

**MAJLIS PERWAKILAN PELAJAR UNIVERSITI
MALAYSIA TERENGGANU MANAGEMENT
SYSTEM**

By

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**Thesis submitted in partial fulfilment of the
requirement for the award of the degree of
Bachelor of Computer Science with Maritime Informatics with Honours**

**FACULTY OF OCEAN ENGINEERING TECHNOLOGY AND INFORMATICS
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2023**

THESIS CONFIRMATION AND APPROVAL

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DECLARATION

I hereby declare that this thesis is the result of my own research except as cited in the references.



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MAJLIS PERWAKILAN PELAJAR
UNIVERSITI MALAYSIA TERENGGANU
MANAGEMENT SYSTEM

ABSTRACT

Majlis Perwakilan Pelajar (MPP) is the main role in providing direct services to assist the holistic development, welfare, personality, and softness of university students to shape a superior personality and polish their potential. MPP also can booking room for meeting club organization. In Universiti Malaysia Terengganu (UMT), there is no system to manage the room. MPP did not provide a formal platform for the Club Organization to book the room for meeting. Hence, Majlis Perwakilan Pelajar Universiti Malaysia Terengganu Management System (MPP UMT Management System) was proposed to solve this problem. The system was developed using Waterfall Model Methodology. Netbeans IDE is used as the software development tool PhpMyAdmin as the backend to store data in the database and for the front end of the system, HTML, CSS, and JavaScript are used. From this system, it can be used as a planner for the MPP to track the booking room, leave and complaint from the President Club.

**SISTEM PENGURUSAN
MAJLIS PERWAKILAN PELAJAR
UNIVERSITI MALAYSIA TERENGGANU**

ABSTRAK

Majlis Perwakilan Pelajar (MPP) berperanan utama dalam memberikan perkhidmatan secara langsung bagi membantu pembangunan holistik, kebajikan, sahsiah dan kelembutan pelajar universiti untuk membentuk sahsiah unggul dan menggilap potensi diri. MPP juga boleh menempah bilik mesyuarat untuk organisasi kelab. Di Universiti Malaysia Terengganu (UMT), tiada sistem pengurusan untuk penempahan bilik. MPP tidak menyediakan platform rasmi untuk Presiden Kelab menempah bilik mesyuarat. Justeru, Majlis Perwakilan Pelajar Universiti Malaysia Terengganu (Sistem Pengurusan MPP UMT) dicadangkan untuk menyelesaikan masalah ini. Sistem ini dibangunkan menggunakan “Waterfall Model” metodologi. Netbeans IDE digunakan sebagai alat pembangunan perisian, PhpMyAdmin sebagai bahagian belakang untuk menyimpan data dalam pangkalan data dan untuk bahagian hadapan system menggunakan HTML, CSS dan JavaScript. Daripada sistem ini, ia boleh digunakan sebagai perancang untuk MPP mengesan bilik tempahan, cuti dan aduan daripada Kelab Presiden.

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LIST OF ABBREVIATIONS

MPP UMT	Majlis Perwakilan Pelajar Universiti Malaysia Terengganu
MPP	Majlis Perwakilan Pelajar UMT
HEPA	Hal Ehwal Pelajar UMT
PC	President Club UMT
UTM	Universiti Teknologi Malaysia
UTHM	Universiti Tun Hussein Onn Malaysia
UKM	Universiti Kebangsaan Malaysia
SAW	Simple Additive Weighting
SDLC	System Development Life Cycle
ERD	Entity-Relationship Diagram
SPMP	Software Project Management Plan
SDD	Software Design Documentation
FR	Functional Requirement
NFR	Non-Functional Requirement

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CHAPTER 1

INTRODUCTION

This chapter discusses the introduction of the projects including background of the problem, problem statement and problem solution. Furthermore, research objectives also stated in this chapter with the scopes of the project.

1.1 Project Background

Majlis Perwakilan Pelajar (MPP) plays a key role in directly assisting university students with their overall development, wellness, personality, and softness to develop a superior personality and maximize their potential. Previously, instant messaging tool "Whatsapp" was used to make lodging reservations. This approach is ineffective since the MPP is already perceived as a student, making it difficult for them to locate the data booking room.

1.2 Problem Statements

The problem statement of the MPP UMT Management System as below:

1. Hard to differentiate time and date between booking for room due to duplication information during booking of the room.
2. Due to the nature of manual work, there will be a chance of some error as humans tend to make mistakes in recording the information of the booking room such as club names, details room, details program, time, and date.
3. Hearing complaint from MPP and PC by face-to-face communication leads to miscommunication because MPP didn't act further due to forgetful.

1.3 Problem Solution

Problem solution is a solution based on the problem statement as below:

1. Booking room can be done online, user can select the available booking room in the system. This can avoid duplication room due to details room, time, and date.
2. Date will be updated and easier to be keep in a system that ease the PC to book rooms for meeting program. This can avoid people take easy on booking room for meeting.
3. Complaint module been built for the MPP and President Club to state their problem. This shown that MPP act toward their responsibility

1.4 Objectives

The objectives are:

1. To compile and evaluate the MPP UMT Management System's management system requirements.
2. To create a system for MPP UMT Management System.
3. To create a framework for the MPP UMT Management System.

1.5 Project Scope

1. This system is developed specifically for MPP UMT.
2. This system using web-based application and generated using English language.
3. The user of the system is MPP, PC and Hal Ehwal Pelajar UMT (HEPA).
4. The user can review their booking room using web-based applicaton.
5. The system will use programming language such as JAVA and Javascript.
6. The users for this system are President Club and a few of other Majlis Perwakilan Pelajar society.

1.6 Thesis Outline

The following is a breakdown of this thesis. The overview, issue description, objectives, and scopes are presented in the first chapter's introduction to define the MPP UMT Management System. The Booking, Complaint, and Leave module of the current system is reviewed in Chapter 2's underlying literature. The third chapter of this thesis focuses on the project planning schedule and the process for constructing this system using the Waterfall model. A brief overview of system requirements is given in Chapter 4, along with information on methods for gathering them, functional and non-functional requirements, and requirement analysis methods like use case diagrams, use case descriptions, activity diagrams, class diagrams, sequence diagrams, and CRUD analyses. The design and implementation of the system are highlighted in chapters five and six. The system architecture, database design, interface design, and system development are the main topics in this chapter. The dissertation's conclusion and some recommendations for the future are provided in Chapter 7.

CHAPTER 2

LITERATURE REVIEW

This chapter discusses the introduction, fundamental theory and concept, related works, discussion, and summary.

2.1 Introduction

Using articles, journals, books, current systems, or other sources pertinent to the problem and the field of study, a systematic analysis is known as a literature review. This demonstrates the benefits and drawbacks of current systems as well as research being done to create new, better systems. All the essential elements of the documentation for the system being produced are covered in the literature review. The booking, complaint, and leave modules of the MPP UMT Management System will be examined and analyzed in this chapter.

2.2 Fundamental Theory and Concept

To make use of the MPP, the management system discussions are critical. This MPP UMT Management System's objective is to serve as a platform for users to convey their ideas, bookings, and concerns to the HEPA. The findings of this study can be used to estimate the importance of booking with MPP and the necessity for MPP UMT Management System among users. A literature review, then, is a methodical analysis of articles, journals, books, systems, or other relevant materials connected to the subject and field of study. This highlights the advantages and disadvantages of the systems, as well as the research that may be used to develop new, better systems. This study was conducted to create a new MPP UMT Management System prototype that meets the needs of the MPP.

2.3 Related Works

Based on previous studies, there is no university did the Majlis Perwakilan Pelajar Management System exist before. However, the University Management System will be the reference for the existing system.

2.3.1 Universiti Teknologi Malaysia

Universiti Teknologi Malaysia Management System has a calendar webpage shown in Figure 2.1.



Figure 2. 1: Calendar page of UTM

Figure 2.1, the calendar has been generated by the admin management. The calendar based on the public holiday and a few programs that will be held at the university.

Furthermore, UTM has an online google form for lab equipment and session booking that eases students to book their session and equipment of use. Figure 2.2 and 2.3 shows the lab equipment and session booking webpage.

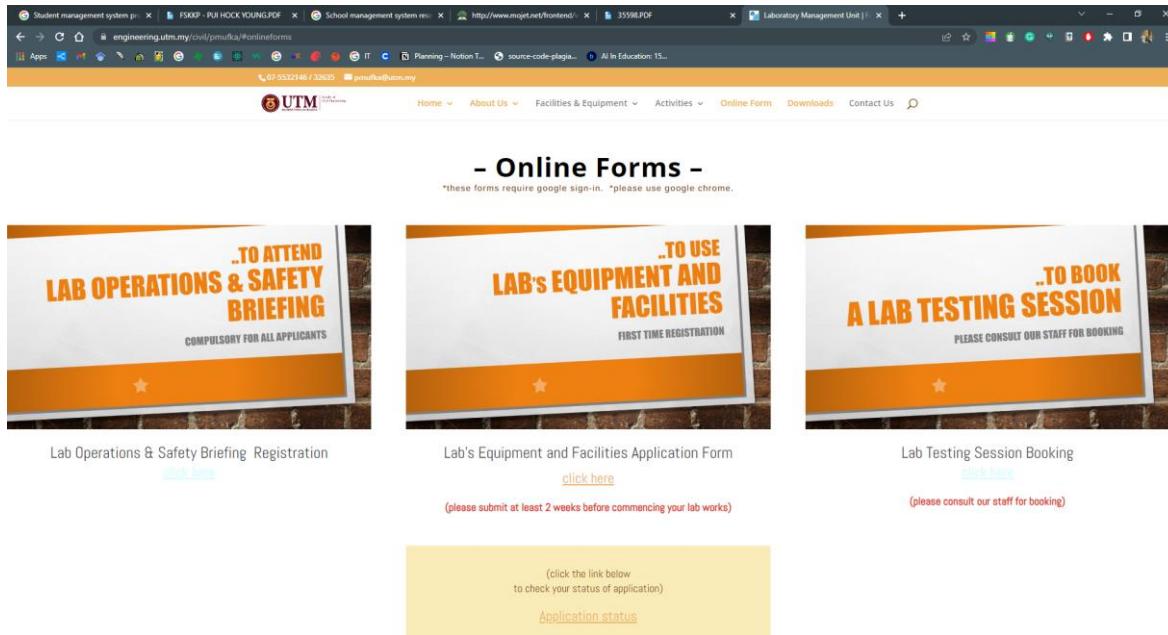


Figure 2. 2: Laboratory Management page of UTM

Application Status						
A	B	C	D	E	F	G
Time of submission	Ref. No	Name	Supervisor	Program / Course	Status	
4/5/2018 22:50:33	PMU0044	Mahamed Firdaus	Prof. Ir. Dr. Mahmood Bin Md Tahir	PhD	5- Approved - Ready for booking	
4/5/2018 22:50:24	PMU0045	K.M. Aminoddin	Prof. Ir. Dr. Mahmood Bin Md Tahir	PhD	5- Approved - Ready for booking	
4/5/2018 22:57:47	PMU0046	Wan No Firduz Binti Wan Hassan	Prof. Ir. Dr. Mahmood Bin Md Tahir	PhD	5- Approved - Ready for booking	
49	1/10/2018 19:50:15	PMU0048	Mohamed Syahmi Bin Zukarnaini	Assoc. Prof. Dr. Tan Cher Seng	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
50	1/10/2018 20:12:14	PMU0049	Cheo Sokian	Dr. Rosli Neer Mohamed	Master by Research 5-Approved - Ready for booking	
51	1/11/2018 03:07:33	PMU0050	Nur Hanjuri Falahi Binti Abdul Halim	Dr. Sophia C. Alib & Dr. Mohammadreza Vafaei	Master by Research 5-Approved - Ready for booking	
52	1/14/2018 12:44	PMU0051	Khadevi	Prof. Ir. Dr. Mahmood Bin Md Tahir	DOCTOR ENGINEERING 5-Approved - Ready for booking	
53	1/15/2018 23:50:56	PMU0052	Eliza Hanum Binti Shaari	Dr. Nor Hasnah Binti Abdul Shukor Lin	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
55	1/15/2018 23:57:40	PMU0054	Farah Hanum Binti Shahri	Dr. Nor Hasnah Binti Abdul Shukor Lin	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
56	1/18/2018 01:52	PMU0055	Mohamed Raffly Binti Ibrahim	Dr. Abdullah Zawawi Bin Awang	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
57	1/18/2018 01:57:35	PMU0056	Muhammad Azrin Bin Kamarrudin	Dr. Abdullah Zawawi Bin Awang	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
59	1/18/2018 01:57:35	PMU0058	Arif Alzat Bin Mohd Nizam	Dr. Nur Haliza Binti Abd. Khalil	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
60	1/18/2018 23:27:07	PMU0059	Ruhai Pervez Memon	Assoc. Prof. Dr. Abdul Rahman Bin Mohd Sam	PhD 2-Incomplete - Please Resubmit - Refer to the email	
64	1/20/2018 23:31:20	PMU0063	Rahmat Hidayat Bin Rusdi	Prof. Dr. Ahmad Bahaudin Bin Abd Rahman	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
65	1/20/2018 23:31:20	PMU0064	Abdulrahman Fuazan bin Mahadzir	Prof. Dr. Ahmad Bahaudin Bin Abd Rahman	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
66	1/25/2018 01:26:35	PMU0065	Darshana Binti Peter Mangane	Dr. Mohd Faizal Zainal Abidin	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
67	1/29/2018 09:42	PMU0066	Mohammed Armeen Zahid Bin Malek Zafullah	Assoc. Prof. Dr. Abdul Rahman Bin Mohd Sam	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
68	2/2/2018 22:23:53	PMU0067	Dhanash Kumar	Assoc. Prof. Dr. Abdul Rahman Bin Mohd Sam	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
69	2/3/2018 20:19:35	PMU0068	Abdul Wahied	Assoc. Prof. Dr. Abdul Rahman Bin Mohd Sam	Master by Taught Course 5-Approved - Ready for booking	
70	2/4/2018 0:24:37	PMU0069	Hassan Amer Ali	Assoc. Prof. Dr. Abdul Rahman Bin Mohd Sam	Master by Taught Course 5-Approved - Ready for booking	
71	2/5/2018 3:17:01	PMU0070	Mohammed Noor Ariff Bin Imran	PhD 2-Incomplete - Please Resubmit - Refer to the email		
72	2/6/2018 7:03:59	PMU0071	Aina Mawarr Binti Ahmad Norain	Prof. Dr. Mohammad Bin Ismail	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
73	2/17/2018 20:29:38	PMU0072	Fatin Nadhirah binti Mohamad	Assoc. Prof. Dr. Abdul Rahman Bin Mohd Sam	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
74	2/26/2018 16:12:32	PMU0073	Siew Zhi Yang	Dr. Mohd Azreen Mohd Ariffin	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
75	2/26/2018 19:56	PMU0074	Notul M. Ali Abdulkaleeb	Dr. Mahalyana Binti Abi B. Kadir, Assoc. Prof. Dr. Abdul Rahman Bin Mohd San Undergraduate	Master by Taught Course 5-Approved - Ready for booking	
76	2/26/2018 2:24:43	PMU0075	Baraa Najah Abdullah	Dr. Mohd Yunus Bin Ismail	Master by Taught Course 5-Approved - Ready for booking	
77	3/2/2018 3:11:16	PMU0082	Muhamad Sharidq Bin Mohd Shukri	Dr. Mohd Yunus Bin Ismail	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
84	3/4/2018 2:33:40	PMU0083	Nur Syahida Binti Hamizi	Dr. Rosli Noor Mohamed	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
85	3/5/2018 22:10:23	PMU0084	Abdul Aziz Bin Mohd Azmi	Dr. Sheik Po Ngian	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
86	3/5/2018 22:43:23	PMU0085	Aba Shazwan B Amir	Dr. Chinthan Amindin	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
88	3/5/2018 23:08:23	PMU0087	Nurdini Binti Zukerpill	Dr. Sheik Po Ngian	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
89	3/5/2018 23:11:33	PMU0088	Nur Afiza Izzati Binti Ahmad	Dr. Sheik Po Ngian	Undergraduate - FYIP/PSM 5-Approved - Ready for booking	
91	3/12/2018 18:39:16	PMU0090	Mahmoud A M Alhailati	Dr. Mohammadreza Vafaei	Master by Taught Course 5-Approved - Ready for booking	

Figure 2. 3: Status Laboratory page of UTM

Figure 2.2 and 2.3, UTM has an application status for the equipment using & lab testing session. The data for each form submitted will be analyzed and the result will be informed by email.

UTM has a comments feed show in the Figure 2.4.

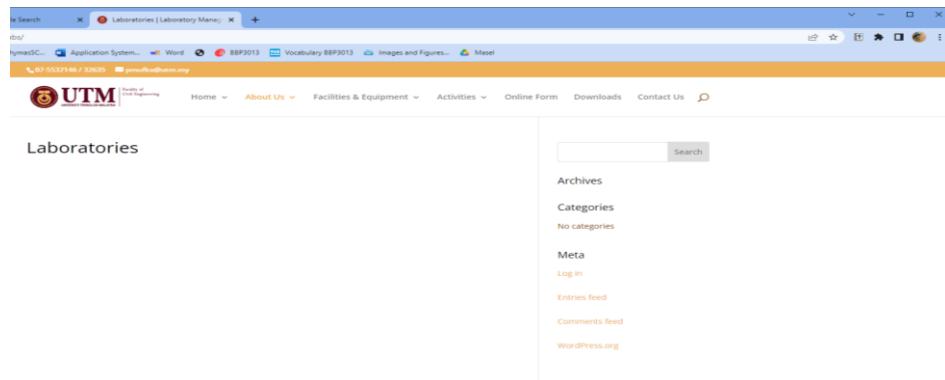


Figure 2. 4: Comment Feed page of UTM

Figure 2.4, it can be seen the comment feed show meta mode of the entries feed, comments feed and a blog set up using WordPress.org. The meta mode that can be updated soon for the student to comment on the use of the system.

UTM has a contact us webpage show in the Figure 2.5.

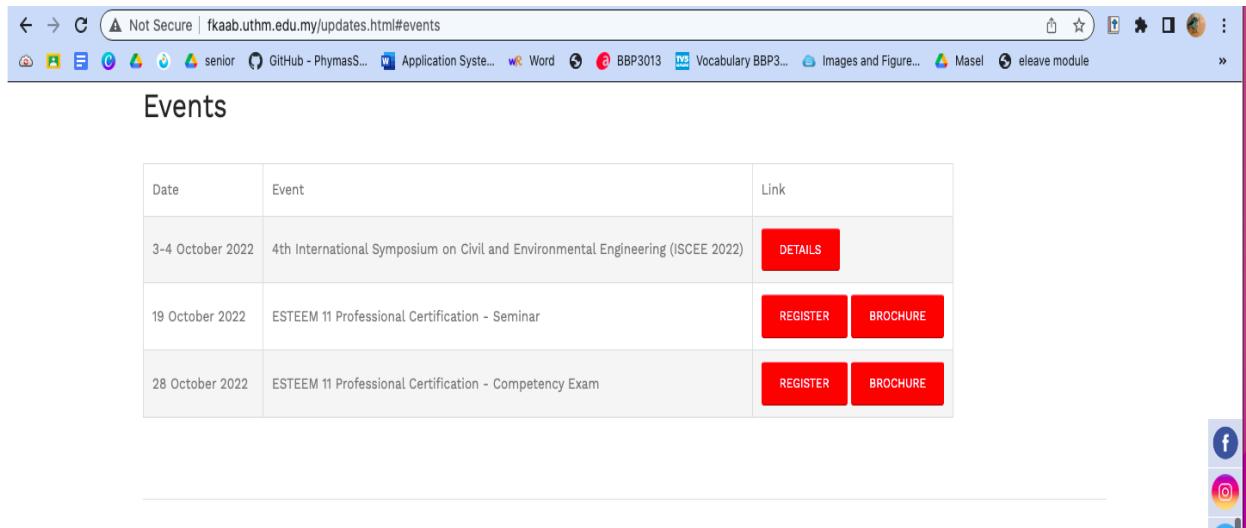
A screenshot of the 'Contact Us' page from the UTM website. The page features a header with tabs for 'Address', 'Opening Hours', 'Call Us', and 'Link'. Below the tabs, there is contact information: 'E-mail : fka@utm.my' and 'Facebook : Faculty of Civil Engineering, UTM JB'. A large button labeled 'SEND A MESSAGE' is centered. Below it, a note says 'Get in touch with us. Your feedback is meaningful for our continuous improvement.' There are four input fields for 'Name', 'Email Address', 'Subject', and 'Message', followed by a 'SEND MESSAGE' button.

Figure 2. 5: Contact us page of UTM

Figure 2.5 the contact us page can send feedback for a continuous improvement for the system.

2.3.2 Universiti Tun Hussein Onn Malaysia

Universiti Tun Hussein Onn Malaysia Management system is observed, Figure 2.6 show the event webpage.



The screenshot shows a web browser window with the URL "Not Secure | fkaab.uthm.edu.my/updates.html#events". The main content is titled "Events" and displays a table with three rows of information:

Date	Event	Link
3-4 October 2022	4th International Symposium on Civil and Environmental Engineering (ISCEE 2022)	DETAILS
19 October 2022	ESTEEM 11 Professional Certification - Seminar	REGISTER BROCHURE
28 October 2022	ESTEEM 11 Professional Certification - Competency Exam	REGISTER BROCHURE

On the right side of the table, there is a vertical sidebar with icons for information, Instagram, and other social media links.

Figure 2. 6: Event page of UTHM

Figure 2.6, the event webpage shows straight date with the agenda for the upcoming week. The event date generated by the admin management after the success of the proposal.

UTHM has an open application for lab equipment and a few videos about the laboratories that they will use, this shows in Figure 2.7 and 2.8.

For Students		
No.	Application	Link
1	Student E-mail	CLICK
2	Student Academic Information System (SMAP)	CLICK
3	Online Application for Student Admission	CLICK
4	UTHM Academic Online Resources (AUTHOR)	CLICK
5	UTHM Bus Tracking System	CLICK
6	Academic Staff Teaching Assessment System (SPARK)	CLICK
7	Online FYP Report Submission (e-Report)	CLICK
8	Industrial Training Management System (e-LI)	CLICK
9	Survey Camp Management System (SysCamp)	CLICK

Figure 2. 7: Laboratory Managemet page for student of UTHM



Advanced Materials Engineering Laboratory

Materials Engineering Laboratory

Heavy Structures Laboratory



Light Structures Laboratory



Computer Laboratories 1, 2 & 3



Important Links

No.	Description	Link
1	About Materials Engineering Laboratory	WATCH
2	About Light Structures Engineering Laboratory	WATCH



Figure 2. 8: Laboratory Management page of UTHM

Figure 2.7 and 2.8, the UTHM laboratory management has open sources for a few applications that can submit face to face to office management. UTHM provides some videos about the laboratory, meeting room, tutorial rooms and resources room for further references.

UTHM has a community support system, Figure 2.9 shows the community support page.

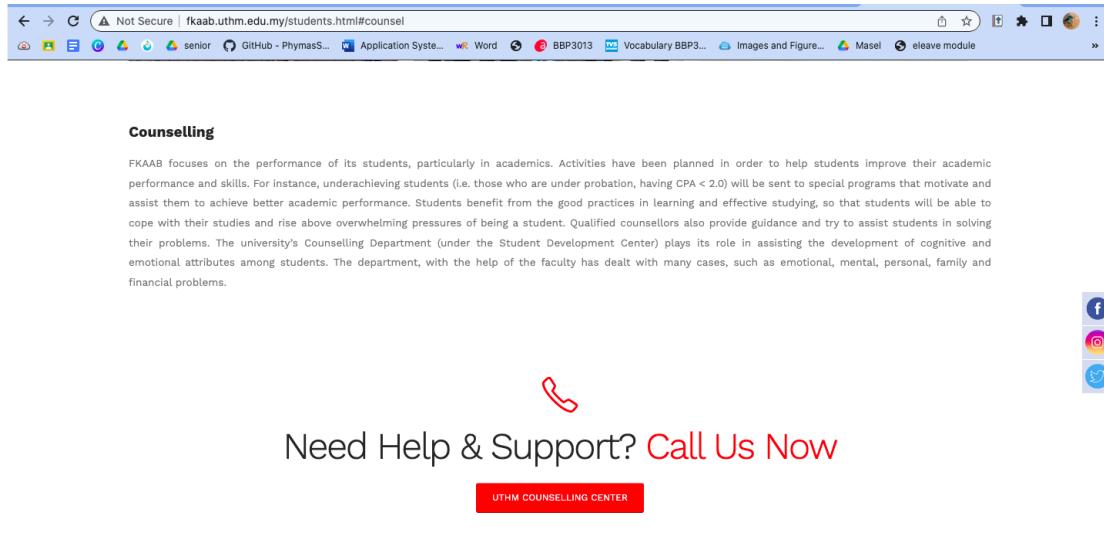


Figure 2. 9: Counseling page of UTHM

Figure 2.9, the community provides counseling, welfare, career, and academic advisor for students who have rough times. Students are placed in capable hands of skilled and experienced personnel and are guided throughout their academic endeavor in the university.

2.3.3 Universiti Kebangsaan Malaysia

Based on the studies, the Universiti Kebangsaan Malaysia Management system is observed. Figure 2.10 shows the faculty engineering page.



Figure 2. 10: Faculty Engineering page of UKM

Figure 2.10, it can be seen that the faculty engineering page consist date with the agenda for the upcoming week. The event will also be generated by the admin management after the success of the proposal. The post for each agenda will be post based on faculty.

Other than that, UKM has Hal Ehwal Pelajar page in Figure 2.11.

The screenshot shows a web browser window with the URL ukm.my/hepukm/muat-turun/. The page content is organized into several sections:

- FELO**:
 - BORANG PERMOHONAN FELO PENGHUNI KOLEJ KEDIAMAN
 - BORANG PENYAMBUTAN FELO
- INSURANS PELAJAR**:
 - Borang Tuntutan Kemalangan
 - Borang Tuntutan Untuk Rawatan Perubatan Hospital dan Pembedahan (Pelajar Antarabangsa)
- SKIM TABUNG PELAJAR**:
 - Skim Tabung Kebajikan Pelajar (STKP)
 - Borang Ulasan Pusat Kesihatan Universiti
 - Borang Tabung Endowmen Bantuan Pelajar UKM
 - Panduan Surat Permohonan STKP dan STEBP
- PERSATUAN**:
 - Borang Penubuhan Persatuan
 - Borang Exco Badan Pelajar
 - Borang Permohonan Pelantikan Penasihat
- PINJAMAN & TAJAAN**:
 - PTPTN
 - JPA

At the bottom of the page, there is a blue footer bar featuring the UKM logo and the text "Monday – Thursday 08:00 – 17:00".

Figure 2. 11: HEP-UKM page of UKM

Figure 2.11, it can be seen in the HEP-UKM page consist of a support system for students to access some applications that need to have approval on a face to face basis. Some applications that needed will conclude.

Furthermore, UKM has a laboratory page in Figure 2.12.

The screenshot shows a web browser window for the URL ukm.my/jurutera/download/. The page header includes the UKM logo, the text "NARATIF BAHRU UKM", and "UNIVERSITI KIRANGSAAN MALAYSIA". The main content area is titled "Download" and features a section for "Declaration Form". It includes a graphic of a computer monitor displaying a form and three links: "Entry Permit for Interstate Travel", "Work from Home Application", and "Lab Access Form".

Figure 2. 12: Laboratory page of UKM

Figure 2.12 show Laboratory page that consists an online google form for lab equipment and session booking that eases students to book their session and equipment of use. The data for each form will be analyzed and the result will be informed by call.

2.4 Discussion

The comparison between the three systems evaluated will be illustrated in this section

Table 2.1. The three systems that are evaluated are:

1. Universiti Teknologi Malaysia
2. Universiti Tun Hussein Onn Malaysia
3. Universiti Kebangsaan Malaysia

The system's findings demonstrated that using the Simple Additive Weighting (SAW) method in an MPP UMT Management System is beneficial in assisting in the resolution of decision-making difficulties that cannot be solved using procedural procedures or instruments.

Some system functionalities from all three assessed systems can be retained and improved to create the future MPP UMT Management System for MPP.

Table 2. 1: Comparison of the three reviewed system

University / Criteria	Booking module	Complaint module	Leave module
Universiti Teknologi Malaysia	<ul style="list-style-type: none">• The system has a calendar based public holiday and program.• The system has an online google form for lab equipment and lab session booking.	<ul style="list-style-type: none">• Survey unit in meta page.• Comment feed in meta page.	<ul style="list-style-type: none">• Lab status section that can be seen by students and staff.
Universiti Tun Hussein Onn Malaysia	<ul style="list-style-type: none">• Open application for submission face to face lab equipment.• Straight date with agenda.• Listed description room and lab.	<ul style="list-style-type: none">• Support system section shows contact without any comment entries.	<ul style="list-style-type: none">• Approval face to face.
Universiti Kebangsaan Malaysia	<ul style="list-style-type: none">• Calendar agenda will be generated based on faculty.• Lab access form will be submitted face to face.	<ul style="list-style-type: none">• Support system section for updating program.	<ul style="list-style-type: none">• Approval face to face.

Table 2.11 show that the literature review is important as it gives an overview of the current existing system. This step is to improve the system by adding some new features and making it easy to establish the new process of methodology regarding the new system that will be developed.

To summaries, the system functions and approach of the SAW method utilised in all three systems have been proven to be effective and may be maintained and improved in the future development of the MPP UMT Management System.

2.5 Summary

Each of the three systems has its own merits, whether in terms of functionality or system architecture. According to the literature reviews, none of the three systems contain tracking and monitoring components. All three systems include an improved management module.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discusses the introduction, project methodology and project planning schedule, and summary of the chapter. This chapter also describes how MPP UMT Management System will be created using the System Development Life Cycle (SDLC) phases to ensure that the system achieves the previously stated objectives in the report. This strategy is essential for the system's successful completion.

3.2 Project Methodology

The waterfall model will be used by the system. The waterfall model's phases are depicted in Figure 3.1.

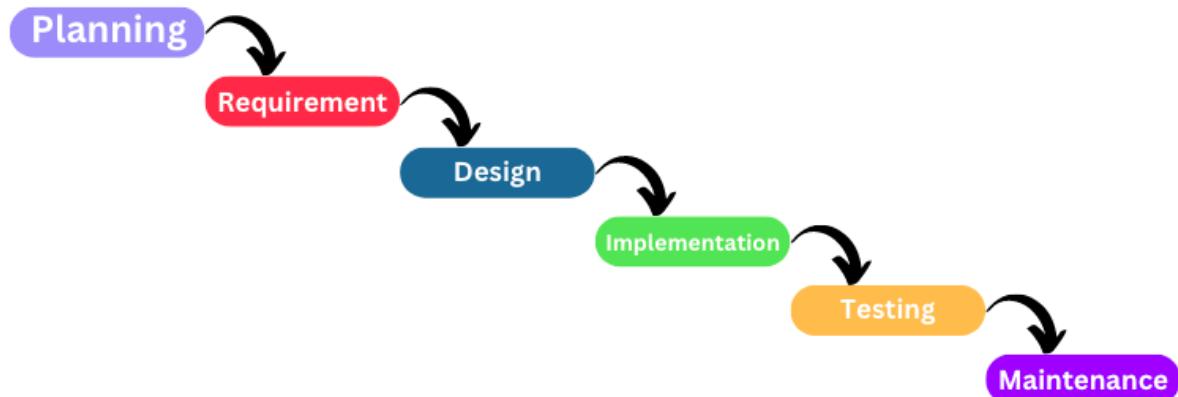


Figure 3. 1: The phases of Waterfall Model (Royce, 1987)

Figure 3.1, this can be seen that the Waterfall Model consists of planning, requirement, design, implementation, testing, and maintenance. It is a division of project activities into linear sequential phases, with each phase having to be completed before moving on to the next.

1 Planning Phase

During the planning phase, the developer creates the project's technical design, task list, resource plan, communications plan, budget, and initial timetable, as well as the user's roles and responsibilities.

2 Requirement Analysis

All project requirements are analyzed, documented in a document, and checked for feasibility analysis if they are valid during this phase. To fulfil the system's requirements, the requirements are acquired via interviewing stakeholders. As a result, the development process will be more efficient and effective. It is critical to examine any constraints and limitations that may affect the development process.

3 System Design

The MPP UMT Management system is prepared with defined hardware and system requirements, such as programming languages, user interface, and more, during this phase. It will define the general architecture of the system. The system interface should be interactive, and the elements in the user interface should be consistent. The database design was then sketched out earlier to reduce redundancy in the data record. The database is designed using the Entity-Relationship Diagram (ERD). The characteristics' primary and foreign keys have been thoroughly explained.

4 Implementation

The MPP UMT Management System source code is written using all of the inputs from the system architecture. The physical design requirements is converted into functional codes. The function and characteristics that were determined during the system design process should be specified.

5 Testing and Verification

Testing must take place once the system has been developed for output verification. To guarantee that all requirements are met, stakeholders are also included in the testing step. As a result, any vulnerabilities and problems will be recognized and repaired sooner.

6 Maintenance

In this phase, if some issues come up, patches are released to fix those issues. Also, to enhance the MPP UMT Management System in better versions when released. Maintenance needs to be done to deliver the changes in the customer environment.

3.3 Project Planning Schedule

A project management schedule is an element that must be emphasized in system development to ensure that all early planning through the end of the project is accomplished on time. This issue can prevent the system's development from being delayed and incomplete in accordance with user requirements.

3.3.1 Milestone

Table 3.1 shows the Milestone of MPP UMT Management System.

Table 3. 1: Milestone MPP UMT Management System

Milestone	Description	Start Date	End Date
1	Project Title Approval	9 October 2022	13 October 2022
2	Interview With Stakeholder	26 October 2022	26 October 2022
3	Preparation of SPMP	16 October 2022	7 November 2022
4	Preparation of SRS	8 November 2022	25 December 2022
5	Preparation of SDD	26 November 2022	28 December 2022
6	Presentation of Final Year Project 1	31 December 2022	31 January 2023
7	Submission of SPMP, SRS, and SDD	9 February 2023	9 February 2023
8	Project Prototype	22 April 2023	22 April 2023
9	Presentation of Final Year Project 2	18 June 2023	18 June 2023
10	Submission of Thesis	19 June 2023	16 July 2023

Table 3.1, this can be seen that the project milestone starts with planning for the MPP UMT Management System project. This project used Waterfall model phases which are planning, requirement, analysis, system design, implementation, and maintenance.

3.3.2 Gantt Chart

Figure 3.2 shows the Gantt Chart of MPP UMT Management System

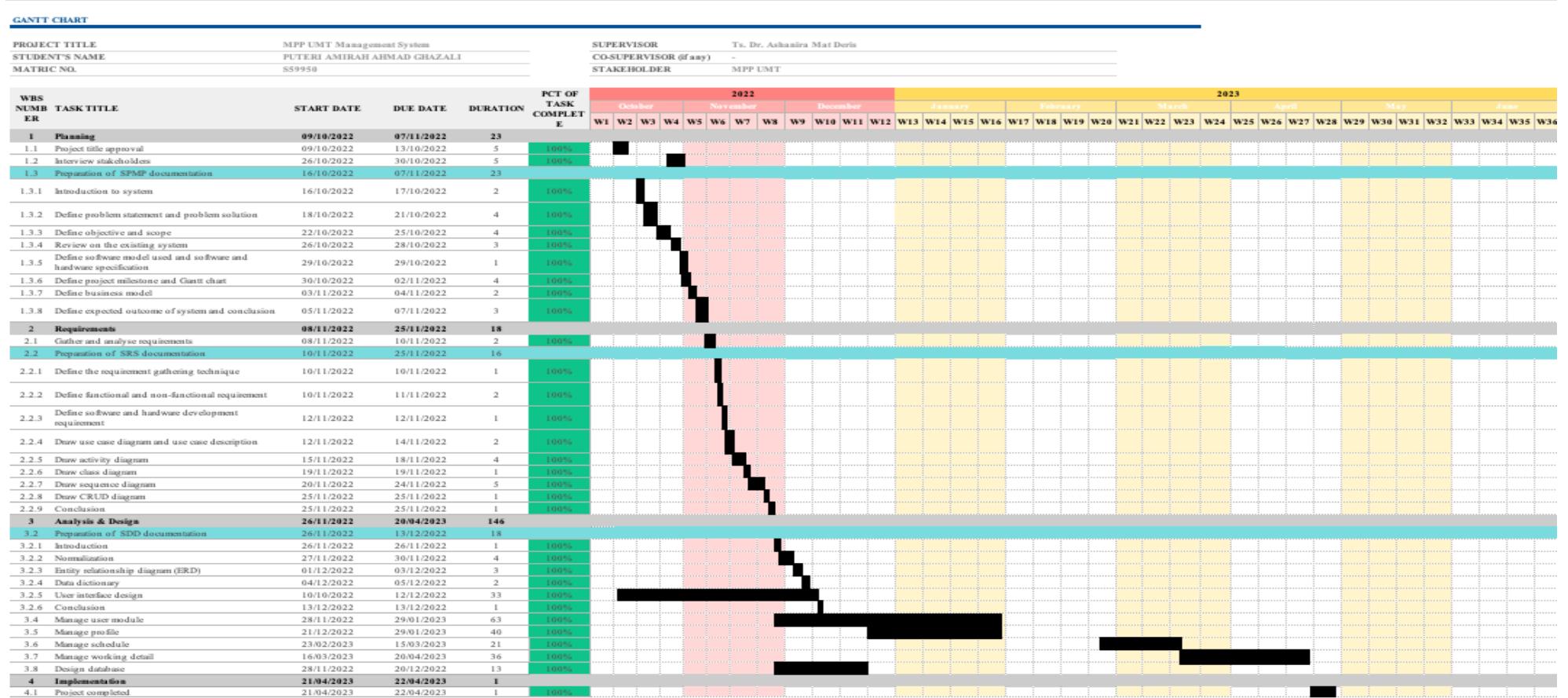


Figure 3. 2: Gantt Chart of MPP UMT Management System

Figure 3.2, tGantt Chart of MPP UMT Management System consists of planning phase, requirement phase, analysis & design phase, and implementation phase.

3.3.2.1 Gantt Chart Description

The project starts with planning for the MPP UMT Management System project. This project used Waterfall model phases which are requirement, analysis, system design, implementation, testing and maintenance. The system is estimated to finish in October 2022.

The requirement phase will be from 9 October 2022 to 20 October 2022. During this phase, the existing system will be reviewed, and the entrepreneurs' documentation will be documented. Following that, complete the Software Project Management Plan (SPMP). The analysis step will next gather all the requirements in order to design the use case, activity diagram, class diagram, and sequence diagram.

The system design will take place on November 17, 2022. The user interface will be designed with the idea in the Entity Relationship Diagram (ERD) during this phase. The Software Design Documentation (SDD) can then be finalized before the presentation. Before beginning system coding during the implementation phase, it will be necessary to examine all documentation created. It runs from November 25 until November 30, 2022. Finally, the system will be maintained beginning on December 15, 2022. Finally, on December 29, 2021, a presentation of the entire system will be given.

3.4 Summary

The Waterfall model was used to design the MPP UMT Management System. The Waterfall methodology contains six phases: System Requirement Analysis, Design, Implementation, Testing, Deployment, and Maintenance. A Gantt chart is used in the project management plan to arrange the MPP UMT Management System development process.

CHAPTER 4

SYSTEM REQUIREMENTS

4.1 Introduction

This chapter discusses about the requirement elicitation techniques, system requirement techniques, system requirement, and requirement analysis.

4.2 Requirement Elicitation Techniques

The search for specifics regarding the functions to be performed by the system and the constraints under which the system must operate is referred to as requirement elicitation. It is defined as the process of acquiring data from stakeholders, or as the elicitation process that occurs after the data analyst has met with stakeholders to understand their requirements. The purpose of requirement elicitation is to thoroughly define every particular project's business needs, risks, and assumptions.

4.3 System Requirements Gathering Techniques

The following are the strategies for obtaining requirements for the development of the MPP UMT Management System.

1 Survey Techniques

This section will go over the approaches utilized to collect requirements from stakeholders to deliver the MPP UMT Management System. Several information gathering strategies were utilized to create and establish requirements for the MPP UMT Management System. Survey approaches as well as creativity skills were employed.

2 Interview Techniques

The interview with the stakeholder is organized through Webex and the questions asked and discussed during the conversation. Before starting the interview, the stakeholder raises his questions about what kind of system that the software developer is trying to make and how the progress of the system. After replying to the questions of the stakeholder, the requirement given come up with the questions they want to know, which is about the background information of the management, the problems the appointment has been made, and the requirements towards the system.

3 Creativity Techniques

Creativity techniques serve to develop innovative requirements, delineate an initial vision of the system, and elicit exciting factors. The brainstorming techniques to collect the ideas which might be helpful for MPP UMT Management System. A detailed research website provided at least three ideas, and the ideas were collected. The software analyst eliminated the vague ideas through the analysis and documented the final ideas suitable for MPP UMT Management System.

4.4 System Requirements

The system requirement is where the function of MPP Pelajar UMT Management System is determined. The requirements are divided into two categories which are functional requirements and non-functional requirements.

4.4.1 Functional Requirement

Table 4.1 shows the functional requirement of MPP UMT Management system.

Table 4. 1: Functional Requirement of MPP UMT Management System

Requirement ID	Functional Requirement	Explanation	Actor
FR1	The Majlis Perwakilan Pelajar UMT Management System shall allow HEPA and MPP to register accounts.	<ul style="list-style-type: none"> • HEPA and MPP can create accounts on the application. • HEPA and MPP can view the account details on the application. • HEPA and MPP can update the account details on the application. • HEPA and MPP can delete the registered account on the application. 	HEPA & MPP
FR2	The Majlis Perwakilan Pelajar UMT Management System shall allow the President Club UMT to manage booking room.	<ul style="list-style-type: none"> • President Club UMT can fill a form to insert a date, details room, and program details for booking room. • President Club UMT can view the submitted date for booking room. President Club UMT can update the information of booking room. President Club UMT can delete booking room. 	President Club UMT

FR3	The Majlis Perwakilan Pelajar UMT Management System shall allow the MPP to manage leave applications.	<ul style="list-style-type: none"> • MPP can create leave MPP applications with a reason letter. • MPP can view the details on the leave applications. • MPP can update the leave applications. • MPP can delete the leave applications.
FR4	The Majlis Perwakilan Pelajar UMT Management System shall allow the Hal Ehwal Pelajar UMT to evaluate leave applications.	<ul style="list-style-type: none"> • Hal Ehwal Pelajar UMT can view the submitted leave applications. • Hal Ehwal Pelajar UMT can edit the submitted leave applications. • Hal Ehwal Pelajar UMT can update the leave applications. • Hal Ehwal Pelajar UMT can delete the leave applications.
FR5	The Majlis Perwakilan Pelajar UMT Management System shall allow MPP manage approval booking room.	<ul style="list-style-type: none"> • MPP can view the MPP appointments for the booking room. • MPP can accept the appointments for the booking room. • MPP can reject the appointments for the booking room.

FR7	The Majlis Perwakilan Pelajar UMT Management System shall allow the users to manage complaint applications.	<ul style="list-style-type: none"> • Users can create All complaint applications. • Users can view the details on the complaint applications. • Users can update the complaint applications. • Users can delete the complaint applications.
FR8	The Majlis Perwakilan Pelajar UMT Management System shall allow users to have private profile in the system	<ul style="list-style-type: none"> • Application shall ensure All every account is set to private. • The account shall not be accessible to the public.
FR9	The Majlis Perwakilan Pelajar UMT Management System shall retrieve all booking room for future purpose.	<ul style="list-style-type: none"> • MPP can retrieve database MPP for • Booking room settings

The Table 4.1 comprises of a set of MPP UMT Management System functional requirements that must be implemented by developers to improve the user experience while using the system. The system behavior under situations that are crucial to the software system's success is defined.

4.4.2 Non-functional Requirement

Table 4.2 shows the non-functional requirement of the MPP UMT Management System

Table 4. 2: Non-functional Requirement of MPP UMT Management System

Requirement ID	Non-Functional Requirements	Explanation
NF1	Security	The Majlis Perwakilan Pelajar UMT Management System when users access the system, authentication and verification must be used so that only authorised users can view the account profile.
NF2	Usability	The Majlis Perwakilan Pelajar UMT Management System shall provide a methodical flow, a basic interface design that is easily understood by users and shall require no coding skills.
NF3	Reliability	The Majlis Perwakilan Pelajar UMT Management System shall provide efficiency of usage, with the task of making decisions in picking the top applicants taking no more than 24 hours.

NF4	Scalability	The Majlis Perwakilan Pelajar UMT Management System shall be able to handle the heavy traffic of usage whenever the system is at the peak of use monthly.
NF5	Performance	The Majlis Perwakilan Pelajar UMT Management System shall be ready to be used for 20 hours every day. Any interactions between the system and the users must last no more than 10 seconds.
NF6	Maintainability	The Majlis Perwakilan Pelajar UMT Management System shall be able to react to the new alterations of criteria addressed for each award if the changes exist in the near year.

The table 4.2 consists of a set of non-functional requirements of the MPP UMT Management System that developers must implement to improve the system's quality and acquire the users' trust and integrity. The quality attributes that are crucial to the software system's success are defined in.

4.5 Requirement Analysis

System analysis is used to define the system's behaviour. It is depicted using a use case diagram, a use case description, an activity diagram, a class diagram, a sequence diagram, and a CRUD analysis.

4.5.1 Use Case Diagram

Figure 4.1 shows a use case diagram of MPP UMT Management System.

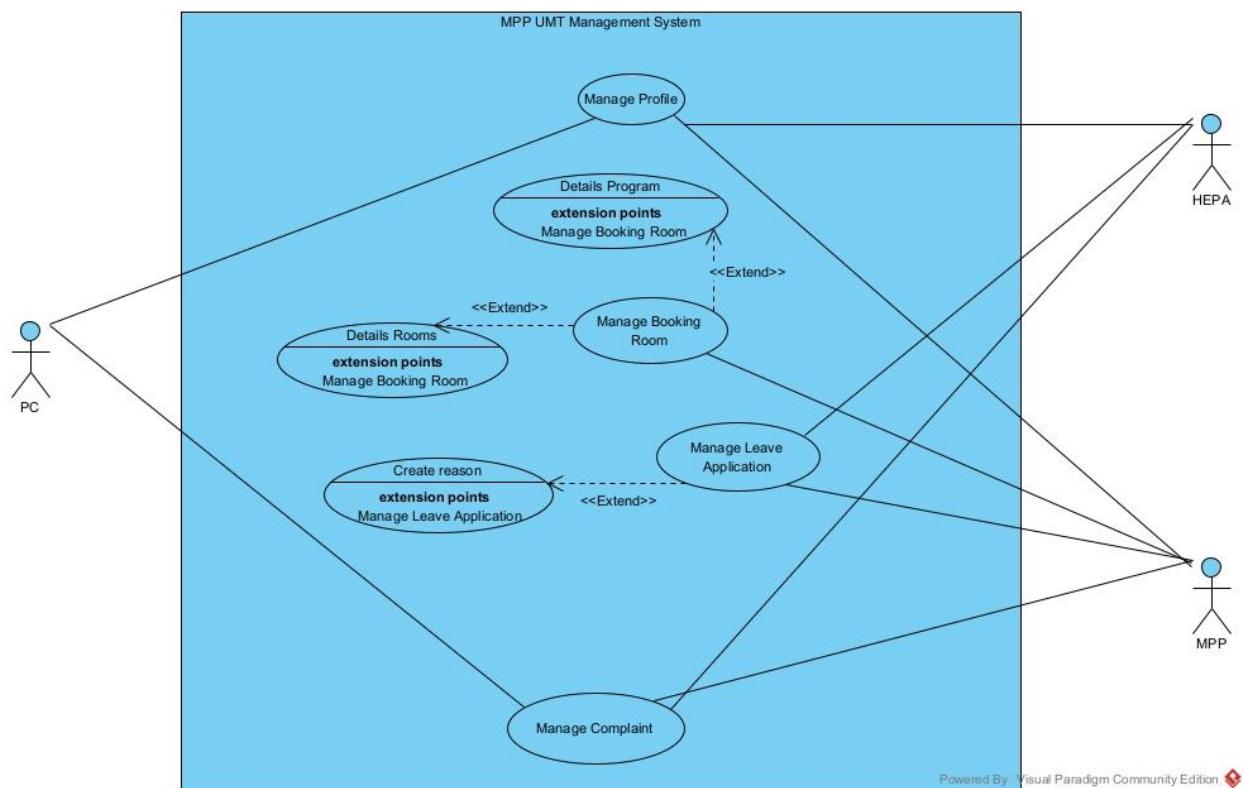


Figure 4. 1: Use Case of MPP UMT Management System

Figure 4.1, it consists of several actors which are HEPA, MPP, and PC that interacted with four respective major use cases.

4.5.2 Use Case Descriptions

A use case description is a feature story that specifies how actors interact with the system environment. It presents the results of a given activity carried out to attain a specified goal. It also defines primary, alternate, and exception flows to demonstrate the many possible approaches.

Table 4.3 shows the use case description of the use case to manage profile.

Table 4. 3: Use Case Description of Manage Profile

Use Case Name: Manage Profile	ID: 1	Important Level: High		
Primary Actor: HEPA and MPP	Use Case Type: Detail, Essential			
Stakeholders and Interests:				
HEPA and MPP need to submit details for the profile applications.				
Brief Description:				
HEPA and MPP need to fill in the application to create accounts.				
Trigger:				
HEPA and MPP need to fill the application to complete applications.				
Type: External				
Relationships:				
<ul style="list-style-type: none">• Association: None• Include: None• Extend: None• Generalization: None				
Normal Flow of Events:				
<ol style="list-style-type: none">1. HEPA and MPP fill the details of the profile.2. HEPA and MPP update the details of the profile.3. HEPA and MPP can assign roles for the profile.				
Sub Flows: None				
Alternate Flows: None				

Table 4.3, it shows that HEPA and MPP can perform CRUD operations in the process of

managing profile. It has been triggered by HEPA and MPP need to fill the application to complete applications.

Table 4.4 shows the use case description of the use case to manage booking room requests.

Table 4. 4: Use Case Description of Manage Booking Room

Use Case Name: Manage Room Booking	ID: 2	Important Level: High
---	--------------	------------------------------

Primary Actor: PC, MPP **Use Case Type:** Detail, Essential

Stakeholders and Interests:

PC needs to submit a details room and details program for the booking room.

MPP needs to manage and review requests submitted by PC.

Brief Description:

PC shall be able to manage submission requests of the details room and details program.

MPP shall be able to review, approve or reject the requests submitted by the PC.

Trigger:

PC needs to submit a details room and details program for the current date to complete the request.

Type: External

Relationships:

- **Association:** MPP, PC
- **Extend:** details room and details program

Normal Flow of Events:

1. PC insert date value.
2. PC creates booking room requests.
3. MPP view booking room requests.
4. PC manages booking room requests.

Sub Flows: None

Alternate Flows:

5a. If MPP approves the booking request, a successful notification message will be notified to the PC.

5b. If MPP rejects the booking request, an unsuccessful notification message will be notified to the PC.

Table 4.4, this can be seen that primary actor for this use case is the PC. PC will manage the submission of the booking room so that MPP can evaluate the qualifications of the requests

for the booking room.

Table 4.5 shows the use case description of the use case to manage leave applications.

Table 4. 5: Use Case Description of Manage Leave Application

Use Case Name: Manage Leave Application	ID: 3	Important Level: High
Primary Actor: HEPA, MPP		Use Case Type: Detail, Essential

Stakeholders and Interests:

MPP needs to submit a reason for the leave applications.

HEPA needs to manage and review applications submitted by MPP.

Brief Description:

MPP shall be able to manage submission applications of the reason.

HEPA shall be able to review, approve or reject the applications submitted by the MPP.

Trigger:

MPP needs to submit a reason for the current date to complete applications.

Type: External

Relationships:

- **Association:** MPP, HEPA
- **Include:** None
- **Extend:** create a reason
- **Generalization:** None

Normal Flow of Events:

1. MPP insert date value.
2. MPP creates leave applications.
3. HEPA view leave applications.
4. HEPA manages leave applications.

Sub Flows: None

Alternate Flows:

5a. If HEPA approves the leave applications, a successful notification message will be notified to the MPP.

5b. If HEPA rejects the leave applications, an unsuccessful notification message will be notified to the MPP.

Table 4.5, this can be seen that MPP needs to be approved first before using the manage leave applications by the system. MPP can perform CRUD operations in the process of managing leave.

Table 4.6 shows the use case description of the use case manage complaint.

Table 4. 6: Use Case Description to Manage Complaint

Use Case Name: Manage Complaint	ID: 4	Important Level: High		
Primary Actor: PC	Use Case Type: Detail, Essential			
Stakeholders and Interests:				
PC needs to submit complaints to the complaint section in the system.				
Brief Description:				
PC shall be able to manage submission complaint the complaint section in the system.				
Trigger:				
PC needs to submit complaints to the complaint system.				
Type: External				
Relationships:				
<ul style="list-style-type: none">• Association: Student, PC• Include: None• Extend: None• Generalization: PC to Students				
Normal Flow of Events:				
1. PC and Students create complaints.				
Sub Flows: None				
Alternate Flows: None				

Table 4.6, this can be seen that primary actors for this use case are PC. PC can give complaints to the system as a reference for the maintenance system.

4.5.3 Class Diagram

A class Diagram is a graphical depiction of a static diagram that shows a static perspective of the target system. This graphic is intended to aid in the description of relationships between the system's interacting objects. The class diagram is typically studied by developers to understand the components that should be produced in the system. The MPP UMT Management System class diagram is shown in Figure 4.2.

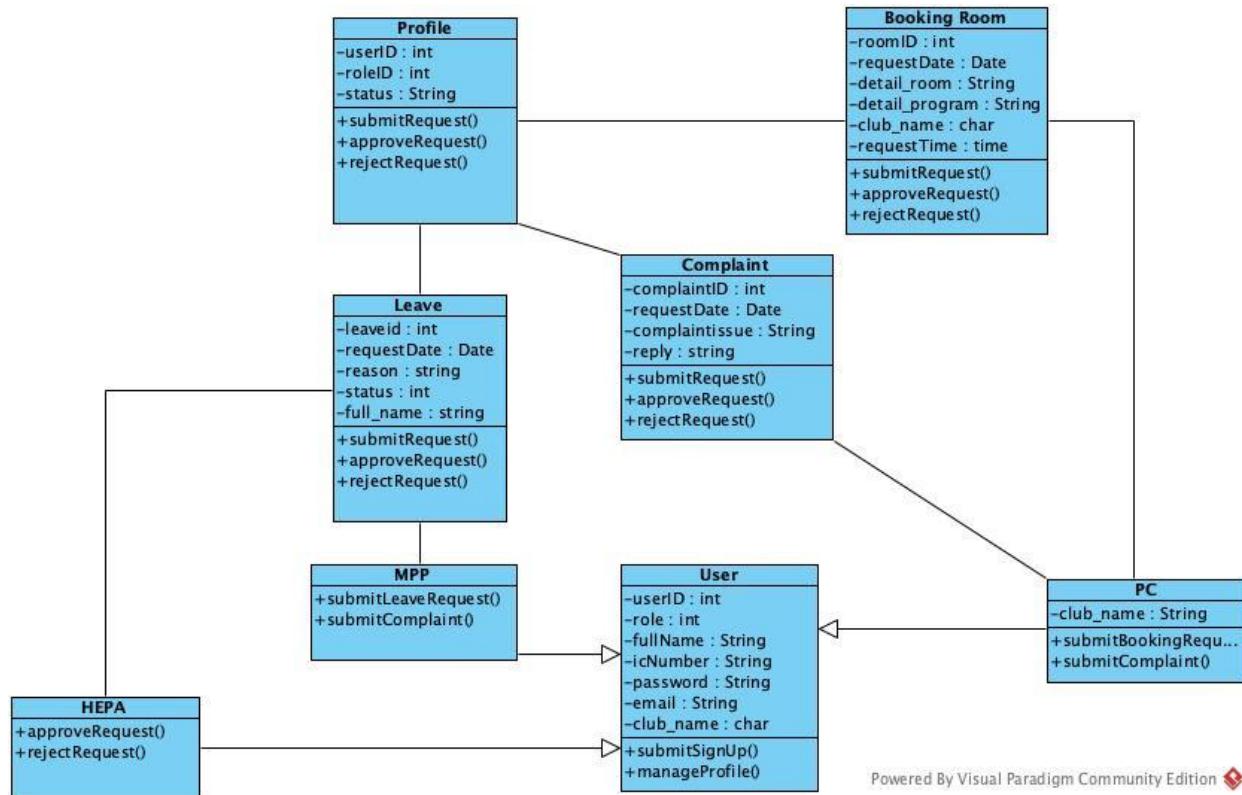


Figure 4. 2: Class Diagram of MPP UMT Management System

Figure 4.2 shows the class diagram that consists of HEPA, MPP, PC, Leave, Profile, Complaint, Booking Room, and User.

4.5.3 Activity Diagram

Figure 4.3 and 4.4 depicts the activity diagram for users to login and register accounts.

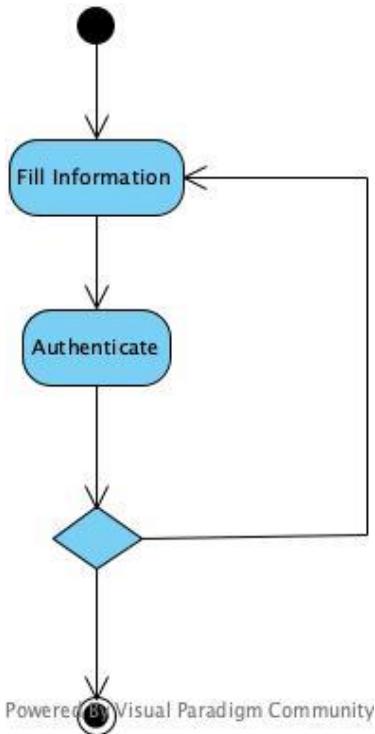


Figure 4. 3: Activity Diagram of Login

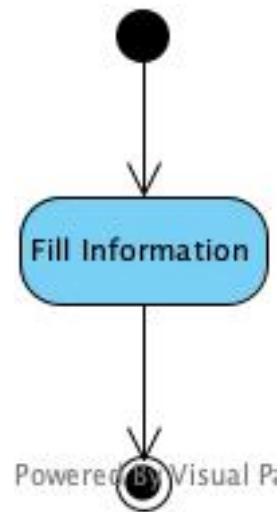


Figure 4. 4: Activity Diagram of Registration

Figure 4.3 and 4.4, it can be seen users to perform Create – Update – Delete operation in the process of registration and login to the MPP UMT Management System.

Figure 4.5 depicts the activity diagram for MPP to manage leave applications.

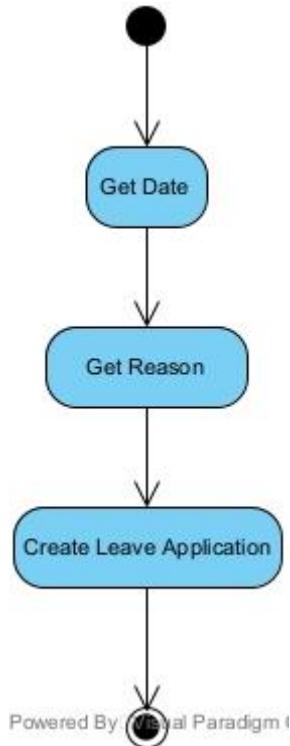


Figure 4. 5: Activity Diagram of Manage Leave Application

Figure 4.5, this can be seen that the activity diagram allows MPP to perform Create – Retrieve – Update – Delete operation in the process of managing leave applications for the leave applications system.

Figure 4.6 depicts the activity diagram for PC to manage booking room.

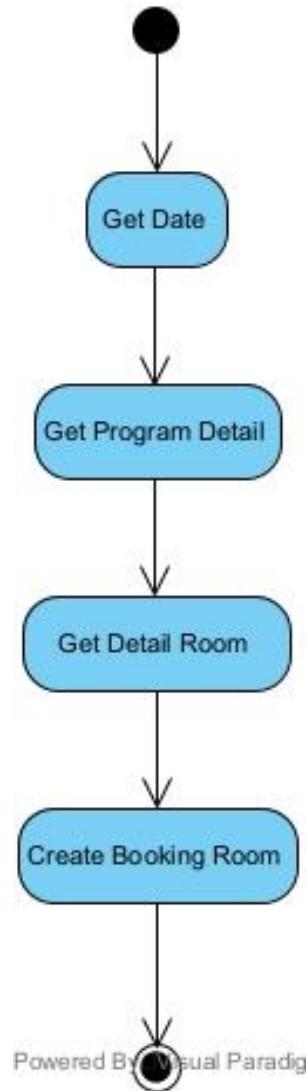


Figure 4. 6: Activity Diagram of Manage Booking Room

Figure 4.6, PC plays an important role to manage the booking room so that MPP can evaluate the qualification of the PC for the successful booking room.

Figure 4.7 depicts the activity diagram for Students and PC to manage complaint.

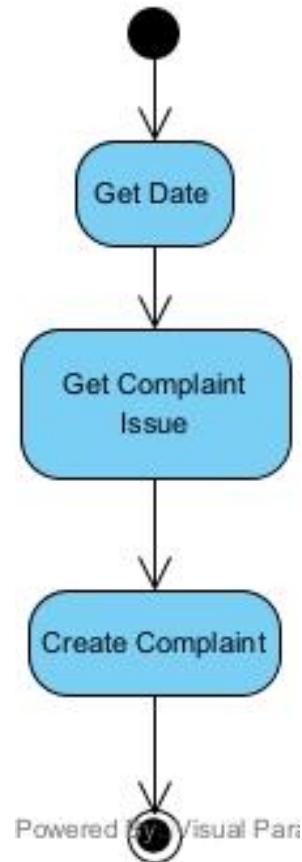


Figure 4. 7: Activity Diagram of Manage Complaint

Figure 4.7, this activity diagram allows PC and Students to perform Create – Retrieve – Update – Delete operation in the process of managing complaint for the complaint system.

Figure 4.8 depicts the activity diagram for MPP and Hal Ehwal Pelajar UMT to manage leave applications.

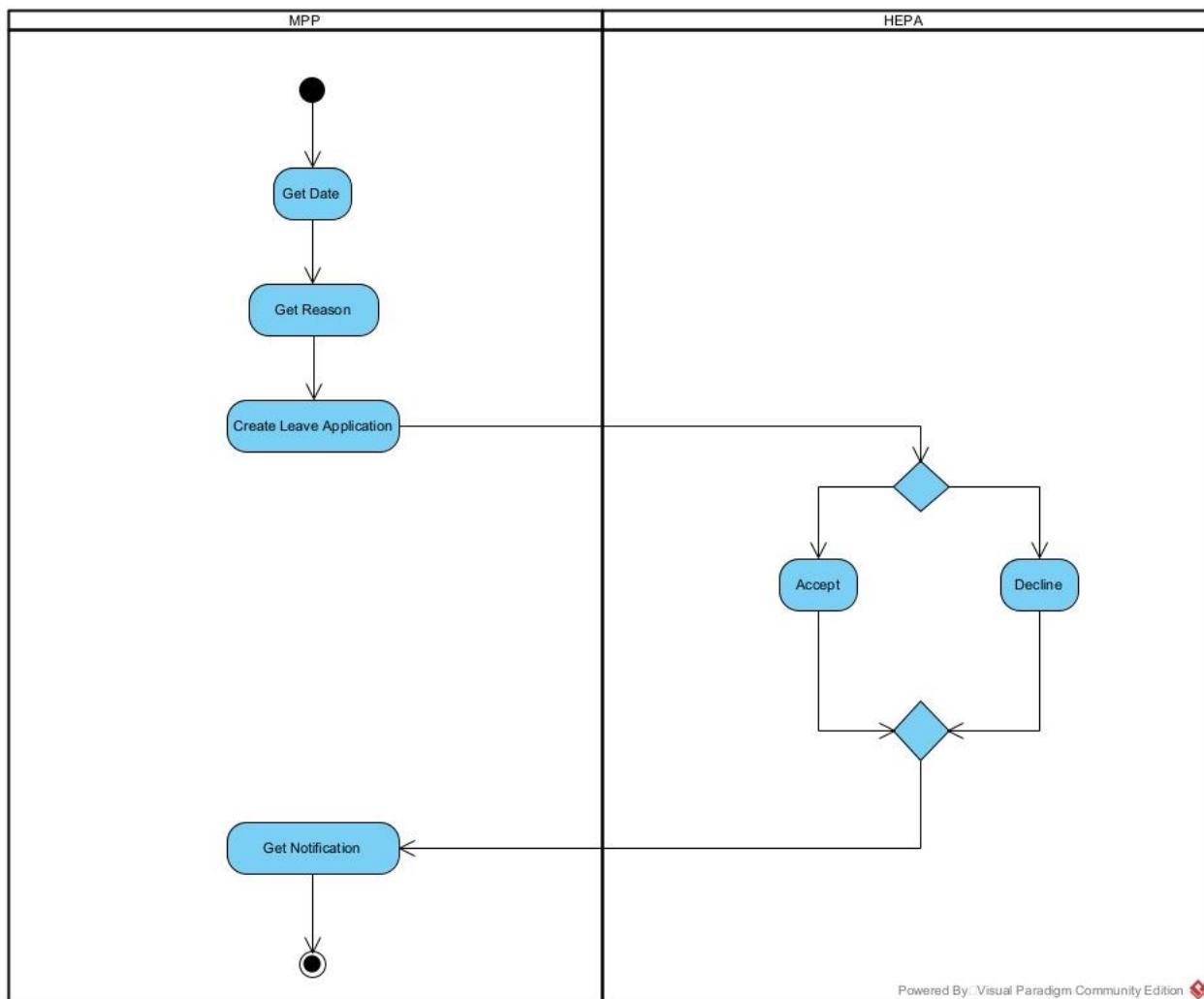


Figure 4. 8: Activity Diagram of Manage Leave Application

Figure 4.8, this shown that this activity diagram is important for the MPP to manage the submission of the reason letter so that Hal Ehwal Pelajar UMT can evaluate the qualifications of the letter for the leave applications.

Figure 4.9 depicts the activity diagram for MPP and PC to manage booking room.

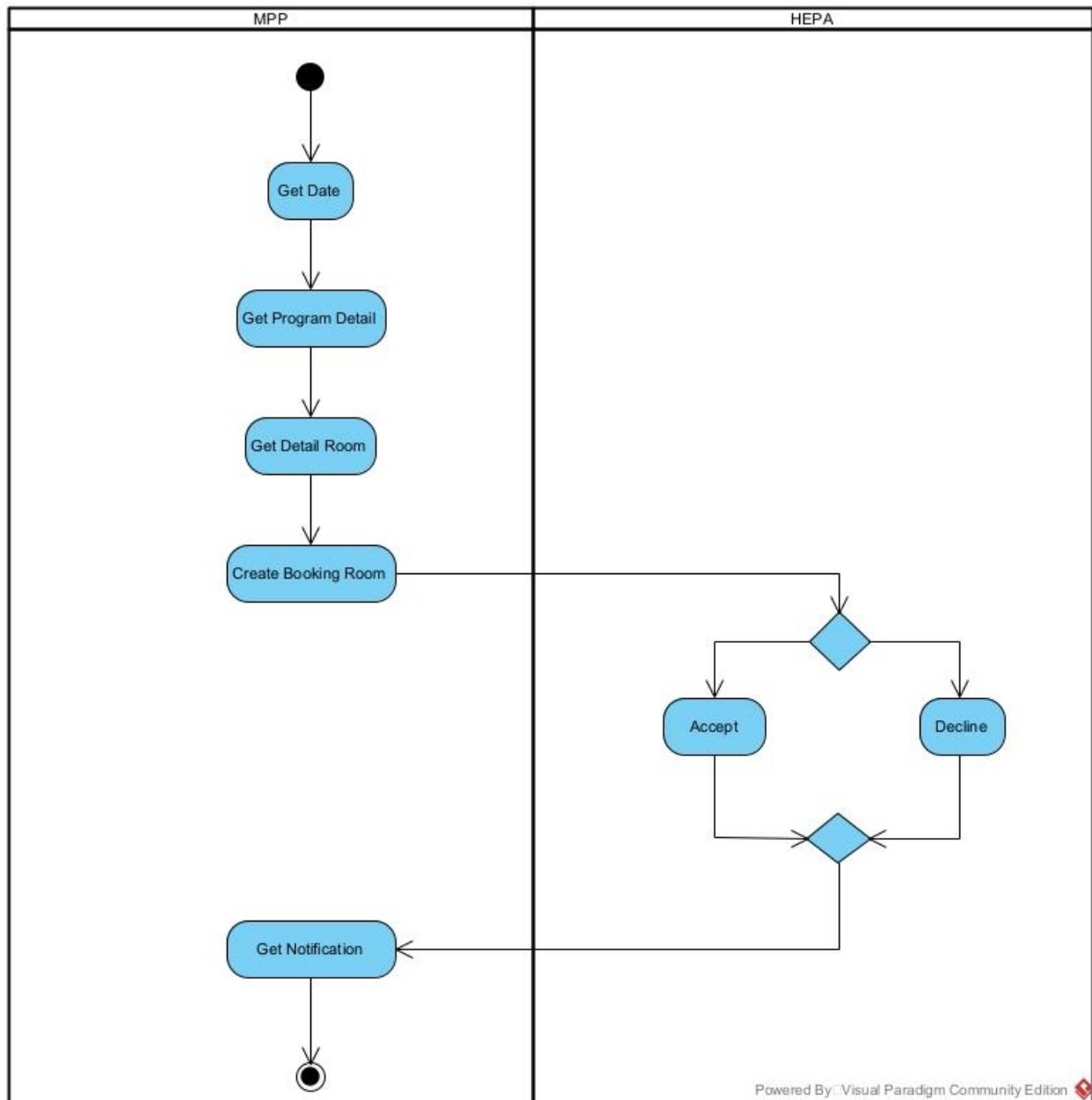


Figure 4. 9: Activity Diagram of Manage Booking Room

Figure 4.9 shown that the activity diagram is important for the PC to manage the submission of the current room details so that MPP can evaluate the qualifications of the room to be booked.

4.5.4 Sequence Diagrams

The Sequence Diagram, also known as the Interactions Diagram, depicts the interaction picture of the system. These diagrams will aid in explaining the interaction between the actors and the system in terms of message sending and receiving.

Figure 4.10 displays the HEPA and MPP registration sequence diagram. Figure 4.11 displays the sequence diagram for a user to sign in to the system.

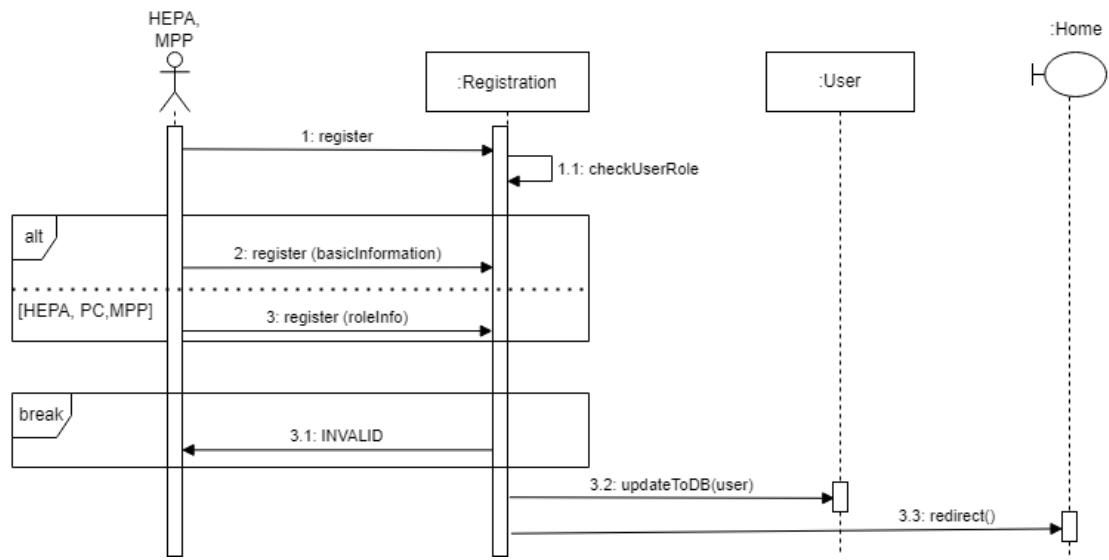


Figure 4. 10: Sequence Diagram of Registration

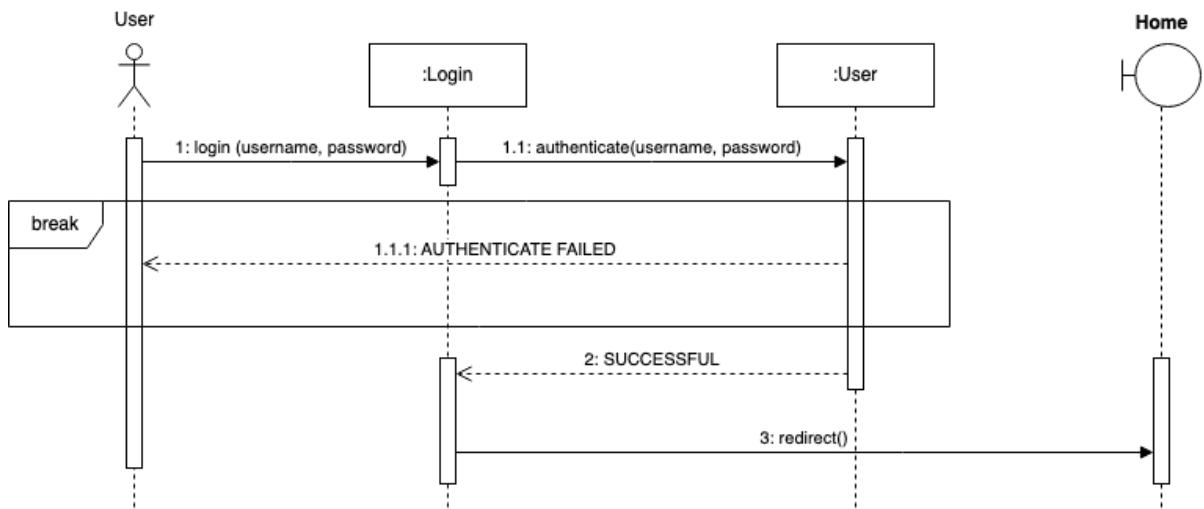


Figure 4. 11: Sequence Diagram of Login

Figure 4.10 and Figure 4.11, the sequence diagram allows users to perform Create – Retrieve – Update – Delete operation in the process of registration and login in MPP UMT Management System.

Figure 4.12 depicts the sequence diagram for MPP to manage leave applications.

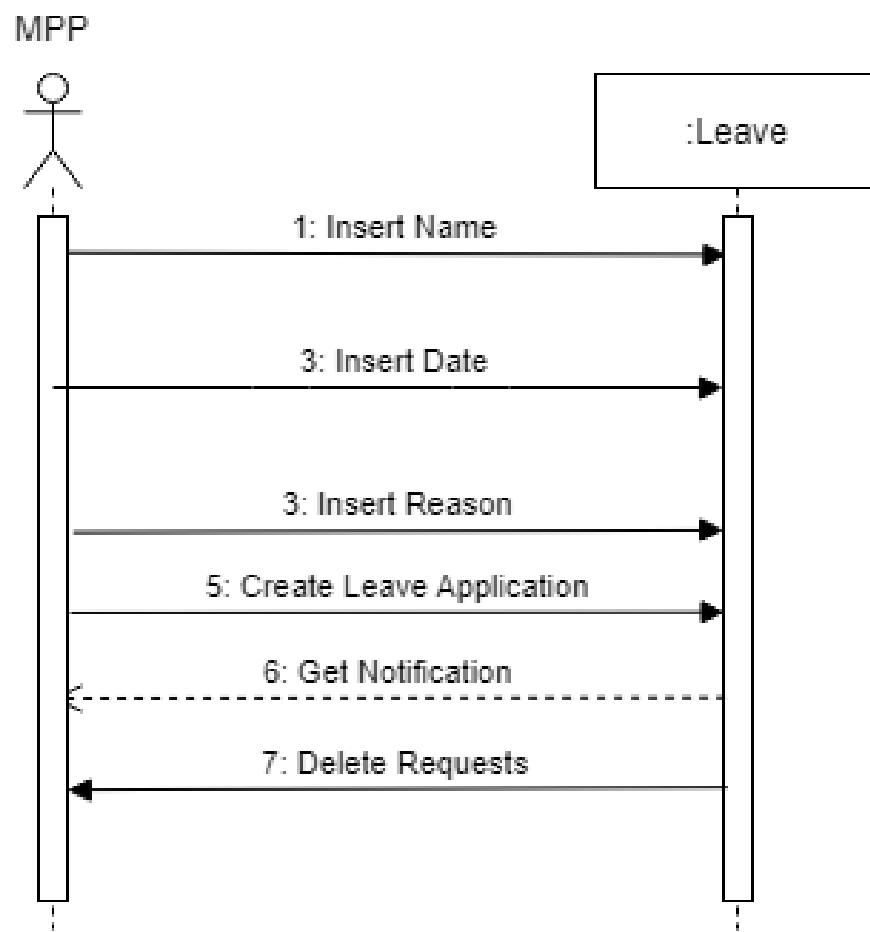


Figure 4. 12: Sequence Diagram of Manage Leave Application

Figure 4.12, it can be seen the MPP plays an important role in managing the submission of a reason so that HEPA can evaluate the qualification of reason to emergency on that date.

Figure 4.13 depicts the sequence diagram for the PC to manage booking room.

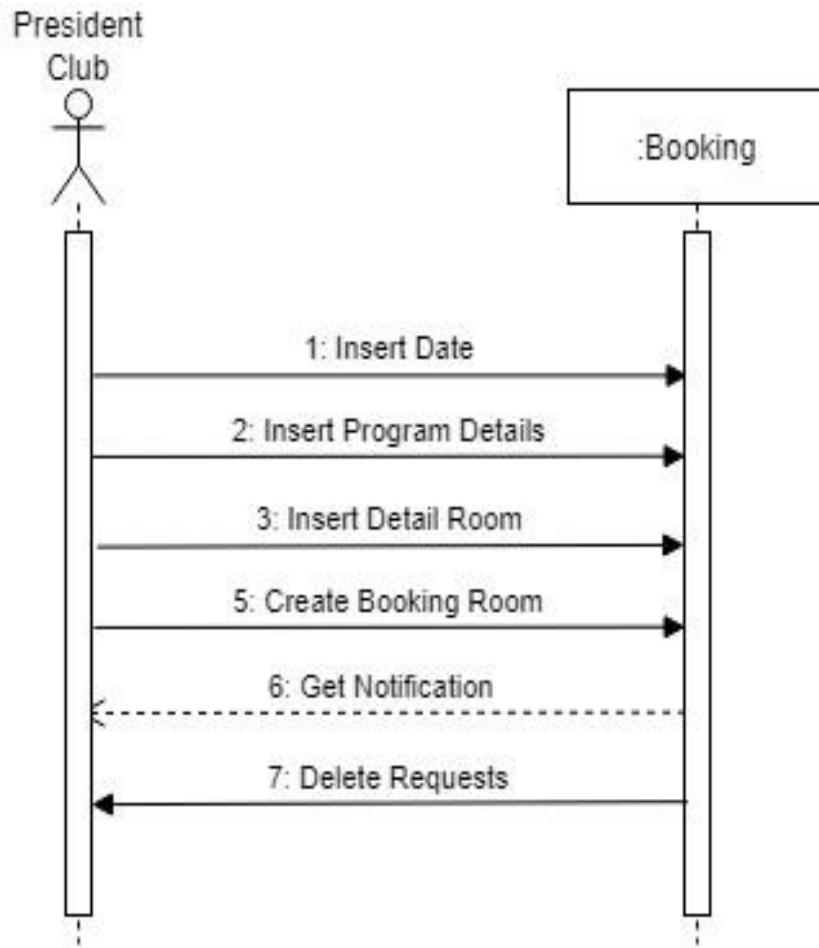


Figure 4. 13: Sequence Diagram of Manage Booking Room

Figure 4.13, show that the PC plays an important role in managing the submission of the booking room so that MPP can evaluate the qualification of the PC booking room.

Figure 4.14 & 4.15 depicts the sequence diagram for PC and MPP to manage complaints.

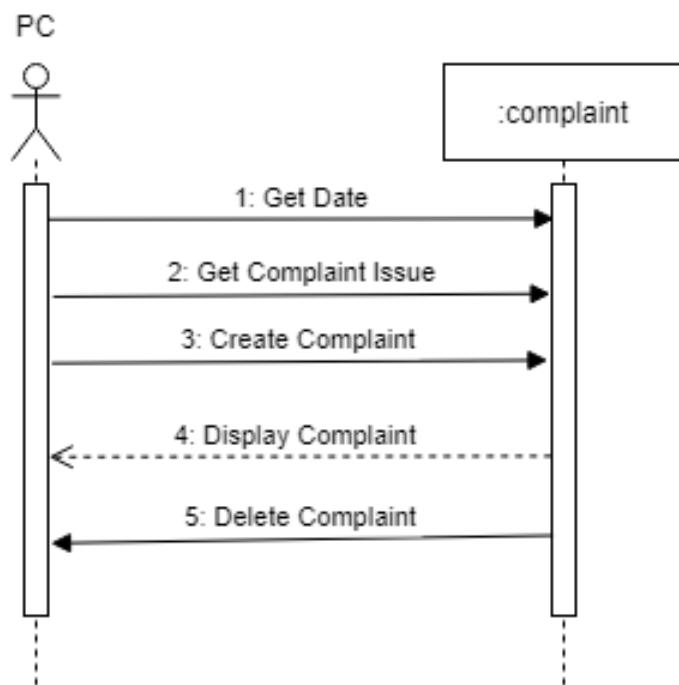


Figure 4. 14: Sequence Diagram of Manage Complaint

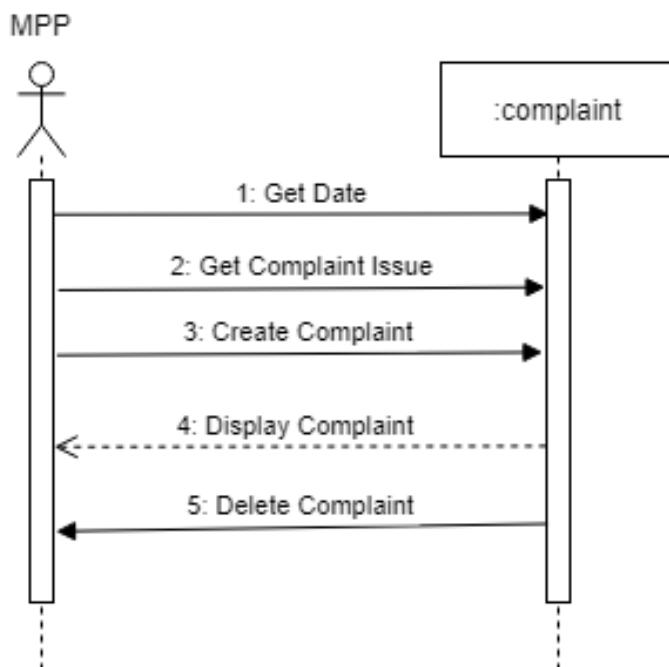


Figure 4. 15: Sequence Diagram of Manage Complaint

From Figure 4.14 and 4.15, it can be seen that the sequence diagram allows PC and MPP to perform Create – Retrieve – Update – Delete operation in the process of complaint in MPP UMT Management System.

Figure 4.16 depicts the sequence diagram for MPP and HEPA to manage leave applications.

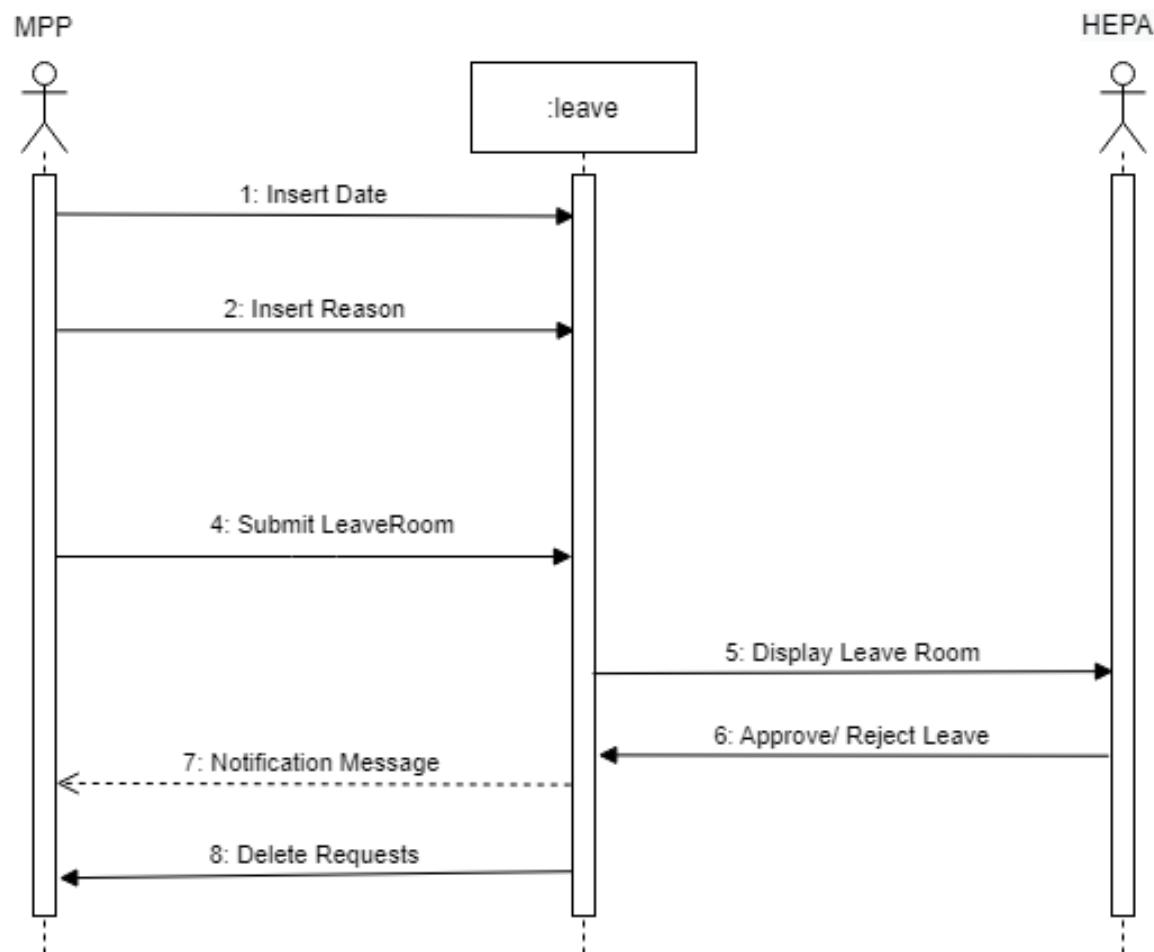


Figure 4. 16: Sequence Diagram of Manage Leave Application

Figure 4.16, this can be seen that it is important for the MPP to manage the submission of the reason evidence so that HEPA can evaluate the qualifications of the MPP to leave on the date.

Figure 4.17 depicts the sequence diagram for MPP and PC to manage booking room.

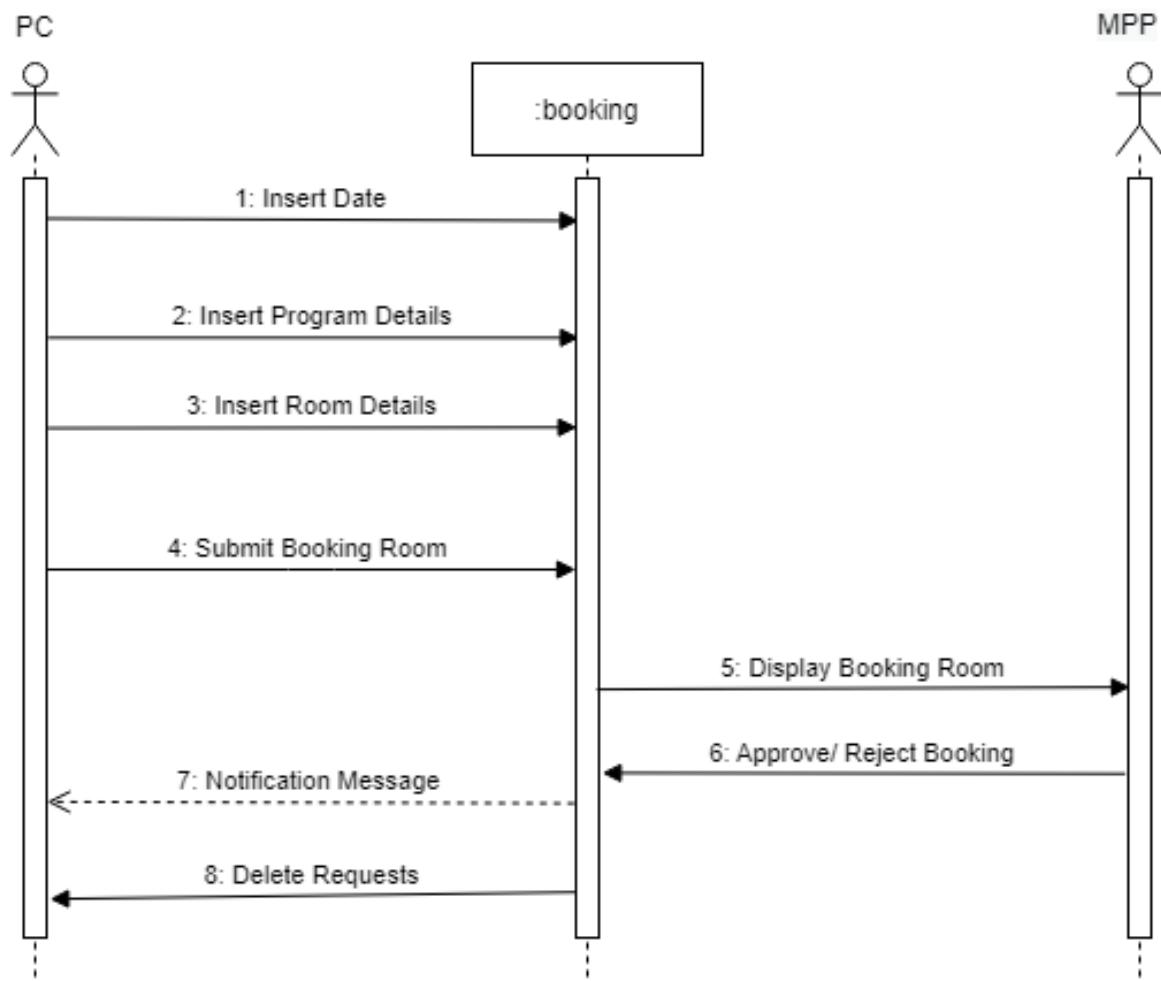


Figure 4. 17: Sequence Diagram of Manage Booking Room

Figure 4.17, this show that it is important for the PC to manage the submission of room details so that MPP can evaluate the qualification of the booking room.

4.5.5 CRUD Matrix

Table 4.7 displays the list of tables in the database of MPP UMT Management System.

Table 4. 7: CRUD Matrix of MPP UMT Management System

Process	HEPA	MPP	PC
Manage Profile	CRUD	CRUD	-
Manage Leave Applications	RUD	CRUD	R
Manage Booking Room	R	CRU	CRD
Manage Complaint	RU	CRD	CRD

Table 4.7 shows that are associated with the CRUD operation, which stands for C= Create, R= Retrieve, U= Update, and D= Delete. This matrix is useful for analysing various user situations that will occur in the system, as well as illustrating which table in the database will handle a high volume of CRUD activities and which table will entail little CRUD actions.

CHAPTER 5

SYSTEM DESIGN

5.1 Introduction

This chapter discusses about the system architecture, package diagram, database design, interface design, discussion, and summary.

5.2 System Architecture

The MPP UMT Management System will use three-tiers architecture as a software architecture show in Figure 5.1.

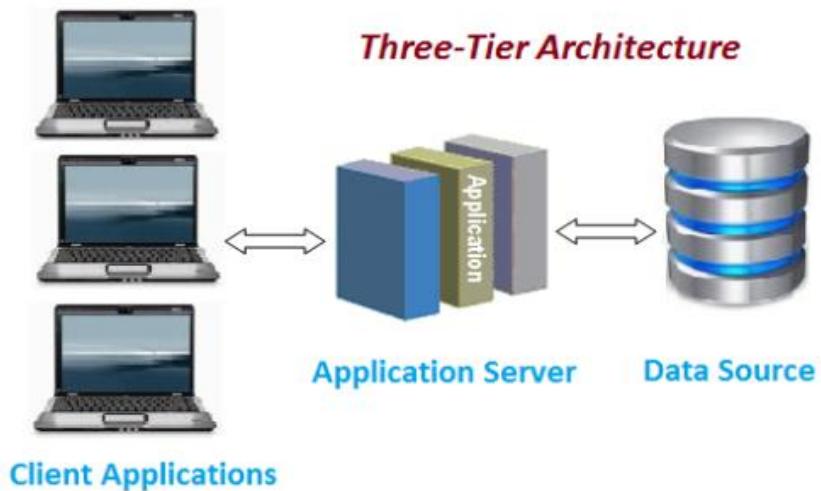


Figure 5. 1: Three-tier architecture of MPP UMT Management System

Figure 5.1 show that software architecture will represent the system organization and backhand workflow of the system. There are few types of software architecture and few features about 3-tier architecture.

Firstly, 3-tier architecture is used in web-based applications. Then, has three layers of viz whereby client tier, application tier and database tier.

The presentation layer components are found at the client tier, which is the highest level

of the software. The presentation layer provides user interfaces for interacting with the system.

The application tier, also known as the business logic layer, is the system's middle tier, where business logic and application components are housed. As a result, it serves as the link between the client and data layers. Meanwhile, at the business layer, all logics such as validation, calculation, and data-related actions exist. It also includes methods for connecting databases.

Data tier is often referred to the database of the system. It is responsible for hosting the database that the application requires. It is a center point for any data to access which is either creating, updating, deleting, or retrieving.

5.3 Package Diagram

A package diagram is a structural diagram that shows how various model pieces are organized and arranged in package form. Figure 5.2 depicts a package as a collection of important UML elements such as diagrams, documents, classes, and other packages.

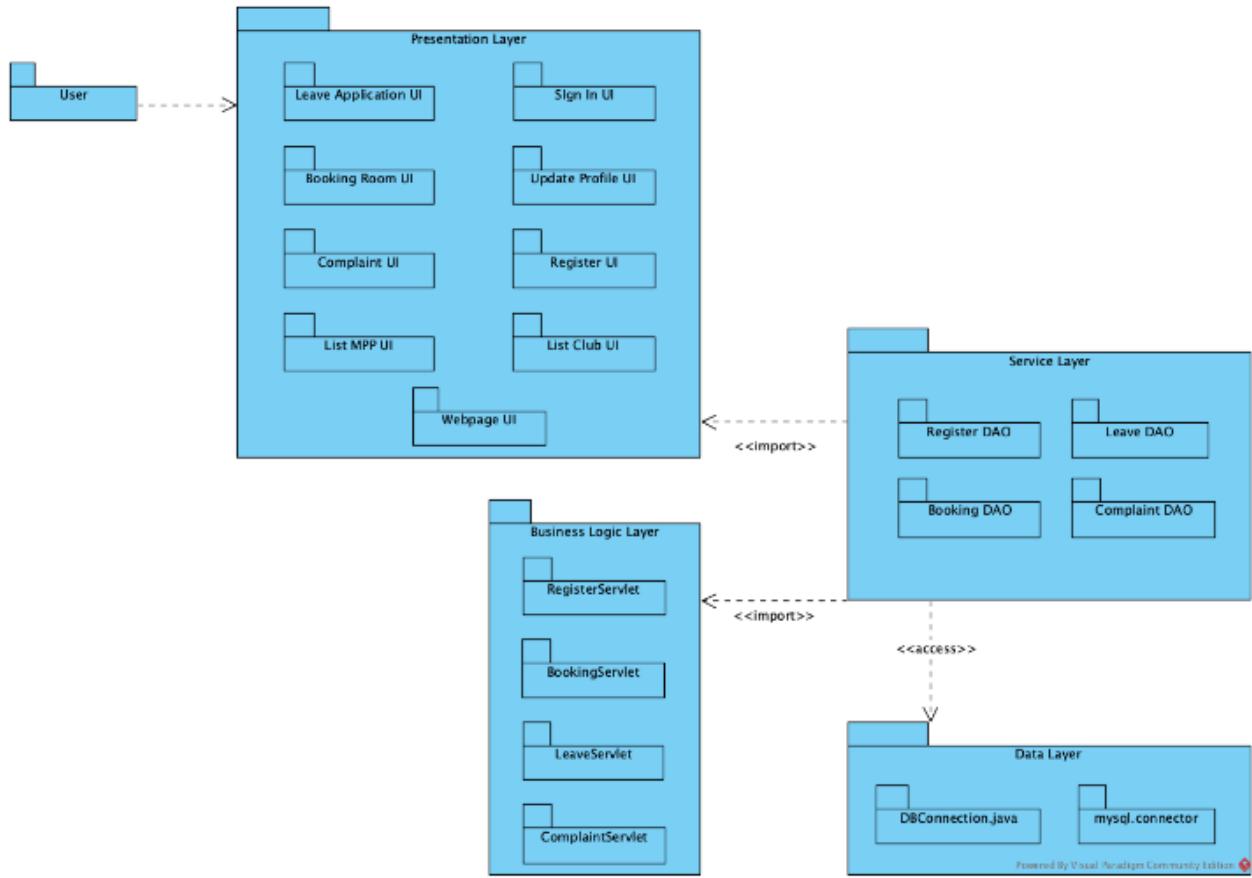


Figure 5. 2: Package Diagram of MPP UMT Management System

Figure 5.2 consists of element is nested inside a packet, which is described as a file of MPP UMT Management System.

5.4 Database Design

Database design is a technique that facilitates system planning, development, and implementation. If the database is well structured, it will ease operations for maintaining and improving data consistency while also saving money on data storage space. The primary goal of database design is to create designs and physical models of logical database systems. This technique entails translating logical database designs to physical media using system hardware and software resources such as database management systems. This section will comprise an ERD Diagram and a Data Dictionary.

5.4.1 Entity Relationship Diagram

Entity Relationship Diagrams (ERDs) are software engineering tools that are used to depict interactions between actors and other things in a system. This graphical representation can assist a programmer in visualising an early concept for a database architecture and managing the tables in the database more effectively. There are two kinds of ERD notations: Figure 5.3 depicts Crow's Foot with Chen Notation.

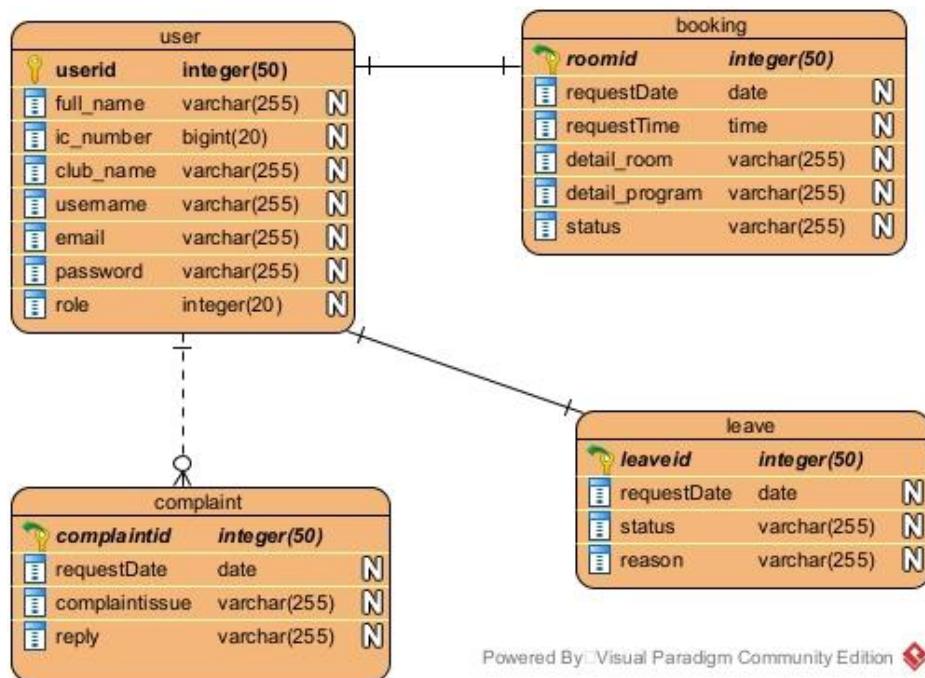


Figure 5. 3: Entity-Relationship Diagram of MPP UMT Management System

The ERD represented in Figure 5.3 uses the Crow's Foot notation to show the entities and relationships between the entities that occur in the database environment of the MPP UMT Management System. This ERD is based on the 8 tables that comply with the Third Normal Form (3NF) standards of database normalisation as shown in the Normalisation portion of this report.

ERD is built around three concepts: entities, relationships, and attributes. There are four entities in this ERD of MPP UMT Management System: user entity, booking entity, complaint entity, and depart entity. Every entity must have distinct characteristics and is linked to others depending on their logical relationship (if any).

5.4.2 Data Dictionary

A data dictionary is a dictionary that stores and displays database metadata. Metadata can be any type of data that is stored in the database's tables. A data dictionary is very useful in software design documentation since it aids in the description of configuration access, data element information, and data element storage location.

This dictionary will also be the major source of information for database administrators and developers. As a result, this section will go through the metadata of the MPP UMT Management System database, which consists largely of 8 tables representing 4 entities in the Entity Relationship Diagram (ERD) shown in Table 5.1 through 5.4.

Table 5.1 show the data dictionary of user entity.

Table 5. 1: Data Dictionary of User Entity

Attribute	Description	Data Type	Size	Null	PK or FK	FK Reference	Constraints
							Table
userid	User Identification	int	50	No	PK		
full_name	User Full Name	varchar	255	Yes			
ic_number	User IC Number	bigint	20	Yes			
club_name	User Club Name	varchar	255	Yes			
username	User Username	varchar	255	Yes			
email	User Email	varchar	255	Yes			
password	User Password	varchar	255	Yes			
role	User Designation	int	20	Yes			

Table 5.1 consists of user id, full name, ic number, club name, username, email, password, and role.

Table 5.2 shows the data dictionary of complaint entity.

Table 5. 2: Data Dictionary of Complaint Entity

Attribute	Description	Data	Size	Null	PK	FK	Constraints
		Type					
					FK	Table	
complaintid	Complaint Identification	int	20	No	PK		
requestDate	Request Date	date	0	Yes			
complaintissue	Complaint Issue	varchar	255	Yes			
reply	Reply Complaint	varchar	255	Yes			
userid	User Identification	int	50	No	FK	User	

Table 5.2 consists of complaint id, request date, complaint issue, reply, and user id.

Table 5.3 shows data dictionary of leave entity

Table 5. 3: Data Dictionary of Leave Entity

Attribute	Description	Data	Size	Null	PK or	FK	Constraints
		Type			FK	Reference	Table
leaveid	leave Identification	int	20	No	PK		
userID	User Identification	int	50	No	FK	User	
requestDate	Request Date	date	0	Yes			
				Yes			pending,
status	Request Status	varchar	255				approved, rejected
reason	User Reason Leave	varchar	255	Yes			
full_name	User Full Name	varchar	255	Yes			

Table 5.3 consists of leave id, user id, request date, status, reason, and full name.

Table 5.4 shows the data dictionary of booking room entity.

Table 5.4: Data Dictionary of Booking Room Entity

Attribute	Description	Data	Size	Null	PK or	FK	Constraints
		Type			FK		
roomid	Room Identification	int	20	No	PK		
userID	User Identification	int	50	No	FK	User	
requestDate	Request Date	date	0	Yes			
requestTime	Request Time	time	0	Yes			
detail_room	Detail Room	varchar	255	Yes			
detail_program	Detail Program	varchar	255	Yes			
status	Request Status	varchar	255	Yes	pending, approved, rejected		
club_name	User Club Name	varchar	255	Yes			

Table 5.4 consists of room id, user id, request date, request time, details room, details program, status, and club name.

5.5 Interface Design

Interface design is the process of creating user interfaces for various applications and devices with the goal of improving usability and overall user experience. It is closely related to UI/UX, which stands for User Interface/User Experience. The goal of user interface design in terms of achieving user goals is to make user interactions as easy and efficient as feasible.

This section will go into the design of the MPP UMT Management System's user interfaces. The UI design is organized by the actors who will interact with the system, which comprise HEPA, MPP, and PC actors, as well as a folder of generic pages.

Figure 5.4 illustrates the sign in page of MPP UMT Management System.

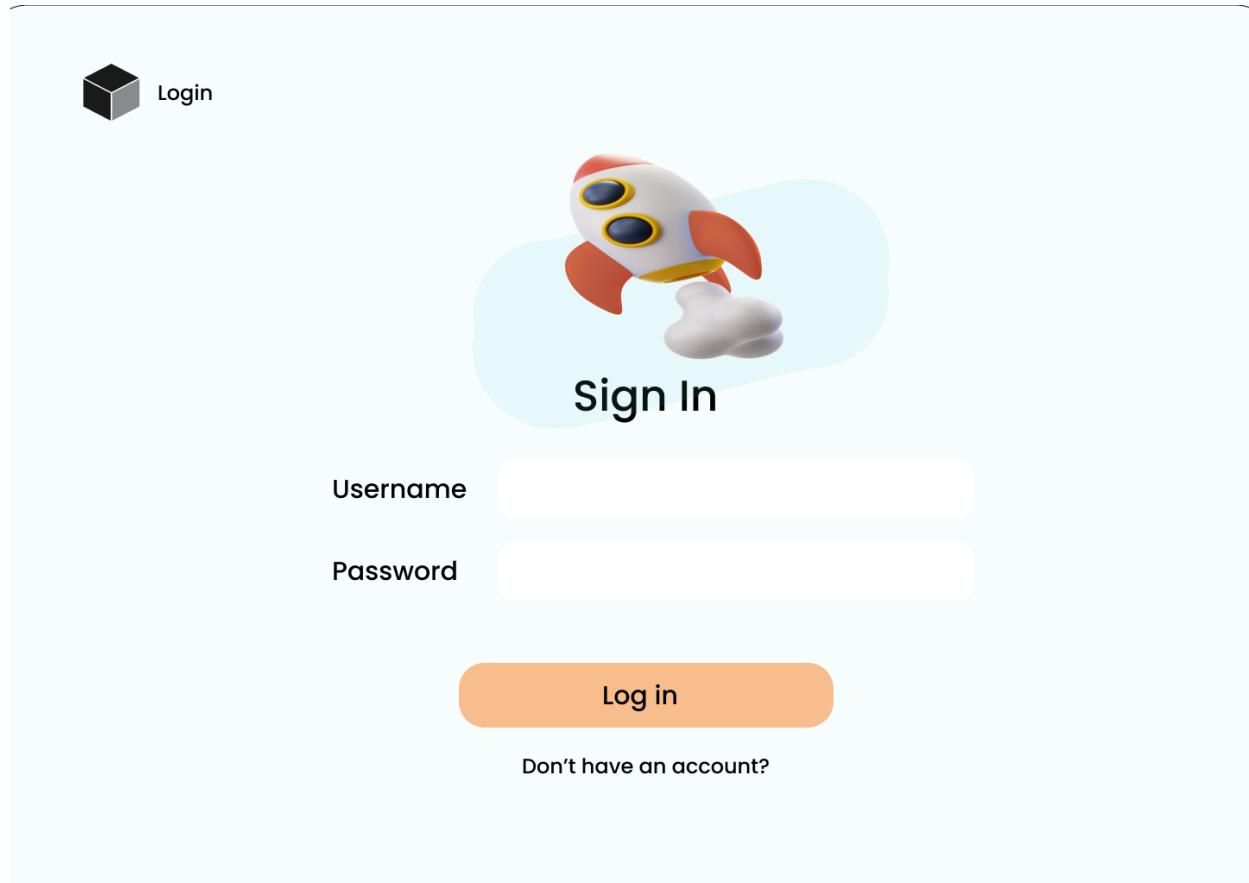


Figure 5. 4: Sign In of MPP UMT Management System

Figure 5.4, shows that users can submit their username and password. If they do not have an account yet, users need to send a form to the HEPA and MPP for verification and registration account.

Figure 5.5 illustrates the homepage of MPP UMT Management System.

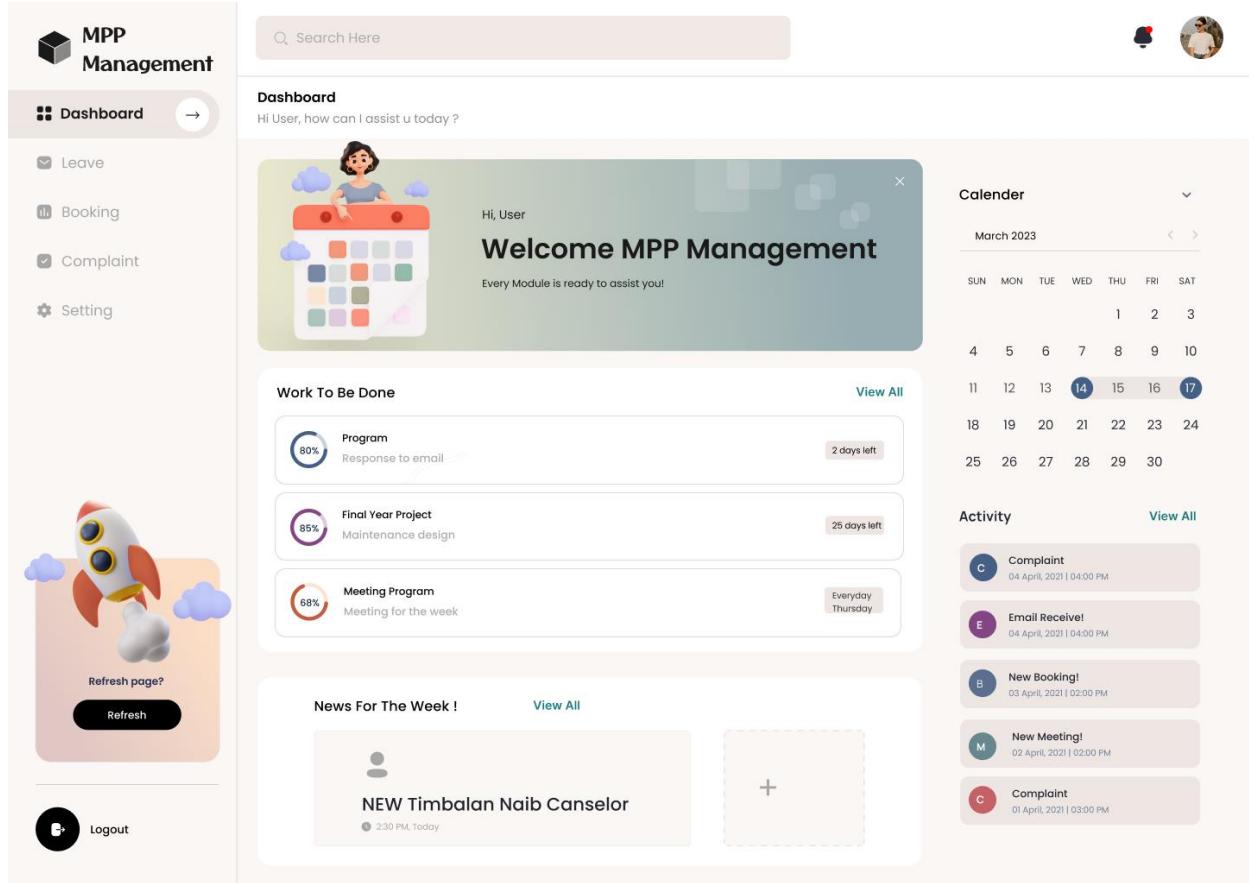


Figure 5. 5: Homepage of MPP UMT Management System

Figure 5.5 shows that users can view the directory leave, booking, complaint and update user. Users also can update their profile to the recent position.

Figure 5.6 shows the booking room form.

The screenshot shows the 'Manage Booking Room' page of the MPP UMT Management System. On the left, there's a sidebar with a rocket icon and buttons for Dashboard, Booking (which is active), Complaint, and Setting. A search bar at the top has placeholder text 'Search Here'. In the center, the main title 'Manage Booking Room' is displayed above four input fields: 'Name', 'Phone Number', 'Date', and 'Time'. Below these fields is a section titled 'Submit Room Details' containing a file upload area with a dashed box for dragging files and a 'Browse files' button. At the bottom right is a large orange 'Create' button. The overall interface is clean with a light orange background.

Figure 5. 6: Add Booking Room of MPP UMT Management System

Figure 5.6 shows PC can book the room for club purposes such as formal meetings, discussion program and others by filling in the required details such as date, time, room details and program details. After that, the PC can submit the form by clicking add, the form will be sent to the MPP for evaluation.

Figure 5.7 shows the list of booking rooms.

The screenshot displays the 'Manage Booking' section of the MPP UMT Management System. On the left, a sidebar menu includes 'Dashboard', 'Leave', 'Booking' (which is selected and highlighted in blue), 'Complaint', and 'Setting'. A central search bar at the top has the placeholder 'Search Here'. In the top right corner, there are user profile icons and buttons for 'Accept' and 'Reject'. The main content area shows a table of booking requests:

User	Contact Info	Type	Time	Attendant	Date	Action
Penyayang Kelab	O12-222 7890 Phone Number	Program	19:30	Syafiq	12/01/2022	<input type="checkbox"/>
PERMADA Kelab	O14-579 6597 Phone Number	Program	19:28	Syafiq	12/01/2022	<input type="checkbox"/>
PEMADAM Kelab	O12-725 2786 Phone Number	Room	19:02	Afdalina	12/01/2022	<input type="checkbox"/>
KEMASIS Kelab	O12-826 7362 Phone Number	Program	16:58	Syafiq	12/01/2022	<input type="checkbox"/>
GPS Kelab	O12-782 0245 Phone Number	Room	16:30	Syafiq	12/01/2022	<input type="checkbox"/>
PERSADA Kelab	O12-978 4557 Phone Number	Room	16:28	Afdalina	12/01/2022	<input type="checkbox"/>

Below the table, a navigation bar shows page numbers 1 through 5 with arrows for navigation.

Figure 5.7: List Booking Room of MPP UMT Management System

Figure 5.7, it can be seen that the webpage consists of an accept and reject status also can see other booking requests.

Figure 5.8 shows the update booking room webpage.

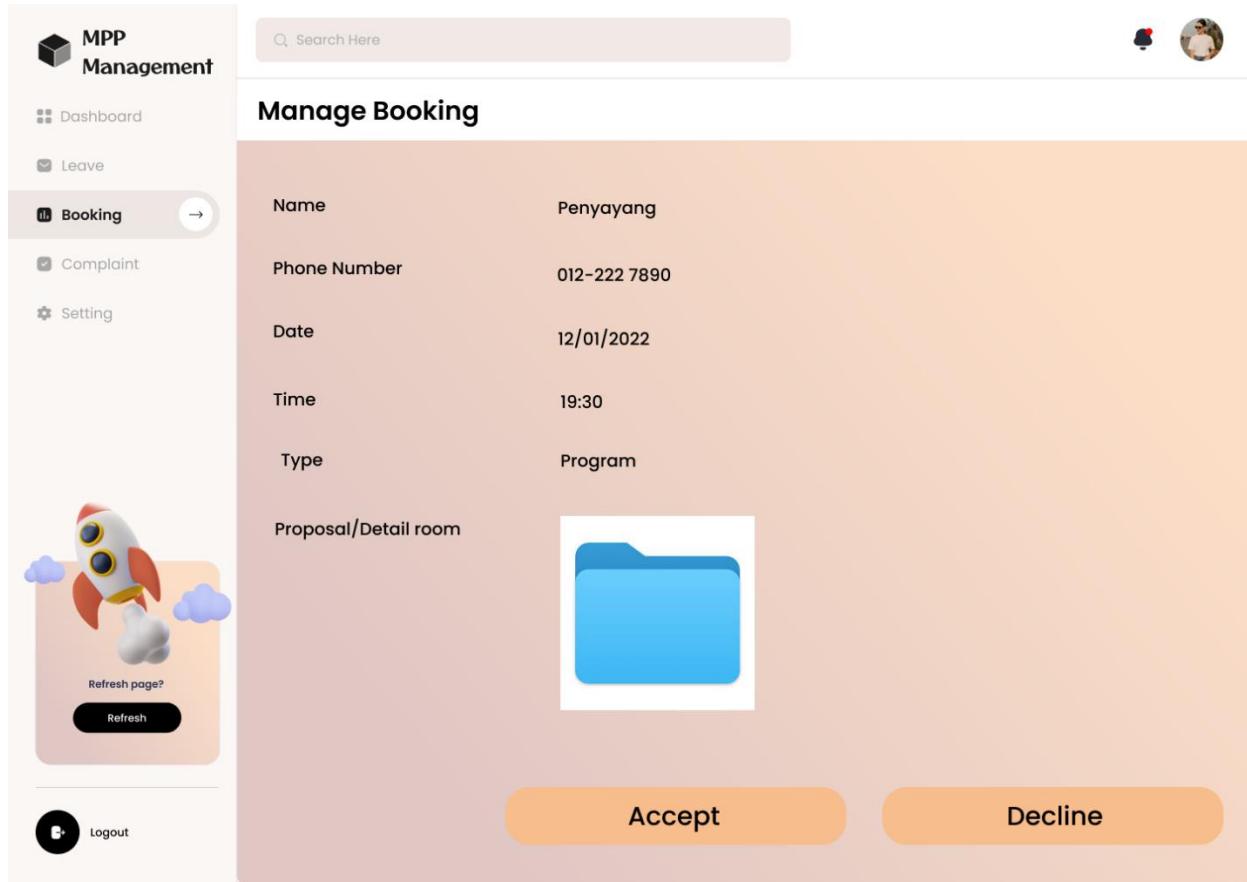


Figure 5. 8: Update Booking Room of MPP UMT Management System

Figure 5.8 illustrates the page of MPP ‘*Kelab & Persatuan*’ take an action for any booking room request. MPP ‘*Kelab & Persatuan*’ can view the booking room form and send a reply either approve or decline the booking request which the action has been taken.

Figure 5.9 shows the new complaint page.

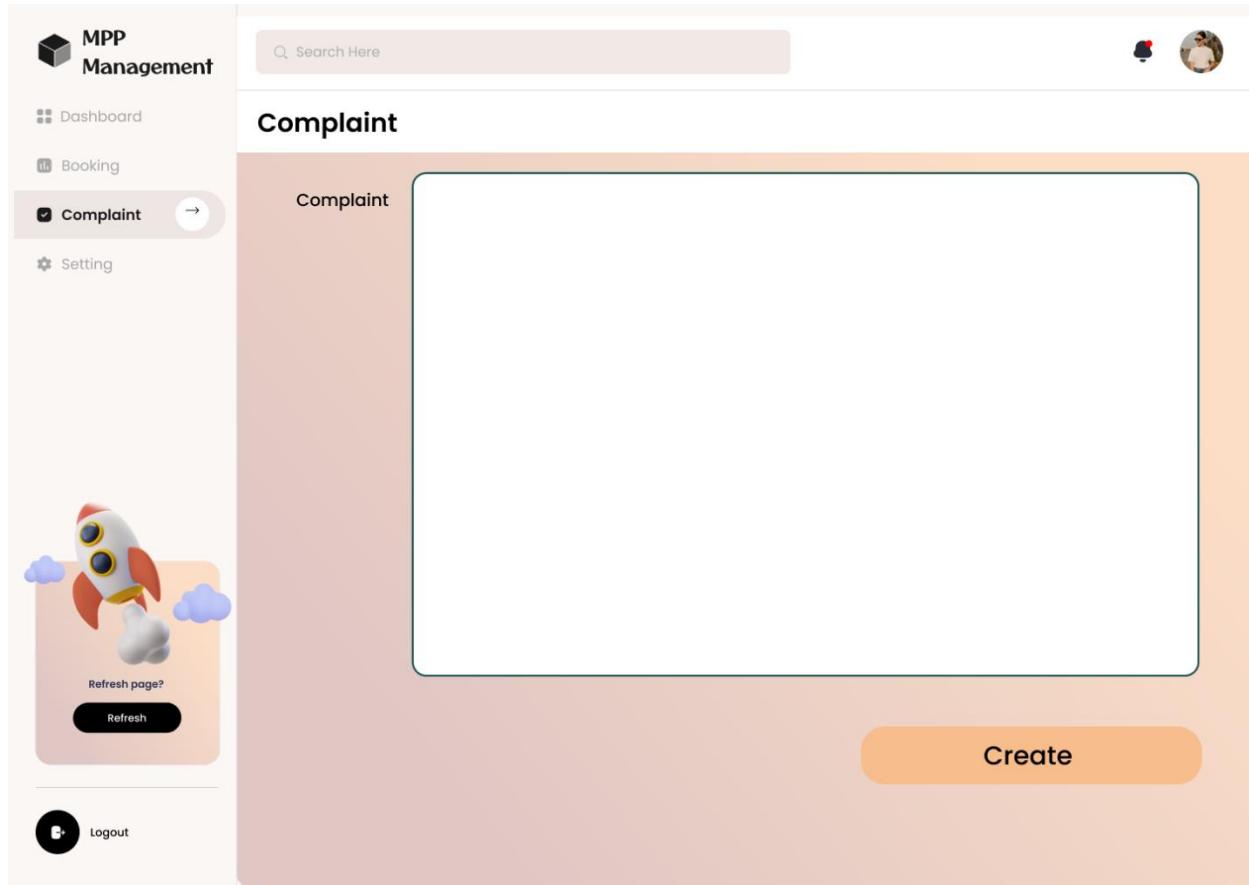


Figure 5. 9: Add Complaint of MPP UMT Management System

Figure 5.9, it can be seen that complaint page can state an issue by filling the date, complaint issue. After filling up the form, the user needs to click the add button for the complaint to be submit to the HEPA for evaluation and action to be taken off.

Figure 5.10 shows the list of complaints.

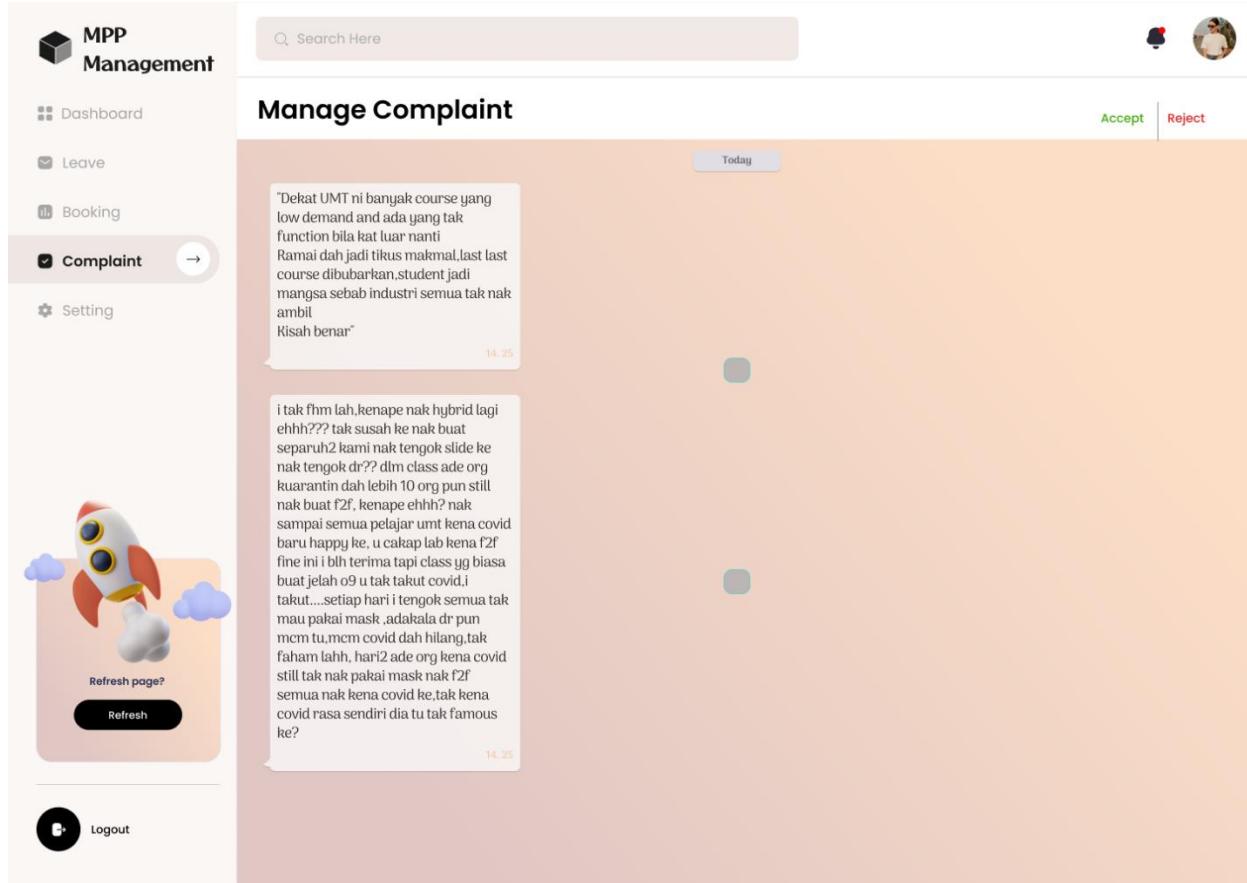


Figure 5. 10: List Complaint of MPP UMT Management System

Figure 5.10 shows the interface design of the complaint page consists of a list of complaint created by the PC and MPP that is represented in the page.

HEPA can perform the task to manage the posting sent by the users either by approving or rejecting the request that can be done by clicking the Accept button to approve the request or the Decline to reject the request. The list of the posting will be continuously updated after every operation is done. The approved/rejected user will be eliminated from the post.

Figure 5.11 shows the reply to complaint page.

The screenshot shows the 'Complaint' section of the MPP UMT Management System. On the left sidebar, there are navigation links: 'Dashboard', 'Complaint' (which is selected and highlighted in blue), and 'Setting'. Below these are two buttons: 'Refresh page?' and 'Refresh'. At the bottom of the sidebar is a 'Logout' button. The main content area has a search bar at the top right. The title 'Complaint' is centered above a large text box. Inside the text box, the following text is displayed:

Umt awak ni suruh student masuk full mcm ni tapi router wifi tu awak tkmo tambah. Dekat kolej kediaman ni la tempat kami buat kerja dekat dalam bilik sendiri. Tambah la router tu bagi banyak. Kalau pagar belakang tu roboh sebab pokok tumbang laju pulak fix. Ni ramai report dekat khidmat ict tapi takde bunyi pun apa solution awak nk buat. Takkan hari hari nak pergi library nk buat assignment cik abang cik kak oii

At the bottom right of the main content area is a large orange 'Create' button.

Figure 5. 11: Reply Complaint of MPP UMT Management System

Figure 5.11 will show that the HEPA will act for complaint issue. MPP and PC can view the complaint status which the action has been taken.

Figure 5.12 shows the add leave form.

The screenshot shows the 'Manage Leave' page of the MPP UMT Management System. On the left, there's a sidebar with a rocket icon and buttons for Dashboard, Leave (which is selected), Booking, Complaint, and Setting. A 'Logout' button is also present. The main area has a search bar at the top right and a profile picture. The title 'Manage Leave' is centered above four input fields: 'Name', 'Matric No.', 'Date', and 'Time'. Below these is a section titled 'Submit Reason Letter' with a file upload interface. A large orange 'Create' button is at the bottom right. The background features a light orange gradient.

Figure 5. 12: Add Leave of MPP UMT Management System

Figure 5.12, MPP can book the date to leave the campus on purposes such as personal illness, family matter and others by filling in the required details such as date and reason leave university. After that, the MPP can submit the form by clicking add, the form will be sent to the HEPA for evaluation.

Figure 5.13 shows the list of leaves from the PC.

The screenshot displays the 'Manage Leave' section of the MPP UMT Management System. On the left, a vertical navigation bar includes options for Dashboard, Leave (selected), Complaint, and Setting. A central search bar at the top has placeholder text 'Search Here'. Below it, another search bar says 'Search for E-Leave' with a 'Create' button. The main area is titled 'Manage Leave' and lists ten leave requests in a table format. The columns are Time, Date, Name, Matric No., and Reason letter (Send/Pending). The data is as follows:

Time	Date	Name	Matric No.	Reason letter (Send/Pending)	Action 1	Action 2
19:30	12/04/2022	Syafiq	S59311	Accepted	🔗	🕒
19:02	19/03/2022	Syafiq	S59311	Accepted	🔗	🕒
19:02	26/02/2022	Ameerul	S57810	Pending	🔗	🕒
19:02	12/01/2022	Syafiq	S59311	Accepted	🔗	🕒
19:02	12/01/2022	Ameerul	S57810	Accepted	🔗	🕒
19:02	12/01/2022	Afdalina	S59311	Accepted	🔗	🕒
19:02	12/01/2022	Syafiq	S59311	Accepted	🔗	🕒
19:02	12/01/2022	Ameerul	S57810	Pending	🔗	🕒
19:02	12/01/2022	Syafiq	S59311	Accepted	🔗	🕒
19:02	12/01/2022	Ameerul	S57810	Accepted	🔗	🕒

At the bottom right, there are navigation arrows and page numbers (1, 2, 3, 4, 5, >). On the far left, there is a decorative rocket icon with a 'Refresh page?' button and a 'Logout' button.

Figure 5. 13: List Leave of MPP UMT Management System

Figure 5.13 shows the interface design of the list of user requests that will be displayed when HEPA clicks the Letter tab at the vertical navigation bar. This page will be navigated to the HEPA. Leave Request-list page consists of horizontal tabs that allows Admin to view the requests send by the users who requested to be MPP.

In this webpage, HEPA can perform the task to manage the requests sent by the users either by approving or rejecting the request that can be done by clicking the edit. The list of the request will be continuously updated after every operation is done.

Figure 5.14 shows the update leave page.

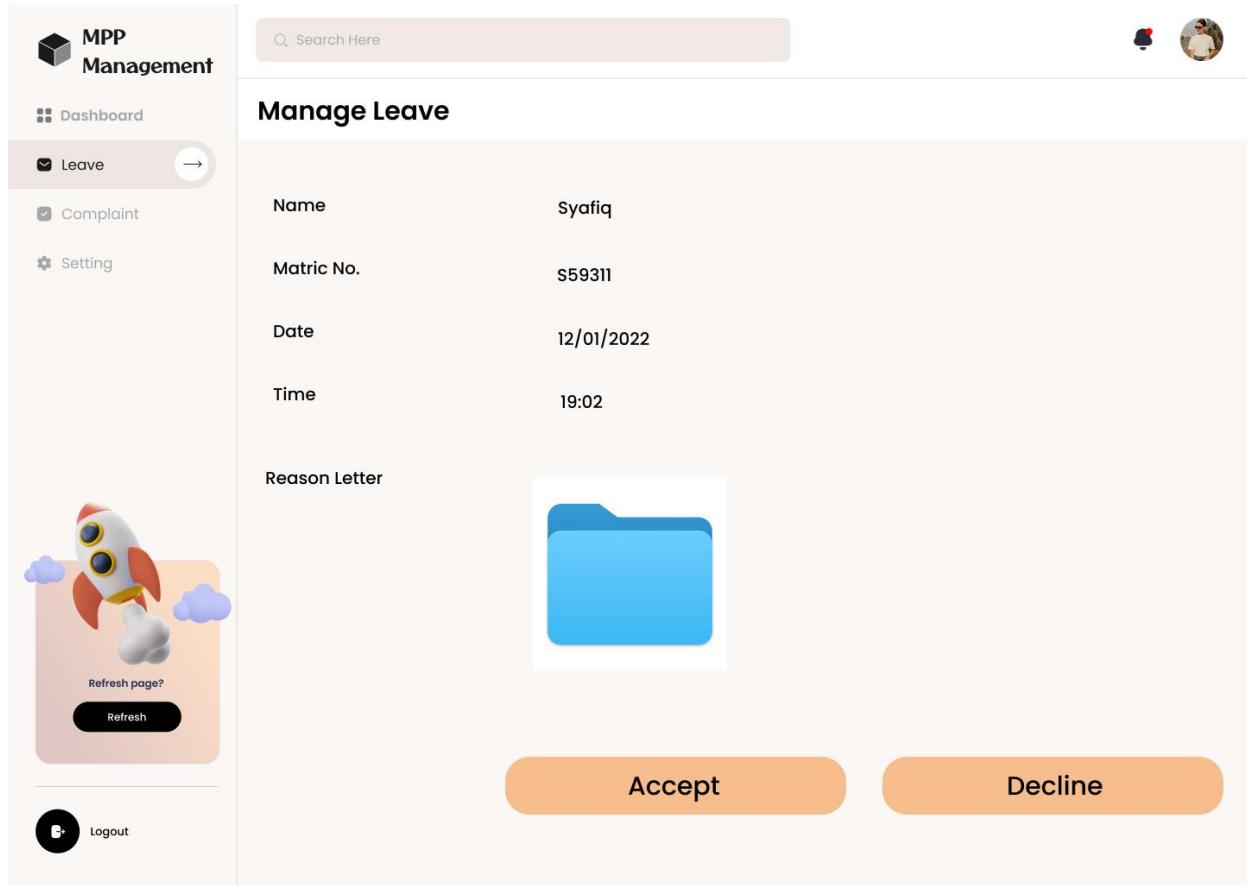


Figure 5. 14: Update Leave of MPP UMT Management System

Figure 5.14, HEPA can perform the task to manage the requests sent by the users either by approving or rejecting the request that can be done by clicking the Accept button to approve the request or the Decline to reject the request. The list of the request will be continuously updated after every operation is done. The approved/rejected user will be eliminated from the list, leaving only the pending request to be displayed in the list.

Figure 5.15 shows account been updated by the user which consists of full name, IC number, designation or club name, username, email, and password.

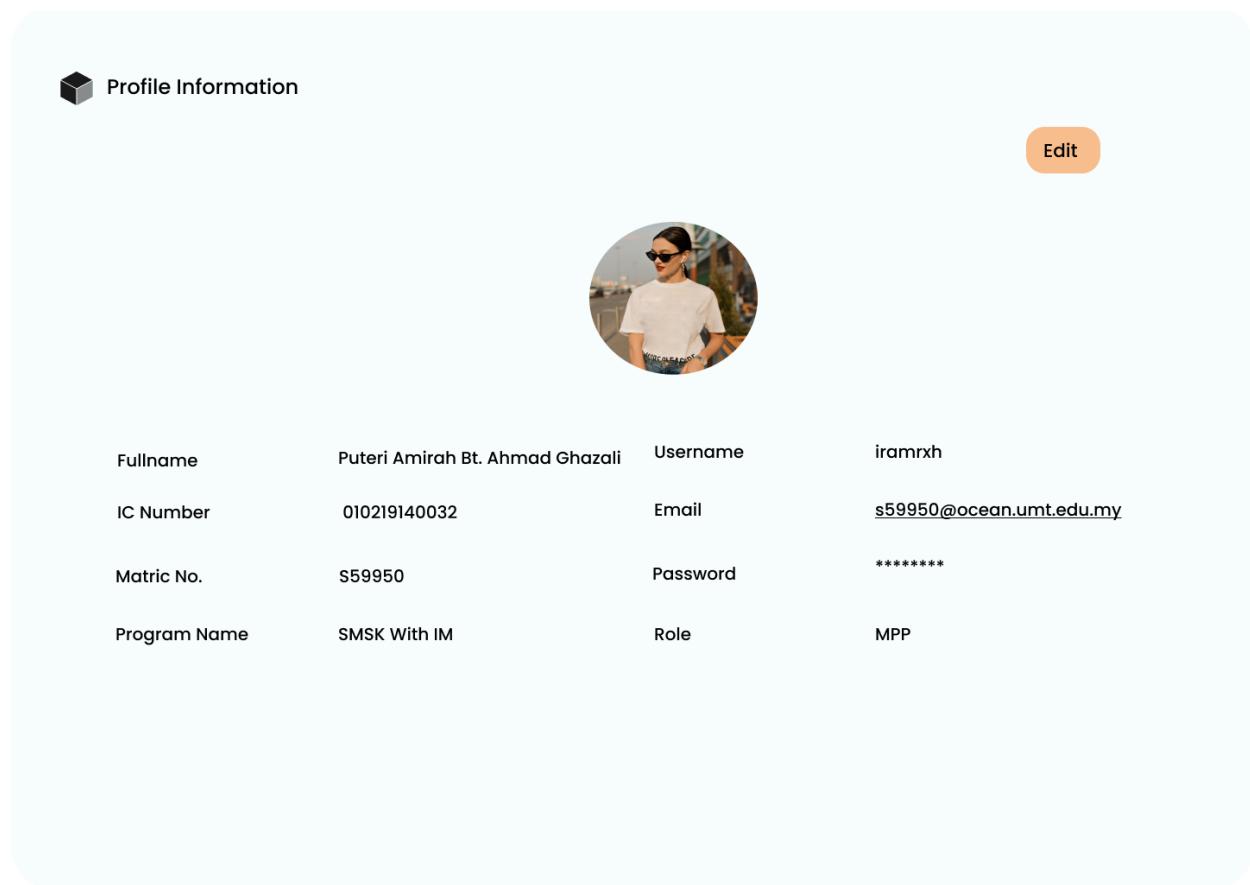


Figure 5. 15: Update Account of MPP UMT Management System

Figure 5.15, this page is accessible for every user that signed in the system. The details of the information of the users will be displayed at this page.

5.6 Discussion

As a result of the application servers' ability to be placed on several machines, the primary three-tier benefit is enhanced scalability. Furthermore, the database requires connections from fewer application servers; it does not establish longer connections with each client. Data integrity is improved. The second rung is where all of the updated information is routed. The second tier can ensure that only critical data is allowed to be changed in the database, removing the potential that untrustworthy client programmes will corrupt data. Because the client does not have direct access to the database, security is enhanced because unauthorised data collection is more difficult. It is more secure since business logic is housed on a secure central server.

Load balancing is made considerably simpler by separating core operations from the database server. object with high performance, portability, and persistence. Reusing is preferred. Each object has the possibility to scale horizontally due to scalability.

Interface design is the process of creating user interfaces for various applications and devices with the goal of improving usability and overall user experience. It is closely related to UI/UX, which stands for User Interface/User Experience. The goal of user interface design in terms of achieving user goals is to make user interactions as easy and efficient as feasible. This section will go into the design of the MPP UMT Management System's user interfaces. The UI design is organised by the actors who will interact with the system, which comprise HEPA, MPP, and PC actors, as well as a folder of generic pages.

5.7 Summary

The process of developing a system by defining its components or modules to satisfy specific needs is known as system design. To understand the system's process in greater depth, use diagrams such as use case diagrams, activity diagrams, class diagrams, and sequence diagrams. This chapter also discusses the properties or database processes that are employed.

CHAPTER 6

SYSTEM IMPLEMENTATION

6.1 Introduction

This chapter discusses about the system hierarchical, system development, discussion, and summary.

6.2 System Hierarchical Menu

The System Menu Hierarchy will provide an overview to system users of the actions that system users need to perform after performing the logging process to the MPP UMT Management System as shown in Figure 6.1.

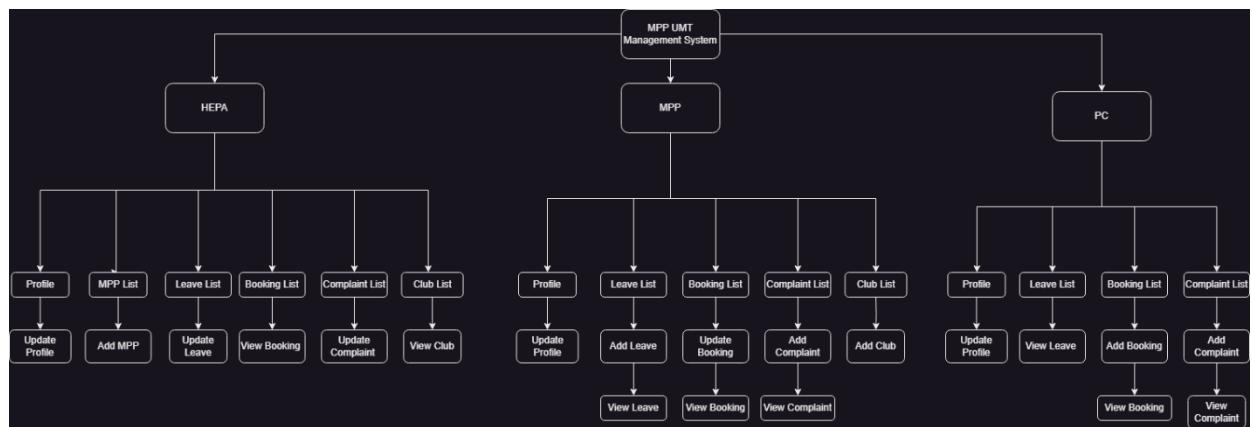


Figure 6. 1: Hierarchical Menu of MPP UMT Management System

Figure 6.1, this will make system users to better understand the flow of MPP UMT Management System. There are three main actors involved in MPP UMT Management System, namely HEPA, MPP and PC.

6.3 System Development

A user interface design is a system design that is created with the Java programming language. Data about complaints, bookings, and other data details are maintained in the XAMPP (phpMyAdmin) database.

Figures 6.2 and 6.3 show the interface that has been developed on the MPP UMT Management System.

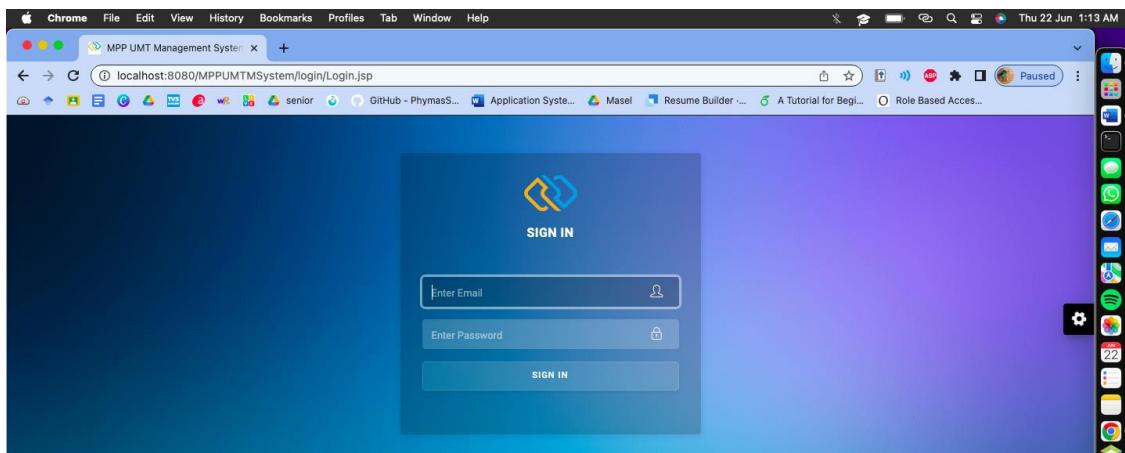


Figure 6. 2: Sign In of MPP UMT Management System

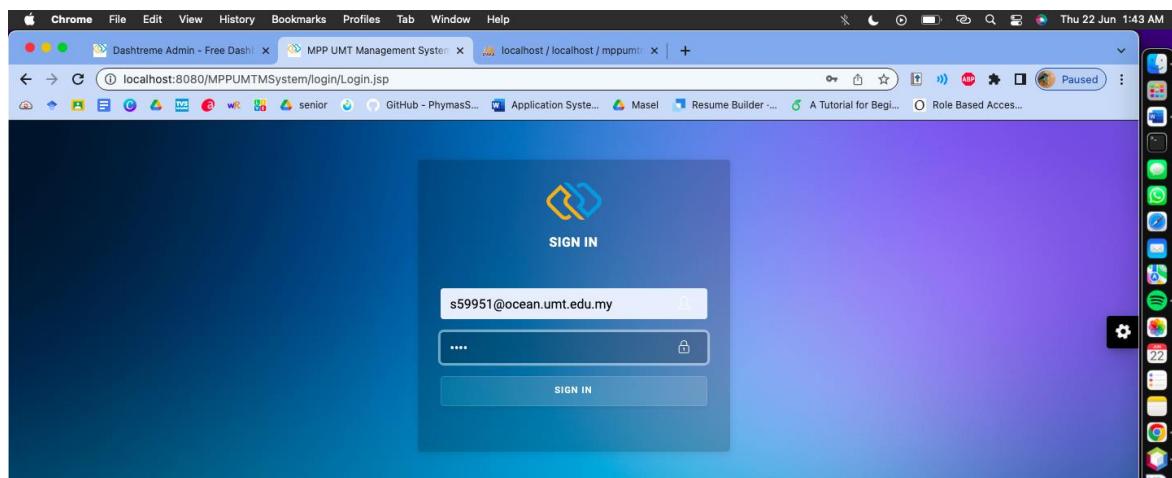


Figure 6. 3: Details Fill for Sign In of MPP UMT Management System

Figure 6.2 and 6.3 shows user can fill up the email address and password to enter the system. After that they will see the dashboard with different navigation.

Figure 6.4, 6.5 & 6.6 shows the dashboard for HEPA, MPP and PC.

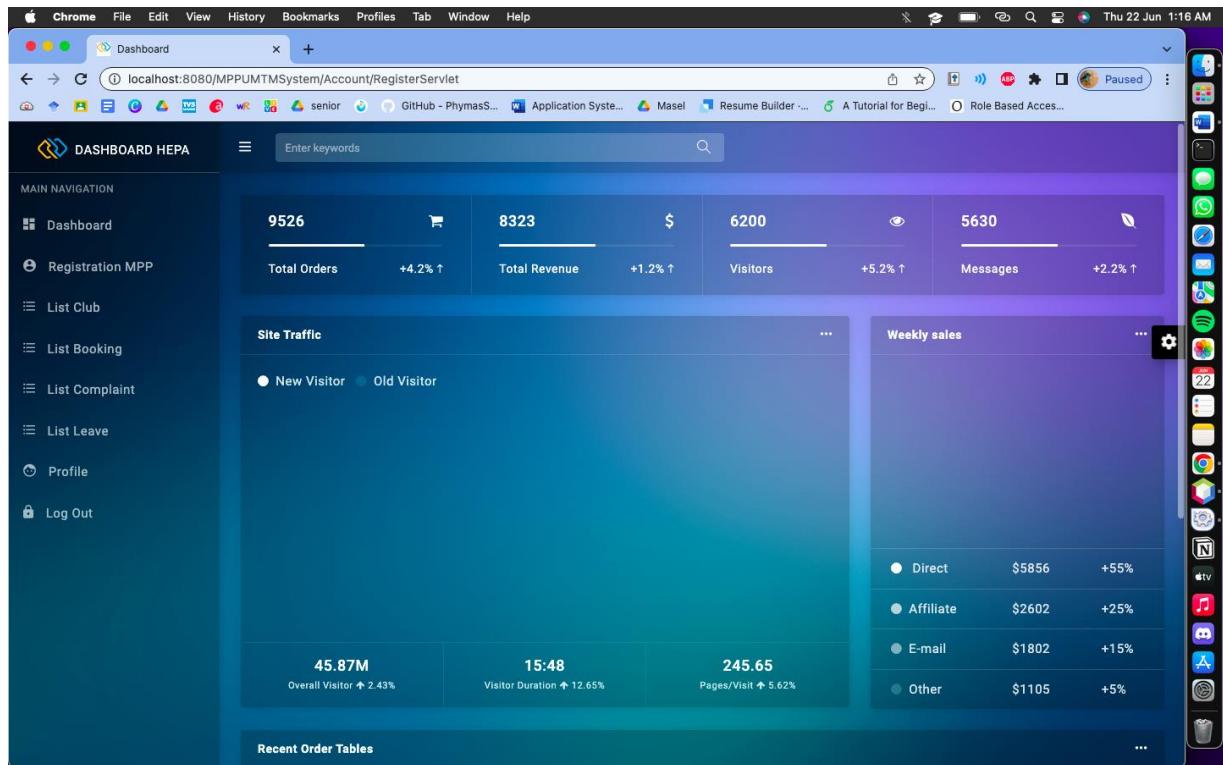


Figure 6. 4: HEPA Dashboard of MPP UMT Management System

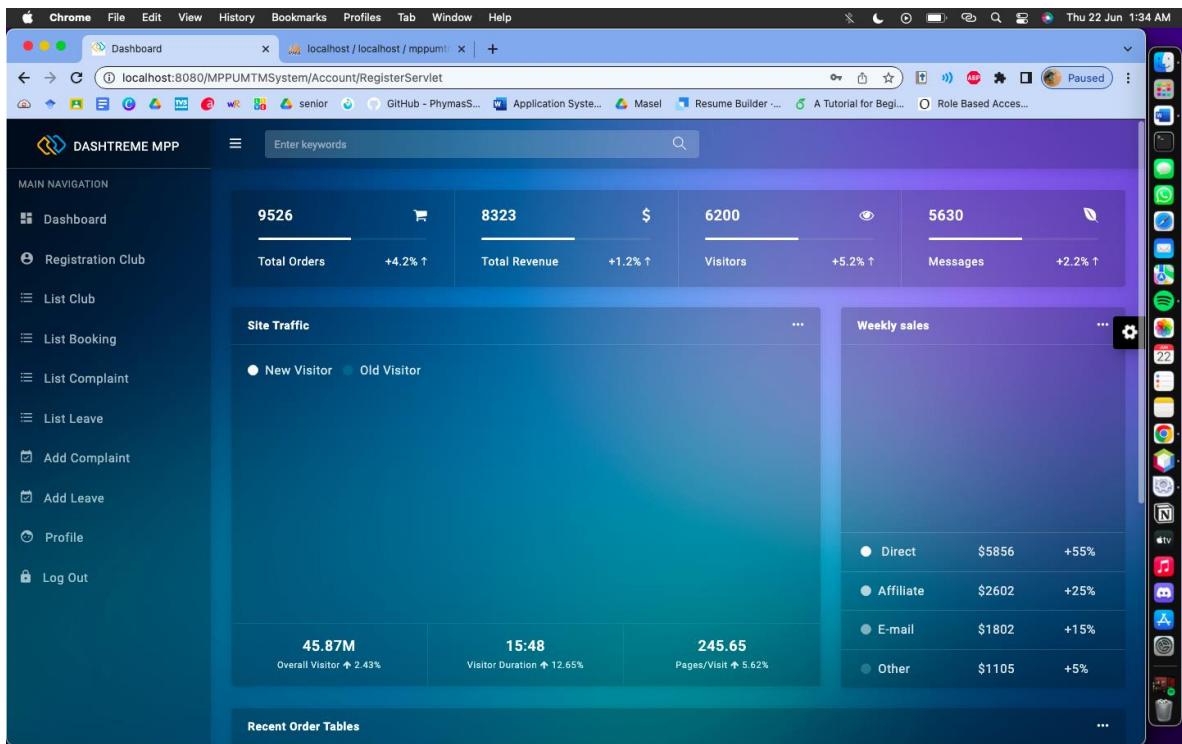


Figure 6. 5: MPP Dashboard of MPP UMT Management System

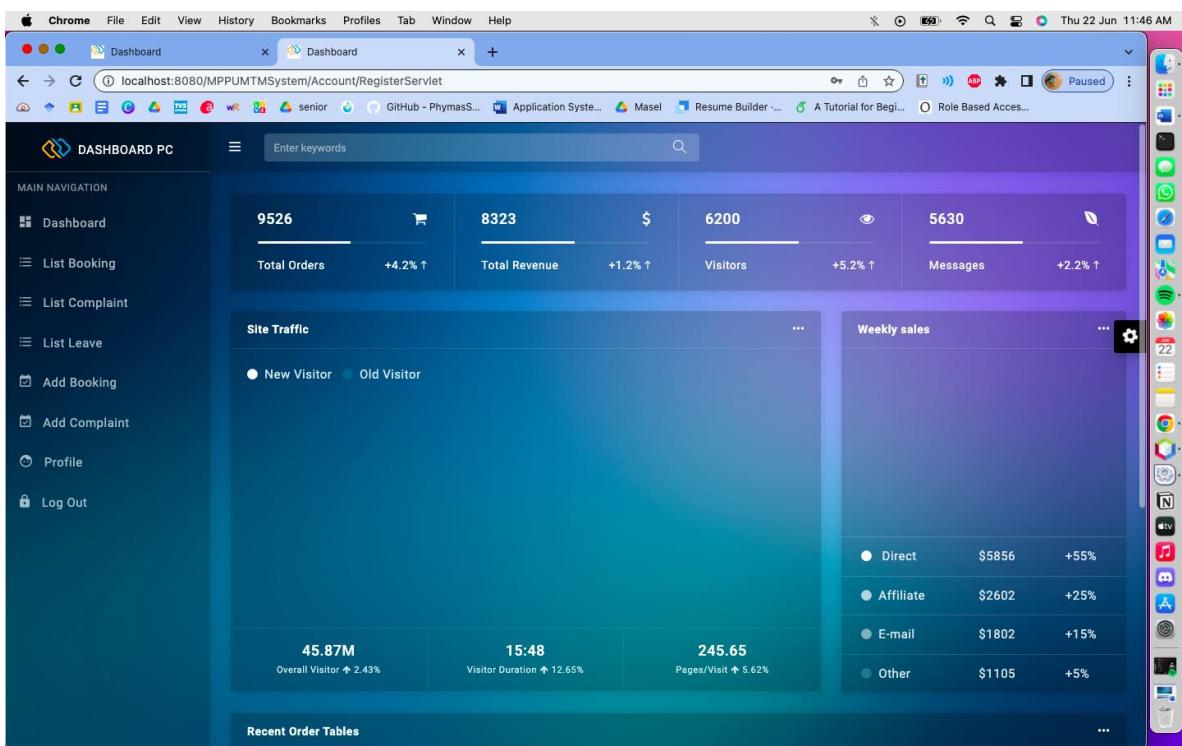


Figure 6. 6: President Club Dashboard of MPP UMT Management System

Figure 6.4, 6.5 & 6.6 can be differentiated by users which will display different main navigation that is shown on the left panel.

Figures 6.7 and 6.8 show a registration account for the new MPP and Club Organization. This will be authorized by HEPA (for register MPP account) and MPP (for register Club Organization account).

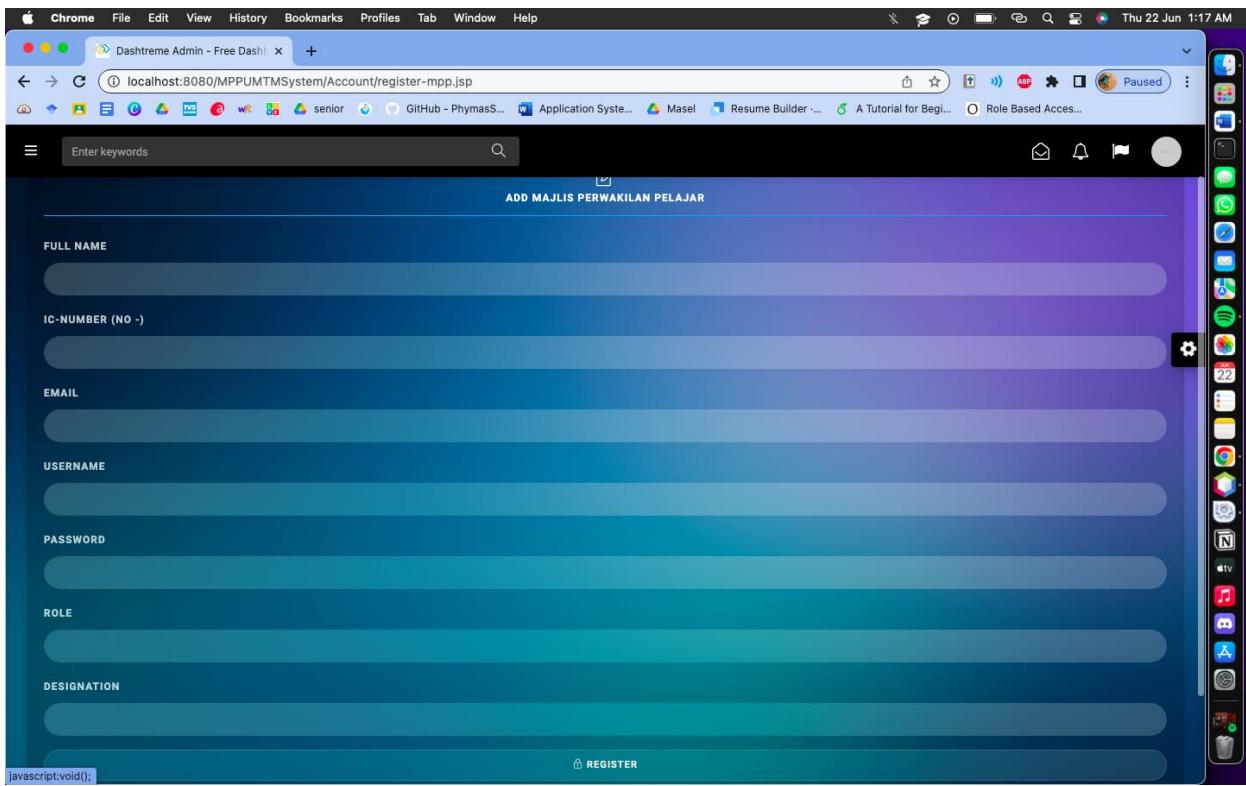


Figure 6. 7: Registration MPP of MPP UMT Management System

Figure 6.7, for HEPA users, they can fill up a registration form to add a new MPP Organization. The form is based on the MPP account, by filling in their full name, IC number, email, username, password, automation role and designation position in MPP. After that, the HEPA can click register to submit the active account for the MPP

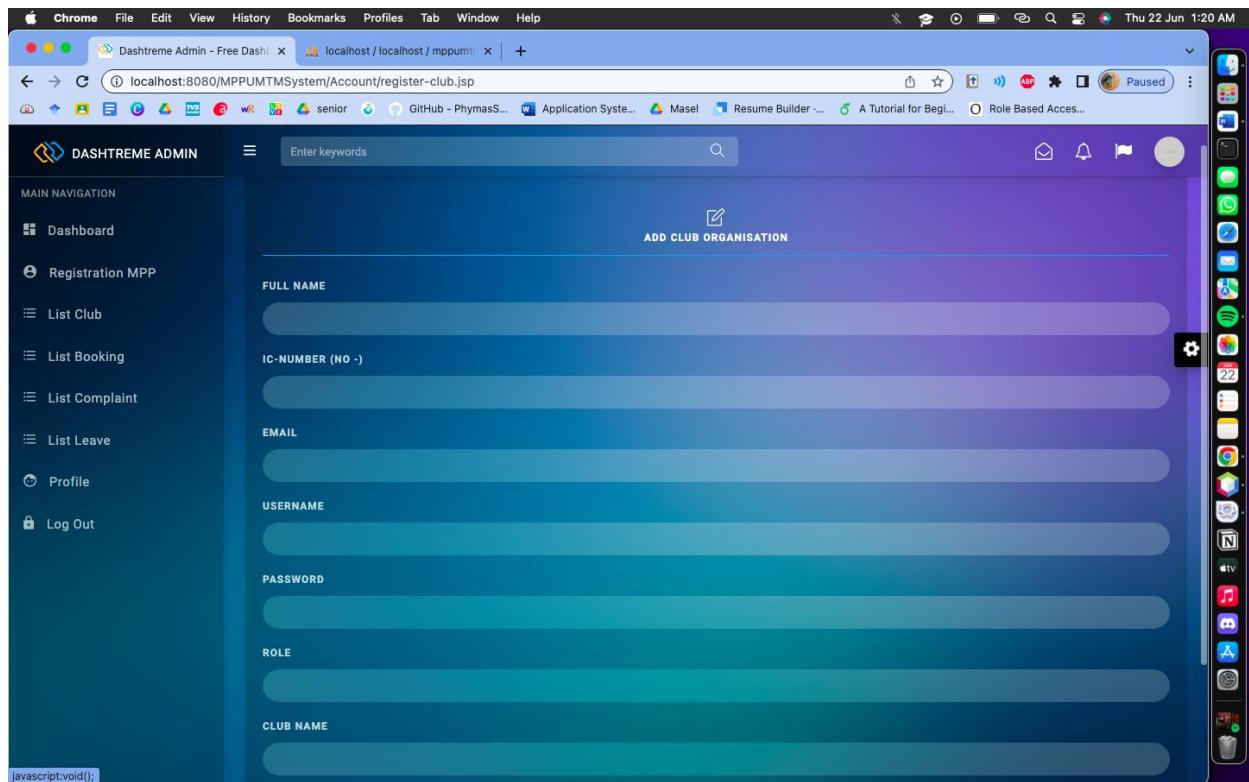


Figure 6. 8: Registration Club Organization of MPP UMT Management System

Figure 6.8, for MPP users, they can fill up a registration form to add a club organization. The form is based on the President Club account, by filling up their full name, IC number, email, username, password, automation role and club name. After that, the MPP can click register to submit the active account for the Club organization.

Figure 6.9 shows the success registration.

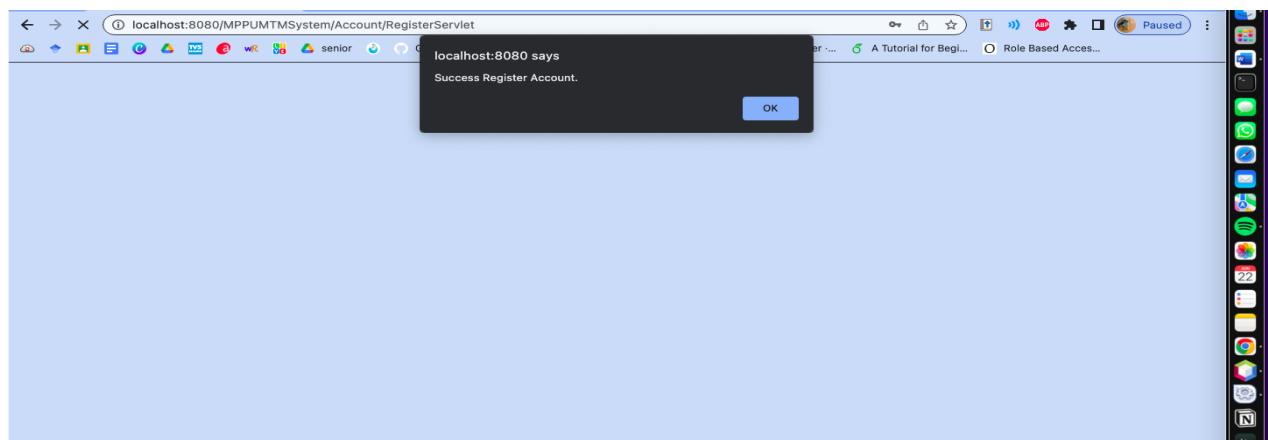


Figure 6. 9: Success Registration of MPP UMT Management System

Figure 6.9 show the success registration by completing the registration form.

Figure 6.10 HEPA will see the list of club accounts that have been activated.

The screenshot shows a web browser window titled "Dashtreme Admin - Free Dash" with the URL "localhost / localhost / mppumt /". The main content area is titled "List Club Organisation". On the left, there is a sidebar with the title "DASHTREME ADMIN" and a "MAIN NAVIGATION" section containing links for Dashboard, Registration MPP, List Club (which is highlighted), List Booking, List Complaint, List Leave, Profile, and Log Out. The main content area displays a table with two rows. The first row has "NAME" as "PUTERI AMIRAH AHMAD GHAZALI" and "CLUB NAME" as "Wakil Pelajar". The second row has "NAME" as "KHAIRUL HAFIZ" and "CLUB NAME" as "PERSADA". At the bottom of the content area, it says "Copyright © 2023 S59950". The browser interface includes a search bar, a toolbar with various icons, and a vertical sidebar on the right with more application icons.

NAME	CLUB NAME
PUTERI AMIRAH AHMAD GHAZALI	Wakil Pelajar
KHAIRUL HAFIZ	PERSADA

Figure 6. 10: HEPA List Club Organization of MPP UMT Management System

Figure 6.10 consists of President Name and their club's name from the HEPA user view.

Figure 6.11 shows MPP can view and delete the account if the club organization is unactive.

The screenshot shows a web browser window in Chrome with the URL `localhost:8080/MPPUMTMSystem/Account/list-club.jsp`. The page title is "List Club Organisation". On the left, there is a sidebar with the "DASHTREME MPP" logo and a main navigation menu containing items like Dashboard, Registration Club, List Club, List Booking, List Complaint, List Leave, Add Complaint, Add Leave, Profile, and Log Out. The "List Club" item is currently selected. The main content area displays a table with two rows of data:

NAME	CLUB NAME	ACTIONS
PUTERI AMIRAH AHMAD GHAZALI	Wakil Pelajar	DELETE
KHAIRUL HAFIZ	PERSADA	DELETE

At the bottom right of the content area, there is a small copyright notice: "Copyright © 2023 S59950". The browser's address bar shows the full URL: `localhost:8080/MPPUMTMSystem/Account/list-club.jsp`.

Figure 6. 11: MPP List Club Organization of MPP UMT Management System

Figure 6.11 consists of delete action button which if the dissolution of the club if the club is unactive for so long

Figure 6.12 shows the delete account for the unactive club organization.

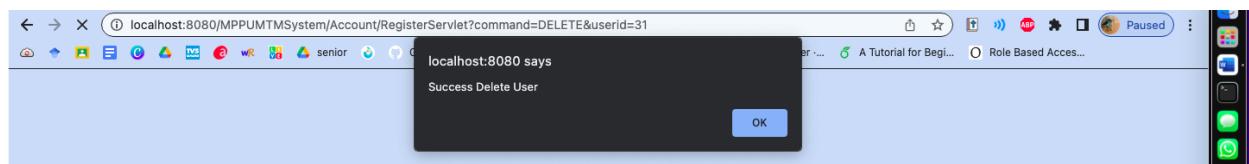


Figure 6. 12: Delete Account of MPP UMT Management System

Figure 6.12 show the delete account if the club organization is unactive.

Figure 6.13 shows an add booking form.

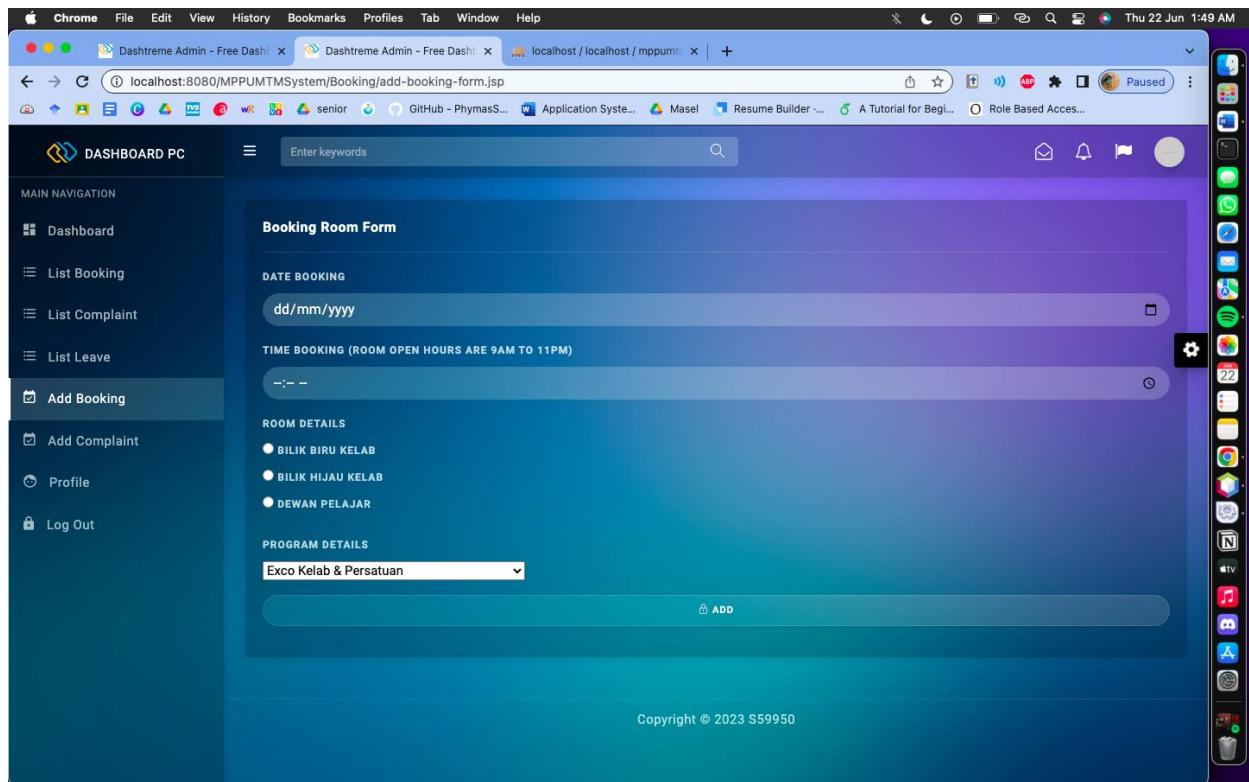


Figure 6. 13: Booking Form of MPP UMT Management System

Figure 6.13, PC can book the room for club purposes such as formal meetings, discussion program and others by filling in the required details such as date, time, room details and program details. After that, the PC can submit the form by clicking add, the form will be sent to the MPP for evaluation.

Figure 6.14 shows the success for the booking room form.

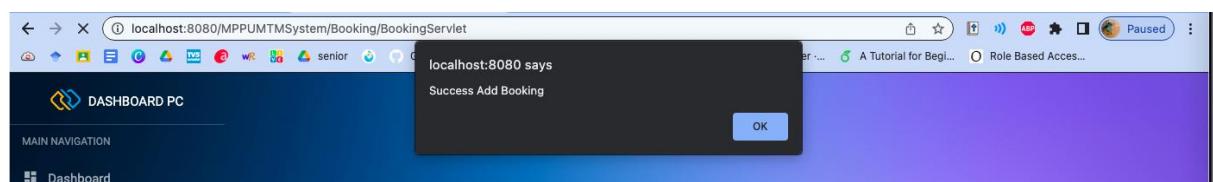


Figure 6. 14: Success Booking Form of MPP UMT Management System

Figure 6.14 show the success booking by completing the booking form.

Figure 6.15 shows a list booking room from the MPP interface.

The screenshot shows a web browser window titled 'localhost / localhost / mppumt' with the URL 'localhost:8080/MPPUMTMSystem/Booking/process-view-booking.jsp'. The page is titled 'List Booking' and displays a table of booking records. The columns are: ID, CLUB NAME, DATE BOOKING, TIME BOOKING, ROOM DETAILS, PROGRAM DETAILS, ACTIONS, and STATUS. The data in the table is as follows:

ID	CLUB NAME	DATE BOOKING	TIME BOOKING	ROOM DETAILS	PROGRAM DETAILS	ACTIONS	STATUS
25	Kebajikan & kediaman MPP	2023-06-30	17:16:00	Bilik Hijau Kelab	Exco Sukan & Rekreasi	UPDATE	REJECTED
28	Kebajikan & kediaman MPP	2023-06-30	18:38:00	Bilik Hijau Kelab	Exco Media & Komunikasi	UPDATE	APPROVED
29	Kebajikan & kediaman MPP	2023-06-30	22:38:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	UPDATE	APPROVED
30	Kebajikan & kediaman MPP	2023-07-01	22:38:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	UPDATE	Rejected
31	Kebajikan & kediaman MPP	2023-07-16	22:38:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	UPDATE	REJECTED
32	Wakil Pelajar	2023-07-22	22:10:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	UPDATE	PENDING

At the bottom of the page, it says 'Copyright © 2023 S59950'.

Figure 6. 15: MPP List Booking Room of MPP UMT Management System

Figure 6.15, MPP have the authority to send an update approve or rejected to the booking room form in status.

Figure 6.16 shows a list booking room from the MPP interface.

The screenshot shows a web browser window titled "Dashtreme Admin - Free Dash" with the URL "localhost:8080/MPPUMTMSystem/Booking/process-view-booking.jsp". The main content area is titled "List Booking" and displays a table of room bookings. The table has columns: ID, CLUB NAME, DATE BOOKING, TIME BOOKING, ROOM DETAILS, PROGRAM DETAILS, and STATUS. The data in the table is as follows:

ID	CLUB NAME	DATE BOOKING	TIME BOOKING	ROOM DETAILS	PROGRAM DETAILS	STATUS
25	Kebajikan & kediaman MPP	2023-06-30	17:16:00	Bilik Hijau Kelab	Exco Sukan & Rekreasi	REJECTED
28	Kebajikan & kediaman MPP	2023-06-30	18:38:00	Bilik Hijau Kelab	Exco Media & Komunikasi	APPROVED
29	Kebajikan & kediaman MPP	2023-06-30	22:38:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	APPROVED
30	Kebajikan & kediaman MPP	2023-07-01	22:38:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	Rejected
31	Kebajikan & kediaman MPP	2023-07-16	22:38:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	REJECTED
32	Kebajikan & kediaman MPP	2023-07-22	22:10:00	Bilik Hijau Kelab	Exco Kelab & Persatuan	APPROVED
33	Wakil Pelajar	2023-07-01	18:49:00	Dewan Pelajar	Exco Kerohanian & Perpaduan	PENDING

At the bottom of the page, there is a copyright notice: "Copyright © 2023 S59950".

Figure 6. 16: PC and HEPA List Booking Room of MPP UMT Management System

Figure 6.16, HEPA can view who in charge on using the room with the supervision of the MPP.

Figure 6.17 shows update booking room page.

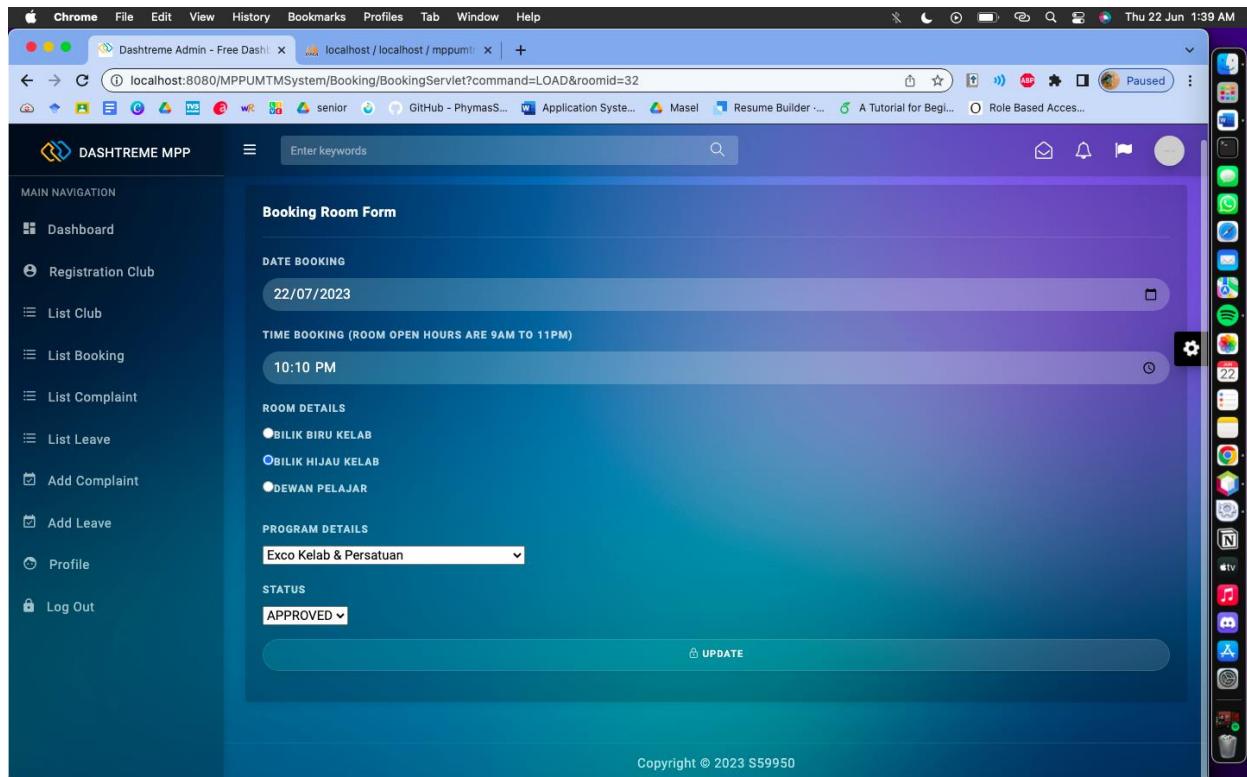


Figure 6. 17: Update Booking Room of MPP UMT Management System

Figure 6.17 illustrates the page of MPP ‘*Kelab & Persatuan*’ take an action for any booking room request. MPP ‘*Kelab & Persatuan*’ can view the booking room form and send a reply either approve or decline the booking request which the action has been taken.

Figure 6.18 shows an update on the booking room form.

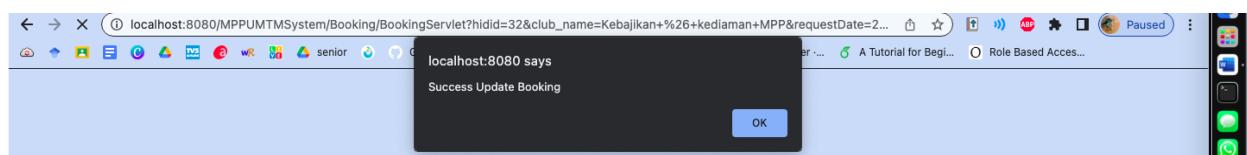


Figure 6. 18: Success Update Booking Room of MPP UMT Management System

Figure 6.18, this shown the MPP ‘*Kelab & Persatuan*’ has been taken the action.

Figure 6.19 shows the new complaint page.

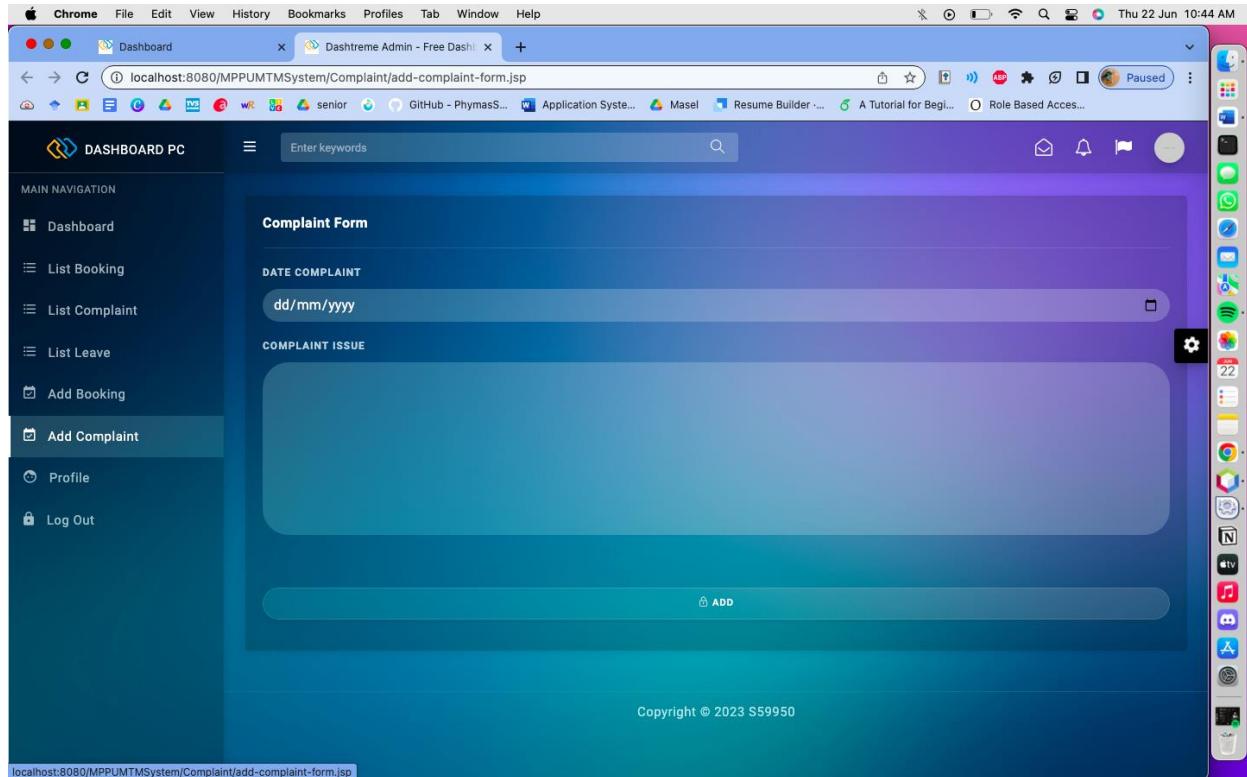


Figure 6. 19: Add Complaint of MPP UMT Management System

Figure 6.19, complaint page can state an issue by filling the date, complaint issue. After filling up the form, the user needs to click the add button for the complaint to be submit to the HEPA for evaluation and action to be taken off.

Figure 6.20 shows the success for the booking room form.

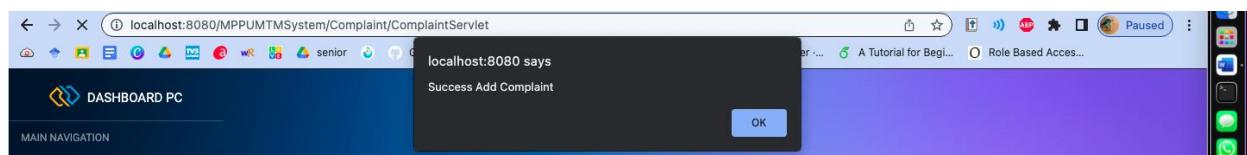


Figure 6. 20: Success Complaint of MPP UMT Management System

Figure 6.20 show the success complaint by completing the complaint form.

Figure 6.21 shows HEPA can reply to the complaint by entering the update actions.

The screenshot shows a web browser window titled "DashTreme Admin - Free Dash" with the URL "localhost:8080/MPPUMTMSystem/Complaint/process-view-complaint.jsp". The main content area is titled "List Complaint" and displays a table of complaints. The table has columns: ID, DATE, COMPLAINT ISSUE, ACTION, and REPLY. The data is as follows:

ID	DATE	COMPLAINT ISSUE	ACTION	REPLY
31	2023-01-22	technical issues	Update	PENDING
32	2023-01-22	technical issue	Update	Will come shortly
39	2023-01-22	technical issue	Update	later
40	2023-01-22	communication	Update	OTW
43	2023-01-24	Miscommunication due to lacking of idea	Update	PENDING
47	2023-01-23	communication	Update	PENDING
48	2023-01-28	Miscommunication due to lacking of idea	Update	PENDING

At the bottom of the page, it says "Copyright © 2023 559950". The left sidebar contains a "MAIN NAVIGATION" menu with items: Dashboard, Registration MPP, List Club, List Booking, List Complaint (which is highlighted), List Leave, Profile, and Log Out. The right side of the screen shows a vertical docked application bar with various icons.

Figure 6. 21: HEPA List Complaint of MPP UMT Management System

Figure 6.21 consists of date, complaint issue and an action button update for the HEPA to reply the complaint.

Figure 6.22 shows the list of complaints from the PC and MPP.

ID	DATE	COMPLAINT ISSUE	STATUS
31	2023-01-22	technical issuees	PENDING
32	2023-01-22	technical issue	Will come shortly
39	2023-01-22	technical issue	later
40	2023-01-22	communication	OTW
43	2023-01-24	Miscommunication due to lacking of idea	PENDING
47	2023-01-23	communication	PENDING
48	2023-01-28	Miscommunication due to lacking of idea	PENDING

Figure 6. 22: PC and MPP List Complaint of MPP UMT Management System

Figure 6.22 shows MPP and PC can view the complaint status which the action has been taken by HEPA.

Figure 6.23 shows the reply to complaint page.

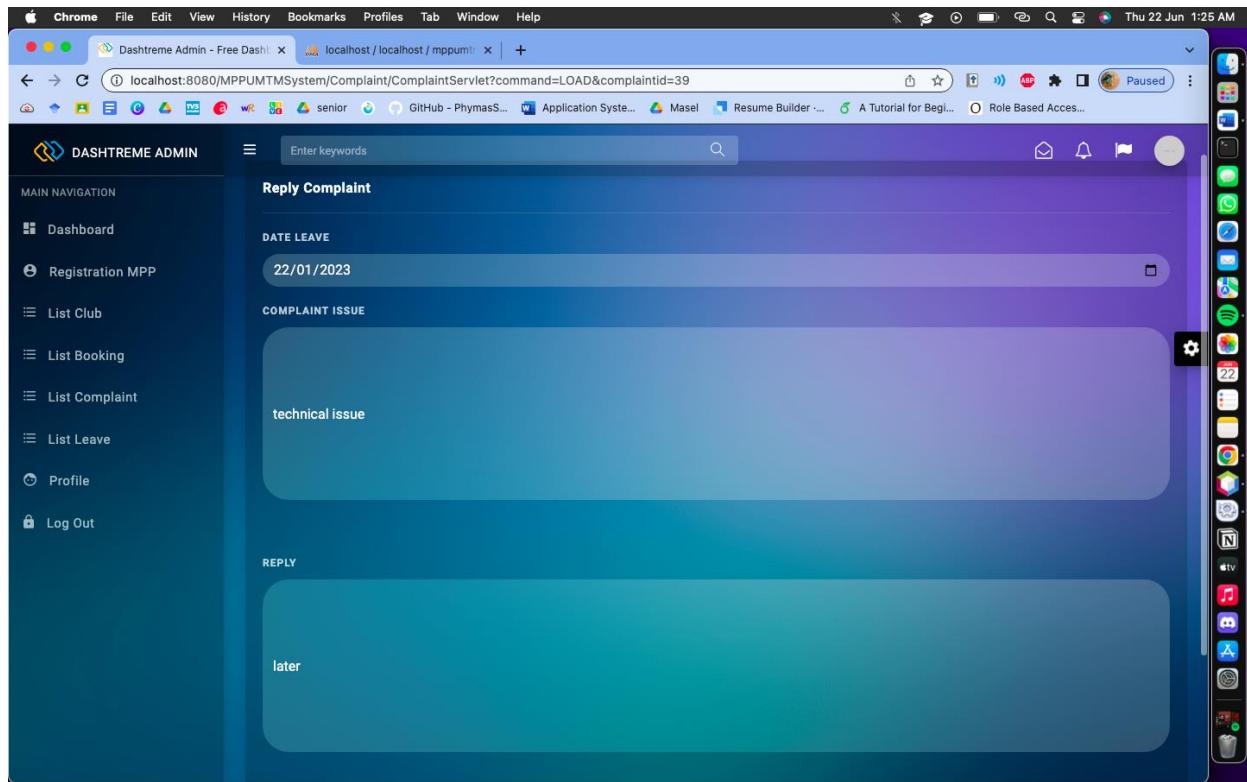


Figure 6. 23: Reply Complaint of MPP UMT Management System

Figure 6.23 consists of date, complaint issue and a reply box for HEPA to reply all of the complaint.

Figure 6.24 shows the success update complaint that reply to the complaint form



Figure 6. 24: Success Update Complaint of MPP UMT Management System

Figure 6.24 show the update notification by completing the update complaint form.

Figure 6.25 shows the leave form.

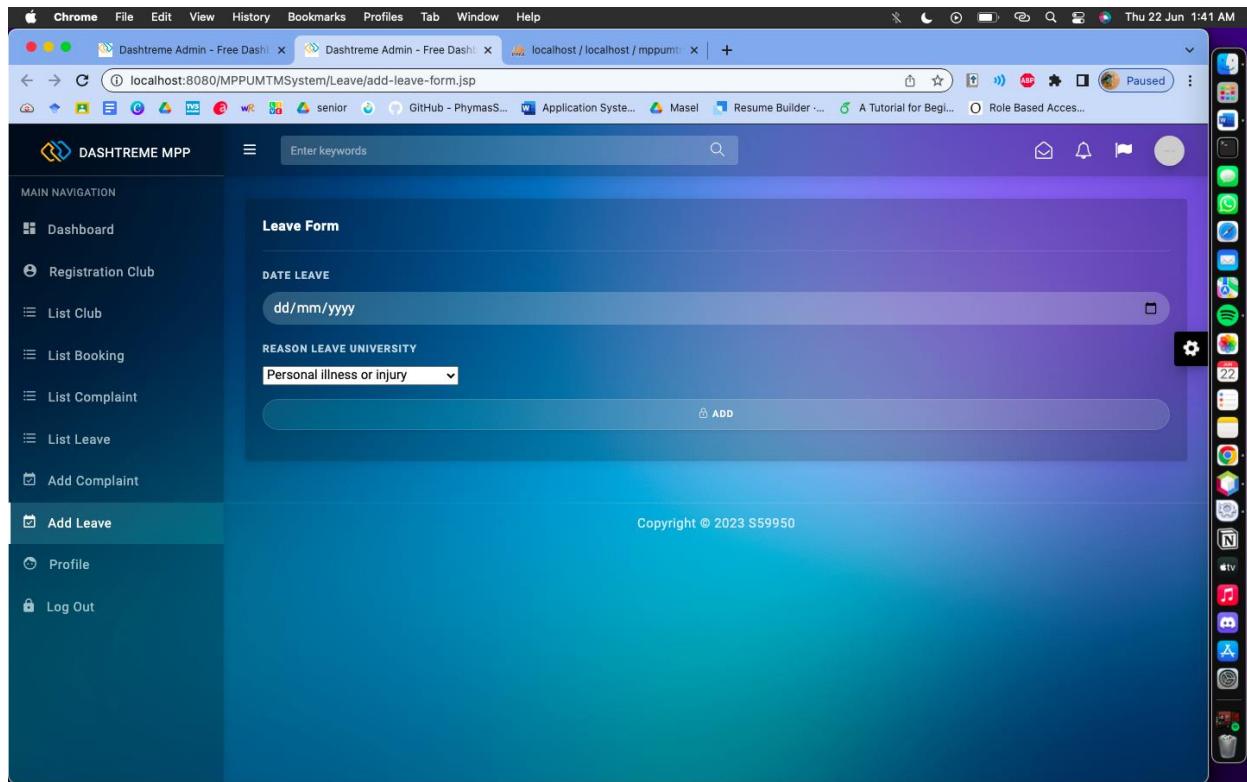


Figure 6. 25: Add Leave of MPP UMT Management System

Figure 6.25, MPP can book the date to leave the campus on purposes such as personal illness, family matter and others by filling in the required details such as date and reason leave university. After that, the MPP can submit the form by clicking add, the form will be sent to the HEPA for evaluation.

Figure 6.26 shows the success submission on leave application.



Figure 6. 26: Success Leave Application of MPP UMT Management System

Figure 6.26 show the success leave by completing the leave form.

Figure 6.27 shows the list of leaves from HEPA.

The screenshot shows a web application titled "DASHTREME ADMIN" running in a Chrome browser. The URL is "localhost:8080/MPPUMTMSystem/Leave/process-view-leave.jsp". The main content area is titled "List Leave" and displays a table of leave requests. The table has columns: ID, MPP, DATE, REASON TO LEAVE THE UNIVERSITY, ACTIONS, and STATUS. The data in the table is as follows:

ID	MPP	DATE	REASON TO LEAVE THE UNIVERSITY	ACTIONS	STATUS
27	Puan Hainany Idayu Binti Yazid	2023-01-22	Personal illness or injury	COMMENT	APPROVED
34	Nur Zuliana Binti Zurkarnain	2023-01-26	Home emergency	COMMENT	PENDING
37	Puan Hainany Idayu Binti Yazid	2023-01-22	Personal illness or injury	COMMENT	REJECTED
49	Muhammad Haziq Haiqal Bin Razali	2023-07-22	Personal illness or injury	COMMENT	PENDING
50	Muhammad Haziq Haiqal Bin Razali	2023-08-03	Home emergency	COMMENT	PENDING

At the bottom of the page, it says "Copyright © 2023 S59950". The left sidebar contains a "MAIN NAVIGATION" menu with items: Dashboard, Registration MPP, List Club, List Booking, List Complaint, List Leave (which is highlighted), and Profile. There is also a "Log Out" option. The right side of the screen shows a vertical docked bar with various application icons.

Figure 6. 27: HEPA List Leave of MPP UMT Management System

Figure 6.27 shows that the HEPA can evaluate the leave request by entering the comment actions.

Figure 6.28 shows MPP & PC can view availability of MPP

The screenshot shows a web browser window titled "localhost / localhost / mpumt...". The main content is a table titled "List Leave" with the following data:

ID	MPP	DATE	REASON LEAVE UNIVERSITY	STATUS
27	Puan Hainany Idayu Binti Yazid	2023-01-22	Personal illness or injury	APPROVED
34	Nur Zuliana Binti Zurkarnain	2023-01-26	Home emergency	PENDING
37	Puan Hainany Idayu Binti Yazid	2023-01-22	Personal illness or injury	REJECTED
49	Muhammad Haziq Haiqal Bin Razali	2023-07-22	Personal illness or injury	PENDING
50	Muhammad Haziq Haiqal Bin Razali	2023-08-03	Home emergency	APPROVED

At the bottom of the page, it says "Copyright © 2023 S59950".

Figure 6.28: MPP & PC List Leave of MPP UMT Management System

Figure 6.28 shows MPP can view the leave status which the action has been taken by HEPA.

Figure 6.29 shows the update leave page.

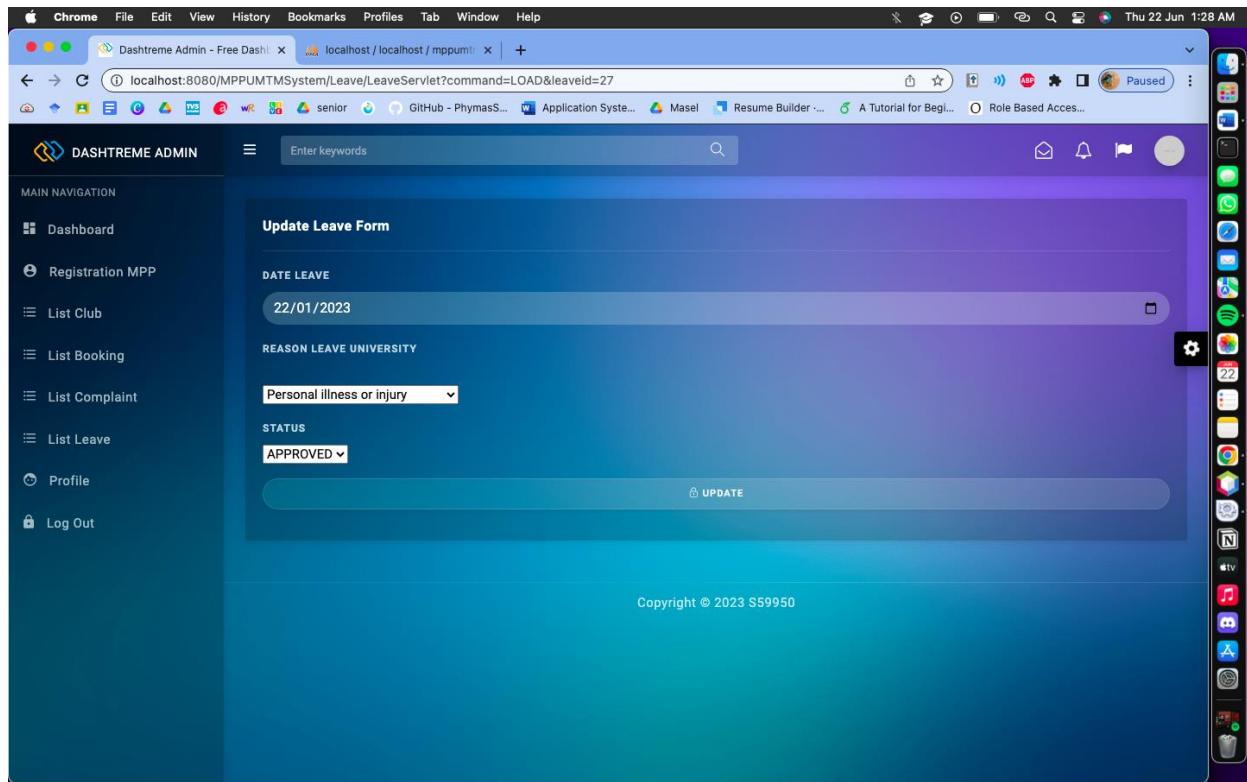


Figure 6. 29: Update Leave of MPP UMT Management System

Figure 6.29 shows that HEPA will act on leave request. MPP and PC can view the leave status which the action has been taken.

Figure 6.30 shows the success update leave that reply to the leave form



Figure 6. 30: Success Update Leave of MPP UMT Management System

Figure 6.30 show the update notification by completing the update leave form.

Figure 6.31 shows account update page.

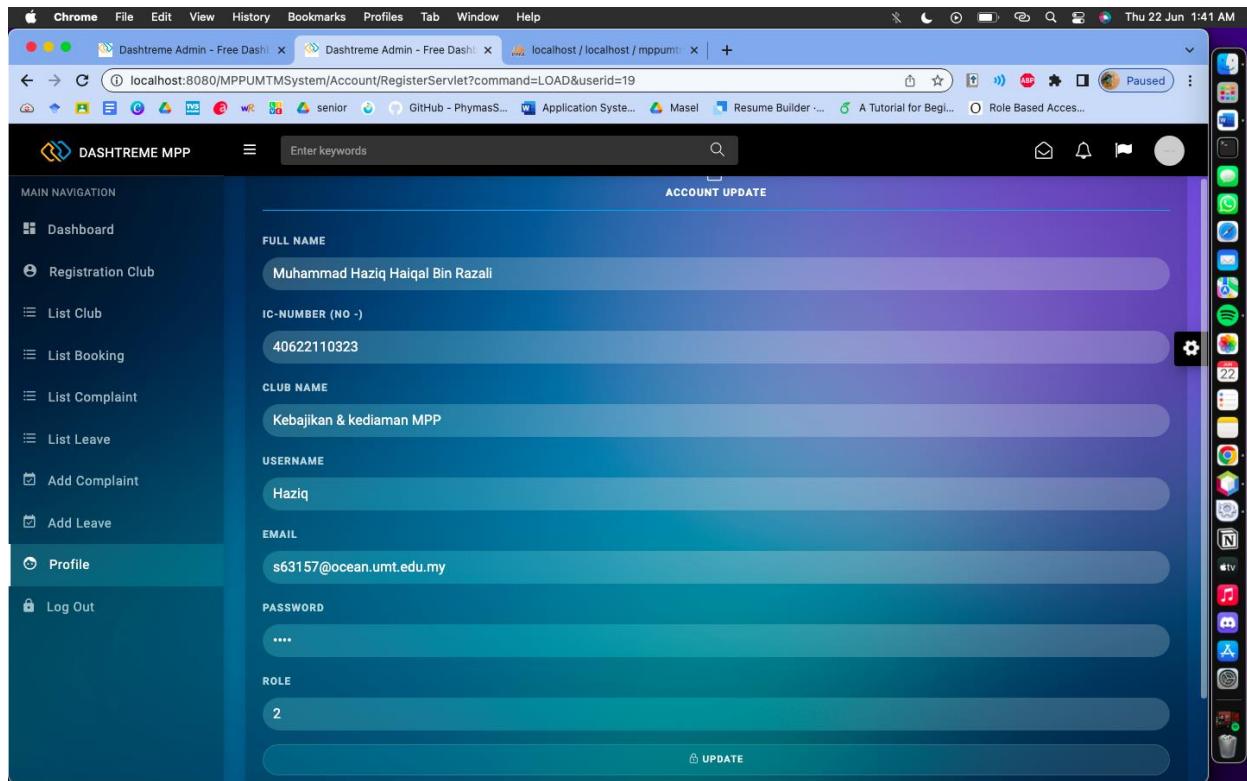


Figure 6. 31: Account Update of MPP UMT Management System

Figure 6.31 shows that the account been updated by the user which consists of full name, IC number, designation or club name, username, email, and password.

Figure 6.32 shows the logout by the user.

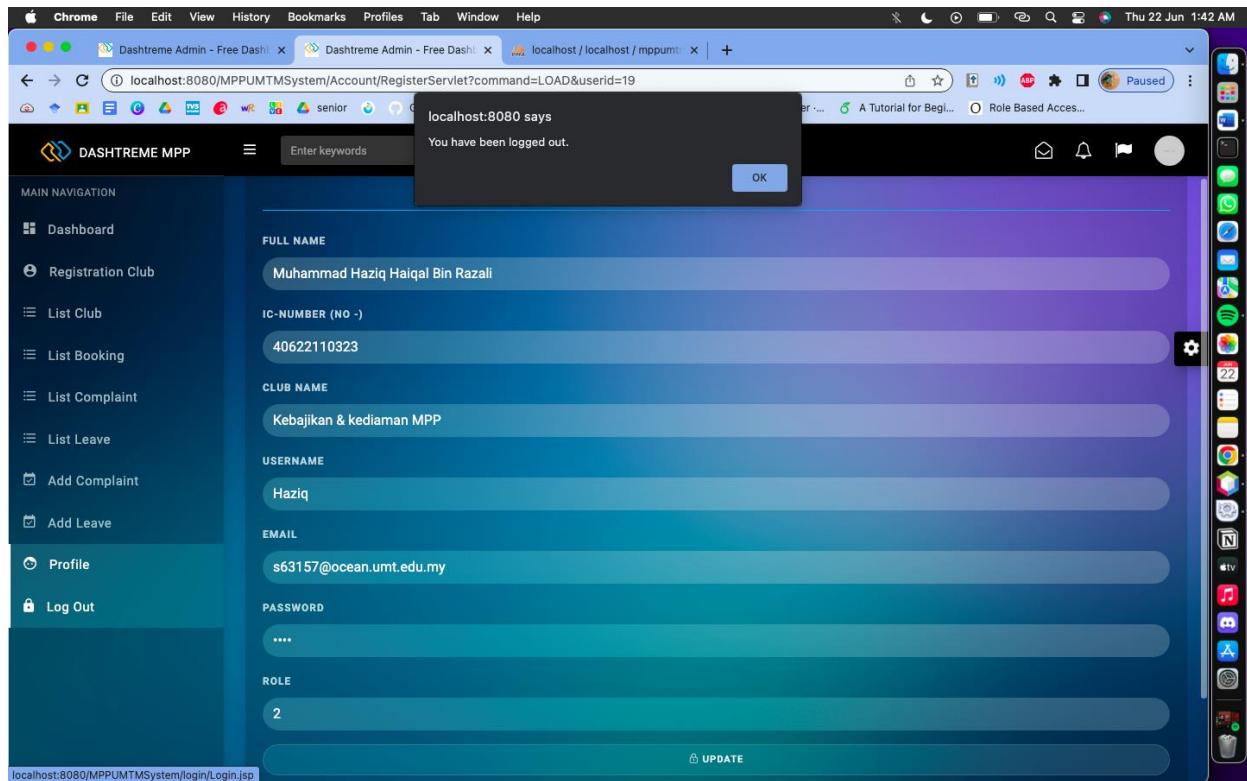


Figure 6. 32: Logout of MPP UMT Management System

Figure 6.32 show the log out notification when the user completing the account update.

6.4 Discussion

A user interface design is a system design created with the Java programming language. Complaints, bookings, and other data details are maintained in the XAMPP (phpMyAdmin) database.

6.5 Summary

System implementation is the process of defining how an information system should be developed and ensuring that the information system runs and is used, according to MPP. The UMT Management System is designed to keep track of all MPP activities, appointments, and progress. A hierarchical menu must be created in order to determine the relationship between each other and then construct this system. The system was effectively developed from all five functional requirements.

CHAPTER 7

CONCLUSION

7.1 Introduction

This chapter discusses about the project contributions, project constraints, future work, and summary.

7.2 Project Contributions

The "Majlis Perwakilan Pelajar UMT Management System" (MPP UMT Management System) contributes to stakeholders by assisting PC in reporting any complaints, dissatisfaction, and suggestions addressing community concern to the proper UMT authorities and departments. Furthermore, the MPP UMT Management System assists the HEPA in checking the contents of the complaint and making next action easy. As a result, delivering status to the PC and acting will be faster and more effective. Furthermore, the MPP UMT Management System simplifies the affairs of the MPP concerned by allowing them to check on the booking process, what action PC has taken, and which PC is responsible for any booking that has been made.

7.3 Project Constraints

Each project that is created will have its own set of constraints. It could be in the form of a logic or syntax error. For HEPA, the system's limits are that the analysis of a complaint cannot be generated in further depth using an infographic such as a Pie Chart or Bar Chart. The constraint for MPP is that they are unable to upload a pdf as proof of leave. The constraint for the PC is that it cannot upload a pdf as evidence of the booking.

7.4 Future Work

The suggested future enhancement to the MPP UMT Management System is to fully automate the system. The proposed upgrades for HEPA include developing a system that may produce complaints with more specifics and show them in various states to make the system more efficient. As for the leave and booking evidence, the future system must allow MPP and PC to submit a video with a maximum file size of 100MB.

7.5 Summary

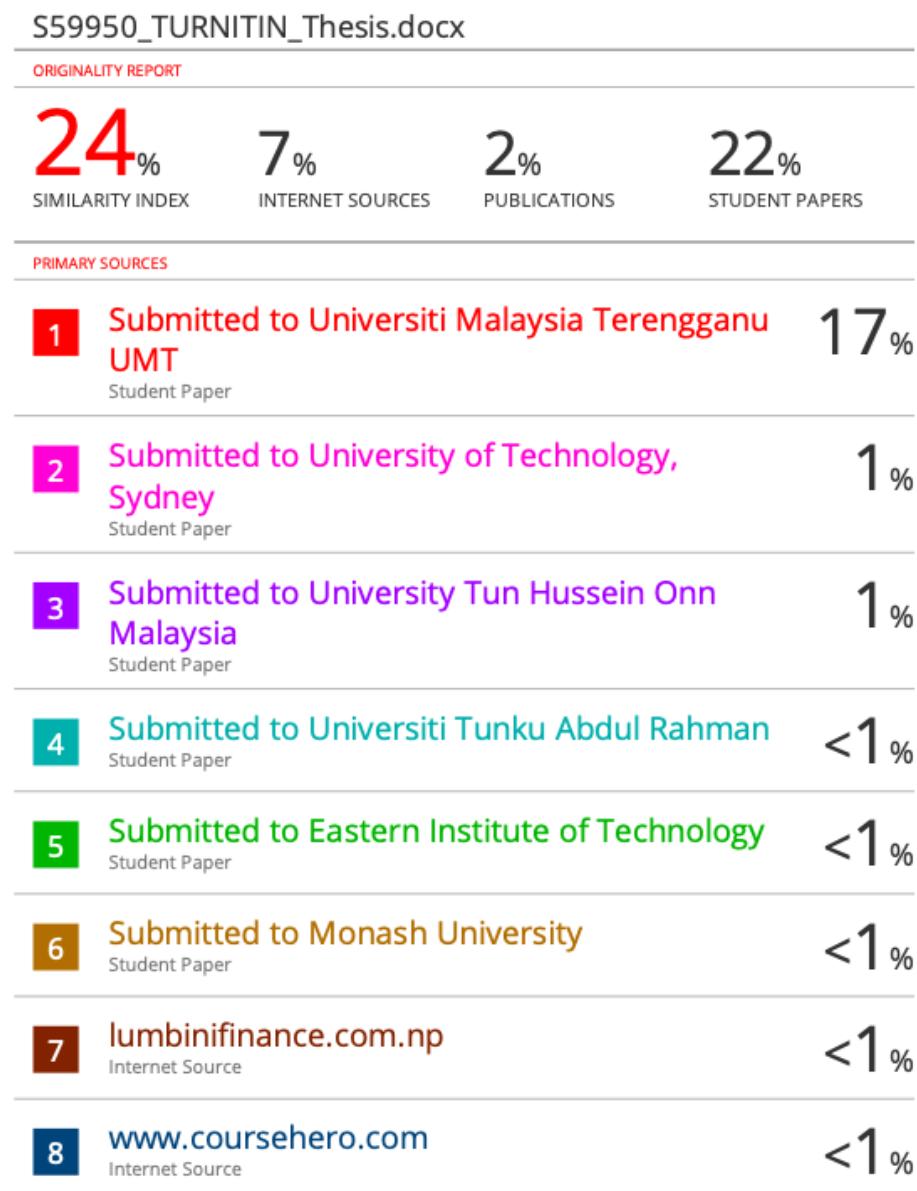
In the end, the project will realise its goals and be developed in accordance with the system design and architecture planning. Feedback was requested, and maintenance and improvements will be made as needed so that this initiative will benefit both system stakeholders and the country.

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APPENDIX

Appendix A: Turnitin Report



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