



FACULTY OF COMPUTING

BCS2243

WEB ENGINEERING

Semester II 2023/2024

TITLE : Fakulti Komputeran Car Parking Management System (FKPark)

SECTION : 03

LECTURER : Nur Shamsiah Binti Abdul Rahman

Link Presentation: <https://youtu.be/6v2PLsKhi70?si=y1Pi15xwFLGUZ8gV>

Student Detail:

Name	Student ID	Student Photo
AZMI WAN NURHALIZA	CB22004	
NUR ALYA SYAKIRAH BINTI NASARUDIN	CB22141	
PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI	CA21034	
NUR SYAZWANI BINTI RAHMAT	CA21025	

TABLE OF CONTENTS

1. IDEA.....	5
1.1 Problem Statement and Proposed Solution.....	5
1.2 Review of two existing system.....	7
2. PROJECT MANAGEMENT FRAMEWORK.....	10
2.1 Gantt Chart / Agile.....	10
3. PROJECT REQUIREMENT.....	11
3.1 Non-Functional Requirements.....	11
4. PROPOSED DESIGN.....	12
4.1 Use Case Diagram.....	12
4.2 Use Case Scenario.....	13
4.3 Access Model.....	24
5. DATA DESIGN.....	25
5.1 ERD.....	25
5.2 Data Dictionary.....	27
5.3 Sample Data.....	31
6. PROPOSED DESIGN: PRESENTATION MODEL.....	35
6.1 MODULE 1 : Login, Manage User, and Vehicle Registration - ALYA SYAKIRAH.....	35
6.2 MODULE 2 : Manage Parking Area - WAN NURHALIZA.....	42
6.3 MODULE 3 : Manage Parking Booking - PUTRI ROSYAMIMI.....	46
6.4 MODULE 4 : Manage Traffic Summon - NUR SYAZWANI.....	50
7. PROJECT DEVELOPMENT.....	54
7.1 Testing plan.....	54
7.2 Deployment Plan.....	55
8. GUI INTERFACE.....	56
8.1 Module 1: Login, Manage User and Vehicle registration (NUR ALYA SYAKIRAH BINTI NASARUDIN CB22141).....	56
8.2 Module 2: Manage Parking Area (AZMI WAN NURHALIZA CB22004).....	65
8.3 Module 3: Manage Parking Booking (PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI CA21034).....	70
8.4 Module 4: Manage Traffic Summon (NUR SYAZWANI BINTI RAHMAT CA21025).....	73
9. TEAM MANAGEMENT.....	79
9.1 Report of Meeting Sessions.....	79
9.2 Task Distribution.....	81
9.3 Link.....	83

LIST OF FIGURES AND TABLES

Figure 1.2.1 shows JustPark UI interface.....	7
Figure 1.2.2 shows ParkMobile UI interface.....	9
Figure 2.1.1 Gantt Chart Project Management Framework.....	11
Figure 4.1.1 : Use Case Diagram FKPark.....	13
Table 4.2.1 Use Case Description Module 1.....	16
Table 4.2.2 Use Case Description Module 2.....	18
Table 4.2.3 Use Case Description Module 3	22
Table 4.2.4 Use Case Description Module 4.....	24
Figure 4.3.1 Access Model FKPark System.....	25
Figure 5.1.1 : ERD.....	26
Table 5.2.1 Data Dictionary Student Table.....	28
Table 5.2.2 Data Dictionary Unit Keselamatan Staff Table.....	28
Table 5.2.3 Data Dictionary Administrator Table.....	29
Table 5.2.4 Data Dictionary Vehicle Table.....	29
Table 5.2.5 Data Dictionary Vehicle Registration Table.....	30
Table 5.2.6 Data Dictionary Parking Table.....	30
Table 5.2.7 Data Dictionary Booking Table.....	31
Table 5.2.8 Data Dictionary Traffic Summon Table.....	31
Table 5.3.1 Sample Data Student.....	32
Table 5.3.2 Sample Data Unit Keselamatan Staff.....	32
Table 5.3.3 Sample Data Administrator.....	33
Table 5.3.4 Sample Data Vehicle.....	33
Table 5.3.5 Sample Data Vehicle Registration.....	34
Table 5.3.6 Sample Data Parking.....	34
Table 5.3.7 Sample Data Booking.....	35
Table 5.3.8 Sample Data Traffic Summon.....	35
Figure 6.1.1 Administrator, Student and Unit Keselamatan Login.....	36
Figure 6.1.2 Student Registration.....	37
Figure 6.1.3 Vehicle Registration.....	38
Figure 6.1.4 Student Dashboard.....	39
Figure 6.1.5 User Profile (Student).....	40
Figure 6.1.6 User Profile (Administrator & Unit Keselamatan Staff).....	41
Figure 6.1.7 Vehicle Information.....	42
Figure 6.2.1 : Parking Spaces Main Menu.....	43
Figure 6.2.2 : List Parking Area - Administrator.....	43
Figure 6.2.3 : Add New Parking Area - Administrator.....	44
Figure 6.2.4 : Update Parking Area - Administrator.....	44
Figure 6.2.5 : Delete Parking Area - Administrator.....	45
Figure 6.2.6 : Manage Parking Area - Administrator.....	45
Figure 6.2.7 : Administrator Dashboard - Administrator.....	46
Figure 6.2.8 : View Parking Area - Administrator, Student, Unit Keselamatan Staff.....	46
Figure 6.3.1 : Interface of student parking booking.....	47

Figure 6.3.2 : Interface of booking confirmation.....	47
Figure 6.3.3 : Interface of booking clashed.....	48
Figure 6.3.4 : Interface of booking confirmed and QR code for reference.....	48
Figure 6.3.5 : Interface of parking reference.....	49
Figure 6.3.6 : Interface of view booking.....	49
Figure 6.3.7 : Administrator Dashboard - Administrator.....	50
Figure 6.4.1 : Interface of Traffic Summon.....	51
Figure 6.4.2 : Interface of Add New Traffic Summon.....	51
Figure 6.4.3 : Interface of Generated QR.....	52
Figure 6.4.4 : Interface of Update Traffic Summon.....	52
Figure 6.4.5 : Interface of Edit Traffic Summon.....	53
Figure 6.4.6 : Interface of Traffic Violation Record.....	53
Figure 6.4.7 : Interface of Unit Keselamatan Dashboard.....	54
Figure 9.1.1 Meeting 1 - WhatsApp.....	57
Figure 9.1.2 Meeting 2 - WhatsApp.....	57
Figure 9.1.3 Meeting 3 - Google Meet.....	58
Table 9.2.1 Task Distribution.....	60

1. IDEA

1.1 Problem Statement and Proposed Solution

Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA), in Pekan, has a restricted amount of parking spaces, which presents a number of management issues for the Faculty of Computing (FK). There are about 200 parking spots available at the faculty for employees and students. There are 1500 students (both undergraduate and graduate) and 100 staff members, making it difficult to manage and assign these parking spots.

When it comes to overseeing its parking facilities, Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA)'s Faculty of Computing (FK) has a number of serious problems. First and foremost, there is a serious problem with the small quantity of parking spots. It will be difficult to meet the parking needs of 1500 students and 100 staff members with only 200 parking spaces available. Due to the fierce rivalry for the few available spots, the parking situation worsens and users become irritated.

Another big problem is parking without permission. Parking in staff-only spots is a common occurrence among students, which can cause arguments and discomfort. In addition to interfering with the planned distribution of spaces, this misuse of allocated parking locations makes it difficult for staff members to find parking in their allotted areas, which poses a daily operational difficulty. This issue emphasises the necessity of more stringent enforcement and improved parking allotment management.

At the moment, the UMP security staff uses manual patrols to enforce parking regulations. Security guards monitor the parking lots and issue citations for infractions, such as students parking in spaces reserved for staff. Nevertheless, this manual method is laborious and prone to human mistake, which results in uneven enforcement and sporadic disregard for infractions. This method's labour-intensiveness also restricts patrol frequency and coverage, which lowers its overall efficacy.

Proposed Solution

In order to overcome these obstacles, we suggest creating FKPark, a web-based vehicle parking management system intended to maximise the utilisation of available parking spots, efficiently implement rules, and improve the parking experience for employees and students. Through the use of sensors placed in each parking space to identify occupancy, FKPark will include real-time parking space monitoring. Users will be able to monitor current parking availability thanks to the user-friendly interface that displays this real-time data.

Furthermore, FKPark is going to introduce a reservation system that will let employees reserve parking spots ahead of time and let students check and reserve spots as they become available. In order to safeguard the integrity of designated parking zones, user identification will be implemented to provide appropriate access control, with distinct access levels for staff and students. Additionally, the technology will automatically identify parking infractions, allowing the UMP security division to electronically issue summonses—a move that will minimise human error and lessen need on manual patrols.

FKPark will also offer thorough reports on parking space usage and infraction trends, which will support policy creation and decision-making. FKPark aims to address the current parking management issues by using technology to monitor and manage parking spaces in a methodical manner. This will ensure efficient space utilisation, reduce unauthorised parking, and streamline enforcement, all of which will improve the overall parking experience for the Faculty of Computing at UMPSA.

1.2 Review of two existing system

i. JustPark

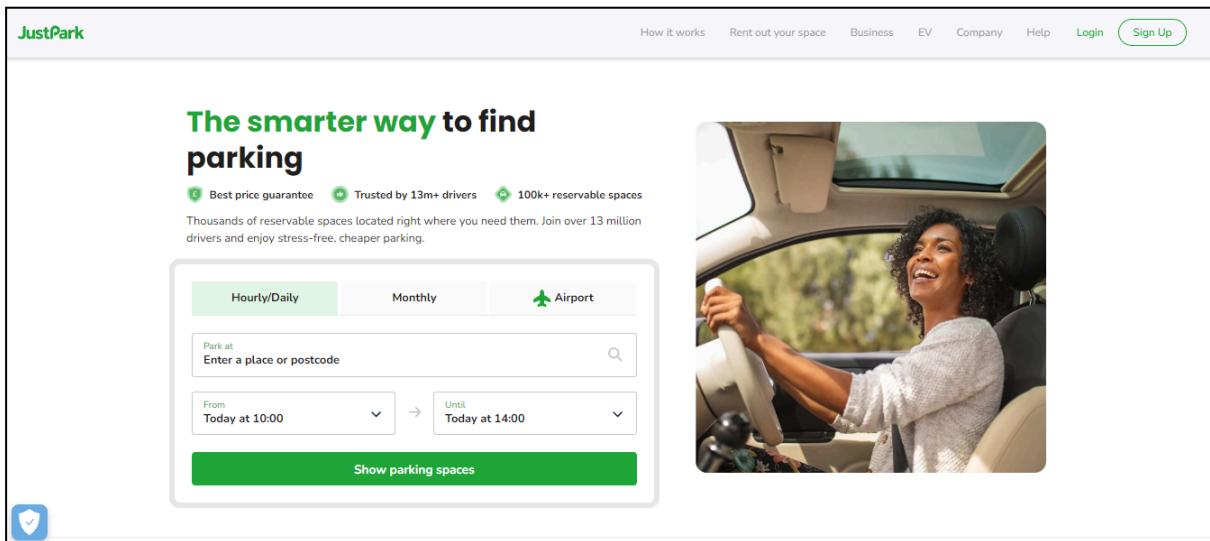


Figure 1.2.1 shows JustPark UI interface

JustPark is a leading online parking business based in the United Kingdom that links cars with a huge parking network. The platform was introduced in 2006 with the goal of resolving the enduring issue of locating convenient and reasonably priced parking. It provides a wide variety of parking choices, such as driveways, private parking, business parking lots, and even spots in residential neighbourhoods. Because the service can accommodate both short- and long-term parking demands, it is a flexible option for a range of situations, including regular commutes, weekend getaways, and lengthy vacations.

The convenience of the user is a priority in JustPark's design. By enabling users to look for and reserve parking spots ahead of time, the site greatly lessens the anxiety and uncertainty that are frequently connected to parking. The website and mobile app for JustPark offer a smooth and user-friendly experience for making and managing parking reservations. JustPark's payment flexibility, which lets consumers make secure payments via the app or website, is one of its best features. The technology also provides real-time availability updates, so when a user makes a booking, they have the most up-to-date information.

In summary, JustPark is a comprehensive and innovative parking solution that leverages technology to enhance the parking experience. Its focus on convenience, community involvement, and sustainability makes it a valuable tool for both drivers and property owners.

ii. ParkMobile

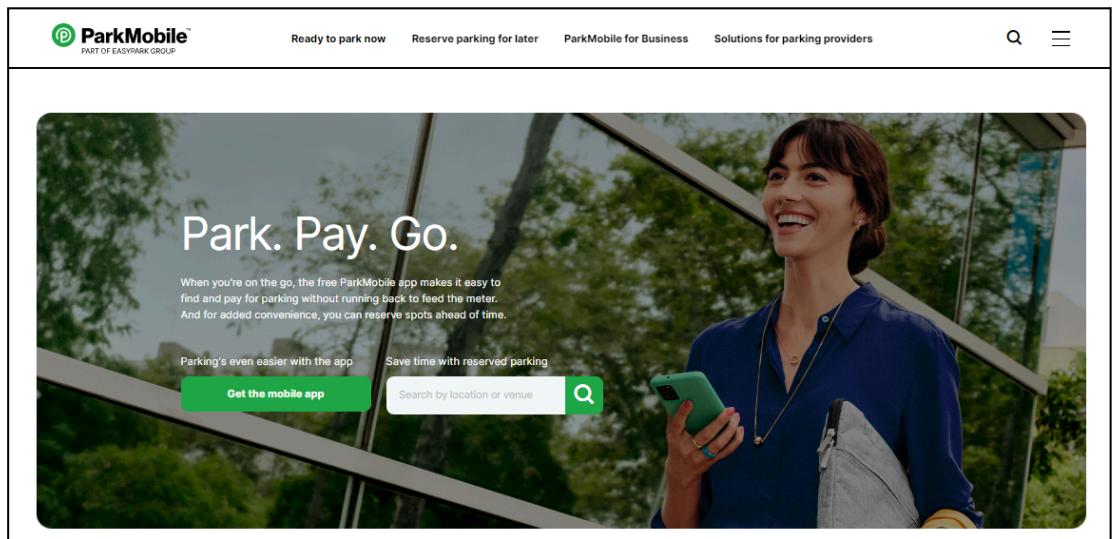


Figure 1.2.2 shows ParkMobile UI interface

ParkMobile is a prominent online parking service that offers a convenient way for drivers to find, reserve, and pay for parking spots across North America. The platform provides for a range of parking requirements, such as event parking, garage parking, and street parking. Drivers can utilise the interactive map on the user-friendly website to look for available places according to their destination or current pricing. Users may quickly identify and reserve acceptable parking spaces using criteria for proximity, cost, and kind of parking. For a hassle-free experience, payments are made straight through the website.

The ParkMobile website is made to be user-friendly, making it simple for drivers to find and reserve parking spots. By inputting their destination or utilising the interactive map feature, which shows real-time availability and pricing, users may search for available parking places. Additionally, the website provides filters to narrow down search results according to factors like price, parking type, and proximity. Users may book and pay for a spot straight through the website once one is identified, making parking hassle-free when they arrive.

ParkMobile's optimisation of parking space utilisation, reduction of traffic congestion, and mitigation of car emissions during parking searches have a good influence on community and environmental goals. This economical use of resources enhances the quality of life in cities and helps urban sustainability projects.

Furthermore, ParkMobile collaborates with parking suppliers and local governments to improve parking management, resulting in better-kept facilities and more ordered urban infrastructure. ParkMobile improves the parking experience and benefits the community and environment at large with its creative approach.

2. PROJECT MANAGEMENT FRAMEWORK

2.1 Gantt Chart / Agile

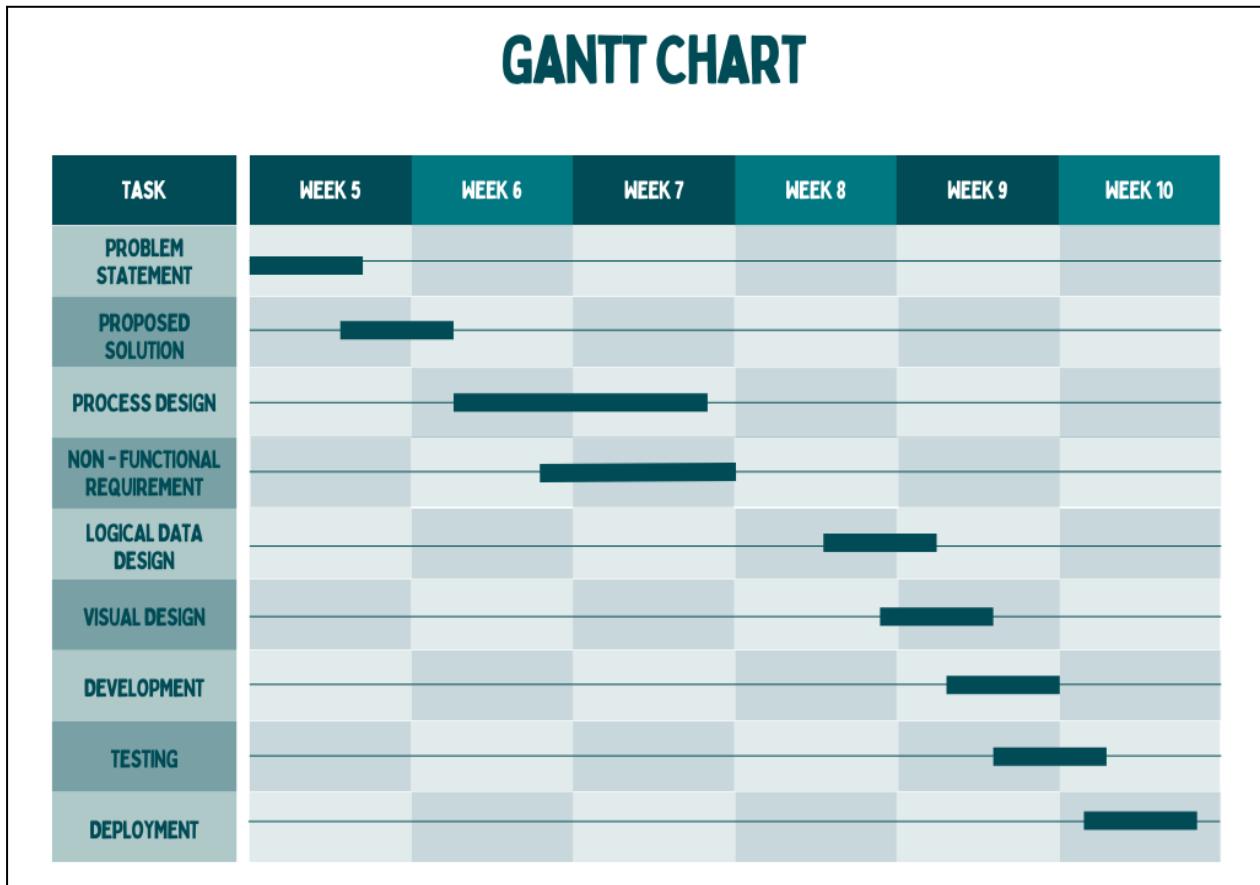


Figure 2.1.1 Gantt Chart Project Management Framework

3. PROJECT REQUIREMENT

3.1 Non-Functional Requirements

NON-FUNCTIONAL REQUIREMENT	DESCRIPTION
Security	<ul style="list-style-type: none">The system shall only allow authorized personnel (Administrator and Unit Keselamatan Staff) to access sensitive features such as issuing parking spaces and parking violations.Personal information of faculty and students stored within the system shall be encrypted.
Performance	<ul style="list-style-type: none">The system should be capable of supporting a large amount of users at once while maintaining a fast response time.The system should provide real-time updates on all modules, ensuring that information is displayed within 5 seconds of any changes.
Availability	<ul style="list-style-type: none">The system shall be available for use by administrator, student, and Unit Keselamatan Staff personnel at all times.The system shall be monitored continuously for performance and availability,
Compatibility	<ul style="list-style-type: none">The system shall be accessible on smartphones, tablets, and computers, supporting common operating systems like Android, iOS, Windows, and macOS.The system shall be compatible with popular web browsers such as Chrome, Firefox, Safari, and Edge to display the information.
Usability	<ul style="list-style-type: none">The system shall feature an intuitive user interface with clear navigation and minimalistic design, making it easy for users to locate parking availability and manage violations.The system shall offer tooltips and contextual help features to assist users in understanding the purpose and functionality of various interface elements.

4. PROPOSED DESIGN

4.1 Use Case Diagram

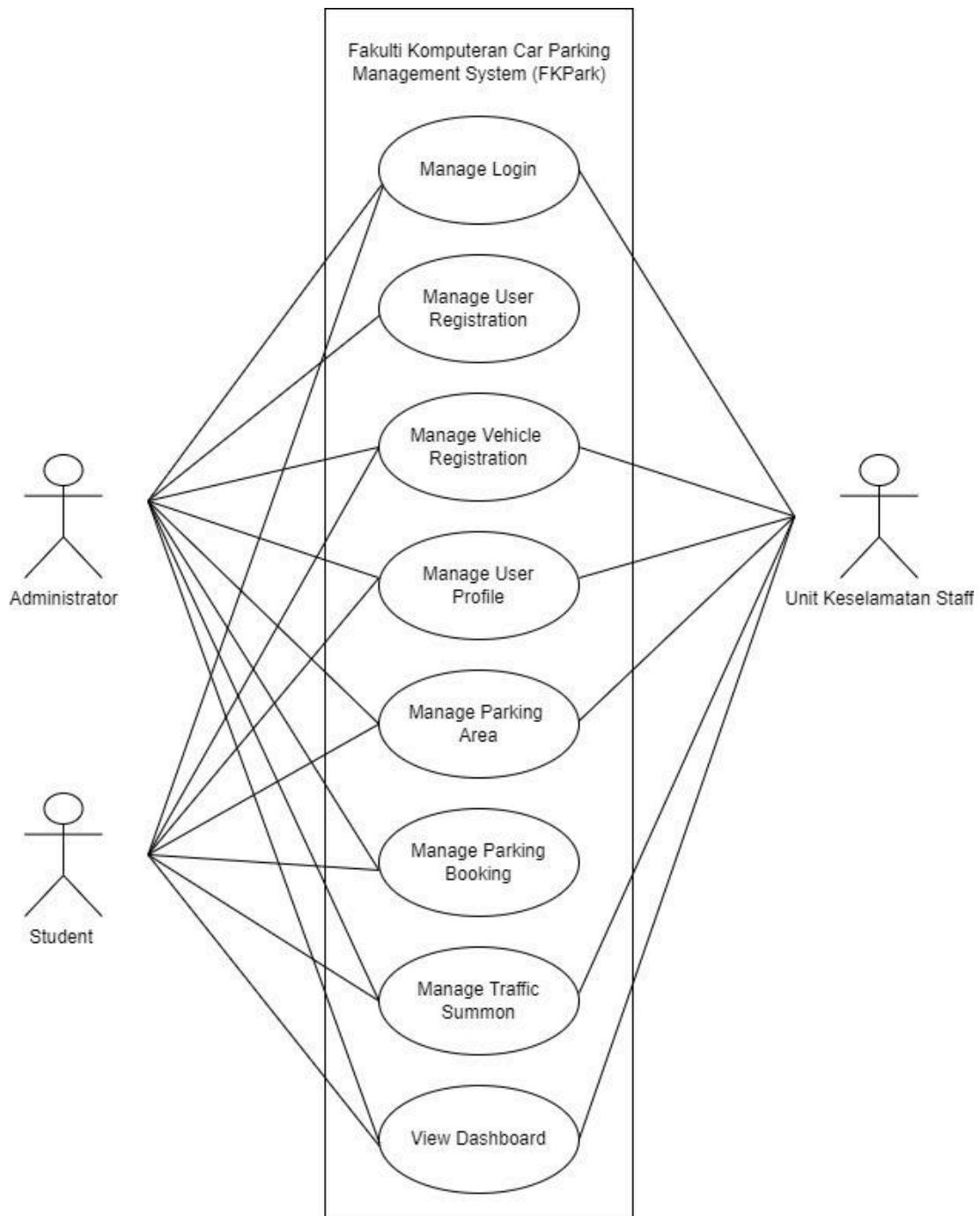


Figure 4.1.1 : Use Case Diagram FKPark

4.2 Use Case Scenario

4.2.1 MODULE 1: Login, Manage User and Vehicle Registration - ALYA SYAKIRAH

Use Case	Login, Manage User and Vehicle Registration
Brief Description	This use case involves Administrators, Student and Unit Keselamatan Staff. Administrators are responsible for registering new users (students) and managing user profiles. After registration, students must register their vehicles by uploading the vehicle grant. Unit Keselamatan staff then approves these vehicle registrations and a QR code vehicle sticker is generated, displaying vehicle and owner information when scanned
Actor	Administrator, Student and Unit Keselamatan Staff
Pre-Conditions	Administrator, Unit Keselamatan Staff and Students must be logged into the system.
Basic Flow	<p>Administrator</p> <ol style="list-style-type: none"> 1. The use case begins when the administrator selects the "User Registration" option on the dashboard. 2. The administrator enters the required information for a new user (student) and submits the form. 3. The system saves the user details and notifies the administrator of successful registration. <p>Student</p> <ol style="list-style-type: none"> 1. The use case begins when a new student accesses the system and requests account creation. 2. The student provides necessary personal information to the administrator for account registration. 3. The administrator registers the student in the system.

	<ol style="list-style-type: none"> 4. The student receives login credentials and logs into the system. 5. The student selects the "Vehicle Registration" option on their dashboard. 6. The student uploads the vehicle grant and submits the vehicle registration form. 7. The system notifies the Unit Keselamatan staff for approval. <p>Unit Keselamatan Staff</p> <ol style="list-style-type: none"> 1. The use case begins when Unit Keselamatan staff selects the "Pending Vehicle Registrations" option on the dashboard. 2. The staff reviews the uploaded vehicle grant and either approves or rejects the registration. 3. If approved, the system generates a QR code vehicle sticker and notifies the student. 4. If rejected, the system notifies the student of the rejection and the reason.
Alternative Flow	<p>A1 - Add New User</p> <ol style="list-style-type: none"> 1. The administrator clicks "Add New User." 2. The system displays a form for entering new user details. 3. The administrator fills out the form and clicks "Submit." 4. The system validates the input and confirms successful registration. <p>A2 - Approve Vehicle Registration</p> <ol style="list-style-type: none"> 1. The staff selects a pending vehicle registration. 2. The staff reviews the vehicle grant and clicks "Approve." 3. The system generates the QR code vehicle sticker and updates

	the vehicle status to "Approved."
Exception Flow	<p>E1 - Invalid User Details</p> <ol style="list-style-type: none"> 1. The administrator clicks "Submit" after entering user details. 2. The system displays an error message if required fields are missing or invalid. 3. The administrator corrects the details and resubmits the form. <p>E2 - Rejection of Vehicle Registration</p> <ol style="list-style-type: none"> 1. The staff selects "Reject" for a pending vehicle registration. 2. The system prompts for a rejection reason. 3. The staff enters the reason and confirms the rejection. 4. The system notifies the student of the rejection and reason.
Post Condition	User and vehicle registration details are successfully recorded and updated in the system

Table 4.2.1 Use Case Description Module I

4.2.2 MODULE 2: Manage Parking Area - WAN NURHALIZA

Use Case	Manage Parking Area
Brief Description	This use case shows how the administrator (FK staff) manages parking lots at the Faculty of Computing (FK), Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA). The administrator can create, update, delete, and view parking spaces. Students and Unit Keselamatan Staff have access to view daily parking area availability information.
Actor	<ol style="list-style-type: none"> 1. Administrator (FK staff) 2. Student 3. Unit Keselamatan Staff
Pre-Conditions	User must be logged in to the system.
Basic Flow	<p>Administrator</p> <ol style="list-style-type: none"> 1. The administrator accesses the "Manage Parking Space" section from the dashboard. 2. They select the option to create a new parking space. 3. They enter the details of the new parking space (e.g., Space Number, Zone, Type). 4. The system generates a unique QR code for the new parking space. [E1 - Error Generating QR Code] 5. They can view, update, or delete existing parking spaces as needs. [A1 - Administrator Updates Parking Space]. 6. They save the changes. 7. The system updates the parking space information and displays a confirmation message. <p>Student and Unit Keselamatan Staff</p> <ol style="list-style-type: none"> 1. Students and Unit Keselamatan Staff access the "View

	<p>Parking Area" section from the menu in Parking Spaces part on the dashboard.</p> <ol style="list-style-type: none"> 2. The system displays the availability status of all parking spaces for the current day. 3. They can view detailed information for each parking area.
Alternative Flow	<p>A1 - Administrator Updates Parking Space</p> <ol style="list-style-type: none"> 1. After accessing the "Manage Parking Space" section from the dashboard, the administrator chooses to update an existing parking space. 2. They select the parking space they wish to update. 3. The administrator modifies the details of the parking space (e.g., Spaces area, Zone). 4. They save the changes. 5. The system updates the parking space information and displays a confirmation message.
Exception Flow	<p>E1 - Error Generating QR Code</p> <ol style="list-style-type: none"> 1. While generating the QR code, the system encounters an error. 2. An error message is displayed to the administrator, indicating the failure to complete the operation. 3. The use case ends.
Post Condition	User can use the FKPark System.

Table 4.2.2 Use Case Description Module 2

4.2.3 MODULE 3: Manage Parking Booking - PUTRI ROSYAMIMI

Use Case	Manage parking booking
Brief Description	This use case involves Administrators, Students, and Unit Keselamatan Staff. Students can book parking spaces via the application, and the system checks for availability and potential clashes. Once booked, the system generates a QR code for reference. Administrators and Unit Keselamatan Staff manage parking space availability and monitor the usage.
Actor	Student
Pre-Conditions	<ul style="list-style-type: none"> ● Students must be logged into the system. ● Students must have registered their vehicles and received QR code vehicle stickers.

Basic Flow	<p>Student</p> <p>Booking Parking:</p> <ol style="list-style-type: none"> 1. The use case begins when the student logs into the system. 2. The student navigates to the "Booking Parking" section. 3. The application displays the parking booking page. 4. The student selects the filter form and fills in the details to see if it's available or searched by parking number. 5. The system displays all parking number information based on the filter they choose. The student chooses booking details such as date and time to see availability. 6. The student can click on the "Book" button on a parking number.. 7. A pop up notification to confirm booking. 8. The student clicks confirms their booking information. 9. The system checks for booking clashes (overlapping time slots for the same parking space). 10. If no clashes, the system processes the booking and generates a QR code. 11. The student receives a confirmation and the QR code for reference and fills the parking reference such as date, duration, parking number, plate number and student ID. 12. Then, students can click "Submit" then navigate to the booking page. 13. The student can view, update and cancel a booking if they want <p>Parking the Vehicle:</p> <ol style="list-style-type: none"> 1. The use case begins when the student arrives at the parking lot. 2. The student scans the QR code generated during the booking process. 3. The system redirects the student to the parking page. 4. The student inputs the expected parking duration. 5. The application displays relevant information such as plate
-------------------	---

	<p>number and start time.</p> <ol style="list-style-type: none"> 6. The student confirms the information and proceeds to park. 7. Upon leaving, the student scans the QR code again to record vacancy.
Alternative Flow	<p>A1 - Add New Booking</p> <ol style="list-style-type: none"> 1. The student selects an available parking space. 2. The system displays a booking form for entering details. 3. The student fills out the form and clicks "Submit." 4. The system validates the input and confirms successful booking if no clashes. <p>A2 - Modify Booking</p> <ol style="list-style-type: none"> 1. The student selects an existing booking to modify. 2. The system displays the booking details for editing. 3. The student updates the details and clicks "Submit." 4. The system checks for clashes and confirms the changes if no conflicts are found.
Exception Flow	<p>E1 - Invalid Booking Details</p> <ol style="list-style-type: none"> 1. The student clicks "Submit" after entering booking details. 2. The system displays an error message if required fields are missing or invalid. 3. The student corrects the details and resubmits the form. <p>E2 - Booking Clash Detected</p> <ol style="list-style-type: none"> 1. The system identifies a clash with an existing booking. 2. The system notifies the student of the clash.

	<p>3. The student is prompted to select a different time slot or parking space.</p>
Post Condition	<ul style="list-style-type: none"> ● Booking details are successfully recorded, and a QR code is generated. ● The system updates the parking space availability accordingly.

Table 4.2.3 Use Case Description Module 3

4.2.4 MODULE 4: Manage Traffic Summon - NUR SYAZWANI

Use Case	Manage Traffic Summon
Brief Description	This use case delineates the process through which Unit Keselamatan Staff members handle traffic summon issuance within the Faculty of Computing (FK), Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA). Staff members identify traffic violations, record them via the FKPark application, and generate unique QR codes to notify vehicle owners of the summons. Additionally, the system incorporates a demerit point system for traffic violations.
Actor	Unit Keselamatan Staff
Pre-Conditions	Users must be logged in to the system.
Basic Flow	<p>Unit Keselamatan Staff</p> <ol style="list-style-type: none"> 1. Staff members patrol FK areas to identify traffic violations. 2. Upon identifying a violation, they open the FKPark application and select the "Traffic Summon" option. 3. In the traffic summon page, the staff need to choose the "add new traffic violation" option to register a new summon. 4. The application prompts staff to choose the type of violation (parking violation, campus traffic regulation violation, accident). 5. Staff members input detailed information such as vehicle registration number, violation location, and additional notes. 6. Upon completing the information entry, staff members submit the record. 7. The application validates the input and generates a unique QR code for the summon, which is then notified to the vehicle owner.

	<p>Demerit Point System for Traffic Violations</p> <ol style="list-style-type: none"> 1. The system receives information about the traffic violation and its type. 2. Demerit points corresponding to the violation type are determined (10 for parking violation, 15 for non-compliance with campus traffic regulations, 20 for causing an accident). 3. The system updates the user's demerit point total. 4. The application checks the total demerit points against enforcement thresholds. 5. If the points exceed a threshold, the application enforces the corresponding penalty (less than 20 points; warning, less than 50 points; revocation of in-campus vehicle permission for 1 semester, less than 80 points; revocation of in-campus vehicle permission for 2 semesters, more than 50 points; revocation of in-campus vehicle permission for the entire study duration).
Exception Flow	<p>E1 - Error Generating QR Code</p> <ol style="list-style-type: none"> 1. During QR code generation, if the system encounters an error, it notifies the staff member. 2. An error message is displayed, indicating the failure to complete the operation. 3. The use case concludes.
Post Condition	The FKPark application remains accessible for further traffic violation management.

Table 4.2.4 Use Case Description Module 4

4.3 Access Model

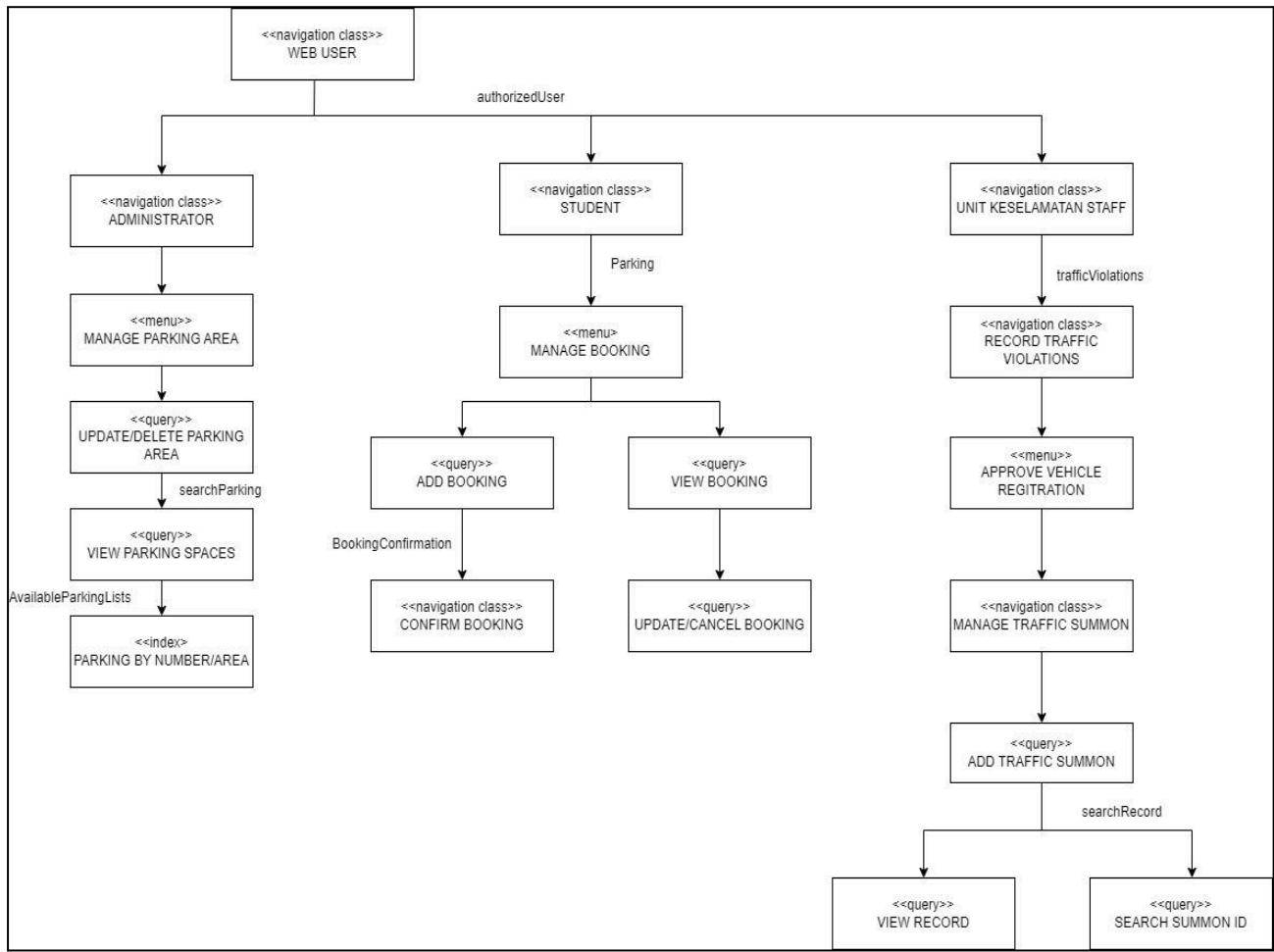


Figure 4.3.1 Access Model FKPark System

5. DATA DESIGN

5.1 ERD

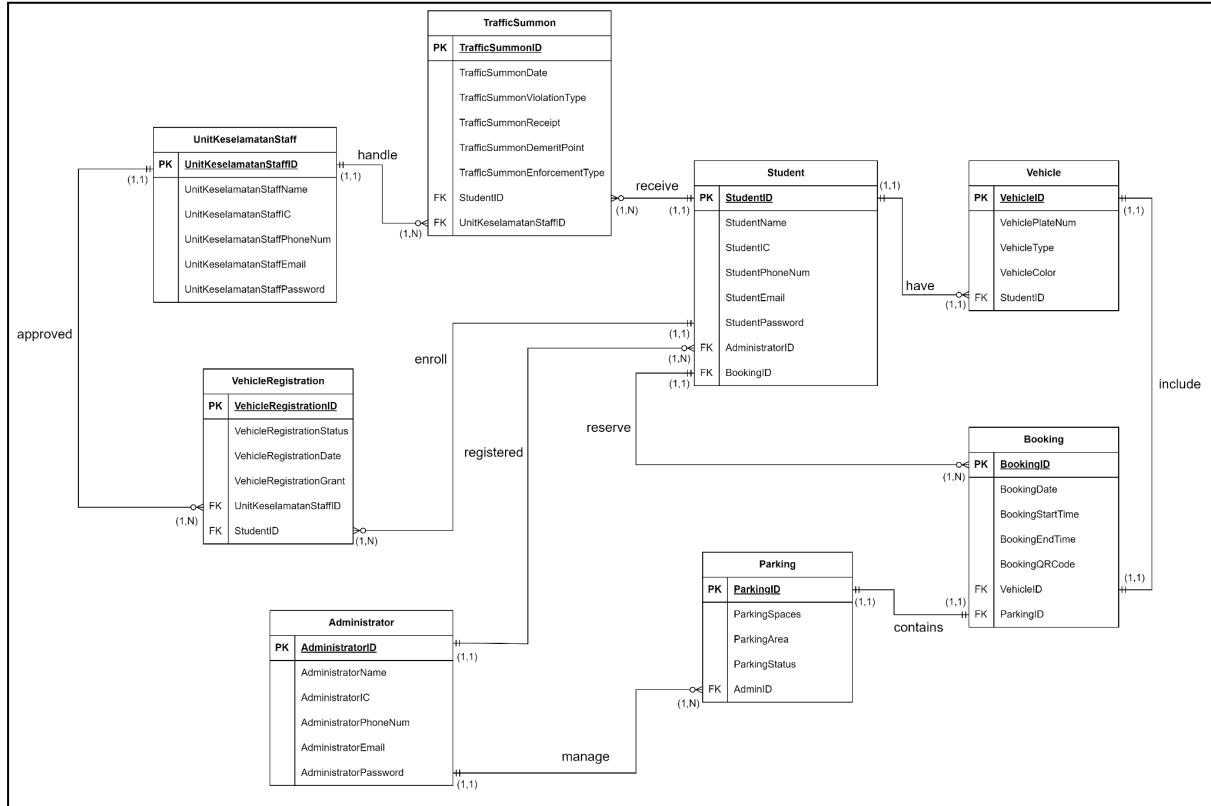


Figure 5.1.1 : ERD

1NF

- **Fakulti Komputeran Car Parking Management System (FKPark)**
 (TrafficSummonID, TrafficSummonDate, TrafficSummonViolationType, TrafficSummonReceipt, TrafficSummonDemeritPoint, TrafficSummonEnforcementType, StudentID, UnitKeselamatanStaffID, UnitKeselamatanStaffName, UnitKeselamatanStaffIC, UnitKeselamatanStaffPhoneNum, UnitKeselamatanStaffEmail, UnitKeselamatanStaffPassword, VehicleRegistrationID, VehicleRegistrationStatus, VehicleRegistrationDate, VehicleRegistrationGrant, VehicleID, VehiclePlateNum, VehicleType, VehicleColor, StudentName, StudentIC, StudentPhoneNum, StudentEmail, StudentPassword, AdministratorID, BookingID, BookingDate, BookingStartTime, BookingEndTime, BookingQRCode, ParkingID, ParkingSpaces, ParkingArea, ParkingStatus, AdminID, AdministratorName, AdministratorIC, AdministratorPhoneNum, AdministratorEmail, AdministratorPassword)

2NF

- **TrafficSummon** (TrafficSummonID, TrafficSummonDate, TrafficSummonViolationType, TrafficSummonReceipt, TrafficSummonDemeritPoint, TrafficSummonEnforcementType, StudentID, UnitKeselamatanStaffID)
- **UnitKeselamatanStaff** (UnitKeselamatanStaffID, UnitKeselamatanStaffName, UnitKeselamatanStaffIC, UnitKeselamatanStaffPhoneNum, UnitKeselamatanStaffEmail, UnitKeselamatanStaffPassword)
- **VehicleRegistration** (VehicleRegistrationID, VehicleRegistrationStatus, VehicleRegistrationDate, VehicleRegistrationGrant, UnitKeselamatanStaffID, StudentID)
- **Vehicle** (VehicleID, VehiclePlateNum, VehicleType, VehicleColor, StudentID)
- **Student** (StudentID, StudentName, StudentIC, StudentPhoneNum, StudentEmail, StudentPassword, AdministratorID, BookingID)
- **Booking** (BookingID, BookingDate, BookingStartTime, BookingEndTime, BookingQRCode, VehicleID, ParkingID)
- **Parking** (ParkingID, ParkingSpaces, ParkingArea, ParkingStatus, AdminID)
- **Administrator** (AdministratorID, AdministratorName, AdministratorIC, AdministratorPhoneNum, AdministratorEmail, AdministratorPassword)

3NF

- **TrafficSummon** (TrafficSummonID, TrafficSummonDate, TrafficSummonViolationType, TrafficSummonReceipt, TrafficSummonDemeritPoint, TrafficSummonEnforcementType, StudentID, UnitKeselamatanStaffID)
- **UnitKeselamatanStaff** (UnitKeselamatanStaffID, UnitKeselamatanStaffName, UnitKeselamatanStaffIC, UnitKeselamatanStaffPhoneNum, UnitKeselamatanStaffEmail, UnitKeselamatanStaffPassword)
- **VehicleRegistration** (VehicleRegistrationID, VehicleRegistrationStatus, VehicleRegistrationDate, VehicleRegistrationGrant, UnitKeselamatanStaffID, StudentID)
- **Vehicle** (VehicleID, VehiclePlateNum, VehicleType, VehicleColor, StudentID)
- **Student** (StudentID, StudentName, StudentIC, StudentPhoneNum, StudentEmail, StudentPassword, AdministratorID)
- **Booking** (BookingID, BookingDate, BookingStartTime, BookingEndTime, BookingQRCode, VehicleID, ParkingID)
- **Parking** (ParkingID, ParkingSpaces, ParkingArea, ParkingStatus, AdminID)
- **Administrator** (AdministratorID, AdministratorName, AdministratorIC, AdministratorPhoneNum, AdministratorEmail, AdministratorPassword)

5.2 Data Dictionary

Field Name	Description	Data Type	Constraint
StudentID	Student id	VARCHAR(7)	PK, NOT NULL
StudentName	Student name	VARCHAR(30)	
StudentIC	Student identification card number	VARCHAR(14)	
StudentPhoneNum	Student phone number	NUMBER	
StudentEmail	Student email	VARCHAR(30)	
StudentPassword	Student password	VARCHAR(30)	
AdministratorID	Administrator id	NUMBER	
BookingID	Booking id	VARCHAR(10)	FK

Table 5.2.1 Data Dictionary Student Table

Field Name	Description	Data Type	Constraint
UnitKeselamatanStaffID	Unit Keselamatan Staff ID	NUMBER	PK, NOT NULL
UnitKeselamatanStaffName	Unit Keselamatan Staff Name	VARCHAR (30)	
UnitKeselamatanStaffIC	Unit Keselamatan Staff IC	VARCHAR (14)	
UnitKeselamatanStaffPhoneNum	Unit Keselamatan Staff Phone Number	NUMBER	
UnitKeselamatanStaffEmail	Unit Keselamatan Staff Email	VARCHAR (30)	
UnitKeselamatanStaffPassword	Unit Keselamatan Staff Password	VARCHAR (30)	

Table 5.2.2 Data Dictionary Unit Keselamatan Staff Table

Field Name	Description	Data Type	Constraint
AdministratorID	Administrator ID	NUMBER	PK, NOT NULL
AdministratorName	Administrator Name	VARCHAR (30)	
AdministratorIC	Administrator IC	VARCHAR (14)	
AdministratorPhone Num	Administrator Phone Number	NUMBER	
AdministratorEmail	Administrator Email	VARCHAR (30)	
AdministratorPassw ord	Administrator Password	VARCHAR (30)	

Table 5.2.3 Data Dictionary Administrator Table

Field Name	Description	Data Type	Constraint
VehicleID	Vehicle ID	VARCHAR (10)	PK, NOT NULL
VehiclePlateNum	Vehicle Plate Number	VARCHAR (10)	
VehicleType	Vehicle Type	VARCHAR (20)	
VehicleColour	Vehicle Colour	VARCHAR (15)	
StudentID	Student ID	VARCHAR (7)	FK

Table 5.2.4 Data Dictionary Vehicle Table

Field Name	Description	Data Type	Constraint
VehicleRegistrationID	Vehicle registration id	VARCHAR(10)	PK, NOT NULL
VehicleRegistrationStatus	Vehicle registration status	VARCHAR(10)	
VehicleRegistrationDate	Vehicle registration date	DATE	
VehicleRegistrationGrant	Vehicle registration grant	VARCHAR(50)	
UnitKeselamatanStaffID	Unit Keselamatan staff id	NUMBER	FK
StudentID	Student id	VARCHAR(7)	FK

Table 5.2.5 Data Dictionary Vehicle Registration Table

Field Name	Description	Data Type	Constraint
ParkingID	Parking id	VARCHAR(10)	PK, NOT NULL
ParkingSpaces	Parking spaces	VARCHAR(10)	
ParkingArea	Parking area	VARCHAR(10)	
ParkingStatus	Parking status	VARCHAR(9)	
AdministratorID	Administrator id	NUMBER	FK

Table 5.2.6 Data Dictionary Parking Table

Field Name	Description	Data Type	Constraint
BookingID	Booking ID	VARCHAR (10)	PK, NOT NULL
BookingDate	Booking Date	DATE	
BookingStartTime	Booking Start Time	TIME	
BookingEndTime	Booking End Time	TIME	
BookingQRCode	Booking QR Code	LONGBLOB	
VehicleID	Vehicle ID	VARCHAR (10)	FK
ParkingID	Parking ID	VARCHAR (10)	FK

Table 5.2.7 Data Dictionary Booking Table

Field Name	Description	Data Type	Constraint
TrafficSummonID	Traffic Summon ID	VARCHAR (10)	
TrafficSummon Date	Traffic Summon Date	DATE	
TrafficSummon ViolationType	Traffic Summon Violation Type	VARCHAR (30)	
TrafficSummon Receipt	Traffic Summon Receipt	LONGBLOB	
TrafficSummon DemeritPoint	Traffic Summon Demerit Point	NUMBER	
TrafficSummon EnforcementType	Traffic Summon Enforcement Type	VARCHAR (20)	
StudentID	Student ID	VARCHAR (7)	FK
UnitKeselamatan StaffID	Unit Keselamatan Staff ID	NUMBER	FK

Table 5.2.8 Data Dictionary Traffic Summon Table

5.3 Sample Data

Student

StudentID	StudentName	StudentIC	StudentPhoneNum	StudentEmail	StudentPassword	AdministratorID	BookingID
SD001	Mohd Faizal Ramli	950101-14-1234	011-2345678	faizal@gmail.com	faiz80al	AD003	BK001
SD002	Nur Aisyah Abdul	960202-08-5678	019-8765432	aisyah@gmail.com	53aisyah11	AD002	BK002
SD003	Ahmad Zulkarnain	970303-12-3456	012-3456681	ahmad@gmail.com	44hm4d	AD001	BK003

Table 5.3.1 Sample Data Student

Unit Keselamatan Staff

UnitKeselamatan StaffID	UnitKeselamatan StaffName	UnitKeselamatan StaffIC	UnitKeselamatan StaffPhoneNum	UnitKeselamatan StaffEmail	UnitKeselamatan StaffPassword
UK001	Siti Saleha	850505-01-1234	013-4567890	saleha@gmail.com	saleha113
UK002	Roslan Ahmad	830404-02-5678	014-5678901	roslan@gmail.com	ro5l44n
UK003	Kamal Ismail	820303-03-9012	016-6789012	kamal@gmail.com	k4ma11

Table 5.3.2 Sample Data Unit Keselamatan Staff

Administrator

AdministratorID	AdministratorName	AdministratorIC	AdministratorPhoneNum	AdministratorEmail	AdministratorPassword
AD001	Puan Ramlah Hassan	720101-05-6789	013-6943321	<u>ramlah@gmail.com</u>	r4mlaaah
AD002	Encik Mohamad Ali	710202-06-5432	011-7765432	<u>mohamad.ali@gmail.com</u>	mhmmmd4l1
AD003	Dr. Siti Aishah	730303-07-8910	016-8995470	<u>dr.siti@gmail.com</u>	dr51siti

Table 5.3.3 Sample Data Administrator

Vehicle

VehicleID	VehiclePlateNum	VehicleType	VehicleColor	StudentID
VH001	WXR 0306	Car	Blue	SD001
VH002	JBC 1803	MotorCycle	Black	SD002
VH003	PFX 1910	Car	White	SD003

Table 5.3.4 Sample Data Vehicle

Vehicle Registration

VehicleRegistrationID	VehicleRegistrationStatus	Vehicle RegistrationDate	VehicleRegistrationGrant	UnitKeselamatanStaffID	StudentID
VR001	Approved	2024-01-15	UMPGR20245001	UK001	SD001
VR002	Approved	2024-02-20	UMPGR20246002	UK002	SD002
VR003	Rejected	2024-03-25	UMPGR20247003	UK003	SD003

Table 5.3.5 Sample Data Vehicle Registration

Parking

ParkingID	ParkingSpaces	ParkingArea	ParkingStatus	AdminID
FKC	Car	FKC-1	Booked	AD001
FKC	Car	FKC-2	Available	AD002
FKM	Motorcycle	FKM-3	Booked	AD003

Table 5.3.6 Sample Data Parking

Booking

BookingID	BookingDate	BookingStartTime	BookingEndTime	BookingQRCode	VehicleID	ParkingID
BK001	2024-04-02	08:00:00	10:00:00	LONGBLOB	VH001	FKC
BK002	2024-04-03	09:00:00	11:00:00	LONGBLOB	VH002	FKC
BK003	2024-04-04	10:00:00	12:00:00	LONGBLOB	VH003	FKM

*Table 5.3.7 Sample Data Booking***Traffic Summon**

TrafficSummon ID	Traffic SummonDate	TrafficSummon ViolationType	TrafficSummon Receipt	TrafficSummon DemeritPoint	TrafficSummon EnforcementType	StudentID	UnitKeselamatan StaffID
TF001	2024-04-05	Parking Violation	LONGBLOB	10	Warning given	SD001	UK001
TF002	2024-04-10	Not comply in campus traffic regulation	LONGBLOB	15	Warning given	SD002	UK002
TF003	2024-04-15	Accident Caused	LONGBLOB	25	Revoke in campus vehicle permission for 1 semester	SD003	UK003

Table 5.3.8 Sample Data Traffic Summon

6. PROPOSED DESIGN: PRESENTATION MODEL

6.1 MODULE 1 : Login, Manage User, and Vehicle Registration - ALYA SYAKIRAH

UMP logo	FK-Park
<<logo>>	<<text>>
FK PARK <<image>> FK PARK MANAGEMENT SYSTEM <<text>>	
Email <<text>>	Email <<inputtext>>
Password <<text>>	Password <<inputtext>>
Role <<text>>	Role <<dropdown>>
Forgot Your Password <<text>>	
Login <<text>>	
Don't have an account ? <<text>>	
Sign Up ? <<link>>	

Figure 6.1.1 Administrator, Student and Unit Keselamatan Login

UMP logo	FK-Park
<<logo>>	<<text>>
<p style="text-align: center;">FK PARK <<image>> FK PARK MANAGEMENT SYSTEM <<text>></p>	
<input type="text" value="Name"/> <<text>>	<input type="text" value="Name"/> <<inputtext>>
<input type="text" value="IC"/> <<text>>	<input type="text" value="IC"/> <<inputtext>>
<input type="text" value="Phone Number"/> <<text>>	<input type="text" value="Phone Number"/> <<inputtext>>
<input type="text" value="Email"/> <<text>>	<input type="text" value="Email"/> <<inputtext>>
<input type="text" value="Password"/> <<text>>	<input type="text" value="Password"/> <<inputtext>>
<input type="text" value="Profile Picture"/> <<text>>	<input type="button" value="Upload Picture"/> <<uploadbutton>>
<input type="button" value="Register"/> <<text>>	
<input type="text" value="Already Register"/> <<text>>	<input type="text" value="Log In Here"/> <<link>>

Figure 6.1.2 Student Registration

UMP logo	FK-Park
<<logo>>	<<text>>
<p style="text-align: center;">FK PARK <<image>> FK PARK MANAGEMENT SYSTEM <<text>></p>	
<p>Vehicle Type <<text>></p>	
<p>Vehicle Type <<dropdown>></p>	
<p>Vehicle Plate Number <<text>></p>	
<p>Vehicle Plate Number <<inputtext>></p>	
<p>Vehicle Color <<text>></p>	
<p>Vehicle Color <<inputtext>></p>	
<p>Vehicle Grant <<text>></p>	
<p>Upload File <<uploadbutton>></p>	
<p>Register <<text>></p>	
Already Register <<text>>	Log In Here <<link>>

Figure 6.1.3 Vehicle Registration

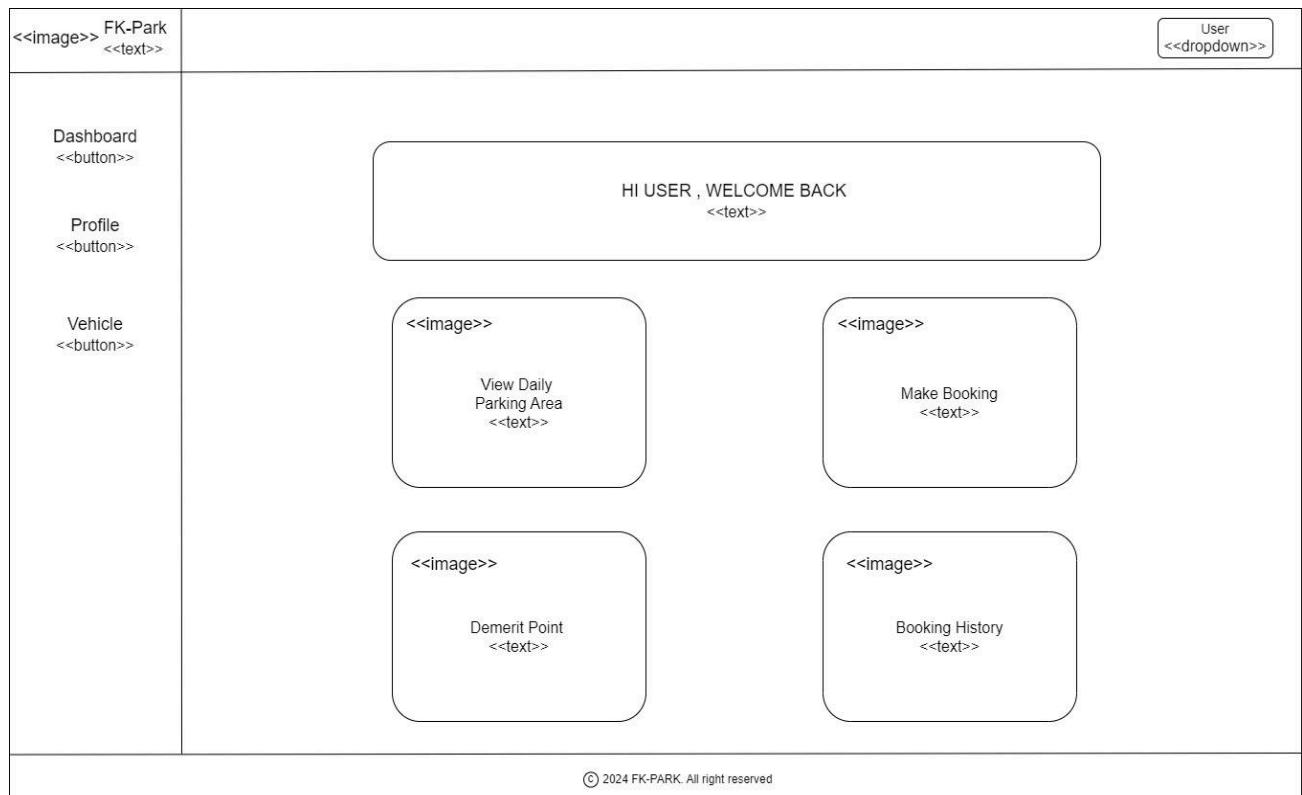


Figure 6.1.4 Student Dashboard

<p><<image>> FK-Park <<text>></p>	<p>User <<dropdown>></p>
<p>Dashboard <<button>></p> <p>Profile <<button>></p> <p>Vehicle <<button>></p>	<div style="border: 1px solid black; border-radius: 15px; padding: 10px;"> <div style="text-align: center; margin-bottom: 10px;"> Profile <<image>> <<editbutton>> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Name <<text>></div> <div style="border: 1px solid black; padding: 5px; width: 100%;">Name <<text>> <<editbutton>></div> </div> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">IC <<text>></div> <div style="border: 1px solid black; padding: 5px; width: 100%;">IC <<text>> <<editbutton>></div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Phone Number <<text>></div> <div style="border: 1px solid black; padding: 5px; width: 100%;">Phone Number <<text>> <<editbutton>></div> </div> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Email <<text>></div> <div style="border: 1px solid black; padding: 5px; width: 100%;">Email <<text>> <<editbutton>></div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Password <<text>></div> <div style="border: 1px solid black; padding: 5px; width: 100%;">Password <<text>> <<editbutton>></div> </div> <div style="width: 45%;"></div> </div> <div style="text-align: center; margin-top: 10px;"> Save Change Cancel </div> </div>
<p>© 2024 FK-PARK. All right reserved</p>	

Figure 6.1.5 User Profile (Student)

<p><<image>> FK-Park <<text>></p> <p>Dashboard <<button>></p> <p>Profile <<button>></p>	<p>User <<dropdown>></p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin-bottom: 10px;"> <p>Profile <<image>> <<editbutton>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Name <<text>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Name <<text>> <<editbutton>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Phone Number <<text>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Phone Number <<text>> <<editbutton>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Email <<text>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Email <<text>> <<editbutton>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Password <<text>></p> </div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px;"> <p>Password <<text>> <<editbutton>></p> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> Save Change Cancel </div>
<p>© 2024 FK-PARK. All right reserved</p>	

Figure 6.1.6 User Profile (Administrator & Unit Keselamatan Staff)

<<image>> FK-Park <<text>>	<div style="text-align: right;"> User <<dropdown>> </div> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> Dashboard <<button>> Profile <<button>> Vehicle <<button>> </div> <div style="margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; border-radius: 10px; display: flex; align-items: center;"> Profile <<image>> Vehicle Type <<text>> <<text>> <<editbutton>> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; border-radius: 10px; display: flex; align-items: center;"> Vehicle Plate Number <<text>> <<text>> <<editbutton>> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; border-radius: 10px; display: flex; align-items: center;"> Vehicle Color <<text>> <<text>> <<editbutton>> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; border-radius: 10px; display: flex; align-items: center;"> Vehicle Grant <<text>> <<image>> <<editbutton>> </div> <div style="margin-top: 10px; text-align: center;"> Save Change Cancel </div> </div> </div> </div> </div></div>
© 2024 FK-PARK. All rights reserved	

Figure 6.1.7 Vehicle Information

6.2 MODULE 2 : Manage Parking Area - WAN NURHALIZA

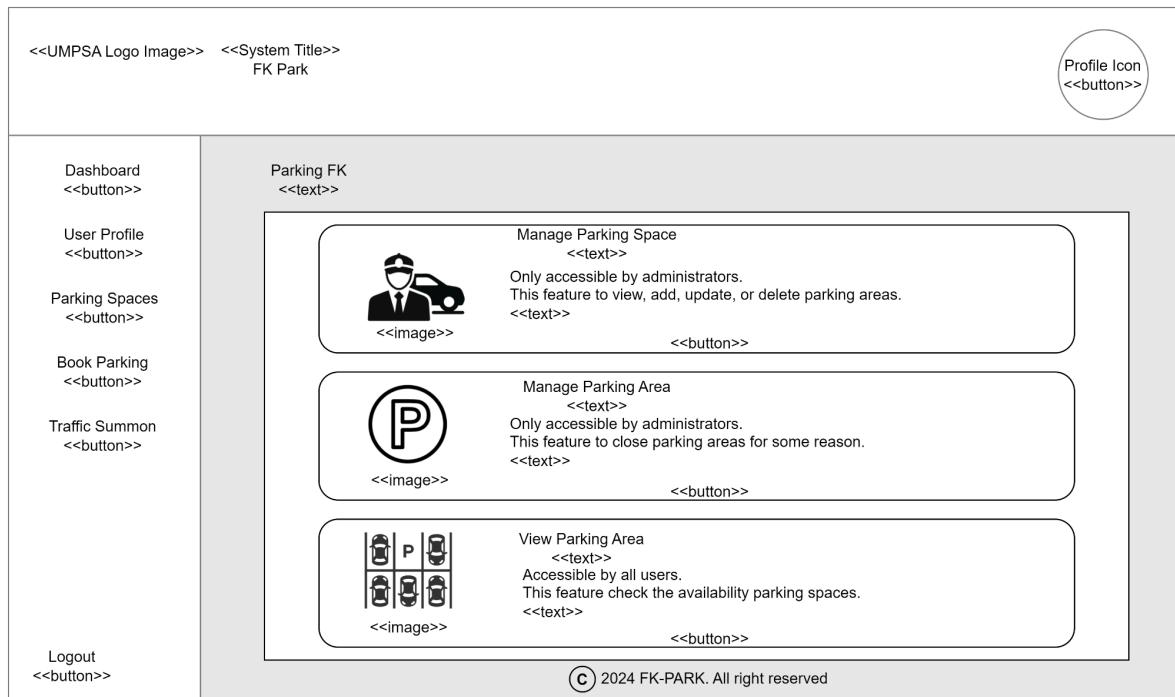


Figure 6.2.1 : Parking Spaces Main Menu

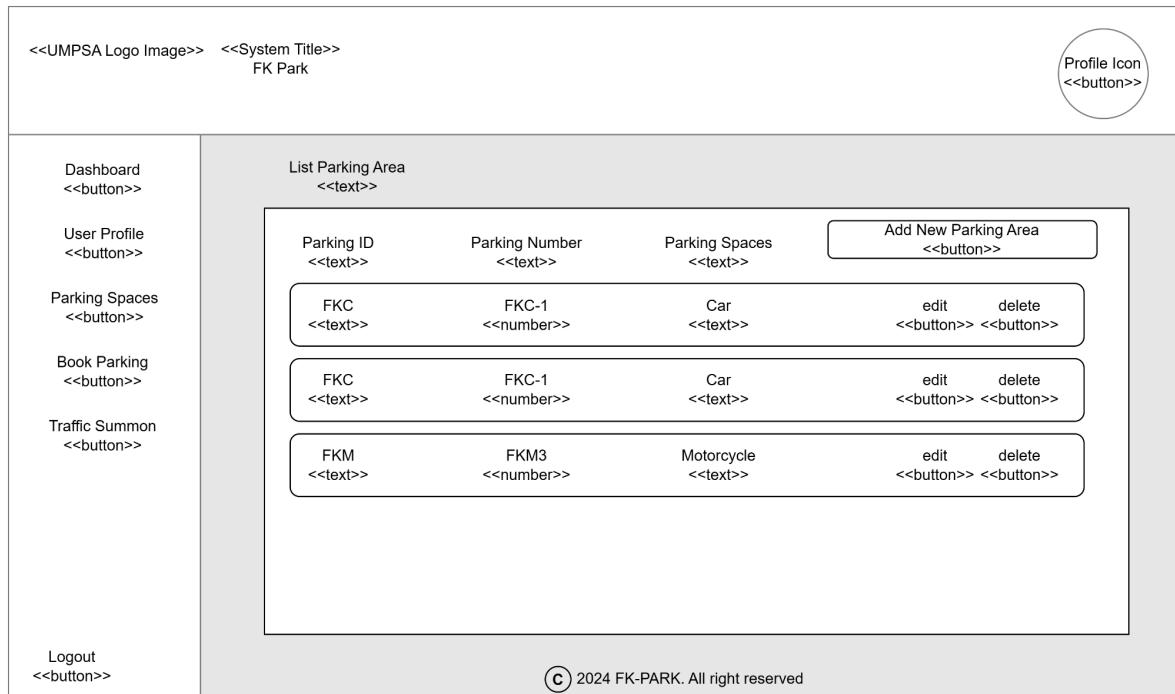


Figure 6.2.2 : List Parking Area - Administrator

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard <<button>> User Profile <<button>> Parking Spaces <<button>> Book Parking <<button>> Traffic Summon <<button>> Logout <<button>>	<p>Add New Parking Area <<text>></p> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p>Enter the required information: <<text>></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> <input type="text" value="Parking ID"/> <input type="text" value="Parking Number"/> </td> <td style="width: 50%;"> <input type="text" value="Parking Spaces"/> <input type="text" value="Parking Spaces (Car/Motorcycle)"/> </td> </tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="flex: 1;"> <input type="button" value="Cancel
<<button>>"/> <input type="button" value="Reset
<<button>>"/> </div> <div style="flex: 1; text-align: right;"> <input type="button" value="Submit and Generate QR
<<button>>"/> </div> </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p>	<input type="text" value="Parking ID"/> <input type="text" value="Parking Number"/>	<input type="text" value="Parking Spaces"/> <input type="text" value="Parking Spaces (Car/Motorcycle)"/>
<input type="text" value="Parking ID"/> <input type="text" value="Parking Number"/>	<input type="text" value="Parking Spaces"/> <input type="text" value="Parking Spaces (Car/Motorcycle)"/>		

Figure 6.2.3 : Add New Parking Area - Administrator

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard <<button>> User Profile <<button>> Parking Spaces <<button>> Book Parking <<button>> Traffic Summon <<button>> Logout <<button>>	<p>Update Parking Area <<text>></p> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p>Fill the information below to update: <<text>></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> <input type="text" value="Parking ID"/> <input type="text" value="Parking Number"/> </td> <td style="width: 50%;"> <input type="text" value="Parking Spaces"/> <input type="text" value="Parking Spaces (Car/Motorcycle)"/> </td> </tr> </table> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="flex: 1;"> <input type="button" value="Cancel
<<button>>"/> <input type="button" value="Reset
<<button>>"/> </div> <div style="flex: 1; text-align: right;"> <input type="button" value="Save
<<button>>"/> </div> </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p>	<input type="text" value="Parking ID"/> <input type="text" value="Parking Number"/>	<input type="text" value="Parking Spaces"/> <input type="text" value="Parking Spaces (Car/Motorcycle)"/>
<input type="text" value="Parking ID"/> <input type="text" value="Parking Number"/>	<input type="text" value="Parking Spaces"/> <input type="text" value="Parking Spaces (Car/Motorcycle)"/>		

Figure 6.2.4 : Update Parking Area - Administrator

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard <<button>> User Profile <<button>> Parking Spaces <<button>> Book Parking <<button>> Traffic Summon <<button>> Logout <<button>>	<p>Delete Parking Area <<text>></p> <p>Please confirm if you want to delete the information shown below: <<text>></p> <table border="1"> <tr> <td>Parking ID <<text>></td> <td>Parking Spaces <<text>></td> </tr> <tr> <td colspan="2">Parking ID <<text>></td> </tr> <tr> <td>Parking Number <<text>></td> <td>Parking Spaces (Car/Motorcycle) <<text>></td> </tr> <tr> <td colspan="2">Parking Number <<text>></td> </tr> </table> <p>Cancel <<button>> Reset <<button>> Delete <<button>></p> <p>(C) 2024 FK-PARK. All right reserved</p>	Parking ID <<text>>	Parking Spaces <<text>>	Parking ID <<text>>		Parking Number <<text>>	Parking Spaces (Car/Motorcycle) <<text>>	Parking Number <<text>>	
Parking ID <<text>>	Parking Spaces <<text>>								
Parking ID <<text>>									
Parking Number <<text>>	Parking Spaces (Car/Motorcycle) <<text>>								
Parking Number <<text>>									

Figure 6.2.5 : Delete Parking Area - Administrator

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard <<button>> User Profile <<button>> Parking Spaces <<button>> Book Parking <<button>> Traffic Summon <<button>> Logout <<button>>	<p>Manage Parking Area <<text>></p> <p>Choose and fill the required information: <<text>></p> <table border="1"> <tr> <td>Parking ID <<text>></td> <td>Date From <<text>></td> <td>Time From <<text>></td> </tr> <tr> <td>Parking ID <<dropdown>></td> <td>Date <<input>></td> <td>Time <<input>></td> </tr> <tr> <td>Parking Number <<text>></td> <td>Date Until <<text>></td> <td>Time Until <<text>></td> </tr> <tr> <td>Parking Number <<dropdown>></td> <td>Date <<input>></td> <td>Time <<input>></td> </tr> <tr> <td>Parking Spaces <<text>></td> <td>Reason <<text>></td> <td></td> </tr> <tr> <td>Parking Spaces (Car/Motorcycle) <<dropdown>></td> <td colspan="2">Reason <<input>></td> </tr> </table> <p>Cancel <<button>> Reset <<button>> Save <<button>></p> <p>(C) 2024 FK-PARK. All right reserved</p>	Parking ID <<text>>	Date From <<text>>	Time From <<text>>	Parking ID <<dropdown>>	Date <<input>>	Time <<input>>	Parking Number <<text>>	Date Until <<text>>	Time Until <<text>>	Parking Number <<dropdown>>	Date <<input>>	Time <<input>>	Parking Spaces <<text>>	Reason <<text>>		Parking Spaces (Car/Motorcycle) <<dropdown>>	Reason <<input>>	
Parking ID <<text>>	Date From <<text>>	Time From <<text>>																	
Parking ID <<dropdown>>	Date <<input>>	Time <<input>>																	
Parking Number <<text>>	Date Until <<text>>	Time Until <<text>>																	
Parking Number <<dropdown>>	Date <<input>>	Time <<input>>																	
Parking Spaces <<text>>	Reason <<text>>																		
Parking Spaces (Car/Motorcycle) <<dropdown>>	Reason <<input>>																		

Figure 6.2.6 : Manage Parking Area - Administrator



Figure 6.2.7 : Administrator Dashboard - Administrator

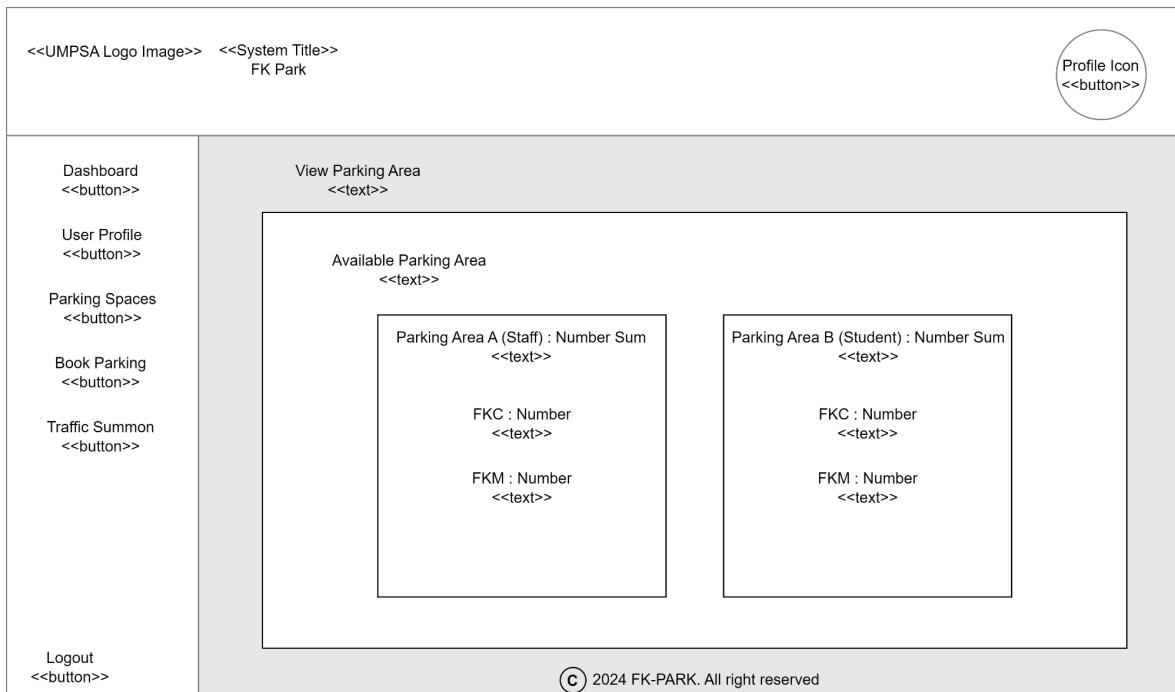


Figure 6.2.8 : View Parking Area - Administrator, Student, Unit Keselamatan Staff

6.3 MODULE 3 : Manage Parking Booking - PUTRI ROSYAMIMI

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<p>Student Booking Parking</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>Search <input type="text"/> </p> <p>Filter:</p> <p>Date: <input type="button" value="Today"/></p> <p>Time: <input type="button" value="10am"/></p> <p>Availability: <input type="button" value="Available"/></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. Parking</th> <th>Area</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>A1-1</td> <td>A1</td> <td>Book</td> </tr> <tr> <td>A1-2</td> <td>A1</td> <td>Book</td> </tr> <tr> <td>A1-3</td> <td>A1</td> <td>Book</td> </tr> </tbody> </table> <div style="text-align: right; margin-top: 10px;"> ● Available ● Booked </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p> </div>	No. Parking	Area	Status	A1-1	A1	Book	A1-2	A1	Book	A1-3	A1	Book
No. Parking	Area	Status											
A1-1	A1	Book											
A1-2	A1	Book											
A1-3	A1	Book											

Figure 6.3.1 : Interface of student parking booking

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<p>Student Parking Booking</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>Search <input type="text"/> </p> <p>Filter:</p> <p>Date: <input type="button" value="Today"/></p> <p>Time: <input type="button" value="10am"/></p> <p>Availability: <input type="button" value="Available"/></p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Are you sure to book A1-3?</p> <p style="text-align: center;">Confirm No</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. Parking</th> <th>Area</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>A1-1</td> <td>A1</td> <td>Book</td> </tr> <tr> <td>A1-2</td> <td>A1</td> <td>Book</td> </tr> <tr> <td>A1-3</td> <td>A1</td> <td>Book</td> </tr> </tbody> </table> <div style="text-align: center; margin-top: 10px;"> ● Available ● Booked </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p> </div>	No. Parking	Area	Status	A1-1	A1	Book	A1-2	A1	Book	A1-3	A1	Book
No. Parking	Area	Status											
A1-1	A1	Book											
A1-2	A1	Book											
A1-3	A1	Book											

Figure 6.3.2 : Interface of booking confirmation

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<h3>Student Parking Booking</h3> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <input style="width: 100%; height: 25px; border: none; border-bottom: 1px solid #ccc; padding: 0 5px; margin-bottom: 5px;" type="text" value="Search"/> 🔍 </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> Filter: </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="flex: 1;"> <p>Date: <input style="border: 1px solid #ccc; padding: 2px 5px; width: 100%; height: 100%;" type="button" value="Today"/></p> <p>Time: <input style="border: 1px solid #ccc; padding: 2px 5px; width: 100%; height: 100%;" type="button" value="10am"/></p> <p>Availability: <input style="border: 1px solid #ccc; padding: 2px 5px; width: 100%; height: 100%;" type="button" value="Available"/></p> </div> <div style="flex: 1; border: 1px solid #ccc; padding: 10px; text-align: center;"> <p style="margin: 0;">Booking Clashed!</p> <p style="margin: 0;">Please choose another parking.</p> <p style="margin: 0;">OK</p> </div> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. Parking</th> <th>Area</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>A1-1</td> <td>A1</td> <td style="background-color: #007bff; color: white; text-align: center;">Book</td> </tr> <tr> <td>A1-2</td> <td>A1</td> <td style="background-color: #007bff; color: white; text-align: center;">Book</td> </tr> <tr> <td>A1-3</td> <td>A1</td> <td style="background-color: #cccccc; color: black; text-align: center;">Book</td> </tr> </tbody> </table> </div> <div style="text-align: right; margin-top: 10px;"> ● Available ● Booked </div>	No. Parking	Area	Status	A1-1	A1	Book	A1-2	A1	Book	A1-3	A1	Book
No. Parking	Area	Status											
A1-1	A1	Book											
A1-2	A1	Book											
A1-3	A1	Book											

© 2024 FK-PARK. All right reserved

Figure 6.3.3 : Interface of booking clashed

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<h3>Student Parking Booking</h3> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <input style="width: 100%; height: 25px; border: none; border-bottom: 1px solid #ccc; padding: 0 5px; margin-bottom: 5px;" type="text" value="Search"/> 🔍 </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> Filter: </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="flex: 1;"> <p>Date: <input style="border: 1px solid #ccc; padding: 2px 5px; width: 100%; height: 100%;" type="button" value="Today"/></p> <p>Time: <input style="border: 1px solid #ccc; padding: 2px 5px; width: 100%; height: 100%;" type="button" value="10am"/></p> <p>Availability: <input style="border: 1px solid #ccc; padding: 2px 5px; width: 100%; height: 100%;" type="button" value="Available"/></p> </div> <div style="flex: 1; border: 1px solid #ccc; padding: 10px; text-align: center;"> <p style="margin: 0;">Booking confirmed!</p> <p style="margin: 0;">Your parking spot has been secured.</p> <p style="margin: 0;">Please arrive within the booked time.</p> <p style="margin: 0;">Please scan the QR code and fill in the details.</p> </div> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. Parking</th> <th>Area</th> <th></th> </tr> </thead> <tbody> <tr> <td>A1-1</td> <td>A1</td> <td style="background-color: #cccccc; color: black; text-align: center;">Book</td> </tr> <tr> <td>A1-2</td> <td>A1</td> <td style="background-color: #007bff; color: white; text-align: center;">Book</td> </tr> <tr> <td>A1-3</td> <td>A1</td> <td style="background-color: #007bff; color: white; text-align: center;">Book</td> </tr> </tbody> </table> </div> <div style="text-align: right; margin-top: 10px;"> ● Available ● Booked </div>	No. Parking	Area		A1-1	A1	Book	A1-2	A1	Book	A1-3	A1	Book
No. Parking	Area												
A1-1	A1	Book											
A1-2	A1	Book											
A1-3	A1	Book											

© 2024 FK-PARK. All right reserved

Figure 6.3.4 : Interface of booking confirmed and QR code for reference

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<h3>Parking Reference</h3> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p>Date: <input type="text" value="19/5/2024"/></p> <p>Time: <input type="text" value="10am"/> until <input style="width: 50px; height: 25px; vertical-align: middle;" type="text" value="12pm"/></p> <p>Parking No: <input type="text" value="A1-3"/></p> <p>Plate No: <input type="text" value="WSA 2011"/></p> <p>Student ID: <input type="text" value="CA21034"/></p> <p style="text-align: center;">Submit</p> </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p>
---	--

Figure 6.3.5 : Interface of parking reference

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<h3>My Booking</h3> <p>Filter:</p> <p>Date: <input style="width: 100px; height: 25px; vertical-align: middle;" type="text" value="Today"/></p> <p>Parking: <input style="width: 100px; height: 25px; vertical-align: middle;" type="text" value="Search"/> </p> <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. Parking</th> <th>Start time</th> <th>End time</th> <th colspan="2">Manage Booking</th> </tr> </thead> <tbody> <tr> <td>A1-1</td> <td>10am</td> <td>12pm</td> <td>View</td> <td>Cancel</td> </tr> <tr> <td>B2-2</td> <td>3pm</td> <td>6pm</td> <td>View</td> <td>Cancel</td> </tr> <tr> <td>C1-2</td> <td>9pm</td> <td>11pm</td> <td>View</td> <td>Cancel</td> </tr> </tbody> </table> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p>	No. Parking	Start time	End time	Manage Booking		A1-1	10am	12pm	View	Cancel	B2-2	3pm	6pm	View	Cancel	C1-2	9pm	11pm	View	Cancel
No. Parking	Start time	End time	Manage Booking																		
A1-1	10am	12pm	View	Cancel																	
B2-2	3pm	6pm	View	Cancel																	
C1-2	9pm	11pm	View	Cancel																	

Figure 6.3.6 : Interface of view booking



Figure 6.3.7 : Administrator Dashboard - Administrator

6.4 MODULE 4 : Manage Traffic Summon - NUR SYAZWANI

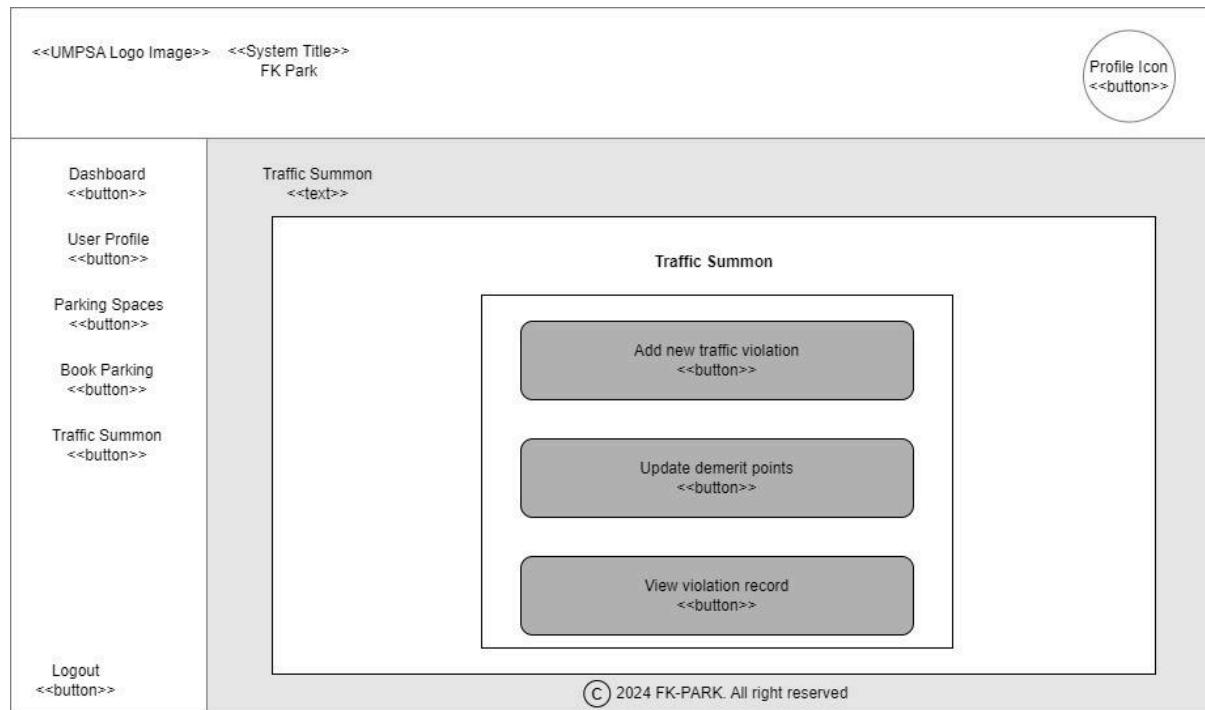


Figure 6.4.1 : Interface of Traffic Summon



Figure 6.4.2 : Interface of Add New Traffic Summon

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<p>Add New Traffic Violation <<text>></p> <p>Add New Traff</p> <p>Enter the required information:</p> <p>Vehicle Plate Number: <input type="text"/></p> <p>Type of Violation: <input type="text"/></p> <p>Type of Enforcement: <input type="text"/></p> <p>Demerit points: <input type="text"/></p> <p>Cancel <<button>> Save & Generate QR <<button>></p> <div style="text-align: center;">(C) 2024 FK-PARK. All right reserved</div>	 <p>Traffic Violation is successfully registered. Here is the QR code.</p> 
---	--	--

Figure 6.4.3 : Interface of Generated QR

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard User Profile Parking Spaces Book Parking Traffic Summon Logout	<p>Update Traffic Summon <<text>></p> <p>Update Traffic Summon</p> <p>Vehicle Plate Number: <input type="text" value="WXR 0306"/></p> <p>Type of Violation: <input type="text" value="Parking Violation"/></p> <p>Type of Enforcement: <input type="text" value="Warning given"/></p> <p>Demerit points: <input type="text" value="10"/></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Vehicle Plate Number:</th> <th>Type of Violation:</th> <th>Type of Enforcement:</th> <th>Demerit points:</th> </tr> </thead> <tbody> <tr> <td>WXR 0306</td> <td>Parking Violation</td> <td>Warning given</td> <td>10</td> </tr> </tbody> </table> <p>Cancel <<button>> Edit <<button>></p> <div style="text-align: center;">(C) 2024 FK-PARK. All right reserved</div>	Vehicle Plate Number:	Type of Violation:	Type of Enforcement:	Demerit points:	WXR 0306	Parking Violation	Warning given	10
Vehicle Plate Number:	Type of Violation:	Type of Enforcement:	Demerit points:						
WXR 0306	Parking Violation	Warning given	10						

Figure 6.4.4 : Interface of Update Traffic Summon

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard <<button>> User Profile <<button>> Parking Spaces <<button>> Book Parking <<button>> Traffic Summon <<button>> Logout <<button>>	<p>Edit Traffic Violation <<text>></p> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center;">Edit Traffic Violation</p> <p>Fill the information below to edit:</p> <p>Vehicle Plate Number: <input type="text"/></p> <p>Type of Violation: <input type="text"/></p> <p>Type of Enforcement: <input type="text"/></p> <p>Demerit points: <input type="text"/></p> <p style="text-align: center;">Cancel <<button>> Save & Generate QR <<button>></p> </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p>
---	---

Figure 6.4.5 : Interface of Edit Traffic Summon

<<UMPSA Logo Image>> <<System Title>>
FK Park

Profile Icon
<<button>>

Dashboard <<button>> User Profile <<button>> Parking Spaces <<button>> Book Parking <<button>> Traffic Summon <<button>> Logout <<button>>	<p>View Traffic Violation Record <<text>></p> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center;">Traffic Violation Record</p> <p>Search Summon ID: <input type="text"/></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Summon ID</th> <th>Date</th> <th>Vehicle Plate Number</th> <th>Type of Violation</th> <th>Type of Enforcement</th> <th>Demerit Points</th> </tr> </thead> <tbody> <tr> <td>TF001</td> <td>2024-04-05</td> <td>WXR 0306</td> <td>Parking Violation</td> <td>Warning given</td> <td>10</td> </tr> </tbody> </table> </div> <p style="text-align: center;">© 2024 FK-PARK. All right reserved</p>	Summon ID	Date	Vehicle Plate Number	Type of Violation	Type of Enforcement	Demerit Points	TF001	2024-04-05	WXR 0306	Parking Violation	Warning given	10
Summon ID	Date	Vehicle Plate Number	Type of Violation	Type of Enforcement	Demerit Points								
TF001	2024-04-05	WXR 0306	Parking Violation	Warning given	10								

Figure 6.4.6 : Interface of Traffic Violation Record

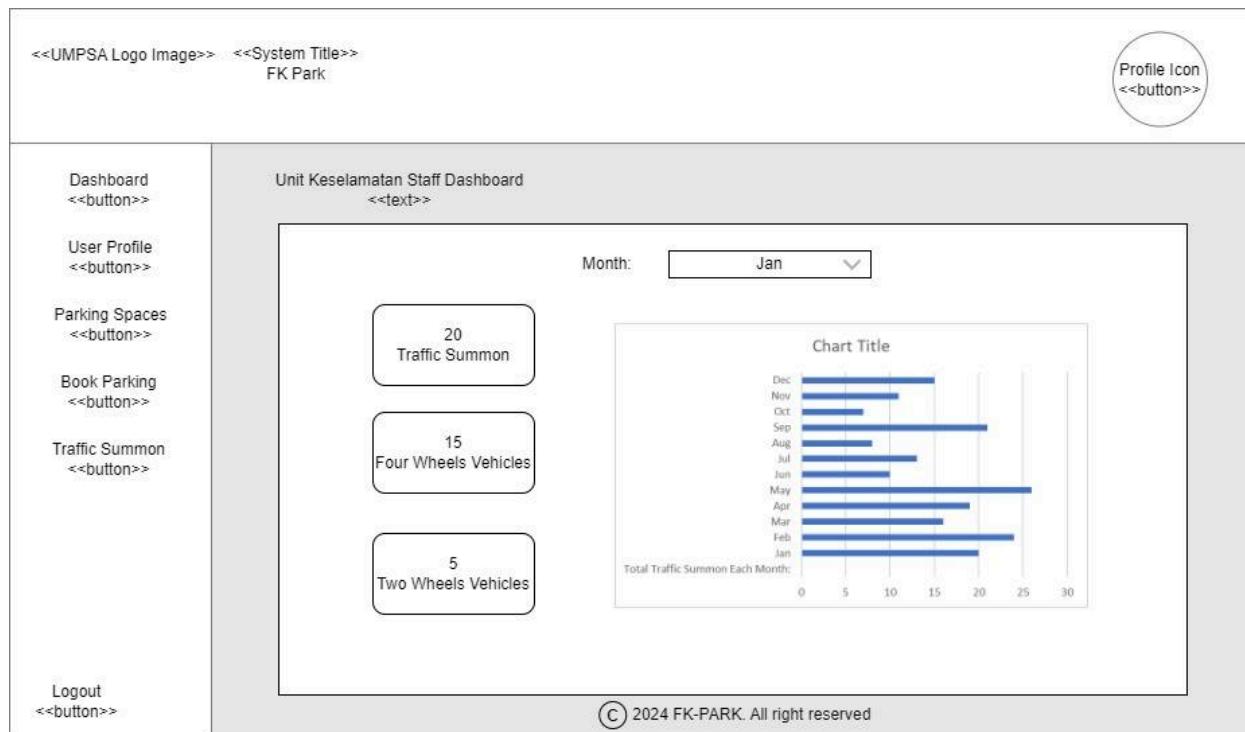


Figure 6.4.7 : Interface of Unit Keselamatan Dashboard

7. PROJECT DEVELOPMENT

7.1 Testing plan

Testing Plan for the FKPark Web-Based Car Parking Management System.

The testing goal is to ensure that the FKPark Management System functions effectively meets established requirements and is prepared for deployment. There will be three different kinds of tests performed:

Functional Testing

To ensure that the system operates in accordance with the specifications provided for each module.

- Login, User and Vehicle Registration: Verifying user login, registration and management processes.
- Parking Area Management: Ensuring the proper creation, updating and deletion of parking spaces and areas.
- Parking Booking Management: This includes testing the booking process, clashing checks and implementing parking procedures.
- Traffic Summon Management: Ensuring accurate recording and reporting of traffic summons and demerit point systems.

Usability Testing

To evaluate the user interface (UI) and design in terms of user experience.

- User Dashboards: Assess the usability and information presentation of student, administrator and Unit Keselamatan staff dashboards.
- QR Code Interactions: Testing the ease of scanning QR codes for vehicle stickers and parking spaces
- User Navigation: Providing intuitive navigation via the application for various user roles.

Performance Testing

To make sure the system is responsive and able to handle heavy loads.

- Load testing: Evaluating the system's performance under high user traffic particularly during peak hours.
- Stress testing: Assessing the system's capacity to retain performance under harsh situations.
- Scalability testing: Ensures that the system can efficiently scale with an increase in users and data.

7.2 Deployment Plan

The deployment plan is important for ensuring that the FKPark Car Parking Management System is easily accessible and used by its targeted users. It refers to the process of deploying the web application in a live environment, allowing users to access and interact with its features and functionalities efficiently.

Pre-deployment preparation

- Verify that the server meets the requirements for hosting the web application, such as suitable storage, memory, and processing power.
- Set up the database server with the necessary schemas, tables, and permissions for the FKPark application.
- Ensure that all required dependencies and libraries are installed and configured on the server.
- Prepare a full backup of the system, including databases, configurations, and codebase, to ensure data integrity and system recovery in case of a problem during deployment.

Deployment

- Prepare the FKPark application code for deployment by compiling the final version.
- Ensure that all necessary dependencies and libraries are included in the deployment package so that the application may work properly.
- Deploy the FKPark application on the Indah UMPSA Hosting Platform.

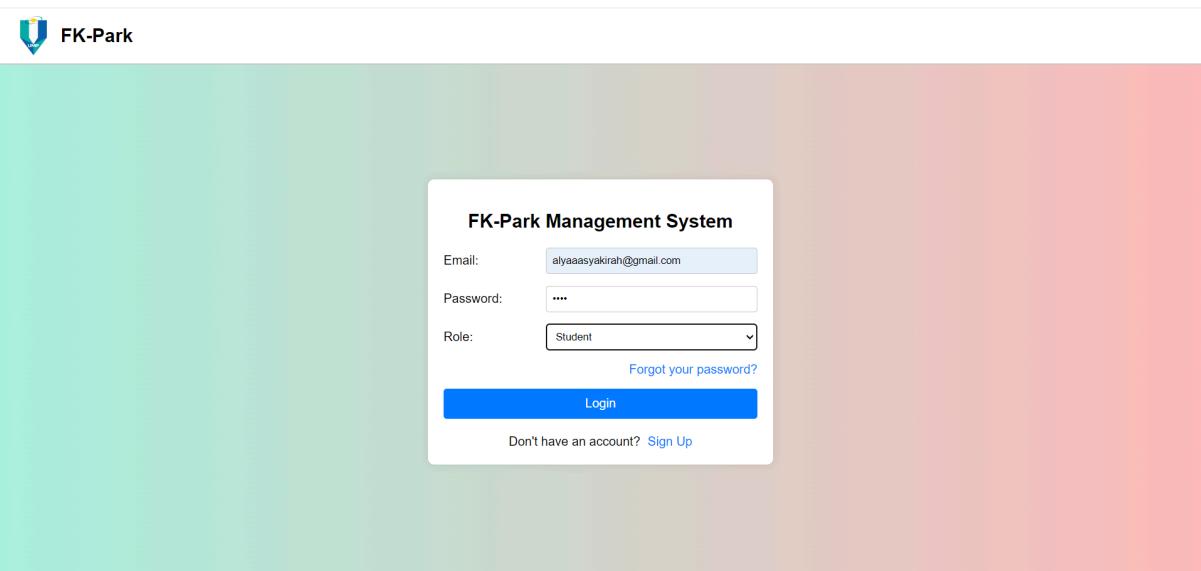
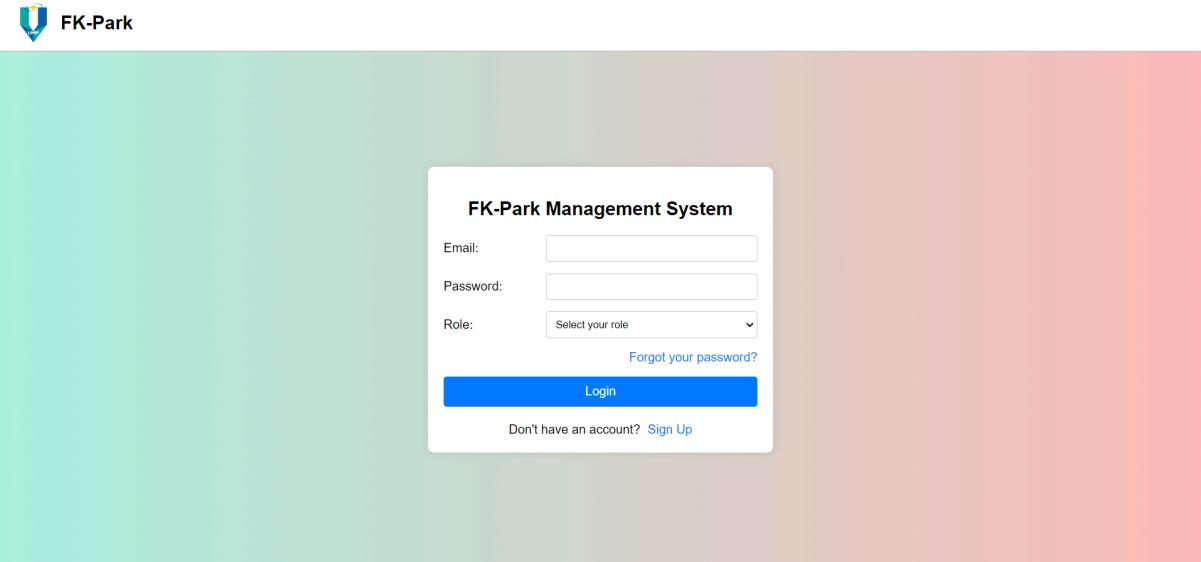
Testing

- Thoroughly test the deployed FKPark application to verify it satisfies the needs and expectations of users, including administrators, students, and security personnel.
- Promptly address any issues or errors discovered during User Acceptance Testing (UAT) to ensure the application's stability and reliability for end users.

8. GUI INTERFACE

8.1 Module 1: Login, Manage User and Vehicle registration (NUR ALYA SYAKIRAH BINTI NASARUDIN CB22141)

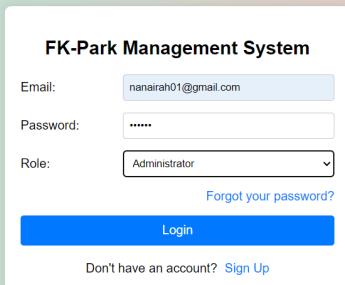
8.1.1 Login Page



Username / Email : alyaaasyakirah@gmail.com

Password : 123456

Role : Student

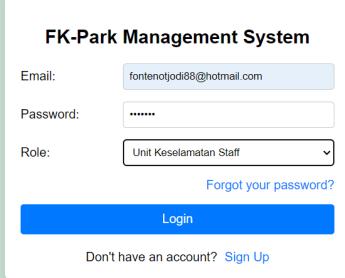


The screenshot shows the login interface for the FK-Park Management System. It features a light gray header with the system name. Below it is a form with three input fields: "Email" containing "nanairah01@gmail.com", "Password" with a masked value, and "Role" set to "Administrator". There is also a "Forgot your password?" link and a large blue "Login" button. At the bottom, a link for new users to "Sign Up" is visible.

Username / Email : nanairah01@gmail.com

Password : 679123

Role : Administrator



The screenshot shows the login interface for the FK-Park Management System. It features a light gray header with the system name. Below it is a form with three input fields: "Email" containing "fontenotjodi88@hotmail.com", "Password" with a masked value, and "Role" set to "Unit Keselamatan Staff". There is also a "Forgot your password?" link and a large blue "Login" button. At the bottom, a link for new users to "Sign Up" is visible.

Username / Email : fontenotjodi88@hotmail..com

Password : 2234567

Role : Unit Keselamatan Staff

8.1.2 Forgot Password and Profile Page

The screenshot shows the 'Edit Profile' page of the FK-Park application. At the top, there is a header bar with the FK-Park logo, a user icon, and a 'Logout' button. On the left, a sidebar menu includes 'Dashboard', 'Profile' (which is currently selected), 'Vehicle', and 'Logout'. The main content area is titled 'Edit Profile' and contains fields for Name, IC, Phone Number, Email, and Password. Each field has a placeholder text and a corresponding input box. Below the input boxes are two buttons: 'Save Changes' and 'Cancel'. At the bottom of the page, a copyright notice reads '© 2024 FK-PARK. All rights reserved.'

8.1.3 Registration Page

The screenshot shows the 'FK-Park Management System' registration page. The background features a gradient from teal on the left to red on the right. The form itself is titled 'FK-Park Management System' and includes fields for Name, IC, Phone Number, Email, and Password. It also features a 'Profile Picture' section with a file upload button and a placeholder 'Choose File | No file chosen'. A large blue 'Register' button is at the bottom of the form. Below the button, a link says 'Already registered? Log in here'.

 FK-Park

localhost says
Registration successful!

OK

System

Name:

IC:

Phone Number:

Email:

Password:

Profile Picture:

Register

Already registered? [Log in here](#)

8.1.4 Vehicle Registration Page

 FK-Park

FK-Park Management System

Vehicle Type:

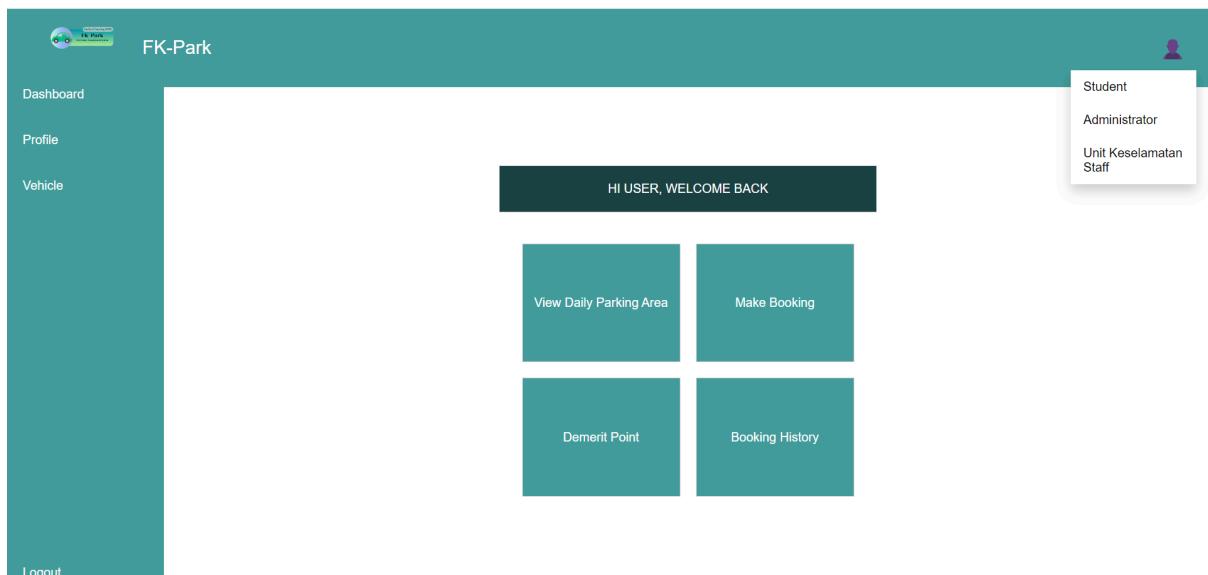
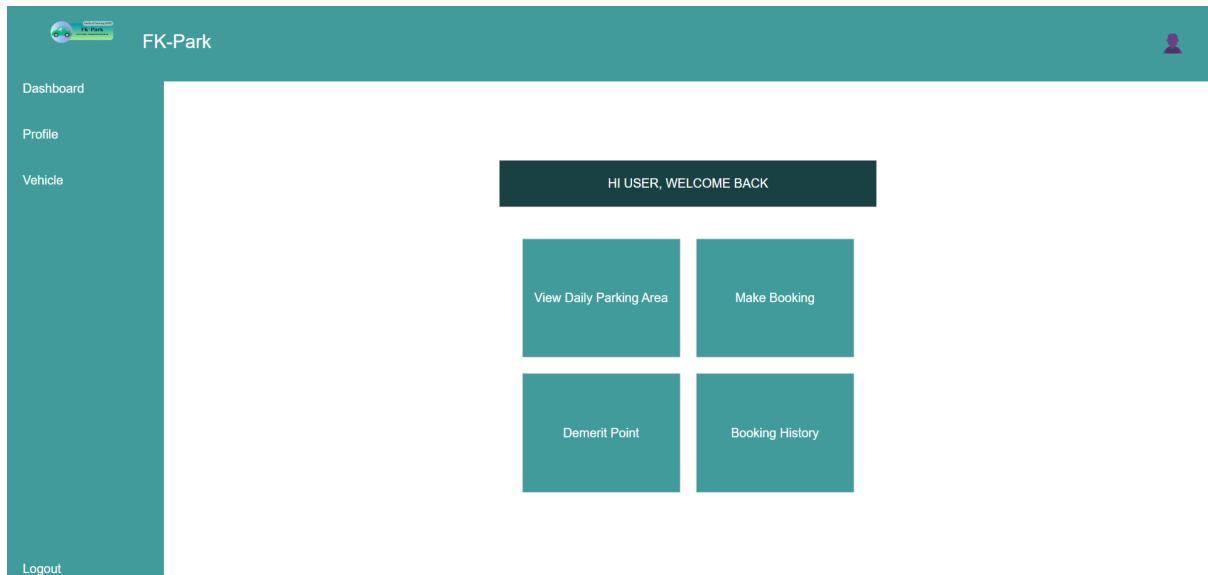
Vehicle Plate Number:

Vehicle Color:

Vehicle Grant:

Register

8.1.5 Dashboard Page

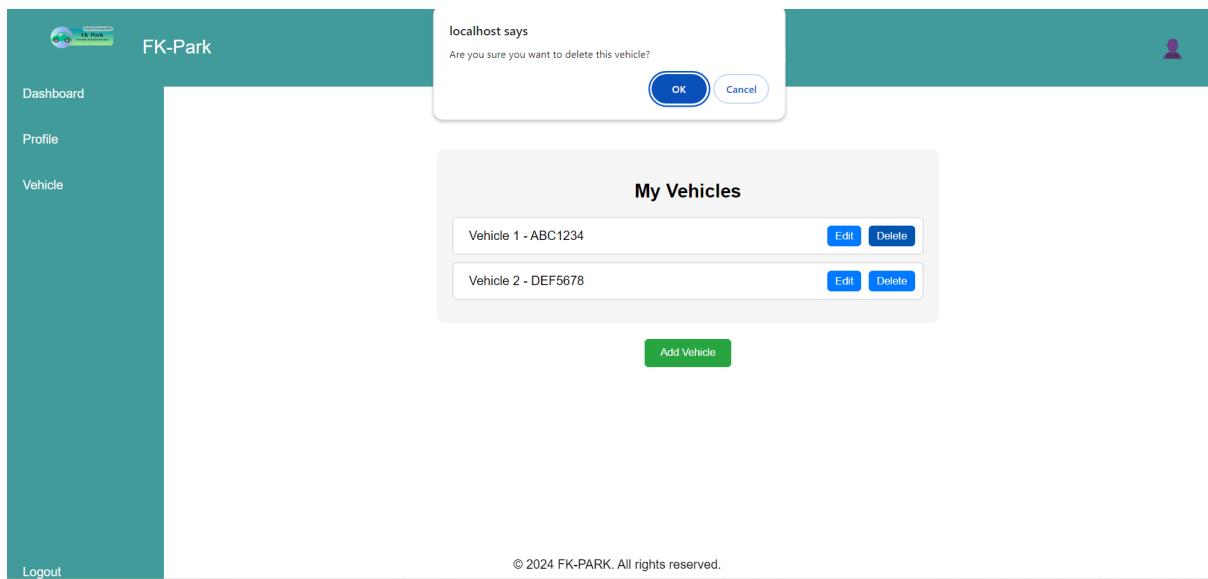


8.1.6 Vehicle Page

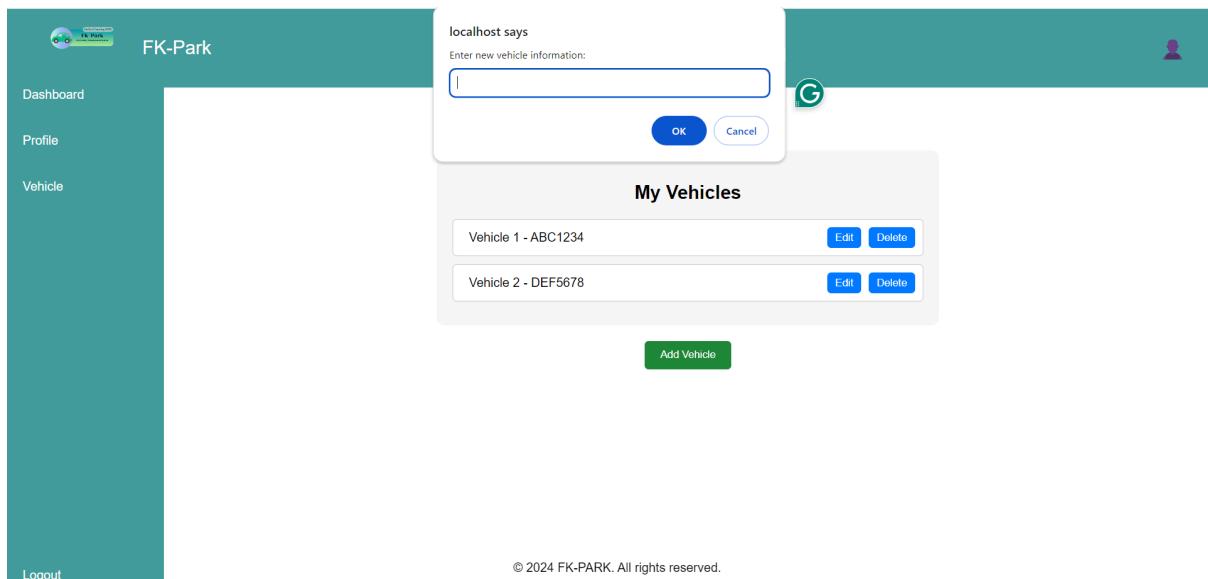
The screenshot shows the FK-Park application interface. The top navigation bar is teal with the logo 'FK Park' and the title 'FK-Park'. On the right side of the top bar is a user icon. The left sidebar has links for 'Dashboard', 'Profile', 'Vehicle', and 'Logout'. The main content area is titled 'My Vehicles' and lists two vehicles: 'Vehicle 1 - ABC1234' and 'Vehicle 2 - DEF5678', each with 'Edit' and 'Delete' buttons. At the bottom of the content area is a green 'Add Vehicle' button. The footer contains the copyright notice '© 2024 FK-PARK. All rights reserved.'

This screenshot is similar to the previous one, showing the 'My Vehicles' page. However, a modal dialog box is overlaid on the screen. The dialog has a title 'localhost says' and a sub-instruction 'Enter new vehicle information:' followed by an input field. At the bottom of the dialog are 'OK' and 'Cancel' buttons. The rest of the interface, including the sidebar, vehicle list, and footer, remains the same.

Edit Button

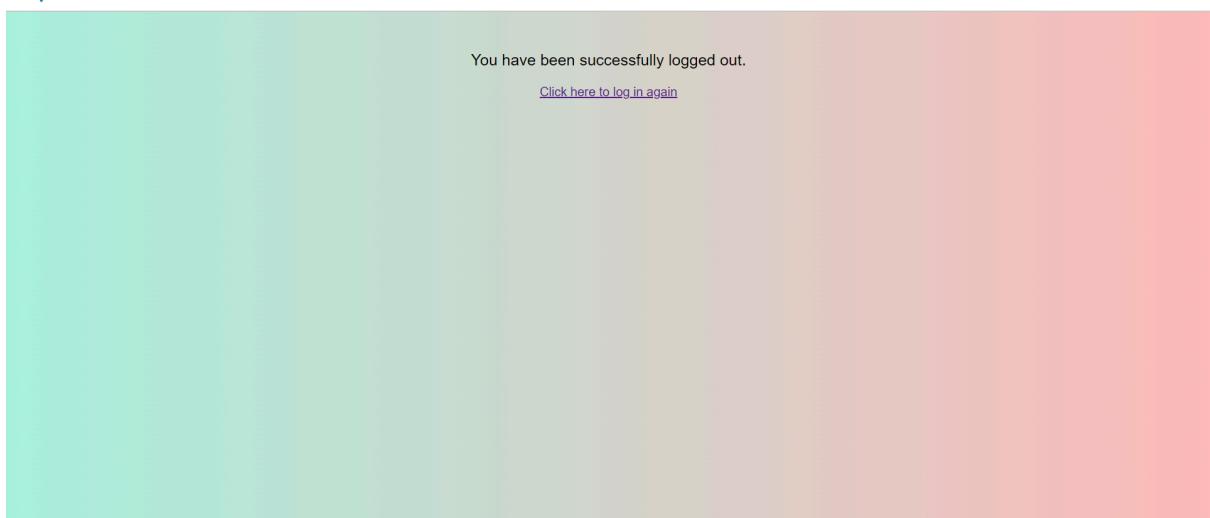
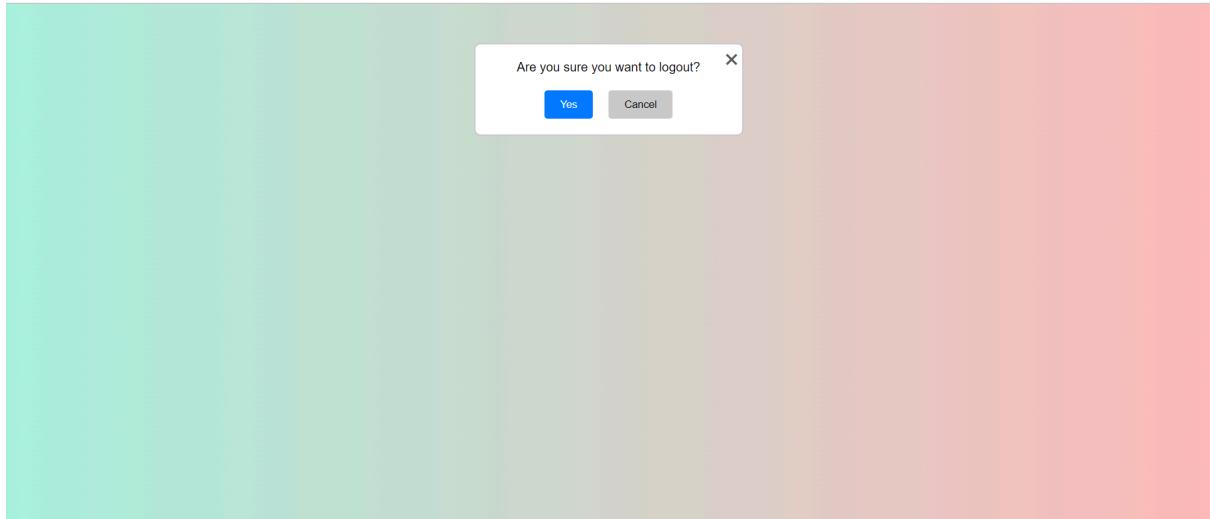


Delete Button



Add Button

8.1.7 Logout Page



8.2 Module 2: Manage Parking Area (AZMI WAN NURHALIZA CB22004)

8.2.1 Home of Parking Spaces Interface (Manage Parking Space and Manage parking Area only for administrator)

The screenshot shows the 'FK Park' home interface. On the left, there's a sidebar with links: Dashboard, User Profile, Parking Spaces, Book Parking, and Traffic Summon. On the right, there are three main sections:

- Manage Parking Space**: Features a car icon with a 'P' and a 'Manage' button.
- Manage Parking Area**: Features a circular icon with a 'P' and a 'Manage' button.
- View Parking Area**: Features a circular icon with a parking lot icon and a 'View' button.

At the bottom right, it says "© 2024 FK-PARK. All rights reserved".

8.2.2 Manage Parking Space - List Parking Interface (add, view, search, edit, and delete)

The screenshot shows the 'List Parking Area' interface. On the left, there's a sidebar with links: Dashboard, User Profile, Parking Spaces, Book Parking, and Traffic Summon. On the right, there's a table titled 'List Parking Area' with the following data:

Parking ID	Parking Number	Parking Spaces	Parking for	Actions	QR Codes
FKC	FKC-1	Car	Staff	<button>Edit</button> <button>Delete</button>	
FKC	FKC-2	Car	Staff	<button>Edit</button> <button>Delete</button>	
FKC	FKC-3	Car	Staff	<button>Edit</button> <button>Delete</button>	
FKC	FKC-4	Car	Staff	<button>Edit</button> <button>Delete</button>	
FKC	FKC-5	Car	Staff	<button>Edit</button> <button>Delete</button>	

At the bottom right, it says "© 2024 FK-PARK. All rights reserved".

8.2.3 Add New Parking Interface

The screenshot shows the FK Park application's user interface. At the top, there is a navigation bar with a logo, the text "FK Park", and a user profile icon. On the left, a sidebar contains links for "Dashboard", "User Profile", "Parking Spaces", "Book Parking", "Traffic Summon", and "Logout". The main content area is titled "Add New Parking Area". It includes fields for "Parking ID" (set to "FKC"), "Parking Number" (empty), "Parking Spaces (Car/Motorcycle)" (set to "Car"), and "Parking for (Staff/Student)" (set to "Staff"). At the bottom of the form are three buttons: "Cancel" (red), "Reset" (blue), and "Submit and Generate QR" (green).

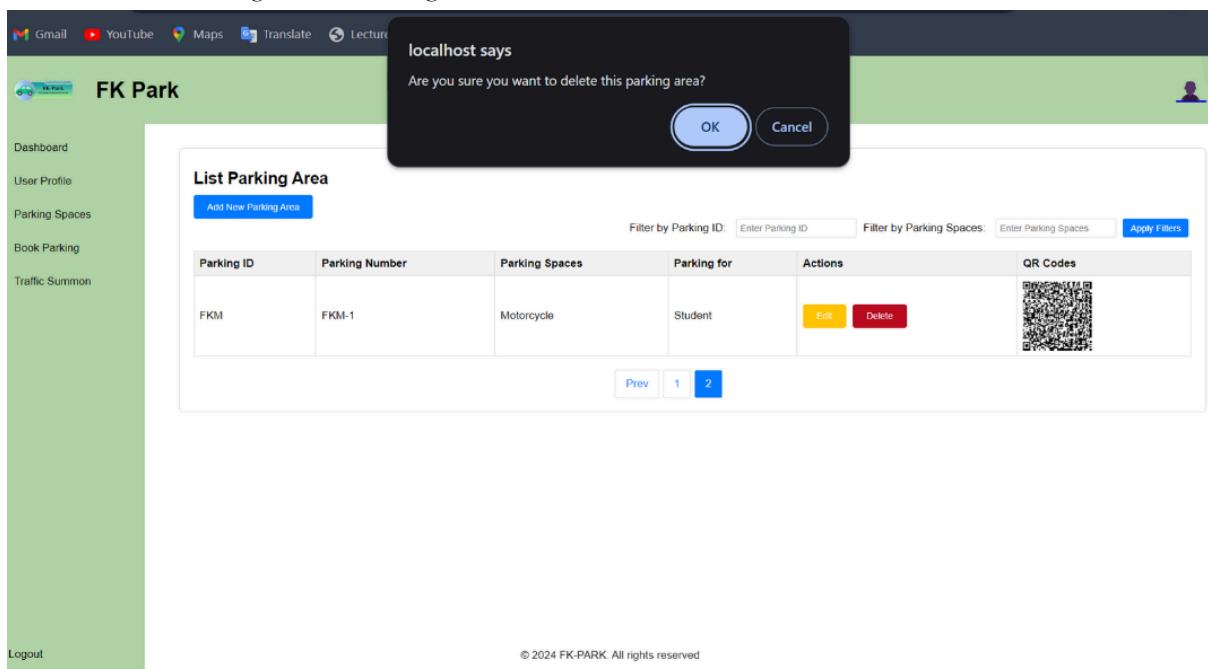
8.2.4 Generate QR Code Information

This screenshot is similar to the previous one, showing the "Add New Parking Area" form. The "Parking ID" is now set to "FKM", and the "Parking Number" field contains "FKM-1". The "Parking Spaces" dropdown is set to "Motorcycle", and the "Parking for" dropdown is set to "Student". Below the form, there is a section titled "Generated QR Code:" which displays a QR code. The footer of the page includes the copyright notice "© 2024 FK-PARK. All rights reserved".

8.2.5 Update Parking Area Interface

The screenshot shows the 'Update Parking Area' form. On the left is a sidebar with links: Dashboard, User Profile, Parking Spaces, Book Parking, Traffic Summon, and Logout. The main area has a title 'Update Parking Area'. It contains four input fields: 'Parking ID' (FKC), 'Parking Number' (FKC-1), 'Parking Spaces (Car/Motorcycle)' (Car), and 'Parking for (Staff/Student)' (Staff). Below the form are three buttons: Cancel, Reset, and Save.

8.2.6 Delete Parking Area Message



8.2.7 Manage Parking Area Interface

Manage Parking Area

Parking ID: FKC Parking Number: FKC-1

Parking Spaces (Car/Motorcycle): Car

Date From: dd/mm/yyyy Time From: hh:mm:ss

Date Until: dd/mm/yyyy Time Until: hh:mm:ss

Reason: Car

Cancel Reset Save

8.2.8 View Parking Area Interface

View Parking Area

Available Parking Area

Parking Area A (Staff): 135

FKC: 45
FKM: 90

Parking Area B (Student): 540

FKC: 180
FKM: 360

8.2.9 Administrator Dashboard Interface



8.2.10 Database Phpmyadmin using XAMPP (saved input)

Showing rows 0 - 10 (11 total, Query took 0.00003 seconds.)

`SELECT * FROM `parking_areas``

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	id	parking_id	parking_number	parking_spaces	parking_for
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	FKC	FKC-1	Car	Staff
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	FKC	FKC-2	Car	Staff
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	FKC	FKC-3	Car	Staff
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	FKC	FKC-4	Car	Staff
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	FKC	FKC-5	Car	Staff
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8	FKC	FKC-6	Car	Staff
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9	FKC	FKC-7	Car	Staff
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10	FKC	FKC-8	Car	Staff
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11	FKC	FKC-9	Car	Staff
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	FKC	FKC-10	Car	Staff
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FKM		FKM-1	Motorcycle	Student

8.3 Module 3: Manage Parking Booking (PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI CA21034)

8.3.1 Student Booking Interface

The screenshot shows the FKPark Student Booking interface. At the top right is a user profile icon. On the left is a sidebar with the following menu items: Book Parking, Parking Spaces, Dashboard, User Profile, Traffic Summon, and Logout. The main content area is titled "Student Booking" and contains three buttons: "Student Booking Parking", "Parking Reference", and "Admin Dashboard".

8.3.2 Student Booking Parking (View, cancel booking)

The screenshot shows the FKPark Student Booking Parking interface. At the top right is a user profile icon. On the left is a sidebar with the following menu items: Dashboard, User Profile, Parking Spaces, Book Parking, Traffic Summon, and Logout. The main content area is titled "Student Booking Parking" and includes a form for selecting a car park (FKC), entering a car plate, and setting start and end times, followed by a "Book" button. Below this is a section titled "My Bookings" containing a table with the following data:

Car Park	Car Plate	Start Time	End Time	QR Code	Action
1	WQS 2211	2024-06-17 11:01:00	2024-06-17 12:01:00	2576a2130301781ac825852e4fbfa861	<input type="button" value="Cancel"/>
2	JBC 1803	2024-06-17 11:18:00	2024-06-17 12:18:00	d8a6a653e4a0a0fdcaa2deaf5c058a176	<input type="button" value="Cancel"/>

8.3.3 Data shows in database

The screenshot shows the MySQL Workbench interface. On the left is a tree view of the database structure under the "parking" schema, including tables for parking, parking_management, administrator, bookings, car_parks, and users. On the right is a data grid for the "bookings" table, which has the following columns: id, user_id, car_park_id, car_plate, start_time, end_time, and qr_code. There are two rows of data:

id	user_id	car_park_id	car_plate	start_time	end_time	qr_code
16	11	1	WQS 2211	2024-06-17 11:01:00	2024-06-17 12:01:00	2576a2130301781ac825852e4fbfa861
19	11	2	JBC 1803	2024-06-17 11:18:00	2024-06-17 12:18:00	d8a6a653e4a0a0fdcaa2deaf5c058a176

8.3.4 Parking reference

The screenshot shows the FKPark application interface. At the top, there is a header bar with the university's logo and name in English and Arabic, followed by the text "FKPark" and a user profile icon. On the left side, there is a vertical sidebar with navigation links: Dashboard, User Profile, Parking Spaces, Book Parking, Traffic Summon, and Logout. The main content area is titled "Parking Reference" and contains three input fields: "Scan QR Code:" with a placeholder box, "Expected Parking Duration (hours):" with a placeholder box, and a "Submit" button below them.

8.3.5 Parking info updated

Car Plate: WXR 0306
Start Time: 2024-06-17 22:36:00
Expected Parking Duration: 1 hours
Parking updated successfully!

This screenshot is identical to the one above, showing the FKPark application interface. The main content area is titled "Parking Reference" and contains three input fields: "Scan QR Code:" with a placeholder box, "Expected Parking Duration (hours):" with a placeholder box, and a "Submit" button below them. The difference is that the sidebar on the left has a different background color and the user profile icon is now blue.

8.3.6 Booking time clash

The screenshot shows the FKPark Student Booking Parking page. On the left sidebar, there are links for Dashboard, User Profile, Parking Spaces, Book Parking, and Traffic Summon. A Logout link is also present at the bottom of the sidebar.

The main content area has a header "Student Booking Parking". Below it, a message says "Booking time clash!". There are input fields for "Select Car Park: FKB", "Car Plate: WXR 0306", "Start Time: [mm/dd/yyyy --:-- --]", and "End Time: [mm/dd/yyyy --:-- --]". A "Book" button is located below these fields.

A section titled "My Bookings" displays a table with one row of data:

Car Park	Car Plate	Start Time	End Time	QR Code	Action
1	WXR 0306	2024-06-17 10:33:00	2024-06-17 11:33:00	fb954131748abd6f2deee0dcf6bc43af	<button>Cancel</button>

8.3.7 Admin login

The screenshot shows the FKPark Admin Login page. The left sidebar contains links for Dashboard, User Profile, Parking Spaces, Book Parking, and Traffic Summon.

The main area features a login form with fields for "Username:" and "Password:", and a "Login" button.

8.3.8 Admin dashboard

The screenshot shows the FKPark Administrator Dashboard. The left sidebar includes links for Dashboard, User Profile, Parking Spaces, Book Parking, and Traffic Summon.

The main dashboard has a title "Administrator Dashboard". It displays several statistics and a chart:

- Number of Users: 10
- Car Booking Parking: 6
- Motorcycle Booking Parking: 4
- Total Booking: 10
- Parking Space Availability: 675
- Top Daily Reserved Parking Spaces: 237

A bar chart titled "Booking Report" compares the number of bookings for "Car" (blue bar) and "Motorcycle" (red bar). The Y-axis ranges from 0 to 6.

8.4 Module 4: Manage Traffic Summon (NUR SYAZWANI BINTI RAHMAT CA21025)

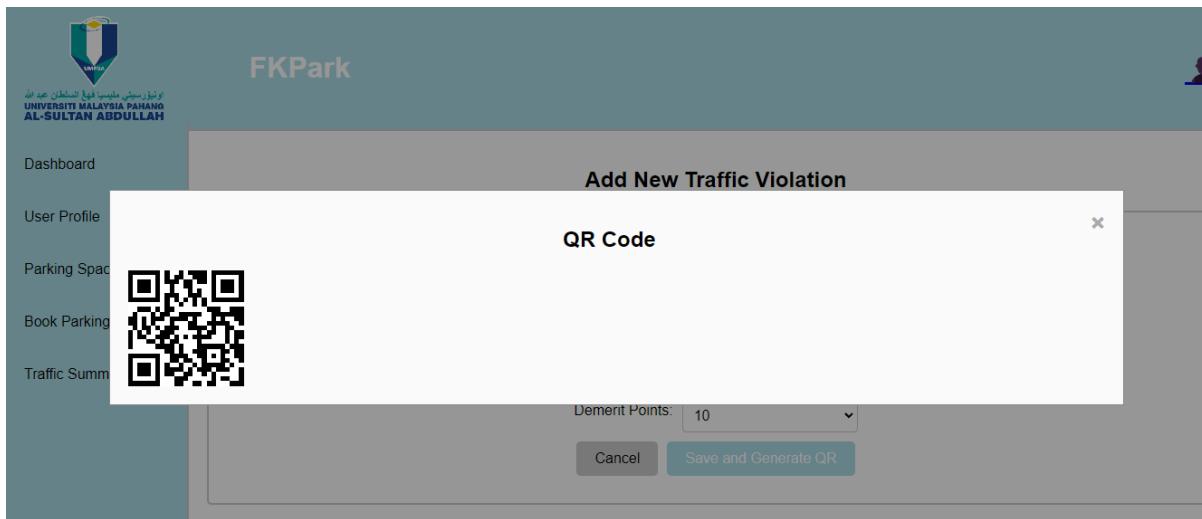
8.4.1 Traffic Summon Home Interface

The screenshot shows the 'Traffic Summon' interface. At the top right is a user profile icon. The main content area is titled 'Traffic Summon' and contains three buttons: 'Add New Traffic Violation', 'Update Traffic Summon', and 'View Violation Record'. On the left sidebar, there are links for 'Dashboard', 'User Profile', 'Parking Spaces', 'Book Parking', 'Traffic Summon', and 'Logout'. The university logo and name are at the top left.

8.4.2 Add new traffic violation

The screenshot shows the 'Add New Traffic Violation' form. It includes fields for 'Staff ID', 'Vehicle Plate Number', 'Type of Violation' (with a dropdown menu), 'Type of Enforcement' (with a dropdown menu), and 'Demerit Points' (with a dropdown menu). At the bottom are 'Cancel' and 'Save and Generate QR' buttons. The sidebar on the left is identical to the previous screenshot.

8.4.3 QR Code generated after saving

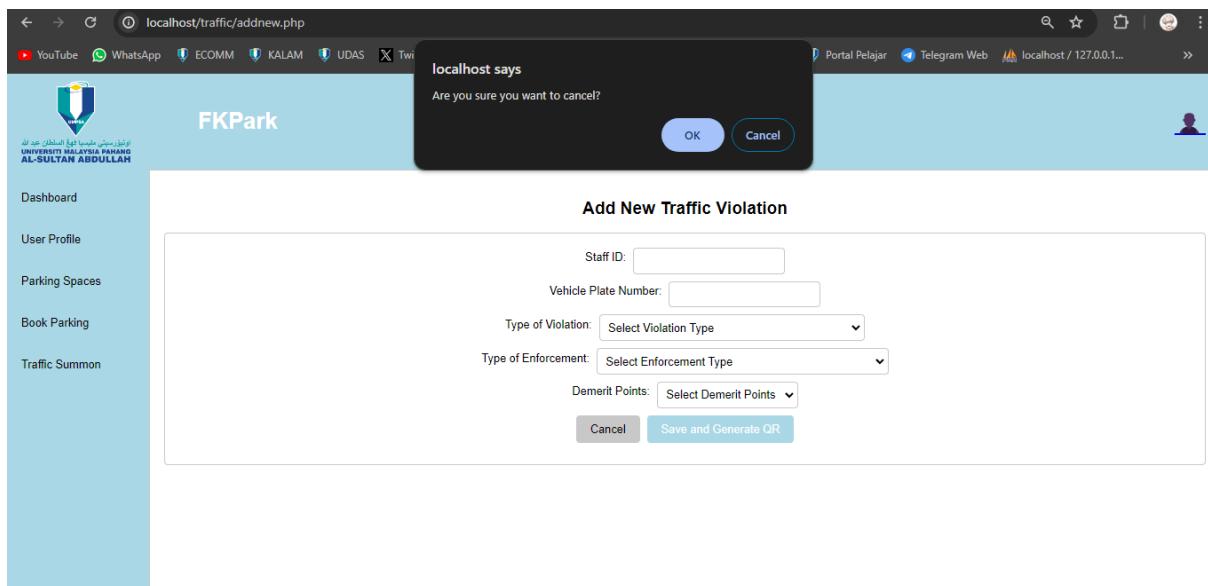


8.4.4 All input data is saved in the database (phpMyAdmin)

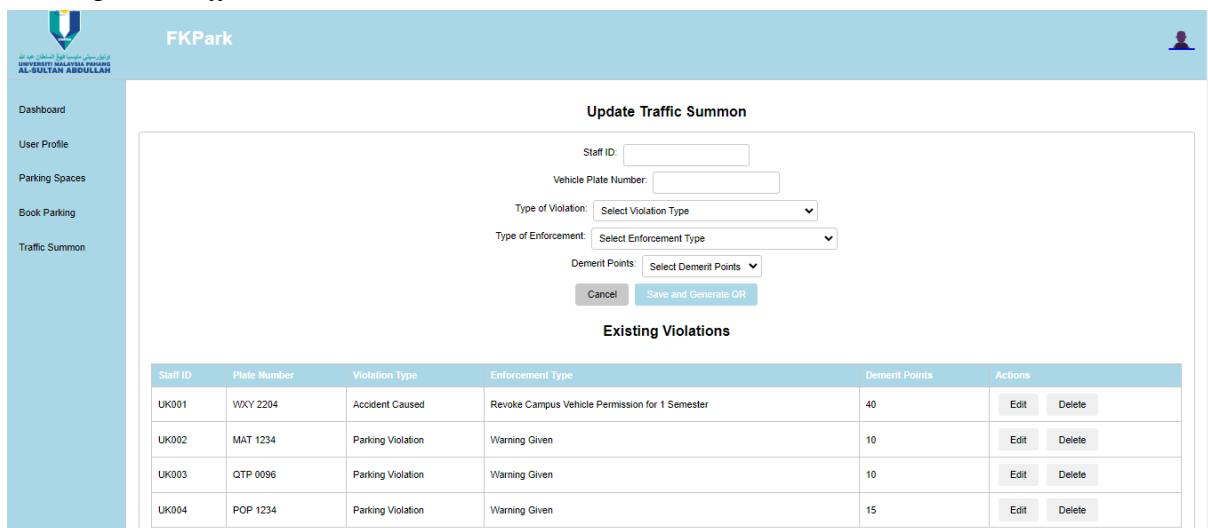
The screenshot shows a table from the "trafficViolations" database. The table has columns: staffID, plate_number, violation_type, enforcement_type, demerit_points, and violation_date. There are four rows of data:

staffID	plate_number	violation_type	enforcement_type	demerit_points	violation_date
UK001	WXY 2204	Accident Caused	Revoke Campus Vehicle Permission for 1 Semester	40	2024-06-16 23:13:30
UK002	MAT 1234	Parking Violation	Warning Given	10	2024-06-16 23:39:41
UK003	QTP 0096	Parking Violation	Warning Given	10	2024-06-16 23:43:46
UK004	POP 1234	Parking Violation	Warning Given	15	2024-06-17 09:00:42

8.4.5 Cancel traffic summon



8.4.6 Update traffic summon



8.4.7 Edit traffic violations (can edit all the information from staff ID until demerit points)

localhost says
Enter new Demerit Points:

Staff ID:
Vehicle Plate Number:
Type of Violation: Select Violation Type
Type of Enforcement: Select Enforcement Type
Demerit Points: Select Demerit Points
OK Cancel Save and Generate QR

Existing Violations

Staff ID	Plate Number	Violation Type	Enforcement Type	Demerit Points	Actions
UK001	WXY 2204	Accident Caused	Revoke Campus Vehicle Permission for 1 Semester	40	Edit Delete
UK002	MAT 1234	Parking Violation	Warning Given	10	Edit Delete
UK003	QTP 0096	Parking Violation	Warning Given	10	Edit Delete
UK004	POP 1234	Parking Violation	Warning Given	15	Edit Delete

8.4.8 Delete traffic summon

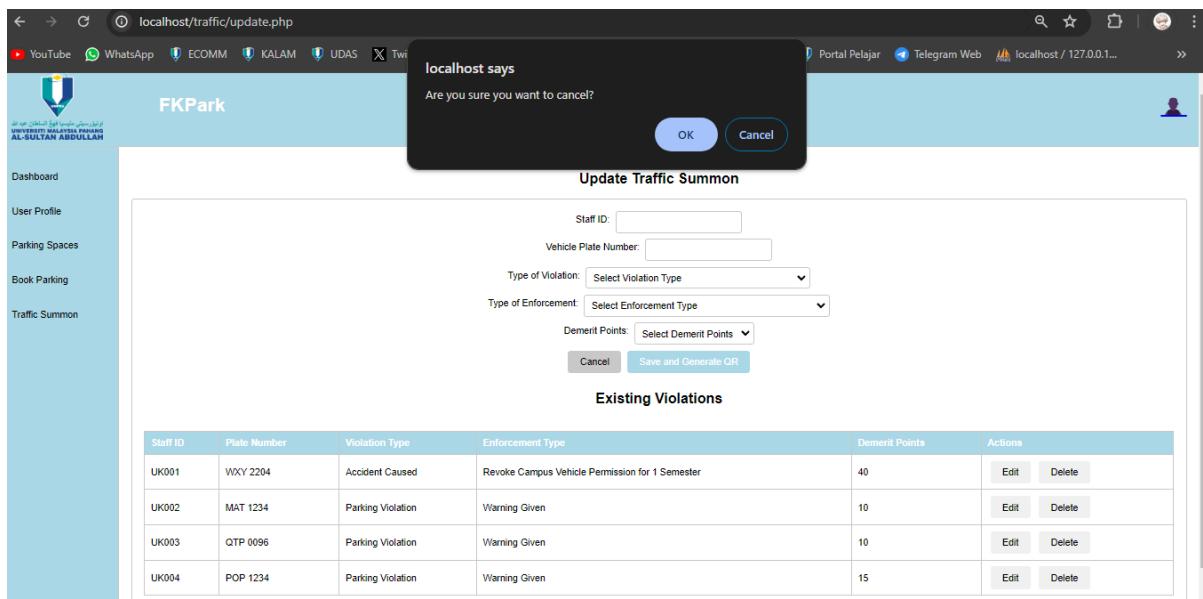
localhost says
Are you sure you want to delete this violation?

Staff ID:
Vehicle Plate Number:
Type of Violation: Select Violation Type
Type of Enforcement: Select Enforcement Type
Demerit Points: Select Demerit Points
OK Cancel Save and Generate QR

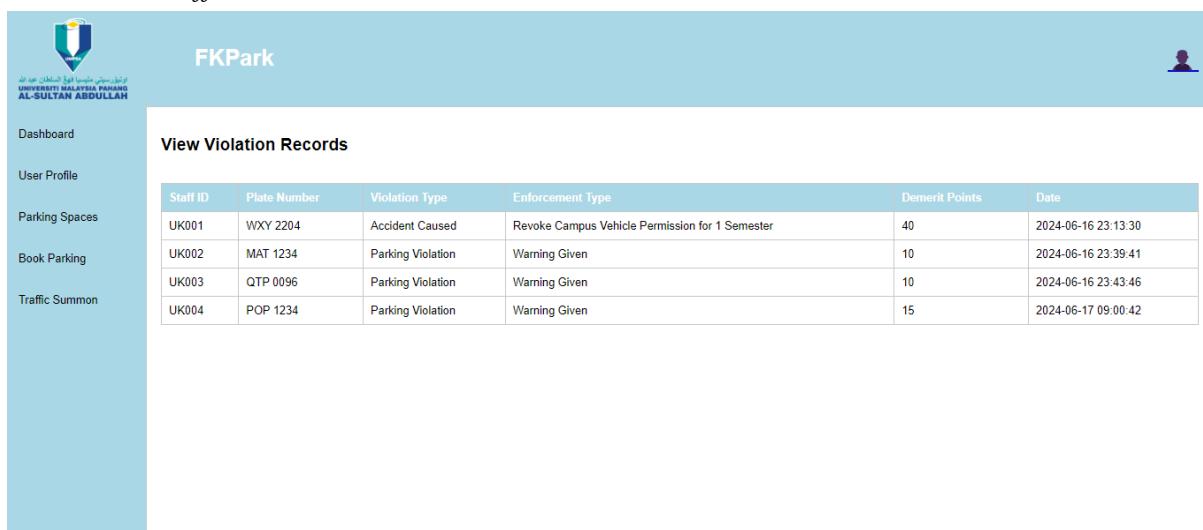
Existing Violations

Staff ID	Plate Number	Violation Type	Enforcement Type	Demerit Points	Actions
UK001	WXY 2204	Accident Caused	Revoke Campus Vehicle Permission for 1 Semester	40	Edit Delete
UK002	MAT 1234	Parking Violation	Warning Given	10	Edit Delete
UK003	QTP 0096	Parking Violation	Warning Given	10	Edit Delete
UK004	POP 1234	Parking Violation	Warning Given	15	Edit Delete

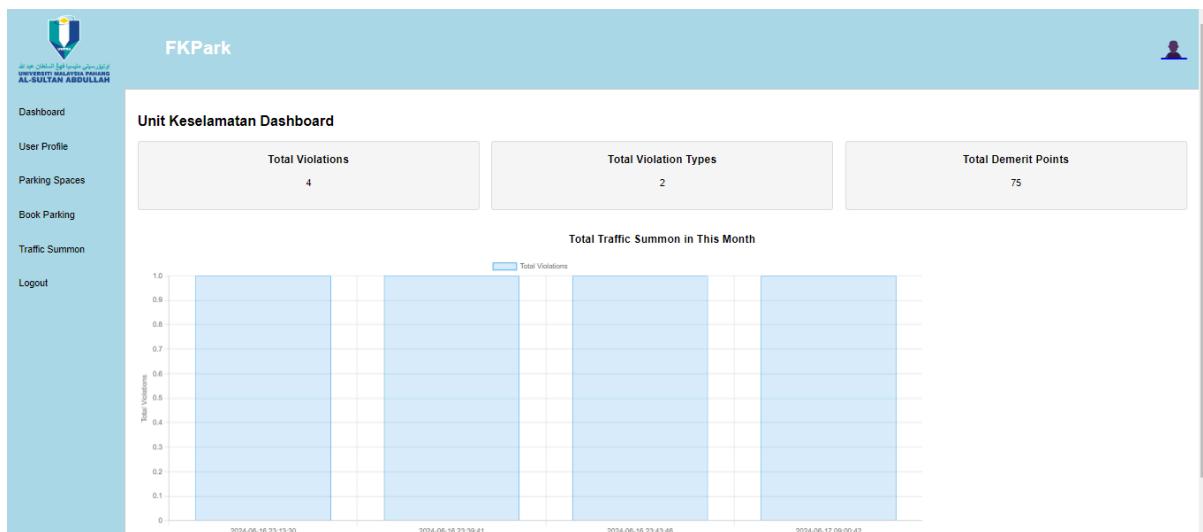
8.4.9 Cancel update traffic summon



8.4.10 View traffic violations record

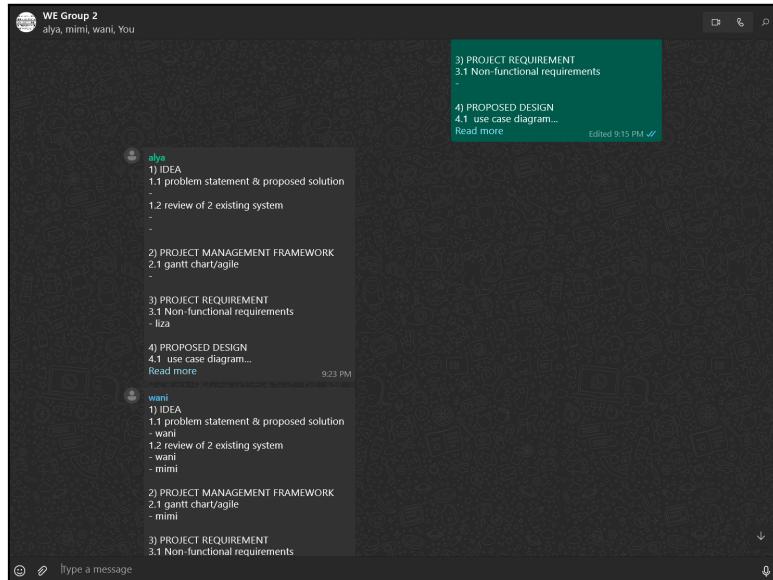


8.4.11 Unit Keselamatan Dashboard



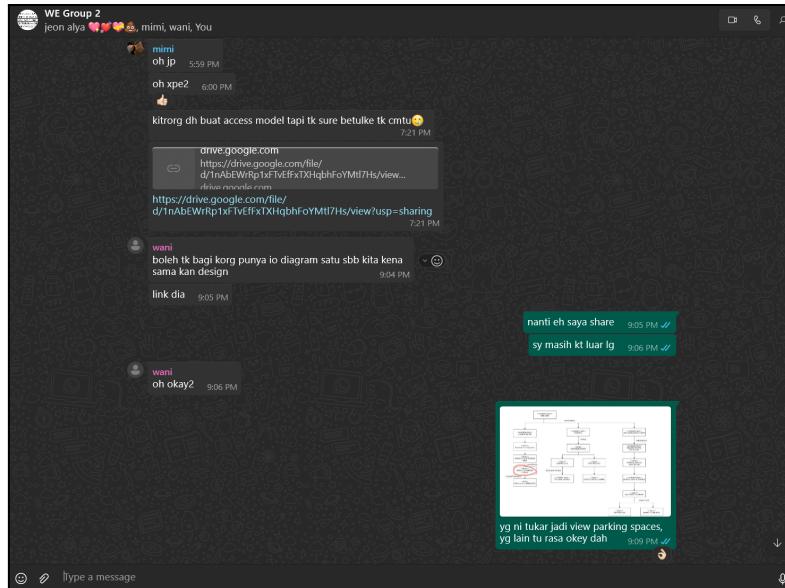
9. TEAM MANAGEMENT

9.1 Report of Meeting Sessions



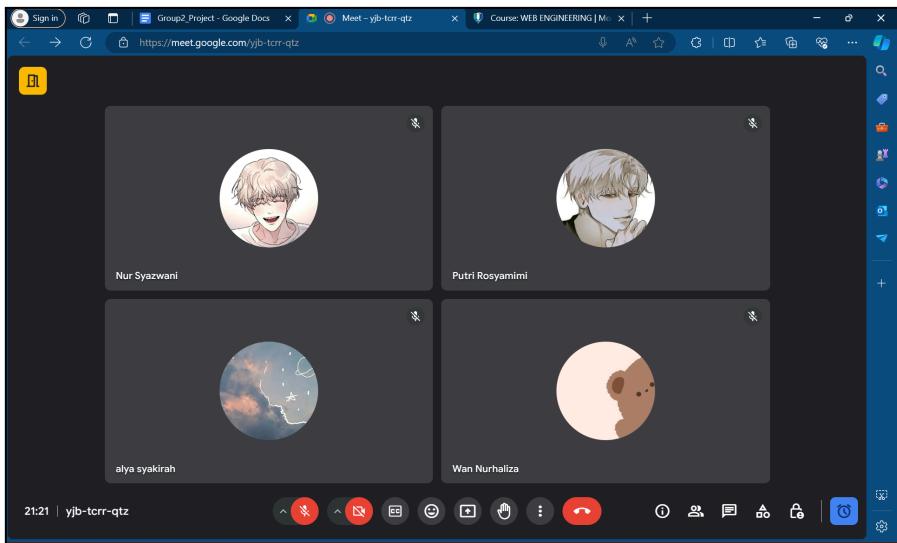
Date	07.05.2024
Task	Task Distribution

Figure 9.1.1 Meeting 1 - WhatsApp



Date	15.05.2024
Task	Discussion about access model & proposed design

Figure 9.1.2 Meeting 2 - WhatsApp



Date	19.05.2024
Task	Recheck all the task given

Figure 9.1.3 Meeting 3 - Google Meet

9.2 Task Distribution

IDEA 1.1 Problem Statement and Proposed Solution	NUR SYAZWANI BINTI RAHMAT
1.2 Review of two existing system	NUR SYAZWANI BINTI RAHMAT PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI
PROJECT MANAGEMENT FRAMEWORK 2.1 Gantt Chart / Agile	PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI
PROJECT REQUIREMENT 3.1 Non-Functional Requirements	AZMI WAN NURHALIZA
PROPOSED DESIGN 4.1 Use Case Diagram	NUR ALYA SYAKIRAH BINTI NASARUDIN
4.2 Use Case Scenario 4.2.1 MODULE 1: Login, Manage User and Vehicle Registration 4.2.2 MODULE 2: Manage Parking Area 4.2.3 MODULE 3: Manage Parking Booking 4.2.4 MODULE 4: Manage Traffic Summon	All Members
4.3 Access Model	NUR SYAZWANI BINTI RAHMAT PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI
DATA DESIGN 5.1 ERD	AZMI WAN NURHALIZA NUR ALYA SYAKIRAH BINTI NASARUDIN

5.2 Data Dictionary	NUR SYAZWANI BINTI RAHMAT PUTRI ROSYAMIMI ATHIRAH BINTI ROSHAIDI
5.3 Sample Data	AZMI WAN NURHALIZA NUR ALYA SYAKIRAH BINTI NASARUDIN
PROPOSED DESIGN: PRESENTATION MODEL 6.1 MODULE 1: Login, Manage User and Vehicle Registration 6.2 MODULE 2: Manage Parking Area 6.3 MODULE 3: Manage Parking Booking 6.4 MODULE 4: Manage Traffic Summon	All Members
PROJECT DEVELOPMENT 7.1 Testing Plan 7.2 Deployment Plan	NUR ALYA SYAKIRAH BINTI NASARUDIN AZMI WAN NURHALIZA
TEAM MANAGEMENT 8.1 Report of Meeting Sessions 8.2 Task Distribution	AZMI WAN NURHALIZA

Table 8.2.1 Task Distribution

9.3 Link

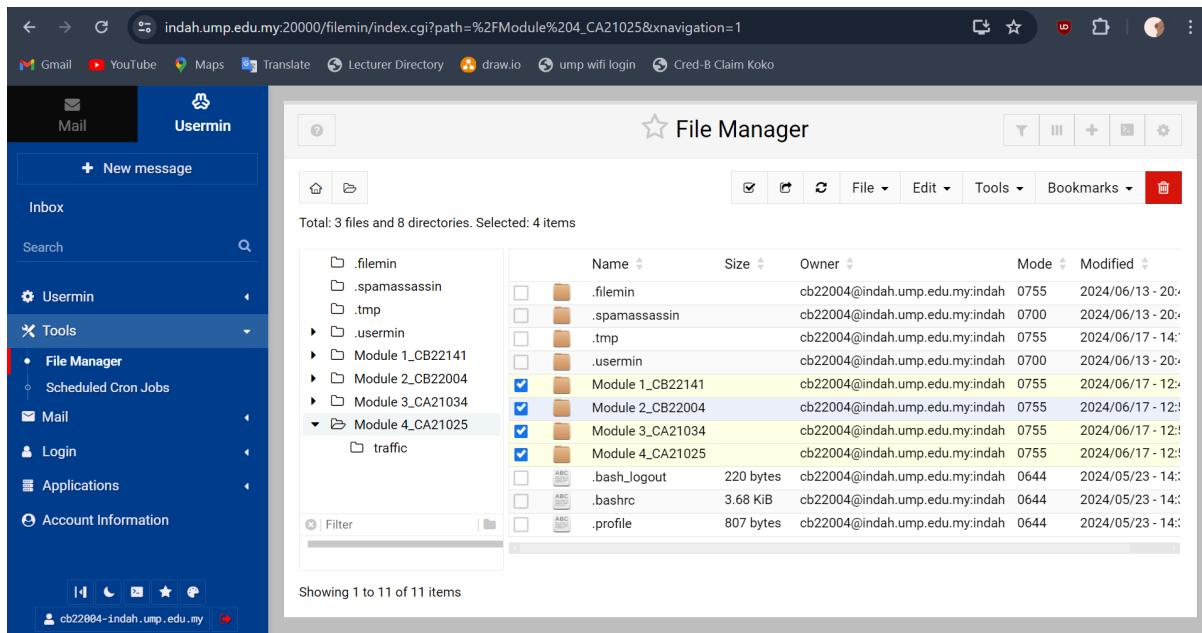
Link Source Code: [Source Code WE_Group 2](#)

Link Presentation: <https://youtu.be/6v2PLsKhi70?si=y1Pi15xwFLGUZ8gV>

Link Indah:

- https://indah.ump.edu.my/cb22004/Module_1_CB22141
- https://indah.ump.edu.my/cb22004/Module_2_CB22004
- https://indah.ump.edu.my/cb22004/Module_3_CA21034
- https://indah.ump.edu.my/cb22004/Module_4_CA21025

*Proof upload Indah



Registered Account for the system:

1. Role : Student

Username / Email : alyaaasyakirah@gmail.com

Password : 123456

2. Role : Administrator

Username / Email : nanairah01@gmail.com

Password : 679123

3. Role : Unit Keselamatan Staff

Username / Email : fontenotjodi88@hotmail..com

Password : 2234567