

Kingdom of Saudi Arab
Ministry of Higher Education
Majmaah University
College of Science at Az-Zulfi
Department of Computer Science & Information



المملكة العربية السعودية
وزارة التعليم العالي
جامعة المجمعة
كلية العلوم بالزلفي
قسم علوم الحاسب والمعلومات

Car Parking Android App

College of science Al Zulfi
Department of Computer Science and Information

Graduation Project:01

Submitted in partial fulfillment of the requirements for the award of
Bachelor degree of the Majmaah University
(2nd semester : 2020)

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Majmaah University

Submitted by:

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Abstract

It was found that it is difficult to reserve a car parking in a large, crowded locations and that search process would take a long time, especially if the customer had an important appointment such as the take-off time of the plane or others.

We proposed a solution, which is an android app that gives the user the opportunity to book a car parking location through an android app where the place and the time duration is determined.

Moreover, when the user arrives at the specified location, he passes the ID card to the barcode scanner to verify the validity of his data recorded in the database.

Finally, the expected results are:

1. Reduce traffic congestion when searching for a position.
2. Organizing parking lots and reduce the time when searching for a parking, especially if the client has an important date, travel or otherwise.

Using modern means Technology making society in evolution.



Acknowledgements

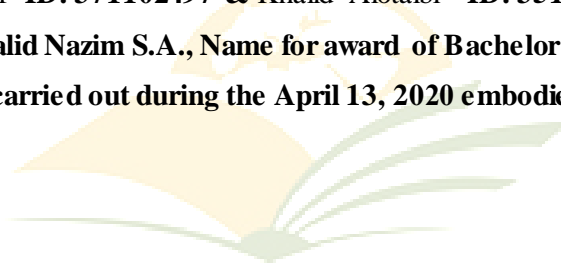
Thanks for all, thanks for all staff in college, special thanks for our supervisor. When we need help always, we find the person standing by our side, and give us all information and guidance to achieve this project, this person is our supervisor.



Certificate by student
MAJAMAAH UNIVERSITY
COLLEGE OF SCIENCE AL ZULFI
DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION

(CERTIFICATE BY STUDENT)

This is to certify that the project titled “Car Parking Android App” submitted by (Abdulmajeed Alnaddaf ID: 371102497 & Khalid Alotaibi ID: 351101535) under the supervision of Dr. Khalid Nazim S.A., Name for award of Bachelor degree of the Majmaah University carried out during the April 13, 2020 embodies my original work.



Signature in full: -----
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Date: 13/04/2020

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Chapter 1: Introduction

1.1. Abstract:

It was found that it is difficult to reserve a car parking in a large, crowded locations and that search process would take a long time, especially if the customer had an important appointment such as the take-off time of the plane or others.

We proposed a solution, which is a android app that gives the user the opportunity to book a car parking location through a android app where the place and the time duration is determined.

Moreover, when the user arrives at the specified location, he passes the ID card to the barcode scanner to verify the validity of his data recorded in the database.

Finally, the expected results are:

- Reduce traffic congestion when searching for a position.
- Organizing parking lots and reduce the time when searching for a parking place if the client has an important date, travel or otherwise.
- Using modern means Technology making society in evolution.



1.2. Problem statement:

- Most of the times in public we take more time to find a parking place and this procedure often disturbs people.
- The effect of problem is:
 - Wasting of time.
 - Make people suffer to find a suitable place to park.
 - Automation of the parking process.

1.3. Project aims (Objectives):

1. Helping specific people like "handicapped and old men".
2. Making parking in public places appear to systematically.

1.4. Applications:

- The CPAA system can be implemented in commercial areas for employee parking.
- The CPAA system can be utilized by companies and organizations such as : (hospitals, malls and university) to automated their parking system
- The CPAA can also be used in public places for public parking like in malls, stations and so on.



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1.5 Where can the CPAA system applied?

- Airports.
- Supermarkets.
- Universities.
- Hospitals.
- Organizational governments.



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Chapter 2: REQUIREMENT ANALYSIS

2.1. Feasibility study:

Car Parking Android App



1. Does the CPAA system should be presence in public places?							Response Percent	Response Total
1	1.Strongly agree						50.00%	1
2	2.Agree						50.00%	1
3	3.I agree to some extent						0.00%	0
4	4.Don't agree						0.00%	0
Analysis	Mean:	1.5	Std. Deviation:	0.5	Satisfaction Rate:	16.67	answered	2
	Variance:	0.25	Std. Error:	0.35			skipped	0

Table 1



2. Does the CPAA system shorten the time and effort for user to find car parking?							Response Percent	Response Total
1	1.Strongly agree						0.00%	0
2	2.Agree						50.00%	1
3	3.I agree to some extent						50.00%	1
4	4.Don't agree						0.00%	0
Analysis	Mean:	2.5	Std. Deviation:	0.5	Satisfaction Rate:	50	answered	2
	Variance:	0.25	Std. Error:	0.35			skipped	0

Table 2

3. Are you going to use the CPAA after it's publish?							Response Percent	Response Total
1	1.Strongly agree						0.00%	0
2	2.Agree						0.00%	0
3	3.I agree to some extent						50.00%	1
4	4.Don't agree						50.00%	1
Analysis	Mean:	3.5	Std. Deviation:	0.5	Satisfaction Rate:	83.33	answered	2
	Variance:	0.25	Std. Error:	0.35			skipped	0

Table 3

4. Do the crisis and lack of parking a real problem for you?							Response Percent	Response Total
1	1.Strongly agree						50.00%	1
2	2.Agree						0.00%	0
3	3.I agree to some extent						50.00%	1
4	4.Don't agree						0.00%	0
Analysis	Mean:	2	Std. Deviation:	1	Satisfaction Rate:	33.33	answered	2
	Variance:	1	Std. Error:	0.71			skipped	0

Table 4



5. How much do you use the system if it is available at a nominal fee?							Response Percent	Response Total
1	.1.High						50.00%	1
2	2.Medium						0.00%	0
3	3.Low						0.00%	0
4	4.Don't know						50.00%	1
Analysis	Mean:	2.5	Std. Deviation:	1.5	Satisfaction Rate:	50	answered	2
	Variance:	2.25	Std. Error:	1.06			skipped	0

Table 5



6. Do you prefer that the CPAA system would be in a form of application?							Response Percent	Response Total
1	1.Strongly agree						50.00%	1
2	2.Agree						0.00%	0
3	3.I agree to some extent						0.00%	0
4	4.Don't agree						50.00%	1
Analysis	Mean:	2.5	Std. Deviation:	1.5	Satisfaction Rate:	50	answered	2
	Variance:	2.25	Std. Error:	1.06			skipped	0

Table 6



7. Do you encourage the students to establish such a system?							Response Percent	Response Total
1	1.Strongly agree						50.00%	1
2	2.Agree						50.00%	1
3	3.I agree to some extent						0.00%	0
4	4.Don't agree						0.00%	0
Analysis	Mean:	1.5	Std. Deviation:	0.5	Satisfaction Rate:	16.67	answered	2
	Variance:	0.25	Std. Error:	0.35			skipped	0

Table 7



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8. What are the places that the CPAA system should be applied?							Response Percent	Response Total
1	1.Hospitals					100.00%	2	
2	2.Markets					50.00%	1	
3	3.Universities					100.00%	2	
4	4.Else					100.00%	2	
Analysis	Mean:	9	Std. Deviation:	12.23	Satisfaction Rate:	183.33	answered	2
	Variance:	149.5	Std. Error:	8.65			skipped	0

Table 8



2.2. Project Scheduling:

The project is divide into two parts:

- Designing requirements and gathering information to report them and it will be finish in the second term of the year.
- Creating and developing the system and start with it at the beginning of the year.



2.3. Purpose:

The purpose of this document is to present a detailed description of the CPAA Android app System. It will explain the purpose and features of the system, what the system will do, the interfaces and the UML of the system, the constraints under which it must operate and how the system will react to external stimuli.

This document is intended for both the stakeholders and the developers of the system.

2.4. Scope of project:

This software system will be a Car Parking Android app for a local editor of the society.

This system will be designed to make users register their information on the system by adding, updating or deleting car parking to reserve a parking area location, and when the users come to the parking location the users will pass their ID card to a barcode reader and when the barcode recognize the user by comparing the number on the ID card with the information that has registered on the website the gate will be open for them.

Finally, the process model that will be use is prototype model.

2.5. Glossary:

Term	Definition
CPAA	Car Parking Android App. CPAA is a system that allows the user to reserve a car parking online.
Booking	Is to reserve or make a reservation for (hotel room or car park, etc.).
SRS	Software Requirement Specification.
Barcode scanner	Is a pattern scanner device that read the pattern on a product and transform it from stage to another?

Table 9

2.6. Overview of Document:

This document has other two chapters, the first providing a full description of the project.

It lists all the functions performed by the system.

The final chapter concerns details of each of the system functions and actions in full for the software developer's assistance. These two sections are cross-referenced by topic; to increase understanding by both groups involved.

2.7. Prototyping model:

The goal of a prototyping-based development process is to counter the first limitation of the waterfall model.

The basic idea here is that instead of freezing the requirements before any design or coding can proceed, a throwaway prototype is built to help understand the requirements.

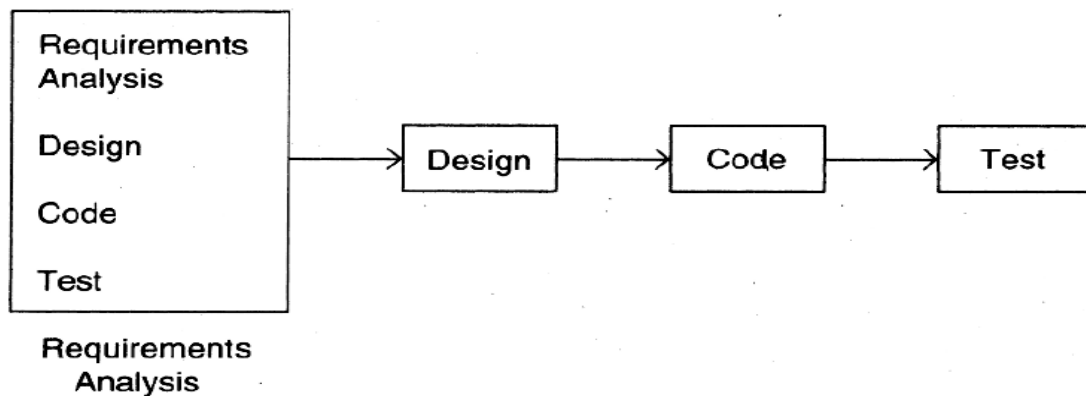


Figure 2.6. Prototyping model process

2.8. Advantages of prototype model:

- Suitable for large systems for which there is no manual process to define the requirements.
- User training to use the system.
- Quality of software is good.
- Requirements are not frozen.

2.9. Disadvantages of prototype model:

- It is slow process.
- Too much involvement of the client is not always preferred by the developer.
- Too much changes and that's disturb the rhythm of the development team.

2.10. Overall description:

The CPAA will be an internet-based and will be interfaced with the existing parking system.

2.11. Functional requirements:

Functional requirements are those requirements that refer to the functionality of the system, i.e. what services it will provide to the user. Such as manage client reservation information like adding new booking, deleting, view and searching.

- The system will save customer details like:
 - Email address.
 - Phone number.
 - Name.
 - User ID.
- The system must save reservation details.
- The CPAA must allow the user to make changes to their original booking and information.

2.12. Non-functional requirements:

Nonfunctional requirements are the requirements that specify criteria that can be used to judge the operation of system. Those constraints under which system will be operate, is called nonfunctional requirements.

- The system will draw information from main parking database, which contain basic information about parking spaces or availability.
- The system require individual log in for each user in order to access their accounts.
- The system will be accessible via android device.
- The system will store information that is entered by the user when making the online booking.

2.13. Performance requirements:

- The CPAA shall be available 24/7
- The CPAA shall be able to accommodate 100 simultaneous users at a time.



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Chapter 3: SYSTEM DESIGN

3.1. Use case diagram:

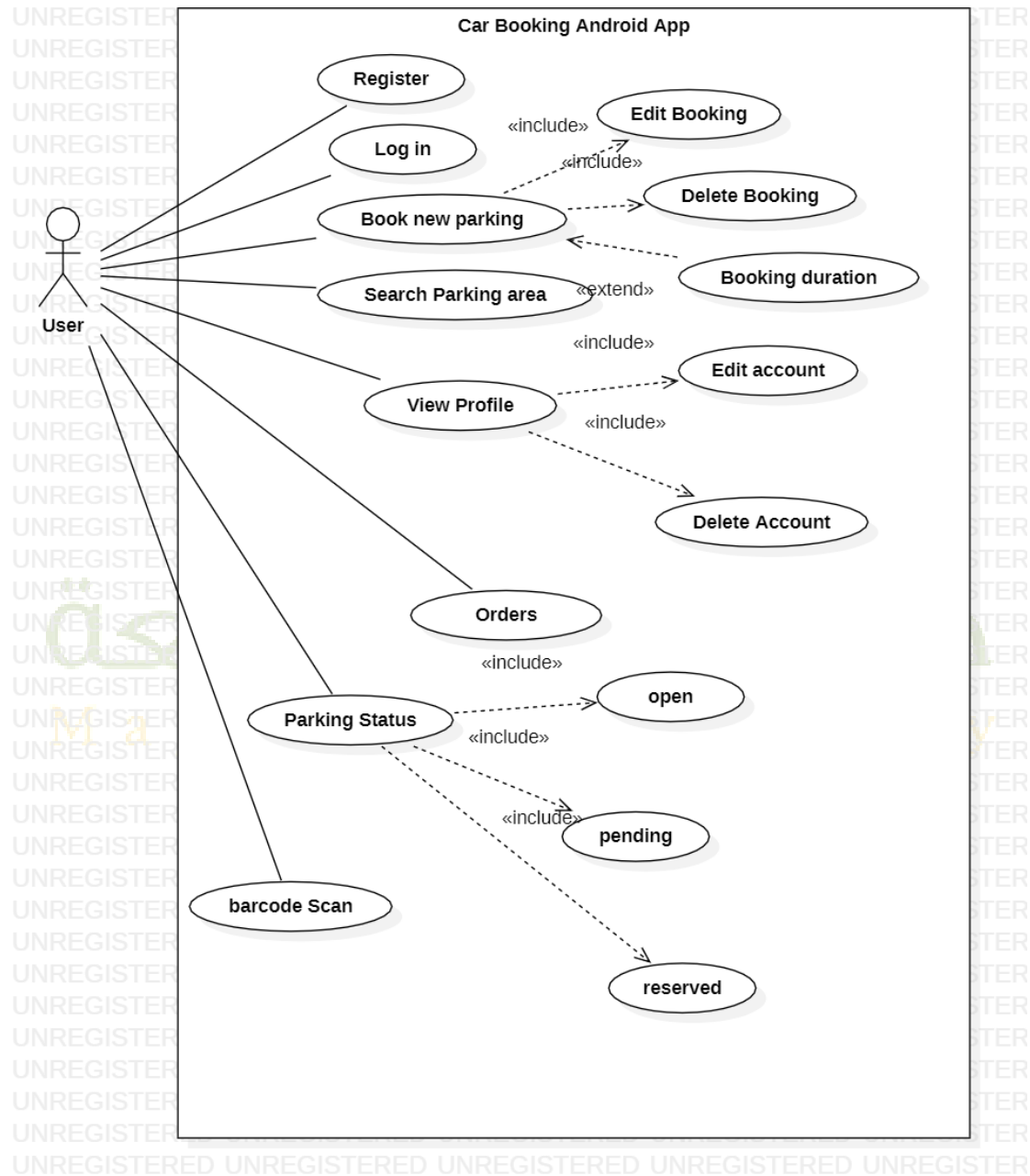


Figure 3.1. Use case diagram (User)

Use case name: CPAA manage booking.

Primary actors: User.

User – want to reserve, edit, delete and view a car parking.

Database (CPAA) – ensures that users are able to book parking places.

Brief description: this use case describes how the user manage his reservation by add, edit, delete, view and search for it,

In addition, the user can access to his log in information.

Trigger: the customer uses the CPAA website to book a parking space.

Normal flow of events:

- User open to the CPAA website.
- User shall register his information and his car information to the CPAA.
- User can log in to the CPAA.
- User access to the CPAA android app
- User chooses what parking area based on list of locations that has registered if it is available.
- User inserts his information regarded to the reservation such as time duration, date duration and the location.
- User confirm his order.
- User receives verification of booking.
- User can access his log in information to modify it.

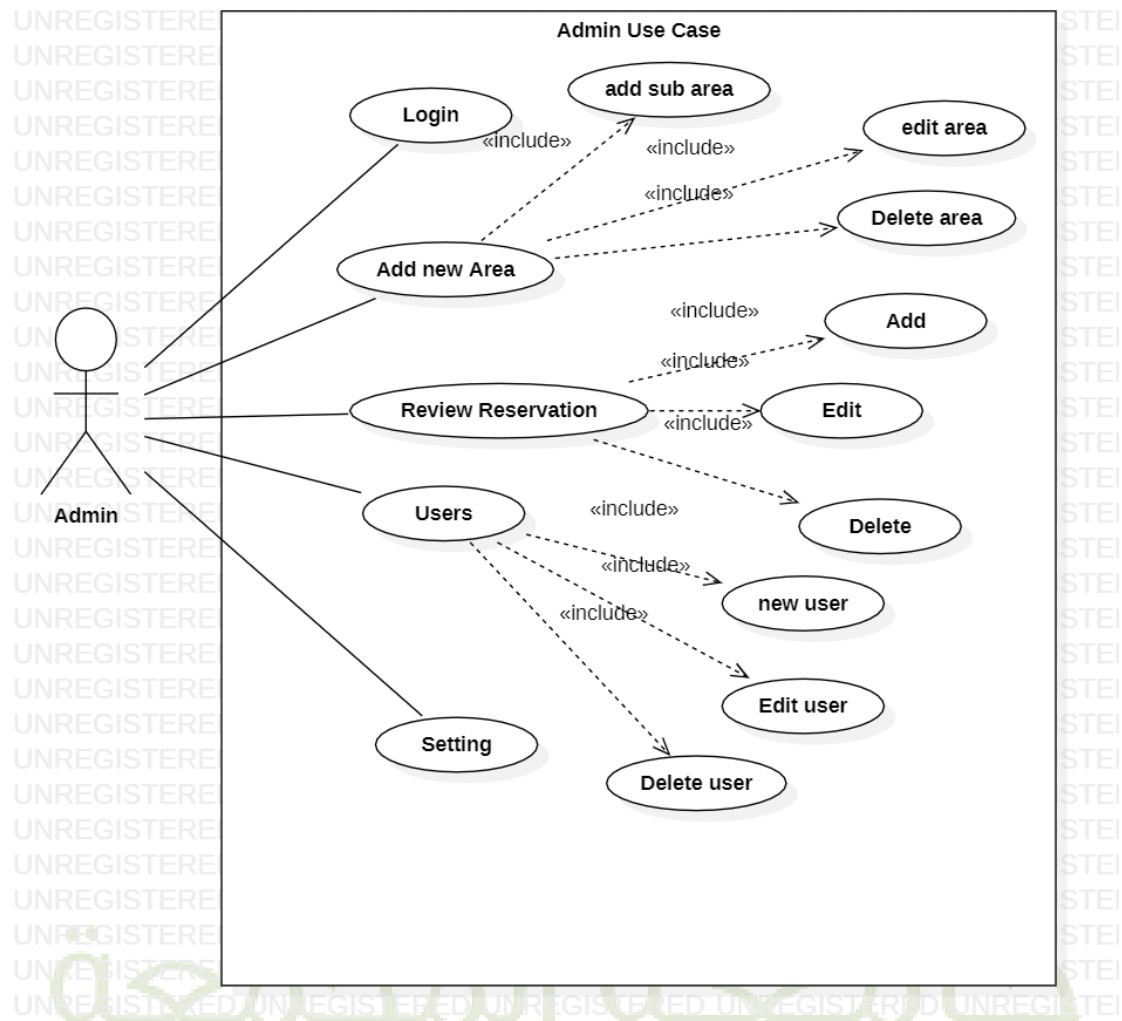


Figure 3.1.0 Use case diagram (Admin)

Use case name: CPAA manage user.

Primary actors: Admin.

Admin – want to edit, delete and view a car parking.

Database (CPAA) – ensures that admin are able to confirm, check and modifies some parts of the system.

Brief description: this use case describes how the admin to administers permissions by add, edit, delete, view and search for users or reservations if the system allow for it.

In addition, the admin can access to the client log in information if something happened to the CPAA.

Trigger: the admin uses the CPAA website to manage client information or the client booking.

Normal flow of events:

- Admin shall register his information to the CPAA.
- Admin can log in to the CPAA.
- Admin access to the CPAA Android.
- Admin manage the user reservations and check for user information.



3.2. Use case description:

Use case name	CPAA booking parking.
Trigger	Selection menu.
Precondition	User – wants to book a parking online.
Basic path	<ul style="list-style-type: none"> • User access to CPAA. • User chooses what place he want to park in based on a list of available slots. • User chooses the date and time duration to reserve a paring place. • User confirm the order. • User receives verification of booking.
Alternate path	N/A
Exception	If there is a connection failure the departmental server returns to the wait state.

Table **10**

3.3. Sequence Diagram:

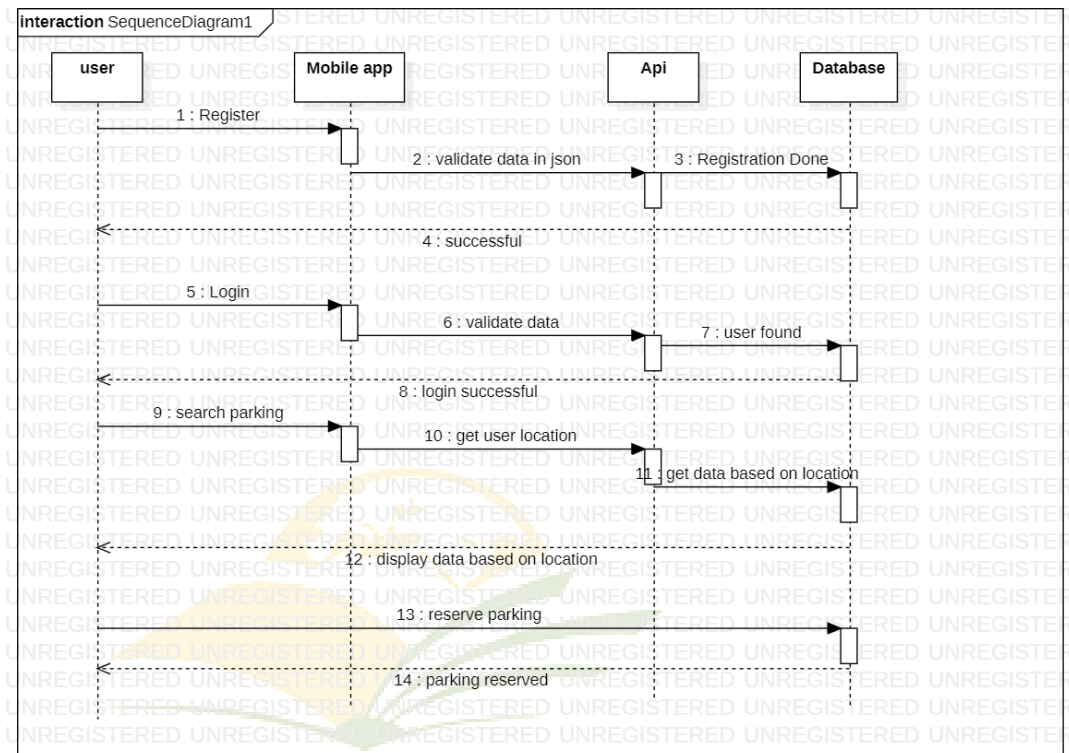


Figure 3.3. Sequence diagram (User)

3.4. Entity relationship diagram (ERD):

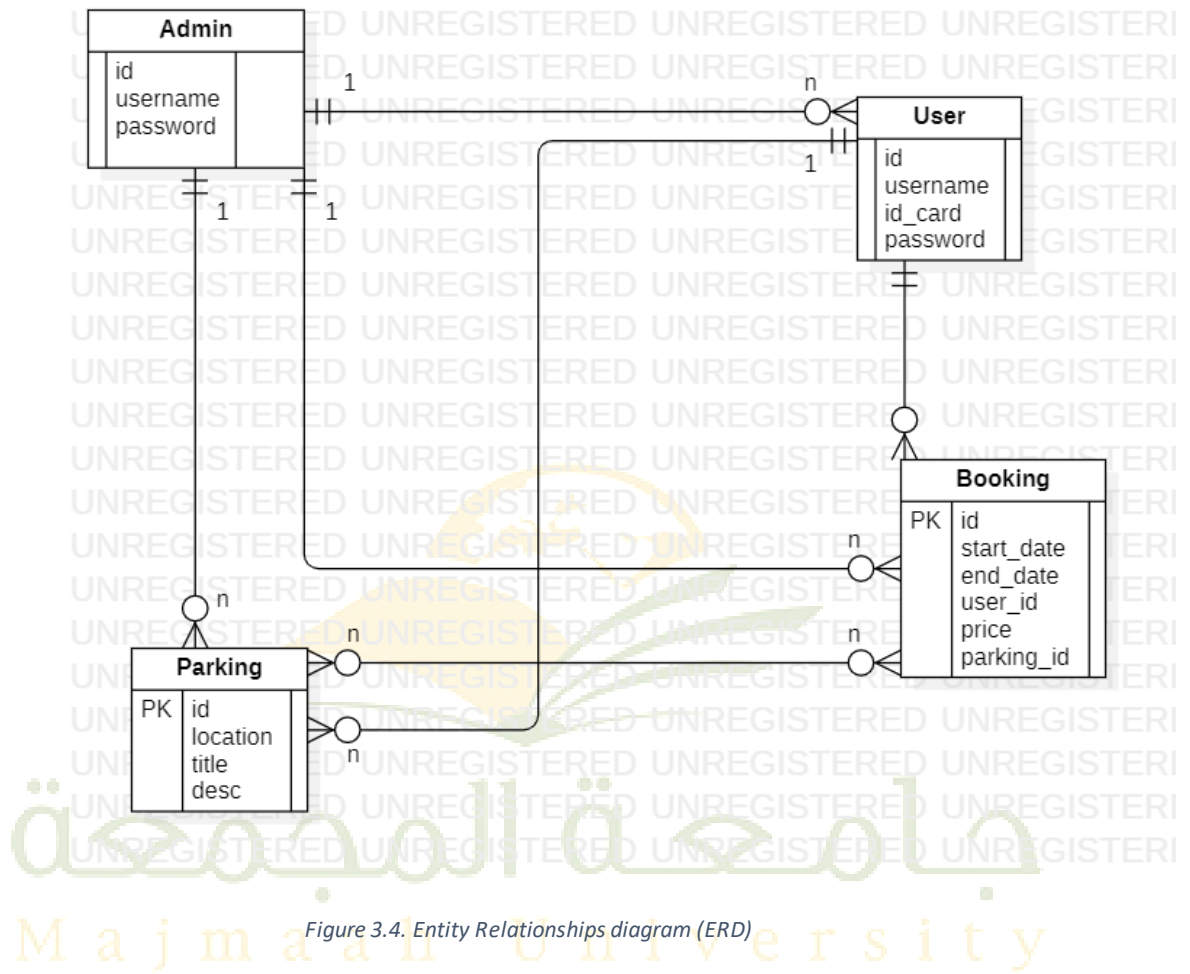


Figure 3.4. Entity Relationships diagram (ERD)

3.5. Class diagram:

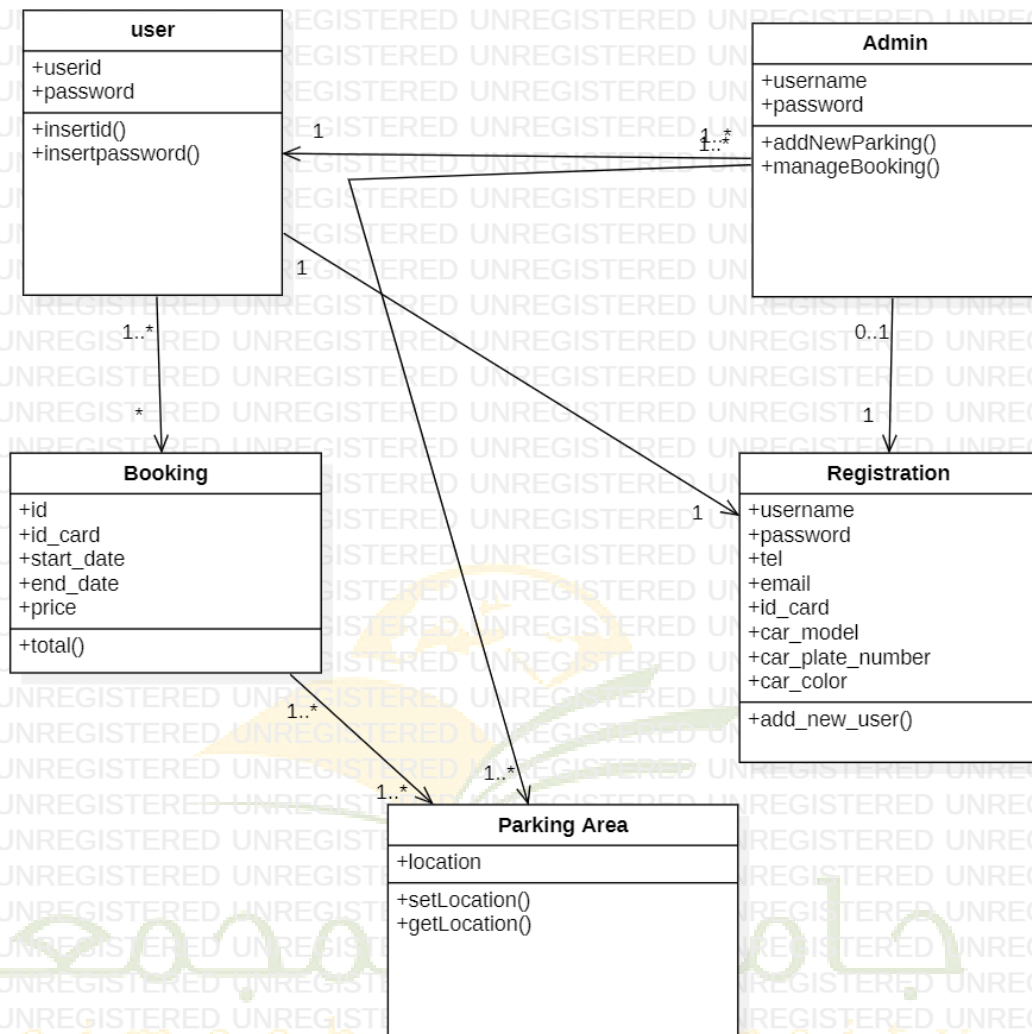


Figure 3.5. Class diagram

3.6. Expected Interfaces

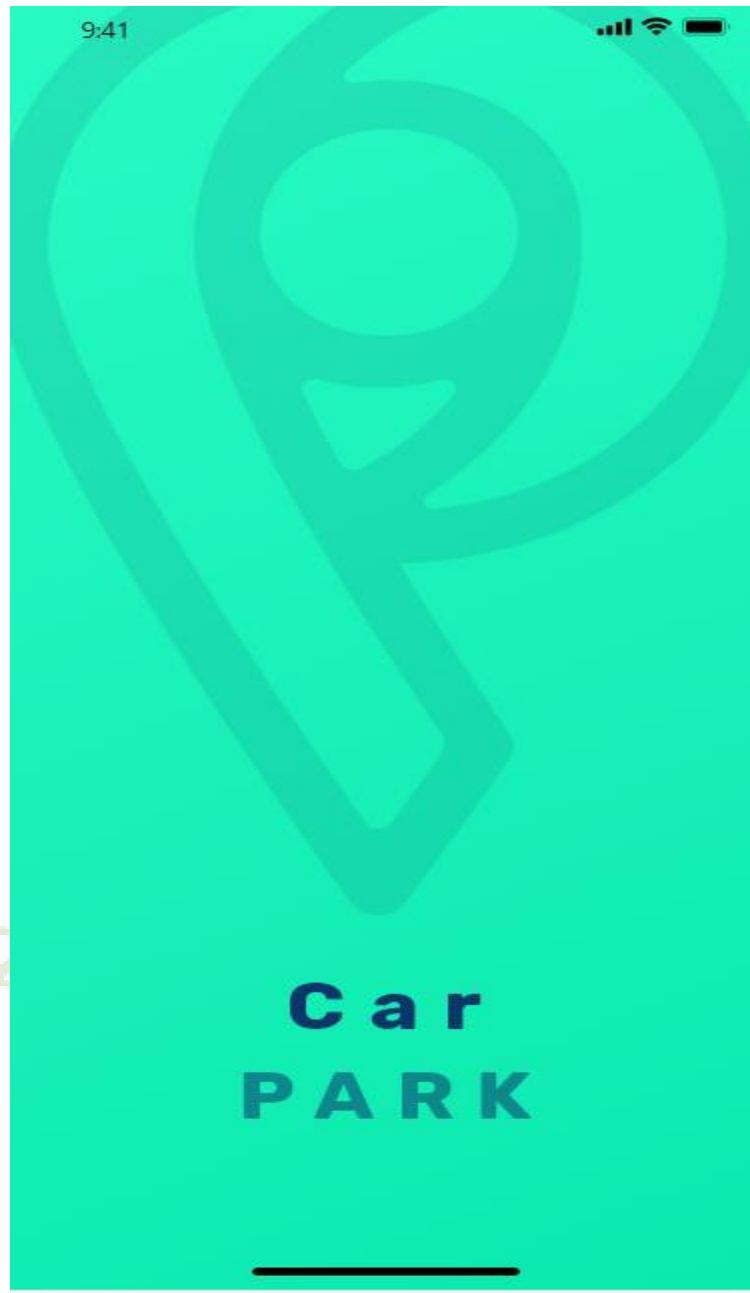


Figure 3.6. Home Interface

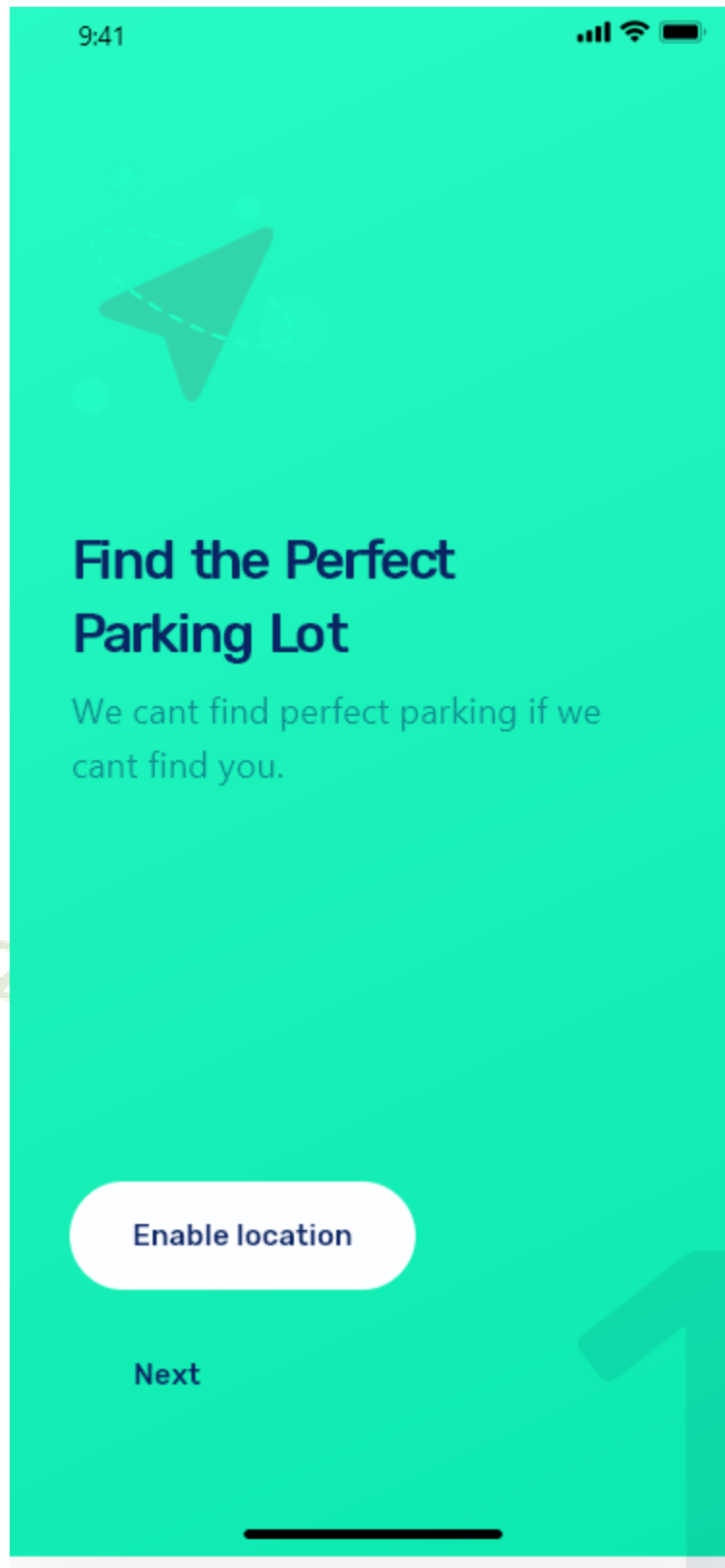


Figure 3.7. enable location Interface

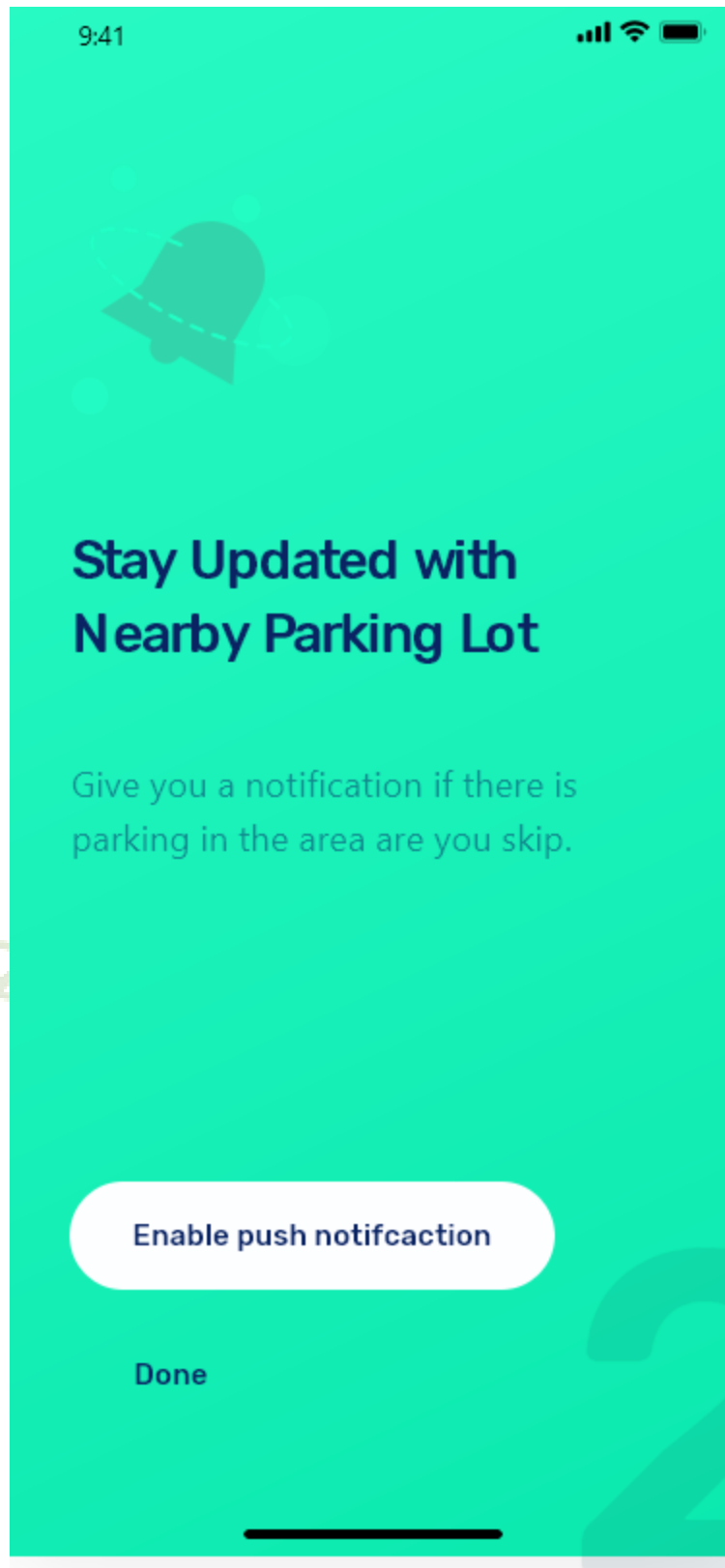


Figure 3.8. enable push notfication Interface

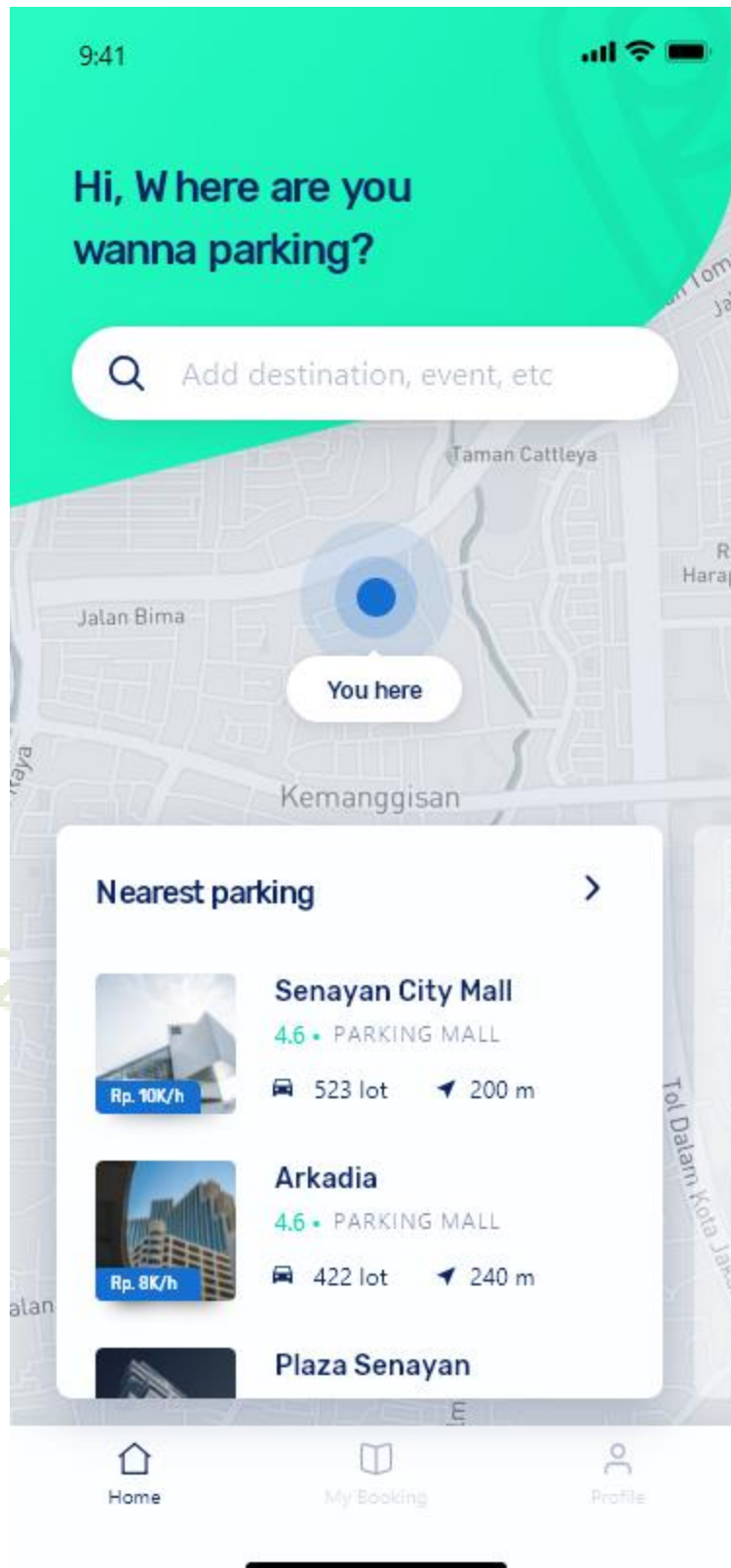


Figure 3.9. nearest parking Interface

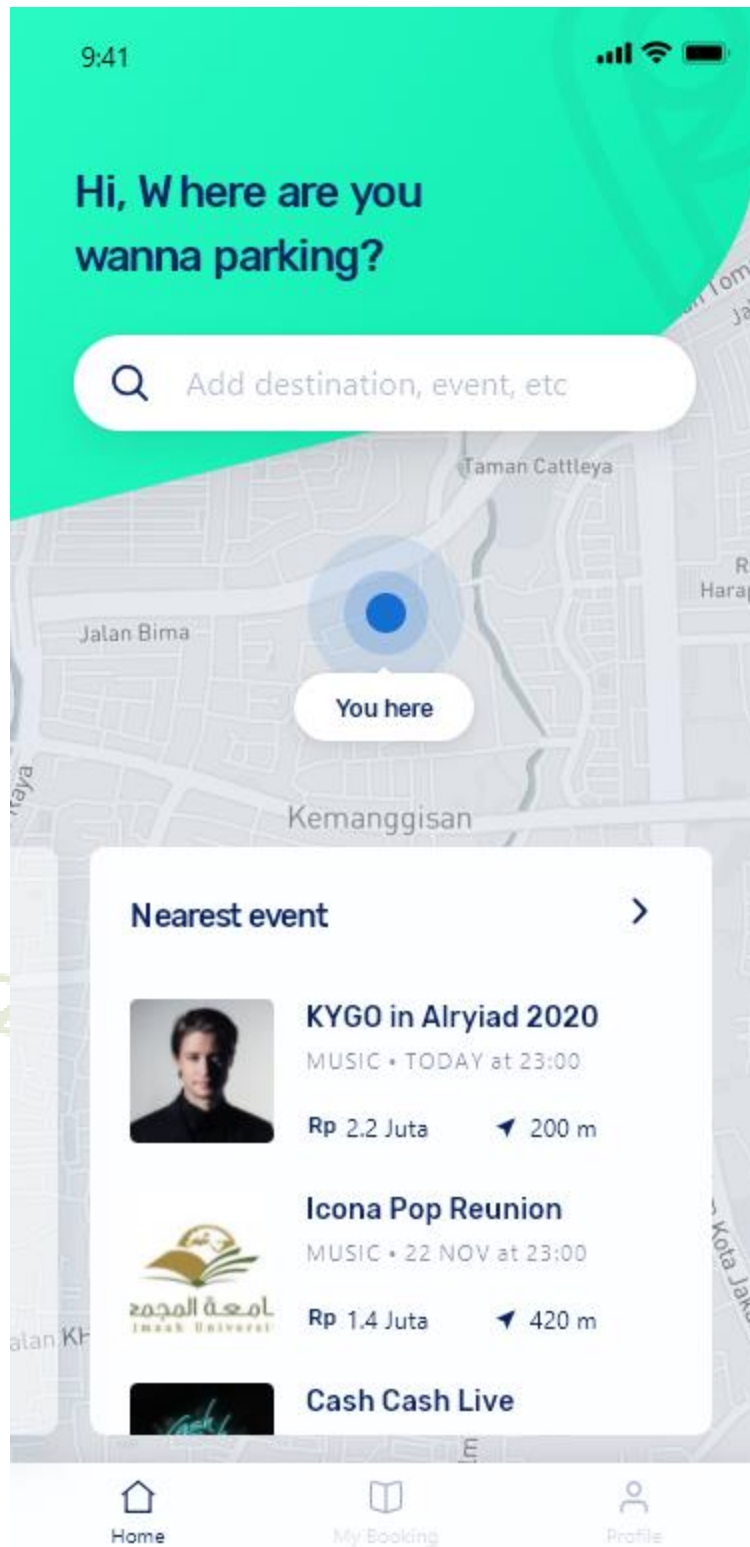


Figure 3.10. nearest event Interface

9:41



Nearby parking

Reco



Senayan City Mall

4.6 • PARKING MALL

RS. 10K/h

523 lot 200 m



Arkadia

4.2 • PARKING STREET

RS. 8K/h

12 lot 230 m



Plaza Senayan

4.2 • PARKING MALL

RS. 8K/h

232 lot 320 m



Gelora Bung Karno

4.8 • PARKING SPACE

RS. 5K/h

1,230 lot 410 m



Moestopo University

3.4 • PARKING SPACE

RS. 4K/h

120 lot 523 m



Gandaria City

4.1 • PARKING MALL

Plaza Senayan



9:41



arking

Recommended parking



Gelora Bung Karno

4.8 • PARKING SPACE

RS. 5K/h

1.230 lot 410 m



Senayan City Mall

4.6 • PARKING MALL

RS. 10K/h

523 lot 200 m



Plaza Senayan

4.2 • PARKING MALL

RS. 8K/h

232 lot 320 m



Arkadia

4.2 • PARKING STREET

RS. 8K/h

12 lot 230 m



Gandaria City

4.1 • PARKING MALL

RS. 10K/h

523 lot 200 m



Moestopo University

3.4 • PARKING SPACE

Plaza Senayan



Home

حياة
Ma

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ity

9:41



Search



Destination, event, etc

RECENT SEARCH



majma City

majma



Atm

majma



Banks

Majma



jada

Sea

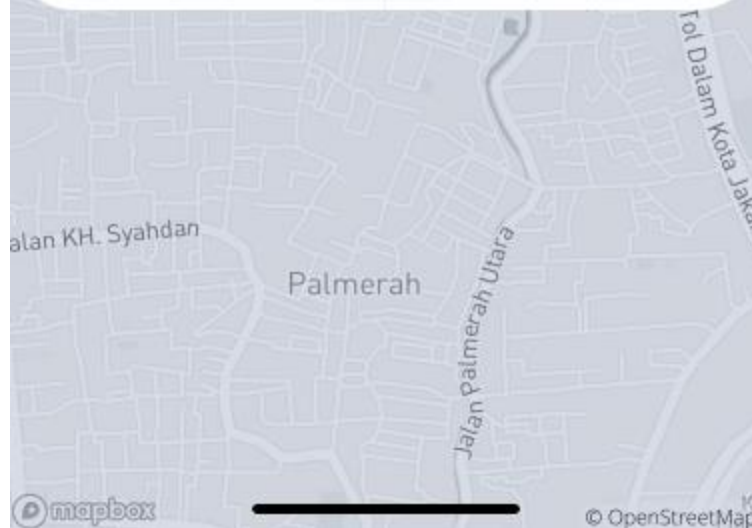
Arriving

Today, 16:20

2h 3m

Leaving

Today, 18:43



9:41



Search

Q Senayan

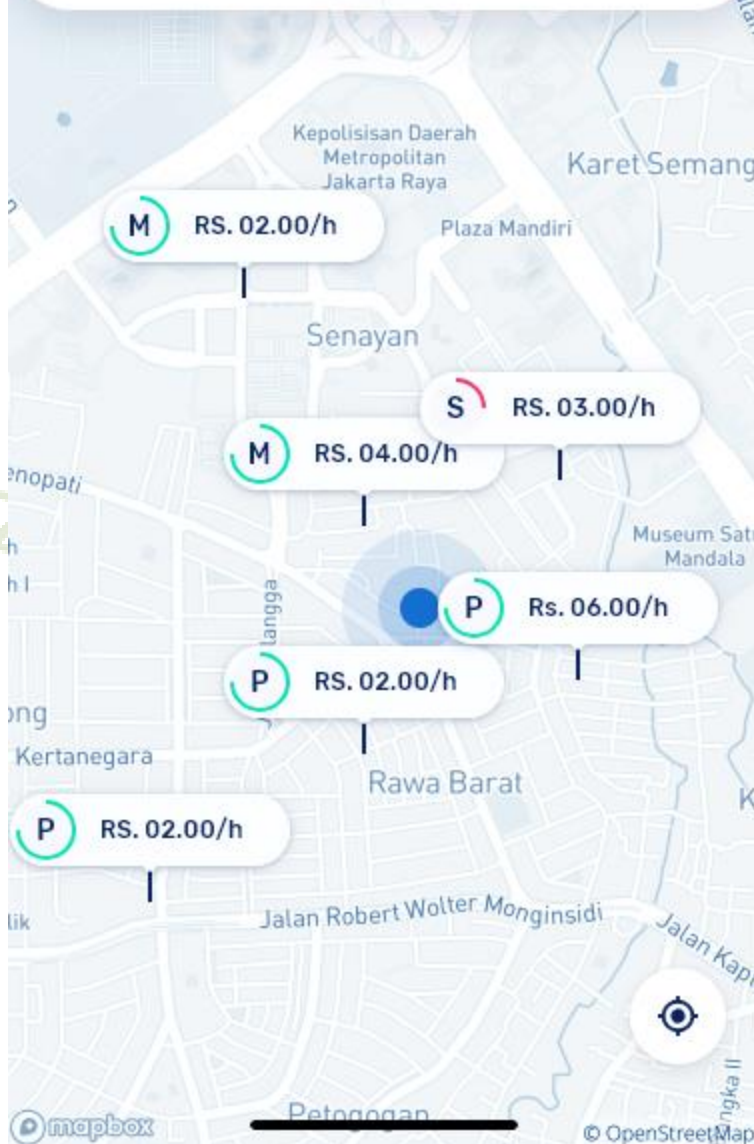
Arriving

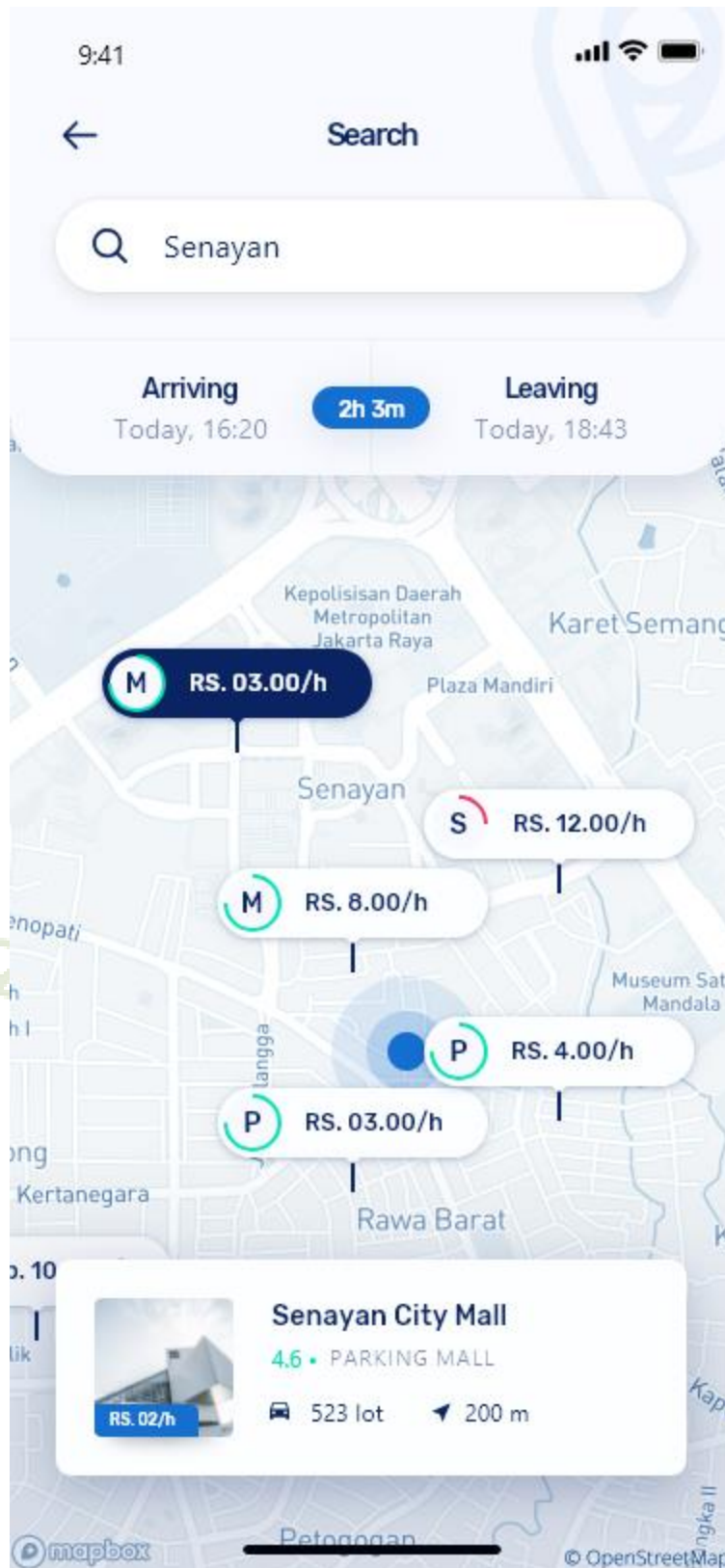
Today, 16:20

2h 3m

Leaving

Today, 18:43







PARKING MALL

4.6

Senayan City Mall

200 m RS 02.0/Hours

Space or Parking Lot

Today we have **240** lot available, dont forget select before booking.

P6
23/40

P5
12/40

P4
23/55

P3
40/58

مجمعة
Majma

جامعة
University

More Detail

ADDRESS

Riyad.majma



Direction

OPERATION

Open • 24 Hours

GATE IN/OUT

South

West

North

East

Book now



PARKING MALL

4.6

Senayan City Mall

200 m RS 02.00/Hours

Space or Parking Lot

Today we have **240** lot available, dont forget select before booking.

P6
23/40

P5
12/40

P4
23/55

P3
40/58

مجمة
Majma

جامعة
University

More Detail

ADDRESS

Alriyad,majma



Direction

OPERATION

Open • 24 Hours

GATE IN/OUT

South

West

North

East

Book now

9:41



**You need to sign in or
create an account to
continue**

حياة
Ma

ج
ity

Login with phone number

More option

9:41



Booking

No. EP-324992429

Destination



Senayan City Mall

SPACE : P5 • 6A

Arriving

Today, 16:20

2h 3m

Leaving

Today, 16:23

Vehicle

Remove Vehicle

Type

Sedan

Plate Number

B12UBS

Driver Info

Pria Kusumawardana ▼

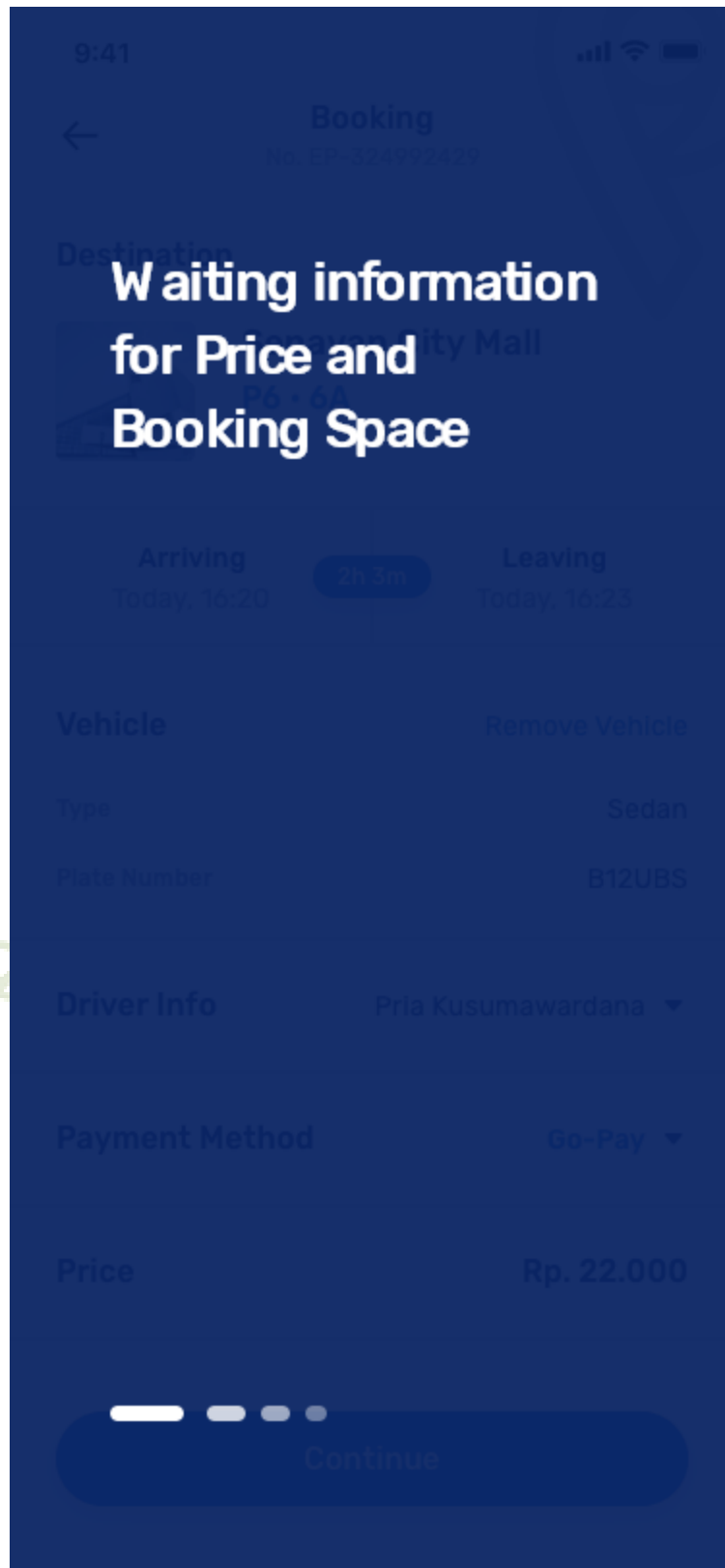
Payment Method

Visa -8378 ▼

Price

RS. 04.00

Book now



9:41



Booking

No. EP-324992429

Destination



Senayan City Mall

SPACE : P5 • 6A

Arriving

Today, 16:20

2h 3m

Leaving

Today, 16:23

Vehicle

Type

Sedan

Plate Number

B12UBS

Driver Info

Pria Kusumawardana

Payment Method

Visa -8378

Price

RS. 22.00

Pay now

9:41



My Booking

SPACE : P5 · 6A

RS. 22.00

Senayan City Mall



Waiting for payment



History

MALL : P2 · 5B

RS. 22.00

Plaza Senayan



Payment success



MALL : P2 · 5B

RS. 45.00

Moestopo



Payment failed



Home



My Booking



Profile

9:41



Payment Success

No. EP-324992429

Space

P5 • 6A

Price

RS. 20.00



Scan Barcode Here

Senayan City Mall

Alriyad,majma



9:41



Payment Success

No. EP-324992429

Space

P5 • 6A

Price

RS. 20.00

Pembayaran Berhasil



Scan Barcode Here

Space P5 • 6A

Rp. 22.000

Senayan City Mall

Pembayaran Gagal



3.7. Conclusions:

From this concept, I conclude that CPAA will help many people to find empty space in large parking area without wasting the time, and it will organize the parking area.

This website is easily accessible and easy to use.

Hence, this is the best alternative to Car Parking Android App.

3.8 References:

- https://en.wikipedia.org/wiki/Software_requirements_specification
- <https://www.youtube.com/watch?v=QpdhBUYk7Kk>
- <https://app.smartsurvey.co.uk/login?g=1&r=%2fsurvey%2fcollect%2fid%2f431045%3five%3d1>
- https://www.google.com.sa/search?safe=strict&ei=p9HbWq70IMfb6QSH8bv wCA&q=how+to+write+conclusion+srs+document&oq=how+to+write+conclusion+srs+document&gs_l=psy-ab.3...870136.878463.0.878767.13.13.0.0.0.0.527.2954.2-5j2j0j2.9.0....0...1c.1.64.psy-ab..4.1.302...35i39k1.0.eaWn5KAqUMo

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