Parkalot

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Date: [date of final presentation]

Final Approval

This is to certify that we have read the report submitted by ***Aqib Ur Rehman(27953)***, ***Muhammad Waqas Rathor(28550)***,***Huzaifa Khan(27951)***, for the partial fulfillment of the requirements for the degree of the Bachelors of Science in Computer Science (BSCS). It is our judgment that this report is of sufficient standard to warrant its acceptance by Riphah International University, Islamabad for the degree of Bachelors of Science in Computer Science (BSCS).

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Declaration

We hereby declare that this document “**Parkalot**” neither as a whole nor as a part has been copied out from any source. It is further declared that we have done this project with the accompanied report entirely on the basis of our personal efforts, under the proficient guidance of our teachers, especially our supervisor **Mr.Muhammad Imran Khan**. If any part of the system is proved to be copied out from any source or found to be reproduction of any project from anywhere else, we shall stand by the consequences.

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Dedication

This project is dedicated to all individuals striving to make urban living more efficient and sustainable. We extend our gratitude to our mentors, family, and friends for their unwavering support and encouragement throughout the development of Parkalot. Their guidance and belief in our vision have been instrumental in bringing this innovative parking solution to life.

Acknowledgement

First of all we are obliged to Allah Almighty the Merciful, the Beneficent and the source of all Knowledge, for granting us the courage and knowledge to complete this Project.We would like to express our heartfelt gratitude to everyone who supported us during the development of Parkalot. Our sincere thanks to our mentors and advisors for their valuable guidance, constructive feedback, and encouragement throughout this project. We also extend our appreciation to our peers for their collaboration and insightful discussions, which enriched our understanding and inspired creative solutions.

Special thanks go to our families and friends for their unwavering support, patience, and motivation, which helped us overcome challenges and stay focused on our goals. Lastly, we are grateful for the opportunity to work on this project, which allowed us to apply our skills and contribute to addressing real-world problems in parking management

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Abstract

Parkalot is a mobile-first application designed to revolutionize parking management by bridging the gap between parking seekers and property owners offering available spaces. The application streamlines the process of finding, reserving, and managing parking spots, addressing challenges such as parking scarcity, traffic congestion, and inefficient resource utilization. It incorporates secure registration using manual identity verification through ID card images and live photo uploads, ensuring a high level of trust and transparency.

Unlike traditional systems, Parkalot adopts a simple manual payment process that eliminates the need for automated systems, making it both user-friendly and adaptable. The real-time parking spot discovery feature, coupled with a mobile-friendly interface, ensures convenience and accessibility for users. This report explores the project’s development process, its goals, and the potential benefits it brings to urban mobility by offering a practical and scalable solution for parking challenges.

CHAPTER 1

INRODUCTION

Urbanization has led to a surge in vehicle ownership, resulting in an increasing demand for parking spaces. The lack of efficient parking management systems has contributed to problems such as prolonged search times, traffic congestion, and underutilization of available parking spots. Parkalot aims to address these challenges by providing a mobile-based platform that simplifies the parking experience for both parking seekers and property owners.

Parkalot focuses on creating a seamless connection between users looking for parking and property owners who wish to rent their available spaces. The application's secure registration process, which involves manual ID card and live photo verification, ensures that only genuine users can access the platform. Additionally, the app offers real-time parking spot discovery, allowing users to locate and reserve spots quickly and efficiently. By integrating a straightforward manual payment system, Parkalot eliminates complexities while maintaining transparency in transactions.

This report delves into the development process of Parkalot, including its scope, objectives, and technical implementation. It also highlights the application's potential to improve urban mobility by optimizing parking space utilization and reducing traffic-related issues. By addressing these critical challenges, Parkalot aims to provide a practical, user-friendly, and impactful solution for modern urban environments.[1]

1.1 GOALS AND OBJECTIVES

Goals and Objectives are given below.

1.1.1 Goals

Following are the goals:

1.1.1.1 Simplify Parking Management

The primary goal of Parkalot is to provide a seamless solution for parking management by connecting parking seekers with property owners through a mobile application[2]. By addressing common issues such as lack of parking availability and inefficient processes, Parkalot aims to streamline the experience of finding, reserving, and utilizing parking spaces.

1.1.1.2 Optimize Urban Mobility

Parkalot seeks to enhance urban mobility by minimizing the time and effort spent on finding parking spaces. This goal aligns with reducing traffic congestion caused by vehicles searching for parking, ultimately contributing to more efficient traffic flow in cities.

1.1.1.3 Empower Property Owners

The project aims to empower property owners by enabling them to monetize their unused parking spaces. By creating a platform for them to list and manage their spots, Parkalot provides an additional source of income while improving resource utilization.

1.1.1.4 Promote User Accessibility

Ensuring ease of use and accessibility for all users is a core goal of Parkalot. The application is designed to provide an intuitive and user-friendly interface, making it accessible for parking seekers and property owners, regardless of their technical expertise.

1.1.2 Objectives

Following are the objectives:

1.1.2.1 Secure User Registration

Parkalot focuses on implementing a robust registration system using manual ID card and live photo verification. This ensures that only verified users can access the platform, promoting trust and security among users.

1.1.2.2 Efficient Parking Spot Management

The application will enable property owners to list, update, and manage their parking spots directly through the mobile app. This includes real-time updates on parking spot availability, ensuring a smooth experience for both owners and seekers.

1.1.1.1. Real-Time Search and Booking

Parkalot aims to provide parking seekers with a GPS-enabled search and booking system, allowing them to find and reserve parking spaces in real time. This feature will significantly reduce the hassle of searching for parking manually.

1.1.2.4 Manual Payment System

A simple and transparent manual payment process will be integrated, ensuring that users can securely complete transactions without the complexity of automated systems. This approach is designed to suit the local context and preferences of users.

1.2 SCOPE OF THE PROJECT

The scope of Parkalot is to develop a mobile application that simplifies parking management by connecting parking seekers with property owners.The project aims to address urban parking challenges such as scarcity of spaces, inefficient utilization, and user inconvenience through the following features:

1.2.1 User Registration and Verification

Users (parking seekers and property owners) will register by uploading their ID card images and live photos for manual identity verification, ensuring secure access to the platform.

1.2.2 Parking Spot Management

Property owners can list, update, and manage parking spaces through the app, providing real-time updates on availability and other details.

1.2.3 Search and Booking

Parking seekers can use GPS-enabled search functionality to locate nearby parking spaces and book them in real-time for specific durations.

1.2.4 Manual Payment System

A straightforward manual payment process will allow users to handle transactions securely, without reliance on automated systems.

1.2.5 Mobile-Only Application

The project exclusively focuses on a mobile app for ease of access, catering to the needs of on-the-go users.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The increasing challenges in urban parking management have prompted researchers to explore innovative solutions utilizing advanced technologies[3]. This chapter examines the state-of-the-art methods and systems developed to address parking issues, focusing on resource allocation, AI-powered identity verification, and user experience in location-based parking systems. By comparing these approaches with Parkalot, we aim to highlight the unique contributions and gaps in existing systems.

2.2 BACKGROUND AND PROBLEM ELABORATION

Urbanization has significantly increased the demand for parking, leading to issues such as traffic congestion, inefficient parking space utilization, and user frustration[4]. Existing systems have attempted to mitigate these problems through smart parking solutions, but many fail to address key challenges like secure identity verification, real-time updates, and intuitive user interfaces. Parkalot differentiates itself by combining manual ID verification, real-time spot discovery, and a mobile-centric approach, making it more accessible and practical for diverse user groups.

2.3 Detailed Literature Review

2.3.1 Definitions

Below are the definations of the words used in literature review

2.3.1.1 Smart Parking Systems

Automated solutions leveraging technology to optimize parking space allocation and reduce search times.

2.3.1.2 AI-Powered Identity Verification

Techniques using artificial intelligence to validate user identity through facial recognition or document analysis.

2.3.1.3 Location-Based Services (LBS)

Applications utilizing GPS and mapping data to deliver real-time information relevant to the user's location.

2.3.1.4 Smart Parking System Based on Resource Allocation

Geng and Cassandras propose a resource allocation-based smart parking system aimed at optimizing parking space utilization[5]. Their method uses algorithms to dynamically assign parking spaces based on vehicle and space availability. The system focuses on reducing search time and improving traffic flow through automated resource management.

Parkalot

Comparison with Parkalot while Geng and Cassandras' system automates resource allocation, Parkalot emphasizes a manual yet user-friendly approach to payment and verification, making it more adaptable to regions with limited technological infrastructure.

2.3.1.5 Conclusion

This work highlights the benefits of automation in parking systems but may not address the accessibility challenges that Parkalot targets with its mobile-centric and straightforward design

2.3.1.6 AI-Powered Identity Verification Methods

Ma and Theera-Ampornpunt explore AI-driven identity verification systems, focusing on the use of facial recognition and document validation for secure access control.[6] Their study evaluates the accuracy and reliability of AI methods, emphasizing their potential in reducing fraudulent activities.Comparison with Parkalot Parkalot integrates manual identity verification through ID card and live photo uploads, offering a simpler alternative to fully automated systems.[7] This approach ensures security while minimizing technical dependencies.

2.3.1.7 **Conclusion**

AI-powered verification systems offer superior accuracy, but Parkalot's manual verification ensures practicality and ease of use, especially in areas with limited access to AI infrastructure

2.3.1.8 User Experience in Location-Based Services for Parking Systems

Rastogi and Bhardwaj analyze user experience in location-based parking systems, focusing on interface design, navigation accuracy, and user satisfaction. Their work emphasizes the importance of intuitive designs and real-time information in enhancing user engagement.[8]

Comparison with Parkalot, it shares a similar focus on user experience, employing a GPS-enabled interface for real-time parking spot discovery[9]. However, Parkalot's emphasis on manual payment and verification adds a layer of simplicity that sets it apart.

2.3.1.9 Conclusion

While location-based services enhance user experience through real-time updates, Parkalot combines this with a straightforward process to ensure accessibility for diverse users.

2.4 LITERATURE REVIEW SUMMARY TABLE

Below is complete Literature summary table.

Table 1: History of Computing Devices

No.	Name, reference	Inventor	Year	Input	Output	Description
1.	Smart Parking System Based on Resource Allocation][R]	Geng & Cassandras	2013	Parking space data, vehicle location	Optimized parking space assignment	Proposes a system for dynamic resource allocation to reduce search time and traffic
2.	AI-Powered Identity Verification Methods	Ma & Theera-Ampornpunt	2019	User facial images, ID documents	Verified user identity	Explores AI-driven methods for secure identity verification through facial recognization
3.	User Experience in Location-Based Services for Parking Systems	Rastogi & Bhardwaj	2020	GPS location, user preferences	Real-time parking suggestions	Analyzes user interface design and real-time navigation for location based-parking system

2.5 RESEARCH GAP

Despite significant advancements in smart parking systems, several gaps remain that limit their widespread adoption[10]. Most existing systems, such as those based on resource allocation and AI-driven identity verification, rely heavily on advanced infrastructure and automation, which may not be feasible in regions with limited technological resources. Additionally, while user experience in location-based services has been explored, many solutions lack inclusivity, focusing solely on automated systems that may exclude users who prefer or require simpler, manual processes.

Parkalot addresses these gaps by combining the efficiency of GPS-enabled parking discovery with the accessibility of manual identity verification and payment methods[11]. This ensures that users can benefit from a secure and straightforward parking solution without the need for extensive automation or complex integrations.

2.6 PROBLEM STATEMENT

Urbanization has exacerbated parking challenges in cities, leading to inefficient resource utilization, prolonged search times, and increased traffic congestion. While existing smart parking systems aim to resolve these issues, they often require advanced technological infrastructure and fail to cater to users in regions where automation is impractical or inaccessible.[12]

There is a critical need for a user-centric parking solution that balances technological innovation with simplicity and adaptability. Parkalot addresses this by offering a mobile application that integrates manual identity verification, real-time parking spot discovery, and a user-friendly payment process. This project seeks to bridge the gap between advanced parking systems and the practical needs of users in diverse urban settings.

CHAPTER 3

REQUIREMENT AND DESIGN

3.1 REQUIREMENTS

3.1.1 Functional Requirements

ID	Requirments
3.1.1.1	The system shall allow users (parking seekers and property owners) to register an account
3.1.1.2	The system shall require users to upload ID cards and live photos for manual verification.
3.1.1.3	Property owners shall be able to list, update, and manage their parking spots
3.1.1.4	The system shall allow parking seekers to search for available parking spots using GPS.
3.1.1.5	The system shall enable parking seekers to book parking spots in real-time.
3.1.1.6	The system shall support manual payment processing between users.
3.1.1.7	The system shall maintain a booking history for parking seekers to view heir previous reservations.
3.1.1.8	The system shall send notifications to property owners when their parking spots are booked.

3.1.2 Non-Functional Requirements

Non Fuctional Requirements are as follows:

3.1.2.1 Usability

The application should have a user-friendly and intuitive interface, ensuring ease of navigation.

3.1.2.2 Performance

The system must respond to user queries (e.g., search and bookings) within 3 seconds.

3.1.2.3 Security

Ensure secure data transmission and storage for ID cards and user information.

3.1.2.4 Scalability

The app should support a growing user base without performance degradation.

3.1.2.5 Availability

Ensure 99% uptime for uninterrupted access.

3.1.3 Hardware and Software Requirements

3.1.3.1 Hardware Requirements

1. Mobile device (Android or iOS) for users.
2. Server with adequate storage and processing capabilities to host user data and app logic.
3. GPS-enabled devices for parking seekers.

3.1.3.2 Software Requirements

3.1.3.2.1 Development Platforms

Android Studio/Visual Studio (for mobile development).

3.1.3.2.2 Backend Framework

Java, Spring Boot, Flask/Django for API development.

3.1.3.2.3 Database

MySQL for storing user and parking data.

3.1.3.2.4 Image Processing

OpenCV or TensorFlow for identity verification.

3.2 PROPOSED METHODOLOGY

The proposed methodology involves the following phases:

3.2.1 Requirement Analysis

Understand the needs of parking seekers and property owners, focusing on simplicity and security.

3.2.2 System Design

Develop a user-friendly mobile application with clear workflows for registration, parking management, and booking.

3.2.3 Development

Build the app with secure manual ID verification, real-time parking search functionality, and efficient booking workflows.

3.2.4 Testing and Integration

Perform rigorous testing to ensure functionality, security, and scalability.

3.2.5 Deployment and Feedback

Deploy the app and collect user feedback for future improvements.

3.3 System Architecture

The system architecture of Parkalot is designed as a multi-tier architecture consisting of the following layers:

3.3.1 Presentation Layer

The mobile app interface for users to register, search, book, and manage parking.

3.3.2 Application Layer

Business logic, including ID verification, parking management, and booking workflows, implemented through REST APIs.

3.3.3 Data Layer

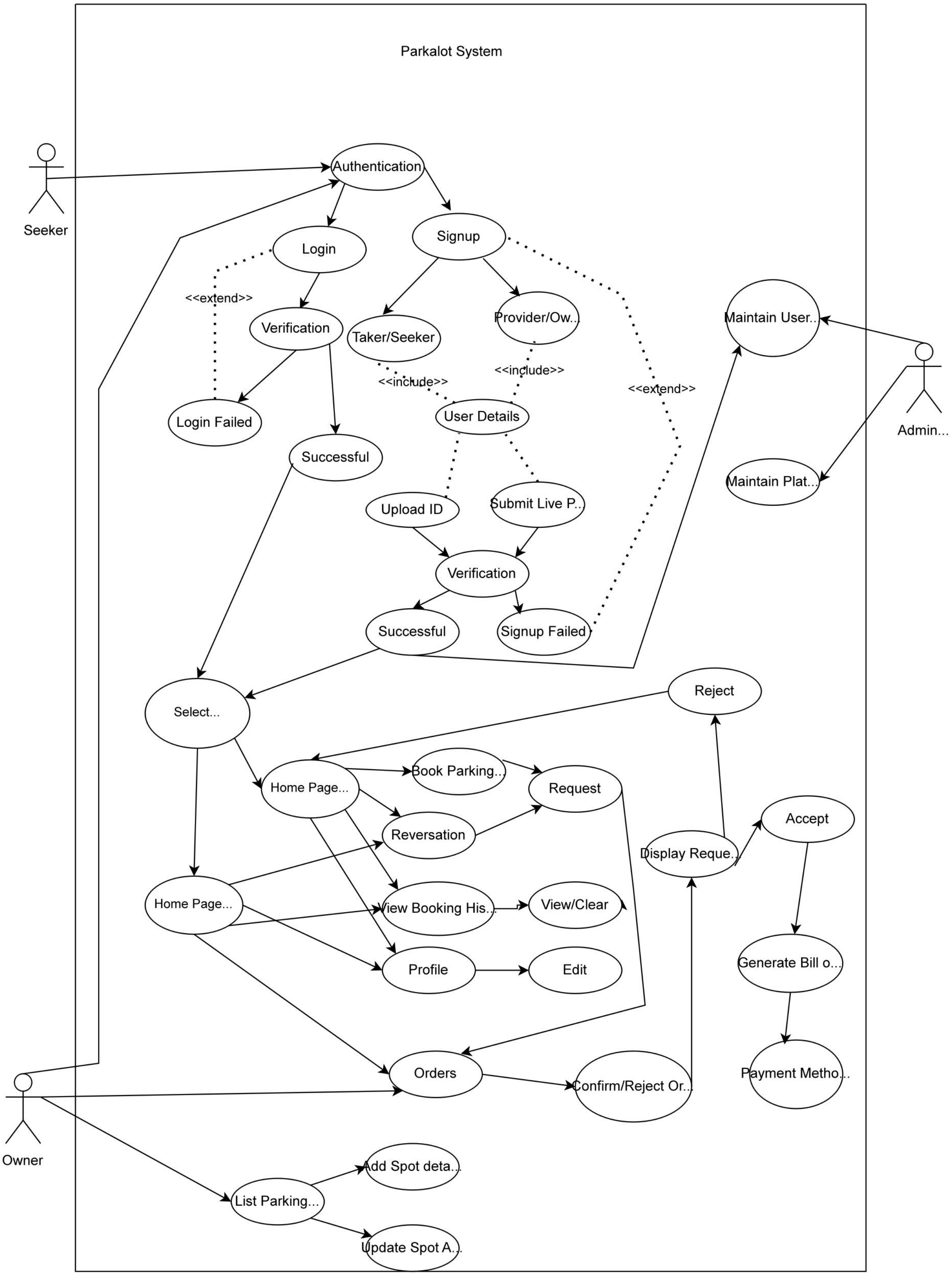
MySQL database for storing user information, parking spot details, and booking history.

3.3.4 Hardware Layer

GPS-enabled mobile devices and servers hosting the backend and database.

This architecture ensures scalability, security, and performance while providing a seamless user experience.

3.4 Use Cases


Parkalot System
Seeker
Authentication
Login
Signup
<<extend>>
Verification
Taker/Seeker
Provider/Ow...
Maintain User...
<<include>>
<<include>>
<<extend>>
Admin...
Login Failed
User Details
Successful
Maintain Plat...
Upload ID
Submit Live P...
Verification
Successful
Signup Failed
Select...
Reject
Home Page...
Book Parking...
Request
Reversation
Accept
Display Reque...
Home Page...
View Booking His...
View/Clear
Generate Bill o...
Profile
Edit
Orders
Confirm/Reject Or...
Payment Metho...
Owner
Add Spot deta...
List Parking...
Update Spot A...

3.4.1 Register User

Name	**Register User**		
Actors	User (Parking Seeker or Property Owner)		
Stakeholders	User: Wants to register securely. System Administrator: Ensures only verified users access the system.		
Pre-Conditions	User must have a valid ID card and a device with a camera.		
Success Guarantee	User is successfully registered and can log in to the system		
Post-Conditions	User data is securely stored, and access to system features is granted.		
Special Requirements	None		
Summary	The user shall provide their email and password on the login form and after successful verification, redirect the user to the home page.		
Basic Flow			
Actor Action		**System Response**	
1	User opens the app and selects "Register."	2	Displays the registration form.
3	User fills in personal details.	4	Validates the input fields and confirms details.
5	User uploads an ID card and captures a live photo.	6	Compares ID card image with live photo for verification.
7	User submits the registration form.	8	Confirms successful verification and saves user data to the database.
9	User receives a registration confirmation	10	Redirects the user to the login page.
Alternative Flow			
6-A	System prompts the user to re-upload a valid ID.	7-A	System notifies the user and redirects to reattempt registration.

3.4.2 List Parking Spot

<table>
<tr><td><b>Name</b></td><td colspan="3"><b>List Parking Spot</b></td></tr>
<tr><td><b>Actors</b></td><td colspan="3">Property Owner</td></tr>
<tr><td><b>Stakeholders</b></td><td colspan="3">Property Owner:List parking spots. Parking Seeker: Needs accurate parking availability.</td></tr>
<tr><td><b>Pre-Conditions</b></td><td colspan="3">Property owners must have a registered account.</td></tr>
<tr><td><b>Success Guarantee</b></td><td colspan="3">Parking spot is successfully listed and visible to users.</td></tr>
<tr><td><b>Post-Conditions</b></td><td colspan="3">Parking spot details are saved and searchable.</td></tr>
<tr><td><b>Special Requirements</b></td><td colspan="3">None</td></tr>
<tr><td><b>Summary</b></td><td colspan="3">This use case outlines how property owners can add and manage parking spots for seekers to find and book</td></tr>
<tr><td colspan="4"><b>Basic Flow</b></td></tr>
<tr><td colspan="2"><b>Actor Action</b></td><td colspan="2"><b>System Response</b></td></tr>
<tr><td>1</td><td>Property Owner logs into the app.</td><td>2</td><td>Displays the dashboard with listing options</td></tr>
<tr><td>3</td><td>Owner selects "List Parking Spot."</td><td>4</td><td>Opens the form to add parking spot details.</td></tr>
<tr><td>5</td><td>Owner enters details such as location, size, and availability</td><td>6</td><td>Validates input and saves the parking spot details.</td></tr>
<tr><td>7</td><td>Confirms listing and updates the database.</td><td>8</td><td>Confirms listing and updates the database.</td></tr>
<tr><td>9</td><td>Spot is visible to parking seekers.</td><td>10</td><td>Notifies the owner of successful listing.</td></tr>
<tr><td colspan="4"><b>Alternative Flow</b></td></tr>
<tr><td>4-A</td><td>System highlights missing fields and prompts to complete the form.</td><td></td><td></td></tr>
</table>

3.4.3 Search Parking spot

Name	**Search parking spot**		
Actors	Parking seeker		
Stakeholders	-Parking Seeker-: Needs a quick way to find a parking spot -Parking Owner-:Wants visibility for listed spots		
Pre-Conditions	Parking Seeker is logged into the system. GPS is enabled on the user's device		
Post-Conditions	Parking seeker finds and selects a parking spot for booking.		
Special Requirements	None		
Summary	This use case enables user to locate and book nearby parking spaces using GPS and search filters.		
Basic Flow			
Actor Action		**System Response**	
1	. Parking Seeker logs in and selects "Search."	2	Displays the search interface with filters.
3	Seeker enters search criteria (e.g., location, availability)	4	Processes the search query and retrieves matching results..
5	Seeker confirms the selection.	6	Reserves the parking spot and updates the database.
Alternative Flow			
2-A	System suggests nearby options or allows the user to adjust filters.	1-A	System prompts the user to manually enter the location.

3.4.4 Manual Payment Processing

<table>
<tr><td><b>Name</b></td><td colspan="3"><b>Process Manual Payment</b></td></tr>
<tr><td><b>Actors</b></td><td colspan="3">User (Parking Seeker or Property Owner)</td></tr>
<tr><td><b>Stakeholders</b></td><td colspan="3">Parking Seeker: Needs a simple payment process.
Property Owner: Expects timely payments.</td></tr>
<tr><td><b>Pre-Conditions</b></td><td colspan="3">Booking has been confirmed by the Parking Seeker.</td></tr>
<tr><td><b>Post-Conditions</b></td><td colspan="3">Payment is completed, and the booking is finalized.</td></tr>
<tr><td><b>Special Requirements</b></td><td colspan="3">None</td></tr>
<tr><td><b>Summary</b></td><td colspan="3">Parking seekers and property owners manually process payments after confirming bookings.</td></tr>
<tr><td colspan="4"><b>Basic Flow</b></td></tr>
<tr><td colspan="2"><b>Actor Action</b></td><td colspan="2"><b>System Response</b></td></tr>
<tr><td>1</td><td>Parking Seeker confirms the booking.</td><td>2</td><td>Displays payment details for the transaction.</td></tr>
<tr><td>3</td><td>Seeker initiates manual payment</td><td>4</td><td>Sends confirmation of payment initiation to the Property Owner.</td></tr>
<tr><td>5</td><td>Property Owner confirms receipt of payment</td><td>6</td><td>Marks the booking as complete and updates the database.</td></tr>
<tr><td colspan="4"><b>Alternative Flow</b></td></tr>
<tr><td>3-A</td><td>System flags the transaction as pending and notifies both parties.</td><td>4-A</td><td>System notifies the user and redirects to reattempt registration.</td></tr>
</table>

3.4.5 View Booking History

Name	**View Booking History**
Actors	Parking Seeker

Stakeholders	Parking Seeker: Wants to track their previous bookings.		
Pre-Conditions	User has made at least one booking.		
Post-Conditions	Booking history is displayed for the user.		
Special Requirements	None		
Summary	Parking seekers can view past bookings, including details like date, time, and location.		
Basic Flow			
Actor Action		**System Response**	
1	Parking Seeker logs in and selects "View Booking History."	2	Retrieves and displays a list of past bookings.
3	Seeker selects a booking for details.	4	Displays booking information such as location, date, and amount paid
Alternative Flow			
2-A	System displays a message indicating no booking history is available.		

3.5 Database Design *(Optional)*

3.6 Class Diagram (*Optional)*

3.7 Sequence diagram *(Optional)*

3.8 Any Other Artifact…

3.9 GUI Graphical User Interfaces (*Optional)*

This section should give the GUI dumps of each screen, with reference to the user. The navigation flow of each user is also required, and each GUI should mark the functionality/use case that it covers.

Implementation and Test Cases

For each chapter provide a paragraph of introduction and in the end a paragraph of conclusions.

3.10 Implementation

Whatever implementation that you have done so far, please elaborate here.

Give clear details of the algorithms that were implemented along with the platform and the APIs which were used. **For FYP-1, this chapter can be changed to description of prototype developed.**

3.10.1 Implementation of First Component/Algorithm

Write implementation of first component of your system here.

3.11 Test case Design and description

This section will be added in FYP-II. Summarize the common attributes of test cases. This may include input constraints that must be true for every input in the set of associated test cases, any shared environmental needs, any shared special procedural requirements, and any shared case dependencies. The following scheme is recommended for describing test cases in detail.

3.11.1 Sample Test case No.1

<Software component Name>			
<Reference>			
Test Case ID:	*Reference Number*	**Test Date:**	*Date*
Test case Version:	*Version number*	**Use Case Reference(s):**	*Relation to use cases*
Revision History:	*Refer to previous test case identity (if any)*		
Objective	*Need and scope of the testing*		
Product/Ver/Module:	*Refer to overall system being built and the place of this test case in it.*		
Environment:	*Necessary and desired properties of the test environment. (hardware/software)*		
Assumptions:	*Assumptions that might affect the testing process.*		

Pre-Requisite:	*Necessary condition that needs to be fulfilled prior to the test case.*	
Step No.	**Execution description**	**Procedure result**
	Events being tested.	*Mention software response.*
Comments:		
□ *Passed* □ *Failed* □ *Not Executed*		

3.11.2 Sample Test case No.2

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3.12 Test Metrics

Summarize here the common ground of attributes of test case metrics.

3.12.1 Sample Test case Matric.No.1

Metric:	**Purpose**
Number of Test Cases:	Total number of test cases that you have developed for your system.
Number of Test Cases Passed:	The number of test cases that successfully passed
Number of Test Cases Failed:	The number of test cases that failed
Test Case Defect Density:	(No of test cases failed * 100) No of test cases executed
Test Case Effectiveness:	No of defects detected using test cases *100 Total number of defects detected
Traceability Matrix:	Traceability is the ability to determine that each feature has a source in requirements and each requirement has a corresponding implemented feature.

3.12.2 Sample Test case Metric.No.2

3.12.3 Sample Test case Metric.No.3

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Parkalot

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Experimental Results and Analysis

This chapter will be added in FYP-II. Give proper analysis and discussion of experimental results (in plain English text) along with tables of results. **For each chapter provide a paragraph of introduction and in the end a paragraph of conclusions.**

Conclusion and Future Directions

This chapter is mandatory. Give conclusions and summary of the work done. What were your findings and what were the results? Discuss in detail whether the scope of your project was entirely covered or not and whether the objectives of the project were met or not. What challenges did you face and what has been left out and why?

Sum up all the conclusions of all the chapters here to make a conclusion chapter. Do not repeat any text, just summarize it in different words.

Give recommendations for future work also. How your project can be further enhanced or improved? Future recommendations if someone wants to work on it. **For FYP-1 it is mandatory to list down a plan of the work to be done for FYP-2**

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