UTM UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

# Project: Phase 1

**<AppointmentPro PKU>**

SECD2523 - DATABASE

SEMESTER I, SESSION 2023/2024

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## 1.0 Introduction

In response to the changing needs of our diverse student and staff population, Pusat Kesihatan Universiti (PKU) has evolved its healthcare infrastructure with the appointment system. Access to prompt and effective healthcare services is crucial in today's university environment, where students balance extracurricular activities, personal commitments and academic obligations. Although the community has benefited greatly from the university's current healthcare system, it is clear that improvements are required to satisfy the increasing demand for efficiency, accessibility and convenience.

The PKU appointment system is a complete solution intended to optimize the whole healthcare process, not just a tool for scheduling. The system's goal goes beyond making appointment scheduling easier. It also attempts to make healthcare more patient-centered and integrated. Furthermore, the implementation of this appointment system is consistent with the university's overarching objectives to foster a campus culture that is health-conscious. By utilizing technology to improve healthcare efficiency and accessibility, the university shows that it is dedicated to the overall health of its student body. The PKU appointment system is more than simply a tool. It is evidence of our commitment to creating a culture where each student and staff member's health and welfare are given top priority.

In conclusion, the PKU appointment system represents a revolutionary step in building a more patient-centered, technologically advanced and responsive healthcare ecosystem at our university. The initiative not only tackles pressing issues related to appointment scheduling but also establishes a foundation for a comprehensive and advanced approach to healthcare administration, thereby strengthening the university's dedication to the welfare of its student body.

## 2.0 Background Study

The current Pusat Kesihatan Universiti (PKU) appointment system depends on email notifications to remind patients of their appointments. However, because email is used less frequently, this approach has faced difficulties. Given that a sizable segment of the university community does not routinely communicate via email, PKU staff members have indicated that they would rather use WhatsApp as a more efficient way to connect with patients. Additionally, manual backups are still kept in physical books even though there is a computerized system in place for recording patient information. The redundant nature of this practice raises questions regarding the accuracy of the data and the effective use of technology.

Additionally, the appointment system's selective implementation, reserved only for the psychology department, presents a disjointed approach to healthcare management at the university. Appointments in psychology are made digitally, but walk-ins are accepted in other departments. This discrepancy affects patient care and makes it more difficult to coordinate healthcare resources across the board.

The present software is also subject to limitations, with staff productivity reportedly being negatively impacted by delays. These delays may have an impact on the standard of healthcare services by interfering with the appointment scheduling process and prolonging patient wait times. Employees may struggle to properly manage their time, which could result in a drop in output as a whole.

Acknowledging these difficulties, the suggested appointment system seeks to transform the existing methodology by presenting a more sophisticated and integrated solution. Real-time patient appointment tracking, automated appointment scheduling for all departments, and centralized digital records are all goals of this upgraded system. Through the resolution of these problems, the new system aims to improve PKU's healthcare services' overall efficiency by fostering a more accurate, seamless and patient-centered healthcare experience. The suggested modifications are in line with the overarching objectives of using technology to enhance healthcare delivery on campus and to foster a cutting-edge, adaptable healthcare ecosystem that meets the various needs of the university's student body.

## 3.0 Problem Statement

1. **Challenge in current appointment reminder system**

   The problem at Pusat Kesihatan Universiti (PKU) right now is with the way that appointment reminders are communicated. As of right now, the system uses the traditional method of emailing reminders. But a noteworthy issue has emerged, a large segment of the university population, especially students, prefers to use other communication platforms, with WhatsApp emerging as the go-to option. The reason for this disparity in communication preferences is that the user demographic believes that email usage is limited. Since email is more difficult to access, many students check it less frequently. Notifications via email pertaining to critical healthcare matters may therefore be missed or delayed. This presents a significant risk to the effectiveness of the appointment reminder system, which may result in patients missing their appointments.

2. **Challenge in manual backups kept in physical books**

   Pusat Kesihatan Universiti (PKU) has identified a challenge related to its dual system of computerized patient information recording and manual backups kept in physical books. Using two records presents a number of operational issues. First of all, the practice adds needless redundancy to data management, necessitating more time and money to keep both digital and manual records up to date. In addition to adding to the workload, this redundancy increases the possibility of discrepancies between the two sets of records. Moreover, human error is introduced into the manual transcription of patient data, which raises the possibility of errors and inconsistencies between the digital system and the physical books. These discrepancies may jeopardize the accuracy of patient data, which would affect the standard of PKU's medical services. Concerns concerning the promptness of data updates are also raised by the manual backup method, since any delay in transcription could lead to out-of-date information in both sets of records. In conclusion, PKU's current practice of keeping manual backups in addition to computerized patient records creates inefficiencies and increases the possibility of inconsistent data. Maintaining accurate, current and trustworthy patient data will require a more technologically advanced and integrated approach, which will raise the standard of the institution's healthcare services in general.

3. **Challenge in limitations of system (psychology appointment)**

Pusat Kesihatan Universiti (PKU) has identified a problem that revolves around the limitations of the current appointment system, which is specifically designed for psychology appointments. This limited scope affects the overall effectiveness of healthcare delivery to the university community and poses a number of operational challenges. People who are looking for appointments for medical issues that are not related to psychology are in a difficult situation because the existing healthcare system does not address a wider range of needs. This exclusivity has the unintended consequence of making walk-in services the norm for medical problems other than psychological ones, which creates inefficiencies in the delivery of healthcare. Walk-in services could result in more difficult resource allocation, lengthier wait times and decreased accessibility. The way things are currently set up could also lead to an unequal distribution of healthcare services with a possible preference for psychological services over those who need other types of medical care. Furthermore, putting all of the focus on psychology appointments could unintentionally lead to a less all-encompassing approach to PKU's healthcare services. Ignoring the variety of medical specialties represented on campus could make it more difficult for the university to offer comprehensive healthcare support.

4. **Challenge in delay problem**

The main cause of the identified issue at Pusat Kesihatan Universiti (PKU) is a delay problem in the current software, which seriously hinders the healthcare staff's productivity. The healthcare workflow experiences delays in a number of areas, including making appointments and accessing and updating patient records. The result is a discernible delay in the completion of essential healthcare tasks, impeding the staff's capacity to deliver prompt and efficient services. Regarding the scheduling of appointments, the delay issue could cause patients to wait longer, which would negatively impact their overall experience receiving healthcare. Delays in gaining access to patient records can also make it more difficult for medical staff to decide on course quickly, which may have an effect on the standard of care. Software delays cause workflow disruptions that impact individual tasks as well as the overall coordination of healthcare resources within PKU, leading to inefficiencies. A subpar level of healthcare service delivery results from staff members' inability to work together harmoniously and quickly in response to the changing healthcare needs of the university community.

## 4.0 Proposed Solutions

To address the identified issue of Pusat Kesihatan Universiti (PKU) relying solely on email for appointment reminders, a strategic shift towards utilizing WhatsApp as the primary communication channel is suggested. The evident preference for WhatsApp, especially among the student body at the university, serves as the justification for this switch. To help with this transition, a thorough analysis of user preferences will be carried out. This evaluation seeks to determine how much of a change is required and provides information about the common communication styles among university students.

The WhatsApp Application Programming Interface (API) must also be integrated into the current appointment reminder system as part of the solution. Notifications can now be automatically and individually delivered to user's WhatsApp accounts thanks to this integration. Creating a user-friendly transition plan is essential and it should include educational programs to help users understand the change and get through it. To make sure users are informed and at ease with the new system, workshops, tutorials and instructional materials will be used.

An opt-in system will be put in place to respect user privacy and preferences, allowing users to decide whether or not they would prefer to receive appointment reminders via WhatsApp. This ensures a transparent and user-centric approach in compliance with privacy and data protection regulations. Before the system is fully deployed, a comprehensive testing of the integrated WhatsApp system will be carried out to find and fix any possible problems.

Furthermore, a strategic shift towards full digitization is necessary as part of a comprehensive solution to address Pusat Kesihatan Universiti's (PKU) problem of having to maintain manual backups in physical books in addition to a computerized patient information system. In order to ensure that appointments, medical histories and treatment plans are only recorded and updated digitally, this process involves moving all patient-related procedures to the current computerized system. To familiarize themselves with the expanded use of the computerized patient information system, PKU staff members will participate in training sessions that highlight the advantages of improved accessibility, efficiency and accuracy. The risk of inconsistencies between the physical books and the digital records will be reduced during

the migration phase by carefully verifying the accuracy and completeness of the current manual records.

The digital system will be enabled with real-time updates and synchronization between various modules, guaranteeing that any modifications made are immediately reflected throughout all pertinent sections. The implementation of quality assurance measures, such as periodic audits and checks, which is intended to oversee the precision of digital patient data. To protect patient privacy and confidentiality, security protocols will be reinforced with the addition of encryption and access controls. In order to evaluate the digital system's usability and efficacy, user feedback will be actively sought after. Continuous improvement strategies will be incorporated into the system's evolution to suit the unique requirements and work processes of PKU's healthcare professionals. By maximizing the use of technology, this suggested approach reduces duplication, improves data quality and streamlines operational procedures to eventually raise the standard of healthcare.

In order to address the current shortcoming of Pusat Kesihatan Universiti (PKU)'s appointment system, which presently only handles psychology appointments. The suggested remedy entails a thorough system expansion to include a wider range of medical services. The first step in this strategic approach is a comprehensive needs assessment that determines the range of healthcare disciplines needed within the campus community. PKU develops a comprehensive grasp of the health needs of the community by outlining these diverse medical services, which serves as the foundation for an inclusive appointment system. The appointment system incorporates a prioritization mechanism in order to efficiently handle the surge in demand. By ensuring that those with more urgent and serious medical needs receive timely attention, this helps to improve patient care and allocate resources more effectively.

Moreover, a comprehensive solution is proposed to address the delay issue in Pusat Kesihatan Universiti (PKU)'s current software. The project starts with a thorough evaluation of the software's functionality, focusing on the places where delays are most noticeable. A root cause analysis will examine the underlying causes of these delays, including network infrastructure, database performance and software architecture. The next stage is strategic

software optimization, where specific improvements are made based on assessment results to increase overall responsiveness. Mechanisms for ongoing performance monitoring will be implemented to track the effectiveness of the software over time, guaranteeing that new problems are quickly found and fixed.

Lastly, the establishment of a feedback mechanism, which encourages healthcare personnel to share insights on the efficacy of implemented solutions, is a crucial component of this proposed solution. By ensuring continuous improvements, this feedback loop makes sure that the software changes to meet the ever-changing needs of PKU's healthcare professionals. By implementing these tactical changes, PKU hopes to completely eradicate or drastically cut down on delays in the current software, maximizing the productivity of medical personnel and ultimately raising the standard of healthcare services offered to the campus community.

**Technical Feasibility**

At Pusat Kesihatan Universiti (PKU), the proposed project's technical viability entails a careful assessment of the project's viability within the existing technological framework. This analysis includes a detailed look at the current technical setup to determine how well the suggested fixes work with it. The smooth integration of the larger appointment system, prospective updates to the healthcare management software and the resolution of delay issues in the existing software are important factors to take into account. The evaluation encompasses data migration, emphasizing the preservation of patient data security and integrity throughout the shift. Thorough performance testing, which assesses response times, database dependability and overall system performance, it is necessary to verify the efficacy of suggested optimizations. Another important consideration is scalability, which guarantees that the improved systems can handle future increases in patient data and system usage. The assessment of whether any technology upgrades are required to support the proposed changes is part of the feasibility analysis. The evaluation also takes into account how easily healthcare personnel can adopt new technologies, highlighting the significance of user support and training. A thorough technical feasibility analysis establishes the foundation for a successful and long-lasting implementation and guarantees that the suggested project is compatible with PKU's current technological environment.

**Operational feasibility**

Operational feasibility at Pusat Kesihatan Universiti (PKU) entails a thorough assessment of how well the recommended improvements can be incorporated into the current operational procedures. The impact on daily workflows is taken into account in this assessment, which looks at things like appointment scheduling, patient care protocols and administrative duties. Important considerations include user acceptance and the readiness of medical personnel to accept the suggested modifications, highlighting the necessity of efficient training and assistance. To make sure the project can be properly supported, resource allocation which includes staff time and any additional technology requirements is assessed. The organizational readiness for change and change management procedures are taken into account when estimating the chances of user adoption and successful implementation. Operational feasibility also includes the project's scalability and compatibility with PKU's mission, overarching goals and regulatory requirements. By taking care of these issues, PKU will be able to assess how feasible it would be to implement the suggested improvements into its regular business practices, guaranteeing that the project will have a positive impact on the provision of effective and efficient healthcare services to the campus community.

## 5.0 Objectives

The objectives of this system are stated below:

1. **To provide an improved appointment system that is more convenient for the staff**

   Provide a simple and user-friendly interface for staff to access the appointment system easily. Implementation functions such as colour-coded calendars, drag and drop scheduling by pulling the student's name into the calendar will improve the users' convenience. Besides, a dashboard that displays future appointments and daily schedules can be added to improve management.

2. **Improve the efficiency of appointment scheduling**

   A real-time appointment and scheduling system that changes immediately when an appointment is made, rescheduled or cancelled can avoid overbooking problems, which will significantly improve the effectiveness of making appointments and reduce the time waste. It will also improve the patient experience by ensuring shorter wait times.

3. **Decrease the amount of cancellations and missing appointments**

   Messages of the upcoming appointments will be sent through WhatsApp to the patients' phones to remind the patients. Patients will not forget about the appointment made and this significantly improves attendance.

4. **Allow the staff to remind the patient about their appointment easily**

   The improved system will automatically send messages to the patient about their upcoming appointments which provides the staff with an easier communication tool rather than manually sending reminders. It helps the staff to reduce their work.

5. **Allow students to make appointments for any department in the hospital**

   Users get to book appointments online when they are sick for any department whether is dental, general or others. With this system, users don't need to queue for registration and wait for a long time to have a health check when they reach the Health Centre. They just need to arrive on time based on the appointment they made.

6. **Provide an accurate backup of the information about the students and appointments**

   Cloud-based storage is used to improve the backup data's safety and availability. It is more reliable than manually copying in the book. The data can be recovered if there are any computers that are not in function. This prevents human error and provides a safe data backup.

**6.0 Scope**

Our team is creating an appointment and scheduling management system that is user-friendly. The system helps the staff manage their appointments while the patients get to book appointments easily. The system requires the user to create an account using their email address and set up two-factor authentication to protect user data. The system is developed for two types of users which are the staff of Pusat Kesihatan Universiti (PKU) and the patients. Each user has different views and functions of the system.

The staff of Pusat Kesihatan Universiti (PKU):

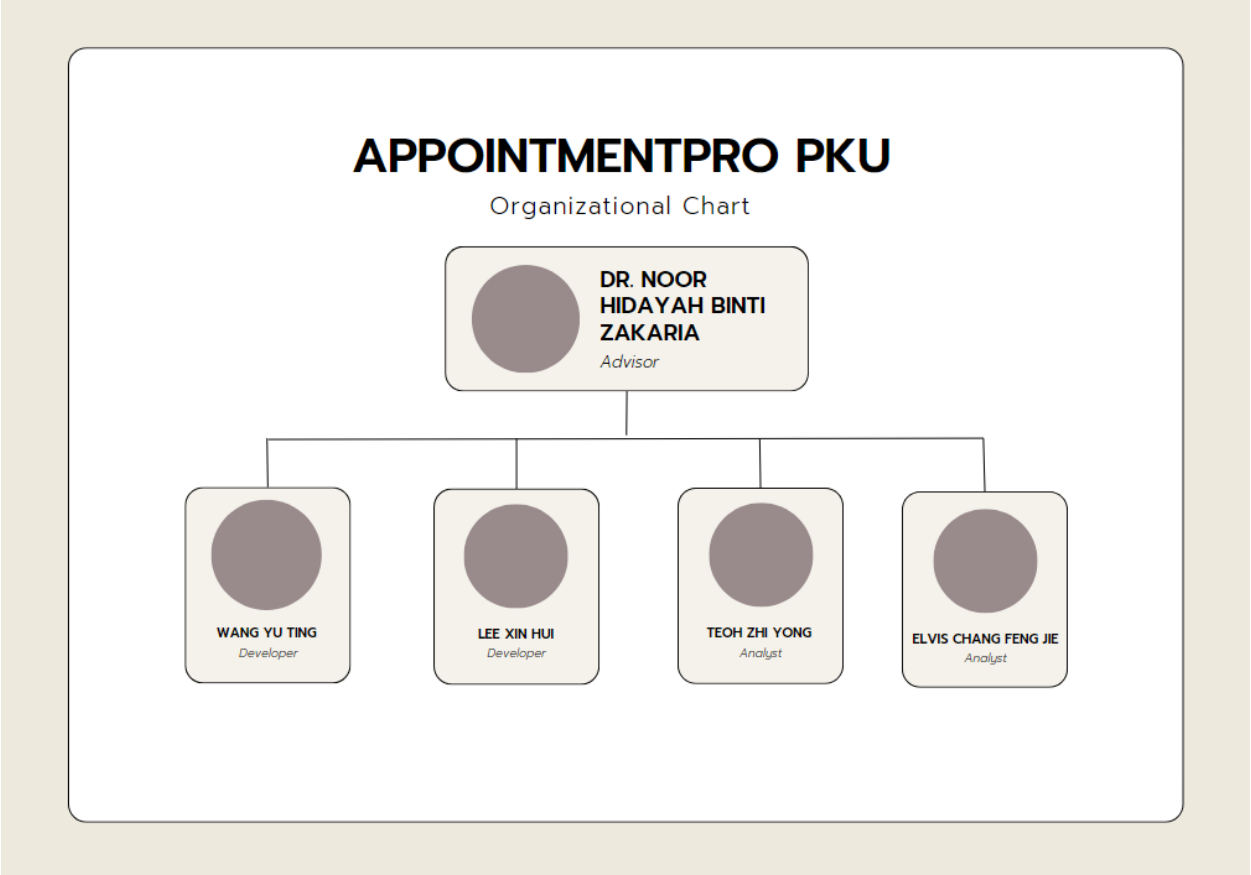
- Allow to view upcoming appointments through the colour-coded calendar
- Manage and arrange the appointments by creating or cancelling appointments on the calendar easily
- Allow to check information of every patient by searching features
- Reminders can be sent to the patients through WhatsApp

Patient:

- Allow to book appointments online by choosing their preferred date and time
- Allow to check the daily timetable that shows the available slots and booked appointments
- Receive reminders of their upcoming appointments to prevent cancellation

## 7.0 Project Planning

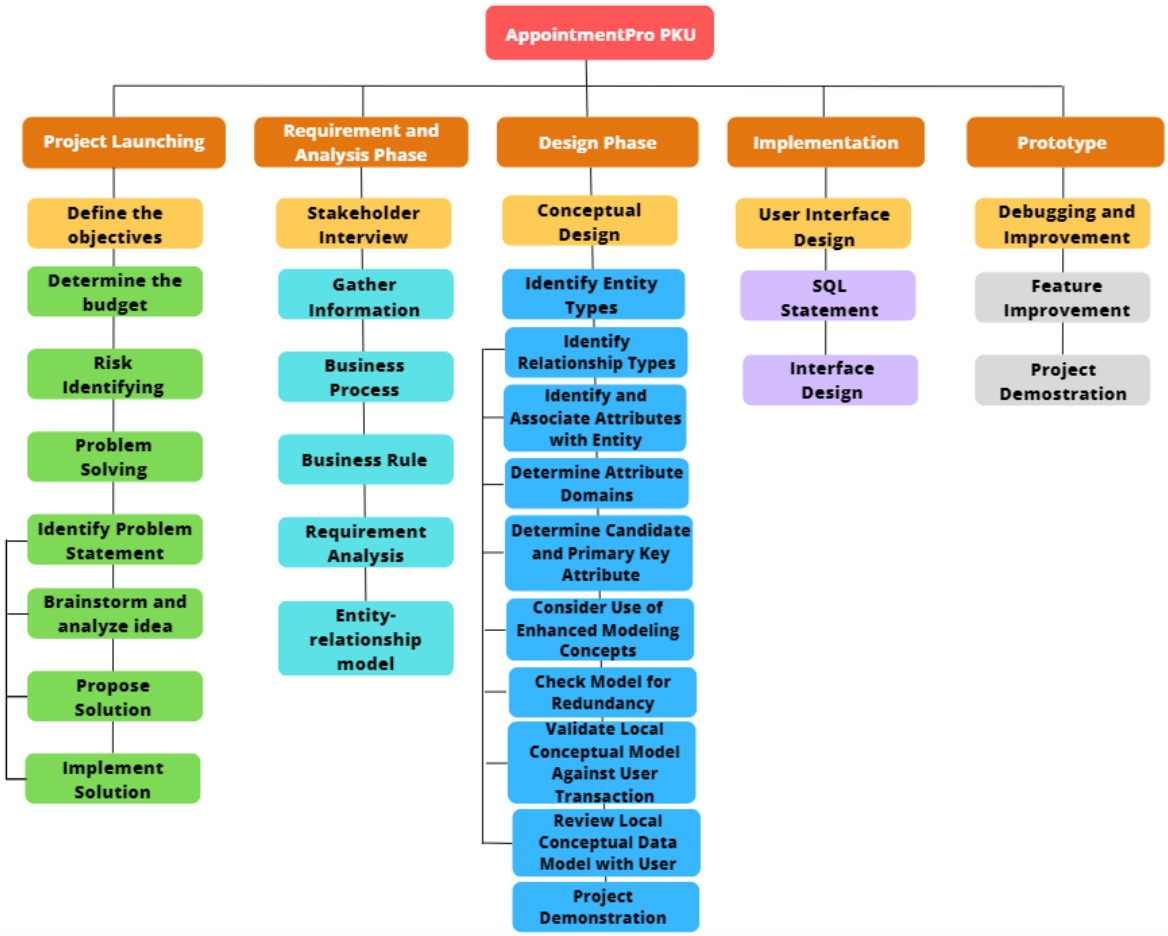
### 7.1 Human Resource




| Role | Person In Charge | Responsibility |
|---|---|---|
| Advisor | Dr. Noor Hidayah Binti Zakaria | • Review the progress of the project<br>• Provide advice to improve the project |
| Developer | • Wang Yu Ting<br>• Lee Xin Hui | • Develop data<br>• Test data<br>• Fix problem |

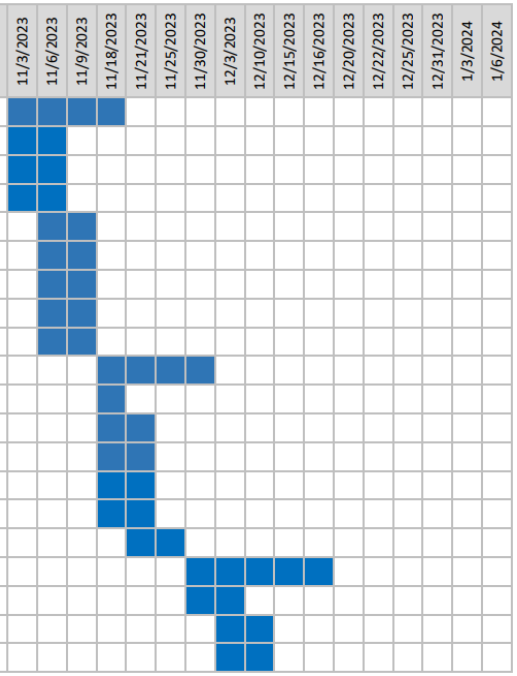
| | | |
|---|---|---|
| Analyst | • Teoh Zhi Yong<br>• Elvis Chang Feng Jie | • Analysis project<br>• Manage data<br>• Troubleshoot problem |

### 7.2 Work Breakdown Structure (WBS)



## 7.3 Gantt Chart

| Task ID | Task Name | Start Date | End Date | Duration (In Days) |
|---|---|---|---|---|
| **1** | **Project Launching** | **11/3/2023** | **11/18/2023** | **16** |
| 1.1 | Define the objectives | 11/3/2023 | 11/6/2023 | 4 |
| 1.2 | Determine the budget | 11/3/2023 | 11/6/2023 | 4 |
| 1.3 | Risk Identifying | 11/3/2023 | 11/6/2023 | 4 |
| 1.4 | Problem Solving | 11/6/2023 | 11/9/2023 | 4 |
| 1.4.1 | Identify Problem Statement | 11/6/2023 | 11/9/2023 | 4 |
| 1.4.2 | Brainstorm and analyze idea | 11/6/2023 | 11/9/2023 | 4 |
| 1.4.3 | Propose Solution | 11/6/2023 | 11/9/2023 | 4 |
| 1.4.4 | Implement Solution | 11/6/2023 | 11/9/2023 | 4 |
| **2** | **Requirement and Analysis Phase** | **11/18/2023** | **11/30/2023** | **13** |
| 2.1 | Stakeholder Interview | 11/18/2023 | 11/18/2023 | 1 |
| 2.2 | Gather Information | 11/18/2023 | 11/21/2023 | 4 |
| 2.3 | Business Process | 11/18/2023 | 11/21/2023 | 4 |
| 2.4 | Business Rule | 11/18/2023 | 11/21/2023 | 4 |
| 2.5 | Requirement Analysis | 11/18/2023 | 11/21/2023 | 4 |
| 2.6 | Entity-relationship Model | 11/21/2023 | 11/25/2023 | 5 |
| **3** | **Design Phase** | **11/30/2023** | **12/16/2023** | **17** |
| 3.1 | Conceptual Design | 11/30/2023 | 12/3/2023 | 4 |
| 3.2 | Identify Entity Types | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.1 | Identify Relationship Types | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.2 | Identify and Associate Attributes with Entity | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.3 | Determine the Attribute Domains | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.4 | Determine Candidate and Primary Key Attribute | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.5 | Consider Use of Enhanced Modeling Concepts | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.6 | Check Model for Redundancy | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.7 | Validate Local Conceptual Model Against User Transaction | 12/3/2023 | 12/10/2023 | 8 |
| 3.2.8 | Review Local Conceptual Data Model with User | 12/3/2023 | 12/10/2023 | 8 |
| 3.3 | Project Demonstration | 12/15/2023 | 12/15/2023 | 1 |
| **4** | **Implementation** | **12/16/2023** | **12/25/2023** | **10** |
| 4.1 | User Interface Design | 12/16/2023 | 12/20/2023 | 5 |
| 4.1 | SQL Statement | 12/20/2023 | 12/22/2023 | 3 |
| 4.3 | Interface Design | 12/22/2023 | 12/25/2023 | 4 |
| **5** | **Prototype** | **12/25/2023** | **1/6/2024** | **13** |
| 5.1 | Debugging Improvement | 12/25/2023 | 12/31/2023 | 7 |
| 5.2 | Feature Improvement | 12/31/2023 | 1/3/2024 | 4 |
| 5.3 | Project Demonstration | 1/3/2024 | 1/6/2024 | 4 |



## 8.0 Requirement Analysis

Stakeholders

- End-users (patient)
- Admin (staff)
- System Developers

Functional requirements

- Users and admin able to register an account and setup 2-factor authentication for the account
- Admin able to view upcoming appointments though colour-coded calendar
- Colours on the calendar should vary according to the number(s) of appointment per day
- Admin able to create an appointment on the calendar
- Admin able to cancel an appointment on the calendar
- Admin able to manage and arrange time slots for each appointment
- Admin able to fetch patient's information by searching patient's name
- Admin able to contact and send reminders to patient through integrated Whatsapp chat box feature
- User able to view available time slots that can be booked for an appointment
- User able to filter out relevant time slots based on date and time session
- User able to book an appointment on a selected time slot
- User will receive reminder through Whatsapp a day prior to the appointment

Non-functional Requirements

- **Performance**

  The system should have fast response towards user actions and have a high throughput to handle large workloads while maintaining low response time besides preventing the occurrence of data loss.

- **Reliability**

  The system should maintain a high uptime so that it is available most of the time and is fault tolerant. The system should continue to function even if one of its servers is down.

- **Security**

  All the users' data such as login credentials and patient's information should be encrypted during data transmission and storage. Staff and patients should only be able to access the pertinent portions of the system.
- **Scalability**

  The system should be built with the ability to scale its database to handle an increase in the number of users and appointments without seeing a significant drop in performance.
- **Usability**

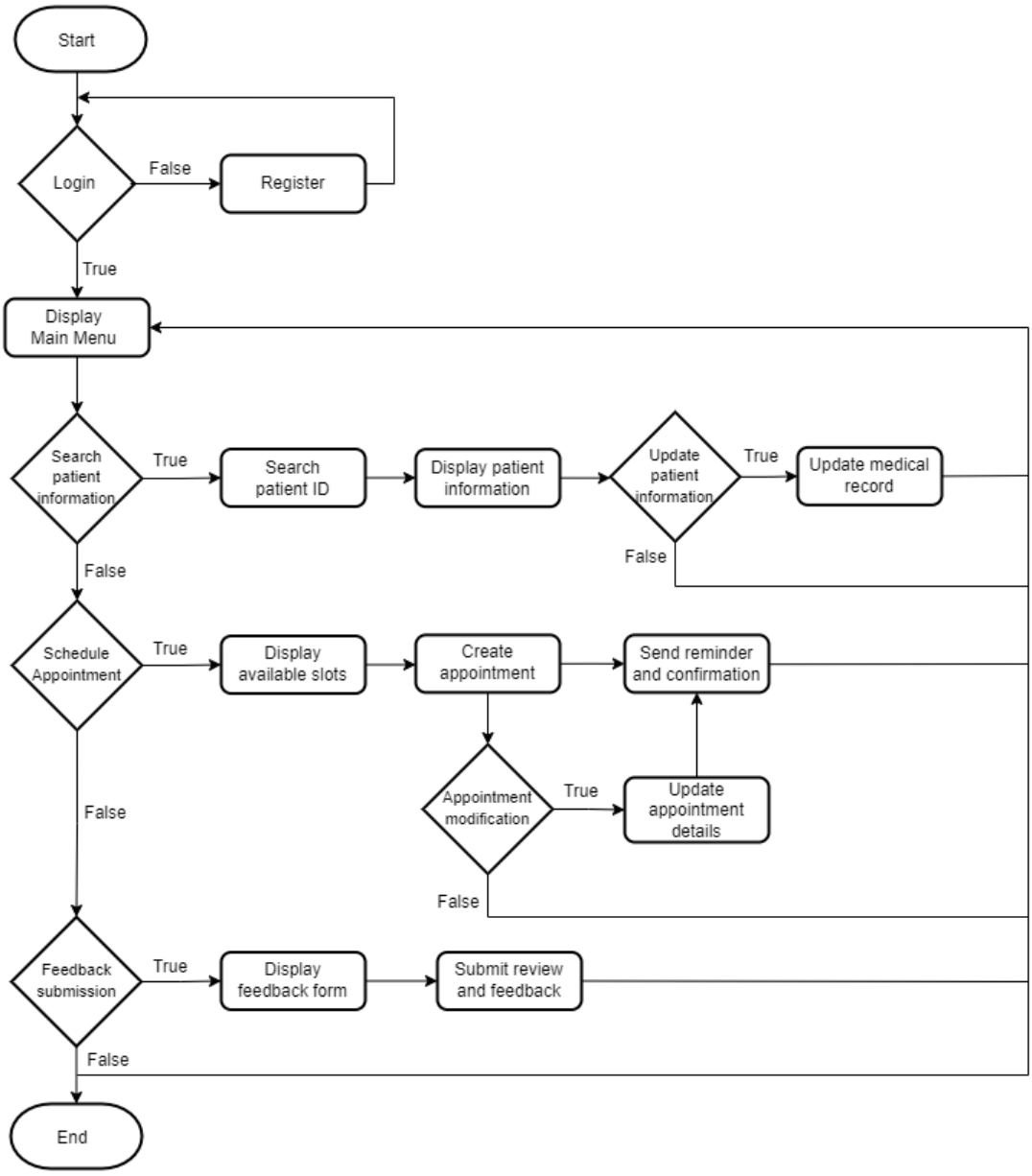
  The system should be user-friendly and easy to use for all kinds of users.
- **Maintainability**

  The system should be designed with modular components to ease the integration of new features or changes.

### 8.1 Current Business Process

Scenarios and workflow:

1. User login
2. Display main menu
3. Search patient information
    a. Search patient ID
    b. Display patient information
4. Update patient information
    a. Update medical record
5. Appointment scheduling
    a. Display available slots
    b. Create appointment
    c. Send reminder and confirmation
6. Appointment modification
    a. Update appointment details
    b. Send reminder
7. Feedback submission
    a. Display feedback form
    b. Fill and submit feedback


Start
Login
False
Register
True
Display Main Menu
Search patient information
True
Search patient ID
Display patient information
Update patient information
True
Update medical record
False
False
Schedule Appointment
True
Display available slots
Create appointment
Send reminder and confirmation
Appointment modification
True
Update appointment details
False
False
Feedback submission
True
Display feedback form
Submit review and feedback
False
End

## 9.0 Transaction Requirement

Data Entry:

Patient Registration:

- Allow authorized users to enter new patient information into the system.
- Capture essential patient details, including name, contact information and medical history..

Appointment Scheduling:

- Provide a user-friendly interface for scheduling new appointments.
- Collect information such as appointment date, time and reason for the appointment.

Medical History Updates:

- Enable staff to update and maintain patient medical history records.
- Support the addition of new medical conditions, medications, allergies, and other relevant information.

Data Update:

Appointment Modification:

- Allow staff to modify existing appointments.

Medical Records Amendments:

- Enable staff to amend medical records based on new information or changes in the patient's condition.
- Maintain an audit trail of any modifications made to medical records.

Data Queries:

Appointment Queries:

- Support queries to retrieve information about upcoming, past, or canceled appointments.
- Allow users to filter and search for appointments based on various criteria.

Patient Information Retrieval:

- Enable staff to query and retrieve patient information quickly.
- Implement search functionality based on patient ID.

Medical History Queries:

- Provide staff with the ability to query and review a patient's complete medical history.
- Support searches for specific conditions, medications, allergies, etc.

Prescription History Queries:

- Allow staff to query and view a patient's prescription history.
- Support searches based on medication name, date, or other relevant criteria.

## 10.0 Benefits and Summary of Proposed Solution

The appointment and scheduling system we developed is to solve the healthcare system's problems with a focus on feedback systems, appointment system improvement, digitization, communication, and software delays based on the problems faced by our stakeholders.

The main method is to develop simple succession plans, connect the WhatsApp API, and efficiently move appointment reminders to WhatsApp. Continuing the digitalization process also aims to simplify patient records, giving privacy and security the highest priority while ensuring real-time updates and data synchronisation. The appointment system will be expanded to support a wider range of medical services and prioritised treatment in order to enhance patient care. The delay issue with the current software will be resolved through a comprehensive analysis, a study of the causes, and strategic improvement. Medical professional data will be used to build a vital feedback mechanism that will allow the system to be improved continuously.

The technical feasibility of these solutions is the main focus, with consideration given to data migration, integration, scalability, and system performance within the current technological environment. Operational feasibility is assessed together with the effects on day-to-day operations, user acceptability, resource allocation, and meeting PKU's mission and regulations.

In conclusion, the proposed solutions aim to enhance PKU's patient care, efficiency, and communication by using technology, simplifying procedures, and prioritising user acceptability and input.

## 11.0 Summary

Our project aims to redesign the appointment and scheduling system at Pusat Kesihatan Universiti (PKU) that focuses on improving communication, digitising records, developing services, and solving software delays due to identified problems.

The problems that we identified are the inefficiency of email-based appointment reminders, the need for duplicate manual backups in addition to digital records, the limited connection of the system, which is particularly for appointments in psychology only and software delays that affect productivity.

The proposed solution for the problems identified in the current system is **communication enhancement, digitisation and record management, system scope expansion and software optimisation.** Appointment reminders will be shifted to WhatsApp along with WhatsApp API insertion which aims to increase the effectiveness of communication. Next, a full transition to digital records offers strong data synchronisation, real-time updates, and strengthened security measures that encourage ongoing user feedback and streamline procedures. Thirdly, the system scope will be expanded to cover a wider range of medical services and give priority to urgent cases for improved care delivery. Lastly, a focus on software efficiency through incremental changes and analysis of causes is required to remove delays, ensuring a more responsive and effective healthcare ecosystem.

The system simplifies the medical appointments for both patients and administrators with a secure account setup process, an user-friendly calendar and WhatsApp notifications. It allows effective appointment scheduling and patient record updates by ensuring scalability, dependability, and strong data security.

The technical feasibility evaluates technological compatibility, performance testing, data migration, integration, and scalability while the operational feasibility evaluates the effect on workflows, user acceptability, resource distribution, and meeting PKU's rules and objectives.

The objectives of the project are to increase staff convenience and efficiency in managing appointments, reduce appointment cancellations and increase scheduling effectiveness and implement cloud-based storage to ensure accurate and secure backup of patient information.

In short, by using technology, simplifying procedures, focusing on security and user-friendliness, continually improving PKU's patient care and operational efficiency are the goals of the suggested changes to develop an appointment and scheduling system with features that are easy to use for both staff and patients, including reminders, account registration, and appointment management.