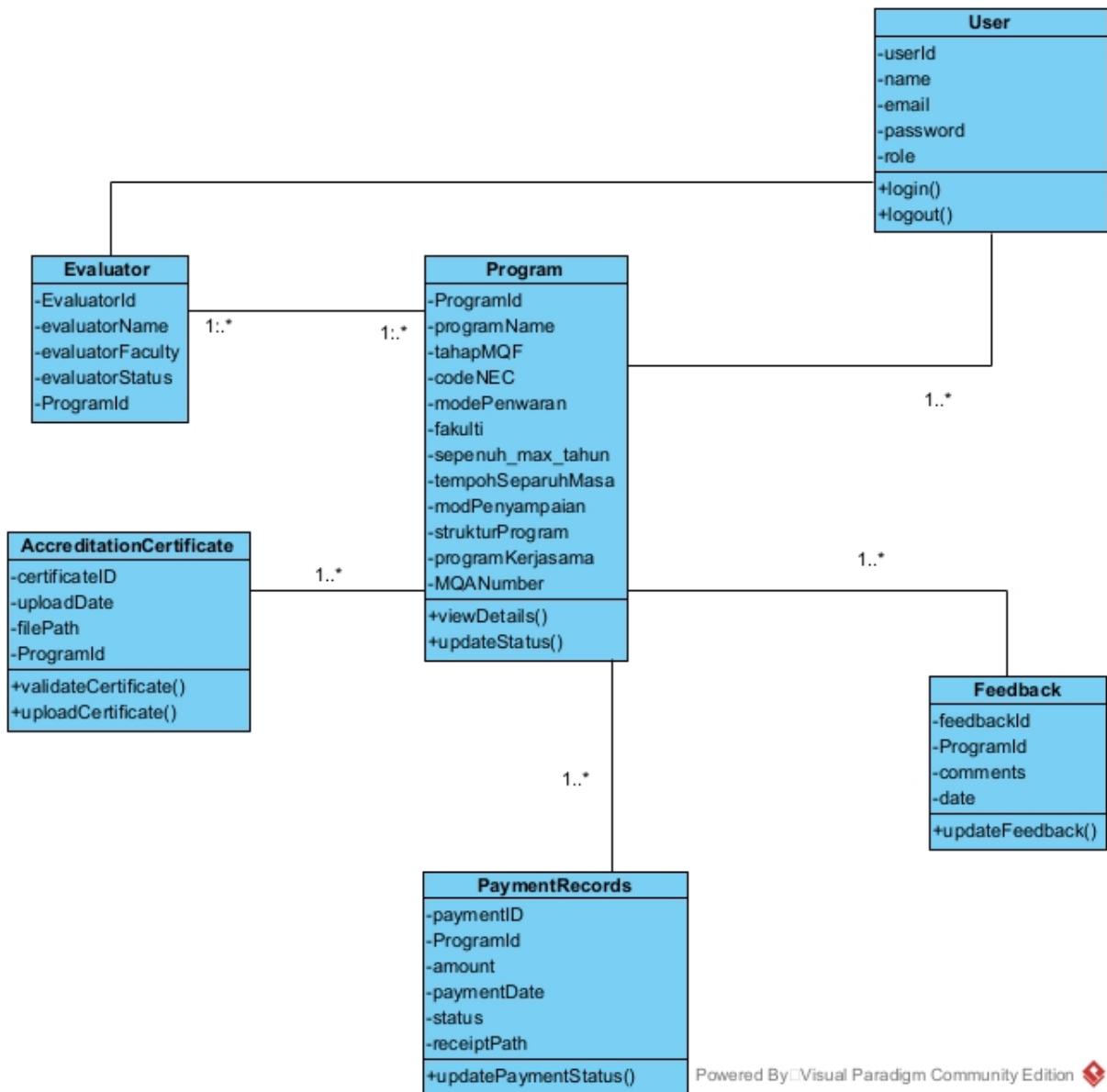


Figure 4.10: Class Diagram for UMT Academic Program Accreditation System

The class diagram above illustrates the primary components of the UMT Academic Program Accreditation System, highlighting their attributes, methods, and interrelationships. The diagram reveals that both the **Administrator** and **PPPKStaff** classes are derived from the **User** class through generalization, as they share common data and functionalities.

The **Program** class serves as the central entity, connecting to several other classes, including **Evaluators**, **AccreditationCertificate**, **PaymentRecords**, and **Feedback**. These associations reflect the pivotal role of the program in the accreditation process.

Furthermore, **User** Class will represent the user of the system it has a role attributes to determine whether the user is a PPPK Staff or Administrator of PPPK.

4.5 Sequence Diagrams

Sequence Diagrams are interaction diagrams that detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and show the order of the interaction visually by using the vertical axis of the diagram to represent time what messages are sent and when.

In the context of this system, the sequence diagram plays aracial role in illustrating how each cocomponent, such as the PPPK staff, interacts with the with the Register Prograand theodule and the Database. this sequence diagram will ease the developer by detailing the process of each interaction and

- **Sequence Diagram for Staff Registration**

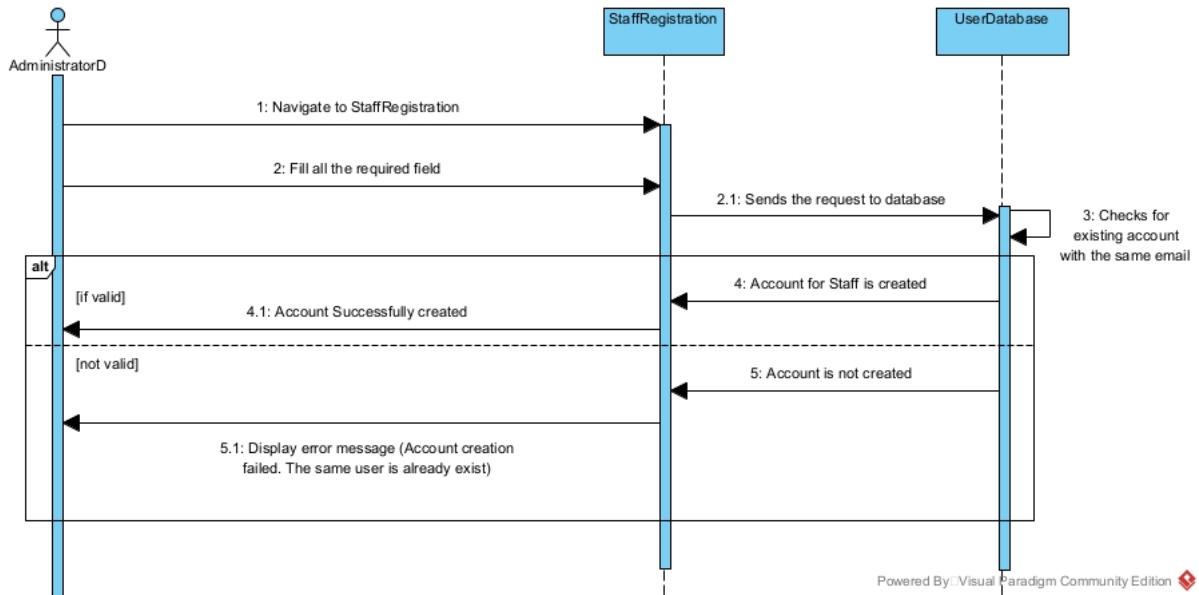


Figure 4.11: Sequence Diagram for Staff Registration

The sequence diagram above shows the Staff Registration Process. The Administrator will log into the system and navigate to staff registration and enter the required details. The StaffRegistration module request to save the data into the user database. The database then will check if the username or staff id is already exist if no, the Staff account will be created else the system will notify and alert the Administrator that the user with the same username or staff id is already exist.

- Sequence Diagram for Program Registration

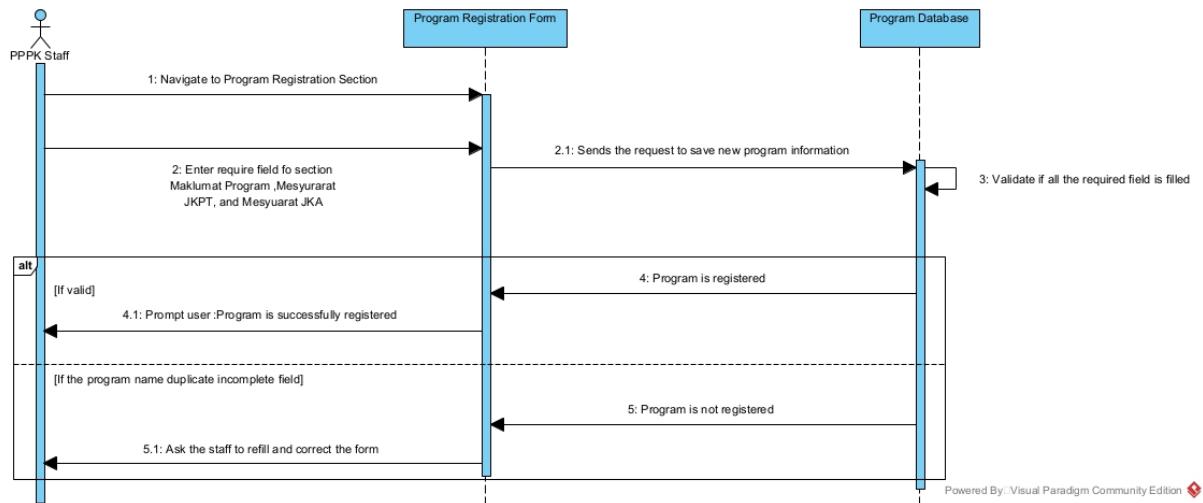


Figure 4.12: Activity Diagram for Program Registration

The sequence diagram above shows the flow of the process of program registration. First, the staff will log in into the system and navigate to the Program Registration Section. The Staff then required to fill 3 sections which are Maklumat Program, Mesyuarat JKPT and Mesyuarat JKA. The module then will send the request to save the new program information to the program database. The system then will check if there is duplicate in data entry such as duplicate program name. If there's none the program is registered and the system will notify the staff that the program is registered. Else, the program is not registered and will alert the staff that there is a duplicate or the required field is not filled by the Staff.

- Sequence Diagram for Payment Records

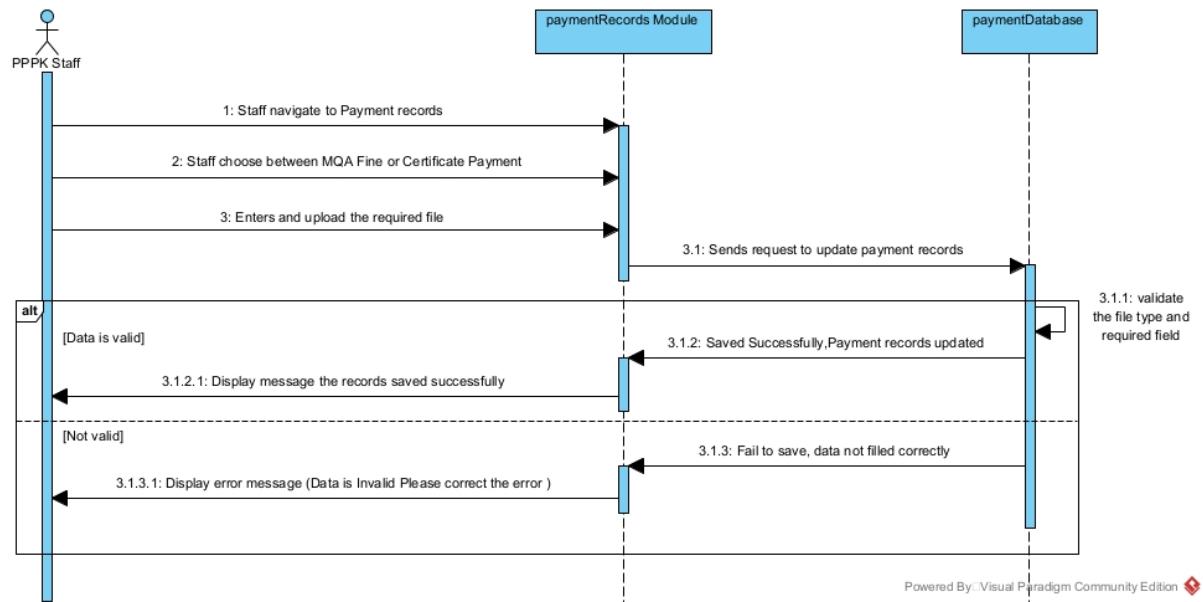


Figure 4.13: Sequence Diagram for Payment Records

The Sequence Diagram above show the sequence diagram for payment records. The flow start with the staff navigate to payment records then the staff will choose between MQA Fine or Accreditation Certificate Payment .After completing the form and upload the required file, the system will check if the file format and the request is valid. if yes it the payment records will be saved and will display the message saying that its saved successfully otherwise it will response failed to save and prompt the staff to check the file format or check the required field.

- Sequence Diagram for View Programs

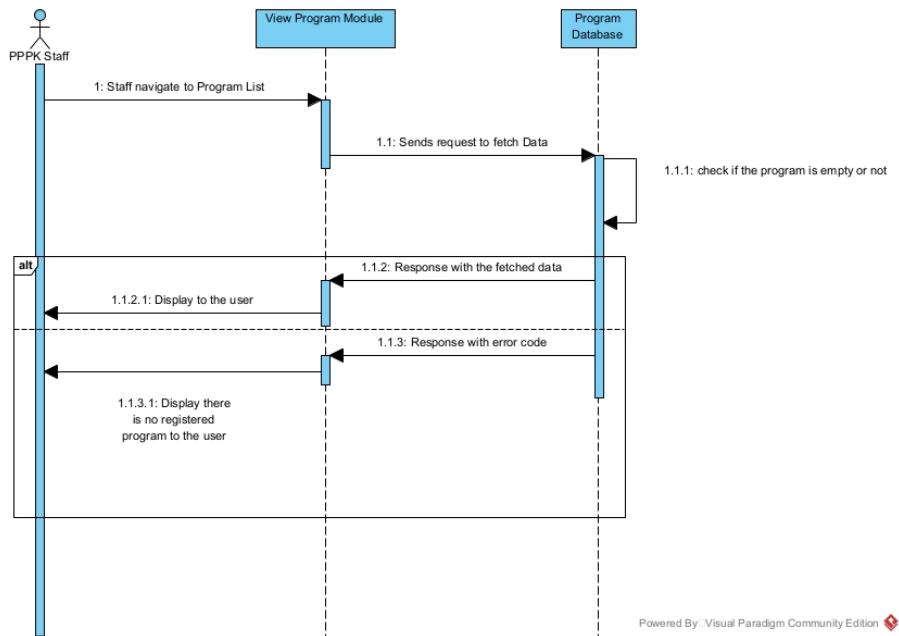


Figure 4.14: Sequence Diagram for View Programs

The Diagram above show the sequence diagram for view programs. The process start with PPPK Staff navigate to program list. Then, the system will sends request to database to try to fetch data. The System will check whether the program list is empty not if. If it is not empty it then will response with the fetched data and display the data to the user. If there is no program it will display there is not registered program to the staff.

- Sequence Diagram for Upload Certificate

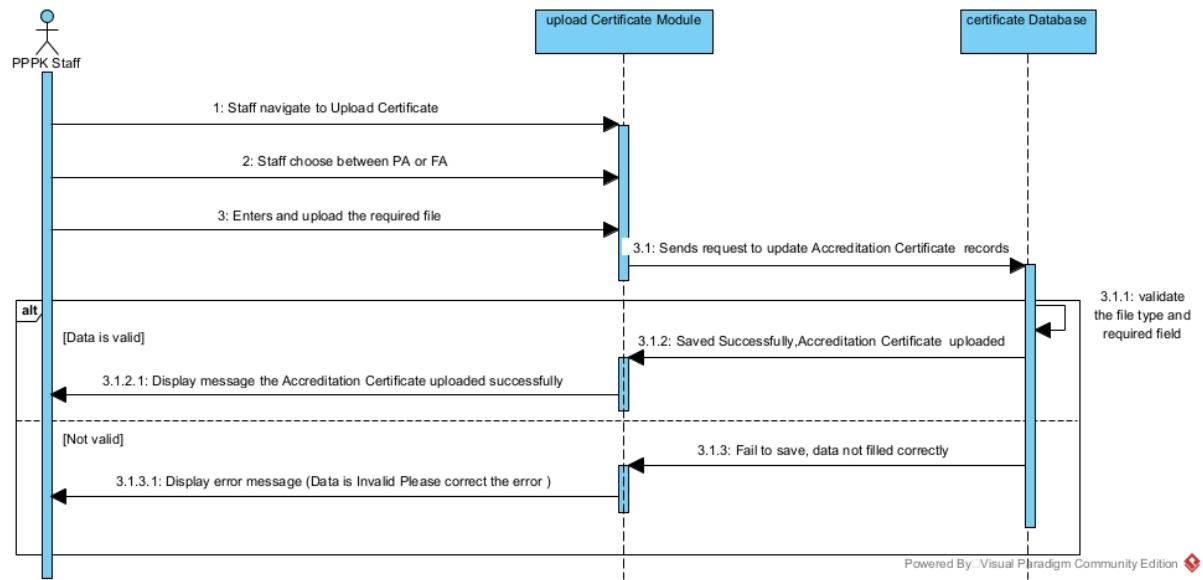


Figure 4.15: Sequence Diagram for Upload Certificate

The diagram above shows the sequence diagram for uploading a certificate. The flow starts with the staff navigating to the 'Upload Certificate' section. The staff will choose between 'PA' or 'FA' certificate to upload. After the staff enters and uploads the required file, the 'upload Certificate Module' will request to send the data to the 'certificate Database'. The system will check whether the field or file upload is valid or filled. If completed and valid, it will save the uploaded certificate with other data. Else, it will display the error message and tell the staff where the error is.

- Sequence Diagram for Registration of Internal Evaluator

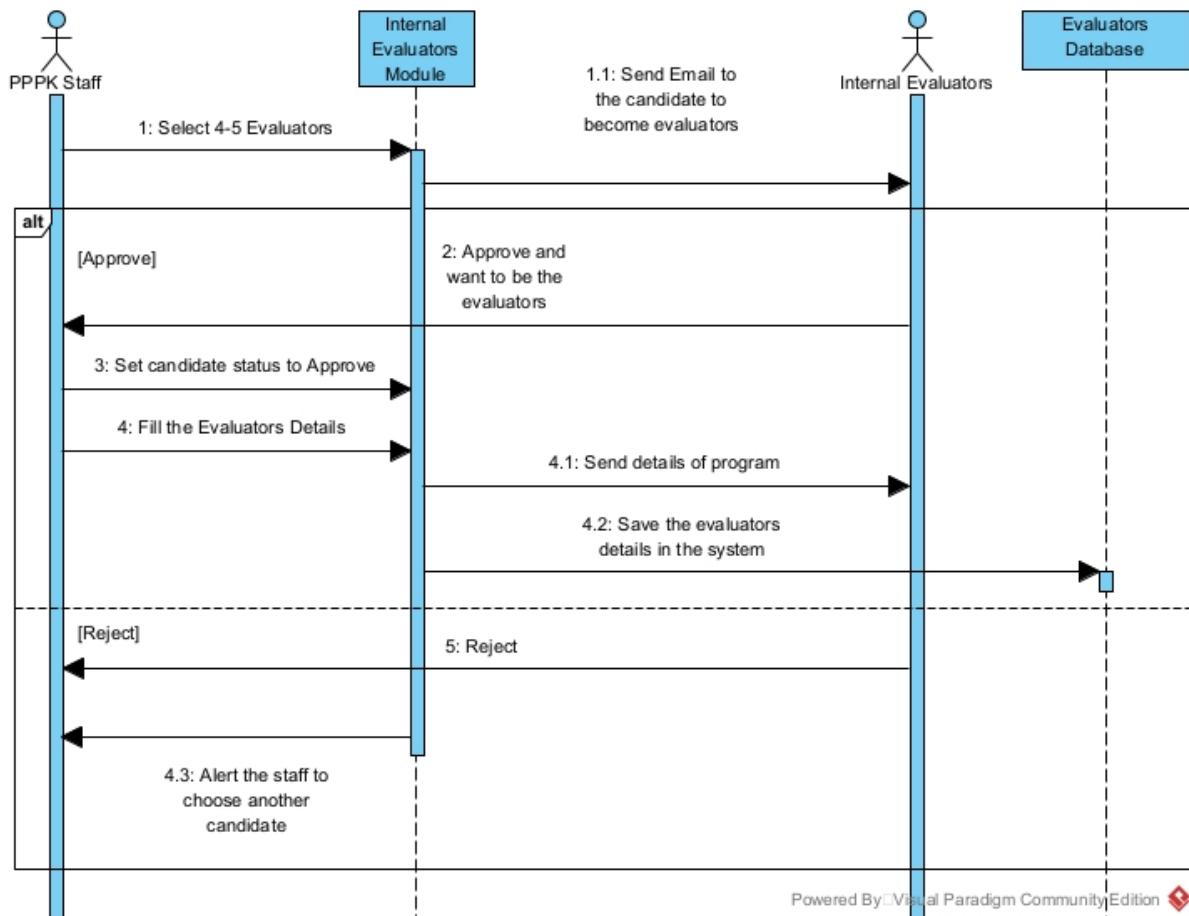


Figure 4.16: Sequence Diagram for Registration of Internal Evaluator

The diagram above shows the sequence of Registration of the internal evaluators. The Process starts with the PPPK staff selecting 4-5 evaluators to be candidates. They will send the email that is generated by the system to be invited as Internal Evaluators. Then the candidate can reject or accept to be evaluators if they accept the staff will update the status of the internal evaluator to accepted and will send the program that will be evaluated and they also will fill the evaluators details than the system will save that details into the systems. If the candidate reject the system staff will update into the system and will choose new Candidate.

- Sequence Diagram for Observation and Feedback by the MQA

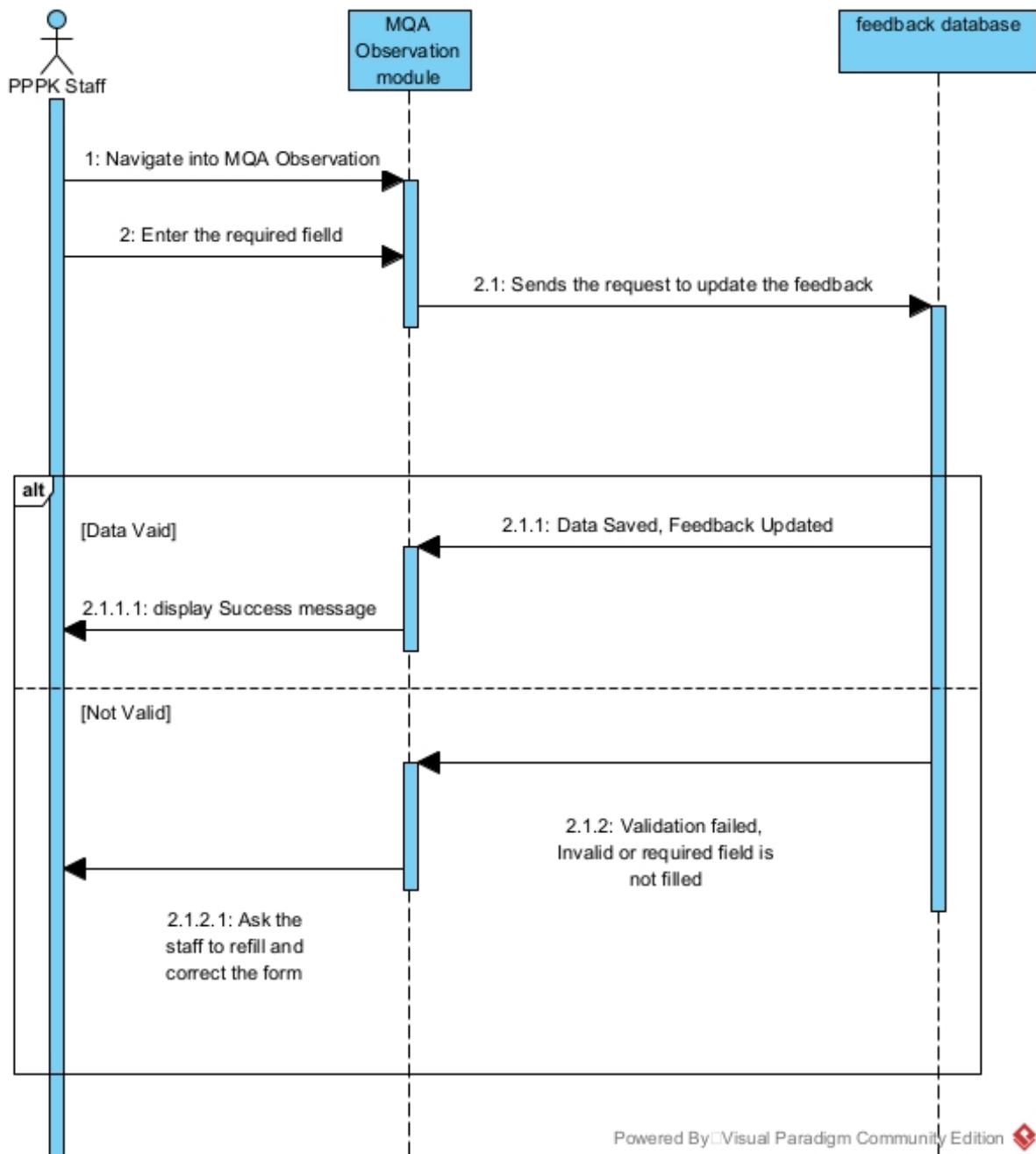


Figure 4.17: Sequence Diagram for Observation and Feedback by the MQA

The above diagram shows the sequence diagram for observation and feedback by the MQA. The workflow starts with PPPK Staff navigate to MQA Feedback section and the staff will fill the required field. Then, system will send the request to update the feedback to the database. The system will check whether the data request is valid or not if yes it will save the data and display the success message to the staff. Else, the validation failed, the system prompt the user to correct and fill all the required field.

- Sequence Diagram for PA and FA Submission Details

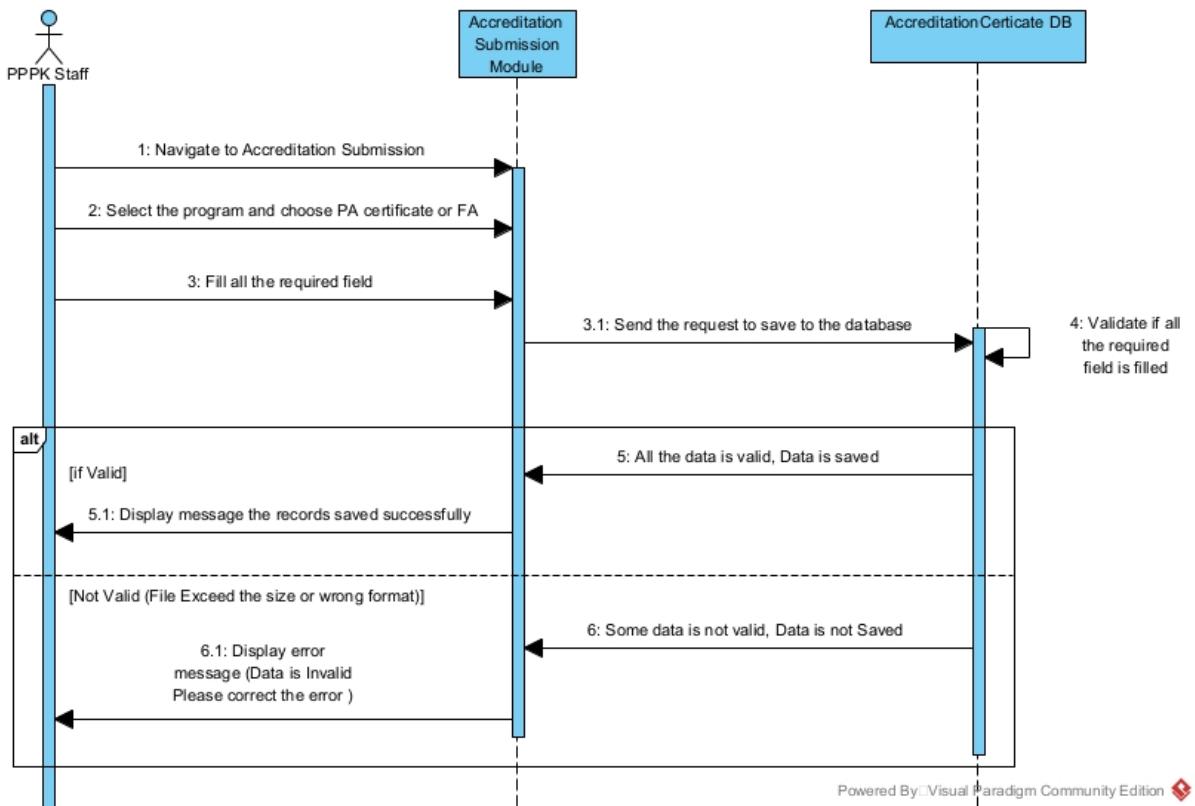


Figure 4.18: Sequence Diagram for PA and FA Submission Details

The above diagram shows the Sequence Diagram for PA and FA Submission Details. The workflow starts with PPPK Staff navigating to Accreditation submission and choosing between PA or FA. The staff then fills the required field. Then, the system will send the request to save the submission details to the database. The system will check whether the data request is valid or not. If yes, it will save the data and display the success message to the staff. Else, if validation failed, the system prompts the user to correct and fill all the required field.

4.6 CRUD Matrix

A CRUD Matrix is a simple way to show how different parts of a system interact with each other through four main actions: Create, Read, Update, and Delete. These actions are the basic operations performed on data in any system. The matrix lists the system's data entities (like tables or modules) on one side and the CRUD actions on the other. At the points where they meet, the matrix shows which actions apply to which data. This helps ensure that all the necessary operations are covered and gives a clear view of how data is handled in the system. It is also useful for spotting missing functions or unnecessary actions.

For the UMT Academic Program Accreditation System, the CRUD Matrix shows how the PPPK staff and administrators work with key parts of the system, like "Programs," "Evaluators," "Accreditation Certificates," and "Payment Records." For example, it highlights tasks like adding new programs, viewing accreditation certificates, updating payment records, or deleting outdated data. This matrix ensures that the system supports all the essential processes for managing academic program accreditation and helps keep the data accurate and up-to-date. The table below shows a detailed overview of these CRUD interactions, explaining all the CRUD interactions and the system workflow.

Actor/ Class	Program	Evaluator	Payments Records	MQA Feedback	Accreditation Certificate	Staff DB
PPPK's Staff	C,R,U,D	C,R,U,D	C,R,U,D	C,R,U,D	C,R,U,D	U,R
Administrator	R	R	R	R	R	C,R,U,D

Table 4.10: CRUD Matrix for UMT Academic Program Accreditation System

CHAPTER 5

SUMMARY

The Software Requirements Specification (SRS) document outlines the design and implementation details of the UMT Academic Program Accreditation System. This system is tailored to streamline the accreditation process by supporting PPPK staff and administrators in managing program registration, accreditation documentation, evaluator feedback, and payment tracking. The document provides a structured framework, detailing both functional and non-functional requirements to ensure the system meets the operational needs of UMT while adhering to MQA guidelines.

The SRS elaborates on key elements such as use cases, class diagrams, CRUD matrices, and sequence diagrams to provide a comprehensive understanding of system functionality and user interactions. Functional requirements define the specific tasks the system must perform, such as uploading accreditation certificates, managing feedback, and updating payment records. Non-functional requirements focus on performance, security, and usability, ensuring the system remains reliable and accessible to users while safeguarding data integrity and confidentiality.

By automating critical tasks and centralizing essential program data, the system aims to enhance efficiency and reduce the workload on PPPK staff. It fosters better coordination among stakeholders, ensures timely updates, and maintains compliance with accreditation standards. This document serves as a blueprint for developers and stakeholders, guiding the implementation of a robust and user-friendly accreditation management system for UMT.

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APPENDICES

APPENDIX A: REFERENCE MATERIALS

.1 Referenced Documents

Below are the documents that been used as a references to gather requirement

A.1 Meeting Minute: Keputusan Mesyuarat Saringan Awal

- **Description:** This documents provides the Data that need to have in Program Registration Module.

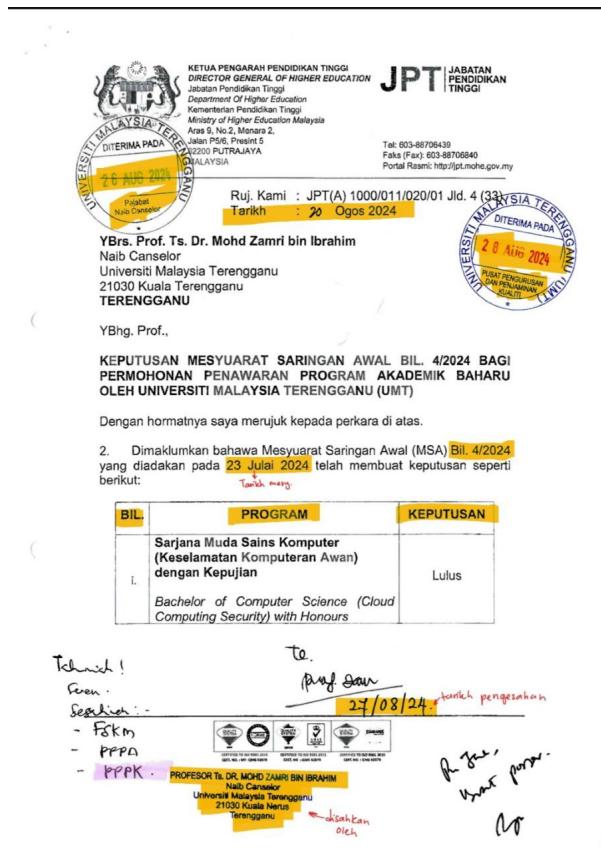


Figure 1: Front Page of Keputusan Mesyuarat Saringan Awal Program Meeting Minute

A.2 Guidelines Documents: Garis Panduan Pembangunan Program Akademik Universiti Awam Edisi Kedua

- **Description:** This documents give the detailed guideline and data that should be have in program registration module



Figure 2: Front Page of Garis Panduan Pembangunan Program Akademik Universiti Awam Edisi Kedua

A.3 Guidelines Documents: National Education Code (NEC-2020)

- **Description:** Extends the details of Program Registration Module .

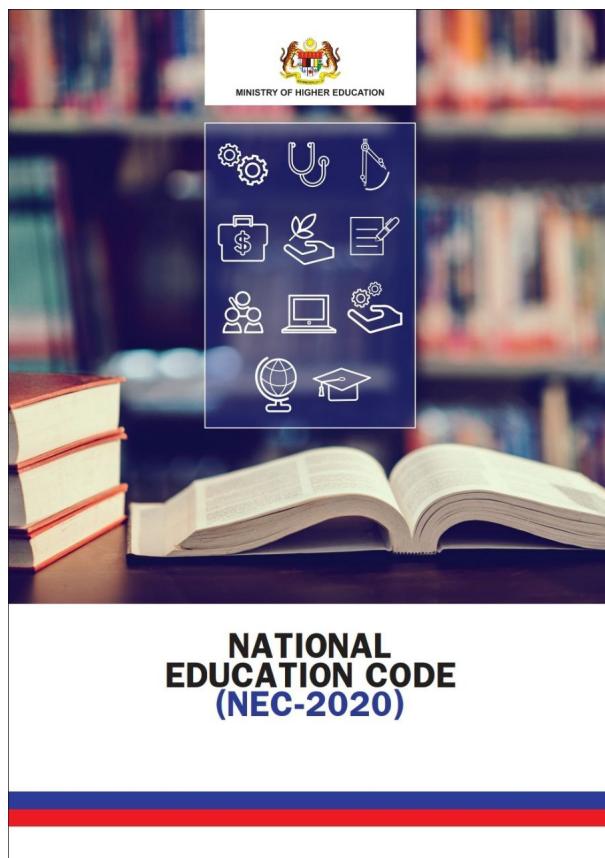


Figure 3: Front Page of National Education Code (NEC-2020)

APPENDIX B: STAKEHOLDER MEETINGS

.2 Meeting Details

Details of the meetings with stakeholders are summarized below:

- **Date:** 24 October 2024
- **Stakeholders:** Puan Fauziyani Binti Ibrahim (Penolong pendaftar kanan PPPK)
- **Agenda:** Gather the requirements of the system and Ask about the first design of the Program Registration.
- **Outcomes:** The requirements were collected such and the design need to be changed to follow the guidelines of the system.

.3 Meeting Pictures



Figure 4: Discussion with Stakeholder on 24 Oct 2024