SMART BOOKING CLASSROOM MANAGEMENT SYSTEM FOR UTAR KAMPAR

BY

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A REPORT

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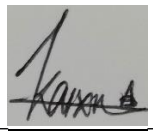

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It is hereby certified that ***Tan Kai Xin*** (ID No: ***20ACB02999***) has completed this final year project entitled "*SMART BOOKING CLASSROOM MANAGEMENT SYSTEM FOR UTAR KAMPAR* " under the supervision of Pn. Nor Afifah Binti Sabri (Supervisor) from the Department of Computer and Communication Technology, Faculty of Information and Communication Technology, and Dr. Ahmad Hakimi (Co-Supervisor) from the Department of Computer and Communication Technology, Facultyof Information and Communication Technology.

I understand that University will upload softcopy of my final year project in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

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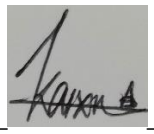

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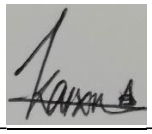
DECLARATION OF ORIGINALITY

I declare that this report entitled "**SMART BOOKING CLASSROOM MANAGEMENT SYSTEM FOR UTAR KAMPAR**" is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

Signature : 

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ABSTRACT

A booking classroom management system is important in one university. In University Tunku Abdul Rahman (UTAR) at Kampar campus, they are still using the traditional way on booking the class. For instance, lecturer in UTAR booked the class by just inform to the respective admin and that admin will help to check and book for the lecturer. However, this is inconvenient and inefficient because when the class been booked by others, this lecturer needs to arrange the date without knowing the scheduling of the class. Thus, an online booking classroom management system is useful in university. It can faster the duration on booking the class needed and easy for admin and student to have a check and manage the class. This will reduce many issue that will happened in traditional ways such as student will not always ask the lecturer about the venue for examination or revision class through the chat or after the class. They may check the venue through this management system by just clicking some button.

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Chapter 1
Introduction

Based on the guideline stipulated by the Ministry of Higher Education (MoHE), a university should provide facilities such as lecture hall, multipurpose hall, tutorial room to achieve learning purpose. Other than these basic facilities, there are library and several faculties which equip with various computer labs, study room, etc., to meet the minimum requirements of the university. However, it was identified that UTAR lecturers have facing problem on booking classroom for the purposes of replacement class, exam, additional class and others. Current classroom booking practice in UTAR required the lecturers to inform the relevant admin with the details such as date, time, purpose and classroom number in at least 5 working days in advance in order for them to successfully booked the classroom. After the admin receives the request from lecturer, only they will proceed to check the available timeslot for particular classroom and then reply to the lecturer. But if, unfortunately, the timeslot that this particular lecturer needs have already reserved by another lecturer, the lecturer needs to rebook without knowing the remaining available timeslot schedule. Consequently, the lecturer will get into the troublesome due to the process of classroom booking become time-consuming and complex. Other than that, it is also possible for mistakes to occur in whole process. For example, the clashing of booking timeslot arises from human error in data entering. Therefore, an online class booking management system is proposed to facilitate lecturers and admin to book classes in a shorter time, in which the lecturers can easily view the available timeslot that added by the admin and book them quickly by filling out a booking form through the system. At the same time, this proposed system could also ease the admin by allowing them to add on the available timeslot in the system and view the requests from lecturers. In addition, students can easily check the additional timeslot that successfully booked by their lecturer.

1.1 Problem Statement and Motivation

The class registration process at University Tunku Abdul Rahman still relies on an outdated method. Lecturers need to inform the administration of their required class times and dates, after which the admin checks the system and schedules the classes. This procedure is time-consuming and inefficient for a university. [14] Consequently, if a specific date and time slot is unavailable, lecturers are not informed of alternative options.

Furthermore, this method is all documentation and vulnerable to human error on the part of administrators and the entry of duplicate data. Administrators may occasionally input incorrect data when registering a class that a lecturer requires, as well as entering duplicate data. For example, if one lecturer schedules a session earlier than their assigned time and another lecturer schedules the same class simultaneously, this will lead to duplicate data entry. As a result, it will also be a significant factor for the delay of work schedules and increase workloads of admin. [15]

Despite the lecturer having previously mentioned the location in a prior lesson, some students continued to raise the topic after class. This will become troublesome as the lecturer will have to repeatedly address the same question.

To enhance the experience of UTAR admins and students, we are preparing to create an online booking classroom management system. This system aims to streamline the booking process, providing a functional platform for students to verify additional class details without the need to consult the lecturer again.

1.2 Objectives

- to develop a booking classroom management system in UTAR that provide lecturers and admins an effective system.

By developing this system, lecturers can easily book classrooms. They can simply enter the desired date and time on the website, and the system will display available classrooms for booking at that time. Additionally, lecturers can register the classroom they need by pressing a button and entering the necessary information, streamlining the process compared to the conventional method. Administrative members can review registrations made by lecturers and either accept or disapprove them with justifications.

- to make it simple for students to check the class

Once the lecturer has enrolled the class and obtained admin approval, the system will display it on the student page, and allowing students to access the system and review the details of additional classes.

- to test the functionalities of system so that it meets the user requirement.

A survey will be conducted, primarily geared at admins, lecturers, and student after completion of system development. The whole purpose of the survey is actually to evaluate the system's performance in multiple fields and make sure that it completely meets the need of all the user groups.

1.3 Project Scope and Direction

The scope of this project are admins, lecturers, and students in UTAR. This system will have the add function for respective admin to add the available timeslot, edit function to response to the booking request and admin will get an email notification sending by lecturer who wish to get permission on booking that empty class automatically. Furthermore, this system also will provide some function to let lecturer easy to book the class such as provide a timetable for lecturers to check the available time of the needed class. This system also will provide function for student in UTAR to check the details of additional class personally after lecturer successfully booked the class on this system without always asking the lecturer.

1.4 Contributions

This system will help lecturers and admins in UTAR on booking classroom effectively. For example, lecturer who want to book the class with this system by just simply enter the date and time and will get the available class. Furthermore, this system also make student can check the class that been register by their lecturer for any purpose on this system. So that, student will not always be asking the lecturer about the detail of additional class.

1.5 Report Organization

This report comprises six chapters. The initial chapter serves as the project introduction, providing background information, the project's context and objectives, as well as its scope and contributions. The second chapter conducts a literature review of various existing booking classroom management system. It also explores the problems and challenges encountered within the traditional classroom booking system domain. Following this, the subsequent two chapters outline the essential requirements for developing the system. It will be covered how the system is being developed using the selected programming language. The essential tools required for developers to design and test the system were included into the chosen integrated development environment (IDE). The fifth chapter delves into system implementation, detailing the software setup process and page views. Chapter six focuses on system evaluation and discussion, encompassing performance testing, user acceptance testing, and addressing implementation issues and challenges. Finally, the concluding chapter offers a summary of the entire project and provides recommendations for future endeavors.

Chapter 2
Literature Review

2.1 Traditional Booking System

A traditional booking system is the one where people make reservations over the phone or in person, not via any online system. However, it is commonly known as the offline booking process. There are two, written and spoken, booking modalities which are appropriate for the traditional booking system. Examples of the two methods of making a reservation are writing a letter, sending fax, and in person visiting the destination; making a phone call to the destination is also another method [1]. Besides, modern booking systems allow for both flexibility and personalized services [2]. When clients need superior customer care and personal treatment, they can talk to admin members by themselves and get direct service reservations or ask questions. One advantage is that customers will not only negotiate and modify their booking but also will get a real-time confirmation from employees. It also results to the prevention of the internet traffic delay. Furthermore, a few businesses would still be doing reservations done manually. For instance, the university involves verb mode when it comes to scheduling classrooms, hence the lecturer needs to seek an official or call for confirmation and booking purposes. However, this will take up more time when making the reservation. Regular booking systems are also inconvenient thereby having limited access. In that regard, they may struggle to decide who the right physician is and build a relationship with one for the healthcare system [3]. Traditional booking systems, which often rely on manual entry, are likely to introduce errors, and that could make the customer unhappy. One of the university staff has got notes in their hand to address the time schedule and keep a record of all the rooms that have been booked. This might result in education dissemination problems of misinformation for both lecturers and students. This would mean that using the manual way of doing things is likely to produce more errors and inconsistencies leading to additional costs from admin training and report generation where re-engineering is necessary [4]. This happens, since at the manual approval system, it requires a persons' physical presence than calling each person to approve the system request.

2.2 Online Booking System

An online booking system can be described as a cloud-based software that helps individuals or businesses to perform booking for services like flight tickets and hotel reservations using internet [5]. It facilitates booking process with a user-friendly interface which makes it easy to check availability, select preferred options, make payment and receive confirmations. There are three types of online booking system which include website booking, mobile app booking, and social media booking. For the website booking and mobile app booking they are more popular nowadays just like Agoda hotel booking have both booking types. For example, some people use Facebook and Instagram to do the online booking with shops that maybe do not have any website or app for the customers to do the booking [1]. It has some features such as a personalized activity dashboard, a real-time availability, automated notifications, and so on. Dashboards are important because they can have an overview regarding the activities. This provides increased data security and a better user experience for employees [5]. Also, the system can send the email automatically about booking confirmation or new features to customers [6]. Apart from that, online booking system has many advantages that involve the reduction of the workloads, error and increase in efficiency for both customers and businesses. For instance, system can automate the tedious administrator work in the university that uses the traditional way while lecturer can also reserve the classroom via the system hence, the problem of human error can be solved. Hence, it will ensure that the booking is synced with, and availability is up to date. Furthermore, it also carries a little weakness either. For example, all the conversation between the machine and the user will be handled only by computer system, without any interactive chat with a person in charge [2]. It will also be complicated by network going low or system is down, these problems are from the system. Therefore, the development of that project, an online booking classroom management system emphasizes site development.

2.3 Previous works

The previous works that I discovered are listed here.

2.3.1 UTAR Library Room Booking System

Refer to figure 2.1, UTAR Library Room Booking System has provided filter function which can let user to filter out their option. Besides that, they also request user to fill in the information for double confirmation purpose during booking the room by referring to figure 2.2. However, this system did not provide any guideline for the booking as they have many refinitiv terminals which may confuse user during choosing the room (figure 2.3). [7]

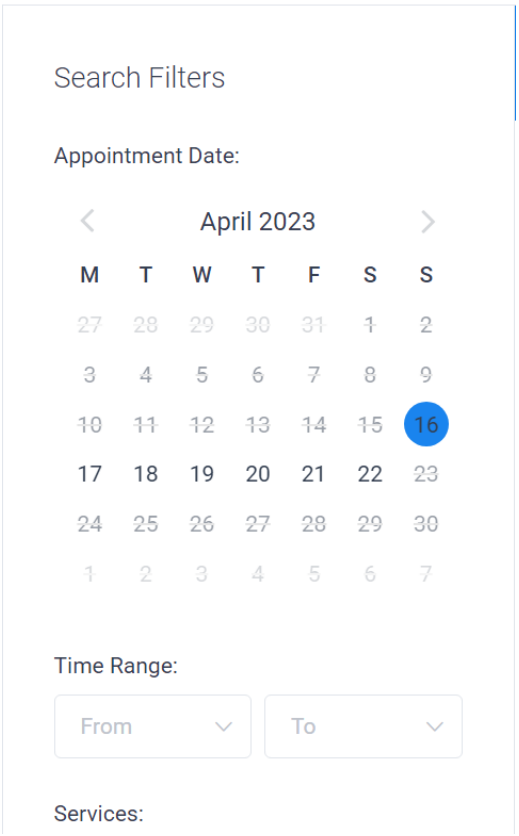


Figure 2.1 Filter Function of UTAR Library Room Booking System

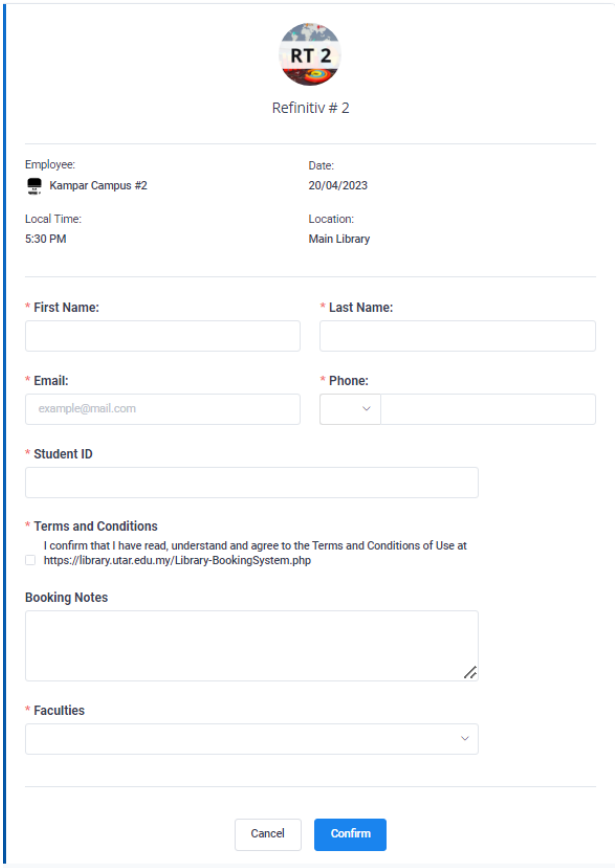


Figure 2.2 Information Required in UTAR Library Room Booking System

Figure 2.3 Refinitiv Room in UTAR Library Room Booking System

2.3.2 Web Booking Room System University of Nottingham

Refer to figure 2.4, the web booking room system by University of Nottingham have require students to fill the information needed as a confirmation during booking a room. Furthermore, it also has cancelled function to student who decide to cancel the room (figure 2.5). However, in figure 2.6 show that this system did not provide the search function and also filter function. In this system, student might be difficult to select the additional equipment which shown in figure 2.7. [8]

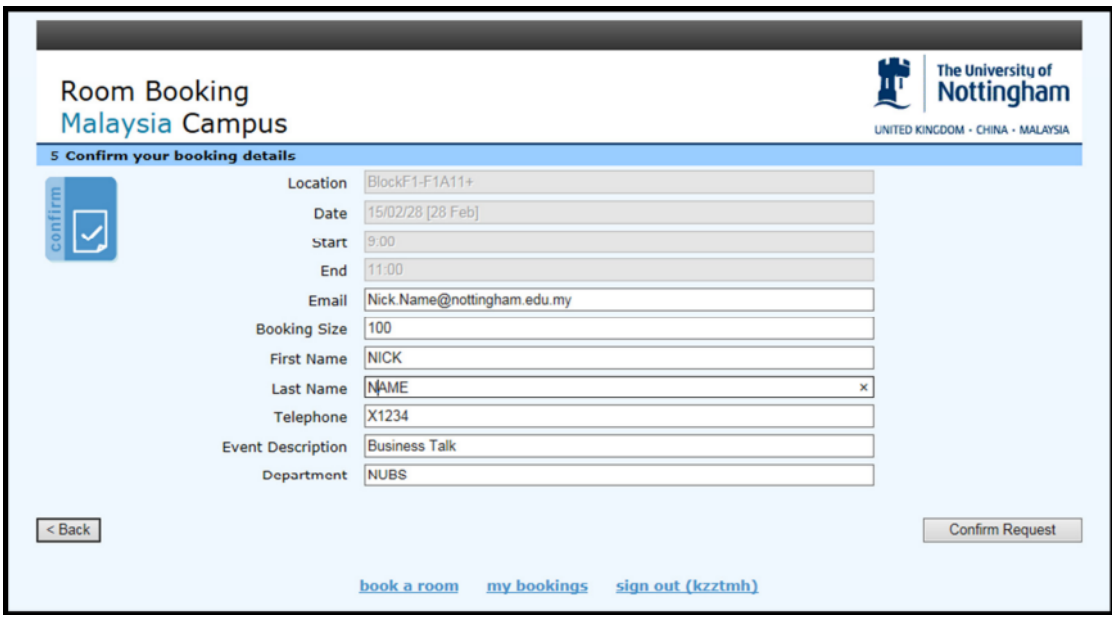


Figure 2.4 Information Required in Web Booking Room System University of Nottingham

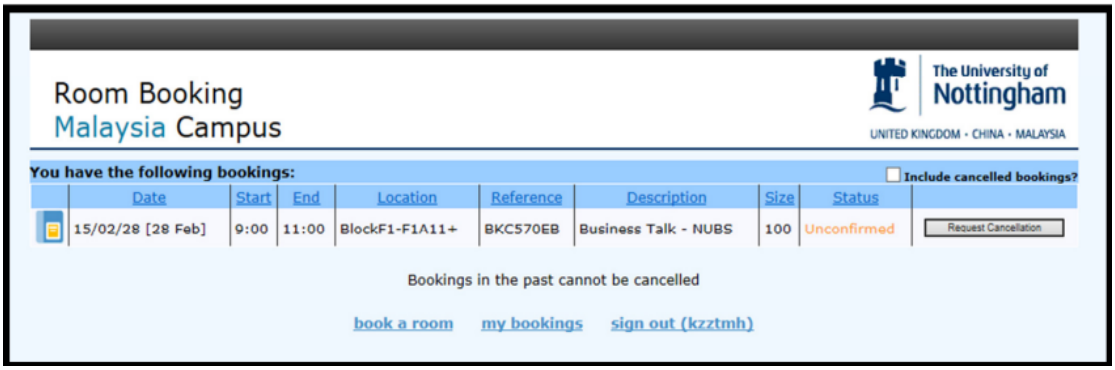


Figure 2.5 Cancellation Function in Web Booking Room System University of Nottingham

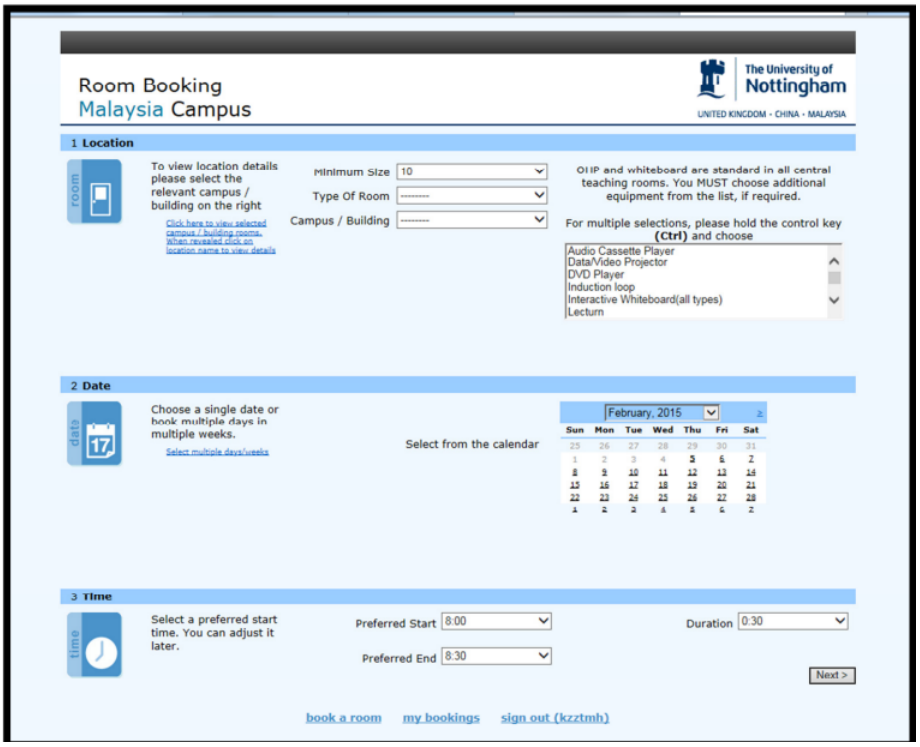


Figure 2.6 Homepage of Web Booking Room System University of Nottingham

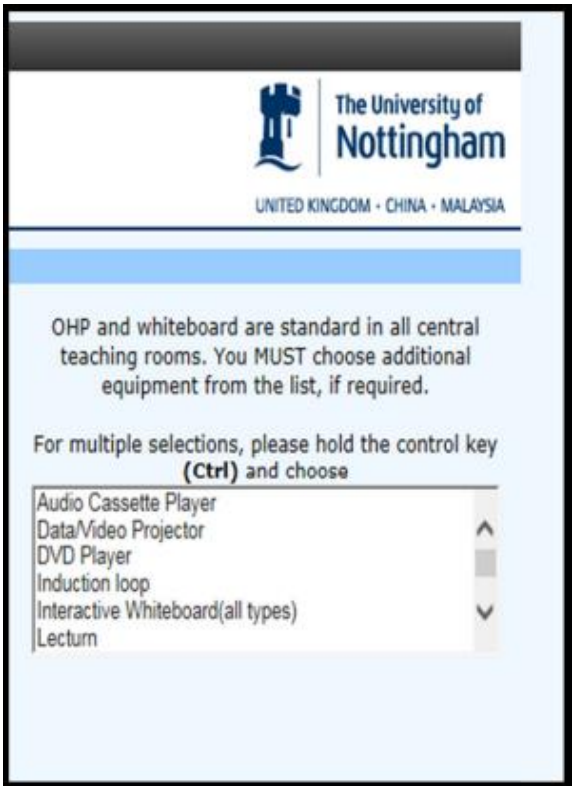


Figure 2.7 Additional Equipment Selection in Web Booking Room System University of Nottingham

2.3.3 Web Room Booking University of Southampton

In this booking system, it provides a guideline to show the entry of this system website in figure 2.8. By referring to figure 2.9, this system provides filter function to user to filter the suitable class. But this system did not provide option for purpose to booking the class. For example, when a lecturer wants to book a class, it did not provide an option to choose whether is for replacement class or examination class. [9]

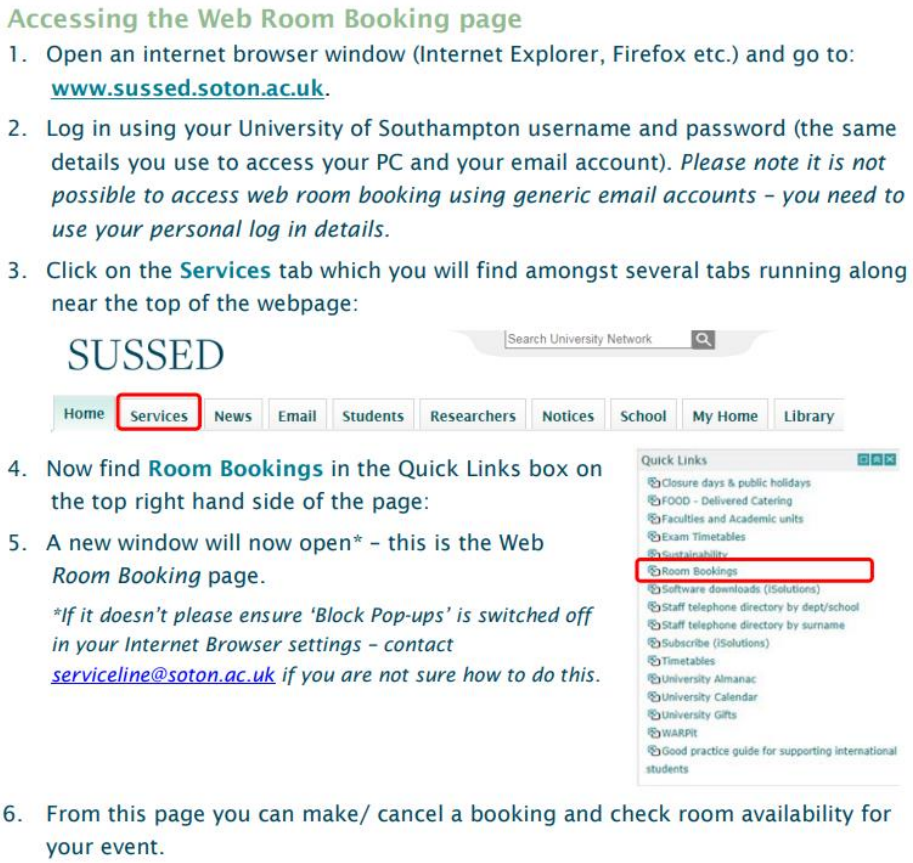


Figure 2.8 Guideline of Web Room Booking University of Southampton

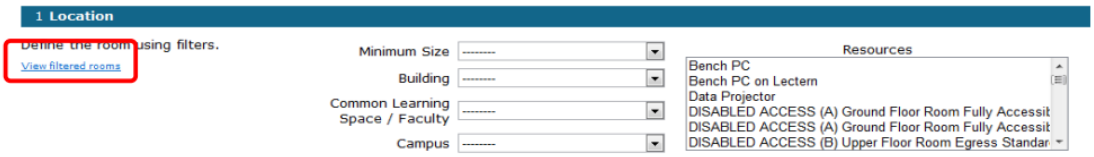


Figure 2.9 Filter Function of Web Room Booking University of Southampton

2.3.4 Resource Booker System University of Edinburgh

As shown in figure 2.10, resource booker system in University of Edinburgh provides filter and search function to ease user looking for class. It also provides schedules of class by month, week, and day. However, this system did not provide timetable for student to check their class. For instance, if the lecturer books a class for examination, student cannot check the venue by using this website. [10]

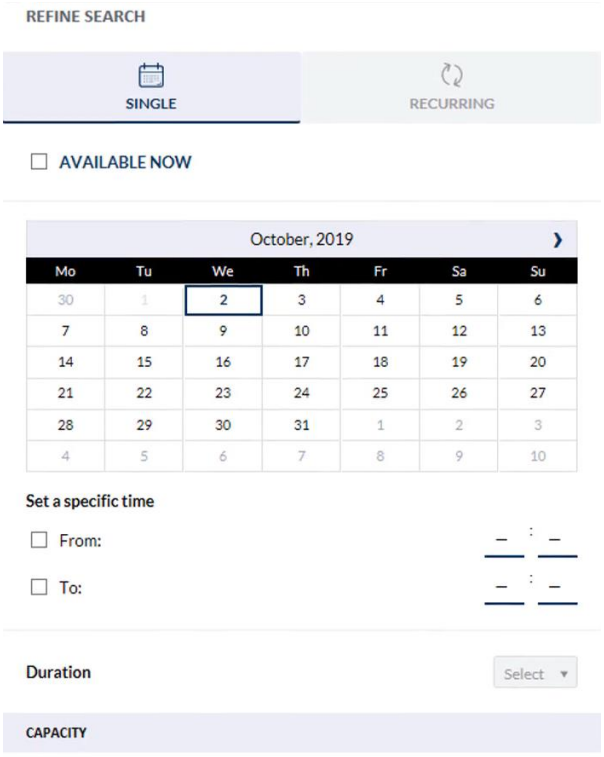


Figure 2.10 Filter Function of Resource Booker System University of Edinburgh

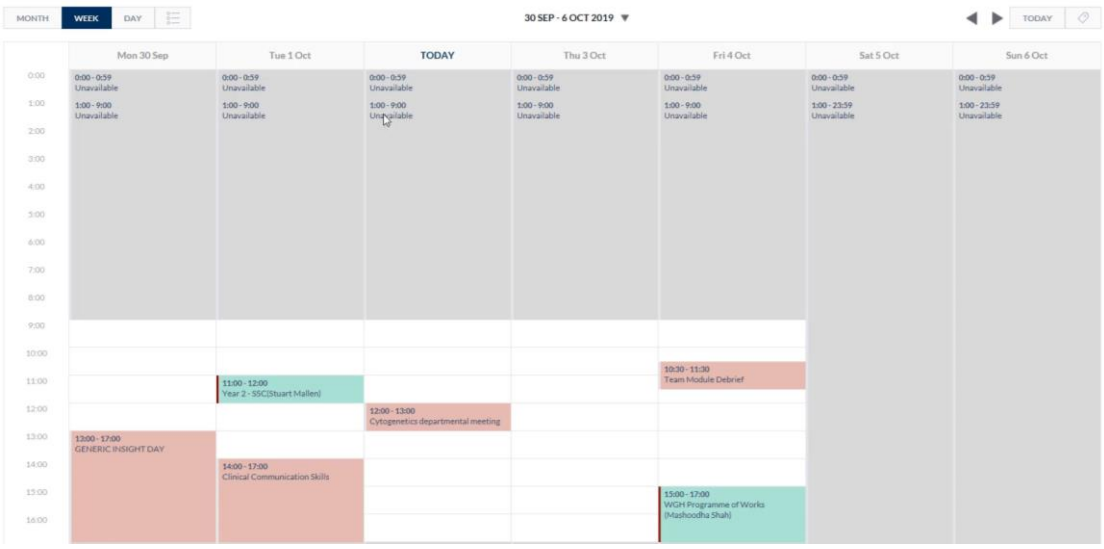


Figure 2.11 Schedule of class in Resource Booker System University of Edinburgh

2.4 Comparison of Previous Works

Below are the comparison table for all previous works.

System	Dominance	Limitation
UTAR Library Room Booking System	- Provide filter function. - Request user to fill the information.	× Did not provide any guideline.
Web Booking Room System University of Nottingham	- Request user to fill information as confirmation. - Contain cancel function.	× Did not provide search function. × Difficulty on choosing additional equipment.
Web Room Booking University of Southampton	- Provide guideline on how to enter this website. - Provide filter function.	× Did not provide option for purpose on booking the class.
Resource Booker System University of Edinburgh	- Provide filter and search function. - Provide schedules of class by month, week, and day.	× Did not provide timetable for student to check the venue of some additional class.
Smart Booking Classroom Management System for UTAR Kampar	- Provide timetable to lecturer for checking schedule of classes. - Provide class schedule for student to check their additional class. - Provide adding available timeslot for admin to add timeslot for each class. - Provide efficient booking system to lecturer and admin for the booking request.	× Did not provide guideline on how to enter this website.

Table 2.1 Comparison of Previous Works

2.5 Summary

Literature review that conducted in this study provides a comprehensive overview of existing system on smart booking classroom management system. Firstly, it highlights about benefits and issues of traditional booking system. In traditional booking system, it has two methods used which is written and spoken. These two methods will bring some benefits such as customer can directly make reservations with the admin. However, it may cause process more time-consuming, and it also have a chance to have human error. Furthermore, it focuses on the online booking system. With the progress of science and technology, the booking system has changed from artificial to intelligent, which avoids many troubles such as time limit for booking process and error that made by human. Online system also simplifies whole booking process. In addition, some research done in this literature review. The first research is UTAR library room booking system which request user to fill information while it did not provide any guideline. Second research is about the web booking room system University of Nottingham that contain cancel function and a limitation is difficult on choosing additional equipment. The web room booking University of Southampton does not provide the opinion for purpose to booking the classroom, but it provides the guideline about using this website. Lastly, University of Edinburgh developed resource booker system that provide schedules of class by month, week, and day but it did not provide the timetable for student to check venue. This may cause trouble for students and lecturers.

Chapter 3

System Methodology/Approach

3.1 Architecture Methodology

Feature-Driven Development (FDD) technique is used to propose an online booking classroom management system. The FDD technique is a five-step development process that emphasises creating features in few iterations. This process enables me to gradually create this system. The main benefit of employing this process is that FDD may split down features into smaller packages, making it simpler to trace down and correct code errors in order to meet requirements. Develop the overall model, create a list of features, planned by feature, design by feature, and build by feature are the five processes in this methodology. [11]

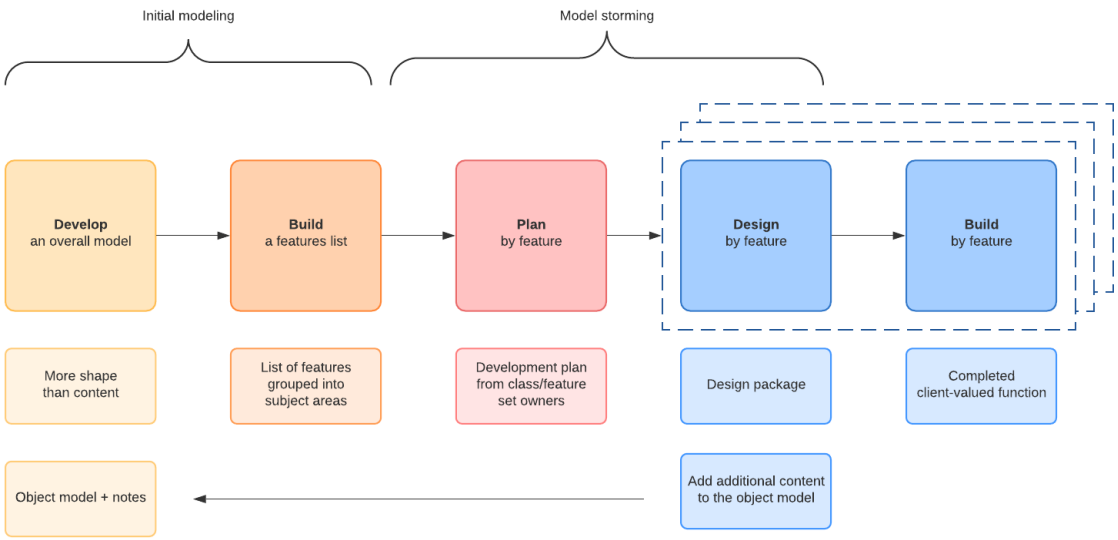


Figure 3.1 Feature-Driven Development Model

Develop overall model.

All of the activities are planned according to a time frame in this step to finish the system. This step starts with a discussion about ideas with the supervisor to develop the project's concept and title. Following the selection of the project's title, Online Class Booking System, and the feature-driven development approach as the preferred methodology, we held discussions with the supervisor and a few lecturers to determine the project's problem statements, scopes, and objectives.

Build a feature list.

Discussions over the project's features continue after all the project's requirements have been decided. Existing systems are examined, scrutinized, and the constraints and limitations are gathered in order to gain a better knowledge of the features required. Then, make a list of every feature that is required. For example, in this system is required the login feature, booking feature and other features.

Plan by features.

The feature list needs to be arranged in this step according to which feature will be created and deployed first. In this system, the login feature will arrange to develop after the homepage feature is done and followed by booking feature.

Design by feature.

After deciding how to arrange the features, we may begin designing each one so that the primary idea can be implemented quickly. In this phase, we will start to design the homepage and other feature used.

Build by feature.

Each of the elements required for implementing the feature design are set into position during this step. A feature model is created and tested, and the user interaction is constructed. The finished version of the feature can be included in the primary edition and made accessible to customers if it succeeds testing and is approved. We will start to develop the homepage before developing the login feature and other feature according to the previous planning. After testing all features, these features will add into the system and system is finalize.

3.2 Use Case Diagram

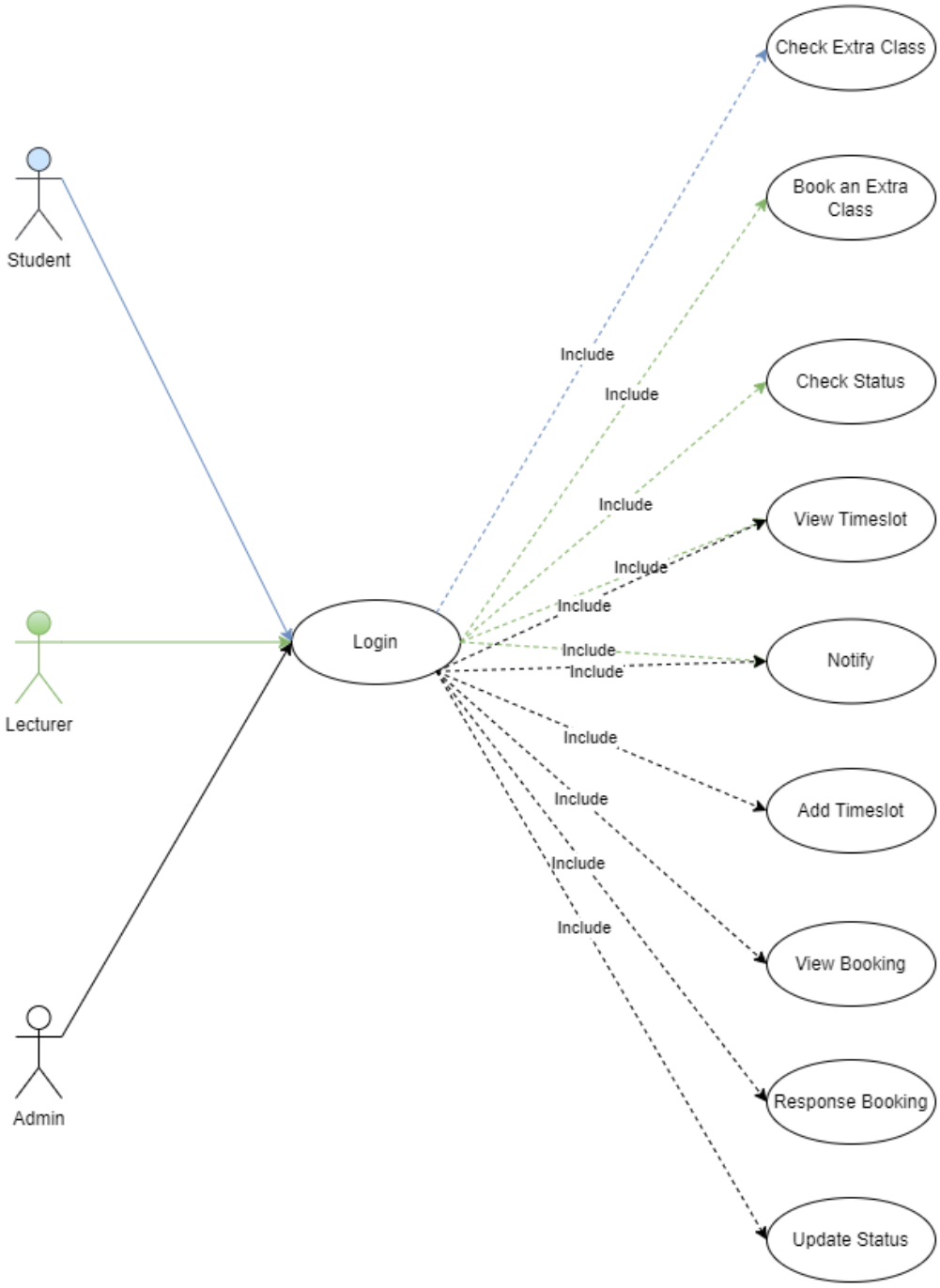


Figure 3.2 Use Case Diagram for Booking Classroom Management System

3.2.1 Explanation Use case diagram.

In this use case diagram, there are three identities in this system which are students, lecturers, and admins. Student can proceed to check and view the details of additional classes in their courses that successfully booked by their lecturer after they login the system. Moreover, lecturers can book the classroom for their purpose used by viewing the available timeslot that added by admin and it will send a notification to the admin. On the other hand, lecturer will get notification when the booking is rejected and also, they can check for the reason in this system through checking the status. Furthermore, admins can add the available timeslot before and after viewing current timeslot. After admin get the notification from lecturer via email, they can check the booking request and decide to approve the request based on the timetable and other request in the system. Lastly, when the admin response to the request, the status will automatically update in system. However, if the request is rejected, an additional email notification will be sent to the lecturer to inform them to reapply for another timeslot.

3.2.2 Specification

Name	Login
Description	Students, lecturers, and admins need to login before gaining access into the system to perform tasks.
Actors	Student, Lecturer, Admin
Benefits	Prevent unauthorized user to perform the task and gain vital data.
Triggers	Student, Lecturer and Admin must be registered.
Pre-Conditions	Student, Lecturer and Admin need to enter their username and password. After that, they also need to answer the reCAPTCHA before they login into the system.
Post-Conditions	Student, Lecturer and Admin will gain access for the system based on their authority.

Table 3.1 Login Specification of Booking Classroom Management System

Name	Check Additional Class
Description	Students can check the additional class that successfully booked by their lecturer.
Actors	Student
Benefits	Reduce troublesome to student and lecturer.
Triggers	Student can get the information of additional class from the system
Pre-Conditions	Student must login
Post-Conditions	Student can check the information of additional class.

Table 3.2 Student Specification of Booking Classroom Management System

Name	Book an Extra Class
Description	Lecturer can book an extra class with the purpose used.
Actors	Lecturer
Benefits	Lecturer can book classroom effectively by simple process.
Triggers	Lecturer must login.
Pre-Conditions	Lecturers need to view the available timeslot.
Post-Conditions	A notification will send to admin about booking request.

Table 3.3 Booking Extra Class Specification of Booking Classroom Management System

Name	Check Status
Description	Lecturer can check the status of booking request.
Actors	Lecturer
Benefits	Lecturer can know the status of request easily.
Triggers	Lecturer must login.
Pre-Conditions	Lecturers need have a registration first.
Post-Conditions	Lecturers can inform to student during class.

Table 3.4 Checking Status Specification of Booking Classroom Management System

Name	View Timeslot
Description	Lecturer can view the available timeslot for booking purpose while Admin can view available timeslot for double confirmation.
Actors	Lecturer and Admin

Benefits	Increase the efficiency of lecturer and admin to view the available timeslot.
Triggers	Lecturer and Admin must login.
Pre-Conditions	No pre-conditions needed.
Post-Conditions	Lecturer can proceed to booking class while Admin can proceed to add extra timeslot or exit.

Table 3.5 Viewing Timeslot Specification of Booking Classroom Management System

Name	Notify
Description	Lecturer can send a notification to admin for booking purpose while Admin can send a notification to lecturer for fail to book the class.
Actors	Lecturer and Admin
Benefits	Lecturer and Admin can get the notification via email as soon as possible.
Triggers	Lecturer and Admin must login.
Pre-Conditions	Lecturers need to submit the booking request and Admins need to reject the booking request.
Post-Conditions	Lecturer can choose to submit another booking request and Admin can view the booking request in system.

Table 3.6 Notifying Specification of Booking Classroom Management System

Name	Add Timeslot
Description	Admin can add new available timeslot easily.
Actors	Admin
Benefits	Increase efficiency of admin and lecturer to get the timeslot.
Triggers	Admin must login.
Pre-Conditions	No pre-conditions needed.
Post-Conditions	The available timeslot will automatically update to the shared database.

Table 3.7 Adding Timeslot Specification of Booking Classroom Management System

Name	View Booking
Description	Admin can view all booking request from various lecturer.
Actors	Admin

Benefits	It will easier admin to view and check the booking request.
Triggers	Admin must login.
Pre-Conditions	No pre-conditions needed.
Post-Conditions	Admins need to response to the booking request before update to system.

Table 3.8 Viewing Booking Specification of Booking Classroom Management System

Name	Response Booking
Description	Admin can response to the booking request as to approve the request or reject the request.
Actors	Admin
Benefits	It will easy admin to
Triggers	Admin must login.
Pre-Conditions	Admins need to view the booing request.
Post-Conditions	The status will update to the shared database and an additional email notification will send to lecturer if the request is rejected.

Table 3.9 Response Booking Specification of Booking Classroom Management System

Name	Update Status
Description	Admin can update the status of booking request.
Actors	Admin
Benefits	Increase efficiency of admin to verify the booking request.
Triggers	Admin must login.
Pre-Conditions	Admins need to response to the booking request.
Post-Conditions	The latest booking status will update to shared database.

Table 3.10 Update Status Specification of Booking Classroom Management System

3.3 Activity Diagram

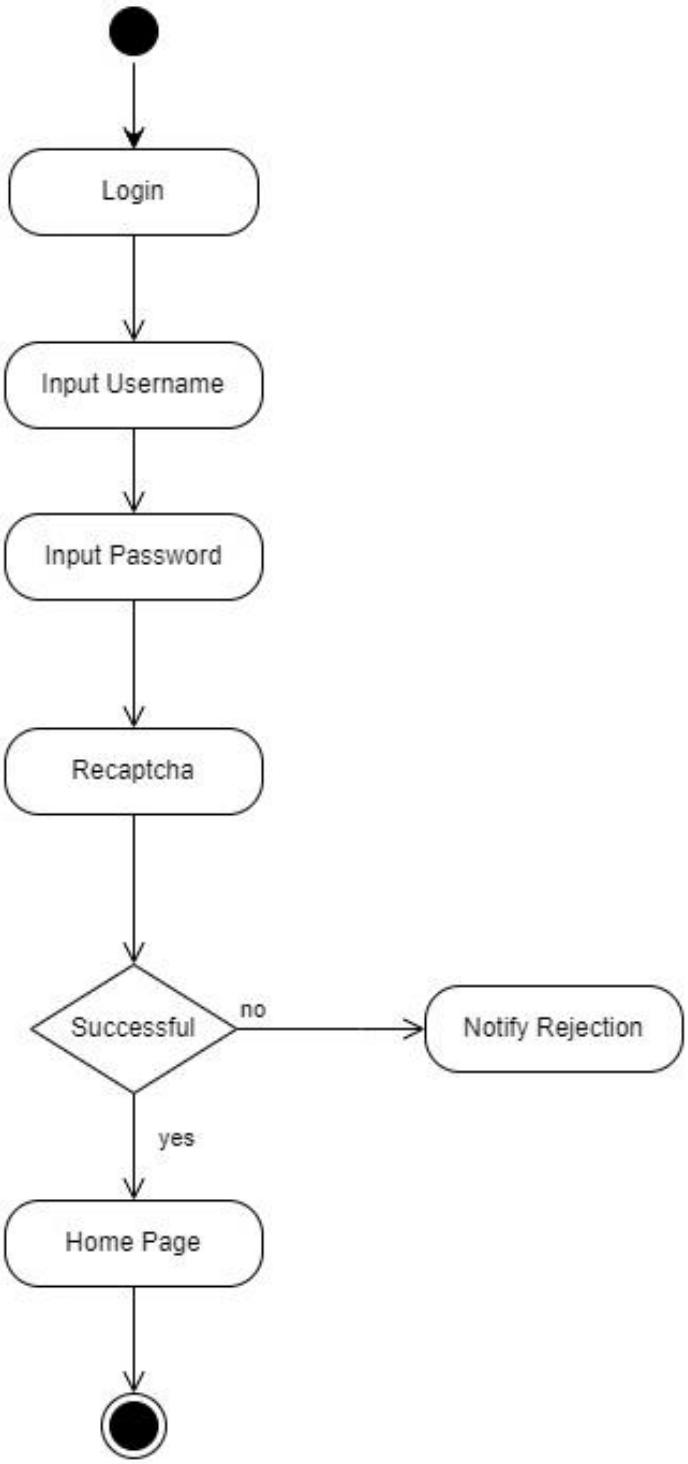


Figure 3.3 Login Page

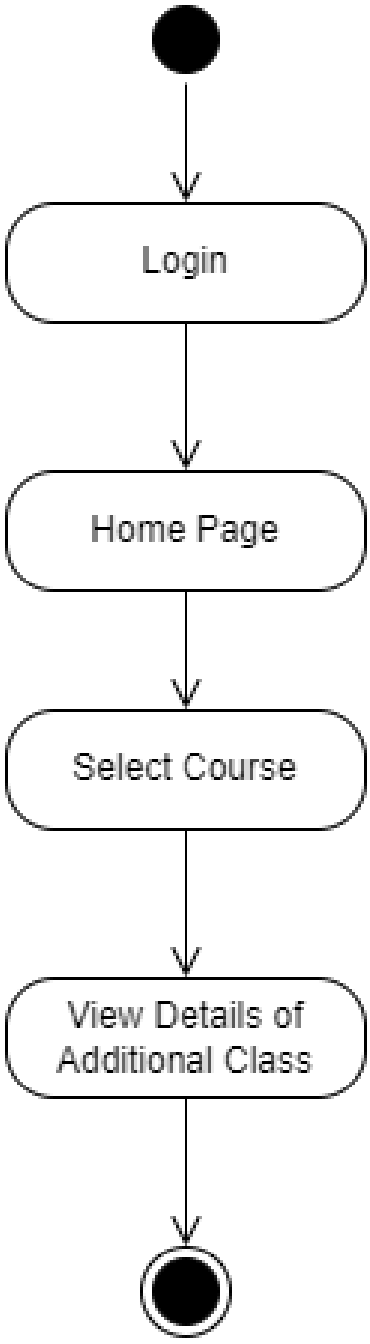


Figure 3.4 Student's Check Booking Result Page

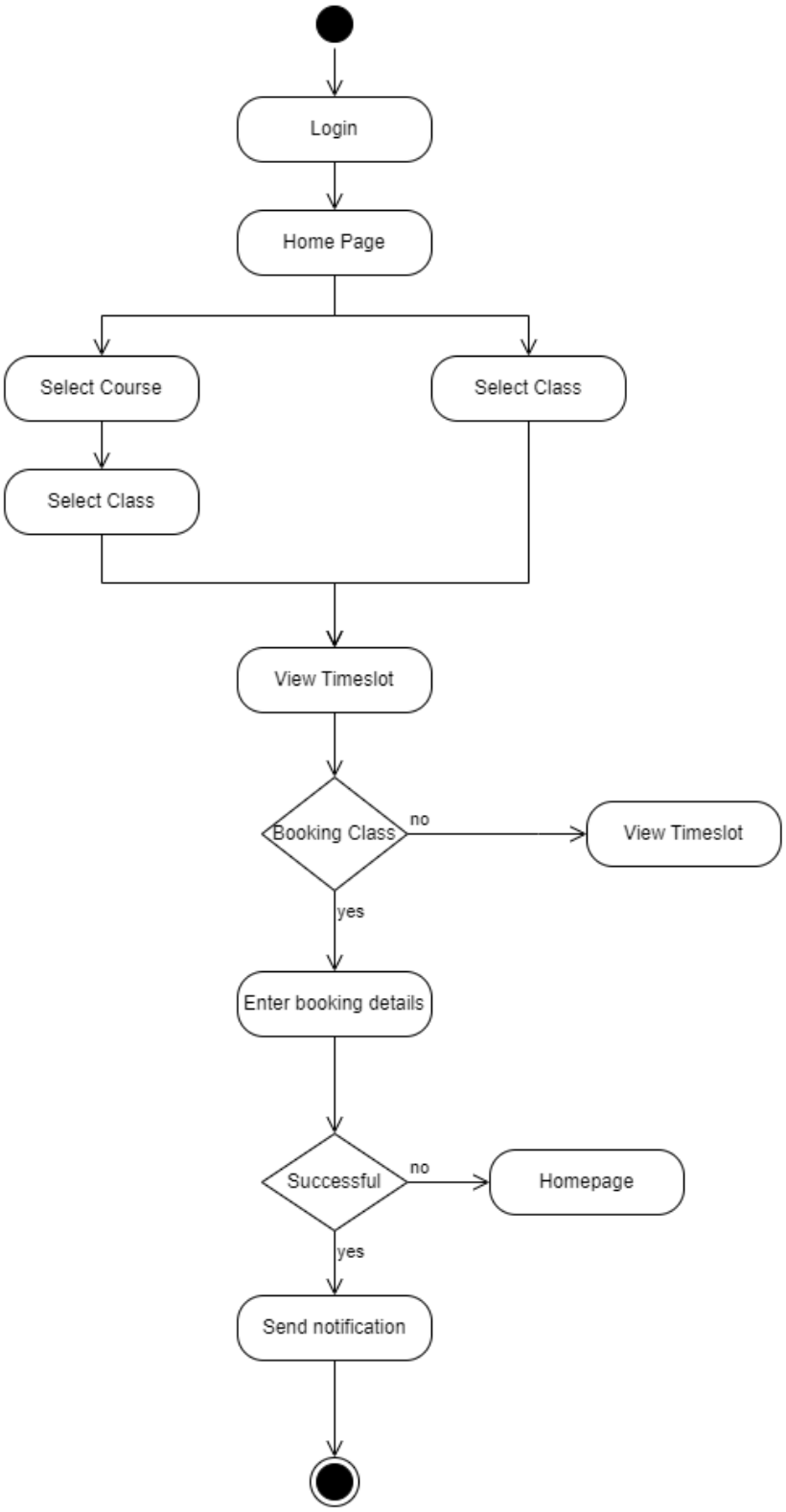


Figure 3.5 Book Classroom Page

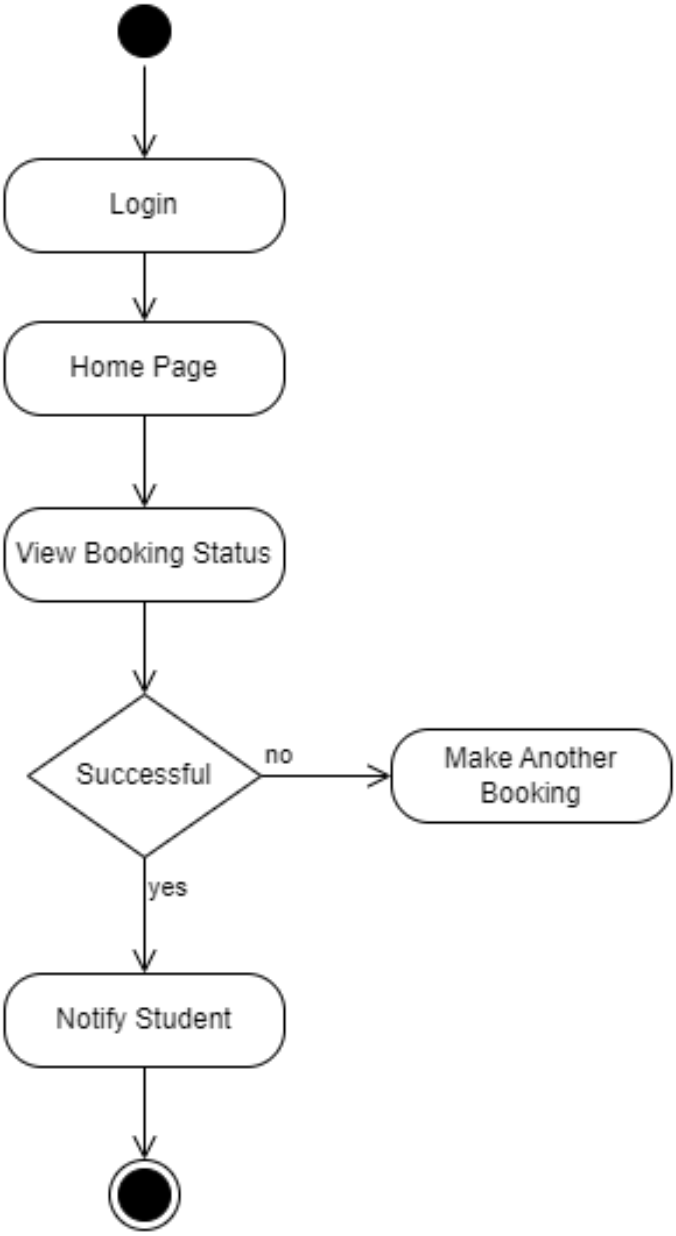


Figure 3.6 View Booking Status Page

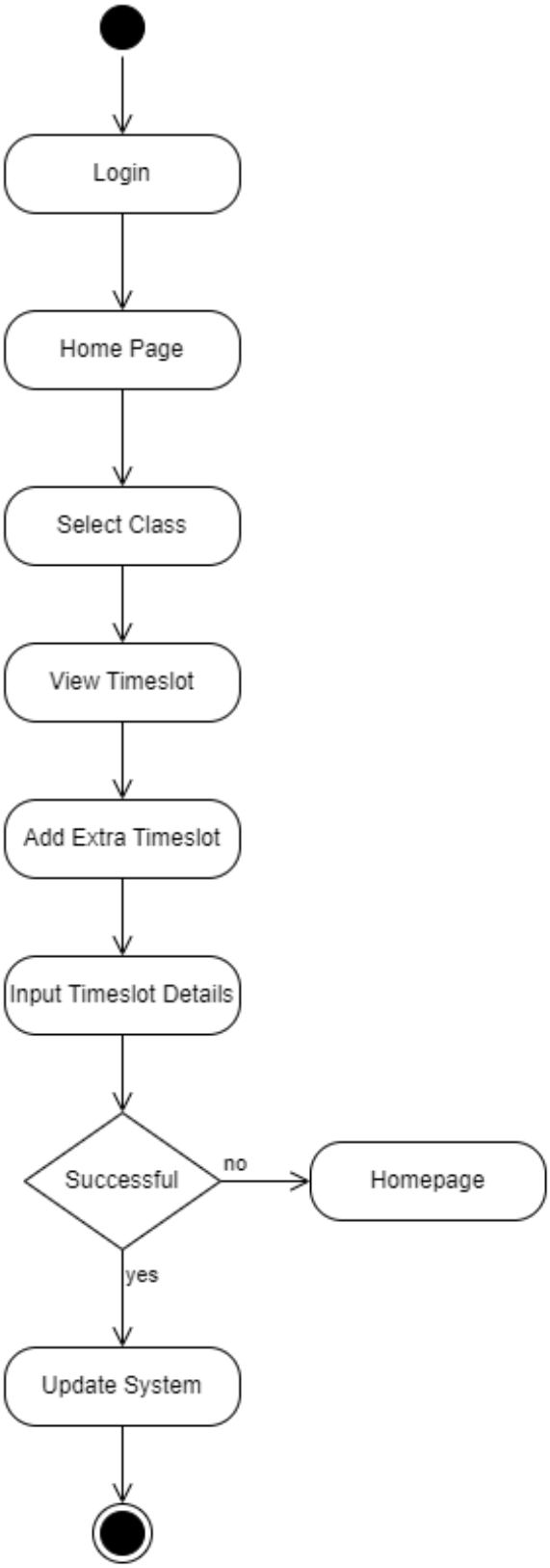


Figure 3.7 View Timeslot and Add Extra Timeslot Page

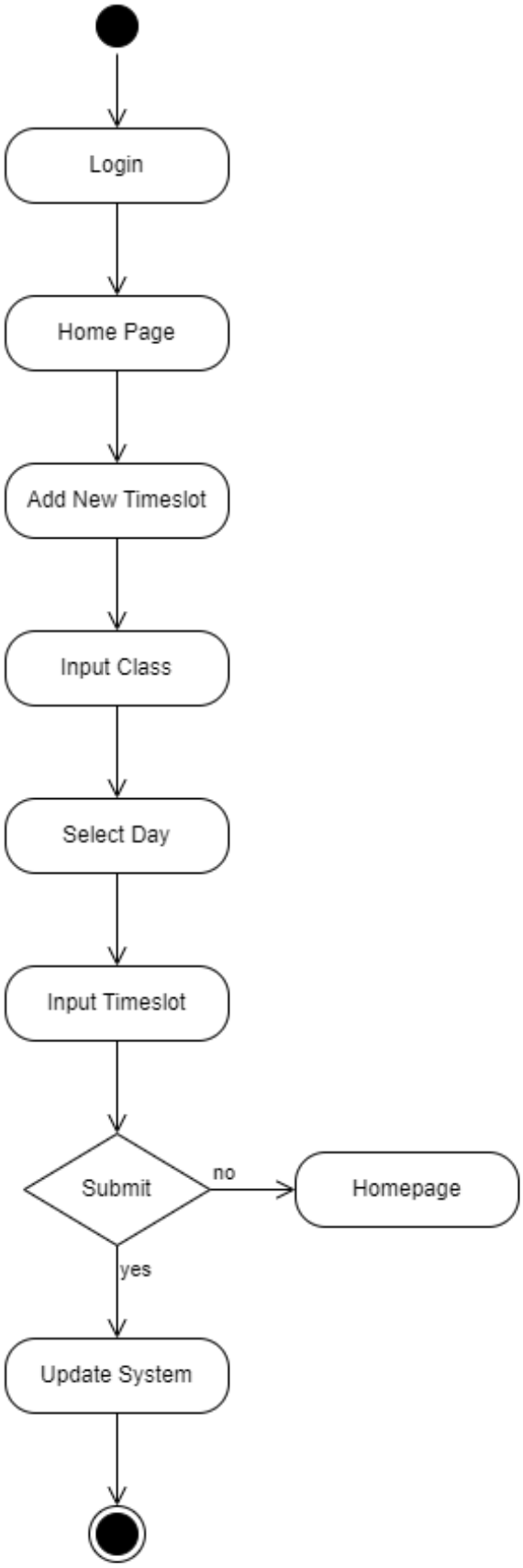


Figure 3.8 Add New Timeslot Page

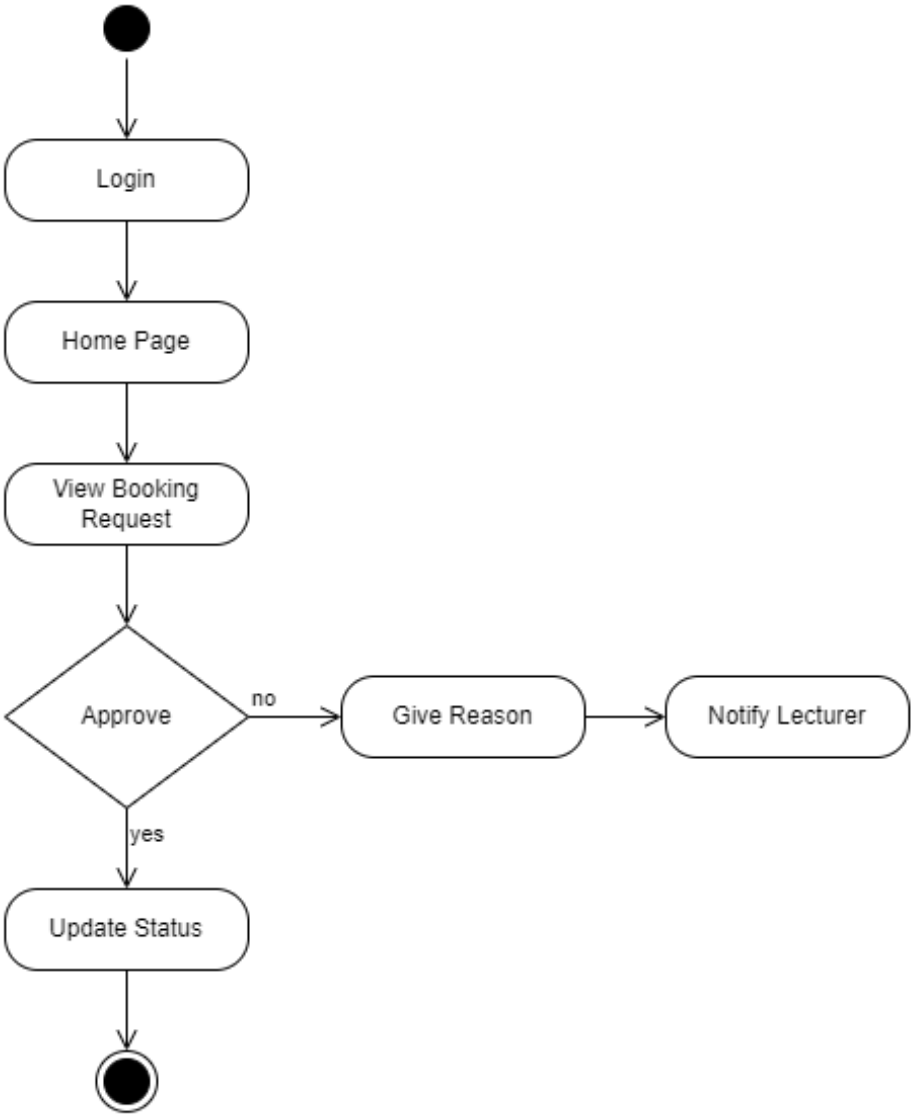


Figure 3.9 View and Response Booking Request Page

3.4 Gantt Chart

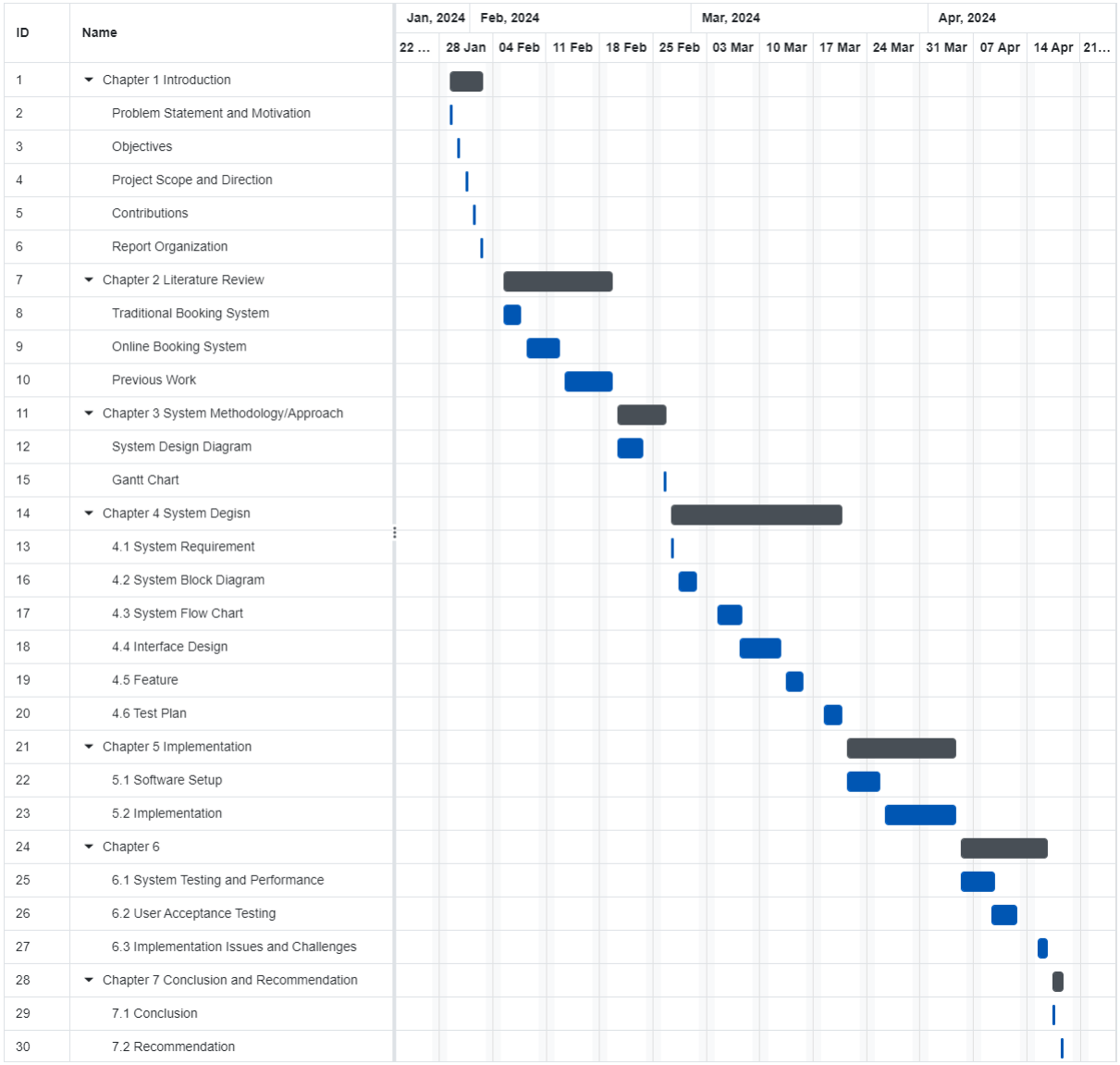


Figure 3.10 Gantt Chart

Chapter 4

System Design

4.1 System Requirement

In this system, it requires hardware and software used for developing a smart online booking classroom management system.

4.1.1 Hardware

The hardware involved in this project is laptop, printer, hard drive, papers, and stationery. A laptop is used for development process to develop the system by writing code while hard drive is used to store all the data as a backup of the project. Printer is used to print out the documentation of the project. In addition, before developing the system, draft is needed, and it is done by using paper and stationary.

Description	**Specifications**
Model	Asus Vivo Book
Processor	Intel(R) Core(TM) i5-10210U CPU @ 1.60GHz 2.11 GHz
Operating System	Windows 10 Home Single Language
Graphic	NVIDIA GeForce MX250
Memory	8GB RAM
Storage	475GB

Table 4.1 Specifications of Laptop

4.1.2 Software

1. Notepad – To have a copy of code for backup use.
2. HTML Server – To run the code and test the system and database connection.
3. Microsoft Edge – To view the research paper and document needed.
4. Microsoft Word – To write the report of project.
5. Microsoft PowerPoint – To design presentation slides of project.
6. Google Chrome – To gather information, run and view system.
7. HTML language – To write the function and interface for building the system.
8. Visual Studio Code – To write the code for building the system.
9. PHP Language – To write the function for building the system.
10. JavaScript Language - To write few functions for building the system.
11. MySQL Database – To store the data in the database.

4.2 System Block Diagram

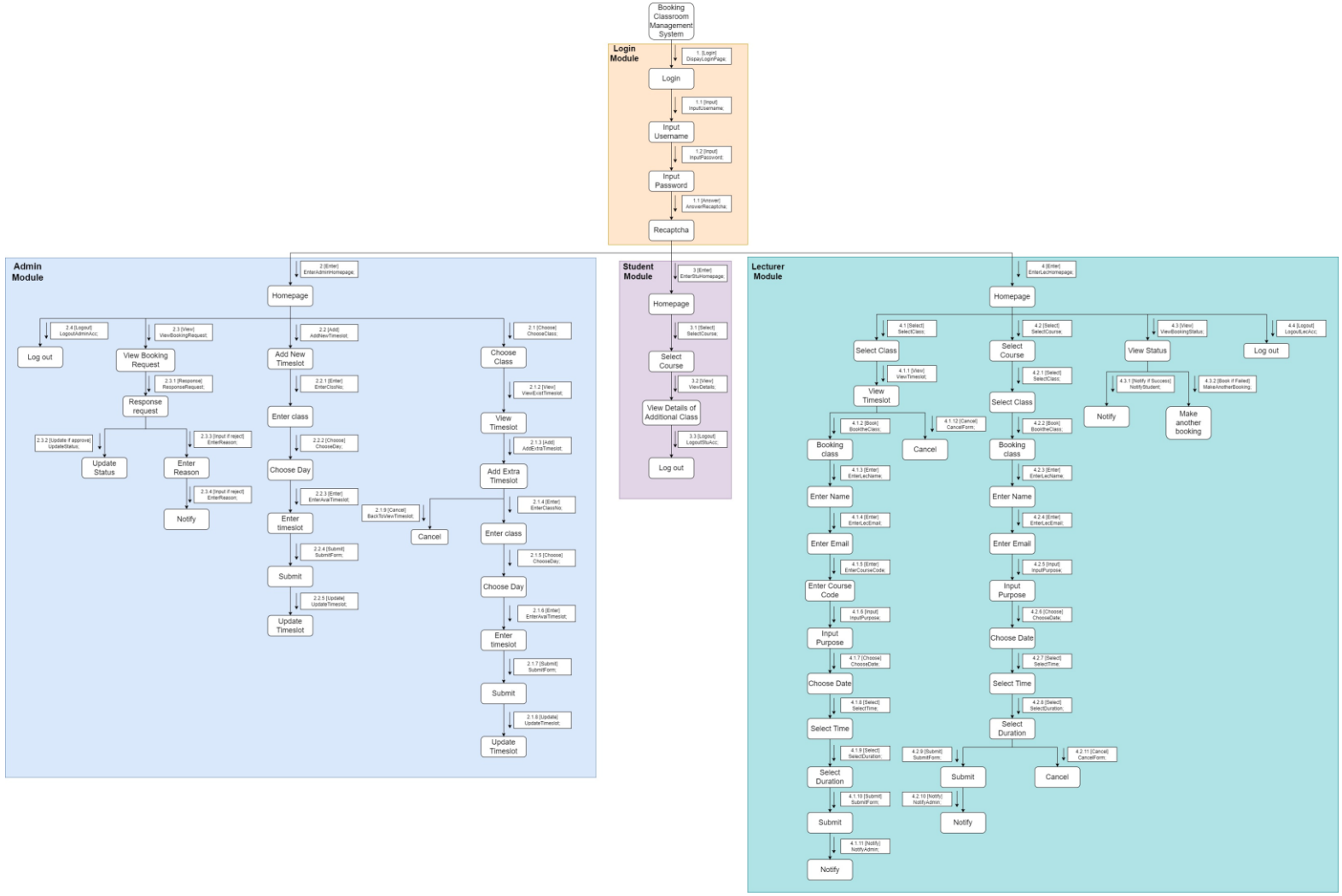


Figure 4.1 System Block Diagram

4.2.1 Explanation of Block Diagram

Login Module

In this module, user able to login by using email and password. After user input the email and password, they also need to answer the reCAPTCHA. Next, system will check the validation of user. If the username and password is valid, system will redirect to their home page as in this system have 3 users which are students, admins and lecturers.

Student Module

In this module, student able to select their courses to view the details of additional classes that successfully booked by their lecturer instead of always asking the lecturer.

Lecturer Module

In this module, lecturers have two ways to booking the class either selecting the course and classroom or just selecting the classroom. If the lecturers choose to select the course and classroom means that the booking form will be automatically insert the course code and the classroom so that the lecturers only need to enter their information and select the date, time and duration of the additional class. On the other hand, the lecturers choose to select the classroom only, the booking will only insert the classroom automatically and the lecturers need to fill in other information needed. When the lecturers submit the form, the system will send an email notification to admin for a reminder. Furthermore, lecturers able to view the booking status in the system after the admin has response to the booking request. If the booking request is approved, the lecturers can notify their student while the booking request is rejected, the lecturers is advice to make another booking.

Admin Module

In this module, admins able to add new available timeslot by entering the classroom, choosing the day and entering the timeslot in the adding form. After admins submit the form, the system will update the available timeslot to the shared database which is lecturer side. Admins also can view the existing available timeslot before adding extra available timeslot. Furthermore, admins able to view the booking requested that submitted by lecturers in this system. Admins can response to the booking request either choose to approve or reject the request. If admins choose to approve the request, the system will update the status to the shared database however the admins rejected the request, an additional email notification will be sent out to the lecturer with proper reason and advice the lecturer to make another booking.

4.3 System Flow Chart

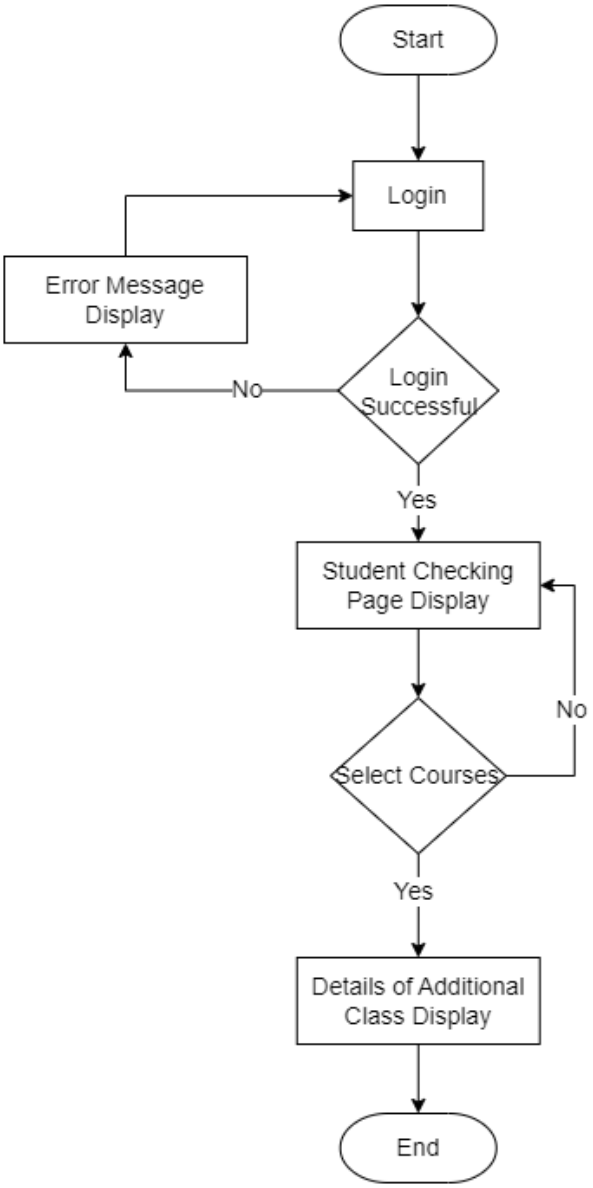


Figure 4.2 Flow of System Process on Student Side

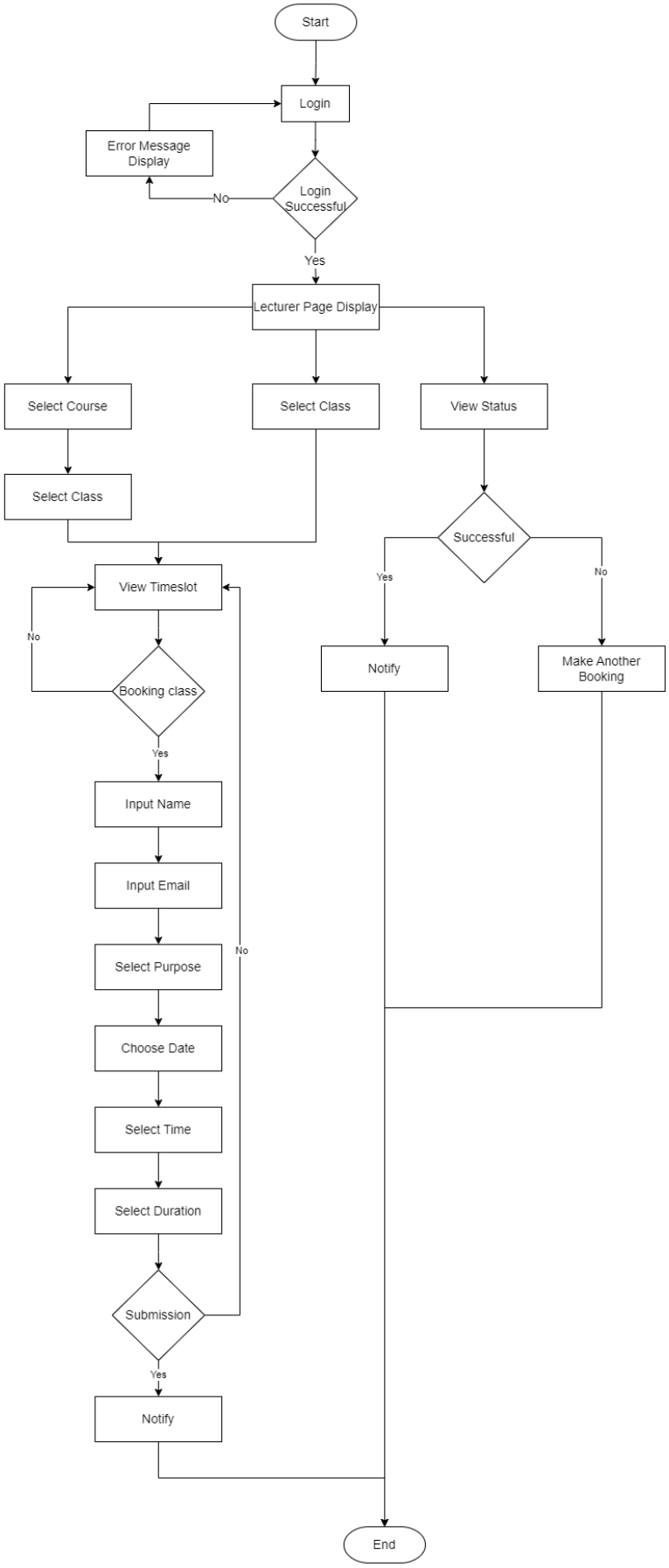


Figure 4.3 Flow of System Process on Lecturer Side

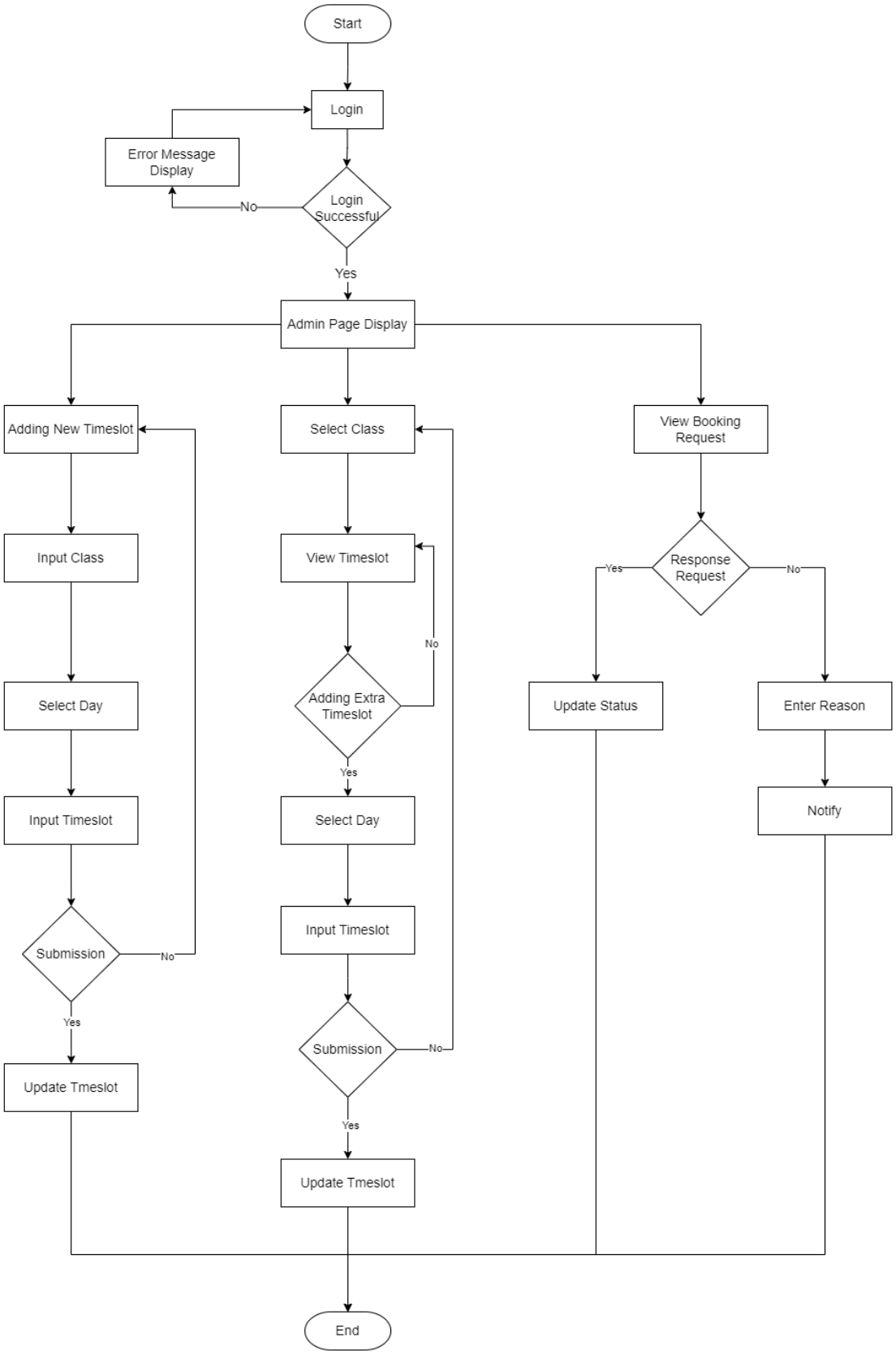


Figure 4.4 Flow of System Process on Admin Side

4.3.1 Explanation of Flow Chart

For student side, user login is needed before student can gain the access and proceed to homepage. When a student login successfully into this system, student home page will display. After that, the student can choose their course to check the additional classes that successfully booked by lecturer instead of always asking to lecturer. However, the student fails to login to the system, a message will prompt out and the student need to login again with the correct username and password.

For lecturer side, user login is needed before lecturer can gain the access and proceed to homepage. When lecturer login into the system successfully, lecturer can either select the course and the classroom or only select the classroom to view the specific timeslot before booking the classroom. If lecturer decide to book the classroom, lecturer need to fill the details needed in the booking form such as the date, time and purpose of booking the classroom. After the booking form is submitted, an email notification will send to admin while if the booing form is cancelled, it will return to view timeslot page. Other than that, lecturer can check the booking status via this system. If the booking successfully, lecturer can notify to their student however if the booking is rejected, the lecturer needed to make another booking for other timeslot.

For admin side, user login is needed before admin can gain the access and proceed to homepage. When admin successfully login into the system, admin can choose to add the new available timeslot by enter the details like classroom, day and the timeslot. After the new timeslot is submitted, system will update to the shared database. Furthermore, admin can choose to view existing timeslot by select the specific classroom and decide to add on extra available timeslot. Lastly, admin can view the booking request and response to the request. If admin approved the request, the status will update to shared database however if admin rejected the request due to some reason, admin need to specify the reason and an additional email notification will send to the lecturer.

4.4 Interface Design

Interface design is important because it used to guide user to understand this system. When creating the interface, many factors must be taken into thought in order for it to successfully lead users through the entire system. Thus, the main goal of interaction design is to set up a channel to let user communicate with the system. Below is the interface designs of booking classroom management system.

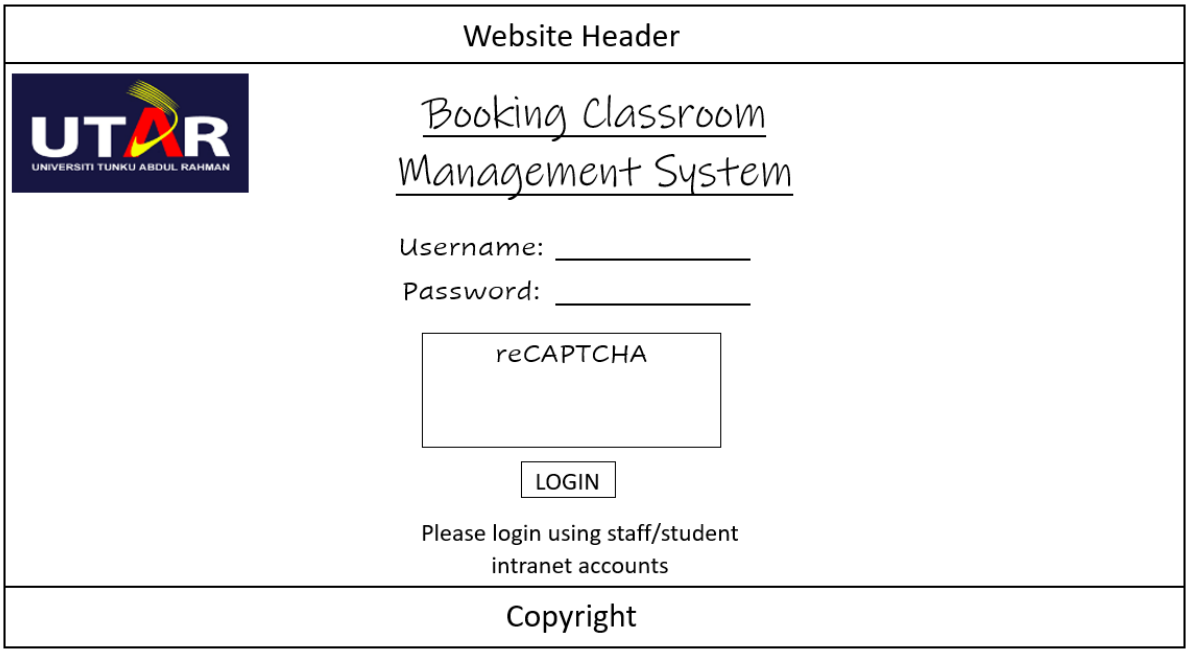


Figure 4.5 Interface for Login Page of Online Booking Classroom Management System

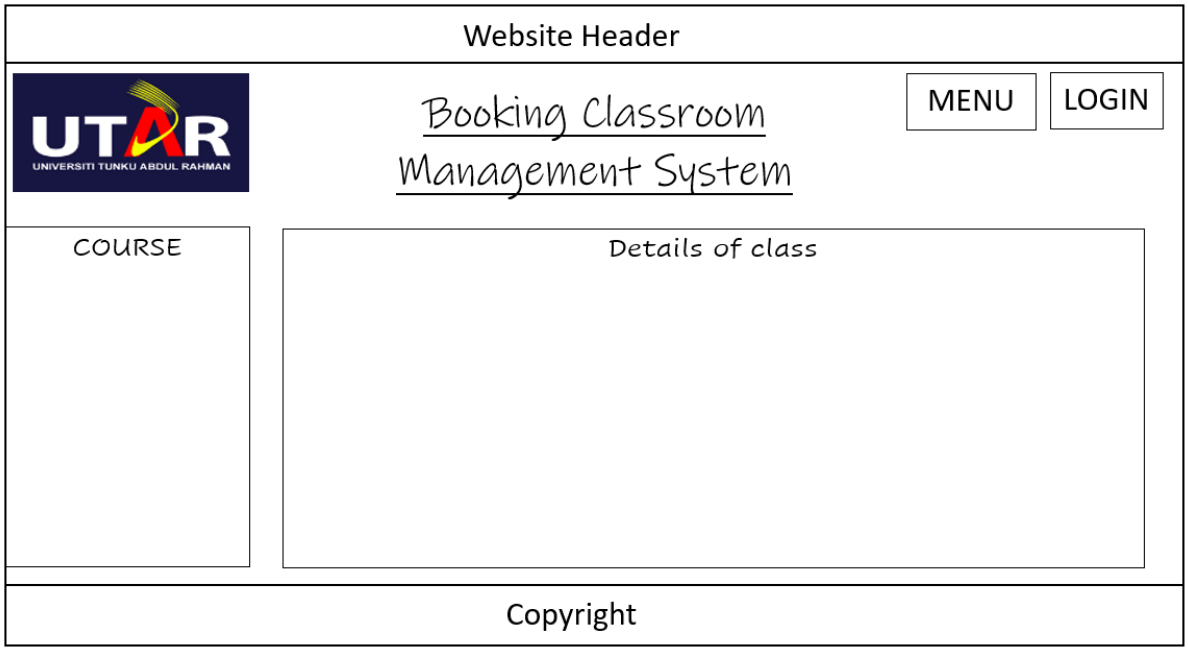


Figure 4.6 Interface for Student Page of Online Booking Classroom Management System

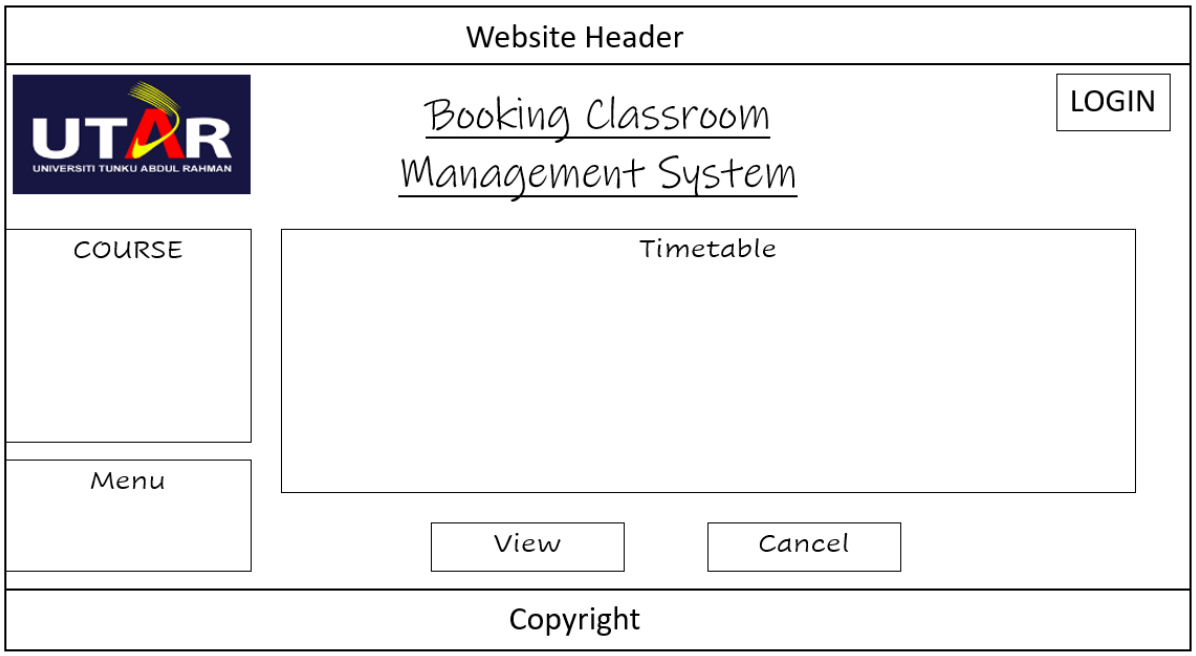


Figure 4.7 Interface for Lecturer Page of Online Booking Classroom Management System

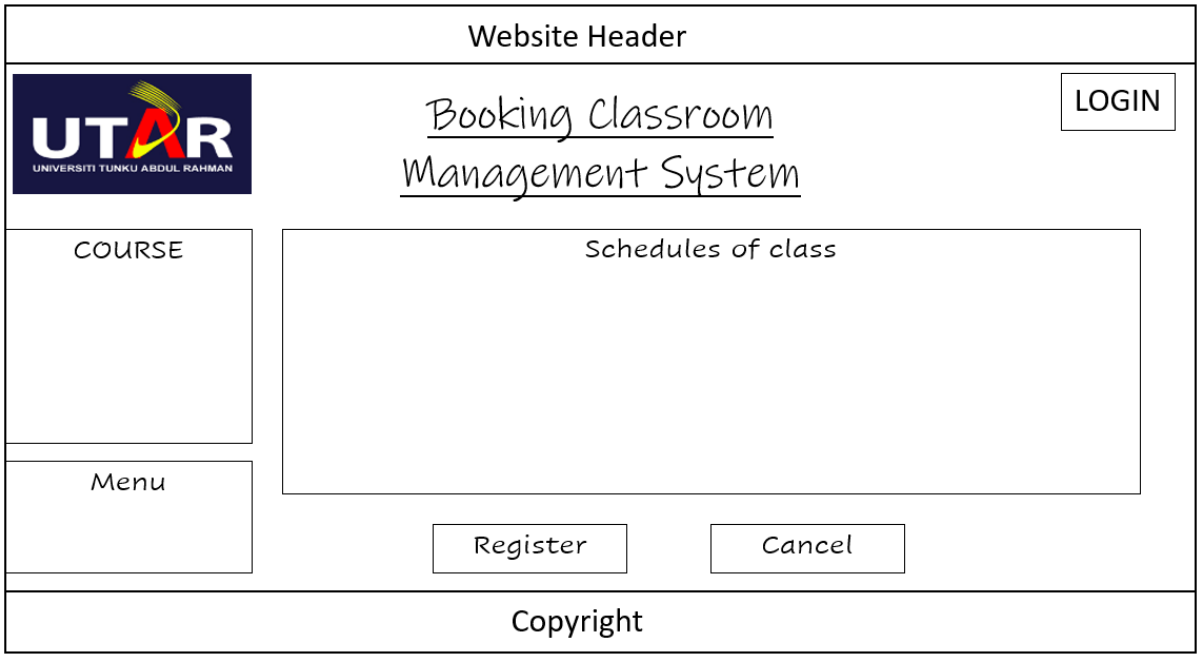


Figure 4.8 Interface for Lecturer to View Timeslot Page of Online Booking Classroom Management System

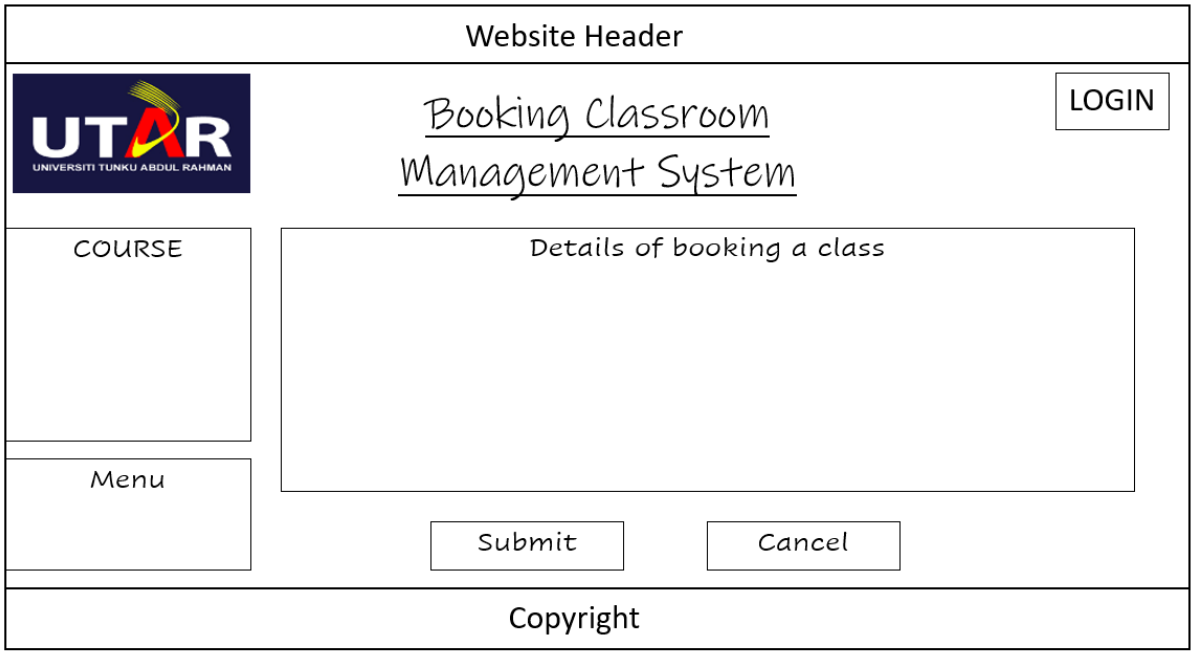


Figure 4.9 Interface for Lecturer to Book the Classroom Page of Online Booking Classroom Management System

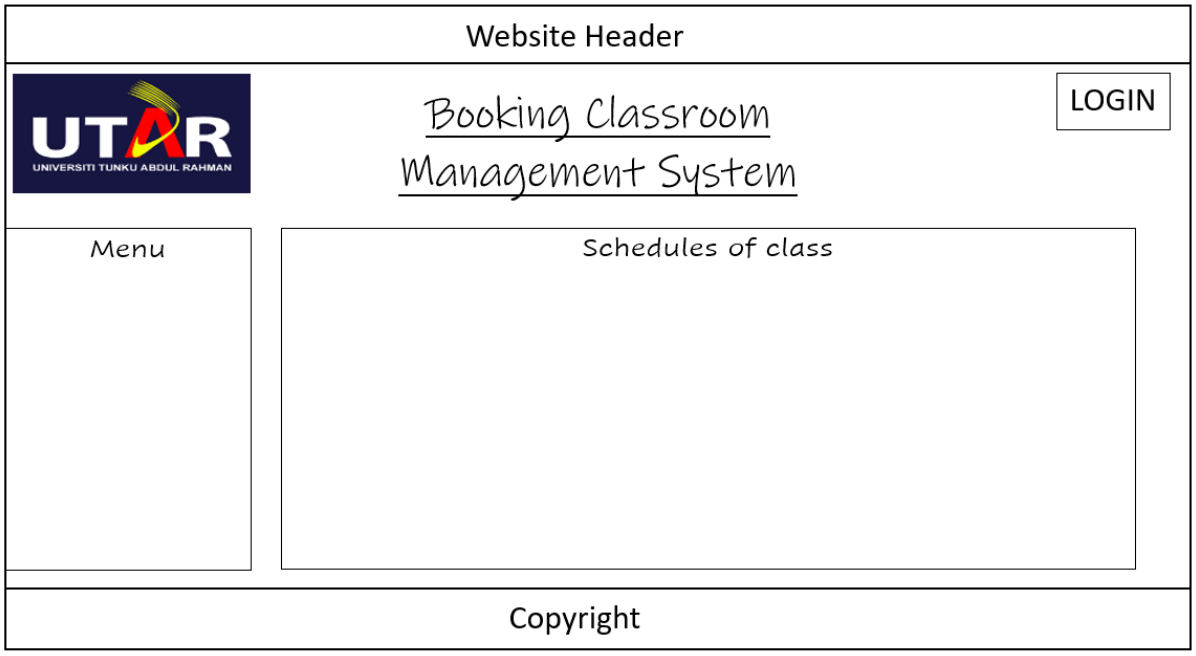


Figure 4.10 Interface for Admin to View Timeslot Page of Online Booking Classroom Management System

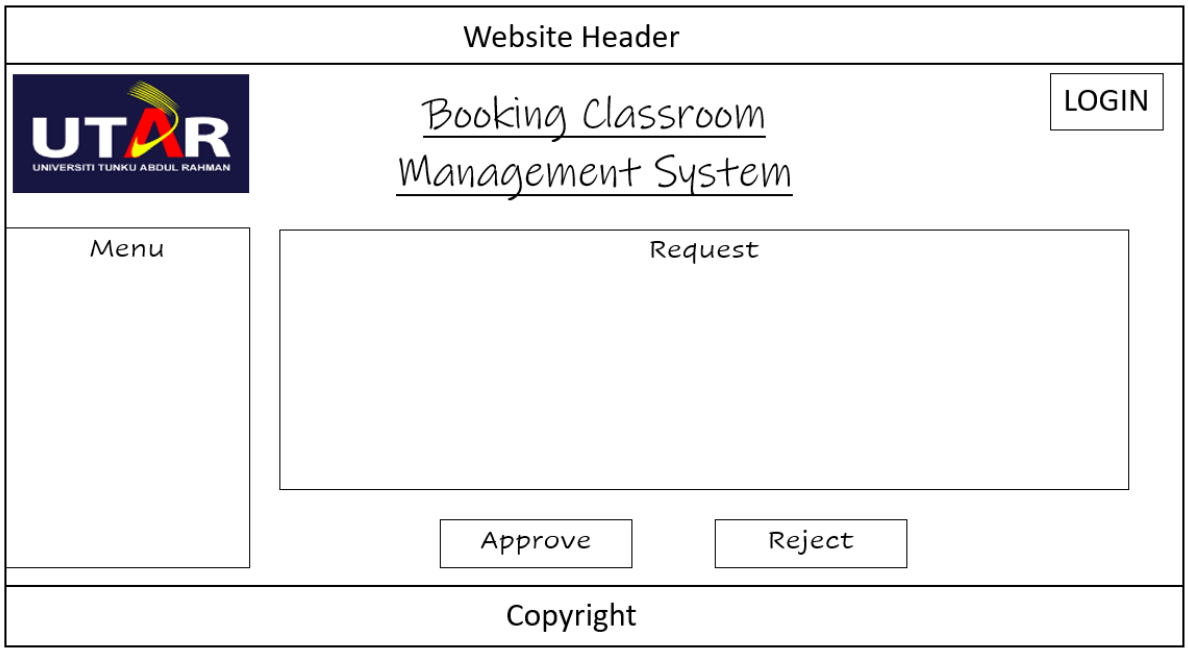


Figure 4.11 Interface for Admin to View Booking Request Page of Online Booking Classroom Management System

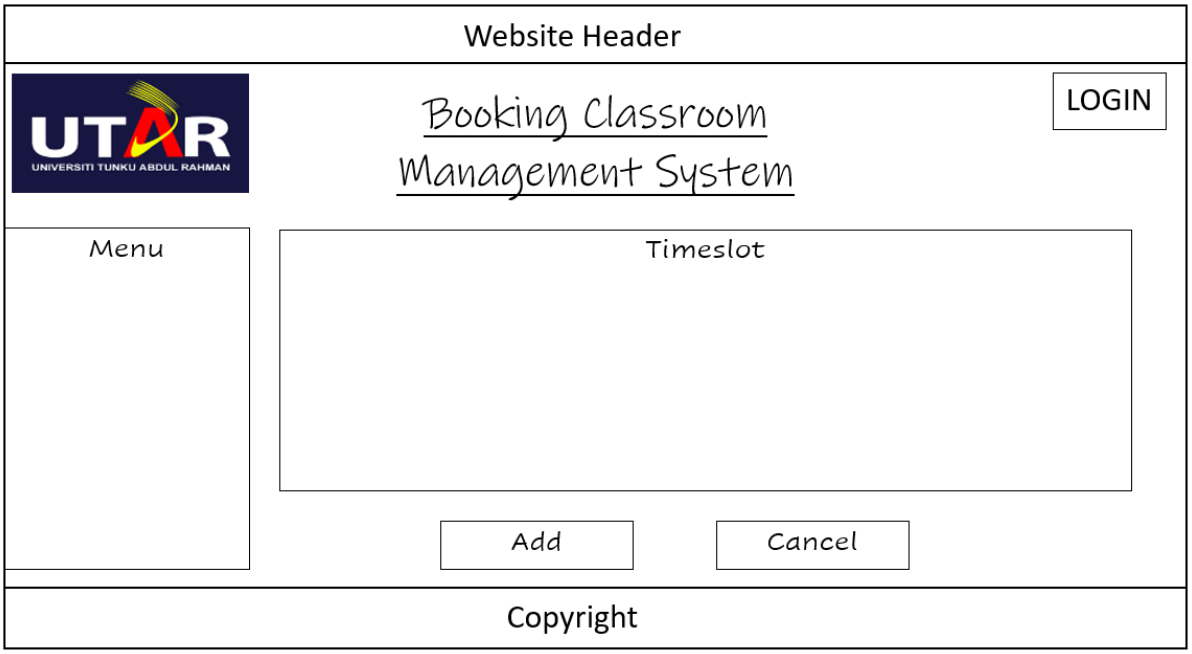


Figure 4.12 Interface for Admin to Add Timeslot Page of Online Booking Classroom Management System

4.5 Feature

In this chapter, features of the developed system will be described. Moreover, the features of the system will be explained and its functionalities.

4.5.1 Login to system

Student, Lecturer and Admin are required to enter their username and password and answer the reCAPTCHA before login to system. The system will follow the pattern of username and check the password to further redirect to their homepage.

4.5.2 Check additional class

Student can check the details of additional classes that successfully booked by their lecturer in system. System will update the booking from the database which get the approval from the admin.

4.5.3 Book available class

Lecturer able to do booking class in this feature by filling out a form that contain the details needed such as purpose of booking the class, date, time and others. After lecturer submit the booking request, a notification will send out. The system will update the request to admin to wait for the response.

4.5.4 Check booking status

Lecturer able to check the booking status after admin has response to the request. If the request is approved, lecturer can notify to their student while if the request is rejected, lecturer needs to make another request by changing the timeslot or class.

4.5.5 View available timeslot

Lecturer required to check the available timeslot before they book the classroom/ System will update the timeslot added by admin inn the database. Admin also can view the existing timeslot before adding new available timeslot to prevent duplicate data entered.

4.5.6 Notification

A notification sent by lecturer to admin to inform admin about the booking request. However, another notification sent by admin to lecturer is to inform lecturer for the status of booking is rejected with the reason.

4.5.7 Add timeslot

Admin able to add available timeslot by filling out the details such as class, day and timeslot to increase the efficiency of admin and lecturer to get the latest available timeslot. After admin submit the form, system will store into database and update to shared database.

4.5.8 View booking request

Admin able to view all booking request from various lecturers with their details. The booking request is order by submission time accordingly. System will get the booking request from the database which stored the information of booking requests.

4.5.9 Response booking request

Admin able to respond to the booking request accordingly by deciding to be approved or rejected after viewing the available timeslot. When admin approved or rejected the request, system will update to the shared database.

4.5.10 Update status

The latest status will update to the shared database and an additional email notification will send to lecturer if the request is rejected.

4.6 Test Plan

This part will be showing how unit testing will be conducted for each and every function of the system.

4.6.1 Login to system

Test ID.	Test Name	Description	Expected Result
001.	Login to system	Students, lecturers, and admins need to login before gaining access into the system to perform tasks.	Login to system Successfully

Table 4.2 Test Plan of Login to System

4.6.2 Check additional class

Test ID.	Test Name	Description	Expected Result
001.	Check Additional Class	Students can check the additional class that successfully booked by their lecturer and view the details of the additional class.	Check Additional Class Successfully

Table 4.3 Test Plan of Check Additional Class

4.6.3 Book extra class

Test ID.	Test Name	Description	Expected Result
001.	Book Extra Class	Lecturer can book an extra class with the purpose used.	Book Extra Class Successfully

Table 4.4 Test Plan of Book Extra Class

4.6.4 Check booking status

Test ID.	Test Name	Description	Expected Result
001.	Check Booking Status	Lecturer can check the status of booking request.	Check Booking Status Successfully

Table 4.5 Test Plan of Check Booking Status

4.6.5 View available timeslot

Test ID.	Test Name	Description	Expected Result
001.	View Available Timeslot	Lecturer can view the available timeslot for booking purpose while Admin can view available timeslot for double confirmation.	View Available Timeslot Successfully

Table 4.6 Test Plan of View Available Timeslot

4.6.6 Notification

Test ID.	Test Name	Description	Expected Result
001.	Notification	Lecturer can send a notification to admin for booking purpose while Admin can send a notification to lecturer for fail to book the class.	Notification Successfully

Table 4.7 Test Plan of Notification

4.6.7 Add timeslot.

Test ID.	Test Name	Description	Expected Result
001.	Add Timeslot	Admin can add new available timeslot easily by filled up simple form.	Add Timeslot Successfully

Table 4.8 Test Plan of Add Timeslot

4.6.8 View booking request

Test ID.	Test Name	Description	Expected Result
001.	View Booking Request	Admin can view all booking request from various lecturer.	View Booking Request Successfully

Table 4.9 Test Plan of View Booking Request

4.6.9 Response booking request.

Test ID.	Test Name	Description	Expected Result
001.	Response Booking Request	Admin can response to the booking request as to approve the request or reject the request.	Response Booking Request Successfully

Table 4.10 Test Plan of Response Booking Request

4.6.10 Update status

Test ID.	Test Name	Description	Expected Result
001.	Update Status	Admin can update the status of booking request.	Update Status Successfully

Table 4.9 Test Plan of Update Status

Chapter 5

System Implementation

5.1 Software Setup

5.1.1 Visual Studio Code

Step 1: Download

To install visual studio code, please install from https://code.visualstudio.com/download. Installed it based on laptop operating system.

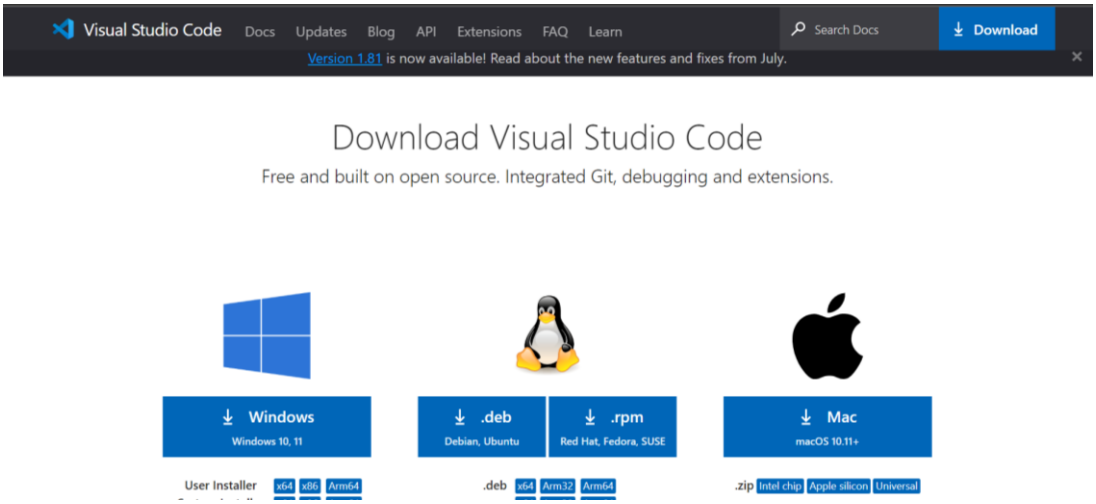


Figure 5.1 Website Downloaded Visual Studio Code Package

Step 2: Installation

After finish downloading, double click the package of visual studio code. A license agreement page will prompt out, please accept the agreement otherwise cannot install the visual studio code. After that, additional tasks can be selected by just ticking the item. Lastly, have a checking for the setting before clicking the install button.

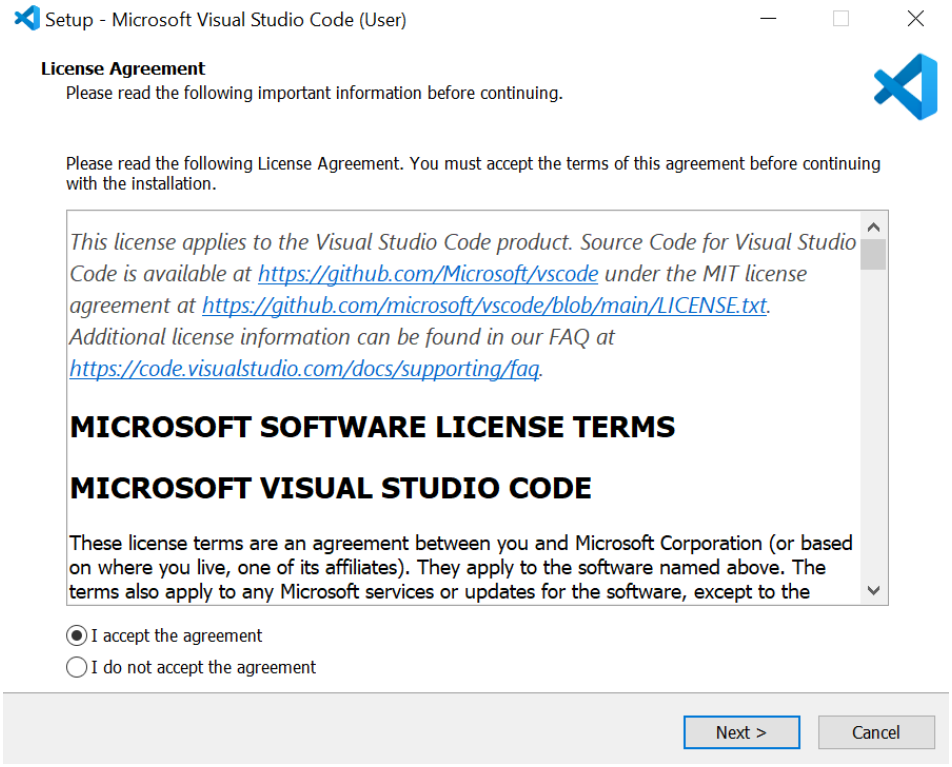


Figure 5.2 License Agreement of Visual Studio Code

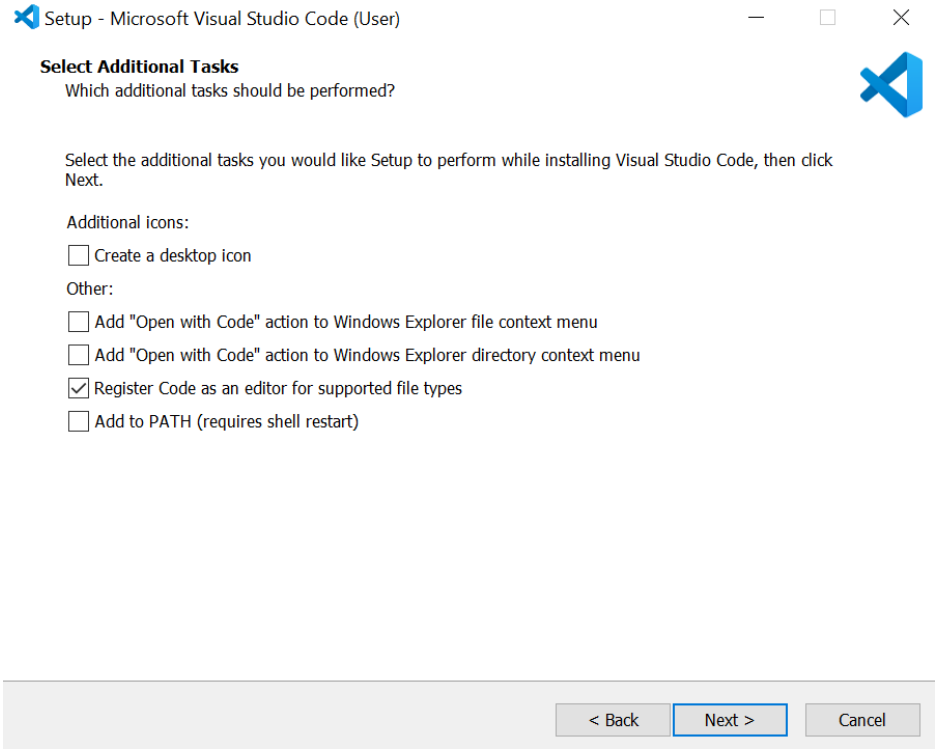


Figure 5.3 Additional Tasks of Visual Studio Code

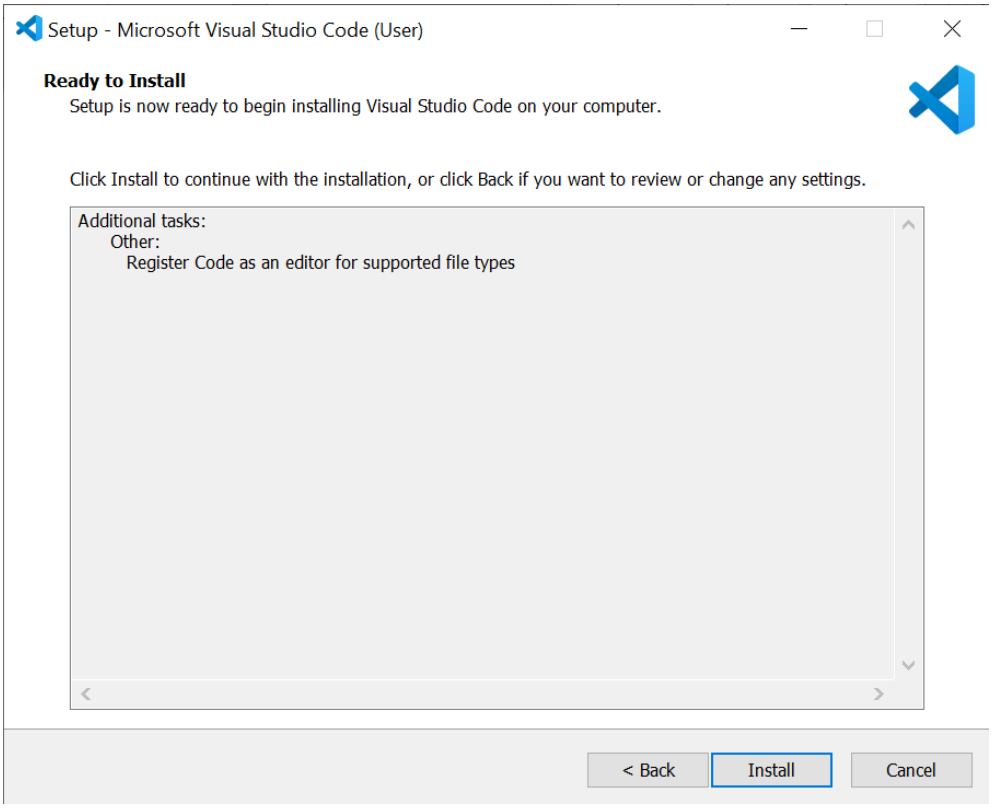


Figure 5.4 Summary Before Install the Visual Studio Code

Step 3: Start up visual studio code.

When installation done, double click the visual studio code and it will run as figure below. System can be developed now.

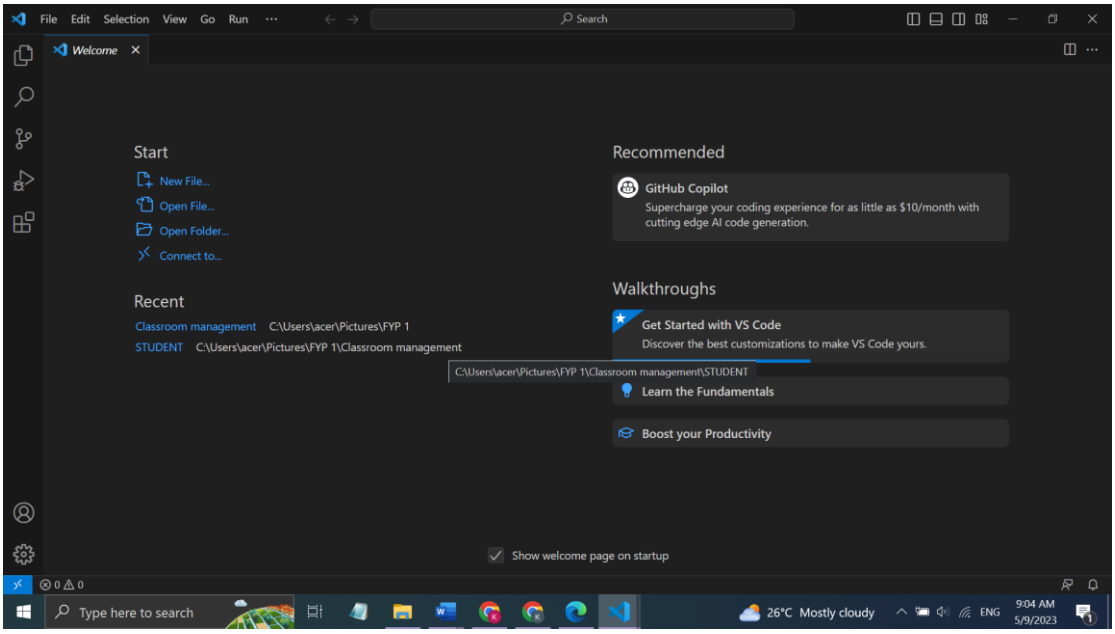


Figure 5.5 Interface of Visual Studio Code

5.1.2 XAMPP Apache Server

Step 1: Download

To install the XAMPP Apache Server, please install from the official website which is https://www.apachefriends.org/download.html

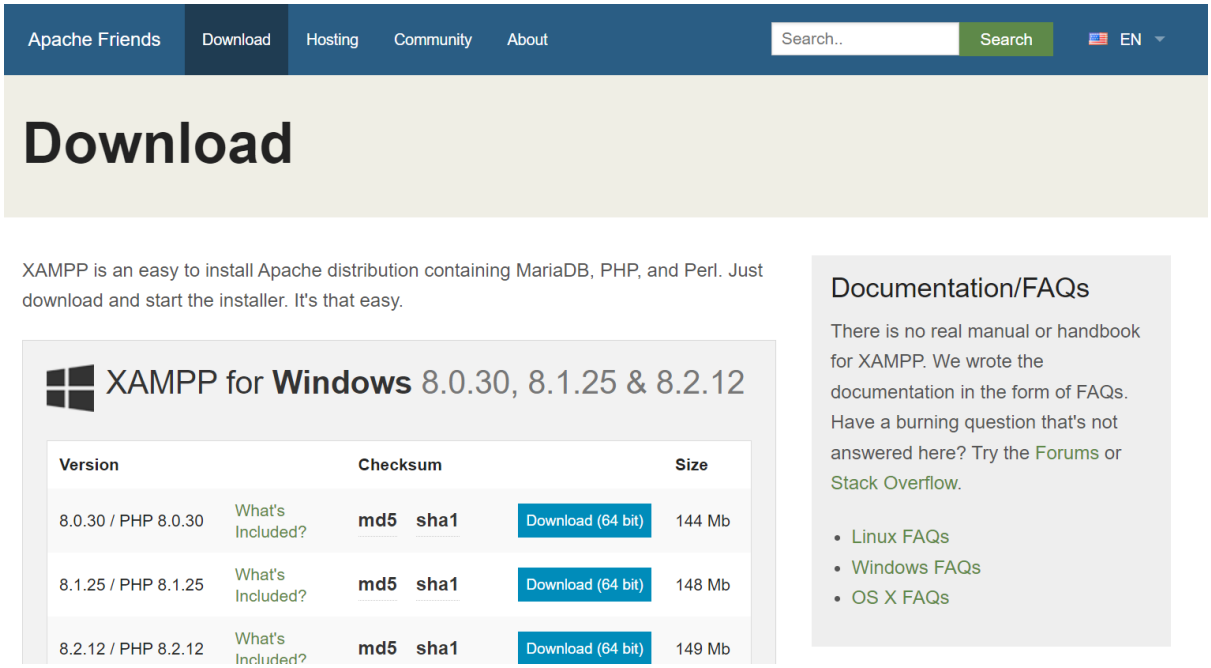


Figure 5.6 Official Website To Install XAMPP Apache Server

Step 2: Installation

After finish downloading the apk, double click to start the XAMPP Apache Server. A welcome page will prompt out, click the next button. After that, user need to choose an empty folder to store the files in the XAMPP. User also need to select the component that wanted to install and click next when user is ready to continue. User can choose the language in the XAMPP, and it is ready to install.

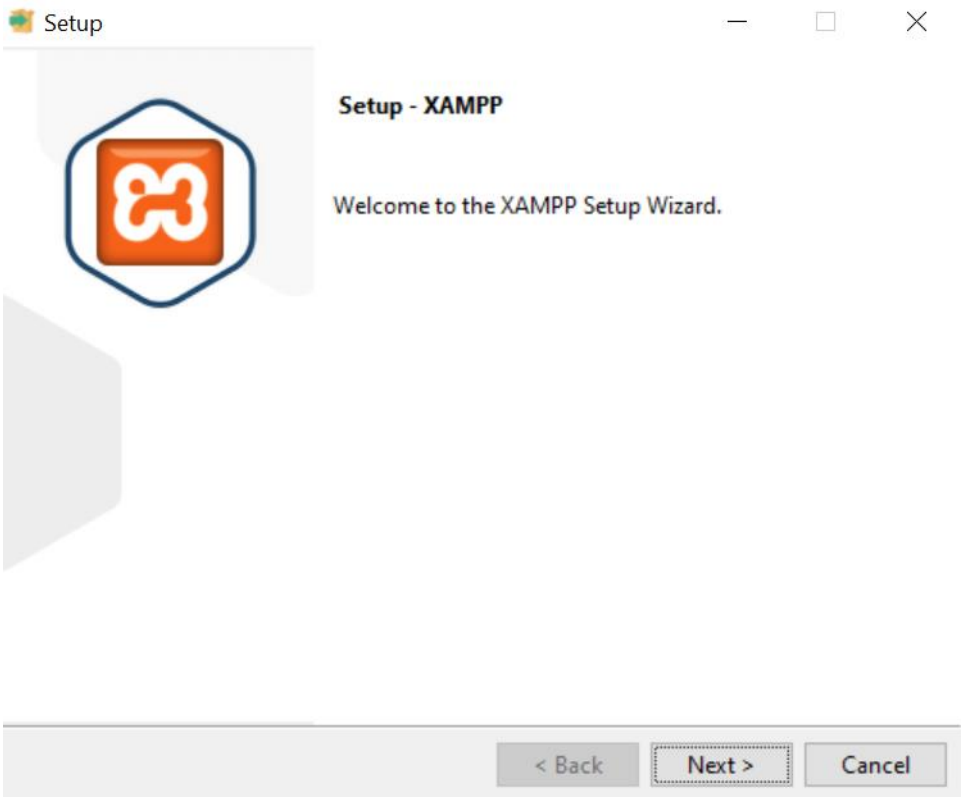


Figure 5.7 Welcome Page

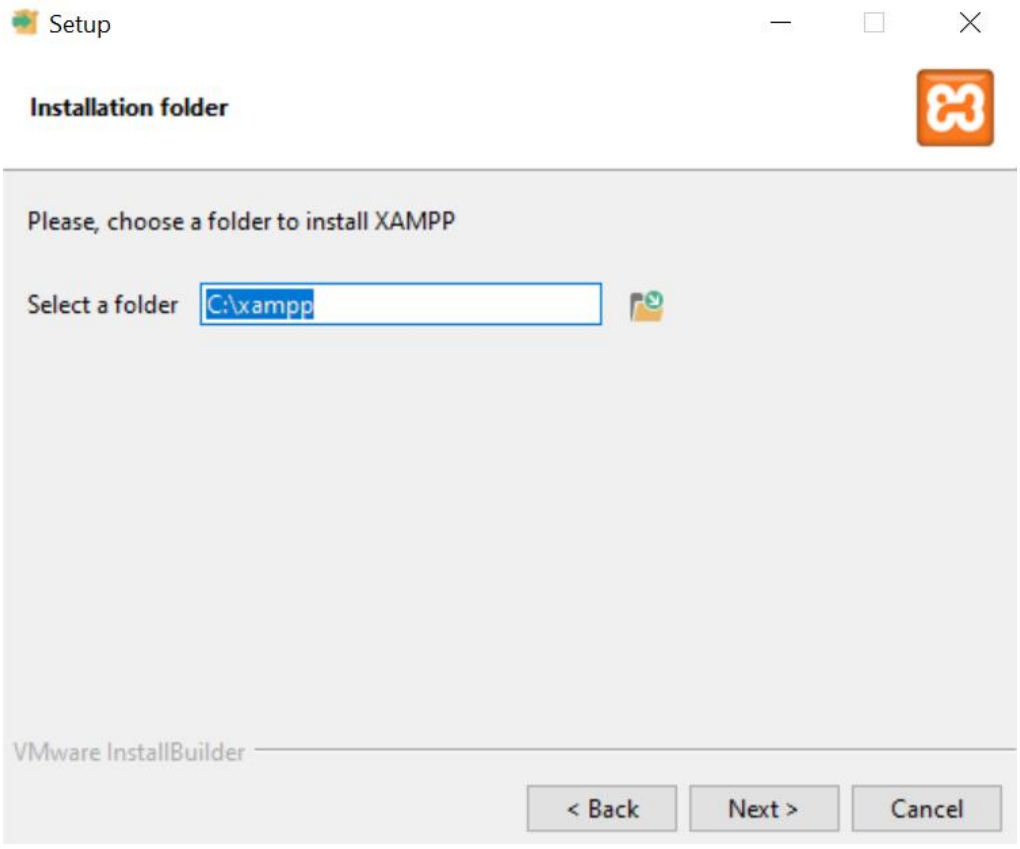


Figure 5.8 Installation Folder Page

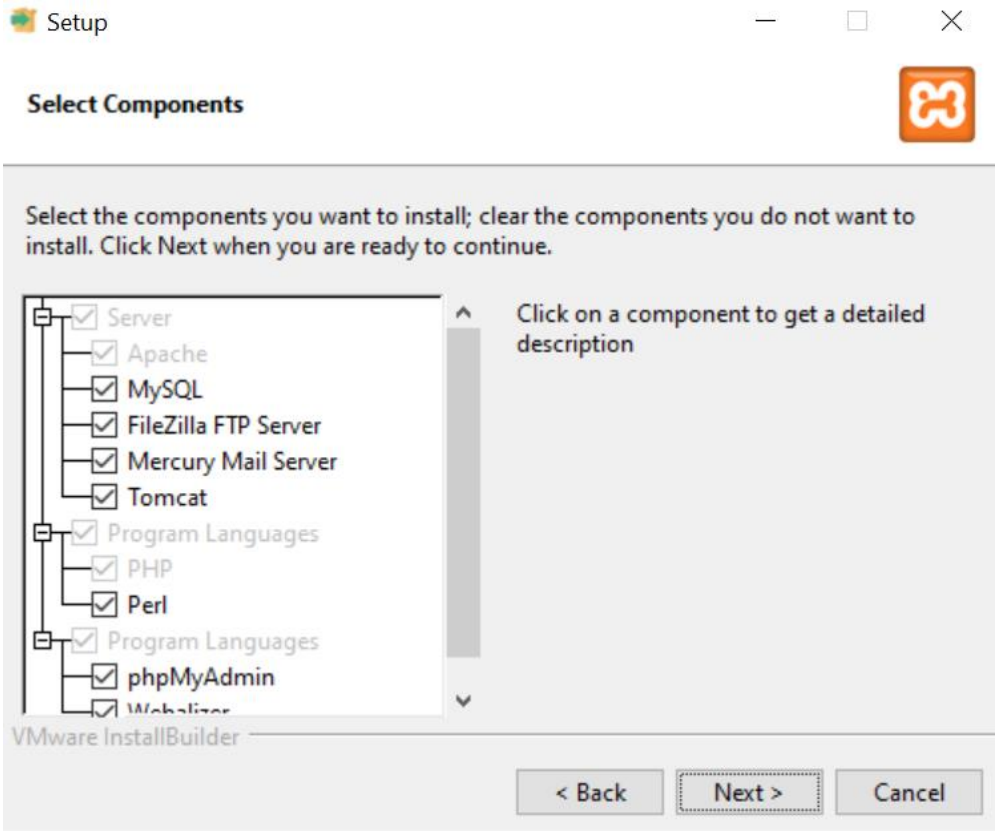


Figure 5.9 Select Components Page

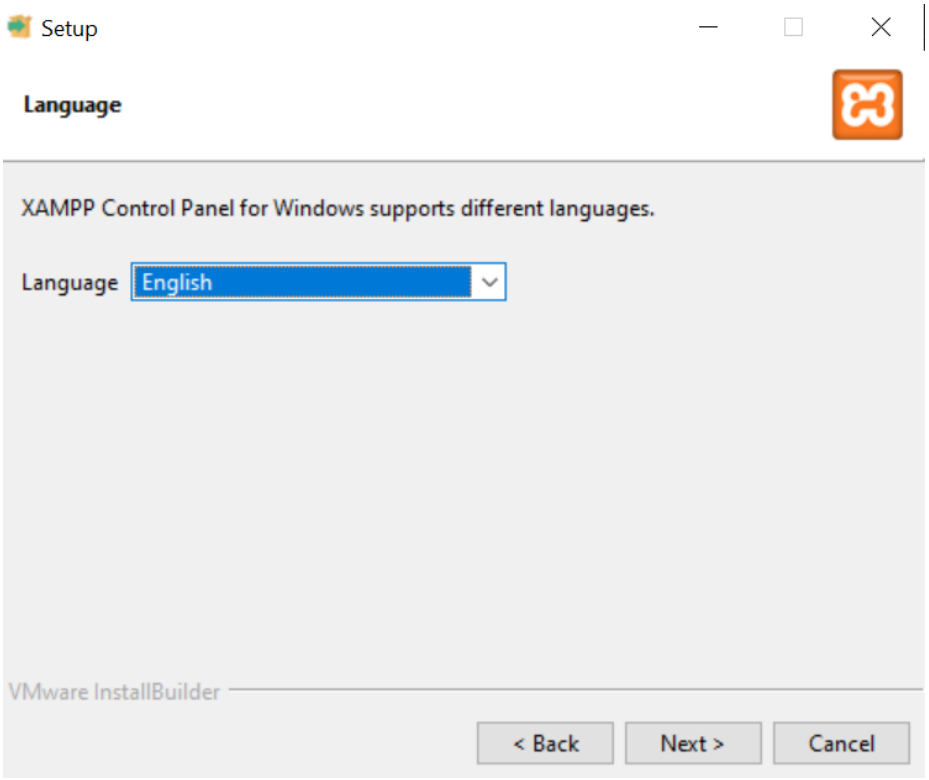


Figure 5.10 Select Language Page

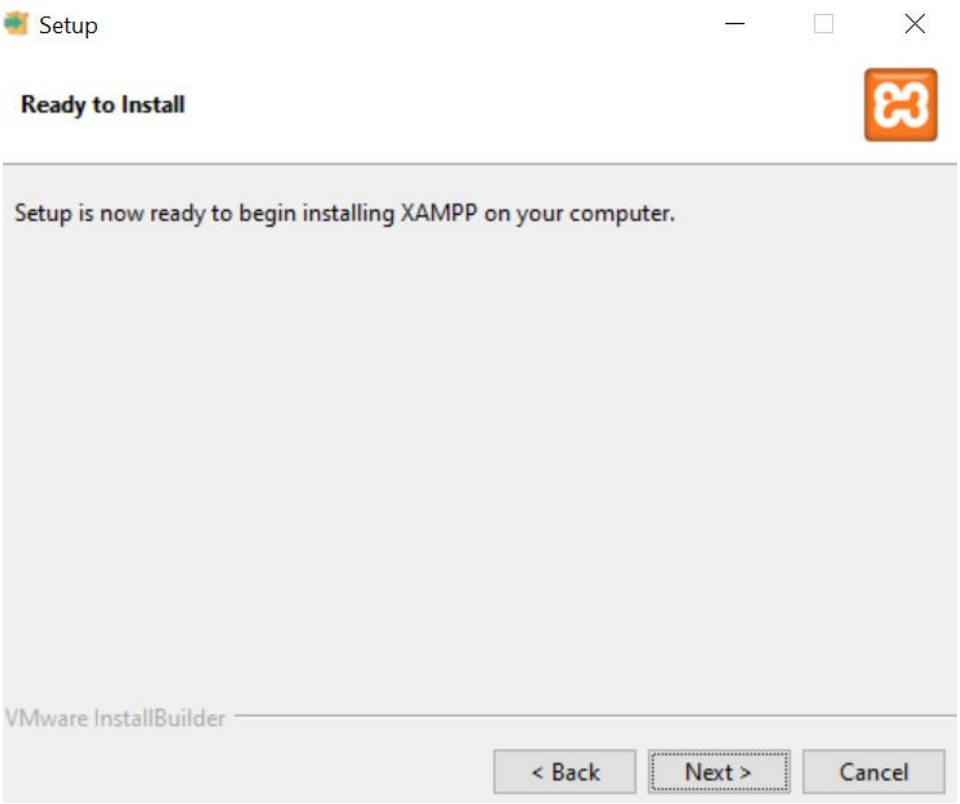


Figure 5.11 Ready to Install Page

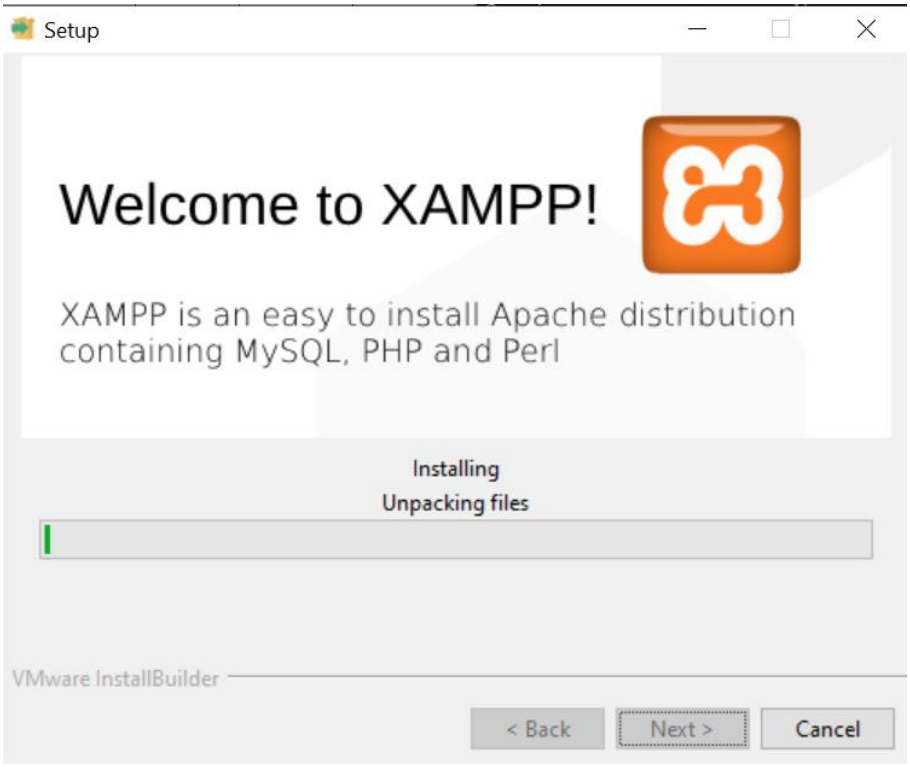


Figure 5.12 Installing Process Page

Step 3: Start Up XAMPP Apache Server

When all the installation done, double click the XAMPP Control Panel and it will run as figure below. User can start the function by clicking the start button.

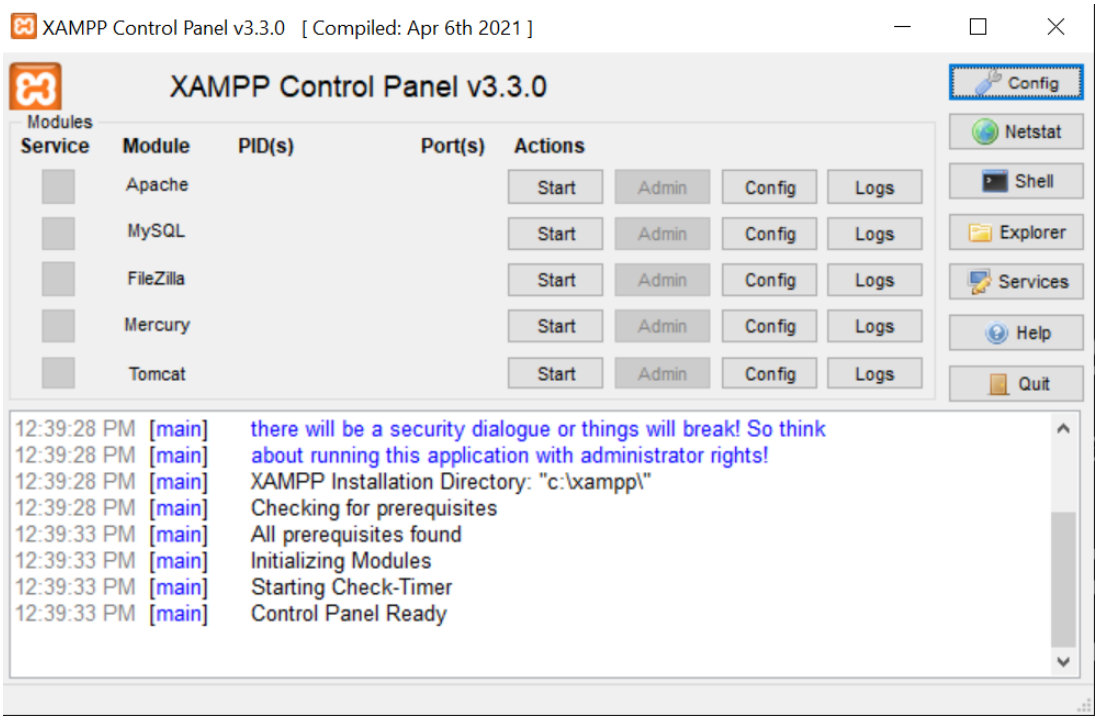


Figure 5.13 Interface of XAMPP Apache Serve

5.1.3 MySQL Database in XAMPP

Step 1: User needs to start the Apache Module and MySQL Module.

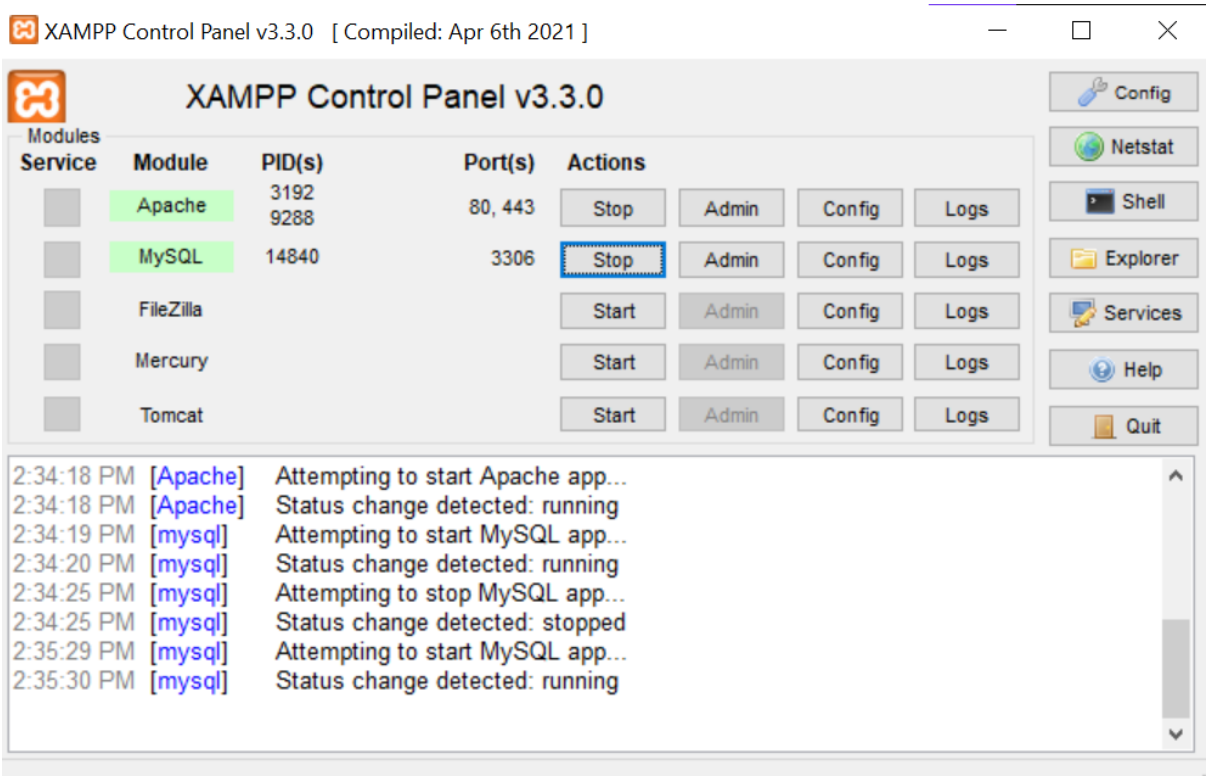


Figure 5.14 XAMPP Control Panel Page

Step 2: After user click the MySQL Module's admin button, the system will redirect to the Admin page in browser.

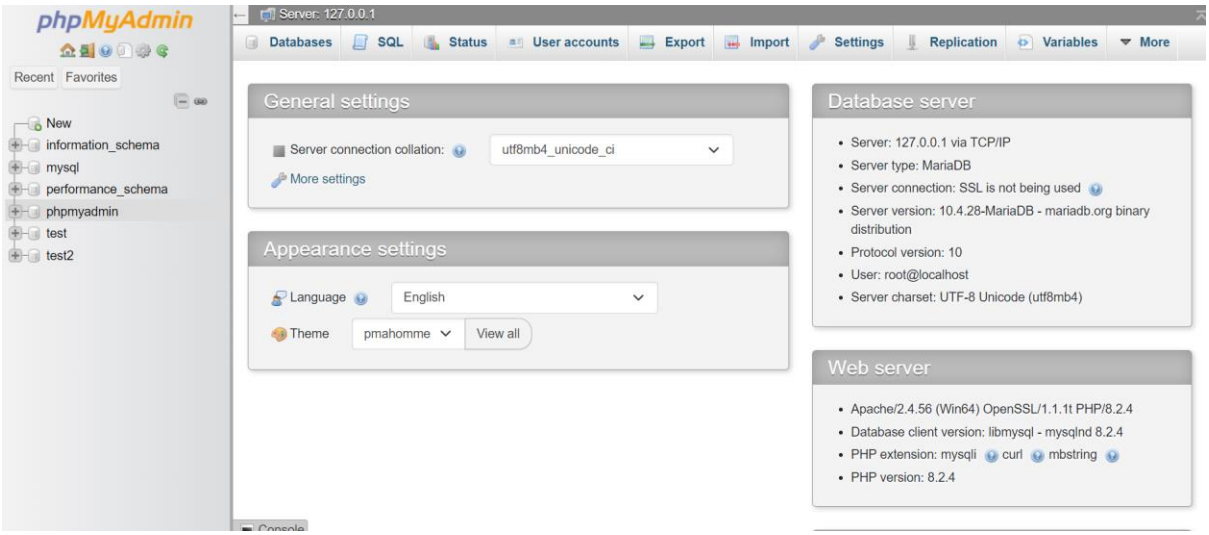


Figure 5.15 Interface of MySQL Admin Page

Step 3: User can create new database by clicking the "New" button in menu and give a name to the database.

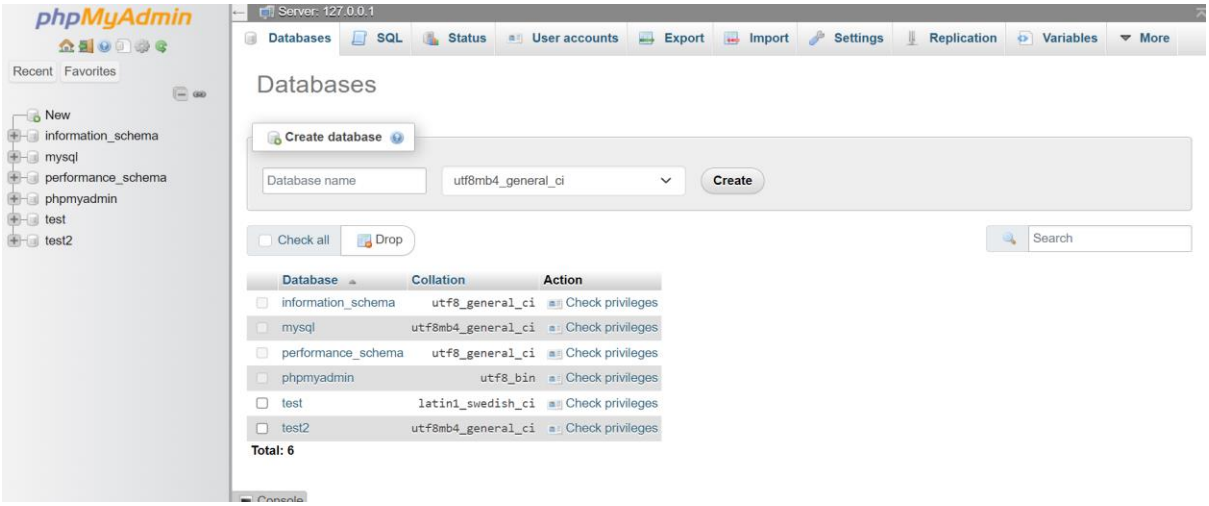


Figure 5.16 Create Database Page

Step 4: After user create a new database, user need to create new table by giving table name and set up the number of columns.

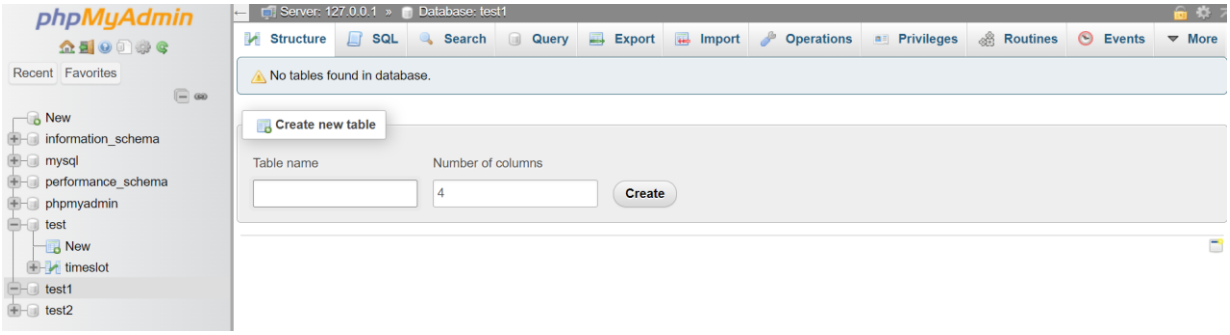


Figure 5.17 Create New Table Page

Step 5: User needed to enter the details of data that wished to store in database.

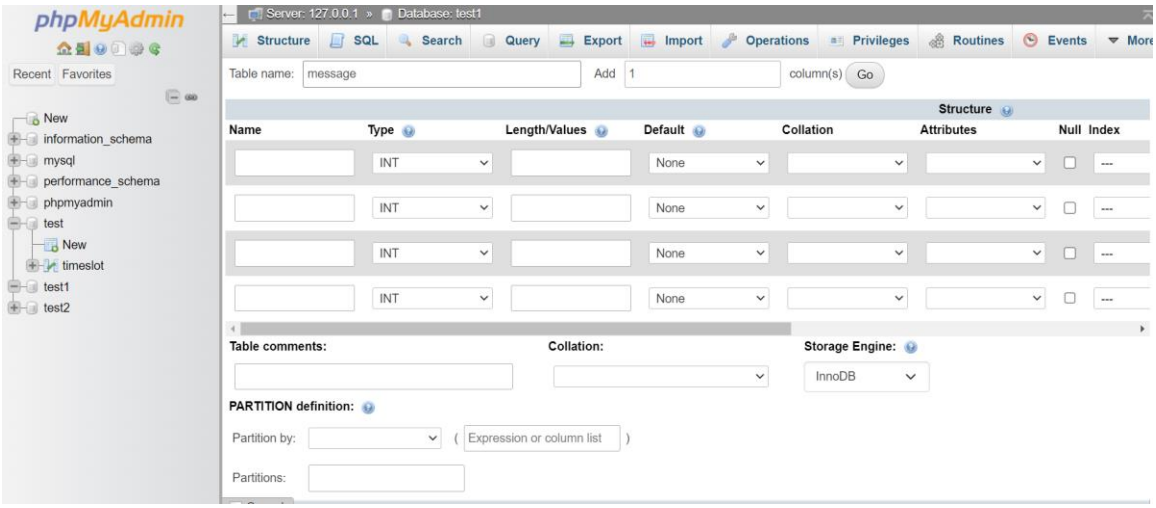


Figure 5.18 Details of Table Content Page

5.2 Implementation

5.2.1 Login Page

Login page will show when user visit the classroom management system. This system required user to enter their username and password. Different username and password will get into different homepage. If incorrect username and password, this page will prompt out alert message said that the username and password are incorrect. Otherwise, user will proceed to next page based on their credentials.

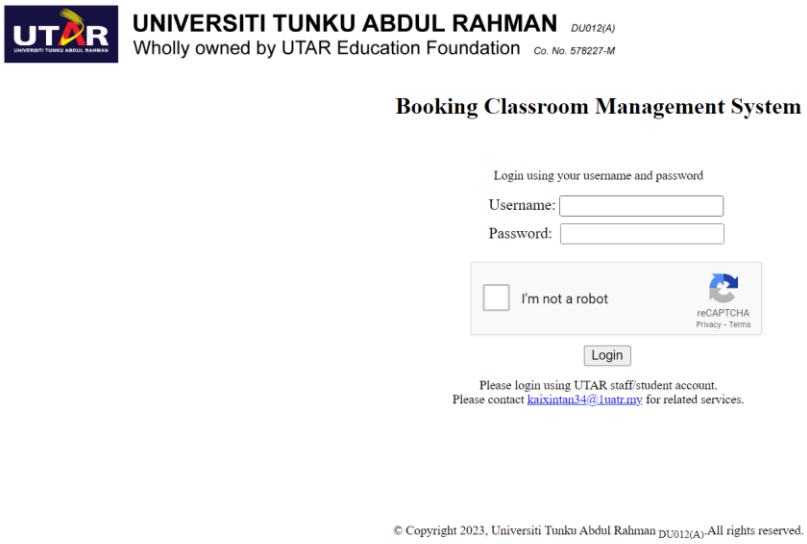


Figure 5.19 Interface of Login Page

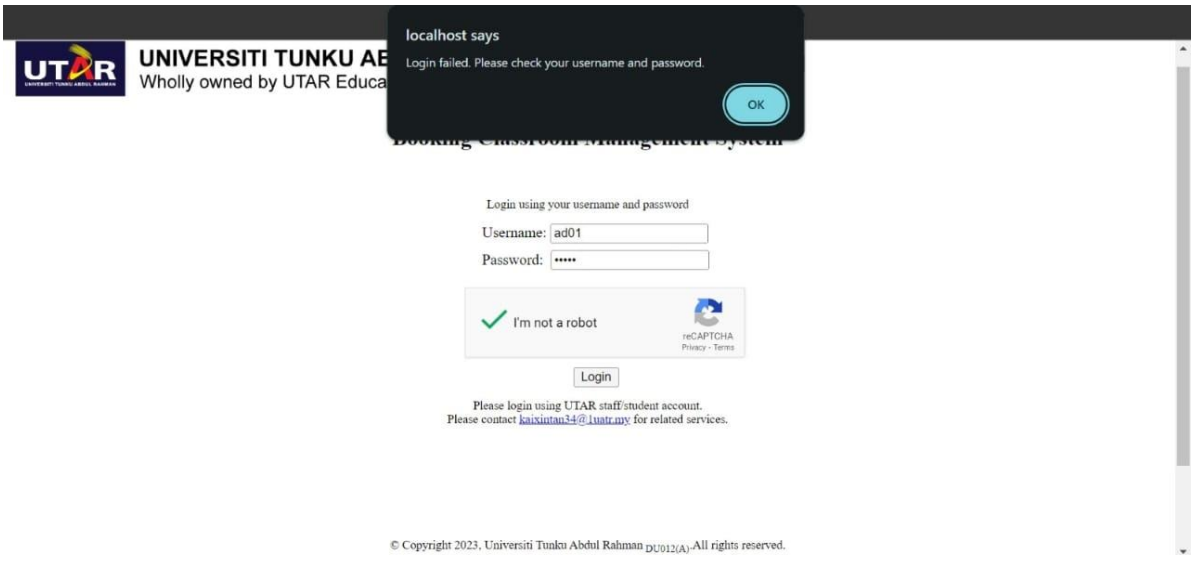


Figure 5.20 Error Prompt Out Page

5.2.2 Student Page

After login with student's credentials, system will redirect to student homepage and students can view the courses taken by this trimester. After selecting the courses, system will display the information of specific course about the additional classes. If that course did not have additional classes, it will show a message "No additional class found for the course code:". After students done checking the additional class, students can log out their account by clicking the log out button and the system will return to login page.

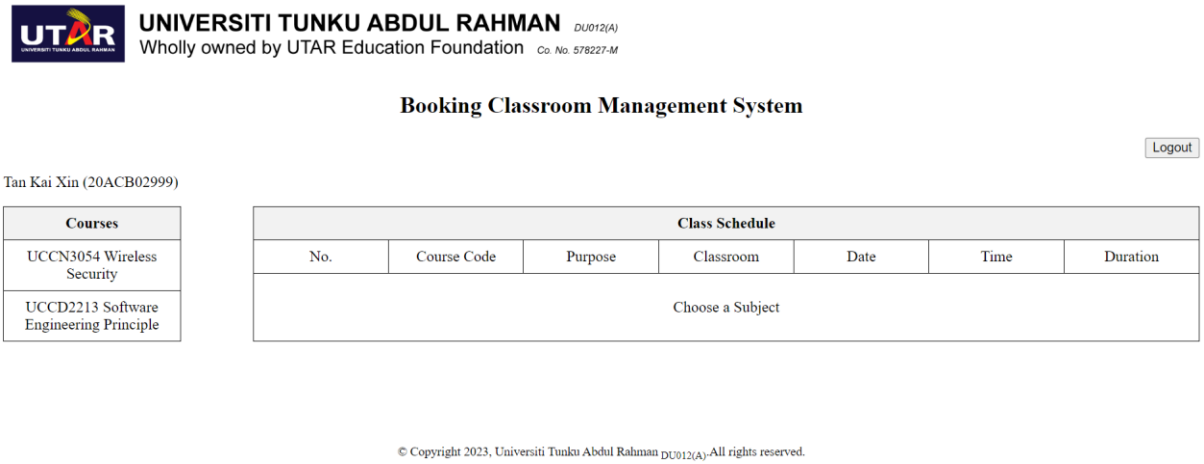


Figure 5.21 Interface of Student Page

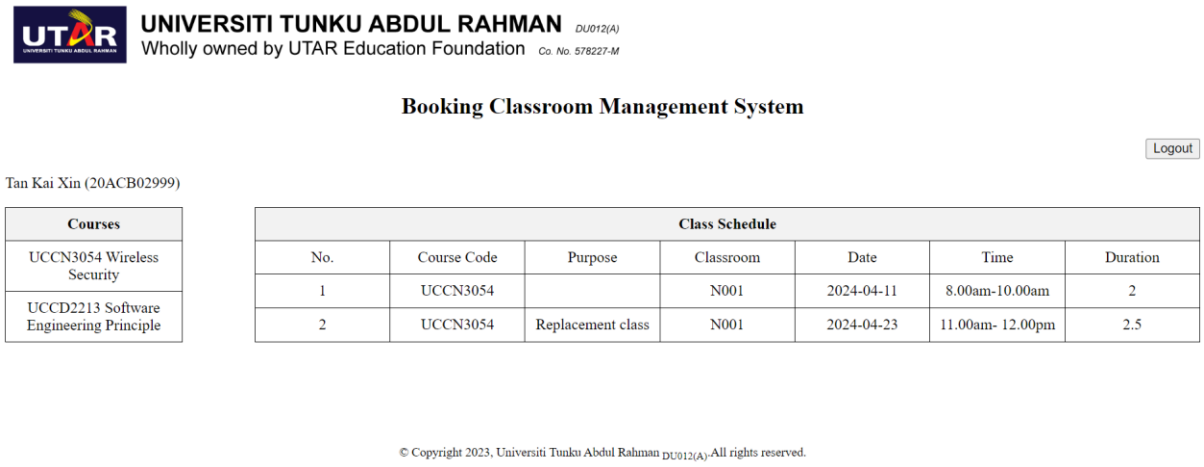


Figure 5.22 Class Schedule Page

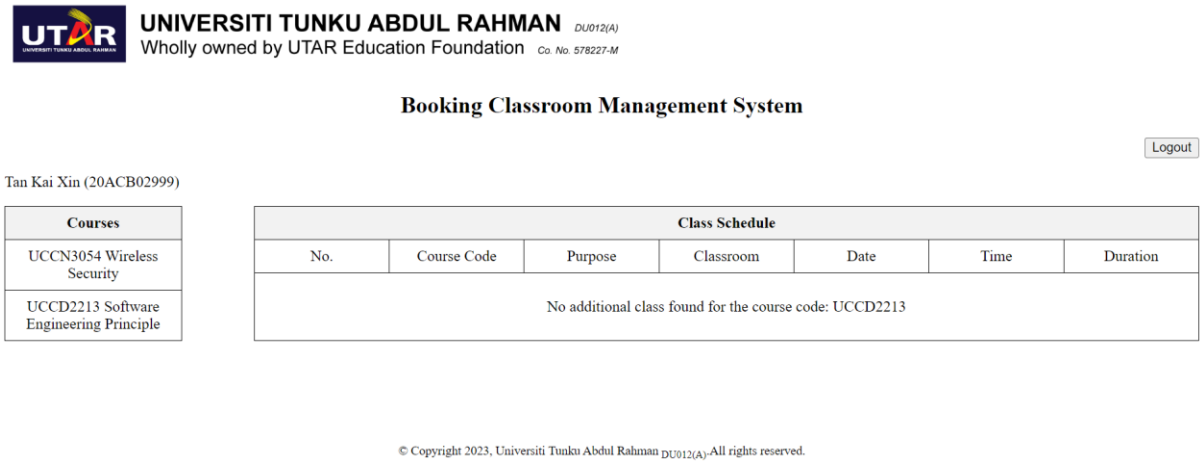


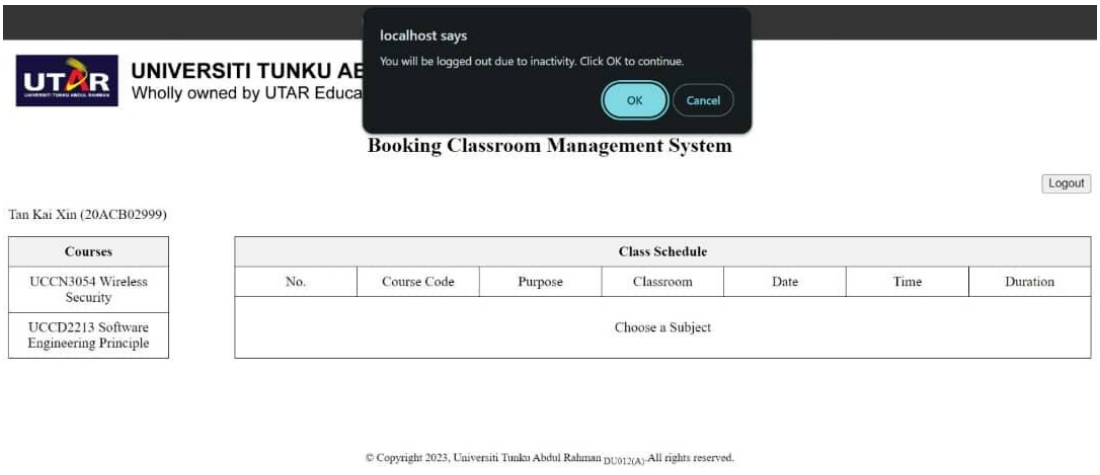
Figure 5.23 Empty Class Schedule Page

```
    <?php
    if ($result->num_rows == 0) {
        echo "<tr><td colspan='7'>No additional class found for the course code: $courseCode</td>
    } else {
        while($row = mysqli_fetch_assoc($result)){

    ?>

    <td><?php echo $counter; ?></td>
    <td><?php echo $row['code'];?> </td>
    <td><?php echo $row['purpose'];?> </td>
    <td><?php echo $row['classroom'];?> </td>
    <td><?php echo $row['date'];?> </td>
    <td><?php echo $row['time'];?> </td>
    <td><?php echo $row['duration'];?> </td>
</tr>
    <?php
        // Increment the counter
        $counter++;
        }
    }
    ?>
```

Figure 5.24 Section of Code for Class Schedule Page



Fogue 5.25 Auto Log Out Function Page

```
let logoutTimer;

function resetLogoutTimer() {
clearTimeout(logoutTimer);
logoutTimer = setTimeout(promptLogout, 300000); // 5 minutes in milliseconds
}

function promptLogout() {
    if (confirm("You will be logged out due to inactivity. Click OK to log out.")) {
        logout();
    } else {
        resetLogoutTimer(); // Reset the timer if the user chooses to stay
    }
}

// Reset the timer whenever there is user activity
document.addEventListener("mousemove", resetLogoutTimer);
document.addEventListener("mousedown", resetLogoutTimer);
document.addEventListener("keypress", resetLogoutTimer);

// Initialize the timer
resetLogoutTimer()

function logout() {
```

Figure 5.26 Section Code for Function Auto Log Out Page

5.2.3 Lecturer Page

After login to system with lecturer's credentials, system will redirect to lecturer home page and lecturers will see the courses taken by this trimester. Lecturers can view available timeslot for each classroom. Consequently, if there is empty available timeslot, system will show a message "No Available Timeslot". Before booking class, lecturers can choose specific course and classroom. In the booking form, lecturers need to fill in all the details needed such as date, time, purpose and other. After lecturer submit the booking form, system will update to shared database and send an email notification to admin. Lecturers also can check the booking status after the admin response it. After lecturers done their roles, lecturers can log out their account by clicking the log out button and the system will return to login page.

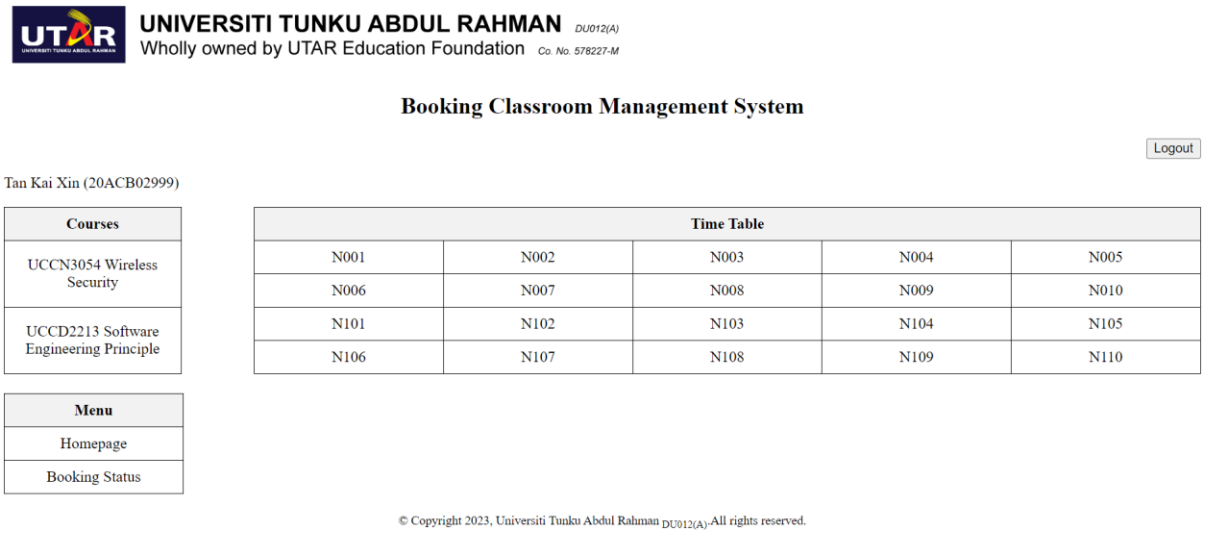


Figure 5.27 Interface of Lecturer Page

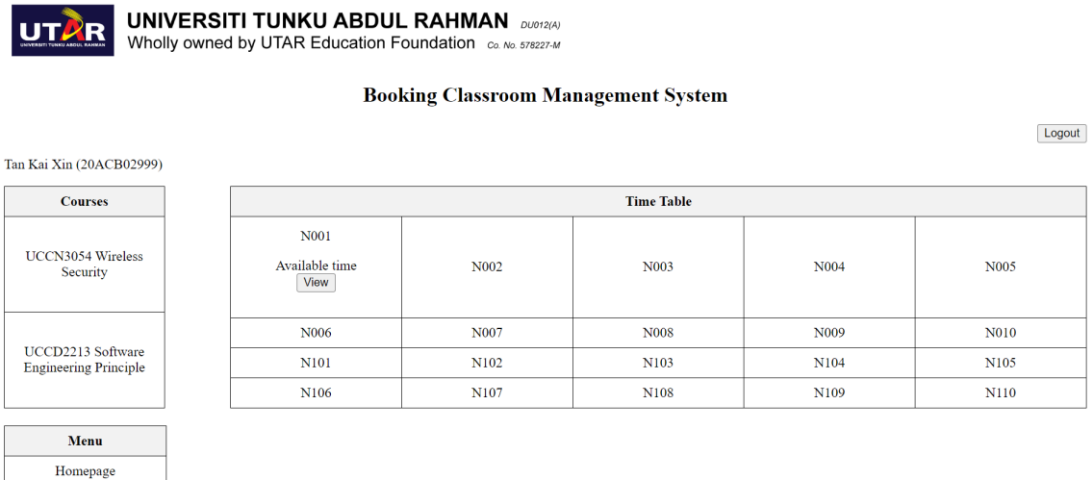


Figure 5.28 Interface of Hidden View Available Timeslot Page

```
function expandElement(element) {
    element.classList.add('expanded');
    const inputField = element.querySelector('.avaitime');
    inputField.style.display = 'block';
}

function collapseElement(element) {
    element.classList.remove('expanded');
    const inputField = element.querySelector('.avaitime');
    inputField.style.display = 'none';
}
```

Figure 5.29 Section of Code for Function Hidden View Available Timeslot Page

```
<td class="expand-div" onmouseover="expandElement(this)" onmouseout="collapseElement(this)">
    N001 <p class = "avaitime"> Available time  <br>
    <input type="button" class="expand-button" value="View" onclick="view('N001')"> </p></td>
```

Figure 5.30 Section of Code for Hidden View Available Timeslot Page

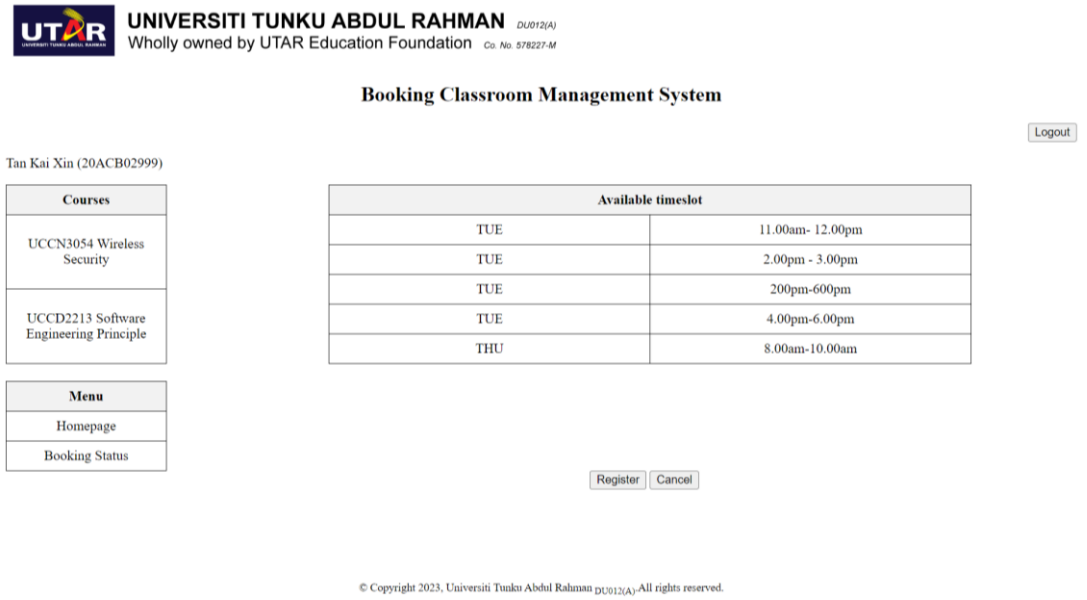


Figure 5.31 Interface of View Available Timeslot Page

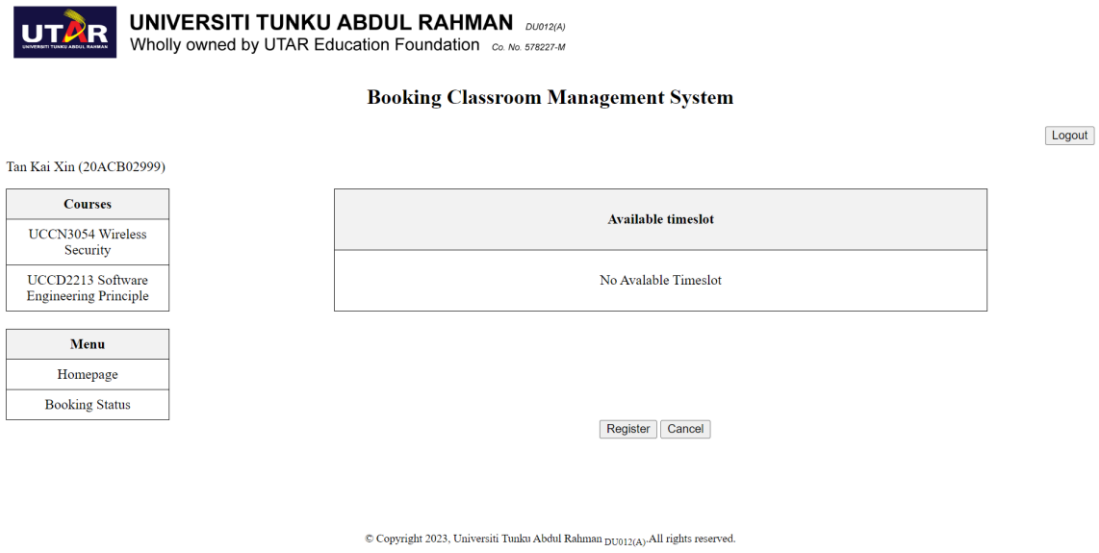


Figure 5.32 Interface of Empty Available Timeslot Page

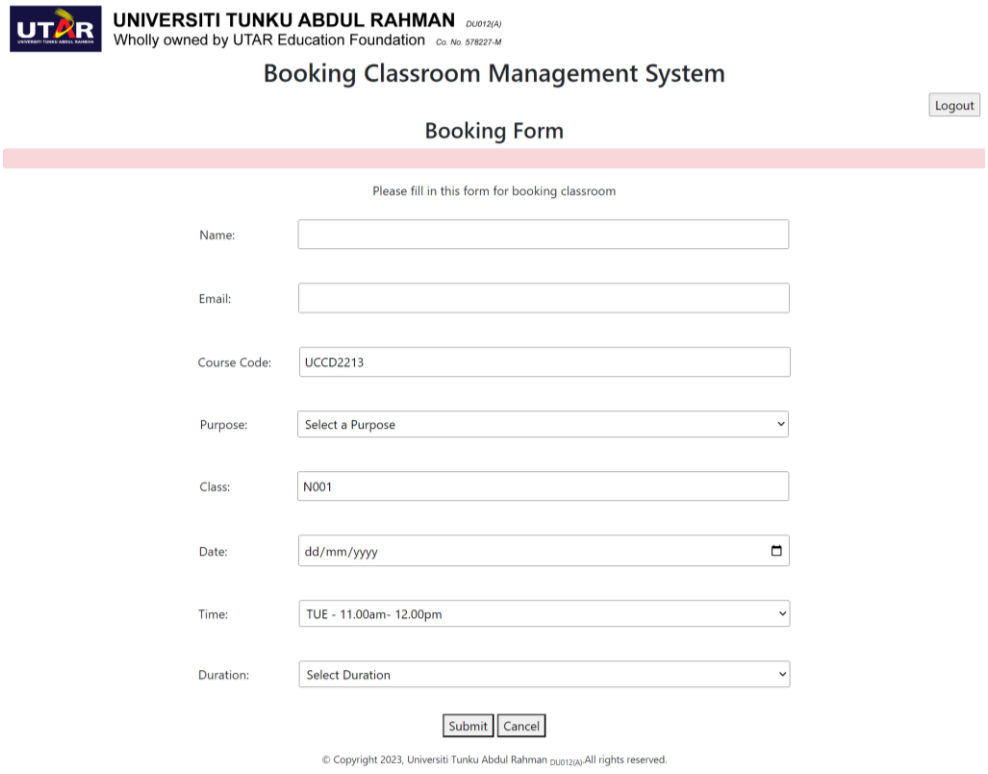


Figure 5.33 Interface of Booking Class Page

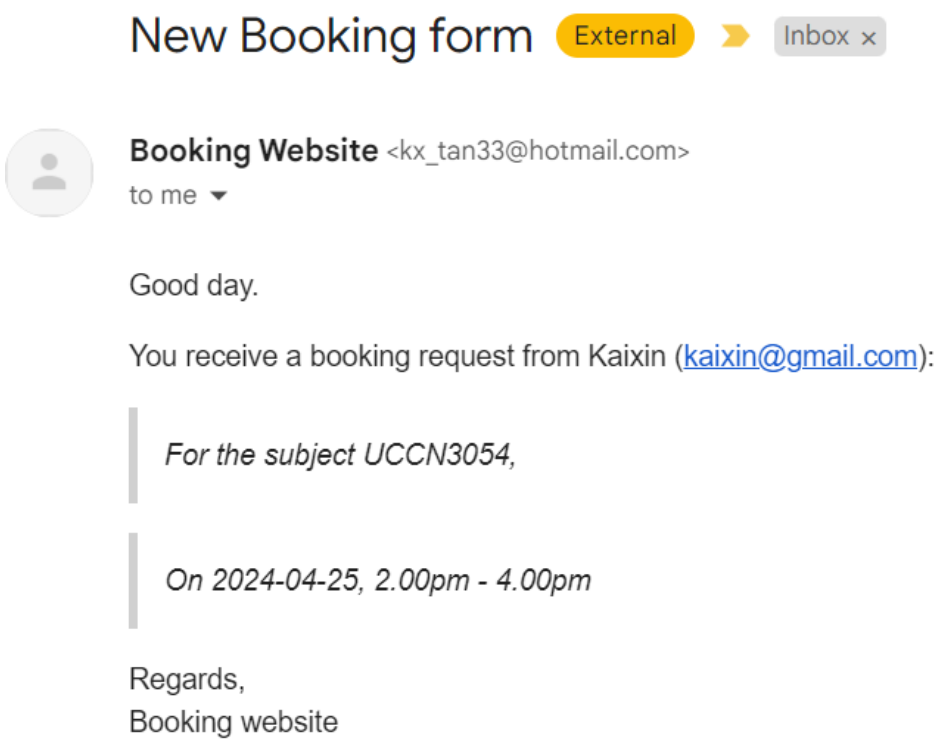
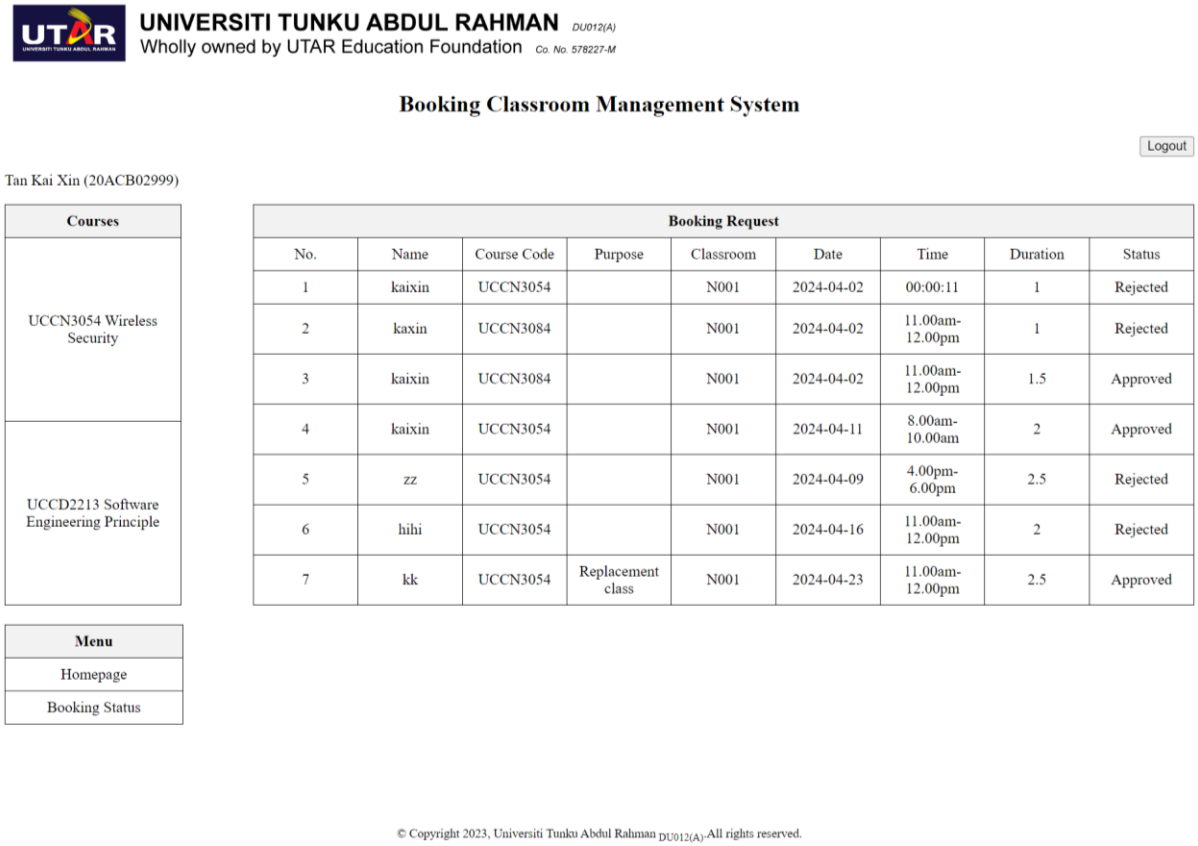


Figure 5.34 Interface of Email Notification Page



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Booking Classroom Management System

Logout

Tan Kai Xin (20ACB02999)

Courses
UCCN3054 Wireless Security
UCCD2213 Software Engineering Principle

Menu
Homepage
Booking Status

Booking Request

No.	Name	Course Code	Purpose	Classroom	Date	Time	Duration	Status
1	kaixin	UCCN3054		N001	2024-04-02	00:00:11	1	Rejected
2	kaxin	UCCN3084		N001	2024-04-02	11.00am-12.00pm	1	Rejected
3	kaixin	UCCN3084		N001	2024-04-02	11.00am-12.00pm	1.5	Approved
4	kaixin	UCCN3054		N001	2024-04-11	8.00am-10.00am	2	Approved
5	zz	UCCN3054		N001	2024-04-09	4.00pm-6.00pm	2.5	Rejected
6	hihi	UCCN3054		N001	2024-04-16	11.00am-12.00pm	2	Rejected
7	kk	UCCN3054	Replacement class	N001	2024-04-23	11.00am-12.00pm	2.5	Approved

Figure 5.35 Interface of View Booking Status Page

5.2.4 Admin Page

After login to system with admin's credentials, system will redirect to admin home page. Admins can add available timeslot by clicking at the menu bar. After system display the add available timeslot page, admins are required to fill in the details and system will update to shared database after submission. Furthermore, admins can view the existing time slot by selecting the class and click on view button. Admins also can add on extra available timeslot for that specific class. Admins can view the booking request at the menu bar and response to the booking request. When the admin response to the request, the status will automatically update in system. However, if the request is rejected, an additional email notification will be sent to the lecturer to inform them to reapply for another timeslot. After admins done all the request, admins can log out their account by clicking the log out button and the system will return to login page.

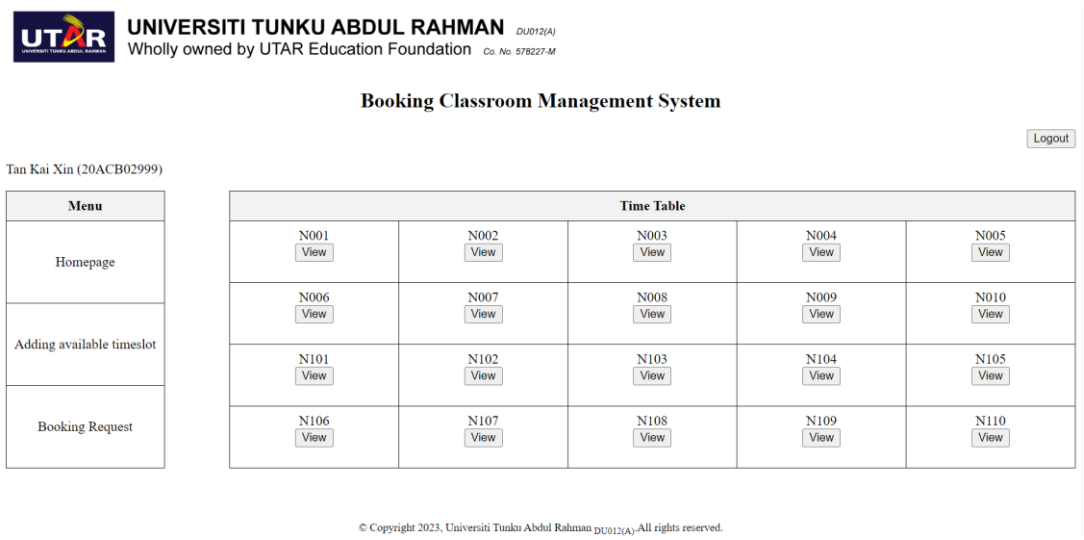


Figure 5.36 Interface of Admin Page

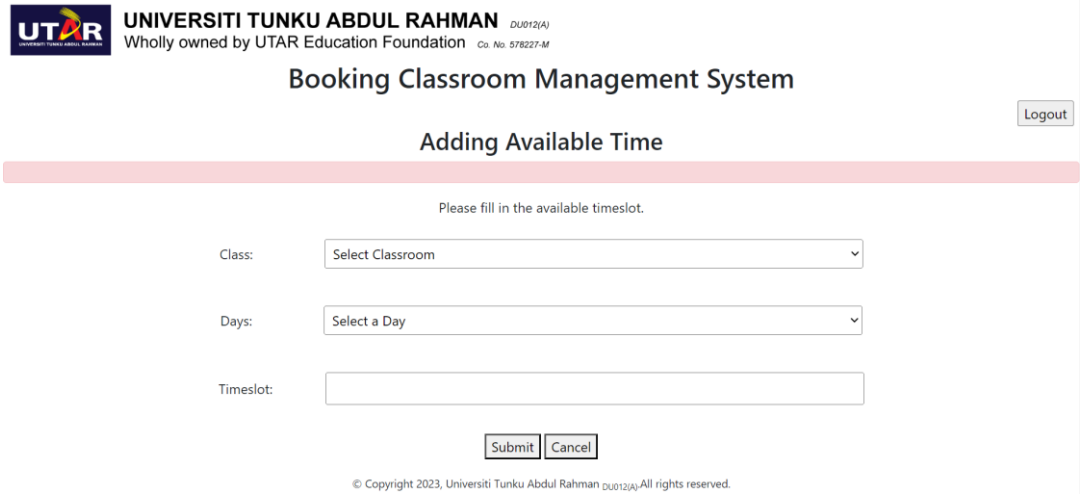


Figure 5.37 Interface of Add Available Timeslot Page

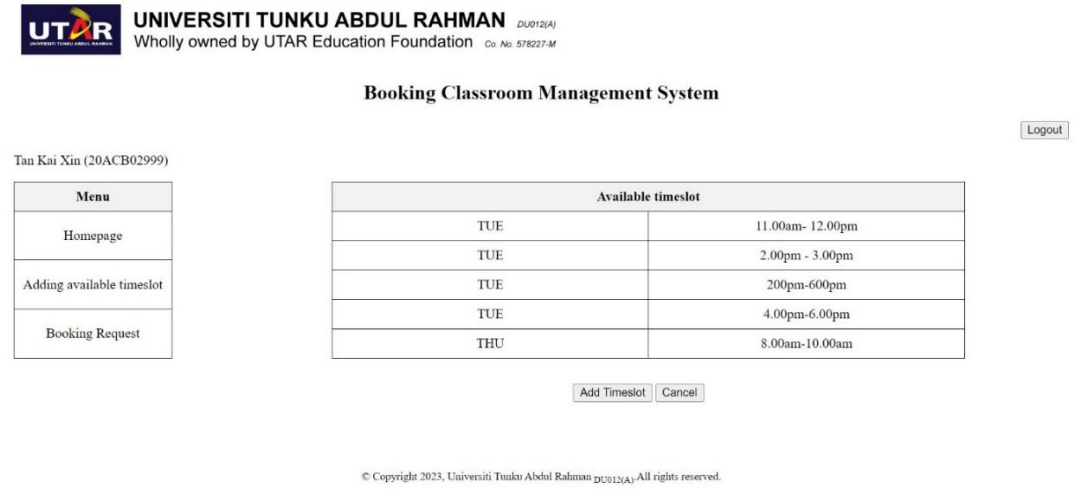


Figure 5.38 Interface of View Existing Timeslot Page

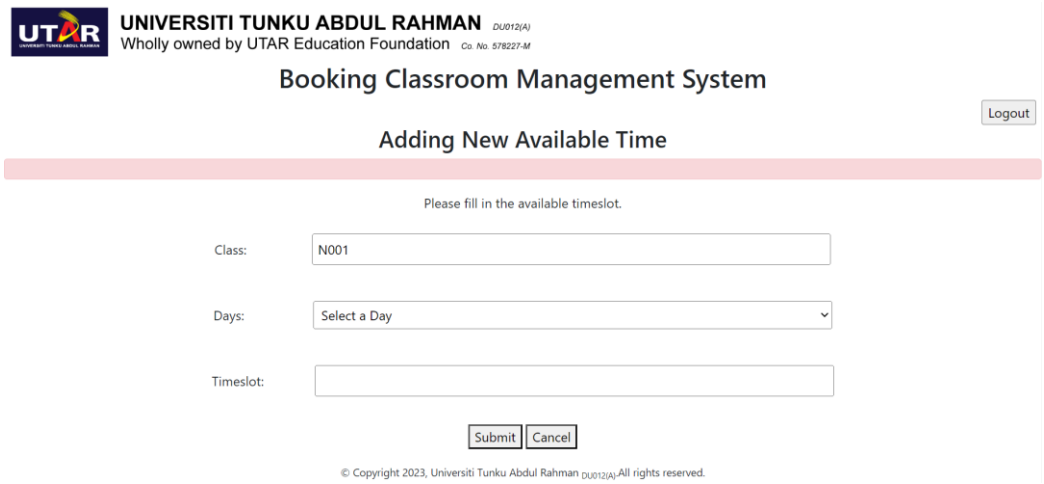


Figure 5.39 Interface of Add Extra Timeslot Page

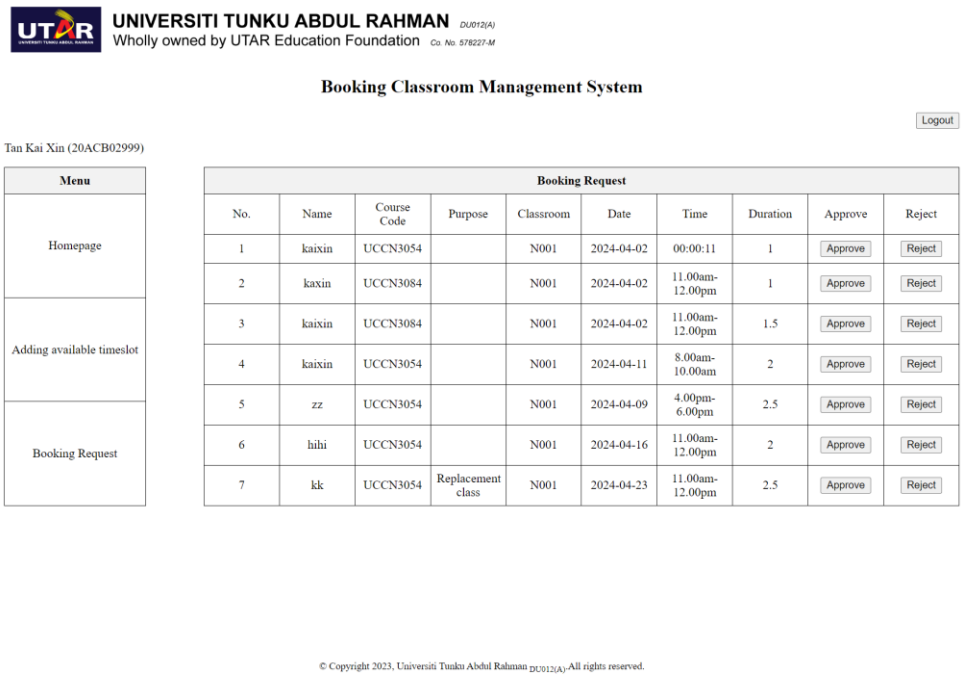


Figure 5.40 Interface of View Booking Request

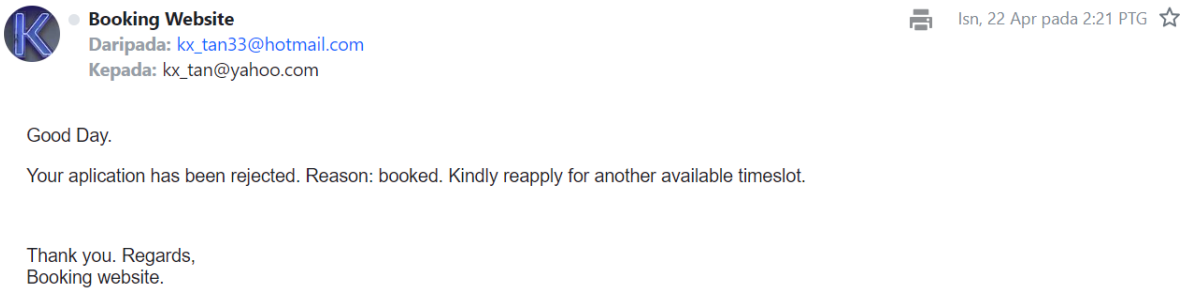


Figure 5.41 Interface of Email Rejection Notification

Chapter 6

System Evaluation and Discussion

6.1 System Testing and Performance

In this part, system testing will be conducted to see how the system functions.

6.1.1 Login

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Login to system	Students, lecturers, and admins need to login before gaining access into the system to perform tasks.	Login to system Successfully	Login to system Successfully	Done

Table 6.1 System Testing and Performance of Login to System

6.1.2 Check additional class

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Check Additional Class	Students can check the additional class that successfully booked by their lecturer.	Check Additional Class Successfully	Check Additional Class Successfully	Done

Table 6.2 System Testing and Performance of Check Additional Class

6.1.3 Book extra class

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Book Extra Class	Lecturer can book an extra class with the purpose used.	Book Extra Class Successfully	Book Extra Class Successfully	Done

Table 6.3 System Testing and Performance of Book Extra Class

6.1.4 Check booking status

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Check Booking Status	Lecturer can check the status of booking request.	Check Booking Status Successfully	Check Booking Status Successfully	Done

Table 6.4 System Testing and Performance of Check Booking Status

6.1.5 View available timeslot

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	View Available Timeslot	Lecturer can view the available timeslot for booking purpose while Admin can view available timeslot for double confirmation.	View Available Timeslot Successfully	View Available Timeslot Successfully	Done

Table 6.5 System Testing and Performance of View Available Timeslot

6.1.6 Notification

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Notification	Lecturer can send a notification to admin for booking purpose while Admin can send a notification to lecturer for fail to book the class.	Notification Successfully	Notification Successfully	Done

Table 6.6 System Testing and Performance of Notification

6.1.7 Add timeslot.

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Add Timeslot	Admin can add new available timeslot easily by filled up simple form.	Add Timeslot Successfully	Add Timeslot Successfully	Done

Table 6.7 System Testing and Performance of Add Timeslot

6.1.8 View booking request

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	View Booking Request	Admin can view all booking request from various lecturer.	View Booking Request Successfully	View Booking Request Successfully	Done

Table 6.8 System Testing and Performance of View Booking Request

6.1.9 Response booking request.

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Response Booking Request	Admin can response to the booking request as to approve the request or reject the request.	Response Booking Request Successfully	Response Booking Request Successfully	Done

Table 6.9 System Testing and Performance of Response Booking Request

6.1.10 Update status

Test ID.	Test Name	Description	Expected Result	Actual Result	Status
001.	Update Status	Admin can update the status of booking request.	Update Status Successfully	Update Status Successfully	Done

Table 6.10 System Testing and Performance of Update Status

6.2 User Acceptance Testing

When it comes to final stage of developing software, user acceptance testing (UAT) is the last step to confirm that the program functions as intended in real-world scenarios. [12] The main goal of this testing is to verify that the software meets the needs of its target users before it is officially launched, ensuring that it is functional, user-friendly, and relevant to practical situations. [13] There are three different modules for user acceptance testing which are student module which need student to answer, lecturer module which need lecturer to answer and admin module that need admin to answer. Furthermore, this system also been tested by other person who unfamiliar with the system to test the ease of understanding and usability. The tester can choose his view about the system by ticking on any of the preferred place with this sign.

6.2.1 Student Module

Tester: Lai Shok Yen Date: 19/04/2024

Opinion		Unsatisfied	Satisfied	Average	Good	Excellent
✓					✓	
Test Module	**Test Description**					
Login	Students need to login before gaining access into the system to perform tasks.				✓	
Check Extra Class	Students can check the extra class that successfully booked by their lecturer.					✓

Comment from Tester:

Good. Nice user interface. Easy to use.

Tester: Ling Mei Sim Date: 19/04/2024

Opinion		Unsatisfied	Satisfied	Average	Good	Excellent
✓					✓	
Test Module	**Test Description**					
Login	Students need to login before gaining access into the system to perform tasks.					✓
Check Extra Class	Students can check the extra class that successfully booked by their lecturer.					✓

Comment from Tester:

Very efficient system. Easy to use.

6.2.2 Lecturer Module

Tester: Nor ‘Afifah Sabri Date: 19/04/2024

Opinion		Unsatisfied	Satisfied	Average	Good	Excellent
✓					✓	
Test Module	Test Description					
Login	Lecturers need to login before gaining access into the system to perform tasks.					✓
Book Extra Class	Lecturer can book an extra class with the purpose used.				✓	
Check Booking Status	Lecturer can check the status of booking request.					✓
View Available Timeslot	Lecturer can view the available timeslot for booking purpose					✓
Notification	Lecturer can send a notification to admin for booking purpose				✓	

Comment from Tester:

Good system. Easy to use.

Tester: Tean Siew Ling Date: 19/04/2024

Opinion		Unsatisfied	Satisfied	Average	Good	Excellent
✓					✓	
Test Module	Test Description					
Login	Lecturers need to login before gaining access into the system to perform tasks.					✓
Book Extra Class	Lecturer can book an extra class with the purpose used.				✓	
Check Booking Status	Lecturer can check the status of booking request.					✓
View Available Timeslot	Lecturer can view the available timeslot for booking purpose					✓
Notification	Lecturer can send a notification to admin for booking purpose					✓

Comment from Tester:

User-friendly interface. Easy to understand. Simple process to book classes. System functionalities are all working fine.

6.2.3 Admin Module

Tester: Tee Geok Hong Date: 19/04/2024

Opinion		Unsatisfied	Satisfied	Average	Good	Excellent
✓					✓	
Test Module	Test Description					
Login	admins need to login before gaining access into the system to perform tasks.					✓
View Available Timeslot	Admin can view available timeslot for double confirmation.				✓	
Add Timeslot	Admin can add new available timeslot easily by filled up simple form.					✓
View Booking Request	Admin can view all booking request from various lecturer.					✓
Response Booking Request	Admin can response to the booking request as to approve the request or reject the request.					✓
Notification	Admin can send a notification to lecturer for fail to book the class					✓
Update Status	Admin can update the status of booking request.					✓

Comment from Tester:

User-friendly system. Both lecturer and admin can adapt to this system quickly.

Tester: Linda Abdullah Date: 22/04/2024

Opinion		Unsatisfied	Satisfied	Average	Good	Excellent
✓					✓	
Test Module	Test Description					
Login	admins need to login before gaining access into the system to perform tasks.				✓	
View Available Timeslot	Admin can view available timeslot for double confirmation.				✓	
Add Timeslot	Admin can add new available timeslot easily by filled up simple form.				✓	
View Booking Request	Admin can view all booking request from various lecturer.				✓	
Response Booking Request	Admin can response to the booking request as to approve the request or reject the request.				✓	
Notification	Admin can send a notification to lecturer for fail to book the class				✓	
Update Status	Admin can update the status of booking request.				✓	

Comment from Tester:

The system can be function well and it can help for less paperwork. All can be thru online system.

6.3 Implementation issues and challenges

There are many obstacles and problems to be solved while implementing a classroom management system, therefore careful thought and skillful problem-solving are needed. Updating booking statuses and explanations in the database presents one such difficulty. One workable option is to use a PHP function to speed up the update process, pull pertinent information, and make sure the database is updated correctly.

One other challenge arises from limits in MySQL databases, which allow for the storage of just one row of data per table. In order to fix this problem, the MySQL database's impacted table needs to be repaired. It also becomes essential to change the user account privileges, especially with the XAMPP Apache Server. Through careful configuration of global rights, the database can handle the required data without any issues.

In addition, if the domain does not exist, reCAPTCHA integration within the system presents a challenge. Fixing this involves setting the right domain, which usually corresponds to the localhost configuration when XAMPP Apache Server is installed. This will guarantee that reCAPTCHA works as intended.

Furthermore, it is crucial to make sure that booking requests and available timeslots are in sync in order to achieve maximum system efficiency. Using a fetching data function becomes essential in order to accomplish this. By retrieving relevant data from the database, this function makes it easier for booking requests to be in sync with available timeslots, which improves the classroom management system's overall efficacy and efficiency.

Chapter 7
Conclusion and Recommendation

7.1 Conclusion

With the development of technologies, University can replace the old-fashioned method for class reservation to online management system. This can avoid a lot of trouble such as time-consuming, human error and duplicate data entering. These troubles will occur because traditional booking system is made by humans over the phone or in person. When booing system is done by human, which means lecturer who want to do the reservation will have time limit due to admin will need to have lunch time and off time. After the work time of admin, lecturer cannot do the reservation via calling to the admin. Furthermore, there also high chance to occur duplicate data entering because when there have more than two admin is serving on this booking system, they may receive the call at the sometimes and make duplicate data without further discuss.

However, when booking system is done by online, lecturer can book the classroom anytime and the admin can approve it within the same day or next day. Online booking system will simplify the booking process by providing lecturer user-friendly interface and this system will provide a page for students to check their additional classes. In addition, the system will keep all the reservation request in first come first serve basic. Therefore, admin can know which request have been done first and accept it accordingly to avoid any conflict.

Feature-driven development technique is used in this system. It is a five-step development process which enables to gradually create system. Other diagrams also been used in system which act as a guidance when developing the system. For example, use case diagram and flow chart is used to check whether missing the function needed while draft interface design is used to have a mindset when develop the interface of system. Thus, this system will simply solve those trouble by using an online website.

7.2 Recommendation

As time goes by, system will grow bigger and might cover all the FYP processes. Table below describe some recommendation for future development.

No.	Recommendation	Explanation	Benefit
1.	Create reusable template	There are several webpages that are clearly duplicates. These repetitive displays are built by similar codes with different variables. Do the conversion of the codes into a file and use it as needed to decrease the amount of repetitive code and make webpage generating speed faster.	- Maintenance for future work would be easy. If the standard screen should be modified, the developer can do the template modification instead of screen redesigning. - Structure code at the backend and well-organized
2.	User oriented system	Since every user will has different perspective view and expectation to the system, it is desirable to collect different user requirements and refine accordingly.	- Clearer user expectation and system that created based on user requirement will more fit in use.
3.	Chat function	The integration of a chat function in the system greatly simplifies the communication process among users, including students, by providing a simple and straightforward method of interacting directly with lecturers within the information structure. Due to this capacity, the live chat facilitates a smooth interaction between students and lecturers where they can engage in a whole conversation of obviously asking a specific question, or giving	- Students will be able to communicate freely with instructors and administrators via platform interface without having to send an email or use an external messaging service. - This instant interaction will foster effective communication and, eventually, less response time as a result.

		feedback hence not disconnecting the purpose which is to enhance well user experience.	
4.	QR code display	In the future, the system can create QR codes, that would make it quicker and easier to schedule lessons between both instructors and students. By the reason of the expanding needs for easy-to-use and good-working tools, admin will use QR codes that are pasted in classrooms entrances.	- Through an efficient QR code system, the system can expedite not only the check-in process but the whole booking system, as well. From booking for the class session to checking in on the day, empowering all the processes towards the highest level of convenience and efficiency.

Figure 7.1 Recommendation

REFERENCES

[1] Augustine, “Modes of Reservation in Hotel,” Main Modes Of Reservations In Hotels - Written | Verbal | Online, https://setupmyhotel.com/train-my-hotel-staff/front-office-training/747-modes-of-hotel-reservations.html#google_vignette (accessed Jul. 26, 2023).

[2] Savitri, “What are the pros and cons of online vs Offline Hotel Bookings?,” Quora, https://www.quora.com/What-are-the-pros-and-cons-of-online-vs-offline-hotel-bookings (accessed Jul. 26, 2023).

[3] S. Sinhasane, “Online appointment scheduling: Take your medical practice to a new level,” Mobisoft Infotech, https://mobisoftinfotech.com/resources/blog/online-appointment-scheduling-in-medical-practice/ (accessed Jul. 27, 2023).

[4] R. Breitmeyer, “What are the 7 disadvantages to a manual system?,” LinkedIn, https://www.linkedin.com/pulse/what-7-disadvantages-manual-system-richard-breitmeyer/ (accessed Jul. 27, 2023).

[5] C. Hahn, “Online booking system - what it is and how it works,” EasyPractice, https://easypractice.net/what-is-online-booking/ (accessed Jul. 28, 2023).

[6] J. Muñiz, “12 most important features your online booking system should have,” Bookinglayer, https://www.bookinglayer.com/article/the-12-most-important-features-your-online-booking-system-should-have (accessed Jul. 28, 2023).

[7] “Utarlibdr.” utarlibdr. https://utarlibdr.fixappt.com/ (Accessed: April 16, 2023).

[8] “How to use the web room booking system – Nottingham.” WRBUserGuideUNMC. https://www.nottingham.edu.my/CurrentStudents/documents/Timetabling/WRBUserGuideUNMC.pdf (Accessed: April 16, 2023).

[9] “Web room bookings - university of southampton sussed-roombookings-guide-upgrade.” https://cdn.southampton.ac.uk/assets/imported/transforms/content-block/UsefulDownloads_Download/F92D51B054854458AA776897674C2DE3/sussed-roombookings-guide-upgrade.pdf (Accessed: April 16, 2023).

[10] "Guidance" The University of Edinburgh. https://www.ed.ac.uk/timetabling-examinations/timetabling/continuous-improvement-and-systems/timetablingsystems/timetabling-applications/resource-booker/guidance (Accessed: April 16, 2023).

[11] Lucid Content Team. "Why (and how) you should use feature-driven development" Lucidchart Blog. https://www.lucidchart.com/blog/why-use- feature-driven-development#:~:text=Disadvantages%20of%20feature%2Ddriven%20development&text=Provides%20no%20written%20documentation%20to,proof%20for%20their%20own%20software. (Accessed: April 16, 2023).

[12] E. Elazar, "User Acceptance Testing (UAT) Process Explained," Panaya, https://www.panaya.com/blog/testing/what-is-uat-testing/#What_is_User_Acceptance_Testing_UAT (accessed Apr. 20, 2024).

[13] M. Setter, "What is user acceptance testing (UAT): Meaning, definition," Usersnap Blog, https://usersnap.com/blog/user-acceptance-testing-right/#:~:text=The%20purpose%20of%20User%20Acceptance,alignment%20with%20real%2Dworld%20scenarios. (Accessed Apr. 20, 2024).

[14] B. Bagitzhanov and U. Myrzadiyar, "Booking of classrooms in KAZGUU," KAZGUU, http://repository.kazguu.kz/bitstream/handle/123456789/1409/Group%2021.pdf?sequence=1&isAllowed=y (accessed Apr. 22, 2024).

[15] W. Chaiwchan and P. Klinhom, "The development of online-class scheduling management system conducted by the case study of Department of Social Science: Faculty of Humanities and Social Sciences Suan Sunandha rajabhat university," International Journal of Computer and Information Engineering, https://publications.waset.org/9999646/the-development-of-online-class-scheduling-management-system-conducted-by-the-case-study-of-department-of-social-science-faculty-of-humanities-and-social-sciences-suan-sunandha-rajabhat-university (accessed Apr. 22, 2024).

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S3	**Study week no.: 2**
Student Name & ID: Tan Kai Xin 20ACB02999	
Supervisor: Pn Nor 'Afifah Binti Sabri	
Project Title: Smart Booking Classroom Management System for UTAR Kampar	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- Done checking all the system done by FYP 1.
- Planning to modify some function of the system.

2. WORK TO BE DONE

- Do modification on some function.
- Add on new function in the system example the view timeslot in lecturer.

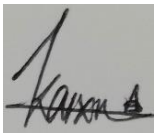
3. PROBLEMS ENCOUNTERED

- None

4. SELF EVALUATION OF THE PROGRESS

Trying to finish the system by week 10 so can focus more on documentation.

Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S3	**Study week no.: 4**
Student Name & ID: Tan Kai Xin 20ACB02999	
Supervisor: Pn Nor 'Afifah Binti Sabri	
Project Title: Smart Booking Classroom Management System for UTAR Kampar	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- Done modification on some function.
- Done add on new function in the system example the view timeslot in lecturer.

2. WORK TO BE DONE

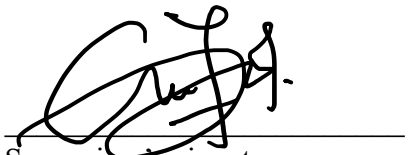
- Do modification on some function.
- Add on new function in the system example the view timeslot in lecturer.

3. PROBLEMS ENCOUNTERED

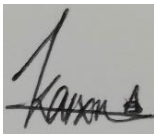
- None

4. SELF EVALUATION OF THE PROGRESS

Trying to finish the system by week 10 so can focus more on documentation.



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S3	**Study week no.: 6**
Student Name & ID: Tan Kai Xin 20ACB02999	
Supervisor: Pn Nor 'Afifah Binti Sabri	
Project Title: Smart Booking Classroom Management System for UTAR Kampar	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- Done modification on some function.
- Done add on new function in the system example the view timeslot in lecturer.

2. WORK TO BE DONE

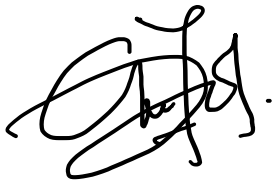
- Continue adding the new function.
- Do a searching about MySQL database.

3. PROBLEMS ENCOUNTERED

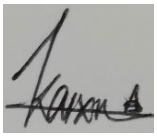
- None

4. SELF EVALUATION OF THE PROGRESS

Trying to finish the system by week 10 so can focus more on documentation.



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S3	**Study week no.: 8**
Student Name & ID: Tan Kai Xin 20ACB02999	
Supervisor: Pn Nor 'Afifah Binti Sabri	
Project Title: Smart Booking Classroom Management System for UTAR Kampar	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- Done create new database for the important information.
- Done the function which needed to use database to fetch data.

2. WORK TO BE DONE

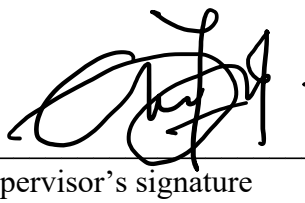
- Do notification function for lecturer and admin.
- Check the function missing in system.

3. PROBLEMS ENCOUNTERED

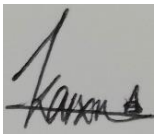
- None

4. SELF EVALUATION OF THE PROGRESS

Trying to finish the system by week 10 so can focus more on documentation.



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S3	**Study week no.: 10**
Student Name & ID: Tan Kai Xin 20ACB02999	
Supervisor: Pn Nor 'Afifah Binti Sabri	
Project Title: Smart Booking Classroom Management System for UTAR Kampar	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- Done notification function for lecturer and admin.
- Done check the function missing in system.

2. WORK TO BE DONE

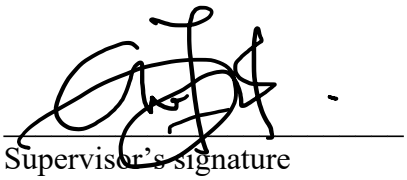
- Discuss with supervisor about documentations.
- List down whole function in system and create diagram for them.

3. PROBLEMS ENCOUNTERED

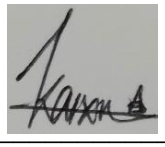
- None

4. SELF EVALUATION OF THE PROGRESS

Trying to finish the system by this week so can focus more on documentation.



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Y3S3	**Study week no.: 12**
Student Name & ID: Tan Kai Xin 20ACB02999	
Supervisor: Pn Nor 'Afifah Binti Sabri	
Project Title: Smart Booking Classroom Management System for UTAR Kampar	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

- Done discuss with supervisor about documentations.
- Done list down whole function in system and create diagram for them.

2. WORK TO BE DONE

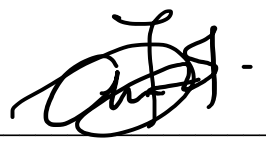
- Presentation slide and preparation
- To be uploaded to turn-it-in and attaches receipt in the full report.

3. PROBLEMS ENCOUNTERED

- None

4. SELF EVALUATION OF THE PROGRESS

Submit the full report on Monday of week 13.



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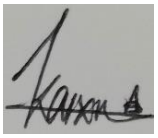

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POSTER

FACULTY OF INFORMATION COMMUNICATION AND TECHNOLOGY

Smart Online Classroom Management System

INTRODUCTION

It is proposed to facilitate lecturers and staff to book classes in shorter time in which the lecturers can easily view the available timeslot that added by the staff and book them quickly by filling out a booking form through the system. In addition, students can easily check the make-up and change of lectures registered by lecturers through the system.

OBJECTIVES

- To develop a booking classroom management system in UTAR that provide lecturers and staffs an effective system.
- To make it simple for student to check the classes easily

PROPOSED METHOD

- Feature-Driven Development - five-step development process that emphasises creating features in few iterations
- Flow chart - a diagram that illustrates the steps, sequences, and decisions of a process

WHY THE PROPOSED SYSTEM IN THIS PROJECT IS BETTER THAN EXISTING SYSTEM?

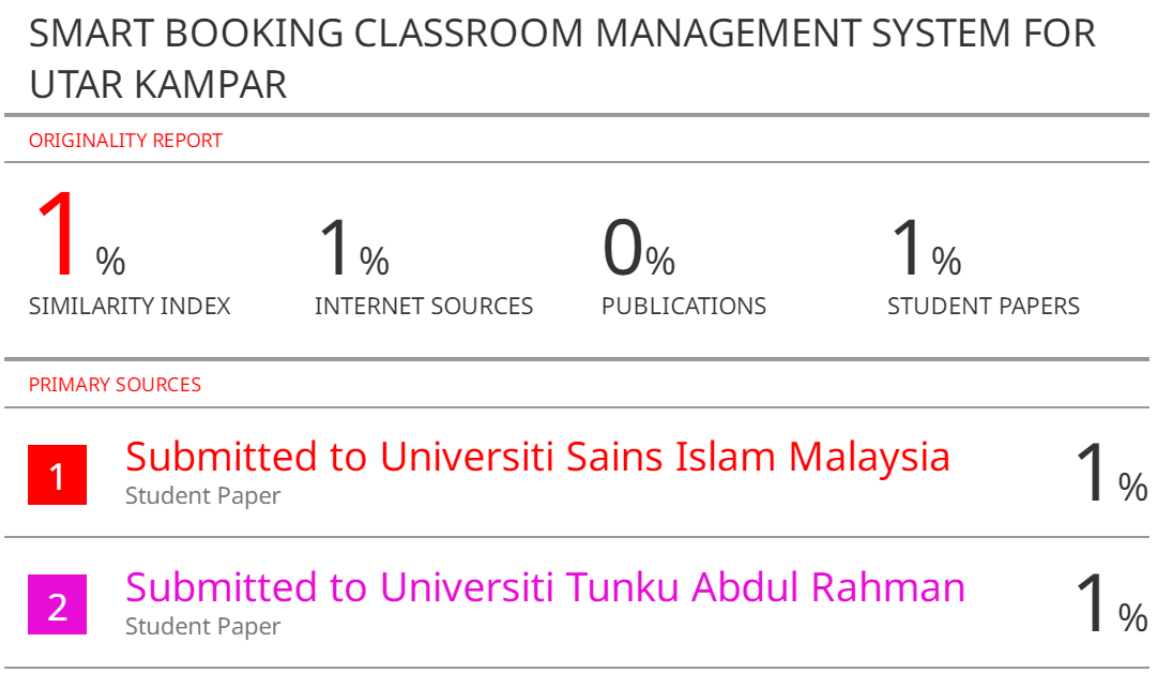
- Provide timetable to lecturer for checking schedule of classes.
- Provide timetable checking for student to check their extra class.
- Provide adding available timeslot for admin to add timeslot for each class.
- Provide efficient booking system to lecturer and admin for the booking request.

CONCLUSION

- This online classroom management system has simply solve the troubles such as human error, duplicate data entering by keeping the request accordingly.

Project Developer: Tan Kai Xin
Project Supervisor: Puan Nor 'Afifah Binti Sabri

PLAGIARISM CHECK RESULT



SMART BOOKING CLASSROOM MANAGEMENT SYSTEM FOR UTAR KAMPAR

ORIGINALITY REPORT

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SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Universiti Sains Islam Malaysia Student Paper	1%
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Universiti Tunku Abdul Rahman			
Form Title : Supervisor's Comments on Originality Report Generated by Turnitin for Submission of Final Year Project Report (for Undergraduate Programmes)			
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FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

Full Name(s) of Candidate(s)	Tan Kai Xin
ID Number(s)	20ACB02999
Programme / Course	FICT/CN
Title of Final Year Project	Smart Booking Classroom Management System for UTAR Kampar

Similarity	**Supervisor's Comments (Compulsory if parameters of originality exceeds the limits approved by UTAR)**
Overall similarity index: 1 % **Similarity by source** Internet Sources: 1 % Publications: 0 % Student Papers: 1 %	
Number of individual sources listed of more than 3% similarity: 0	
Parameters of originality required and limits approved by UTAR are as Follows: **(i) Overall similarity index is 20% and below, and** **(ii) Matching of individual sources listed must be less than 3% each, and** **(iii) Matching texts in continuous block must not exceed 8 words** ***Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.***	

Note Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.

Signature of Supervisor

Name: Pn Nor 'Afifah Binti Sabri

Date: 19/04/2024

Signature of Co-Supervisor

Name: _____

Date: _____

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF INFORMATION & COMMUNICATION TECHNOLOGY
(KAMPAR CAMPUS)

CHECKLIST FOR FYP2 THESIS SUBMISSION

Student Id	20ACB02999
Student Name	Tan Kai Xin
Supervisor Name	Pn Nor 'Afifah Binti Sabri

TICK (√)	DOCUMENT ITEMS Your report must include all the items below. Put a tick on the left column after you have checked your report with respect to the corresponding item.
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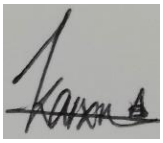
√	Signed Report Status Declaration Form
√	Signed FYP Thesis Submission Form
√	Signed form of the Declaration of Originality
√	Acknowledgement
√	Abstract
√	Table of Contents
√	List of Figures (if applicable)
√	List of Tables (if applicable)
	List of Symbols (if applicable)
	List of Abbreviations (if applicable)
√	Chapters / Content
√	Bibliography (or References)
√	All references in bibliography are cited in the thesis, especially in the chapter of literature review
	Appendices (if applicable)
√	Weekly Log
√	Poster
√	Signed Turnitin Report (Plagiarism Check Result - Form Number: FM-IAD-005)
√	I agree 5 marks will be deducted due to incorrect format, declare wrongly the ticked of these items, and/or any dispute happening for these items in this report.

*Include this form (checklist) in the thesis (Bind together as the last page)

I, the author, have checked and confirmed all the items listed in the table are included in my report.



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(Signature of Student)
Date: 22/04/2024