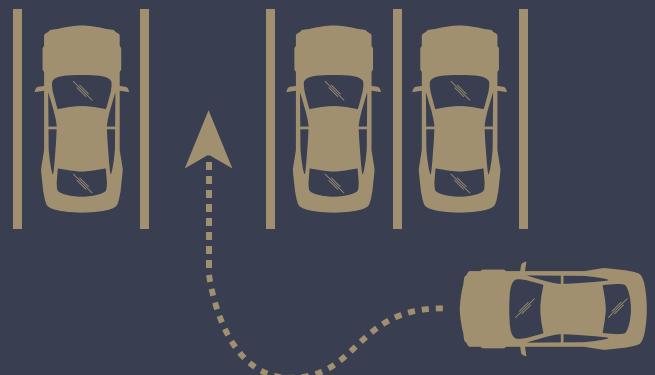


2022

# CarKing

User Interface  
Design Project report



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# ABSTRACT

This report describes the development of our User Interface Design project. The report starts by introducing the application description which would give the readers some background on the application. After that it shows the problem that will be solved through our application, afterwards, we will dive into the system itself and discuss the development process, which begins with the conceptual model, followed by the system's appropriate interaction type chosen, which is considered which interface is best for our application.

The report also presents the challenges of implementing our application and states the main problem that led us to implement this application.

Next, the report presents established requirements and collects data to help understand the user's needs. Then specifying the target audience and implementing the prototype depending on them.

The last thing the report shows is the result of the user testing of the prototype and summarizing the feedback.

# INTRODUCTION ''

## 1.1. Background

The purpose of this project titled "CarKing" is to provide an application that is user-friendly, free of cost system for parking.

It's an application that helps users reserve parking by displaying notifications to the user of available parking's. Also, It provides other services such as hiring someone to park the cars and wash them. In addition, provide a monthly parking subscription to regular users.

## 1.2. Aims and Objectives

- AIM

The aim of our application is to saves people time and effort and change the user experience with reserving parking to an easy and quick experience.

## OBJECTIVES

Developing the transferable skills in logical analysis, communication and project management necessary for working within team-based environment.

You should gain the ability to select tools and methodologies that are fit for specific purposes.

## 1.3. Target Audience and their context

Our application's intended audience is the ones who going to get advantages from our application and are most likely to be interested in the system.

Specification of our target users and their context:

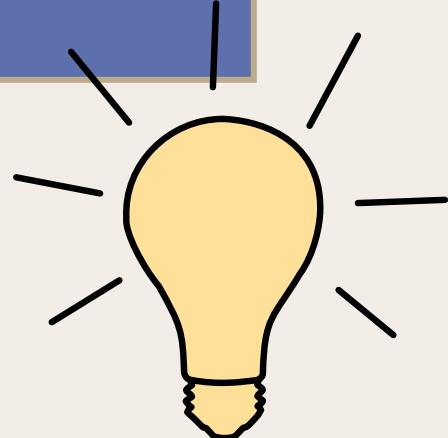
1. Users driving cars.
2. Visiting regular places (they provide parking and subscription).

## 1.4. Problem Definition

A.	Waste of time and effort when searching for available parking's.
B.	Expensive cost to reserve parking.
C.	Lack of organizers who arrange people and the way they park cars.
D.	Randomness and lack of a clear mechanism to reserve parking.

## 1.5. Solutions

A.	Notify the user if the place he chooses has available parking or not, if so let him reserve the convenient parking for him.
B.	Parking prices are available to all segments of society, with discount codes and the feature of a monthly subscription to reserve fixed parking.
C.	Each place registered on the application must show the users how to park correctly in their parking area.
D.	Each place must have rules for reserving parking. For example; the user must reserve parking before two days of his date in some restaurants.

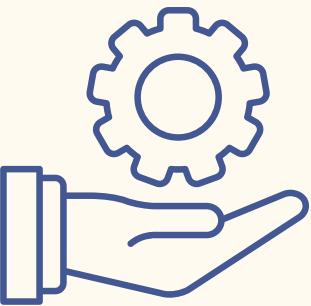


## 1.6. Usability Goals

<b>Effectiveness</b>	Our system is working as it's supposed to do
<b>Efficiency</b>	The system helps users in carrying out their tasks
<b>Safety</b>	The system secure the users information from being misused
<b>Utility</b>	The system provides the right kind of functionality
<b>Learnability</b>	It's easy to learn to use the system

## 1.6. Experience Goals

<b>Helpful</b>	During the rush hour, the system helps users to avoid the traffic on the parking
<b>Satisfying</b>	The experience is related and similar to the real parking system
<b>Enhancing the society</b>	The system save a lot of user time by knowing in advance if there's available parking



# Development analysis

## 2.1. Conceptual Model

**Metaphor:** real parking space

**Concepts:** car, parking, car wash, payment, monthly subscription, hiring person, reserve

**Object relation:** reserve parking space, the car is parking, the hiring person park or wash the car, monthly subscription to parking.

**Mapping:** car corresponds to a physical object, parking to its physical location.

**Function:** reserve parking space, hire someone to park the car and wash it, monthly parking subscription, users can see their account information.

**Function relationship:** enter user information before reserve, reserve before parking, pay after reserve, hire someone then choose the service, subscribe then pay.

**Data:** new parking space added by developer, payment method added by typing data, user information added by typing data.

## 2.2. Interaction & Interface Type

- **Interaction type:**

- Instructing (because the Application implements actions according to the user's choices from the services)
- Exploring (because the user may use the application while moving through real or virtual parking)

- **Interface type:**

- Mobile (because it's an application on mobiles)
- Touch (because user mostly use the application with touch, press buttons, select choices, and write his information)
- Smart (because it can notify the user and provide many services)

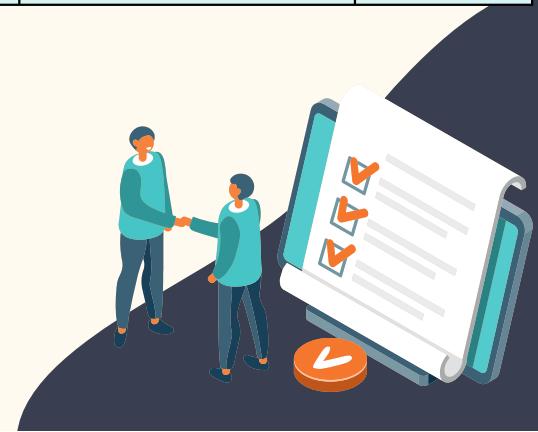
# Establishing Requirements

”

Part #1

## 1. Evaluation Questions

المستخدم	هل تعتقد أن فكرة التطبيق مفيدة وتلبي احتياجاتك كسائق مركبة؟	ما الوقت المستغرق لتسجيل معلومات المركبة في التطبيق وحفظها ؟	عند البحث عن الموقع في الخريطة كم عطلاً واجهت في النظام؟	بناءً على ملاحظتك ، خطوة أحتاجت لحجز موقف في التطبيق؟
1	نعم	0.5-1 دقيقة	3	كم عطلاً واجهت في النظام؟
2	نعم	1-2 دقيقة	1	خطوة أحتاجت لحجز موقف في التطبيق؟
3	نعم	1-2 دقيقة	1	بناءً على ملاحظتك ، خطوة أحتاجت لحجز موقف في التطبيق؟
4	ربما	1-2 دقيقة	1	خطوة أحتاجت لحجز موقف في التطبيق؟
5	ربما	0.5-1 دقيقة	1	بناءً على ملاحظتك ، خطوة أحتاجت لحجز موقف في التطبيق؟
6	نعم	0.5-1 دقيقة	0	خطوة أحتاجت لحجز موقف في التطبيق؟
7	نعم	3-2 دقيقة	3	عند البحث عن الموقع في الخريطة كم عطلاً واجهت في النظام؟
8	ربما	1-2 دقيقة	+3	عند البحث عن الموقع في الخريطة كم عطلاً واجهت في النظام؟
9	نعم	1-2 دقيقة	1	عند البحث عن الموقع في الخريطة كم عطلاً واجهت في النظام؟
10	نعم	1-2 دقيقة	1	عند البحث عن الموقع في الخريطة كم عطلاً واجهت في النظام؟
11	نعم	0.5-1 دقيقة	2	عند البحث عن الموقع في الخريطة كم عطلاً واجهت في النظام؟



# Establishing Requirements

”  
Part #1

## 2.Draft Questions

في اعتقادك ماهي الأماكن التي تحتاج منك لحجز موقف قبل الذهاب إليها؟	1 0	الجنس	1
هل قمت بإستخدام تطبيق لحجز مواقف السيارات من قبل؟	1 1	العمر	2
ما هي ابرز العيوب او المميزات التي واجهتك خلال تجربتك للتطبيق الذي ذكرته اعلاه؟	1 2	المستوى التعليمي	3
اذا أجبت بـ لا فيإمكانك الاطلاع على التطبيق	1 3	المهنة	4
هل تعتقد أن فكرة التطبيق مفيدة وتلبي احتياجاتك كسائق مركبة؟	1 4	ما مستوى خبرتك في استخدام التقنية	5
ما الوقت المستغرق لتسجيل معلومات المركبة في التطبيق وحفظها ؟	1 5	هل تملك مركبة؟	6
عند البحث عن الموقع في الخريطة كم عطلا واجهت في النظام؟	1 6	هل تشكل لك مواقف السيارات مشكلة تؤثرعلى حياتك؟	7
بناءً على ملاحظتك ، كم خطوة أحتاجت لحجز موقف في التطبيق؟	1 7	هل يهمك تسهيل عملية حجز المواقف لك ولمن حولك؟	8
ما هي الخدمات التي تتوقع وجودها في تطبيقنا؟	1 8	هل تؤيد وجود تطبيق يساعدك في حجز موقف؟	9



# Establishing Requirements

”  
**Part #1**

## 3. Pilot Test

#	Draft Questions	Modified Questions	Justification
1	Age (18 - older than 33)	Age (younger than 18 - older than 33)	Some users are younger than 18
2	Education level (primary - college)	Education level (primary - college) + other	It wasn't covering all categories
3	Career (choose one)	Career (choose multiple)	User might be both student and employee
4	Do you have a vehicle?	Do you drive a vehicle?	User might have one but don't drive it
6	Do you support having an application that helps you book a parking spot?	Do you support having an application that helps you book a parking spot before or during your arrival at your destination?	To make it clearer
7	What services do you expect to have in our application?	What services do you expect to have in our application to improve your experience as a user?	To draw the user's attention and clear the idea of the application



# Establishing Requirements

”  
Part #1

## 4. Final Questionnaire

في اعتقادك ماهي الأماكن التي تحتاج منك لحجز موقف قبل الذهاب إليها؟	1 0	الجنس	1
هل قمت بإستخدام تطبيق لحجز موافق السيارات من قبل؟	1 1	العمر	2
ماهي ابرز العيوب او المميزات التي واجهتك خلال تجربتك للتطبيق الذي ذكرته اعلاه؟	1 2	المستوى التعليمي	3
اذا أجبت بـ لا فيإمكانك الاطلاع على التطبيق	1 3	المهنة	4
هل تعتقد أن فكرة التطبيق مفيدة وتلبي احتياجاتك كسائق مركبة؟	1 4	ما مستوى خبرتك في استخدام التقنية	5
ما الوقت المستغرق لتسجيل معلومات المركبة في التطبيق وحفظها؟	1 5	هل تقود مركبة؟	6
عند البحث عن الموقع في الخريطة كم عطلا واجهت في النظام؟	1 6	هل تشكل لك موافق السيارات مشكلة تؤثرعلى حياتك؟	7
بناءً على ملاحظتك ، كم خطوة أحتاجت لحجز موقف في التطبيق؟	1 7	هل يهمك تسهيل عملية حجز المواقف لك ولمن حولك؟	8
ماهي الخدمات التي تتوقع وجودها في تطبيقنا لتحسين تجربتك كمستخدم؟	1 8	هل تؤيد وجود تطبيق يساعدك في حجز موقف قبل أو أثناء وصولك لوجهتك؟	9



# Establishing Requirements

”  
Part #1

## 5. Tabulated Results

طابع زمني	الجنس	العمر	المستوى التعليمي	المهنة
5:36:50 2022/05/17	ص	أنثى	من 18 إلى 25	
7:29:11 2022/05/17	ص	أنثى	من 18 إلى 25	
8:58:23 2022/05/17	ص	أنثى	من 18 إلى 25	
9:13:35 2022/05/17	ص	أنثى	من 18 إلى 25	
9:37:15 2022/05/17	ص	أنثى	من 18 إلى 25	
10:40:58 2022/05/17	ص	أنثى	من 18 إلى 25	
10:57:18 2022/05/17	ص	أنثى	من 18 إلى 25	
12:19:56 2022/05/17	م	أنثى	من 26 إلى 33	
12:34:23 2022/05/17	م	أنثى	من 18 إلى 25	
12:40:05 2022/05/17	م	ذكر	من 18 إلى 25	، موظف
12:52:15 2022/05/17	م	ذكر	أكبر من 33	
12:56:53 2022/05/17	م	ذكر	من 18 إلى 25	
1:05:10 2022/05/17	م	أنثى	من 18 إلى 25	
1:24:42 2022/05/17	م	أنثى	من 18 إلى 25	
1:26:31 2022/05/17	م	ذكر	من 18 إلى 25	
1:43:52 2022/05/17	م	ذكر	من 18 إلى 25	موظف
1:44:07 2022/05/17	م	ذكر	من 18 إلى 25	
1:48:22 2022/05/17	م	أنثى	من 18 إلى 25	
2:00:58 2022/05/17	م	أنثى	من 18 إلى 25	
2:37:53 2022/05/17	م	أنثى	من 26 إلى 33	

ردود النموذج 1



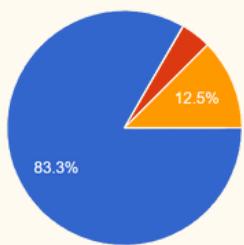
# Establishing Requirements

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Part #1

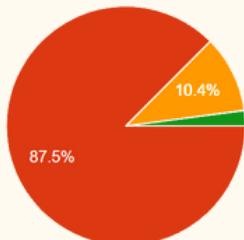
## 5. Results Analysis

هل يهمك تسهيل عملية حجز المواقف لك ولمن حولك؟



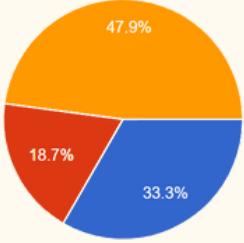
نعم  
لا  
ربما

العمر



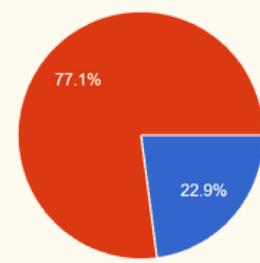
أقل من 18  
من 18 إلى 25  
من 26 إلى 33  
أكبر من 33

هل تشكل لك مواقف السيارات مشكلة تؤثر على حياتك؟



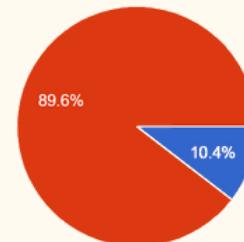
نعم  
لا  
ربما

الجنس



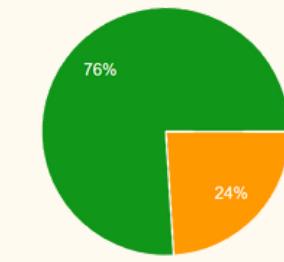
ذكر  
إناث

هل قمت بإستخدام تطبيق لجز مواقف السيارات من قبل؟



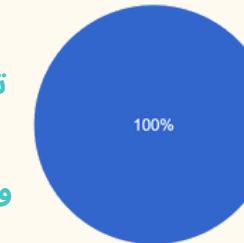
نعم  
لا

التعليم



ابتدائي  
متوسط  
ثانوي  
جامعي  
غير ذلك

هل تؤيد وجود تطبيق يساعدك في حجز موقف قبل أو أثناء وصولك لوجهتك؟



نعم  
لا

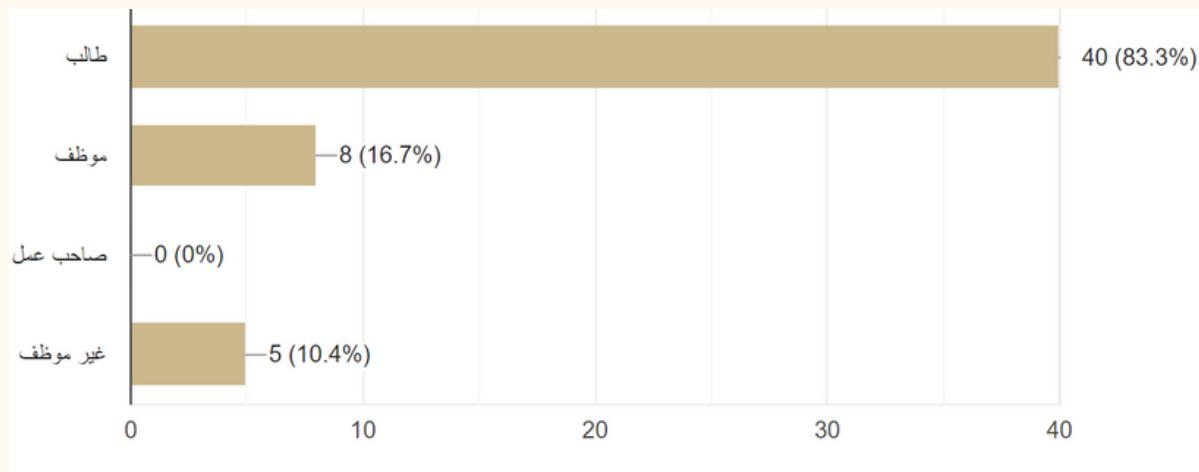


# Establishing Requirements

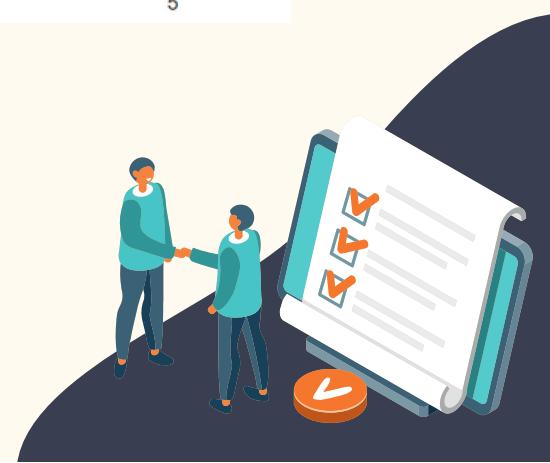
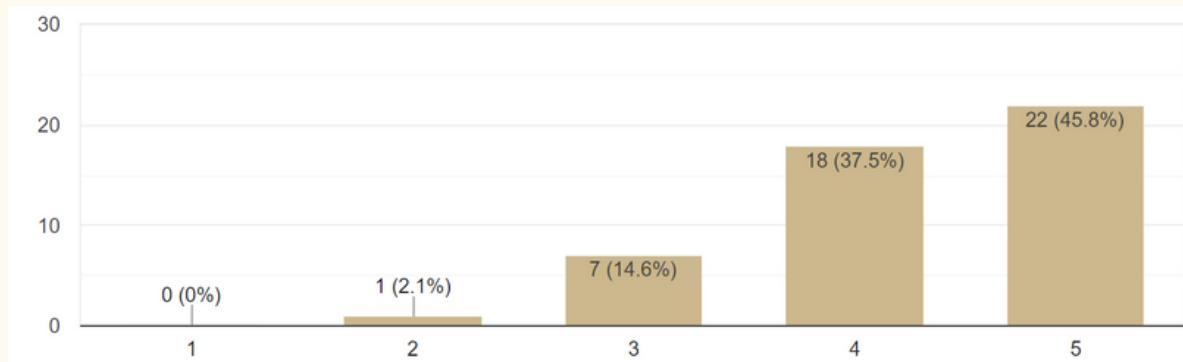
”  
Part #1

## 5. Results Analysis

المهنة



الخبرة  
في  
استخدام  
التقنية

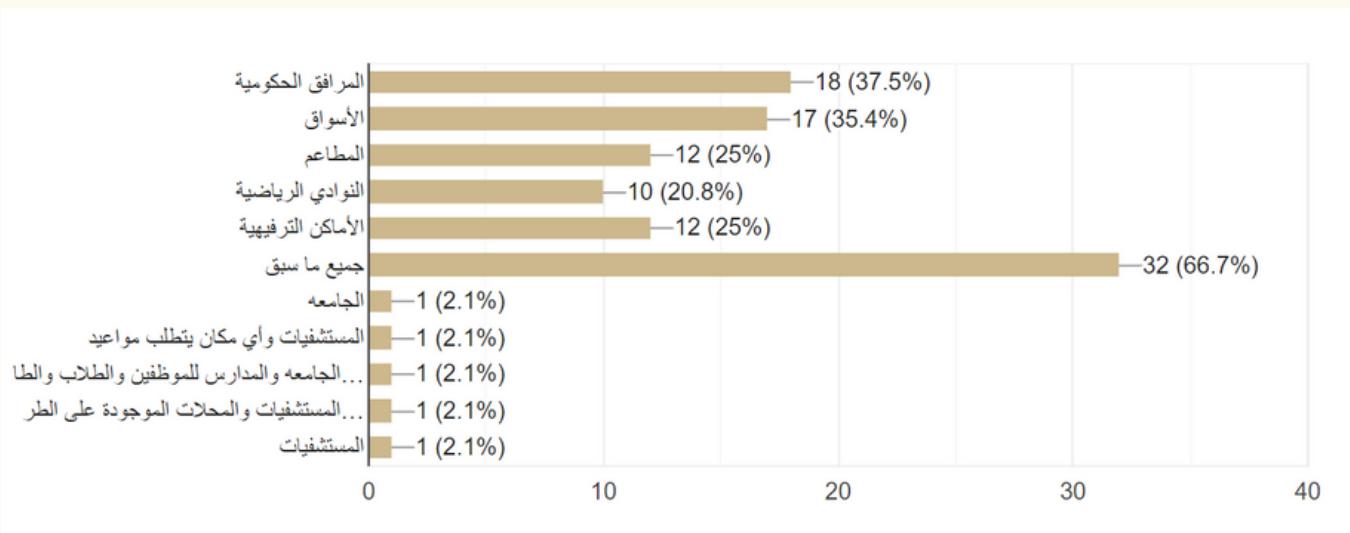


# Establishing Requirements

”  
Part #1

## 5. Results Analysis

في اعتقادك ما هي الأماكن التي تحتاج منك لحجز موقف قبل الذهاب إليها؟



ما هي ابرز العيوب او المميزات التي واجهتك خلال تجربتك للتطبيق الذي ذكرته ؟



هل قمت بإستخدام تطبيق لحجز مواقف السيارات من قبل؟

تصميم الواجهات جذابه

المميزات سهولة الاستخدام والوصول السريع للخدمات

العيوب عدم وجود خاصية إضافة سيارات متعددة



# Establishing Requirements

## ” Part #1

### 5. Results Analysis

ما هي الخدمات التي تتوقع وجودها في تطبيقنا لتحسين تجربتك كمستخدم؟

معرفة وجود موقف شاغر او لا

تنوع خيارات طرق الدفع

وجود مكان لتعبئة الوقت المقدر في استعمال الموقف

يكون سهل في تحديد الموقع، التطبيق يكون فيه اللغة العربية

سرعة الاستجابة  
دقة مكان الموقف  
والتحقق من انه فارع  
الدفع بطرق الدفع الالكترونية

عمل التطبيق بدون إتصال بالإنترنت

سهولة استخدام ووضوح التطبيق

حفظ بيانات البطاقة



# Establishing Requirements

''

**Part #1**

## 5. Results Summarization

We received answers from 59 people. 81.4% of them were females and 18.6% of them were males.

The majority were between the ages of 18 to 25, representing 88.1%. 10.2% were from 26 to 33, and the last group was 1.7% who were over 33 years old.

88.6% had a university education. 19.4% had a high school education. 84.7% were students, 15.3% were employees and 10.2% have no job.

47.5% are experts in technology while 39% see themselves with the least degree, 7% consider themselves normal users, and only 1.7% with very limited knowledge of technology.

67.8% were people who aren't driving cars, and ONLY 32.2% do.

45.8% of people think of car parking as a possible problem that could affect their daily lives. WHILE 39% already see it as a major problem, and ONLY 15.3% consider it "not a problem".

86.4% care about facilitating the car parking process for themselves and people around them, 10.2% may care about certain conditions, And 3.4% don't care at all.

100% of people want to have an application that helps them book a parking spot before or during their arrival at any destination.

# Establishing Requirements

''

## Part #1

### 5. Results Summarization

We also received different answers to the "what places you need to reserve a parking spot before going to it" question. 69.5% vote for all the above which are {Government facilities, markets, restaurants, sports clubs, and recreational places}. 33.9% vote for government facilities, 30.5% vote for markets, 22% for restaurants, 18.6% for sports clubs, and 23.7% vote for recreational places. On the "Other" section, multiple people wrote {Hospital, university, School, airport}.

89.9% of people never used a parking app, and ONLY 10.2% do. Those 10.2% people used parking apps called "Mawgif" and "Thaki" and they describe them as having a unique graphical user interface, ease of use, and quick access to different services. But the cons were the disability of adding multiple cars.

69.5% of people think that the parking app is useful for the car driver. 28.8% of people think the app may be useful. ONLY 1.7% think it is not useful.

The first evaluation question was "How long does it take to record and save vehicle information in the application?" 54.5% of people took from 1min to 2min. WHILE 36.4% took from have a min to 1min. And only 9.1% of people took 2min to 3min maximum.

# Establishing Requirements

”  
**Part #1**

## 5. Results Summarization

The second evaluation question was "When searching for a location on the map, how many errors did you encounter in the system?". 54.5% of people faced only one error, WHILE 18.2% faced 3 errors, And 9.1% faced no errors. The same percentage faced 2 errors, and also faced more than 3 errors.

The third and last evaluation question was "Based on your observation, how many steps did it take to reserve a parking spot in the app?". 72.7% of people took 3 steps to reserve parking, WHILE 18.2% took 4 steps, and 9.1% took only 2 steps.

the last question on the questionnaire was "What services do you expect to have in our application to improve your experience as a user?". We received 45 answers, And the most common were { adding multiple cars, saving different payments methods, adding apple pay on the payment method, ease of use, and quick access to services}



# Pre - Design

## Part #2



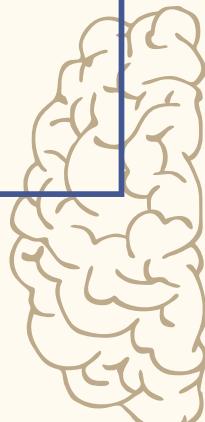
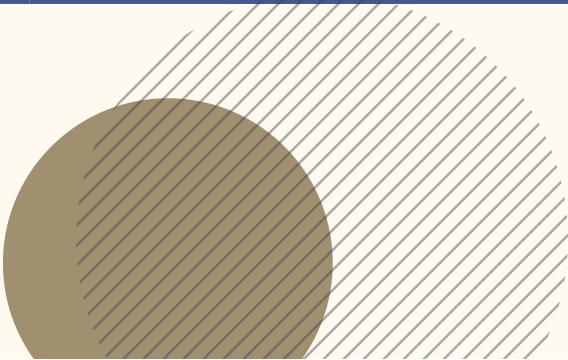
Attention	Meaning for Target Users	Design Implications
Memory	<ul style="list-style-type: none"> <li>- Design memorable experience interfaces that promote recognition method and reduce recall method.</li> <li>- limitation of short-term memory to process information that make users cannot remember a lot of Information.</li> <li>- Using visuals and images that convey all the information to the users but not more than needed.</li> </ul>	<ul style="list-style-type: none"> <li>- Instead of design the form with using recalling method to remember lot of information, such as input field, writing time or date, we reduce it by using select from a list of options and menu.</li> <li>- Use categories to display different service in the applications that make it easy to remember</li> <li>- Using familiar icon and pattern for common tasks so that users would know which function associated with them.</li> <li>- Designing an interface like “search history” page and view “last viewed services” page to help users follow what they previously done.</li> </ul>

# Pre - Design

## Part #2

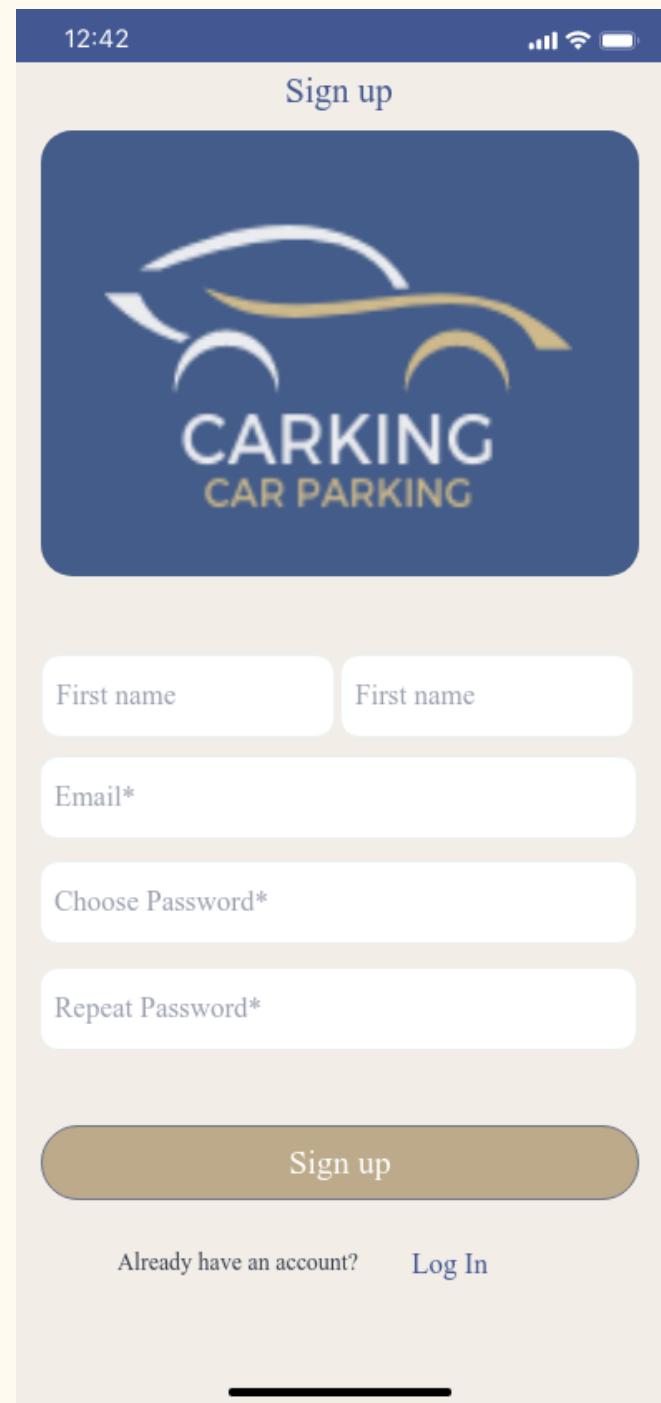
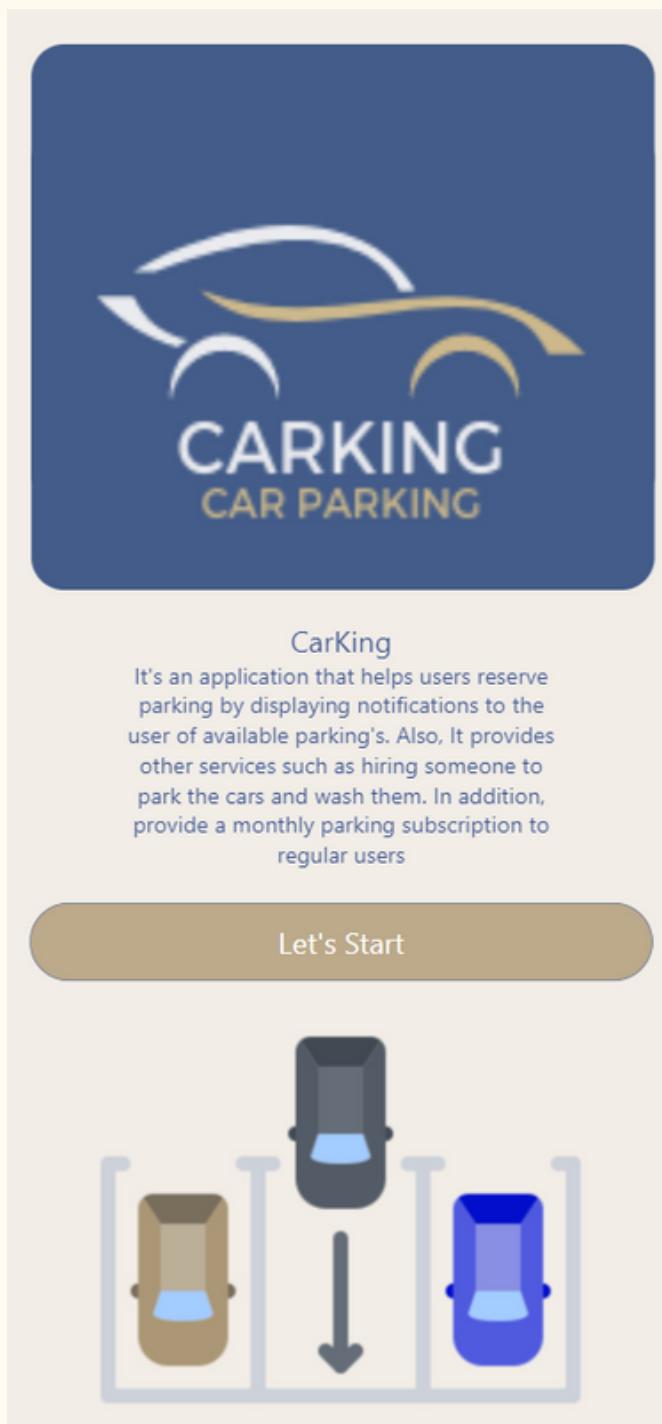


Perception	Meaning for Target Users	Design Implications
	<ul style="list-style-type: none"> <li>- Using effective visual ways of grouping information, such as white spacing or empty spacing to grouping information, and it helping the user attend to relevant information.</li> <li>- Groups the important and related pieces of information together so that the user attention remains intact.</li> <li>- Balance the colors and make it fully contrast to the rest of the page to appeal to the eye, and to differentiate some design elements.</li> </ul>	<ul style="list-style-type: none"> <li>- Grouping the main function in tab bar to make it easier to find when needed, and group related object close to each other with associated button to increase user attention by minimize the details.</li> <li>- Use consistent and engaging icons with labels, adding gradient overlay on the image to enhance the text contrast on images, and use a consistent color scheme.</li> </ul>



# Prototype

## Part #3



The sign-up screen has a header showing the time as 12:42 and signal strength. The title "Sign up" is at the top. Below it is the CarKing logo. The form fields are arranged in two columns:  
First name (left), First name (right)  
Email\*  
Choose Password\*  
Repeat Password\*  
At the bottom are "Sign up" and "Log In" buttons, along with a link for users who already have an account.

# Prototype

## Part #3

12:42

● ● ● ● ●

<



Welcome Back

Email\*

Password\*

Sign in

OR

 Sign in with Facebook

Forgot Password?

New in CarKing? New Account

---

12:42

● ● ● ● ●

<

### Reset Password

Enter your email

We are going to send you a link to reset your password there.

Email\*

Reset password

Having problems? Contact support

---

# Prototype

## Part #3

15:50

 Search

Let's park

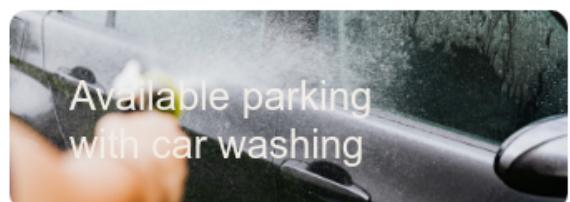
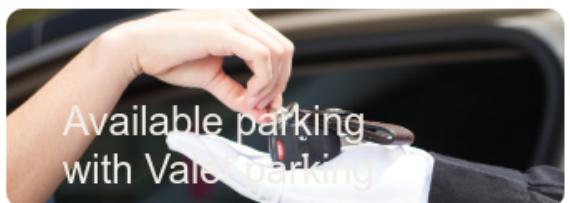


Discounts

%



Available parking

Available parking  
with car washingAvailable parking  
with Valid parking

Home



Active order



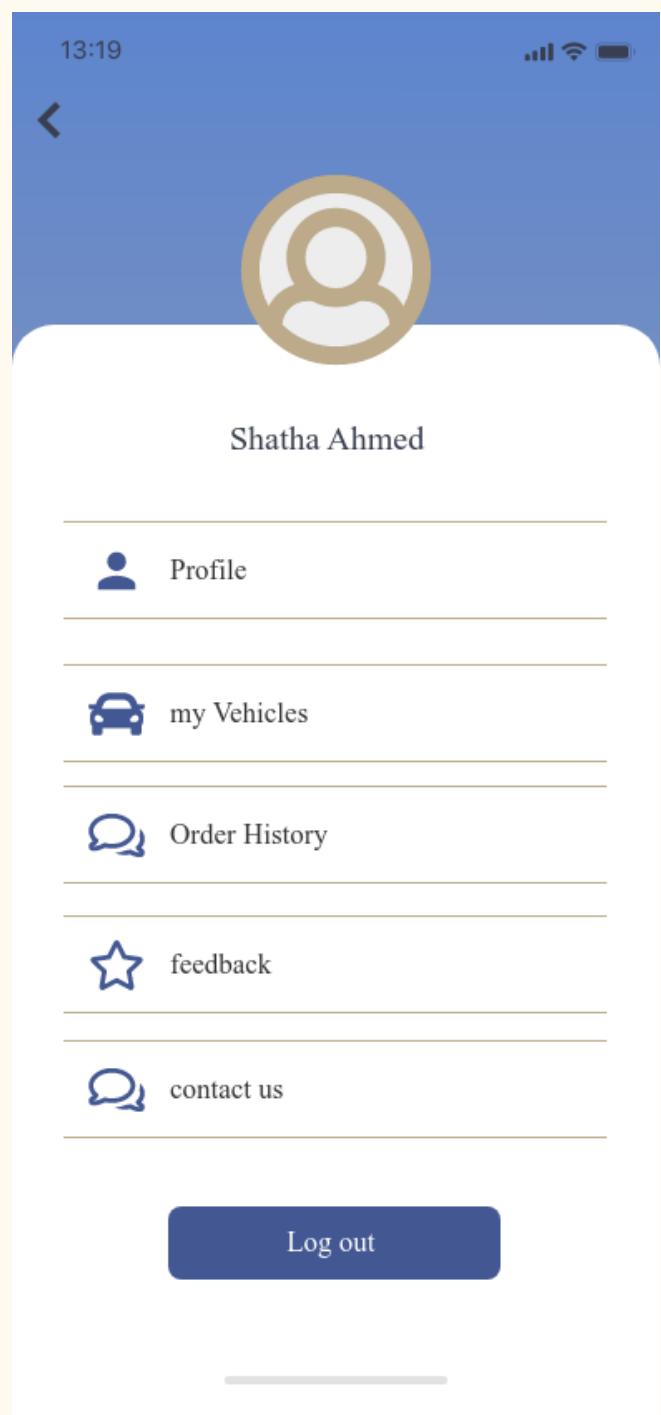
Subscription



Wallet



More



# Prototype

## Part #3

12:42      

  
**Reward Points**  
 1,042



**Last Parking**

  
**Mall Parking**      **30sr**  


---

**wednesday**  
 from: 10:30 pm   to: 12:00 am

  
**Hospital Parking**      **30sr**  


---

**monday**  
 from: 8:40 pm   to: 9:30 pm

  
**University Parking**      **50sr**  


---

**sunday**  
 from: 7:30 am   to: 10:30 am

  
**SuperMarket Parking**      **20sr**  


---

**friday**  
 from: 5:20 pm   to: 6:30 am

12:43      

 **Edit Profile**



**Username**

**Car Plate**

English  Arabic

**Language**

English

Arabic

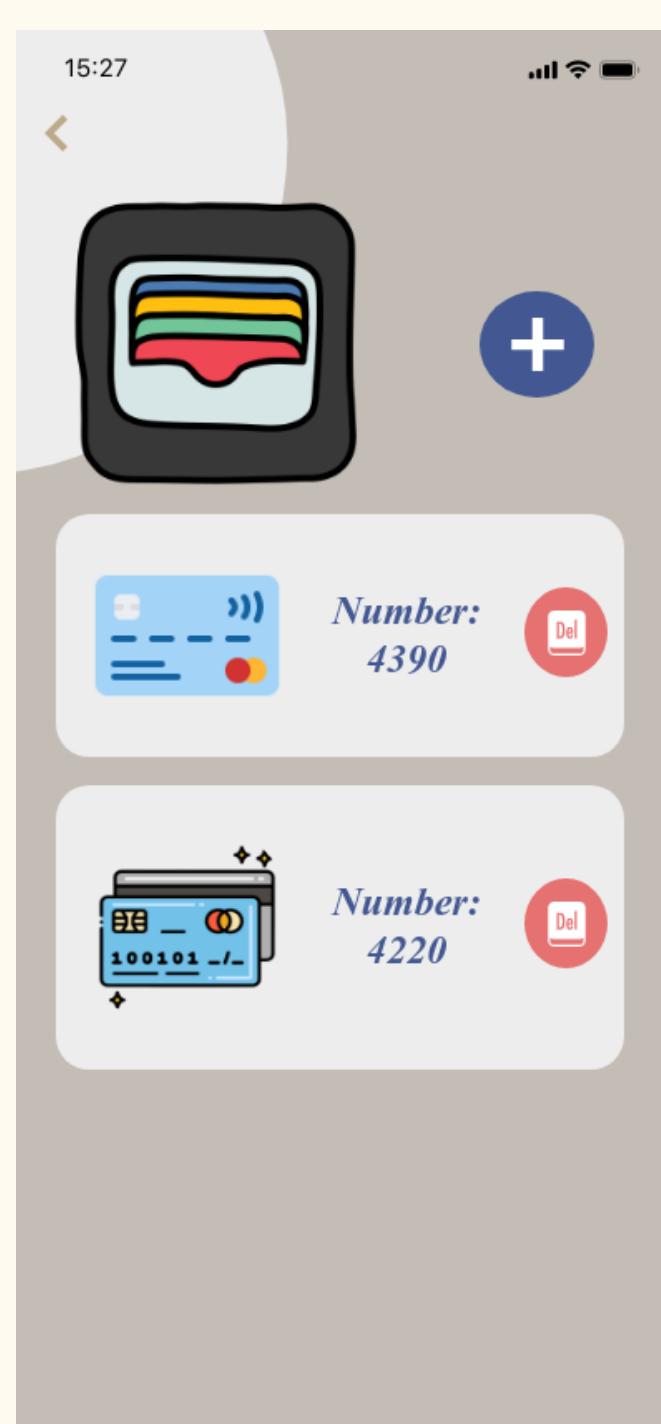
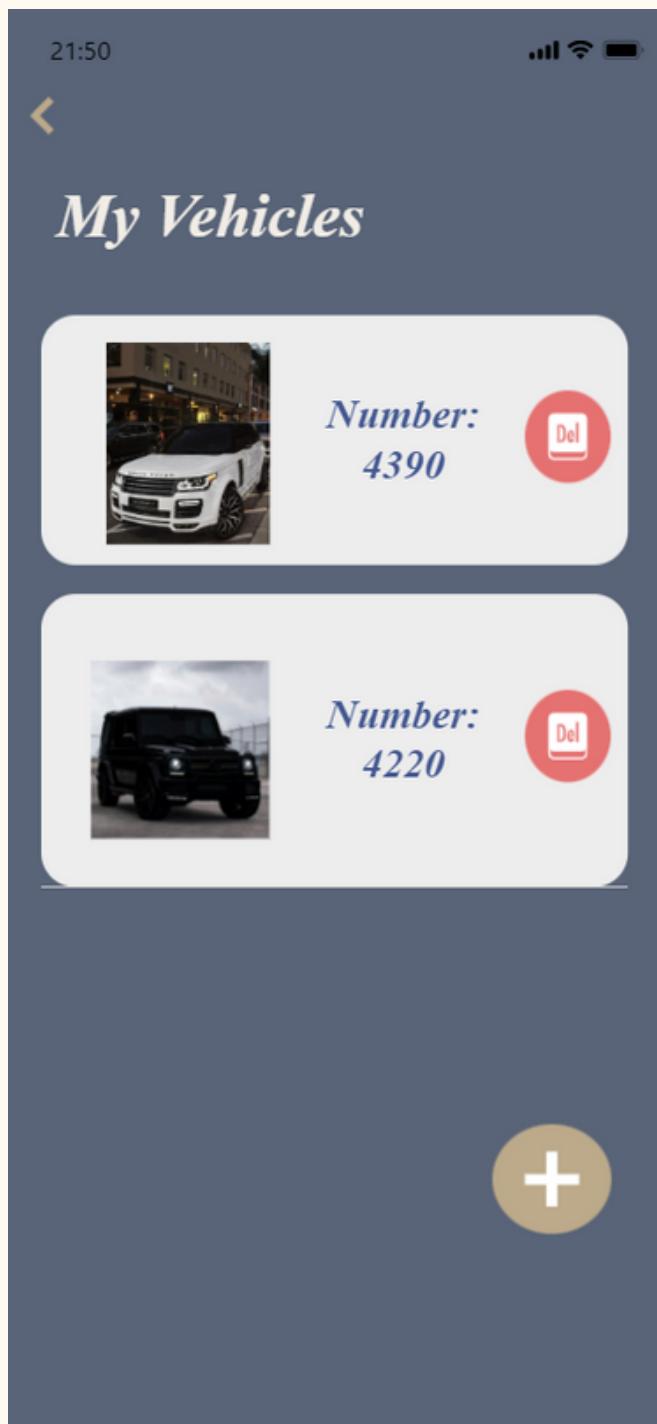
Go

**Bills and Point**

**Save**

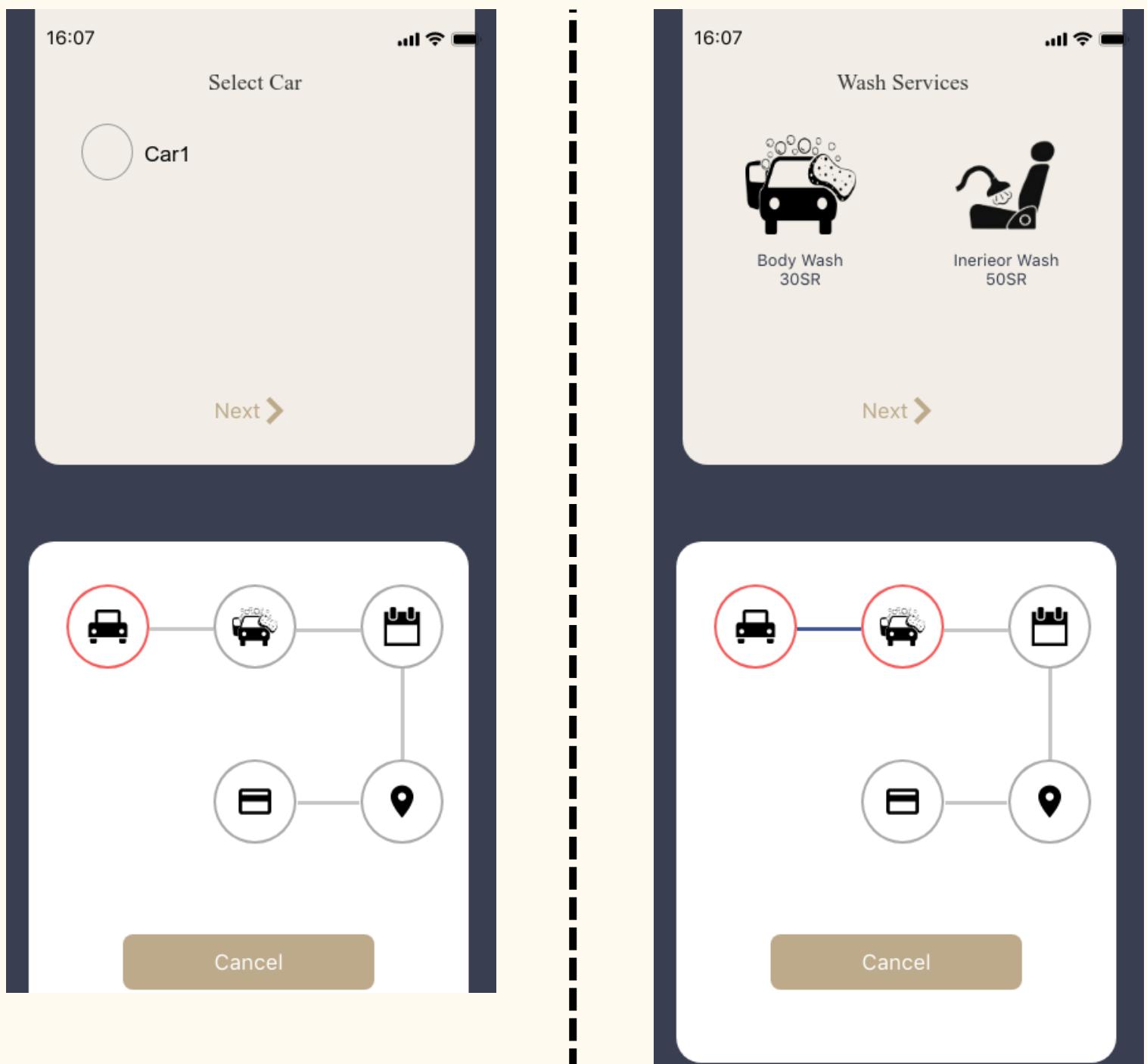
# Prototype

## Part #3



# Prototype

## Part #3



The image displays two mobile application screens side-by-side, separated by a vertical dashed line.

**Left Screen: Select Car**

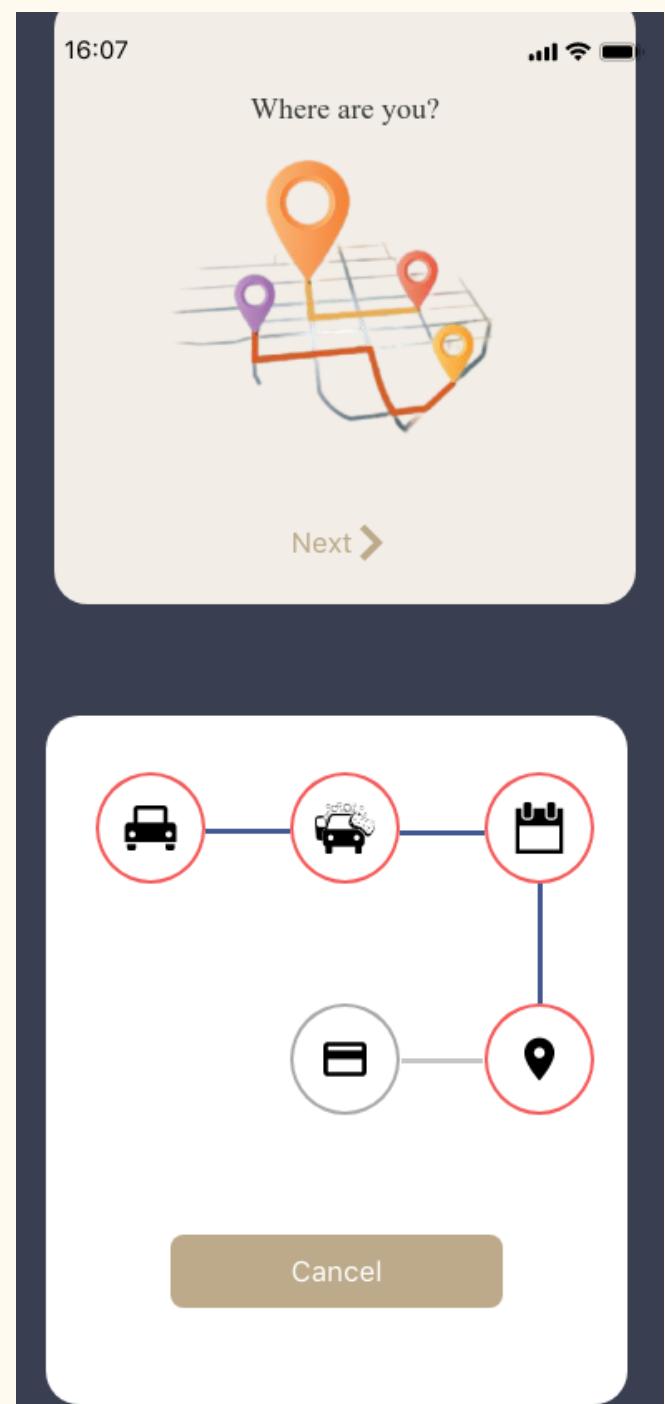
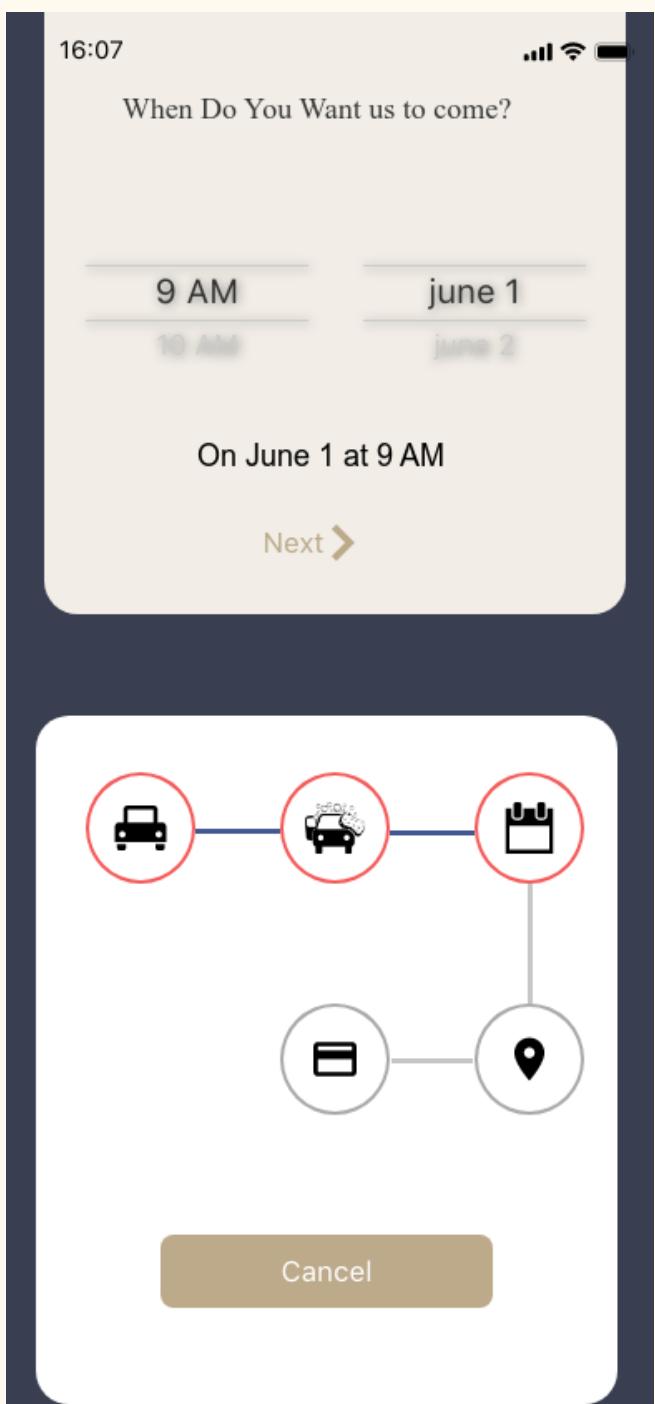
- Time: 16:07
- Network: 4G
- Signal: Full strength
- Battery: Half charged
- Title: Select Car
- Content: A circular icon labeled "Car1" with a car silhouette.
- Buttons: "Next >" at the bottom right.
- Bottom Navigation: A horizontal bar with three icons: a red-bordered car, a car with a checkmark, and a calendar.
- Bottom Action: "Cancel" button.

**Right Screen: Wash Services**

- Time: 16:07
- Network: 4G
- Signal: Full strength
- Battery: Half charged
- Title: Wash Services
- Content: Two service options with icons:
  - Body Wash 30SR: Car silhouette with water droplets.
  - Interior Wash 50SR: Car interior silhouette.
- Buttons: "Next >" at the bottom right.
- Bottom Navigation: A horizontal bar with three icons: a red-bordered car, a car with a checkmark, and a calendar.
- Bottom Action: "Cancel" button.

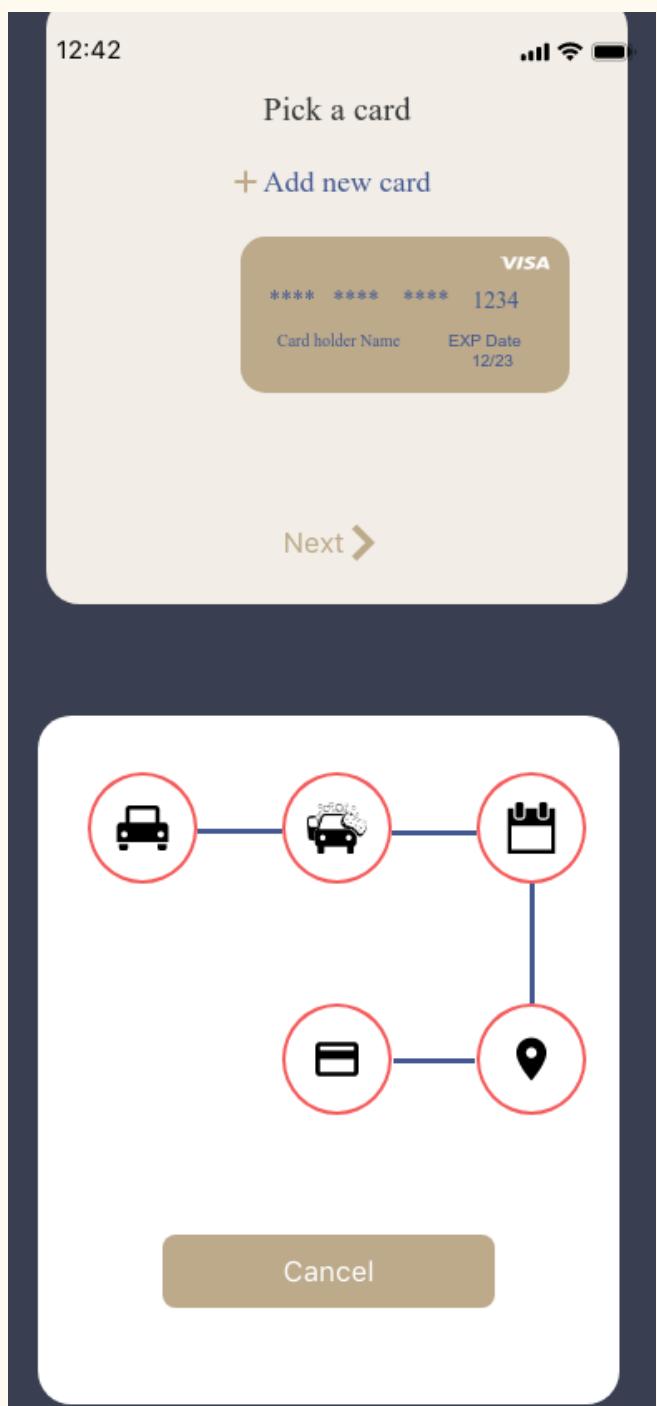
# Prototype

## Part #3



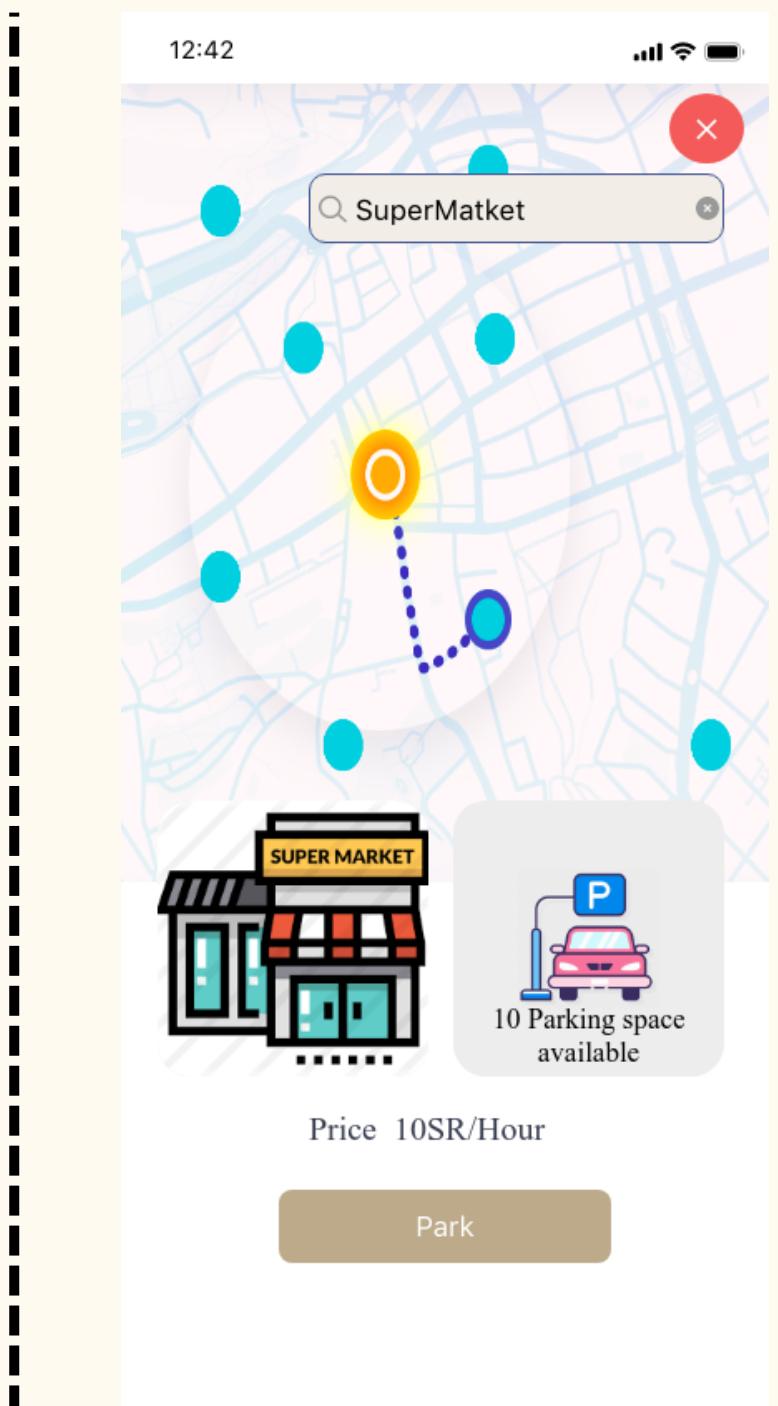
# Prototype

## Part #3



# Prototype

## Part #3



# Prototype

## Part #3

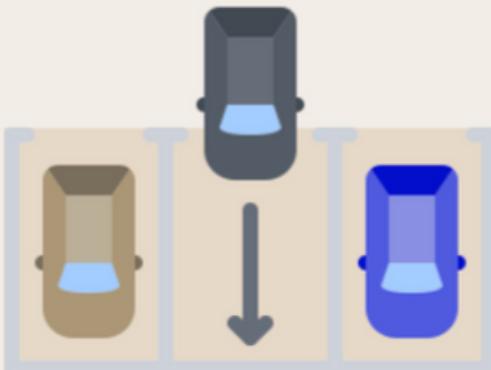
21:15

<

### Subscription

subscribe to reserve a static park for your car in your FAVORITE places

I've already subscribed



**Best Offer**

**MONTHLY EXTRA**  
Reserve FIVE parkings  
+3 EXTRA  
**49.99SR**  
1.66SR per day

**MONTHLY BASIC**  
Reserve FIVE parkings  
**30.99SR**  
1.33SR per day

**YEARLY BASIC**  
Reserve FIVE parkings  
+ Monthly car wash  
**719.99SR**  
50.99SR per month

21:50

<

### MONTHLY EXTRA

To complete you subscription please follow these steps

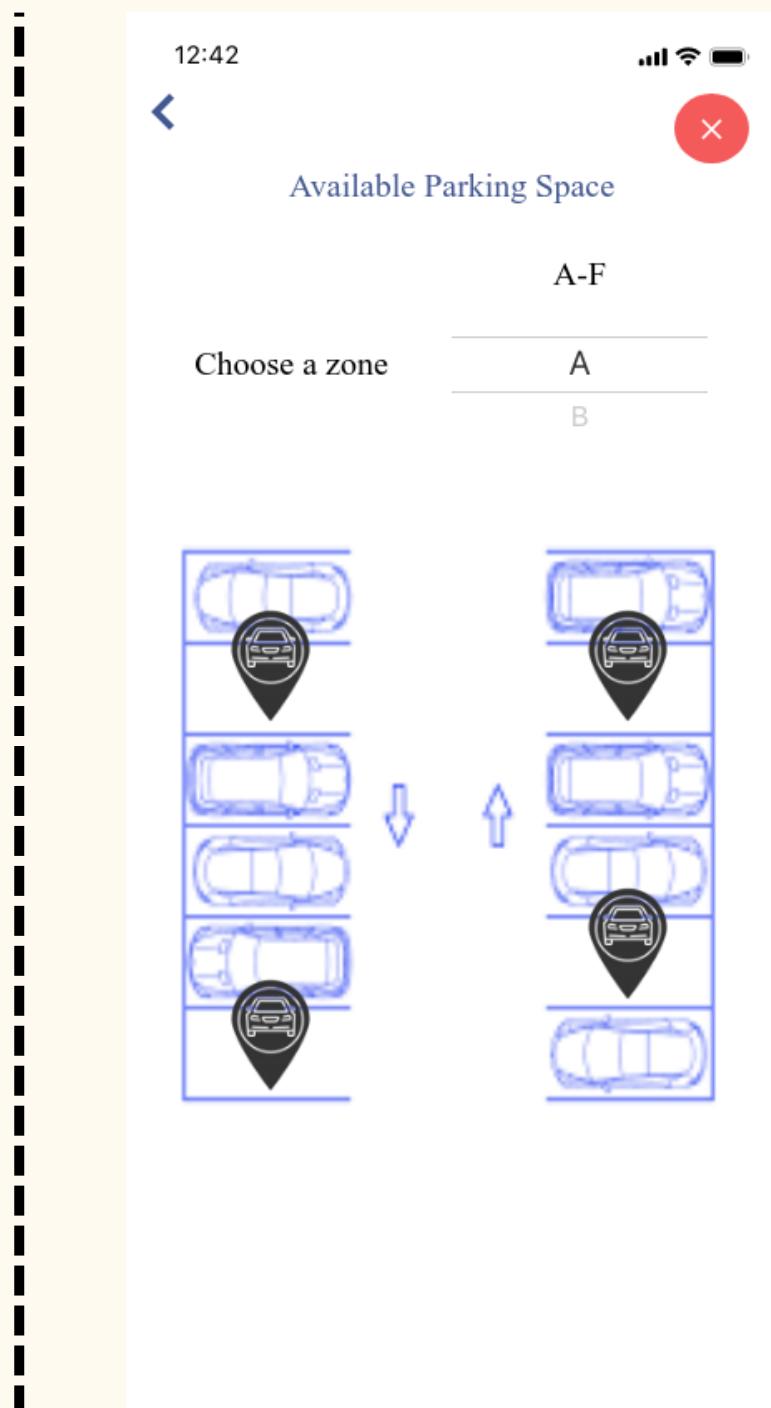
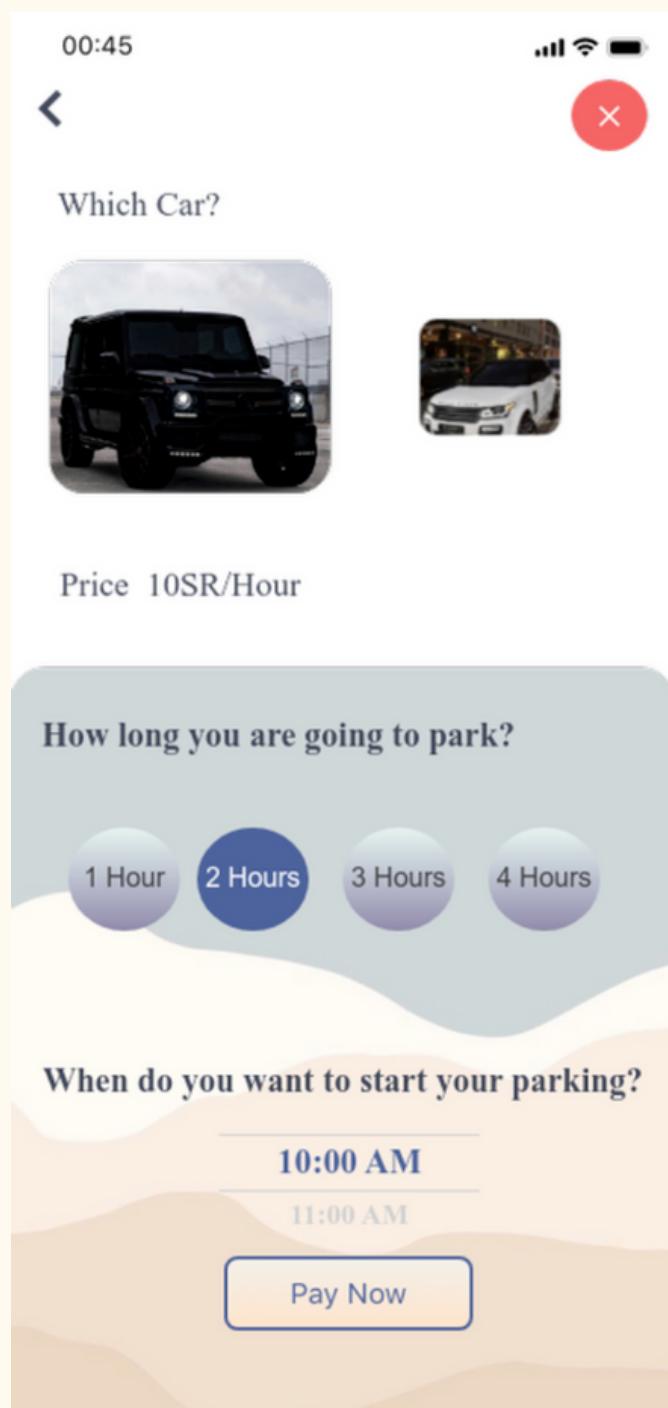
- 1 Select Place 8 places 
- 2 Reserve Park 1 park/place 
- 3 Pay 49.99SR/month 

**Recommendations**

- Super market
- University
- Hospital
- Shopping Mall

# Prototype

## Part #3



# Prototype

## Part #3

21:50

<

### MONTHLY EXTRA



Monthly Extra Subscription  
Reserve five parkings +3 Extra **49.99SR**

Pay with

Registered credit card

› **Slide to pay 49.99SR**

Use another payment method

Apple Pay	Pay
stc pay	Pay
Visa	VISA
MasterCard	MasterCard
Mada	MADA

22:03

<

### MONTHLY EXTRA



Monthly Extra Subscription  
Reserve five parkings +3 Extra **49.99SR**

**Pay 49.99SR for Subscription**

Pay 49.99SR for a Monthly Extra Subscription. The subscription will be renewed automatically until you cancel it.

**Cancel** **OK**

› **Slide to pay 49.99SR**

Use another payment method

Apple Pay	Pay
stc pay	Pay
Visa	VISA
MasterCard	MasterCard
Mada	MADA

# Prototype

## Part #3

21:15

My Subscriptions



Recent Subscriptions

	Monthly Extra	12	Days Remain
--	---------------	----	-------------

Expired Subscriptions

Monthly Extra Dec 25, 12:00 pm	49.99SR
Monthly Basic Oct 13, 11:21 pm	39.99SR
Monthly Basic Sep 24, 10:08 am	39.99SR

[Cancel Subscription](#)

21:15

YOUR SUBSCRIPTIONS

	Monthly Extra Subscription Reserve FIVE parkings +3 EXTRA <b>49.99SR</b> 1.66 SR per day
---	--

If you cancel the subscription before the days remain ends you will still be able to access your parkings until the duration ends.

[Cancel Subscription](#)

# Prototype

## Part #3

22:03      

  YOUR SUBSCRIPTIONS

**Monthly Extra Subscription**  
 Reserve FIVE parkings +3 EXTRA  
**49.99SR** 1.66 SR per day

If you cancel the subscription before the days remain ends you will still be able to access your parkings until the duration ends.

**Cancel Subscription**  
Are you sure you want to cancel subscription?  
**Cancel Subscription**

**YES**  
**NO**

22:03      

  CANCELED SUBSCRIPTIONS

**Monthly Extra Subscription**  
 Reserve FIVE parkings +3 EXTRA  
**49.99SR** 1.66 SR per day

If you cancel the subscription before the days remain ends you will still be able to access your parkings until the duration ends.



# Prototype

## Part #3

<

**20SR** for 2 Hours

SuperMarket Parking




---



**00:26:04**

Active End Parking

**Parking Ticket**

Parking spot A2	Vehicle code #A04
Date from May 27/10:00 AM	Date to May 27/12:00 PM

16:02

<

Where are you going? (x)

*Active Parking spot*



A-2



F-8

---

*Washing order*



# Prototype

## Part #3

< Add Card

**VISA**

\*\*\*\*\* \* 1234

Card holder Name EXP Date  
Placeholder 12/23

Full Name

Card Number

1234 5678 908 

Expiry Date CVV

12/23 974

Save this Card 

**Pay Now**

16:08 <

**VISA**

\*\*\*\*\* \* 1234

Card holder Name EXP Date  
Placeholder 12/23

Full Name

Card Number

1234 5678 908 

Expiry Date CVV

12/23 974

Save this Card in my wallet 

**Pay Now**

# Prototype

## Part #3

12:42



Pick a card

\*\*\*\* \* \* \* \* 1234

Card holder Name

EXP Date

12/23

+ Add new card to pay

Pay Now

13:02



CAR INFORMATION

Type

Label 1

Label 2

Color

Label 1

Label 2

Plate number

Placeholder



# Design Principles



## Part #4

Feedback	<p>Giving relevant feedback through tasks, conforming success, and providing useful feedback in case of error.</p> <p>This is done by giving them a notification message about whether their payment process has been done successfully or not.</p> <p>In addition, if the user selects a time period or the duration he wants to use the parking spot, then the selected option will be in a different color and a click sound</p>
Constraints	<p>restricts, a user from performing a certain action until he performs some action, an example of the constraint in our app, is that the user will be able to see the sequence of actions he should take and enter the desired information to lastly confirm the booking and payment processing. This helps in booking a parking spot or car washing with all information entered and not skipped to avoid any mistake.</p>
Affordance	<p>Affordances make our life easier as they support our successful interactions with the world of physical things and virtual objects.</p> <p>That achieved with the buttons, every button are highly symbolic and mostly use the hints taken from the real world so that users could understand them quickly</p>
Consistency	<p>Main benefit in Consistency that the interfaces are easier to learn and use.</p> <p>That achieved with the unified currency which is riyal Saudi because the app specified for KSA.</p> <p>also the app use the 12 hour format.</p>
Visibility	<p>Good designs don't overwhelm users with alternatives or confuse with unneeded information.</p> <p>That achieved when the user about to reserve parking he will know immediately what to do next and he did't confuse, also in the subscription and in the other task the user will know directly what to do</p>

# Experience Goals

## Part #4

Helpful	The users are able to search for the place they are going to and show its location and then display the parking spot and show the available spots to book. It also offers other services to users that help them in their daily life routines such as car washing and parking.
Satisfying	We tried to create a user experience that is satisfying, easy, pleasant, and natural for the user as much as possible to be able to book a parking spot early and quickly. we are making sure that the app performs the right functionality and the intended ones and this is done by seeing the user reaction to our app, thus we provide a rating and communication through emails services in the app that helps us to improve our app in the places that the users found the problem and errors in the app. Also reward points for each time the user ends the parking before expirations
Enhancing the society	The users know in advance if there are any free or available spaces to park in and how many available ones are in that place that you are going to, and pre-book. Additionally, there are 2 languages supported by the app <ul style="list-style-type: none"><li>• Arabic</li><li>• English</li></ul>
Clear Language	The app uses an easy and clear language by using terminologies that are not ambiguous or abusive and the user can get the meaning directly and quickly using short sentences .

# Usability Goals

## Part #4

Effectiveness	Effectiveness is a measure of how well the app does what it is designed to do. that achieved when the user complete the task of reserving the parking, and achieved when other task completed such as payment or add card even when the user choose any service such as car wash or subscription.
Learnability	The app provides interface include simple brief about the app to facilitate the use of the application to the user
Safety	To protect the user from any dangerous condition and undesirable situations, the app achieved the safety with log out button. we separate the log out button from save info button and if the user choose to cancel the subscription a notification will appear to confirm his choice
Efficency	because the user interact with the app that means the user want to do the task quickly and in the right way, so every task will not take more than 1 minute and the task will be completed in the right way
Utility	Utility is about providing functions that users need in the first place. so the app provide all the requirements and task that suppose to be in the app such as reserve parking space or hire someone to wash the car and the subscription service.

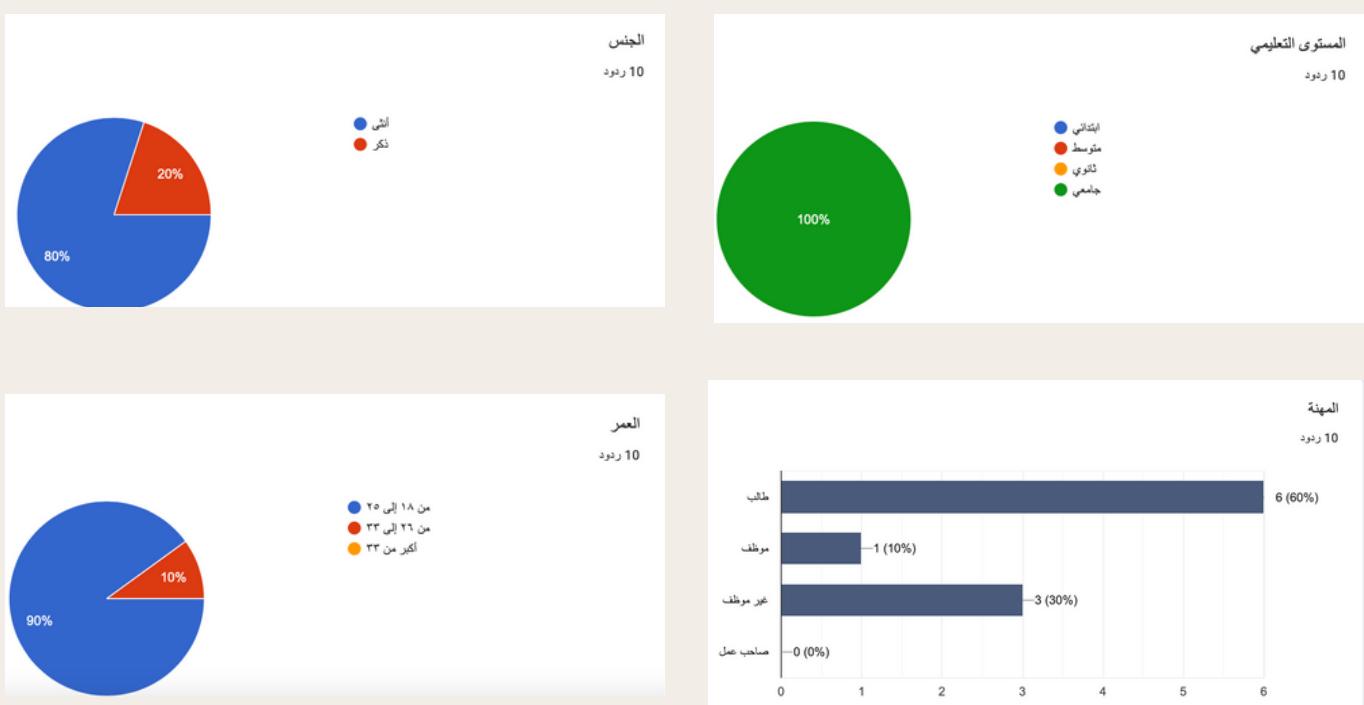
# Usability Testing

”

## Part #5

### Participants Description

10 participants involved in the evaluation of the prototype where most of them female university student and their agers range between 18 to 25 years old.



# Usability Testing

## Part #5

### Environment Description

All participants were tested in their homes, user interaction with the prototype were observed and the time taken to perform the task was calculated by the observer

### Tasks Description

- 1
- 2
- 3

Record vehicle information in the application and save it

Find a location using the map

reserve a parking

# Usability Testing

## Part #5

Users \tasks	Record vehicle information in the application and save it	Find a location using the map	reserve a parking
User1	21 sec	54 sec	93 sec
User2	55 sec	32 sec	28 sec
User3	15 sec	40 sec	24 sec
User4	30 sec	37 sec	31 sec
User5	19 sec	35 sec	27 sec
User6	23 sec	33 sec	39 sec
User7	45 sec	28 sec	40 sec
User8	37 sec	25 sec	38 sec
User9	30 sec	19 sec	20 sec
User10	39 sec	35 sec	18 sec
Average	31.4 sec	33.8 sec	35.8 sec

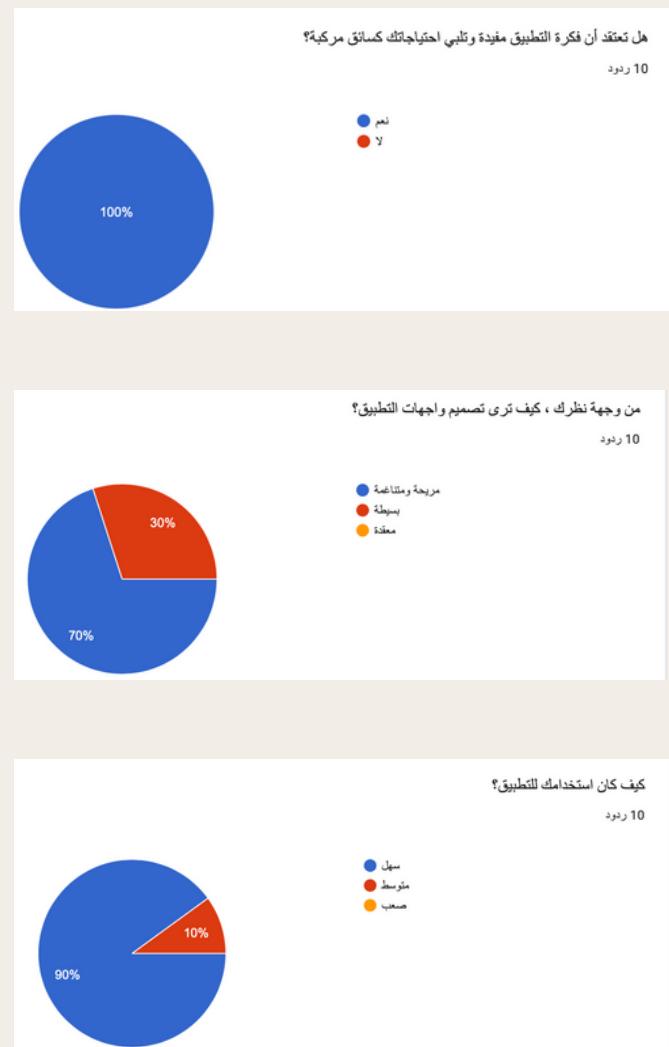
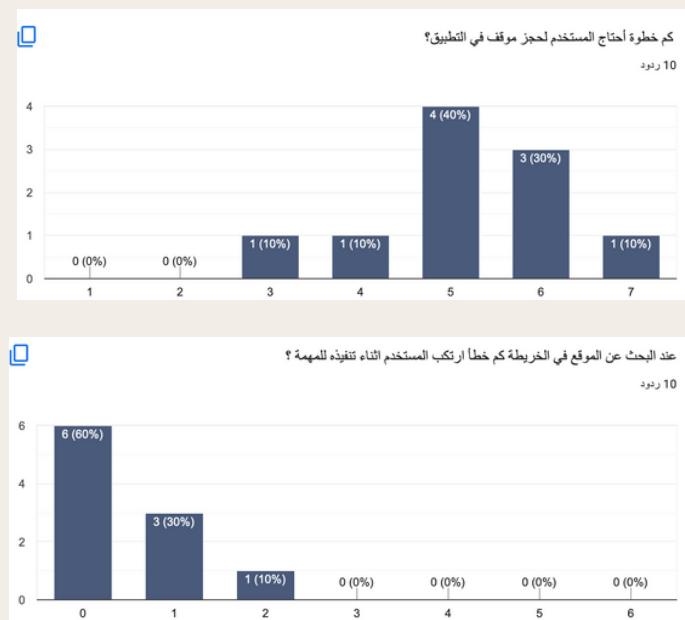
# Usability Testing

”  
Part #5

## Prototype Evaluation

objective  
measure

subjective  
measure



# Usability Testing

”

## Part #5

### post-test questionnaire

- The estimated average time the participants took to complete adding vehicle information in the application and save the task is 31.4 sec.
- 40% that is 4 of 10 of the participants took 5 steps to reserve parking and 10% of the participants took 3 steps to reserve parking and 30 % took 6 steps to reserve parking and 10 % took 4 steps to reserve parking while 10% took 7 steps to reserve parking.
- 30%(3 of 10) of the participants face two errors while looking to find his/her location using the map and 10%(1 of 10) of the participants face an error while looking to find his/her location using the map.
- Most of the participants found the app's services easy to use and the design of the interfaces comfortable and harmonious.
- Also, All the participants found that The idea of the app is useful and meets their needs as drivers.



The screenshots show a Google Form with the following questions:

- جنس\***: انشي (radio), ذكر (radio)
- العمر\***: من ١٨ إلى ٢٥ (radio), من ٢٦ إلى ٣٢ (radio), أكبر من ٣٢ (radio)
- المستوى التعليمي\***: ابتدائي (radio), متوسط (radio), ثانوي (radio), جامعي (radio), آخر (radio)
- المهنة\***: طالب (checkbox), موظف (checkbox), غير موظف (checkbox), صاحب عمل (checkbox), أخرى (checkbox)
- هل تعتقد أن فكرة التطبيق مقيدة وتبليغي احتياجاتك؟**: نعم (radio), لا (radio)
- من وجهة نظرك، كيف ترى تصميم واجهات التطبيق؟**: مرتبة ومتناهية (radio), بسيطة (radio), معقدة (radio), أخرى: \_\_\_\_\_
- كم خطوة أحتاج المستخدم لحجز موقف في التطبيق؟**: 6, 5, 4, 3, 2, 1, 0 (radio scale)
- كيف كان استخدامك للتطبيق؟**: سهل (radio), متوسط (radio), صعب (radio)

# Conclusion

At the end of this project, we learned a lot about the user requirements and how to establish data and organize them to develop a system.

In addition, we understood the nature of the parking problems more deeply and how specific users want the application to be done. We established this with the help of the questionnaire we sent and the resulted data from it.

And the most important thing was when we implemented our prototype considering all this information to achieve the user's needs.

# References

1. Questionnaire Form Link

<https://forms.gle/RVSVGcbg27m9MW55A>

2. ProtoType Link

<https://pr.to/YLMXMG/>