BOOKING PARKING APPLICATION

SAMER MOHAMMED ALI AHMED AL-SERRI

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Software Development) with Honours.

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FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

DECLARATION

I hereby declare that this project report entitled

SAMER MOHAMMED ALI AHMED AL-SERRI

is written by me and is my own effort and that no part has been plagiarized

without citations.

STUDENT : **SAMER MOHAMMED ALI AHMED AL-SERRI** Date : 12/09/2021

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I hereby declare that I have read this project report and found

this project report is sufficient in term of the scope and quality for the award of

Bachelor of Computer Science (Software Development) with Honours.

SUPERVISOR : **Ts. AZLIANOR BINTI ABDUL AZIZ** Date: 18/09/2021

DEDICATION

To my beloved parents who supported me throughout the journey, my family, and my supervisor, Ts. AZLIANOR BINTI ABDUL AZIZ for her wise and careful advice and planning.

And to my classmates in BITS, who co-operated with me and shared their innovative ideas in completing the completion of this project.
Thank you so much.

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ABSTRACT

There are many factors that lead to the crowding where one of the factors is the lack of parking in a crowded city like Kuala Lumpur. The person who goes out by using won caron weekend or holiday to the center of the city, he/she maybe difficult to find parking which can makes them park in the wrong place that will cause narrow road and crowding. To overcome this major problem, Booking Parking Application is developed to allow the user, after authentication, to search for available parking by using Google Maps. The application will show the user the list of parking optionsnear to users current location. For each selected parking, the app will show information about the parking address, the price per hour, and working hours,to the users for make a reservation.. Once the reservation is made with date and time selected, the user just needs to scan the QR on the gate of the parking for authentication and granted the access to the reserved parking. The QR code is actually generated earlier by the application after the parking owner received authentication from the given parking information such as location, the number of parking he offers, working time, and price per hour. This Booking Parking Application will play a big role in our community by providing easy life, save time and reduce crowded asthe main goal of this App is to make your life easier with the least effort.

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ABSTRAK

Terdapat banyak faktor yang membawa kepada kesesakan di mana salah satu faktornya ialah kekurangan tempat letak kenderaan di bandar yang sesak seperti Kuala Lumpur. Orang yang keluar dengan menggunakan kereta pada hujung minggu atau percutian ke pusat bandar, mungkin sukar mencari tempat letak kenderaan yang boleh membuatkan mereka parkir di tempat yang salah yang akan menyebabkan jalan raya sesak dan sesak. Untuk mengatasi masalah besar ini, Aplikasi Parkir Pemesanan (*Booking Parking Application*) dikembangkan untuk membolehkan pengguna, setelah mengesahkan, mencari tempat letak kenderaan yang tersedia dengan menggunakan Peta Google. Aplikasi ini akan menunjukkan kepada pengguna senarai pilihan tempat letak kereta berhampiran dengan lokasi pengguna sekarang. Untuk setiap tempat letak kereta yang dipilih, aplikasi akan menunjukkan maklumat mengenai alamat tempat letak kereta, harga per jam, dan waktu kerja, kepada pengguna untuk membuat tempahan. Setelah tempahan dibuat dengan tarikh dan waktu yang dipilih, pengguna hanya perlu mengimbas QR di pintu tempat letak kereta untuk pengesahan dan diberi akses ke tempat letak kenderaan yang dikhaskan. Kod QR sebenarnya dihasilkan lebih awal oleh aplikasi setelah pemilik tempat letak kenderaan mendapat pengesahan dari maklumat tempat letak kenderaan yang diberikan seperti lokasi, jumlah tempat letak kenderaan yang dia tawarkan, waktu kerja, dan harga per jam. Aplikasi Tempat Letak Kereta Pemesanan ini akan memainkan peranan besar dalam komuniti kami dengan memberikan kehidupan yang mudah, menjimatkan masa dan mengurangkan orang ramai kerana matlamat utama Aplikasi ini adalah untuk menjadikan hidup anda lebih mudah dengan sedikit usaha.

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LIST OF ABBREVIATIONS

FYP	**-**	**Final Year Project**
SDLC		**Software Developmet Life Cycle Production**
ERD		**Entity Relationship Diagram**
HLD		**High-level Design**
UI		**User Interface**
DDL		**Data Definition Language**
SDE		**Software Development Environment**
SCM		**System Configuration Management**

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Booking Parking Application is designed to decrease the crowd because of cars increasing day by day. One of the factors that lead to the crowding is the lack of parking in a crowded city like Kuala Lumpur. The person who goes out by his/her car on weekend or holiday to the center of the city, he/she maybe will not find parking so he/she will park in the wrong place which will cause narrow road and crowding. To overcome this major problem, you should book parking prior to going out. Therefore, Booking Parking Application is proposed to allow the user after authentication to search for parking by using Google Maps the application will show him the list of optionsfor parking near to him. When the user selects one from the list, it will show the address, the price per hour, and working hours then he/she can make reservations. to book parking you need to select the date and time, the user just needs to scan the QR on the gate of the parking and the parking will be opened. Also, the owner after authentication should enter parking information such as location, the number of parking he offers, working time, and price per hour also each approval parking will have unique QR owner will print it on the gate of the parking. The Administrator willbe responsible for the entire application such as approve or reject parking registered by theowner, and view the income for each owner, number of owner register, and number ofparking approval for each owner. This Booking Parking Application will play a big role in our community by providing easy life, save time and reduce crowded. The maingoal of this App is to make your life easier with the least effort.

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1.2 Problem Statements

1- Traffic congestion due to no parking reservation.

Due to no previous booking parking, he/she will reach to parking which already full so he/she will be parking on wrong places.

2- Difficulty in checking the valid reservation manually.

It will cause traffic congestion if checking valid reservation done manually because it takes time to check that.

3- Missing reservation data by booking parking manually.

Data of parking, and check-in/check-out-time more likely to be lost not like saving data digitally.

1.3 Objectives

1. With the reservation service, the customers can find and reserve their parking spaces quickly.
   User after select location will be able to view the list of parking near to his/her location then select date and time of reservation.
2. By QR code you can scan easily to check the valid reservation.
   The user just needs to scan the QR to check-in into the parking as long as he/she had already book parking.
3. All reservation data will be saved digitally.
   The data in the booking parking application will be stored digitally using firebase.

1.4 Project scope

The project scope will define the boundaries of Booking Parking Application, which include application system function modules and users involved.

1.4.1 Scope Module.

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- Authentication module - This module will register user and owner information to the database. It will check if users enter the appropriate information and validation verification his/her information.
- Manage the system module - The administrator has the authority to approve or reject the owner and update admin, owner, and user profile.
- Booking module - The user after select location will be able to view the list of parking near to his/her location then select date and time to book.
- QR code module - Each parking will have unique QR code scan image after admin approve the parking.
- Dashboard Reporting module - The administrator can get a summary of data analysis. Which is the number of owners registered, how many parking for each owner, and the income for each owner.

1.4.2 User Scope

i. Administrator

- Add (approve) the parking
- Delete (reject) the parking
- Update the information
- Login/logout

ii. Customer

- Search for the parking
- Book parking
- Update his/her information
- View history of booking
- Login/logout

iii. Owner

- Add parking
- Delete parking
- Update parking, and profile information
- View history for each parking
- Login/logout

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1.5 Project Significance

The importance of this application is to help our community to reduce traffic congestion. Customers will not search for parking in the middle of traffic congestion and the owner will register his parking information easily. this Application could make life easy, save time and reduce crowded by providing easy booking parking application.

1.6 Expected Output

This Booking Parking Application will automate the existing system of manually maintained records of booking, avoid wasting time by going to the parking which is already full. So, by having this application you can check if there is an available parking slot, user can view his history of booking, and update his information from the profile. Also, it would help the owner to register his parking information easily and edit his information such as name and mobile number. This app also will avoid fake owner parking because the owner cannot be the owner until the admin approves him/her.

1.7 Conclusion

In this chapter, there were explanations about the application details including problem statements, objectives and significant of the Booking Parking App. The application users need to install the application and create an account by entering information such as full name, email, and phone number. QR code will be generated once the user has successfully book parking slot. The application will accept the owner after admin approval.

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CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

The literature review included finding, gathering, evaluating, and drawing a conclusion from all topic issues presented by the related body of literature. Whereas the project process includes the strategy and methods used to execute the project. Thischapter is a paper describing the results, procedures, and strategies that can be used in the implementation of the Booking Parking Application. The evidence and results are evaluated by describing the goals, the present situation, and the tools available. Booking Parking Application allows user to select his location then the application will show the nearest parking to his location then the user can book after determiningthe date and time. When the user reaches the parking, he will scan the parking code then he will enter the parking slot. The owner will register all parking information. After the admin approves the parking, the owner can get the QR code of the parking. The owner also can add, delete, update the information on parking. Admin will be ableto approve or reject the owner and see all information include the total income for each owner.

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2.2 Facts and findings

There is a lot of parking still using a manual way so when the customer user reachesto the parking. the owner will give him a card, this card includes the time of check-in and when the user wants to check-out will give back the card to the owner, then the owner will calculate the time and give the price. all this process is done manually. Thiskind of system will face a lot of issues sometimes customers will lose the card. Not like in this application which all process of booking done digitally customer user willno need to hold a card in his pocket just select the date and time of booking then check-in into the parking by scan the QR, the owner also will be more comfortable because owner needs just to print the QR at the gate of parking, and if the owner needs the history of the customer will check it digitally not on paper like the previous system.

2.3 Project Methodology

This section presents the research methodology used in the study, the research design, and the data collection process.

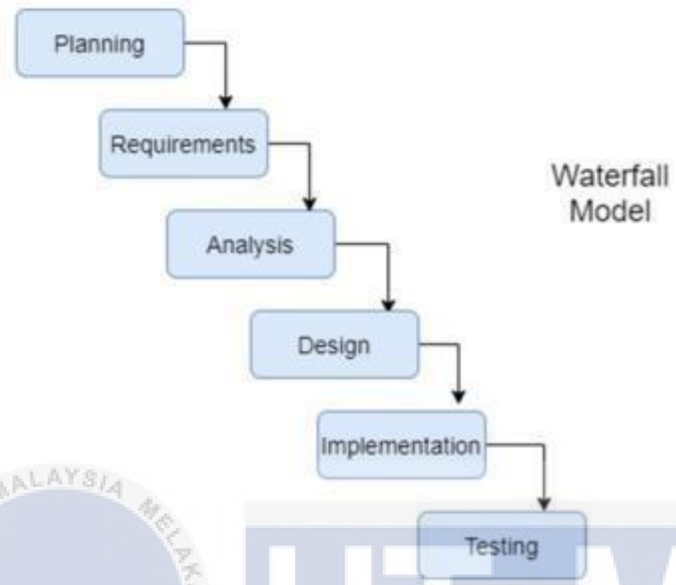

Figure 2.1: Project Methodology

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Figure 2.1 illustrates the approach chosen for the execution of this app. This methodological approach is also useful for software development, using limited preparation in lieu of fast prototypes. The practical module is designed in parallel as a concept in the Software Development Life Cycle Production (SDLC) approach and is implemented to create a full system for quicker product delivery.

2.3.1 Activities in the Software Development Life Cycle

Both operations during the construction of this project in-phase or process shall be described on a rapid model basis. To make further progress on this method, here are identified an appropriate strategy to be practiced in the development of the Booking Parking Application. The Waterfall Life Cycle Model will be presented in detail in this chapter.

2.3.1.1 Planning

Now, the organization of the application begins. after search on the internet about the right strategy to build an application. need to draw wireframe to determine how to navigate between the pages, need to solve issue that another book parking system facing so you will reduce the possibility of repeat the same issue, then draw you the ERD of booking parking application.

2.3.1.2 Requirement

Summary of tasks during the preparation process of the requirement:

- Identify the functional requirement and non-functional requirement of the application.
- Analyze all requirements and definitions in the modules.
- Create a diagram and a specification for each module specifications.

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2.3.1.3 Design

List of activities during the Design phase:

- Pre-design make sure you get off to the right start with the design and development of booking parking application to ensure a great final product.
- Design the interface of Booking Parking Application.
- Create the database on firebase.

2.3.1.4 Implementation

Writing computer programs in this application is split into the programming language React Native as front-end and Firebase as back-end. this will boost device architecture.

2.3.1.5 Testing

List of activities during the testing phase:

- Collect bugs, debug, and document the corrective actions.
- When the error occurs, a solution will be found to overcome the problem.
- Run testing and document the result.

2.4 Project Requirements

2.4.1 Software Requirement

In order to develop booking parking application, need to have this:

Development Tools:

- Visual studio code
- Android emulator
- Adobe Photoshop and Adobe Photoshop
- Microsoft Office Visio
- Microsoft Office
- Firebase

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2.4.2 Hardware Requirement

Personal computer is used to prepare this system. The following are specification.

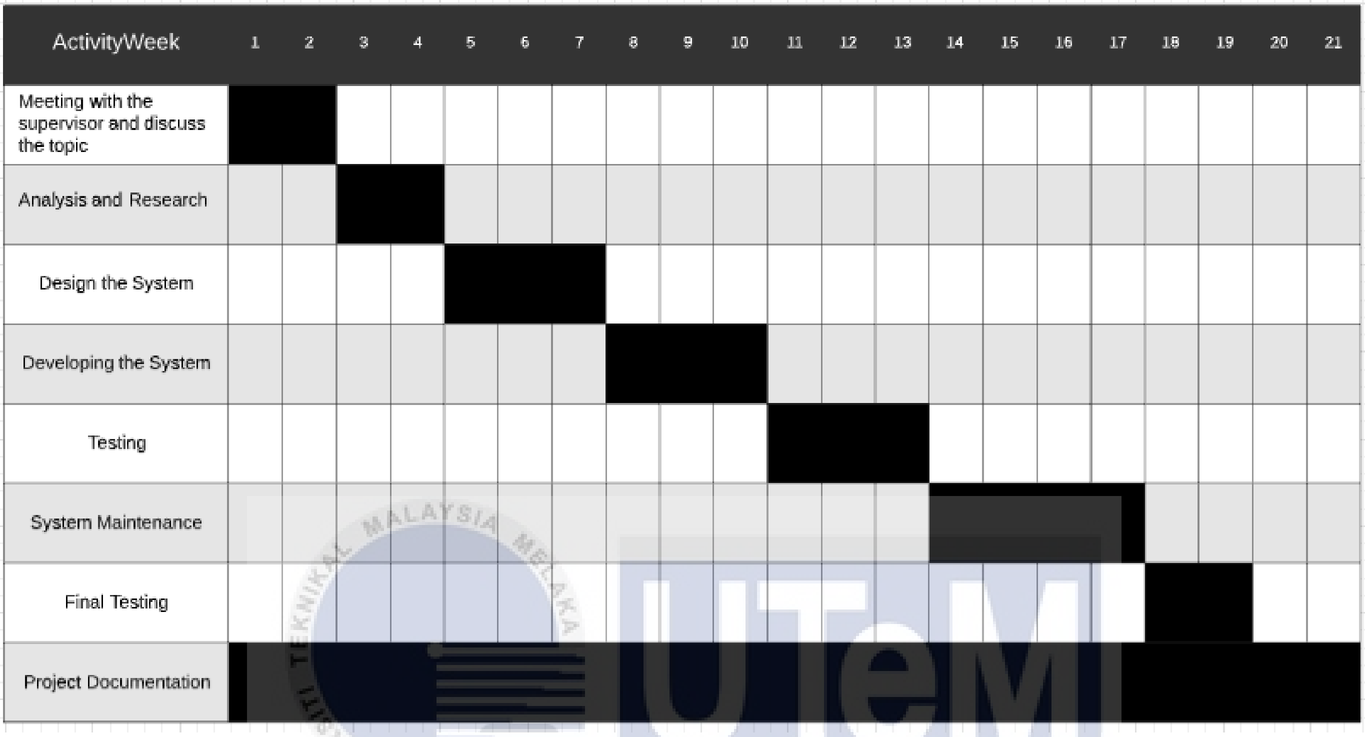
- Operating System: Window 10 Home Single Language
- Processing: Intel Core i7-7200U CPU @2.50GHz
- Memory (RAM): 8GB
- Type of System: 64-bit Operating System

2.4.3 Other Requirement

Other requirements depict user support for the needs of software, hardware, and network that will be used to develop this application.

2.5 Milestones and Schedule

Table 2.1. Milestone and the schedule of the project



ActivityWeek	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Meeting with the supervisor and discuss the topic	■	■																			
Analysis and Research			■	■																	
Design the System					■	■	■														
Developing the System								■	■	■											
Testing											■	■	■								
System Maintenance														■	■	■	■				
Final Testing																		■	■		
Project Documentation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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2.6 Conclusion

The sum-up of this section is that it is essential to create a system for the project methodology and milestone. If everything is followed, it will certainly operate effectively and smoothly. The methodology chosen to create this scheme is the Waterfall Model and the milestone of the project was created. The next section will address this system's analysis.

CHAPTER 3: ANALYSIS

3.1 Introduction

The main purpose of preparing this document is to give a general insight into the analysis and requirements of the existing system or situation and for determining the operating characteristics of the system. Scope: This Document plays a vital role in the software development life cycle (SDLC), and it describes the complete requirement of the system. It is meant for use by the developers and will be the basic during the testing phase. Any changes made to the requirements in the future will have to go through a formal change approval process.

3.2 Problem Analysis

The Problem method can be considered as the problem being analyzed and monitored carefully to capture how the issue came up and how it progressed to its present level. To explain the requirements for Booking Parking Application, a review of the study was performed to determine the information gathered from the current scheme. Analytical work includes the market method and problem assessment. Briefly, the program fixes the problem to examine.

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3.2.1 Sequence Diagram

Sequence diagrams describe interactions, which are used to capture Booking Parking Application scenarios as a set of specified occurrences across several parts of the application, represented by lifelines.

The admin:

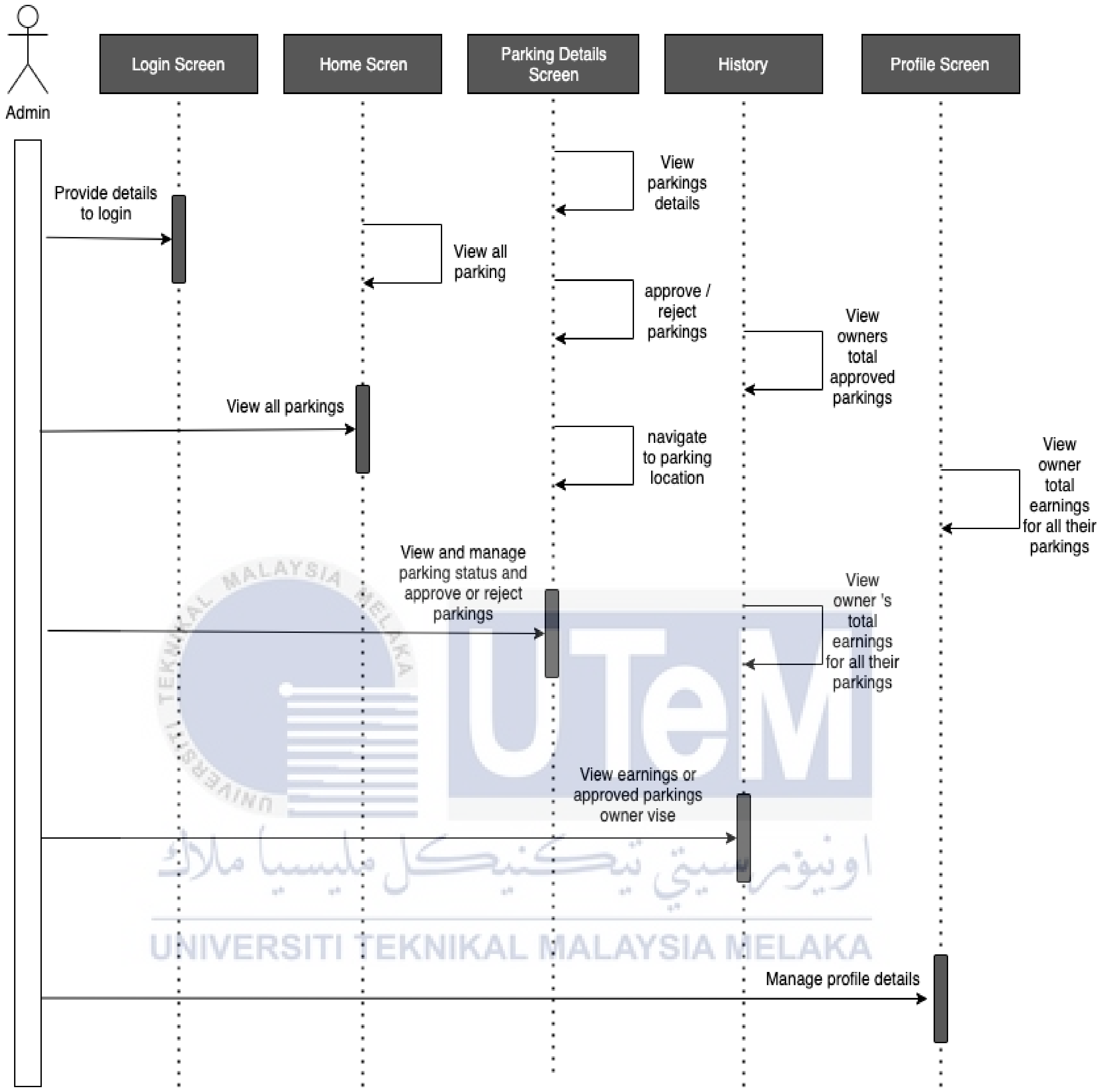
Admin
Login Screen
Home Scren
Parking Details Screen
History
Profile Screen
Provide details to login
View all parking
View parkings details
approve / reject parkings
View owners total approved parkings
View all parkings
navigate to parking location
View owner total earnings for all their parkings
View and manage parking status and approve or reject parkings
View owner 's total earnings for all their parkings
View earnings or approved parkings owner vise
Manage profile details

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Figure 3.1: Admin Sequence Diagram

The owner:

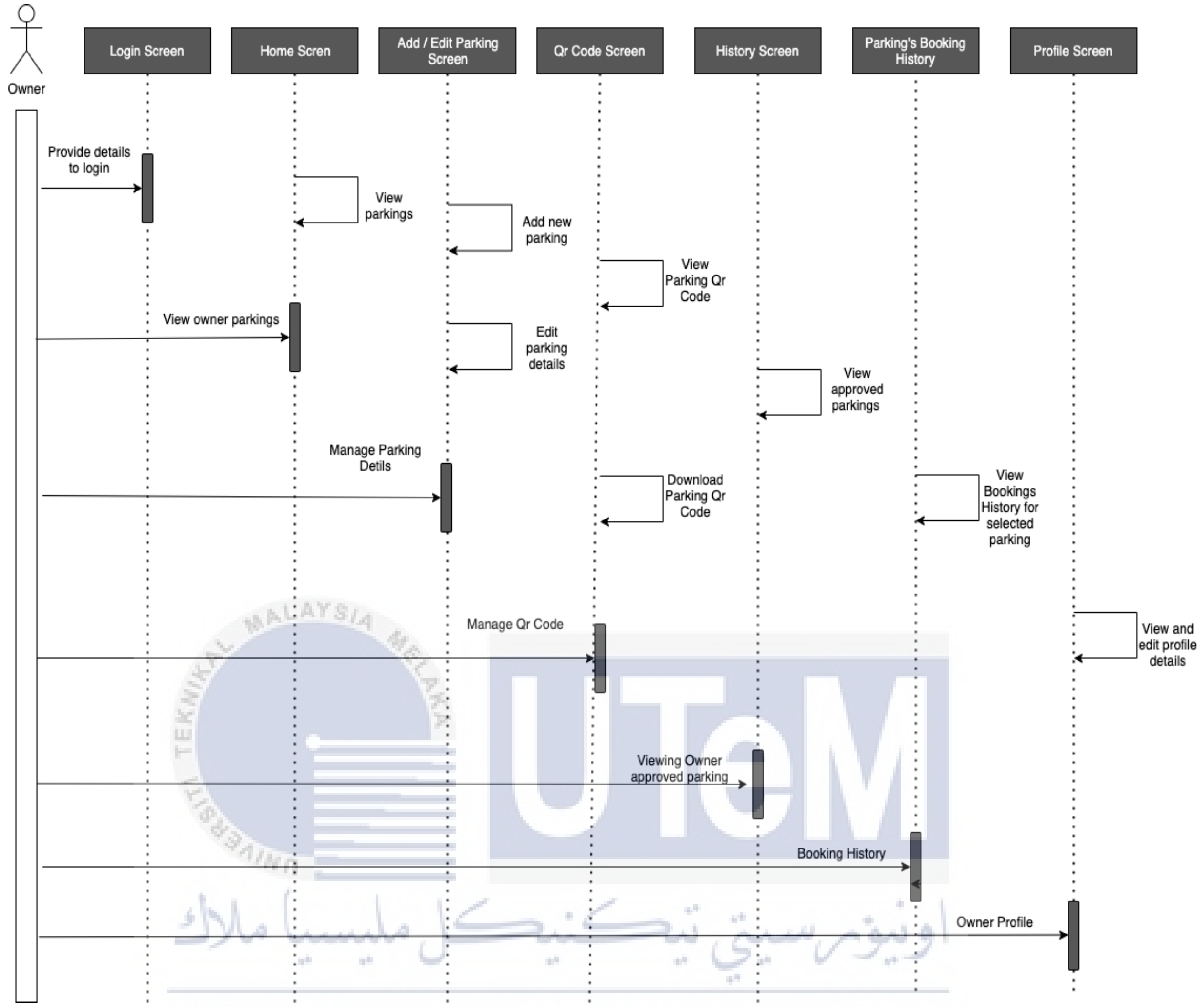

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Figure 3.2: Owner Sequence Diagram

The user:

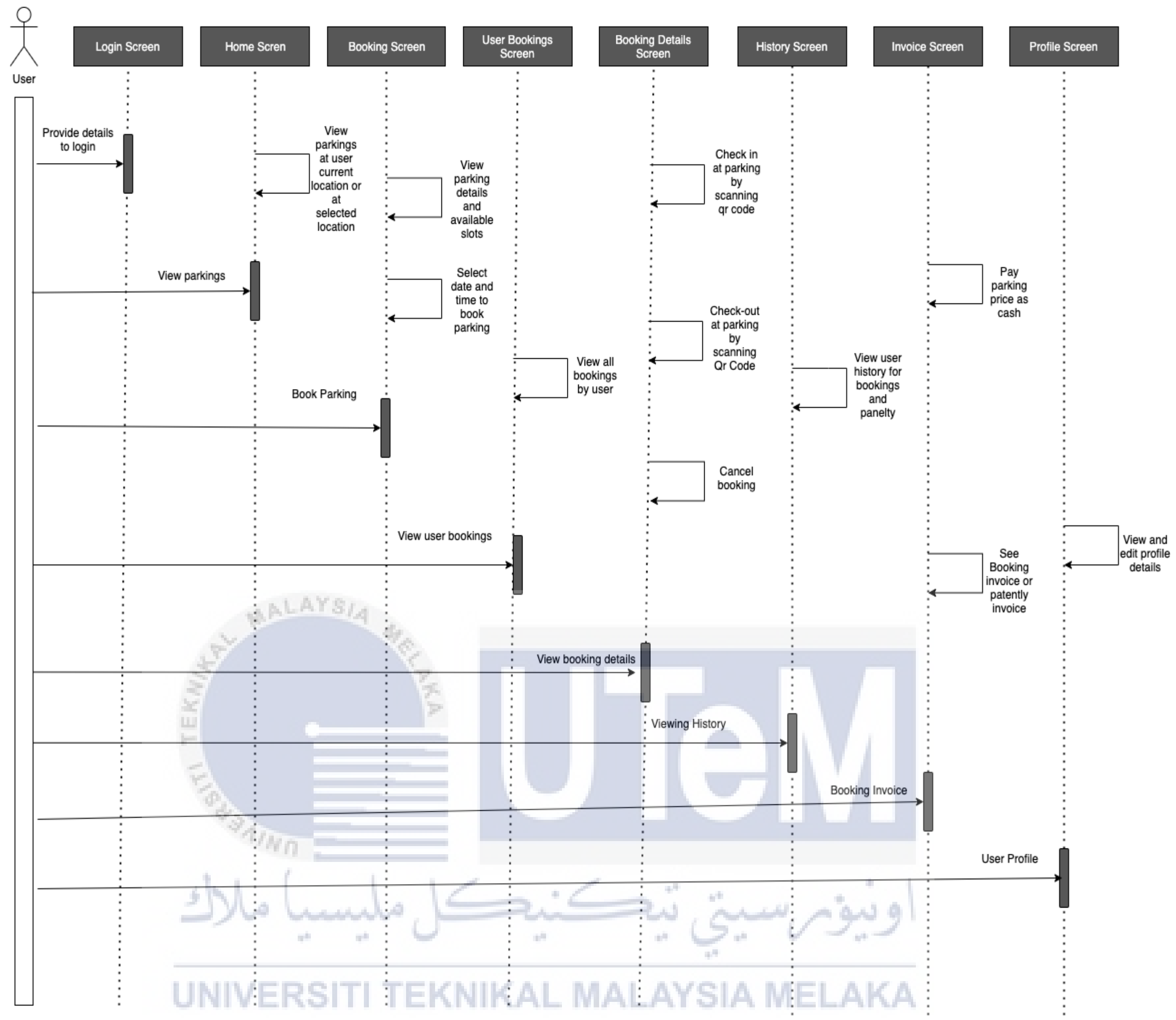
User
Login Screen
Home Scren
Booking Screen
User Bookings Screen
Booking Details Screen
History Screen
Invoice Screen
Profile Screen
Provide details to login
View parkings at user current location or at selected location
View parking details and available slots
Check in at parking by scanning qr code
View parkings
Select date and time to book parking
Pay parking price as cash
Check-out at parking by scanning Qr Code
View all bookings by user
View user history for bookings and panelty
Book Parking
Cancel booking
View user bookings
View and edit profile details
See Booking invoice or patently invoice
View booking details
Viewing History
Booking Invoice
User Profile

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Figure 3.3: User Sequence Diagram

3.3 Requirement Analysis

Requirements Analysis is the process of defining the expectations of the users for the system that is to be built or modified. It involves all the tasks that are conducted to identify the needs of different stakeholders. Analysis of the requirements is critical to developing the project requirements. The fundamental method breaks down stakeholder's need declaration by showing what the project needs to do to meet thatneed. The booking management system meets all the needs of users and owners.

3.3.1 Data Requirement

The aim of the information requirements is to identify and record the entities inside the project scope, as well as the preliminary information characteristics that will affectthe description of the technology infrastructure. Countless problems are considered when identifying information parameters such as the description of entities and their characteristics mostly with the relation among entities, the recognition of the size and quantity for every entity, and the data security of some of the characteristics.

3.3.1.1 Users information

User information normally will store in the database for login the system and store most important data such as Full name, Email, Phone and User ID.

Table 3.1: Users' information

Input	Input Type	Data Type	Null	Key
User_Id	Text input	Varchar22(255)	AUTO	FK
Full name	Text input	Varchar22(255)	Not Null	
Email	Text input	Varchar22(255)	Not Null	
Phone	Number	Int (11)	Not Null	
User_Type	Text input	String	Not Null	Pk

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3.3.1.2 Owners information

Owner information normally will store in the database for login the system and store most important data such as User ID, Full name, Email, Phone and User_Type.

Table 3.2: Data Dictionary for Owner

Input	Input Type	Data Type	Null	Key
approvedParkingId	Text input	Varchar22(255)	AUTO	Pk
User_Id	Text input	Varchar22(255)	AUTO	FK
Full name	Text input	Varchar22(255)	Not Null	
Email	Text input	Varchar22(255)	Not Null	
Phone	Number	Int (11)	Not Null	
User_Type	Text input	String	Not Null	Pk

3.3.2 Functional Requirement

Table 3.3: Functional Requirements

FR NO	Requirements	Description
BPA_1	Create account	The application will allow the new user or owner to register new account to be able to use the system function.
BPA_2	Login and Logout	The application will allow user, owner, and admin to login and logout from the application
BPA_4	View parking	The application will show the list of parking near to user location.
BPA_5	Book parking	The application will allow user to book parking after selecting proper date and time.
BPA_6	check-in / check-out	The application will allow user to scan the QR to check-in or check-out into the parking.
BPA_7	View invoice	The application will give user the invoice after check-out by scan the QR.
BPA_8	Payment for parking	The user will pay the parking fee as cash.
BPA_9	Add new parking	The application will allow the owner to add parking.

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BPA_10	Manage parking details	The owner can edit the details of the parking or delete the parking.
BPA_11	Approve / Reject parking	The application will allow the admin to approve or reject owner parking.
BPA_12	Owner income	The application will allow admin to view each owner income.
BPA_13	Edit profile	The application will allow the user and owner to update their profile.

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3.3.2.1 Use Case View

This use case has three actors which are user, owner, and admin. There are four modules which are authentication module, manage the system module, booking module, book scanner QR code, and dashboard Reporting module.

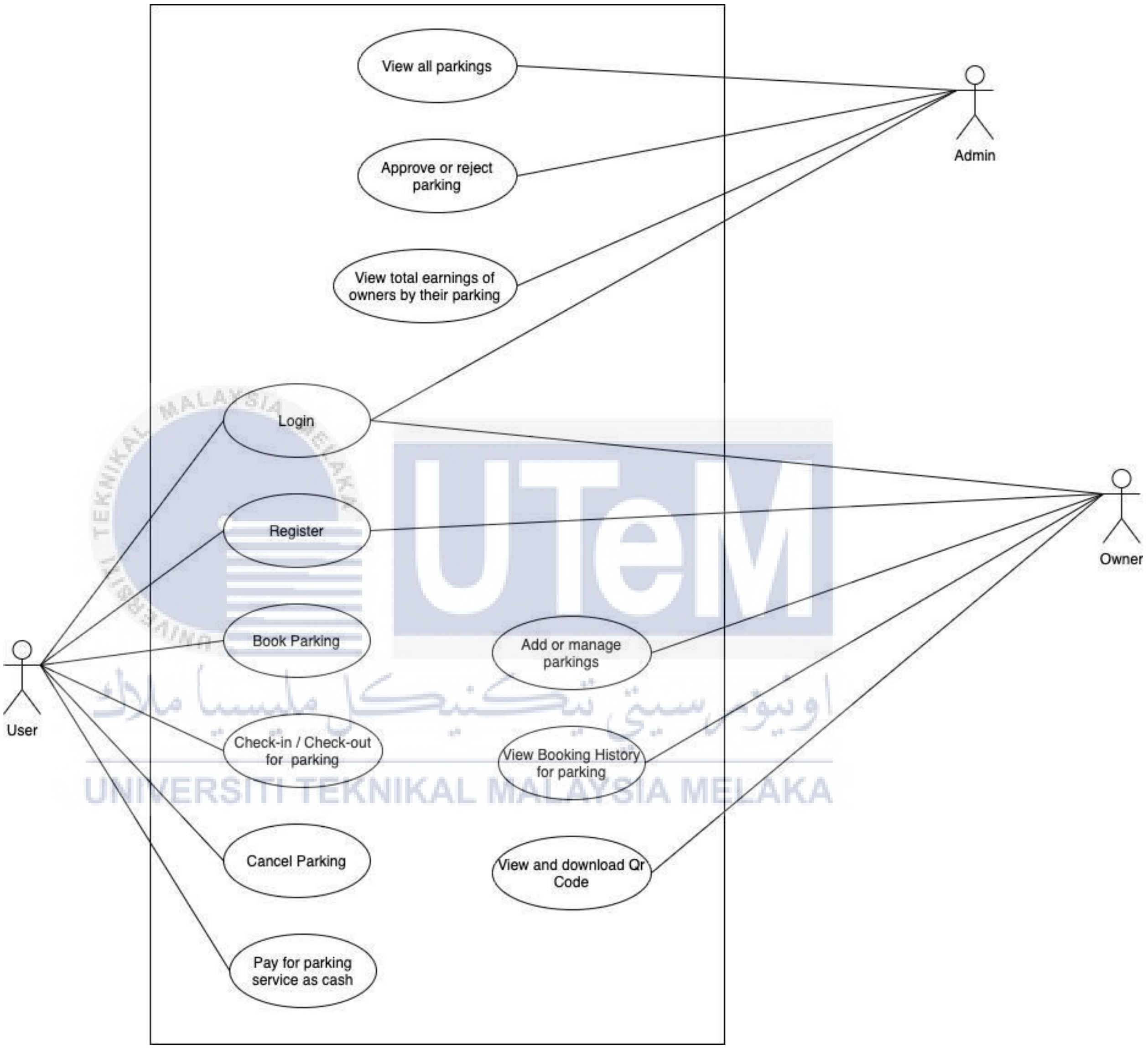
View all parkings
Approve or reject parking
View total earnings of owners by their parking
Login
Register
Book Parking
Check-in / Check-out for parking
Cancel Parking
Pay for parking service as cash
Add or manage parkings
View Booking History for parking
View and download Qr Code
Admin
Owner
User

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Figure 3.4: Use Case View

3.3.3 Non-Functional Requirements

Non-functional criteria suggest how the system can behave and represent a constraint on the actions of the system. Often, device characteristics are often referred to as non-functional specifications. Function characteristics are attributes or functions of the system taken care of by its owners and can also affect their degree of satisfaction with the application.

3.3.3.1 Integrity

Integrity also is part of this system, and it acts to maintain the consistency, accuracy, and trustworthiness of data throughout the system. Data integrity is a crucial part because users are provided with protected data and only an authorized user will get the permissions to access it.

3.3.3.2. User Authentication

Unauthorized user is not allowed to access the system. This is to ensure the integrity of the system and protects the user data.

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3.3.4 Others Requirement

Certain necessities provide support for the use of the hardware, software, and network needs to be used to build this system.

3.3.4.1 Software Requirements

The system required to developing its App are listed below:

Table: 3.4 Software Requirements

Software	Usage
Microsoft Visual Studio Code	A platform to run the code.
Chrome	It is a browser used for searching information and accessing the information that required.
Operating System	Window 10.
Microsoft word 2019	It uses to prepare the system report.
Microsoft Power Point 2019`	It is processor used to present this project.

3.3.4.2 Hardware Requirements

Table 3.5: Hardware Requirements

Software	Usage
CPU	Intel core i3
Processor Speed	2.00 GHz
RAM	4.00 GB
Type of system	32-bit Operating System

3.4 Conclusion

To sum up, some of the specifications included in this project, such as data dictionary analysis, requirements for operating systems, and problem analysis, were addressed in this chapter. Project manufacture and demand are maintained via this project's review process. The next chapter will address the architecture of the systems for this project.

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CHAPTER 4: DESIGN

4.1 Introduction

The Booking Parking application development design is discussing in detail in this chapter. All in all, the flow of the system will be clarified. A developer will design the system based on all requirements gathered before, after collecting all information from the analysis phase.

Two aspects of design are the high-level design and device architecture, will be discussed. It will discuss more of a device structure in high-level design, which is how the system will communicate with each other, like end-users or hardware. Then, for the design of the user interface, it will show in the user's device interface that has various levels in the system. Navigation design demonstrates how the application navigates when the user clicks on the certain button or menu. It explains in the input design what data the user should fill in to be saved throughout the database, Validation is also important to ensure that only valid data contained in the database is valid. What information can be extracted from the database for output design and the data can be converted to information such as described using a graph.

In regard to data management, there are an Entity Relationship Diagram (ERD), data dictionary, normalization, and business rules for conceptual and logical database design. System design will be controlled, and it is also the section during which problem-solving and preparation are conducted for the system solution process. At last, the configuration of the physical database, in which all features of the database are applied.

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4.2 High-Level Design

The whole project framework design is High-level Design (HLD). The system architecture is explained in the Section 4.2.1 while database design in the Section 4.2. It describes the relationship between the various modules and functional requirements, such as data streams, flowcharts, and structures of data.

4.2.1 System Architecture

System architecture is about a summary of how each tier could communicate each other and about top-level components that will include to the proposed solution i.e high-level design. Below is the architecture of the framework for the Booking Parking application.

Reference:

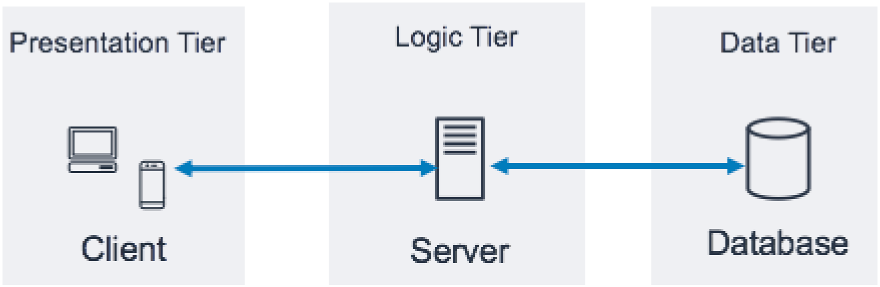

Figure 4.1: System Architecture

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For Booking Parking App, there are five modules, which are authentication module, management system module, booking module, book scanner QR code, and dashboard Reporting module. The user of this application is allowed to book parking,the owner will provide the parking, and admin will approve the parking by giving QRcode for each parking and display the dashboard report.

4.2.2 Interface Design of User

The User Interface Design (UI) is important, and the tool is required to accurately design and view the Ul on the screen. This section would capture online application design in section 4.2.2.1, the input design in section 4.2.2.2.

4.2.2.1 Navigation(s) Design

The design of navigation is a design that show how the whole application navigate from one part to another part. This is to prevent the user from getting confused about the page after they are clicking any particular button. The navigation flow should be correct according to the intended process. The Booking Parking Application navigation architecture is shown in Figure 4.2.

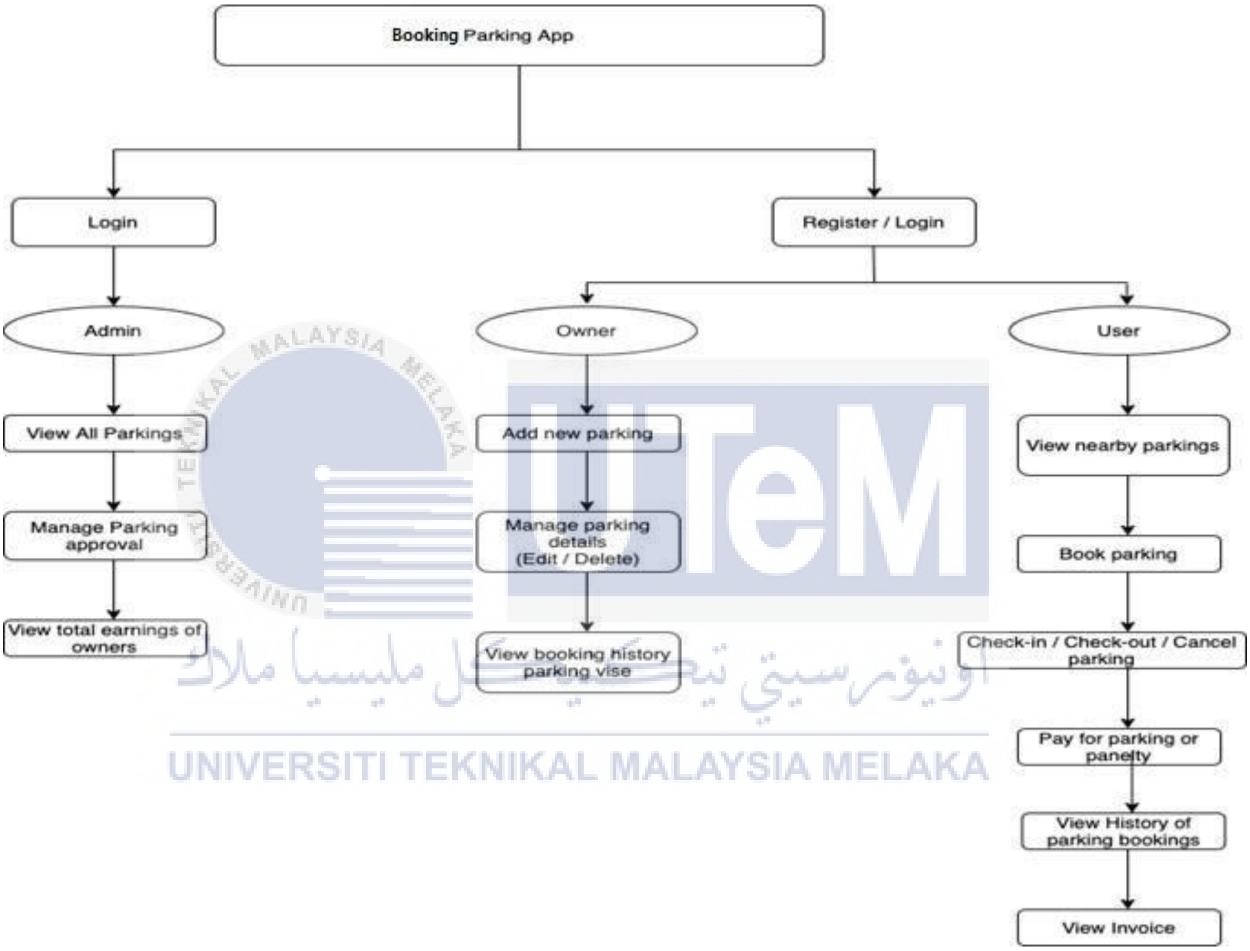
Booking Parking App
Login
Register / Login
Admin
Owner
User
View All Parkings
Manage Parking approval
View total earnings of owners
Add new parking
Manage parking details (Edit / Delete)
View booking history parking vise
View nearby parkings
Book parking
Check-in / Check-out / Cancel parking
Pay for parking or panelty
View History of parking bookings
View Invoice

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Figure 4.2: Navigation Design

4.2.2.2 Input Design

The specification of the entity that will be used on the user interfaces are texts, numbers, alphabets, icons, and more are sone examples of input forms. some input is necessary to keep the data stored in the database, validation is required. The design of the input is shown below for this method.

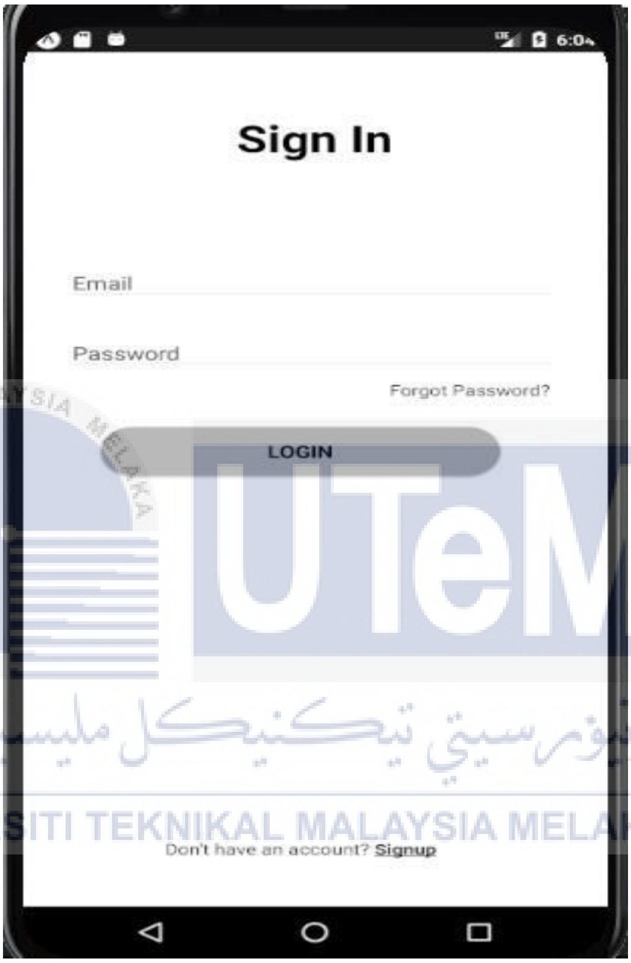

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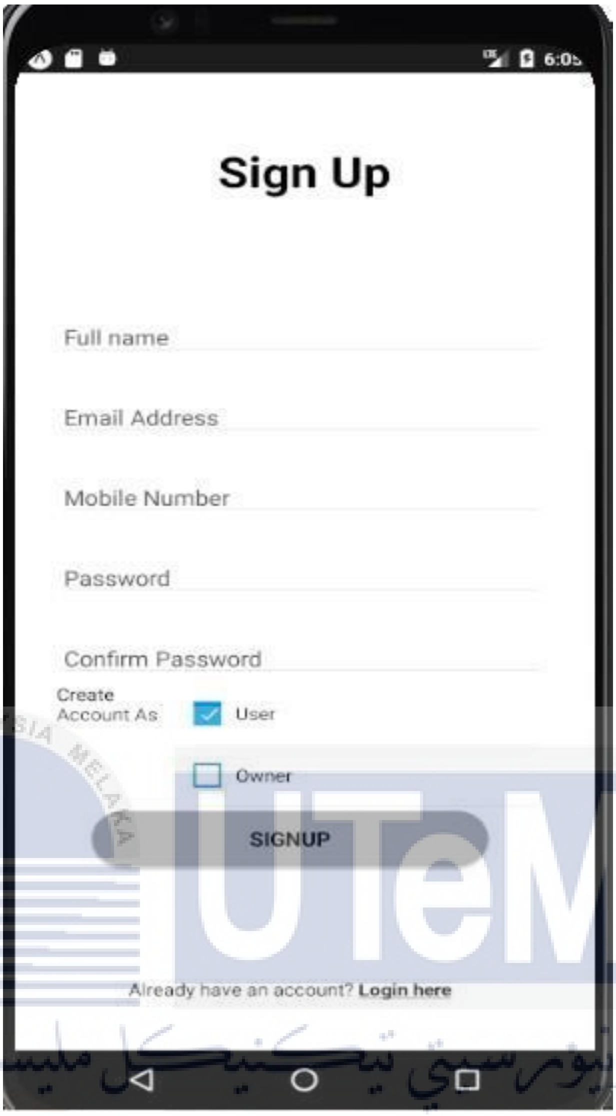
Figure 4.3: Login Interface

Table 4.1: Login input details

Input	**Input Type**	**Data Type**	**Null**
User email	Email field	VARCHAR22	Not Null
Password	Text input	VARCHAR22	Not Null



Sign Up

Full name

Email Address

Mobile Number

Password

Confirm Password

Create Account As ☑ User

□ Owner

Already have an account? **Login here**

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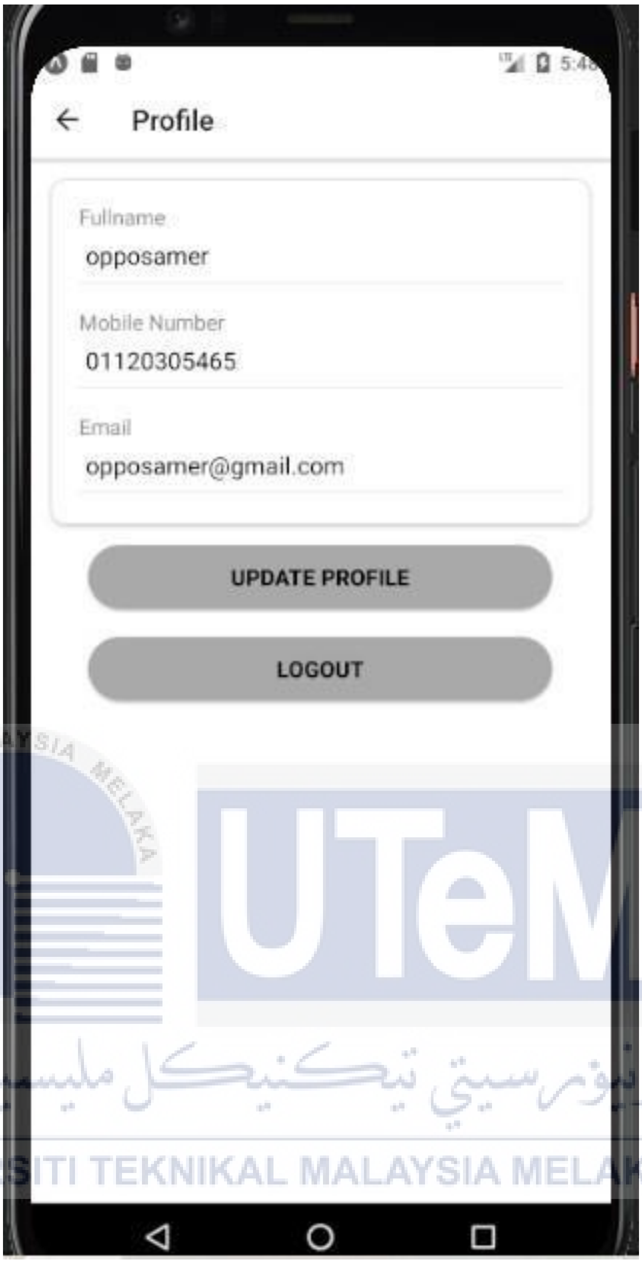
Figure 4.4: Signup Interface

Table 4.2: SignupInterface details

Input	Input Type	Data Type	Null
Username	Text input	VARCHAR22	Not Null
User email	Email field	VARCHAR22	Not Null
Phone Number	number	VARCHAR22	Not Null
Password	Text input	VARCHAR22	Not Null
Type user	Text input	VARCHAR22	Not Null



Profile

Fullname
opposamer

Mobile Number
01120305465

Email
opposamer@gmail.com

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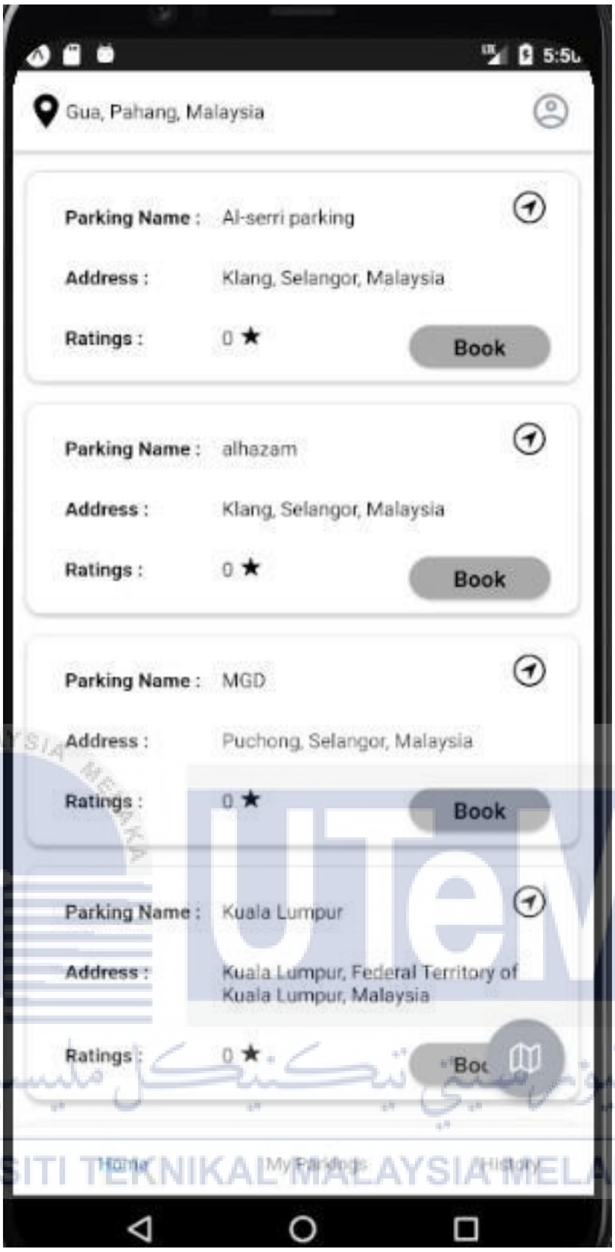
Figure 4.5: Edit Profile

Table 4.3 Edit profile details

Input	Input Type	Data Type	Null
Full name	Text input	VARCHAR22	Not Null
Phone Number	number	VARCHAR22	Not Null
Email	Email field	VARCHAR22	Not Null



Gua, Pahang, Malaysia

Parking Name : Al-serri parking

Address : Klang, Selangor, Malaysia

Ratings : 0 ★

Book

Parking Name : alhazam

Address : Klang, Selangor, Malaysia

Ratings : 0 ★

Book

Parking Name : MGD

Address : Puchong, Selangor, Malaysia

Ratings : 0 ★

Book

Parking Name : Kuala Lumpur

Address : Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia

Ratings : 0 ★

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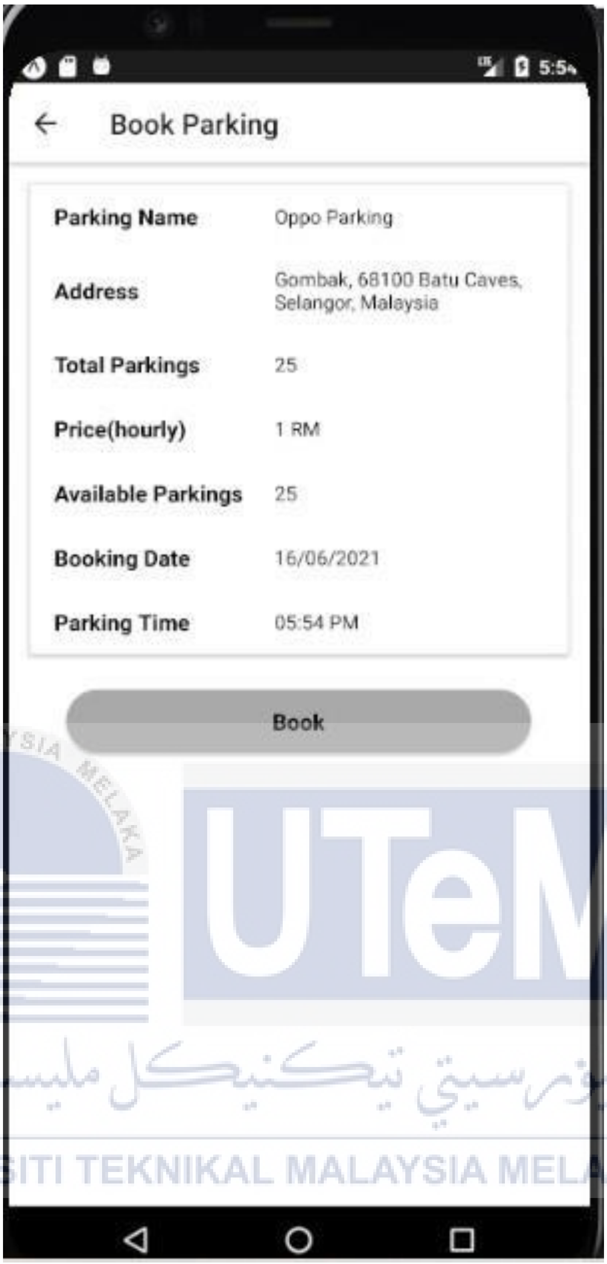
Figure 4.6: Home User Page

Table 4.4 Home User Page Details

Input	Input Type	Data Type	Null
Location	Text input	VARCHAR (225)	Not Null



Book Parking

Parking Name	Oppo Parking
Address	Gombak, 68100 Batu Caves, Selangor, Malaysia
Total Parkings	25
Price(hourly)	1 RM
Available Parkings	25
Booking Date	16/06/2021
Parking Time	05:54 PM

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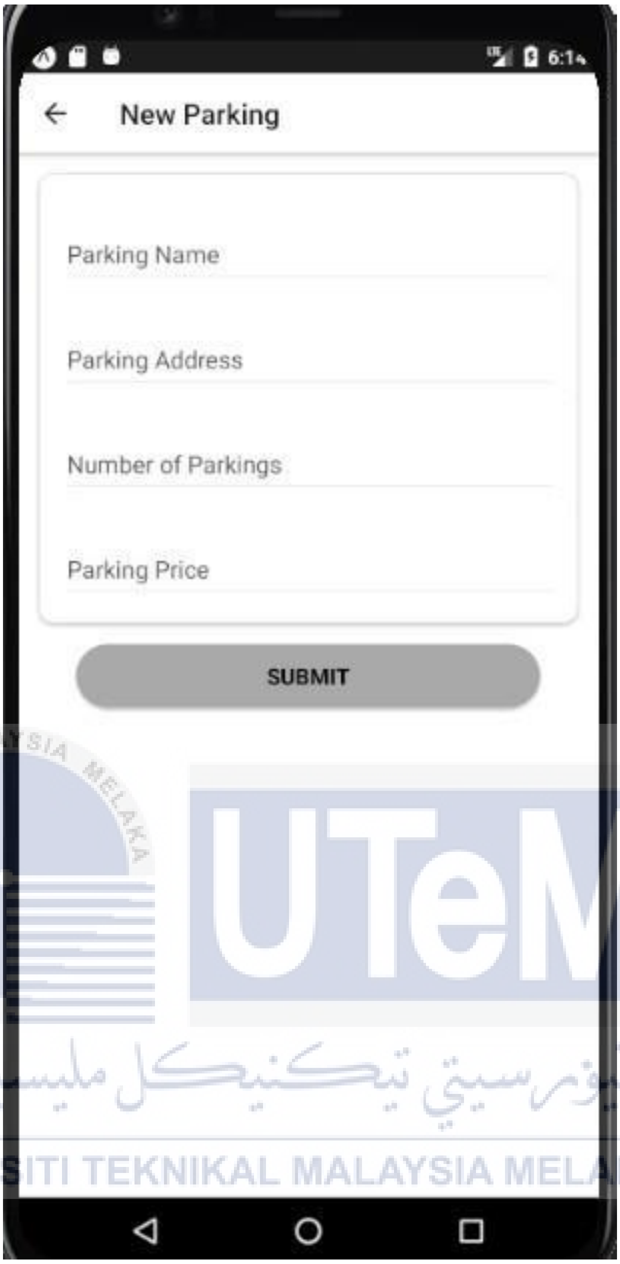
Figure 4.7: Book Page

Table 4.5 Book page details

Input	**Input Type**	**Data Type**	**Null**
Booking Date	date	date	Not Null
Parking Time	time	time	Not Null



Parking Name

Parking Address

Number of Parkings

Parking Price

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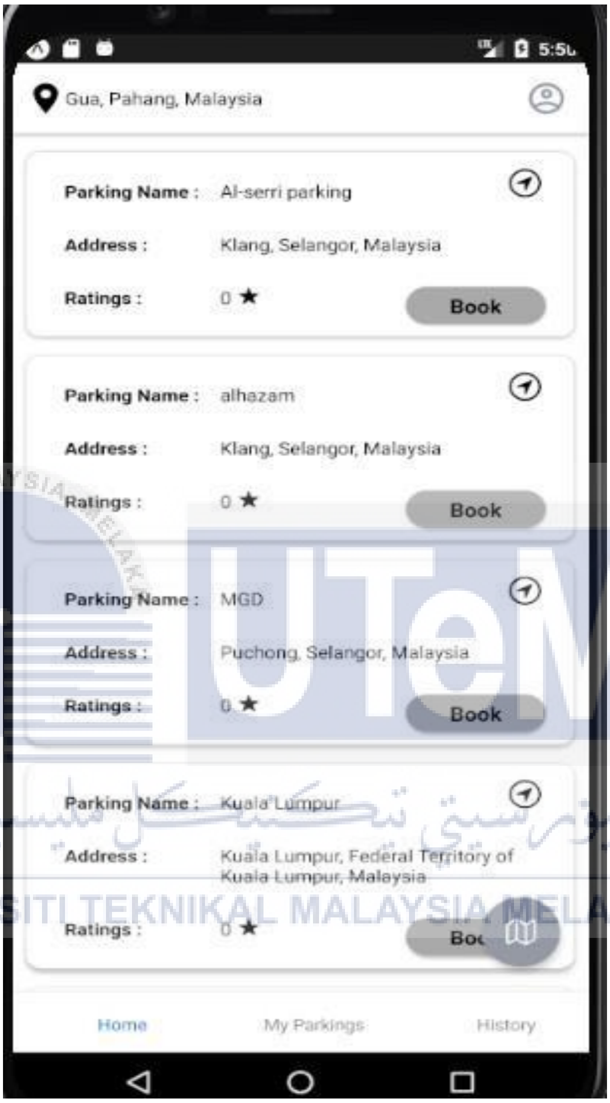
Figure 4.8: Add Parking

Table 4.6 Add Parking

Input	**Input Type**	**Data Type**	**Null**
Parking name	Text input	VARCHAR22	Not Null
Parking Address	Text input	VARCHAR22	Not Null
Number of Parking	Number	Int (11)	Not Null
Parking Price	Number	Float	Not Null

4.2.2.3 Output Design

The output design whereby users view this information is defined in this section. What the users see from the device is also created by the output design. The information came from the user providing the data.



Gua, Pahang, Malaysia

Parking Name : Al-serri parking
Address : Klang, Selangor, Malaysia
Ratings : 0 ★

Parking Name : alhazam
Address : Klang, Selangor, Malaysia
Ratings : 0 ★

Parking Name : MGD
Address : Puchong, Selangor, Malaysia
Ratings : 0 ★

Parking Name : Kuala Lumpur
Address : Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia
Ratings : 0 ★

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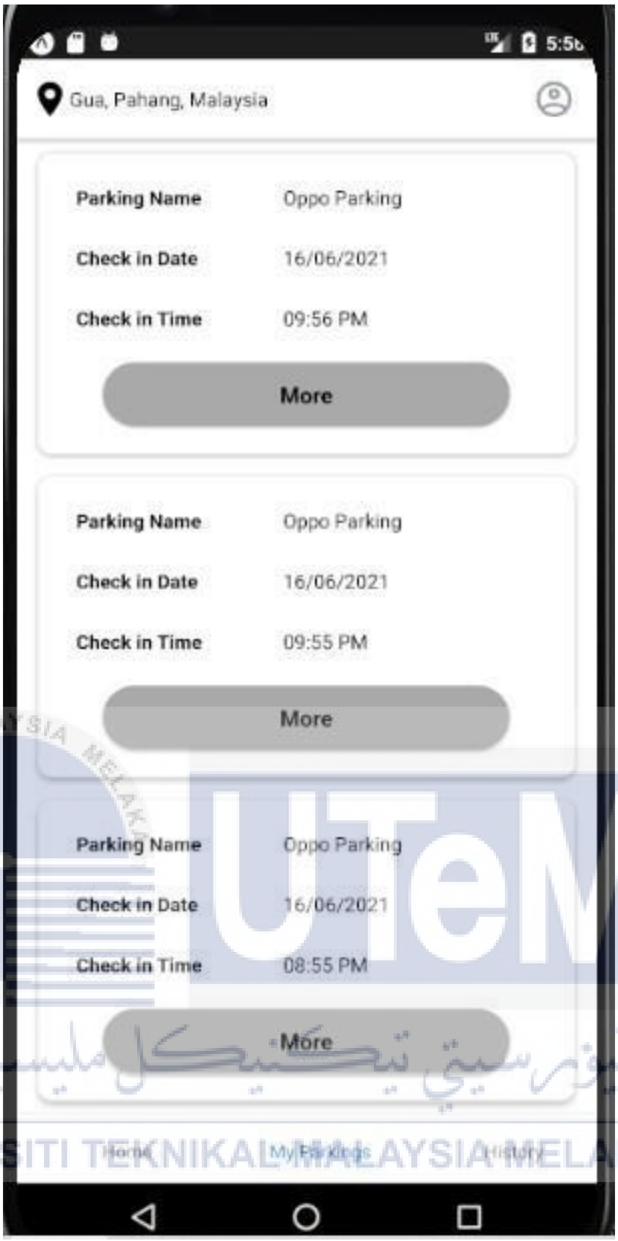
Figure 4.9: Home User Page



Gua, Pahang, Malaysia

Parking Name	Oppo Parking
Check in Date	16/06/2021
Check in Time	09:56 PM

More

Parking Name	Oppo Parking
Check in Date	16/06/2021
Check in Time	09:55 PM

More

Parking Name	Oppo Parking
Check in Date	16/06/2021
Check in Time	08:55 PM

More

Figure 4.10: List of booking parking

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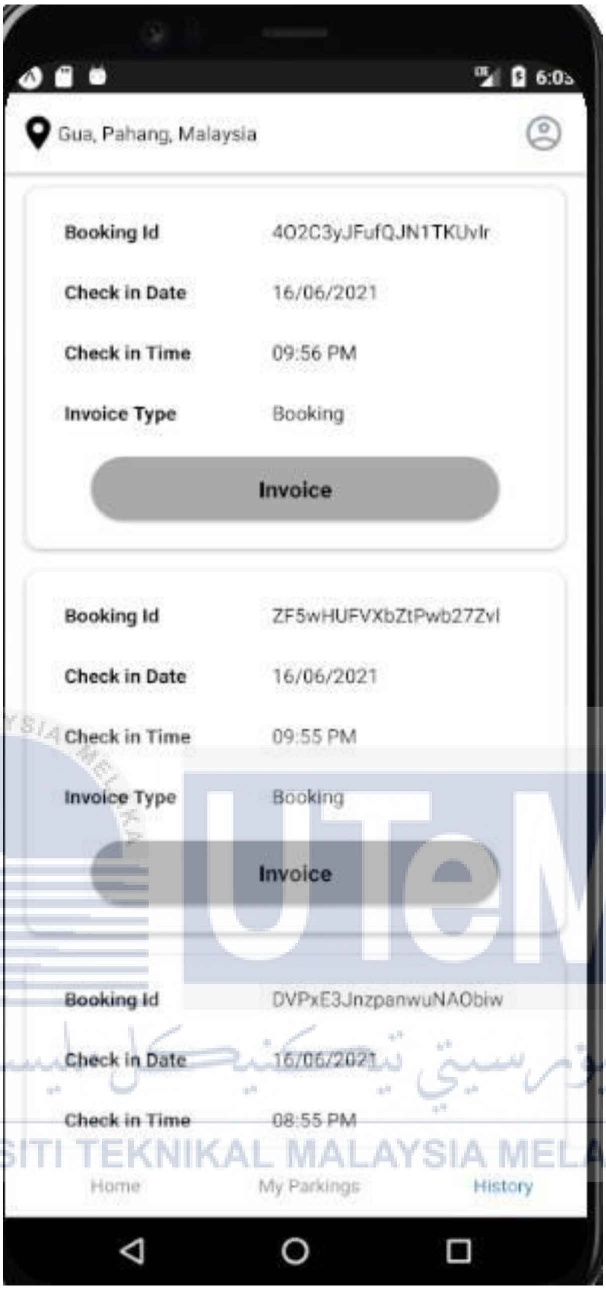

Gua, Pahang, Malaysia

Booking Id	4O2C3yJFufQJN1TKUvIr
Check in Date	16/06/2021
Check in Time	09:56 PM
Invoice Type	Booking

Booking Id	ZF5wHUFVXbZtPwb27ZvI
Check in Date	16/06/2021
Check in Time	09:55 PM
Invoice Type	Booking

Booking Id	DVPxE3JnzpanwuNAObiw
Check in Date	16/06/2021
Check in Time	08:55 PM

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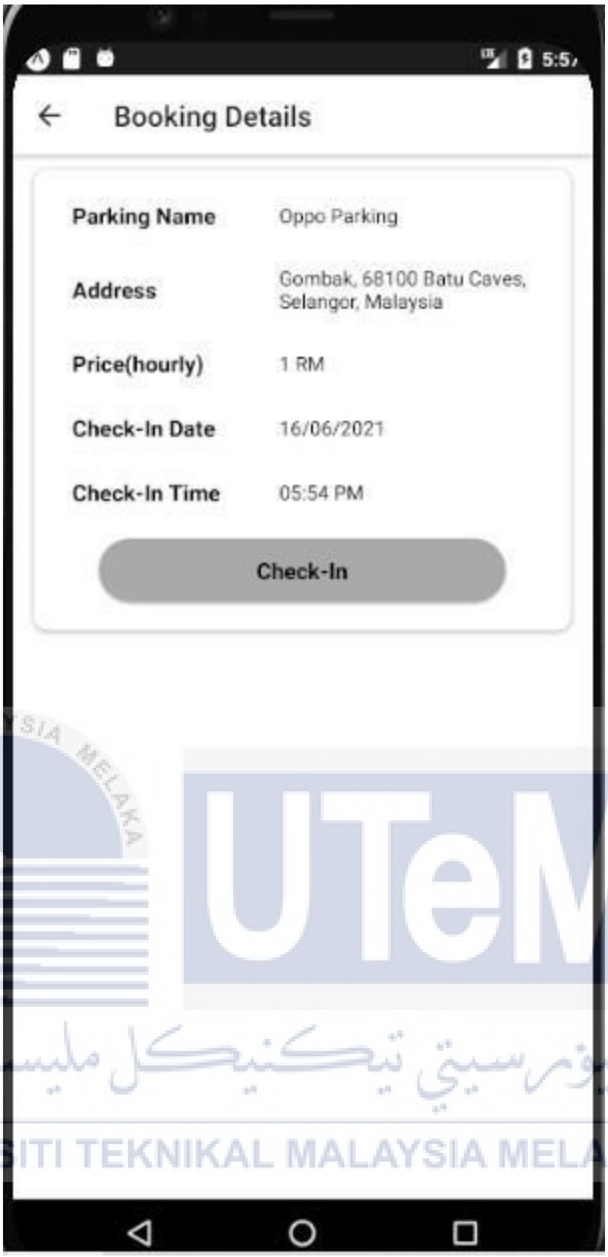
Figure 4.11: History of User Booking



Booking Details

Parking Name	Oppo Parking
Address	Gombak, 68100 Batu Caves, Selangor, Malaysia
Price(hourly)	1 RM
Check-In Date	16/06/2021
Check-In Time	05:54 PM

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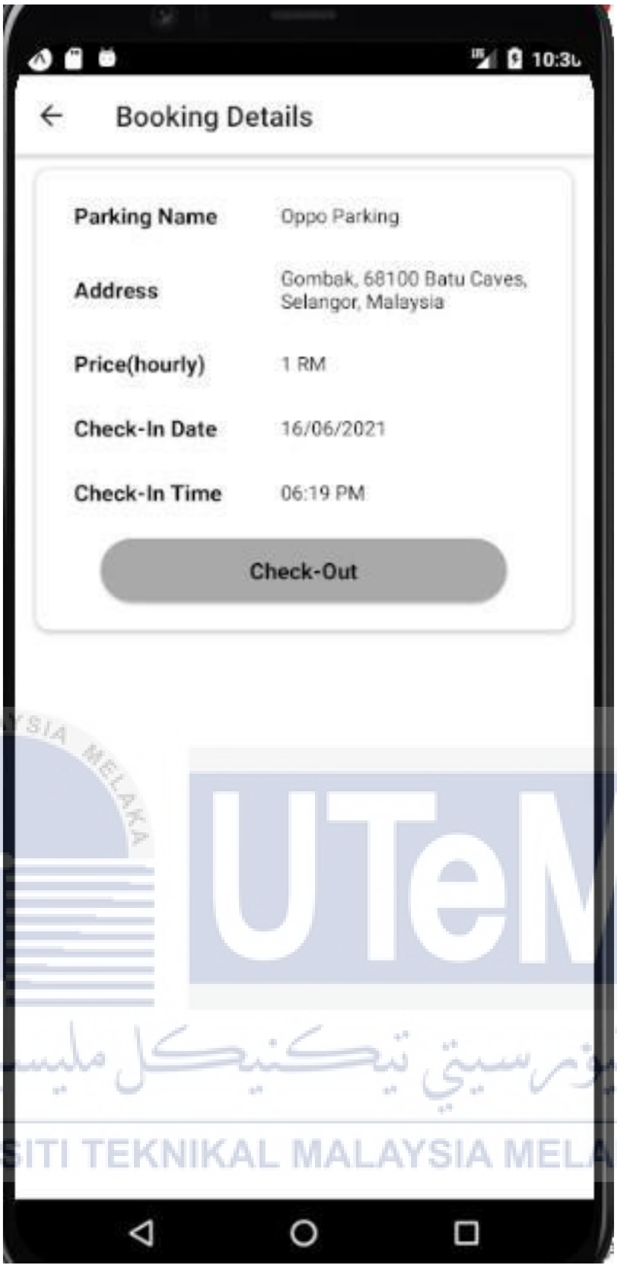
Figure 4.12: Check-in to Parking



Booking Details

Parking Name	Oppo Parking
Address	Gombak, 68100 Batu Caves, Selangor, Malaysia
Price(hourly)	1 RM
Check-In Date	16/06/2021
Check-In Time	06:19 PM

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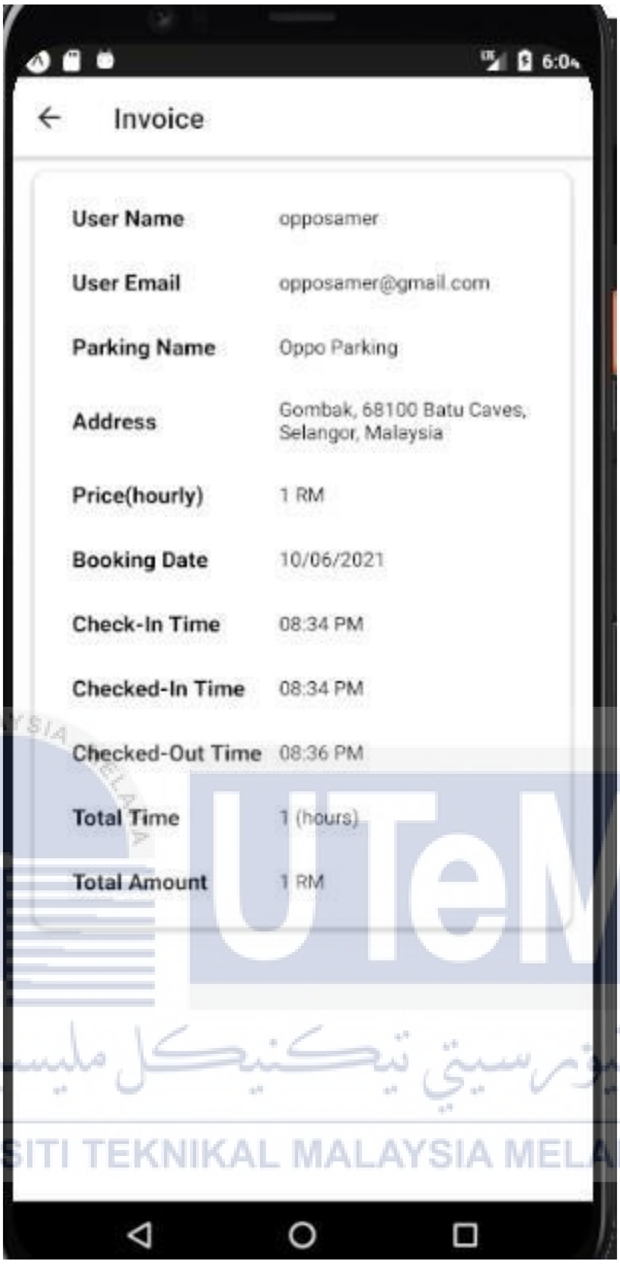
Figure 4.13: Check-out from Parking



Invoice

User Name	opposamer
User Email	opposamer@gmail.com
Parking Name	Oppo Parking
Address	Gombak, 68100 Batu Caves, Selangor, Malaysia
Price(hourly)	1 RM
Booking Date	10/06/2021
Check-In Time	08:34 PM
Checked-In Time	08:34 PM
Checked-Out Time	08:36 PM
Total Time	1 (hours)
Total Amount	1 RM

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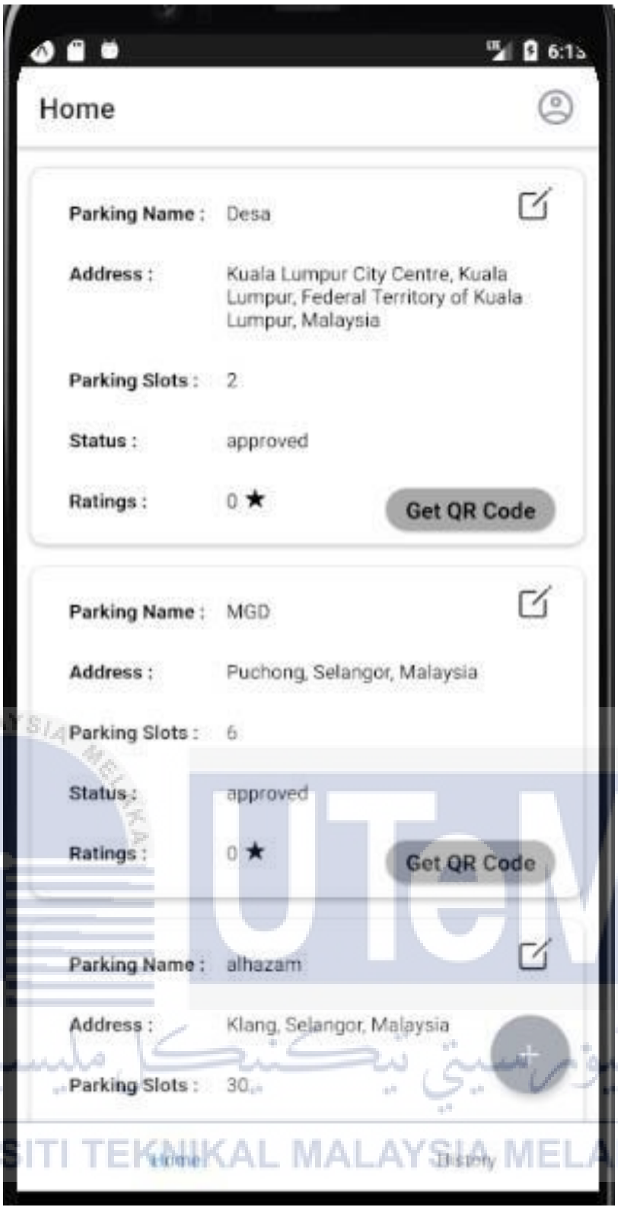
Figure 4.14: Invoice



Home

Parking Name : Desa

Address : Kuala Lumpur City Centre, Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia

Parking Slots : 2

Status : approved

Ratings : 0 ★

Parking Name : MGD

Address : Puchong, Selangor, Malaysia

Parking Slots : 6

Status : approved

Ratings : 0 ★

Parking Name : alhazam

Address : Klang, Selangor, Malaysia

Parking Slots : 30

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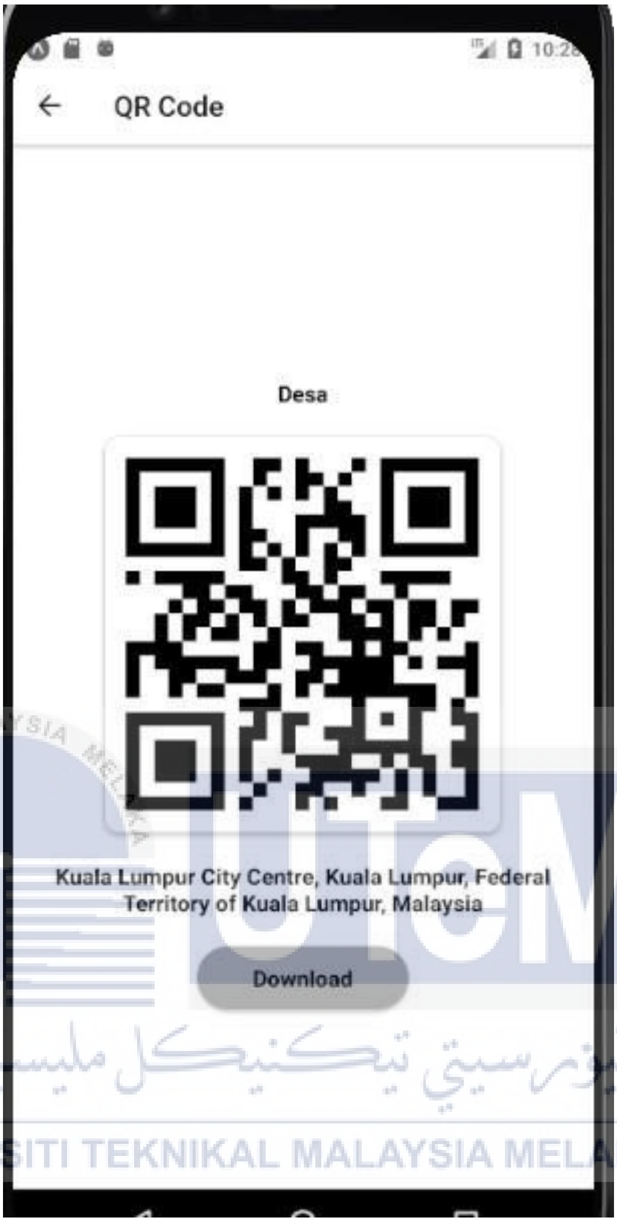
Figure 4.15: Owner Home Page


QR Code

Desa

Kuala Lumpur City Centre, Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia

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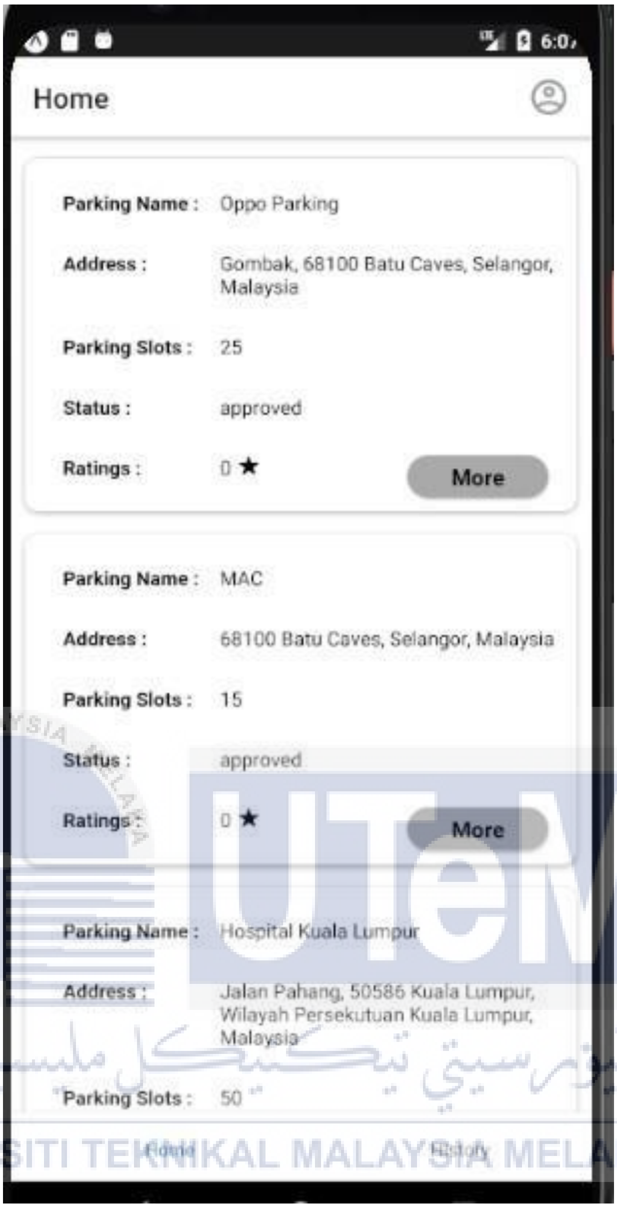
Figure 4.16: QR Code for the Owner



Parking Name : Oppo Parking

Address : Gombak, 68100 Batu Caves, Selangor, Malaysia

Parking Slots : 25

Status : approved

Ratings : 0 ★

Parking Name : MAC

Address : 68100 Batu Caves, Selangor, Malaysia

Parking Slots : 15

Status : approved

Ratings : 0 ★

Parking Name : Hospital Kuala Lumpur

Address : Jalan Pahang, 50586 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia

Parking Slots : 50

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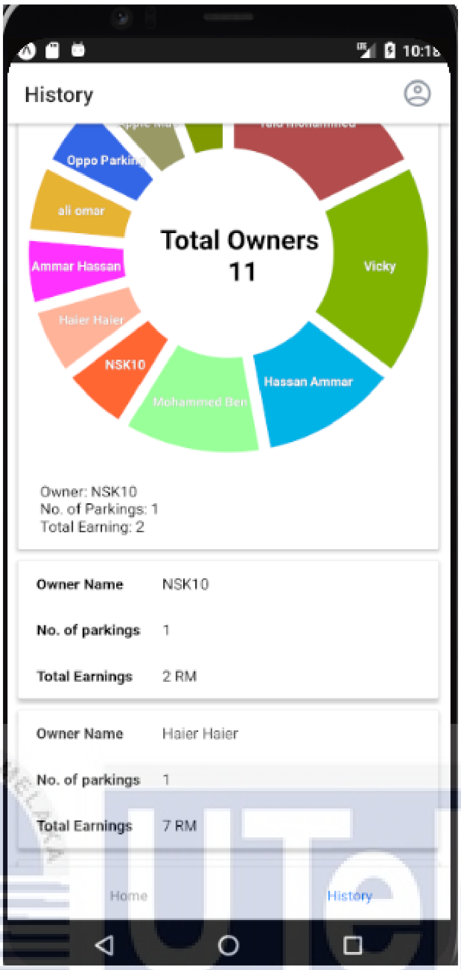
Figure 4.17: Admin parking List



History

Owner: NSK10
No. of Parkings: 1
Total Earning: 2

Owner Name	NSK10
No. of parkings	1
Total Earnings	2 RM

Owner Name	Haier Haier
No. of parkings	1
Total Earnings	7 RM

Figure 4.18: Admin Dashboard

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4.2.3 Database Design

It is a collection of processes that facilitate the designing, It provides acomplete database model.

4.2.3.1 Conceptual Database Design(s)

Entity Relationship Diagram ERD has demonstrated the connections of the set of substances to the database. The information segment is an element in this setting. Nowadays, ER outlines represent an intelligent database structure. Firebase Databaseis used in this project to store information and user data. The database model that is designed for the application will demonstrate as below.

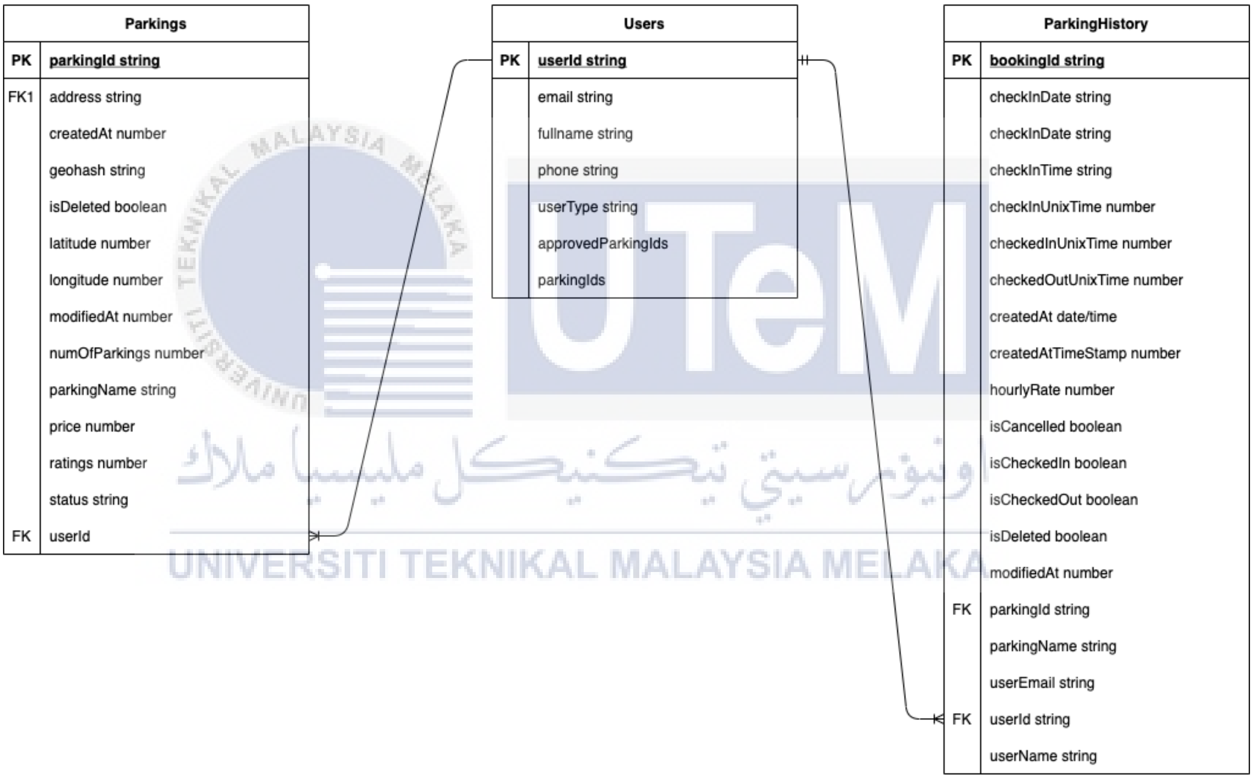

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Figure 4.19: Booking parking application ERD

4.3 Detailed Design

The structured design follows the period of concept design, application of design requirements and product and construction specifications, and eventually specific solutions for qualified implementation.

4.3.1 Use Case Diagram

The use case diagram will be used in this section to discuss how the user interacts with the application. Suppose the user accesses all the application functionalities. use case where the user is interacting with the application (front end).

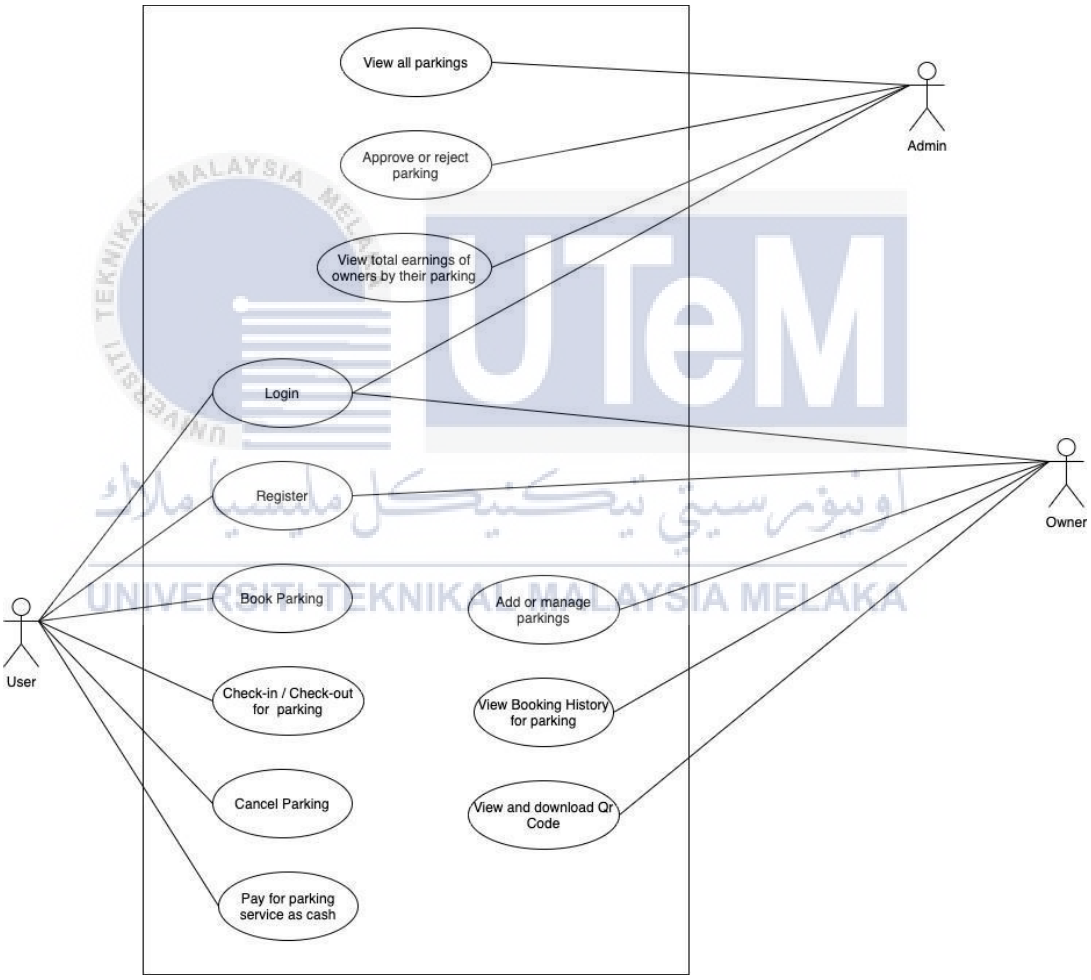
View all parkings
Approve or reject parking
View total earnings of owners by their parking
Login
Register
Book Parking
Check-in / Check-out for parking
Cancel Parking
Pay for parking service as cash
Add or manage parkings
View Booking History for parking
View and download Qr Code
Admin
Owner
User

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Figure 4.20: Use case

4.3.2 Physical Database Design

The conceptual configuration of the database is modified to the goal DBMS Data Definition Language (DDL) will be used. User views are intended to monitor access to a specific part of one or more of the databases.

4.3.2.1 Data Definition Language

Data Definition Language (DDL) is used for creating, updating, and dropping database data. Theories, tables, views, sequences, and indexes contain these database objects. Database managers usethis command during the startup and removal phases of database objects. To display the output, a DDL statement will be generated and processed. For describing data structures, DDL is also known as a programming language.

4.4 Conclusion

The design process of the Booking Parking Application identified and recorded the part and application architecture correctly. The proposed application that contains the application design that has been demonstrated is a high-level design. The design of the application's user interface is also shown in this chapter. It involves navigation design, input design,output design, and other output from this stage that can be used as a good guide for theimplementation of the application. This database design, based on the following design, makes application planning with a specific guide simpler. Moreover, the architecture permits users to see the application flow from beginning to end.

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CHAPTER 5: IMPLEMENTATION

5.1 Introduction

The application development environment setup, application configuration management, and application requirements are outlined in this chapter. Configuration of the operating system, appropriate applications, and the hardware acquired in the application development environment. The implementation phase involves the setup and version control procedure of your environment as well as the implementation step that seeks to use all the data obtained in the preceding phase and to operate a requirement driven framework.

5.2 Software Development Environment Setup

Software Development Environment (SDE) is a complete and unifying framework of services supporting most phases of software development and maintenance. I identify three-level at which the issue of integration in an SDE arise as a key concept at the mechanism level interoperability of the hardware and basic software, at the end-user services level combining the methods and paradigms of the various tools, and at the process of adapting end-user services to the working practices of different users, projects, and organizations.

User services, professional services, and communication services consist of three layers. The Main Client is for the UI. The framework can be used by users using this user interface. The React Native connection between the host and the firebase is used for business services. So, the application will respond to the user's entered data. firebase is used as a database to store the data inserted into this application.

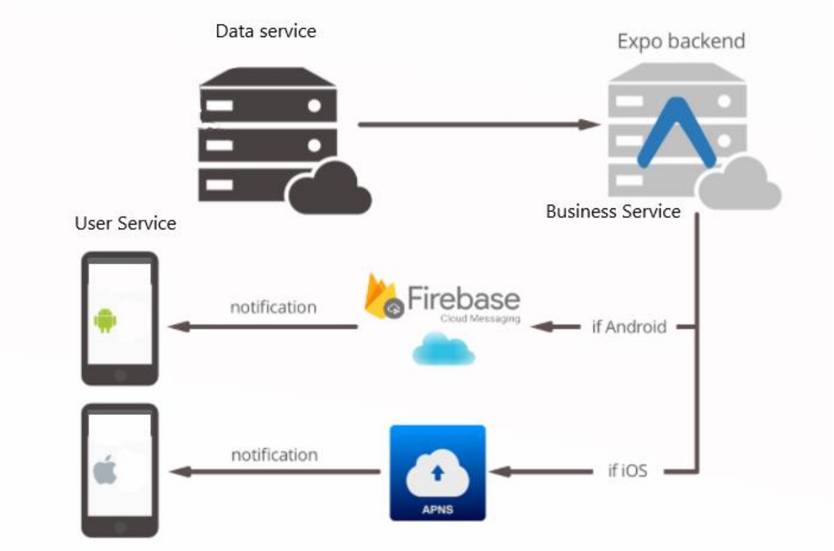

Figure 5.1: SDES

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5.3 Software Configuration Management

There is a need to handle the device setup well. System configuration strategy is intended at checking the whole device and detecting misconfiguration bugs, software errors, and equipment codes.

5.3.1 Configuration environment setup

System Configuration Management (SCM) is a controlling and coordinating mechanism or regularly tracks changes in the records, codes, and other organizations during the Software Development Life Cycle. It is important to maximize the production cycle efficiency with minimal errors.

I. **Server Configuration**

The internet is used for server setup to fully link the application to the database.This server consists of one or more nodes openly accessible to a given request-response message system. basically, the configuration requirements of this application are visual studio code, expo, firebase, and android emulator.

II. Database configu ration

Firebase is used in the design of database and NOSQL is used in the Reference folder to setup the firebase you need to create a Firebase project, rgister the app with firebase, add firebase SDKs and initilize Firebase, access Firebase in your app .

5.3.2 Version Control Procedure

For the application growth, version control is critical, even when GitHub is a free software to the business development platform. The developer can host and review the code for managing their projects. In different programming dialects, the creator may also, provide source code extensions, and track the group's progress.

5.4 Status of Implementation

Table 5.1: Status of Implementation

Modules	Description	Duration	Completion date	Size
Authentication module	1- The application will allow the new user or owner to register new account to be able to use the system function. 2- The application will allow user, owner, and admin to login and logout from the application	12 days	15/4/2021	20kb
	1- The application will allow the admin to approve or reject owner parking.	15 days	30/4/2021	40kb

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Manage the system module	2- The application will allow the owner to add parking. 3- The owner can edit the details of the parking or delete the parking. 4- The application will allow the user and owner to update their profile.			
Booking module	1- The application will show the list of parking near to user location. 2- The application will allow user to book parking after selecting proper date and time.	20 days	20/5/2021	50kb
QR code module	1- QR code will be showing to owner once admin approve the parking. 2- The application will give user the invoice after check-out by scan the QR. 3- The application will allow user to scan the QR to check-in or check-out into the parking.	25 days	14/6/2021	40kb

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Dashboard Reporting module	Administrator can get a summary of number of owners registered, how many parking for each owner, and the income for each owner.	10 days	24/6/2021	20kb

5.5 Conclusion

This chapter ends how implementing the application is very important as it requires the correct functioning of the current application in its context, including implementation, set-up, testing, and application modifications. Without the right resources, a project cannot be effectively executed. The tools will help developers control the project more during the process of implementing the program.

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CHAPTER 6: TESTING

6.1 Introduction

The testing phase is the stage that follows the implementation of the Booking Parking Application with the aim of verifying whether it is responding to the current problem or is it doing what it should do. It also includes examining the application's functionality, in general, to ensure that the application is responding to the user's needs. This will verify the application's performance in security and portability issues, The bottom line is that the application must be delivered, not only does it work properly but also meets other attributes such as ease of use and maintainability. The following test methods have been used to attempt to detect all potential errors and to verify that the application fully meets its requirements. It is worth noting that I tried to follow the best practices.

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6.2 Test Plan

The main purpose of the testing plan for the Booking Parking Application is to discuss test details for Booking Parking Application use cases. The application Project Test Plan also describes the objective, scope, and approach of the testing effort for the Booking Parking Application. The testing plan also indicates which personnel is responsible for each task and identifies the risks associated with the testing plan.

6.2.1 Test Organization

The testing organization describes the personnel who will involve in the test. A unit test, integration test, device test, and user acceptance test were carried out in four types of tests. Basically, as the general framework involves protocols, functional codes, structure, and application modules, this tester will be the main task. Table 6.1 shows the testing organization.

Table 6.1 shows the testing organization of BPA

Tester ID	Name	Roles	Responsibility
T001	Magd Mazz	Manager	- Responsible for project development and preparation of test cases and sample data.
T002	Omar Al-Amoudi	Tester	- Responsible for conducting the test as written in test cases.

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6.2.2 Test Environment

The test environment is set up for this application on WIFI that has not been blocked. The laptop in use must also be connected to the Internet. The application will be tested in an android emulator. Finally, the laboratory must follow the test plan to carry out the test. There is a test running on requires Internet Information Visual studio code, firebase, android emulator, and Google Chrome Microsoft Edge browser. Table 6.2 shows the minimum workspace for the Booking Parking Application.

Table 6.2: Test workspace of BPA

Environment standards	Description
OS	Windows 10
Processor	Intel Core i4
Memory	4.00 GB
Database	Firebase

The application consists of modules that were introduced in the Booking Parking Application. The service involved in the development of this device are shown in table 6.3

Table 6.3: System Software of BPA

System Software
1- Windows 10 2- Visual Studio Code 3- Firebase 4- Android emulator 5- Microsoft Edge

System hardware involved in developing this application. Table 6.4 shows the relevant devices for developing a Booking Parking Application.

Table 6.4: System Software of BPA

System Hardware
1- Memory (RAM): 12GB 2- Type of System: 64-BIT OS 3- Processing Intel (R) Core (TM) i7-4510U CPU @ 2.00GHz 2.60 GHz

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6.2.3 Test Schedule

The timeline is a checklist for research and assessment to ensure that testing has been carried out according to schedule. The test schedule, in other words, controls the timing and length of the test. During the test activity, the lab will have a set of instructions to complete the task. It will be time to take notes to ensure satisfactory results. The tester will use a released laptop computer with all the environment settings required to run the application and to aid in testing. For each operation, the application will perform all the essential required tests and time allocations as follows.

Table 6.5: Test Schedule of BPA

Activity of Test	Period	Started Date	Ended Date
Integration Testing	25 days	1/08/2021	25/8/2021
Application Testing	10 days	26/08/2021	04/09/2021
Acceptance Testing	5 days	5/09/2021	10/09/2021

6.3 Test Strategy

The testing strategy is a how-to guide that will describe how to test this application and what test was performed. The black-box testing is the testing technique in this framework. A black box testing is a measure that checks the application without looking at the application's individual parts. This approach is used for verifying the integrity of any application test standard.

6.3.1 Black Box Testing

Blackbox testing is a form of test that avoids the application or component's internal mechanism and concentrates only on the results generated because of different input and implementation criteria. There are several techniques in which the black box tests the task can be executed, and the techniques that have been used during the testing of the Booking Parking Applications are Use cases, and equivalence analysis.

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6.3.1.1 Use Case

The use case is used to show the user interaction with the application, any action which of tangible value to the user.

Table 6.6: Login Use Case of BPA

Use Case Template	Succeed Login User Case
Test Case ID	BPA-001
Use Case Name	Succeed Login
Use Case Description	Login user to the application
Actor	Admin, Owner, and Customer
Pre-condition	Owner, and Customer registered in the application

Postcondition	Admin, Owner, or Customer is logged in to the application
Basic Flow	1- The Admin, Owner, or Customer fills the login details form. 2- Admin, Owner, or Customer clicks login button. 3- The application verified the entered data. 4- Admin, Owner, or Customer is logged in.
Alternate flow	Admin, Owner, and Customer are not registered in the application.
Tested Data	Email**:** **sameralserri@gmail.com** Password: 123456
Test Status	Pass

Table 6.7: Register Use Case of BPA

Use Case Template	Succeed Register Use Case
Test Case ID	BPA-005
Use Case Name	Succeed Register
Use Case Description	Register customer details to the application.
Actor	Customer or Owner
Pre-condition	-
Postcondition	Customer details are registered successfully to the application.
Basic Flow	1- The customer or owner fills the register details form. 2- The customer or owner clicks register button. 3- The application inserts the entered data to database. 4- The customer or owner redirect to the login page.
Alternate flow	Customers are not registered in the application.
Tested Data	Full Name: Mohammed Ali Email: mohammedalserri@gmail.com Password: 12345 Confirm password: 12345 Phone Number: 01160605463
Test Status	Pass

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6.3.1.2 Decision Tables

Decision table testing is a programmatic testing method used to test the application behavior of various input combinations. Table 6.8 below shows the decision table for the login page.

Table 6.8: Login Decision Table of BPA

Condition	Rule 1	Rule 2	Rule 3	Rule 4
Email	Valid email	Valid email	Valid email	Invalid email
Password	Valid password	Valid password	Invalid password	Invalid password
Actions	-	-	-	-
Log in to the application	True	False	False	False
Error Massage is displayed	False	True	True	True

6.3.1.3 Equivalence Analysis

In this technique, input data units are divided into equivalent partitions that can be used to derive test cases which reduces the time required for testing because of the small number of test cases. Table 6.9 shows the Equivalence Analysis of the Phone Number in the registration form.

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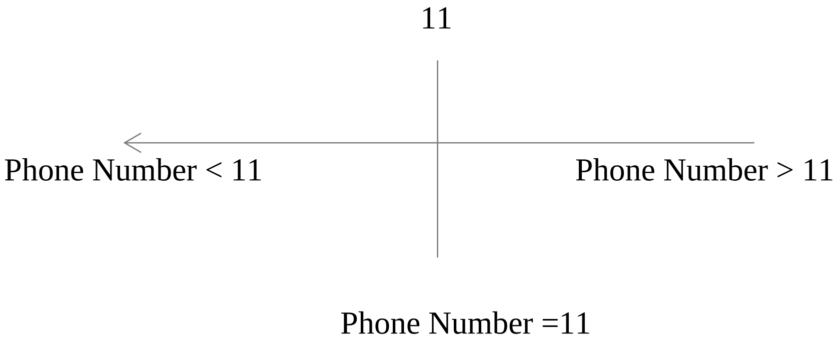

Table 6.9 Equivalence Analysis of the Phone Number

Test Case ID	Phone No	Partition Tested	Expected Output
1	9	Phone Number< 11	Error Message
2	11	Phone Number = 11	OK
3	15	Phone Number > 11	Error Message

6.3.2 Classes of tests

Correctness is the prerequisite for the application and is the primary motivation for testing. The correctness test will need to determine the correct responses from the wrong answers. The tester may or may not know the internal features of the application unit under test, for example, data structure and control variable, Therefore, the black box view applies in testing the application. Note that black box ideas are not just limited to testing correctness.

6.4 Test Design

The test design is based on the writing of a test case suitable for the test application. The test is made up of test descriptions and test data. The aim is to ensure that users are satisfied with the process. Second, it designs the test cases. Finally, testing has carried the application in the context of test cases.

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6.4.1 Test Description

The definition of the test defines the collection of well before, testing dataset and predicted testing results mentioned. The tester must take the exam as a reference.

Table 6.10: Login Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-001	Module Name: Login
Test Case	Expected Result
Check the response on entering a valid email and password.	Login must be successful.

Table 6.11: Login Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-002	Module Name: Login
Test Case	Expected Result
Check the response on entering an Invalid email and valid password.	The login should fail.

Table 6.12: Login Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-003	Module Name: Login
Test Case	Expected Result
Check the response on entering a Valid email and Invalid password.	The login should fail.

Table 6.13: Login Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-004	Module Name: Login
Test Case	Expected Result
Check the response on not entering an email and password.	The login should fail.

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Table 6.14: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-005	Module Name: Register
Test Case	Expected Result
Check the response on entering valid data in all the input fields.	The Register must be successful.

Table 6.15: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-006	Module Name: Register
Test Case	Expected Result
Check the response on not entering data in all the input fields.	The Register should fail.

Table 6.16: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-007	Module Name: Register
Test Case	Expected Result
Check the response on entering invalid email format in the email fields.	The Register should fail.

Table 6.17: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-008	Module Name: Register
Test Case	Expected Result
Check the response on not entering data in the email field.	The Register should fail.

Table 6.18: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-009	Module Name: Register
Test Case	Expected Result
Check the response on not entering data in the name field.	The Register should fail.

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Table 6.19: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-010	Module Name: Register
Test Case	Expected Result
Check the response on not entering data in the password field.	The Register should fail.

Table 6.20: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-011	Module Name: Register
Test Case	Expected Result
Check the response on not entering data in the Phone number field.	The Register should fail.

Table 6.21: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-012	Module Name: Register
Test Case	Expected Result
Check the response on entering alphabetic character in the phone number field.	The Register should fail.

Table 6.22: Register Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-013	Module Name: Register
Test Case	Expected Result
Check the response on entering more or less than the required limit number in the phone number field.	The Register should fail.

Table 6.23: Add New Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-014	Module Name: Add New Parking
Test Case	Expected Result
Check the response on entering valid data in all input fields.	The data should be stored in the database successfully.

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Table 6.24: Add New Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-015	Module Name: Add New Parking
Test Case	Expected Result
Check the response on not entering data in all input fields.	The data should not be stored in the database successfully.

Table 6.25: Add New Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-016	Module Name: Add New Parking
Test Case	Expected Result
Check the response on not entering data in parking name fields.	The data should not be stored in the database successfully.

Table 6.26: Add New Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-017	Module Name: Add New Parking
Test Case	Expected Result
Check the response on not entering data in parking address fields.	The data should not be stored in the database successfully.

Table 6.27: Add New Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-018	Module Name: Add New Parking
Test Case	Expected Result
Check the response on not entering data in number of parking fields.	The data should not be stored in the database successfully.

Table 6.28: Add New Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-019	Module Name: Add New Parking
Test Case	Expected Result
Check the response on not entering data in parking price fields.	The data should not be stored in the database successfully.

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Table 6.29: Book Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-020	Module Name: Book Parking
Test Case	Expected Result
Check the response on entering appropriate valid data in all input fields.	The data should be stored in the database successfully.

Table 6.30: Book Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-021	Module Name: Book Parking
Test Case	Expected Result
Check the response on entering inappropriate data in booking date fields.	The data should not be stored in the database successfully.

Table 6.31: Book Parking Test Case of BPA

Project Name: Booking Parking Application	
Test Case ID: BP-022	Module Name: Book Parking
Test Case	Expected Result
Check the response on entering inappropriate data in parking time fields.	The data should not be stored in the database successfully.

6.4.2 Test Data

Realistic or synthetic knowledge is the test guide to achieve the desired results in accordance with the test design. Test results are examined, reviewed, and confirmed using the existing evidence of the test subject. The test data is verified. The test results within each test case are presented in Table 6.32

Table 6.32: Test Data of BPA

Test Case ID	Test Data
BP-001	Email: sameralserri@gmail.com Password: 123456
BP-002	Email: hamilial@gmail.com Password: 123456
BP-003	Email: sameralserri@gmail.com Password: 123459
BP-004	Email: Password:
BP-005	Full Name: Mohammed Ali Email: mohammedalserri@gmail.com Password: 12345 Confirm password: 12345 Phone Number: 01160605463
BP-006	Full Name: Email: Password:

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	Confirm password: Phone Number:
BP-007	Full Name: Mohammed Ali Email: mohammedalserri@@gmail.com Password: 12345 Confirm password: 12345 Phone Number: 01160605463
BP-008	Full Name: Mohammed Ali Email: Password: 12345 Confirm password: 12345 Phone Number: 01160605463
BP-009	Full Name: Email: mohammedalserri@gmail.com Password: 12345 Confirm password: 12345 Phone Number: 01160605463
BP-010	Full Name: Mohammed Ali Email: mohammedalserri@gmail.com Password: Confirm password: 12345 Phone Number: 01160605463
BP-011	Full Name: Mohammed Ali Email: mohammedalserri@gmail.com Password: 12345 Confirm password: 12345 Phone Number:
BP-012	Full Name: Mohammed Ali Email: mohammedalserri@gmail.com Password: 12345 Confirm password: 12345

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	Phone Number: 0116sa0546da3
BP-013	Full Name: Mohammed Ali Email: mohammedalserri@gmail.com Password: 12345 Confirm password: 12345 Phone Number: 0116060
BP-014	Parking name: al-serri parking Parking address: Sunway Velocity Mall, Mauri, Kuala Lumpur, Federal Territory of Kuala Lumpur Number of parking: 20 Parking Price: 1 RM
BP-015	Parking name: Parking address: Number of parking: Parking Price:
BP-016	Parking name: Parking address: Sunway Velocity Mall, Mauri, Kuala Lumpur, Federal Territory of Kuala Lumpur Number of parking: 20 Parking Price: 1 RM
BP-017	Parking name: al-serri parking Parking address: Number of parking: 20 Parking Price: 1 RM
BP-018	Parking name: al-serri parking Parking address: Sunway Velocity Mall, Mauri, Kuala Lumpur, Federal Territory of Kuala Lumpur Number of parking: Parking Price: 1 RM

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BP-019	Parking name: al-serri parking Parking address: Sunway Velocity Mall, Mauri, Kuala Lumpur, Federal Territory of Kuala Lumpur Number of parking: 20 Parking Price: 1 RM
BP-020	Booking date: 12/2/2021 Parking time: 1:20
BP-021	Booking date: 12/2/2011 Parking time: 1:20
BP-022	Booking date: 12/2/2021 Parking time: 29:39

6.5 Test Results and Analysis

This section is the part that will be documented after the test is complete. A test case is an entry to fest the application and the expected output from these inputs if the application is operating to its specifications. Table 6.33 shows the results of the analysis and testing of the entire test performed on the Booking Parking Application displayed according to the identifier specified for each specific test.

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Table 6.33: Test Result and Analysis of BPA.

Test Case ID	Taster ID	Results	Satisfaction (1-5)
BP-001	T001	Success	5
BP-002	T001	Success	5
BP-003	T001	Success	5
BP-004	T001	Success	4
BP-005	T001	Success	5
BP-006	T001	Success	5
BP-007	T001	Success	5
BP-008	T001	Success	5

BP-009	T001	Success	5
BP-010	T001	Success	5
BP-011	T001	Success	5
BP-012	T001	Success	5
BP-013	T001	Success	5
BP-014	T001	Success	5
BP-015	T002	Success	5
BP-016	T002	Success	5
BP-017	T002	Success	5
BP-018	T002	Success	4
BP-019	T002	Success	5
BP-020	T002	Success	4
BP-021	T002	Success	5
BP-022	T002	Success	5

Based on the test results, we reached the following analysis. the application works satisfactorily during sign-in, login, book parking, cancel the booking, view history of the booking, update profile information, owner register parking, edit parking information, delete parking, and admin approves or reject owner. However, the application is a little slow during determining user location.

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6.6 Conclusion

The key focus of this chapter is on research. For the detection of errors, every single test is significant. The unpredictable situation was corrected, and the reliability of the application was ensured. This application test is intended to enable the developer to build a successful application, in addition, checking also increases application consistency in the absence of defects and problems.

CHAPTER 7: PROJECT CONCLUSION

7.1 Observation on Weaknesses and Strengths

In this portion, the strengths and weakness of this application are listed. Any application developed must have strengths and weaknesses. Application weaknesses can be improved in future improvement.

7.2 Application Strength

Using this application will automate the existing application of manually maintained records of booking, avoid wasting time by going to the parking which is already full. So, by having this application you can check if there is an available parking slot, the user can view his history of booking, and update his information from the profile. Also, it would help the owner to register his parking information easily and edit his information such as name and mobile number. This app also will avoid fake owner parking because the owner cannot be the owner of parking until the admin approves him/her.

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7.3 Application Weaknesses

The weaknesses of the Booking Parking Application are customers cannot ratings the parking, and there is no other payment method such as touch n go e-wallet, grab pay and others.

7.4 Propositions for Improvement

There are some improvements from the weakness of this application that can be used in the future. Firstly, the notification service must be implemented in the application because when a customer books parking before hours application should give notification to the customer before half hour of check-in for reminding.

secondly, the rating service must be implemented in the application to allow the customer ratings so another customer will have a clear idea about the parking.

Finally, for the payment method, the application needs to improve the payment method which can include touch n go e-wallet, grab pay, and others. In this case, it may be easier for customers to choose the payment method for payment.

7.5 Conclusion

In conclusion, this application is almost achieving goals and scope and still needs, improvement to get the tasks done. It takes extra time and effort to make the Booking Parking Application a real framework that can be used by all user levels and effectively accomplish the goal. In order to satisfy the needs of Booking Parking requirements and to explore technological advancement, Booking Parking Application will be improved from period to period.

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APPENDIX A

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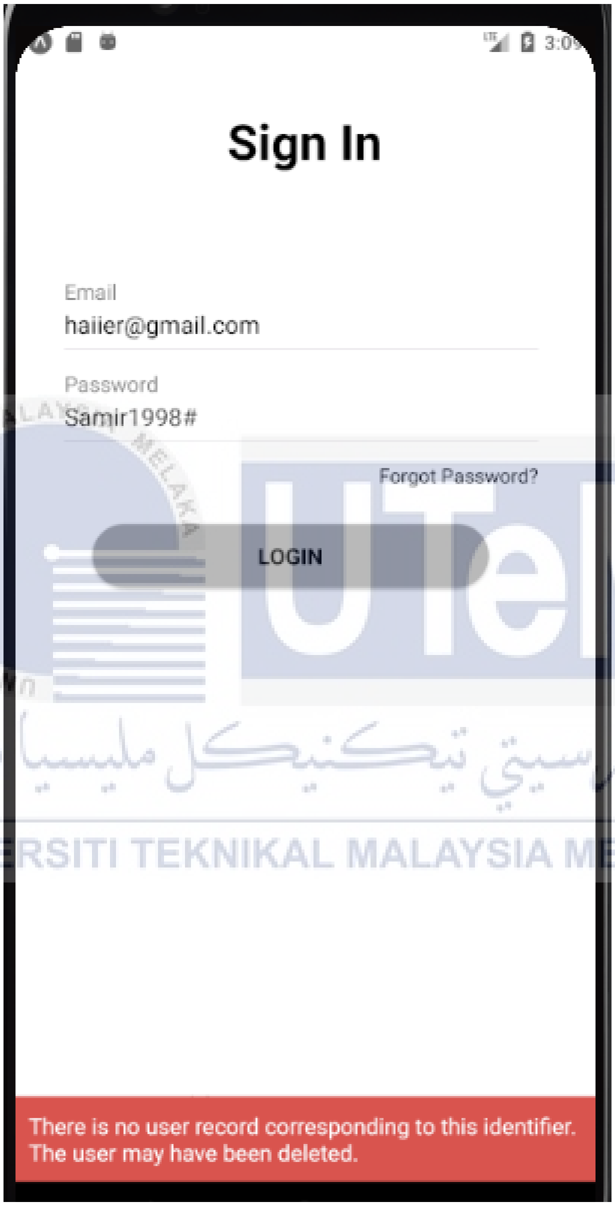

Sign In

Email
haiier@gmail.com

Password
Samir1998#

There is no user record corresponding to this identifier. The user may have been deleted.

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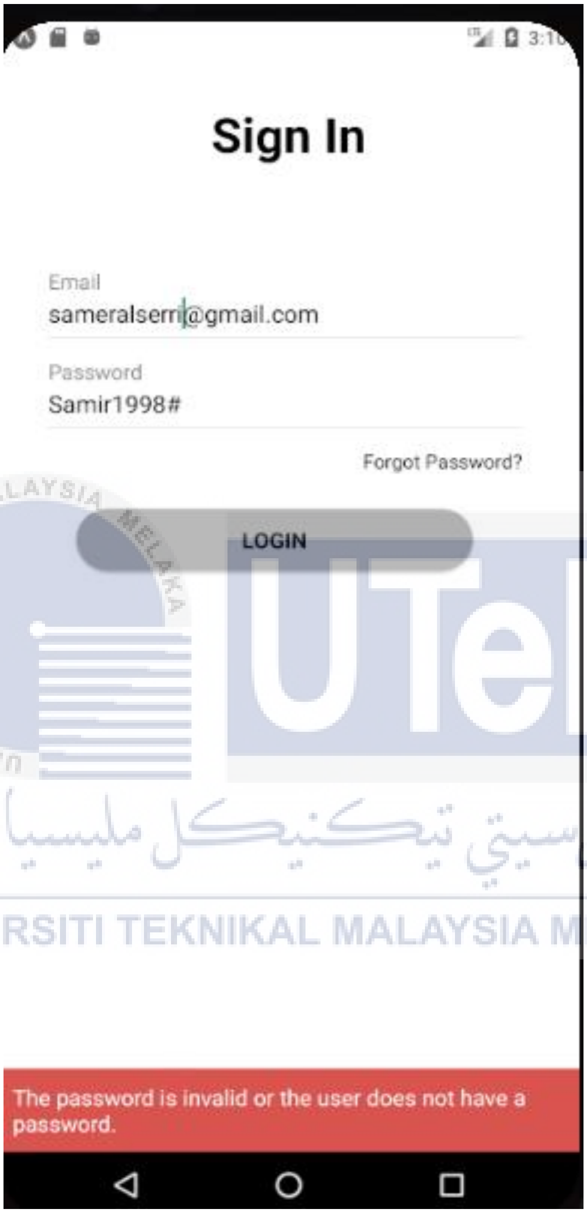
Figure 0.1: Result of BP-002 Test Case



Sign In

Email
sameralserri@gmail.com

Password
Samir1998#

The password is invalid or the user does not have a password.

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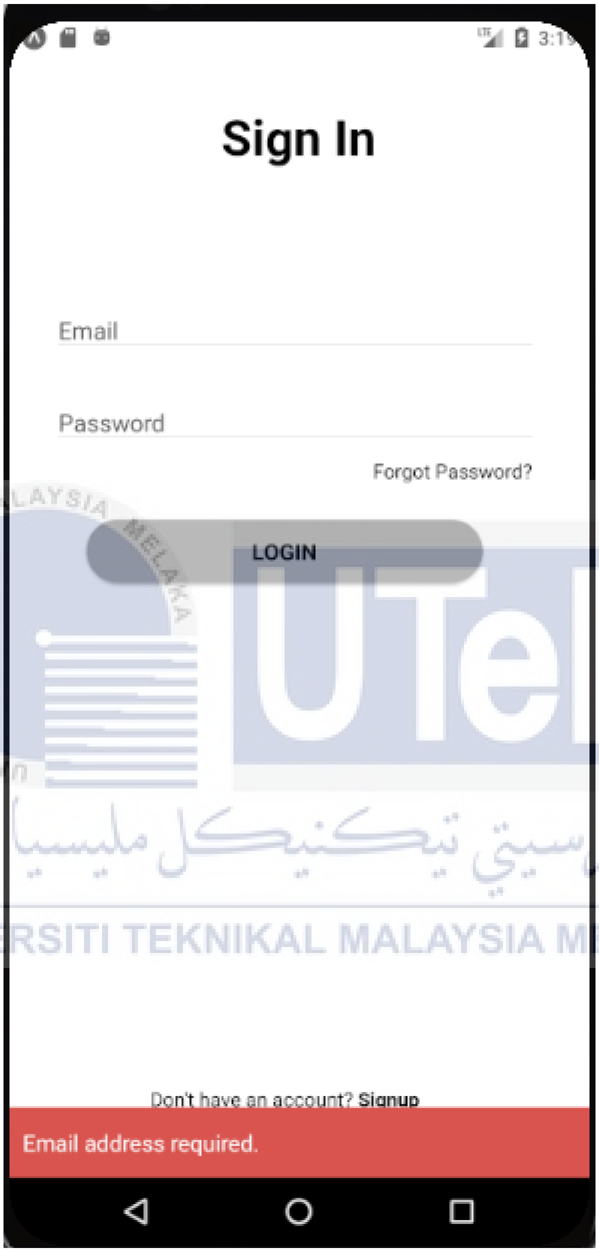
Figure 0.2: Result of BP-003 Test Case



Email address required.

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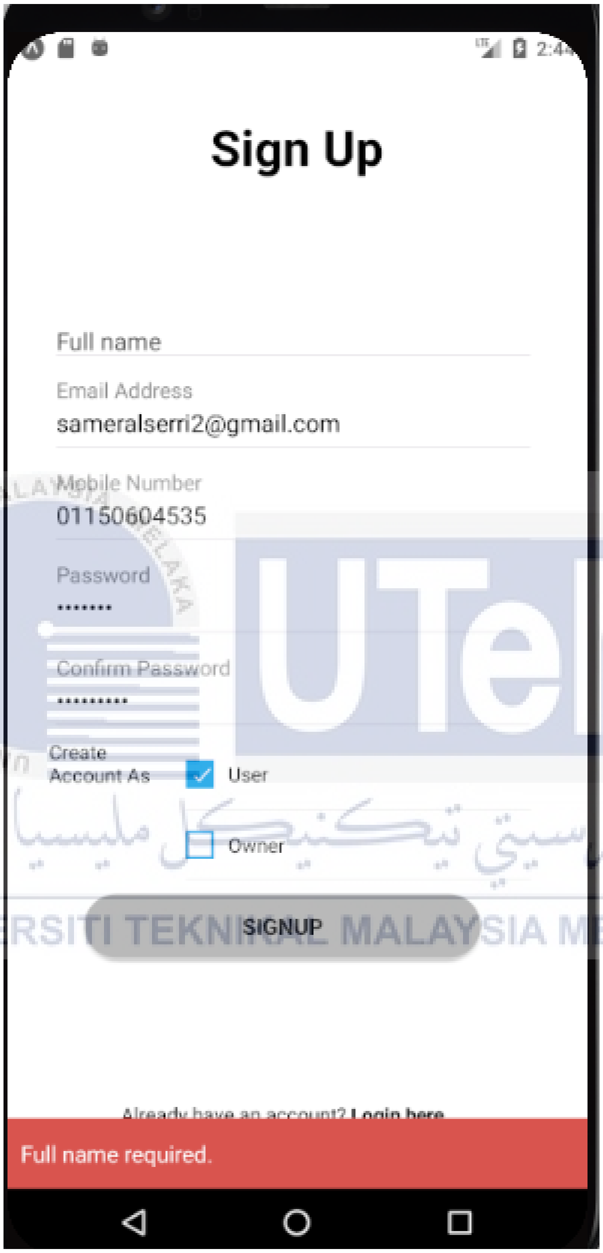
Figure 0.3: Result of BP-004 Test Case



Sign Up

Full name

Email Address
sameralserri2@gmail.com

Mobile Number
01150604535

Password
•••••••

Confirm Password
•••••••••

Create Account As ☑ User

□ Owner

Full name required.

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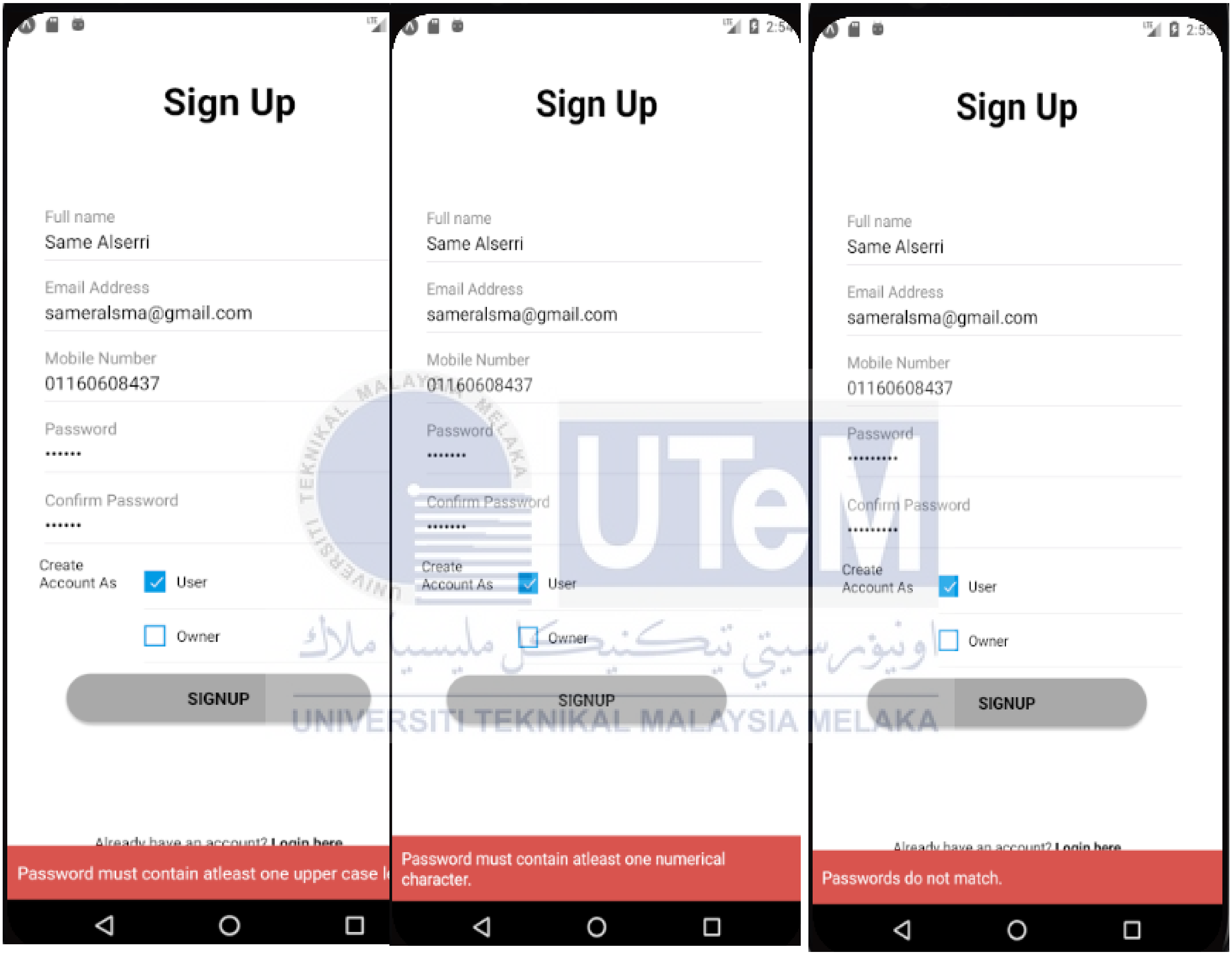
Figure 0.4: Result of BP-009 Test Case



Sign Up

Full name
Same Alserri

Email Address
sameralsma@gmail.com

Mobile Number
01160608437

Password
••••••

Confirm Password
••••••

Create Account As ☑ User

□ Owner

Already have an account? **Login here**

Password must contain atleast one upper case l

Sign Up

Full name
Same Alserri

Email Address
sameralsma@gmail.com

Mobile Number
01160608437

Password
•••••••

Confirm Password
•••••••

Create Account As ☑ User

□ Owner

Password must contain atleast one numerical character.

Sign Up

Full name
Same Alserri

Email Address
sameralsma@gmail.com

Mobile Number
01160608437

Password
•••••••••

Confirm Password
•••••••••

Create Account As ☑ User

□ Owner

Already have an account? **Login here**

Passwords do not match.

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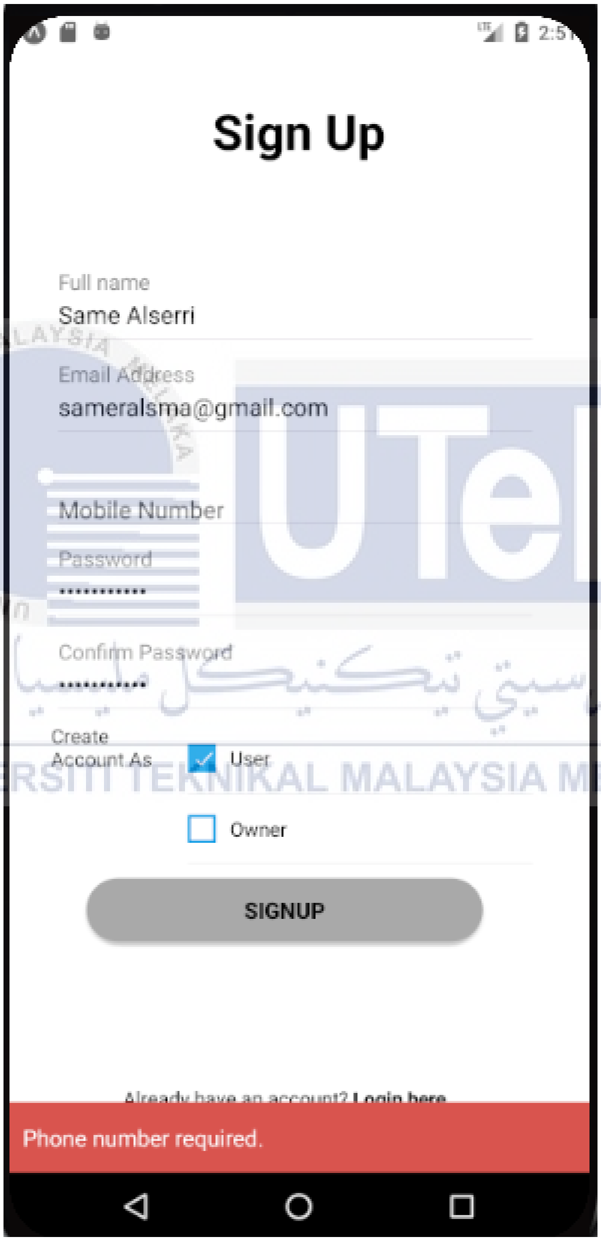
Figure 0.5: Result of BP-010 Test Case



2:5

Sign Up

Full name
Same Alserri

Email Address
sameralsma@gmail.com

Mobile Number

Password
••••••••••••

Confirm Password
••••••••••••

Create Account As ☑ User

□ Owner

Already have an account? Login here

Phone number required.

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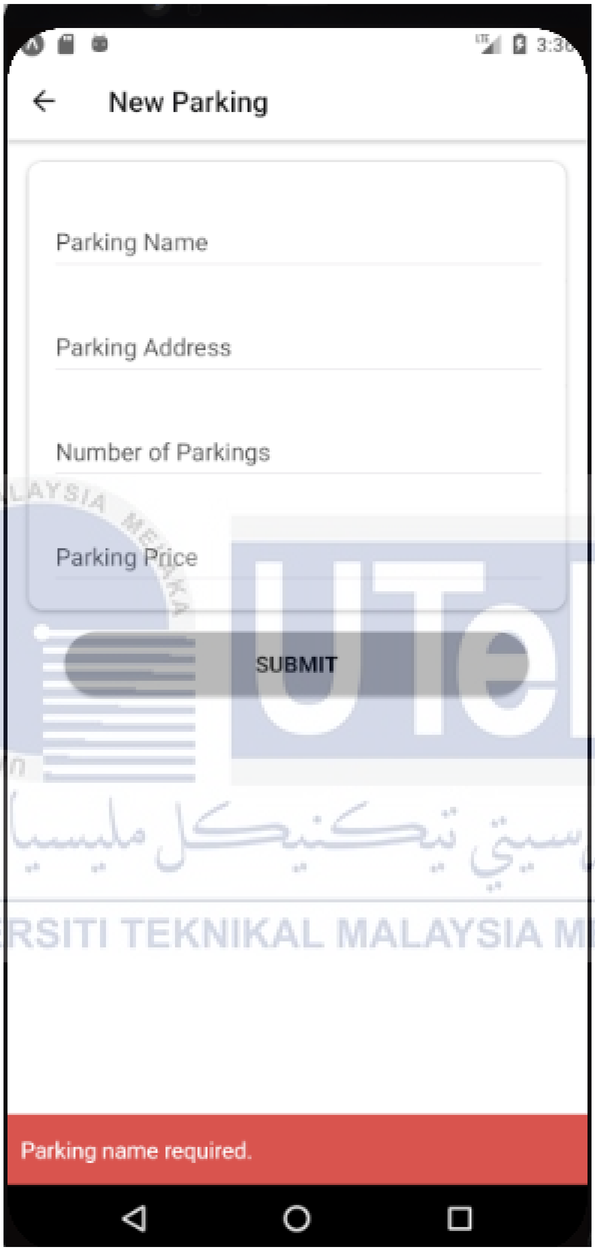
Figure 0.6: Result of BP-011 Test Case



Parking name required.

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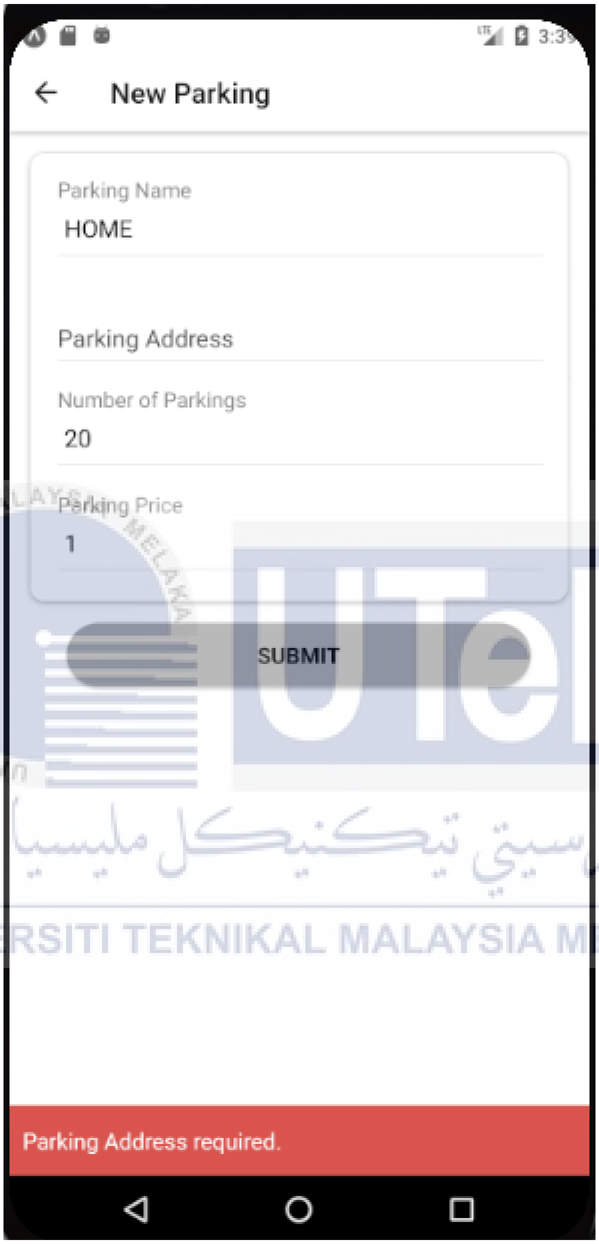
Figure 0.7: Result of BP-016 Test Case



Parking Name
HOME

Parking Address

Number of Parkings
20

Parking Price
1

Parking Address required.

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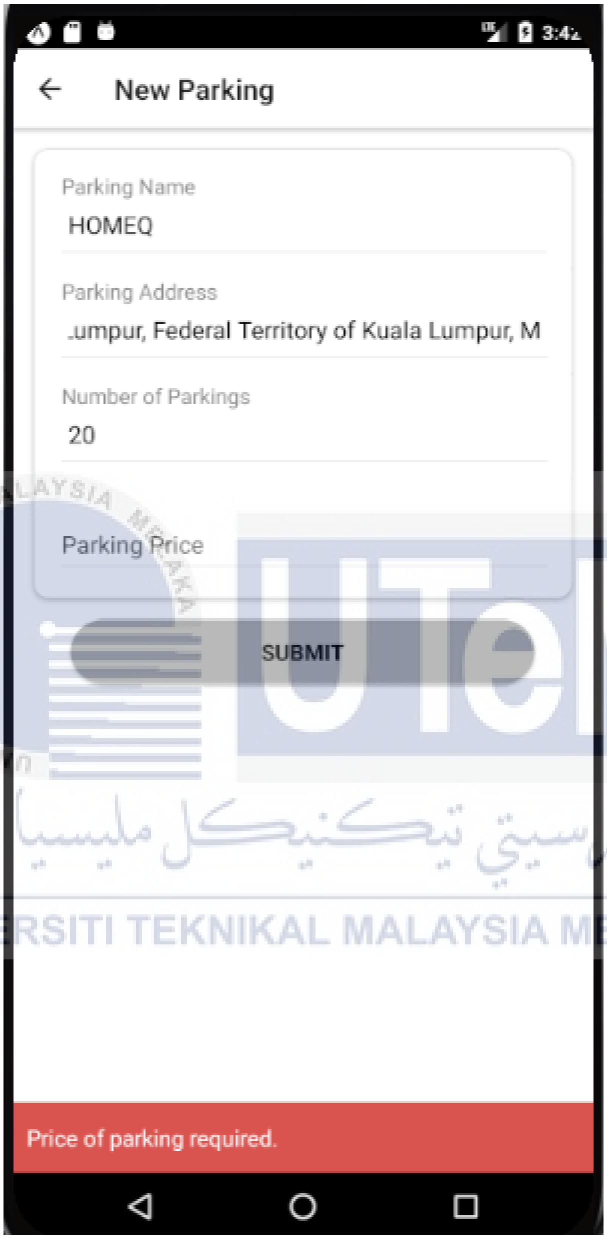
Figure 0.8: Result of BP-017 Test Case



New Parking

Parking Name
HOMEQ

Parking Address
.umpur, Federal Territory of Kuala Lumpur, M

Number of Parkings
20

Parking Price

Price of parking required.

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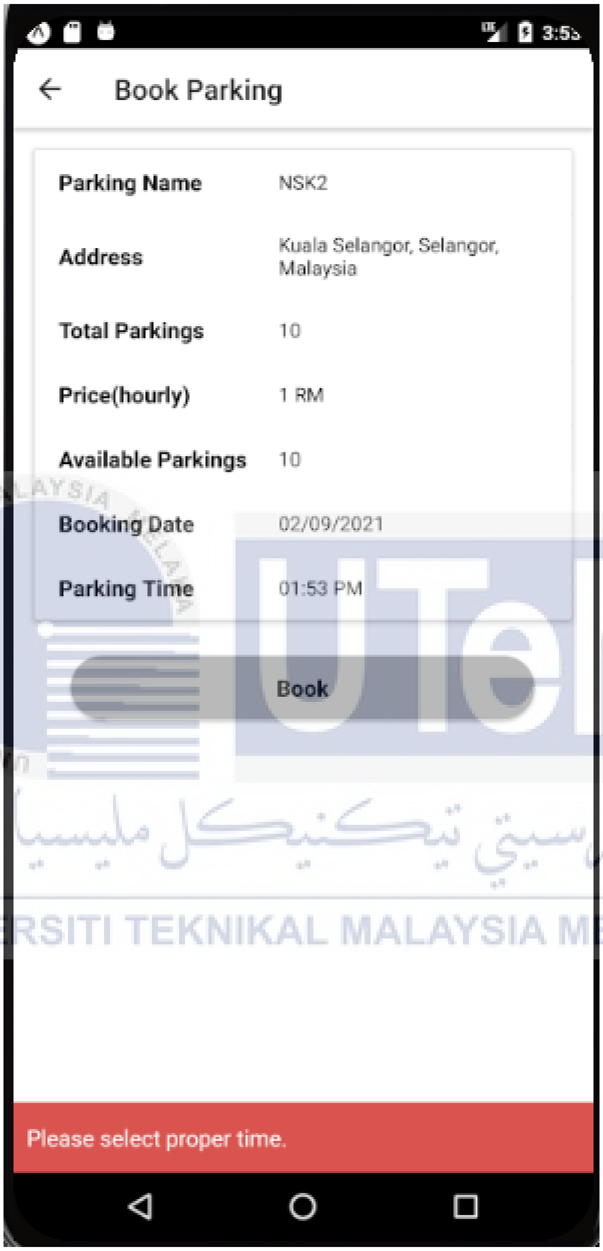
Figure 0.9: Result of BP-019 Test Case



Book Parking

Parking Name	NSK2
Address	Kuala Selangor, Selangor, Malaysia
Total Parkings	10
Price(hourly)	1 RM
Available Parkings	10
Booking Date	02/09/2021
Parking Time	01:53 PM

Please select proper time.

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Figure 0.10: Result of BP-022 Test Case