



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

CPBS



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Software Requirements Specification (SRS)

Version 1

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Title: Car Parking Booking System (CPBS)

Name: Rakan Abdulwahab Aljijakli

ID: 342107126

Supervisor: Dr. Yosry Azzam

Graduation project 1

CSI 510

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Chapter 1: Introduction

1.0. 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 web site that gives the user the opportunity to book a car parking location through a website 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.
3. Using modern means Technology making society in evolution.



1.1. 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:

1. Wasting of time.
2. Make people suffer to find a suitable place to park.
3. Automation of the parking process.



1.2. Project aims (Objectives):

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

1.3. Applications:

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



1.4. Where can the CPBS system applied?



1. Airports.
2. Supermarkets.
3. Universities.
4. Hospitals.
5. Organizational governments.

Chapter 2: REQUIREMENT ANALYSIS



2.0. Feasibility study:



Car Parking Booking System



1. Does the CPBS 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



2. Does the CPBS 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

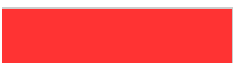
2. Does the CPBS system shorten the time and effort for user to find car parking?							Response Percent	Response Total
Analysis	Mean:	2.5	Std. Deviation:	0.5	Satisfaction Rate:	50	answered	2
	Variance:	0.25	Std. Error:	0.35			skipped	0


3. Are you going to use the CPBS 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





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

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

6. Do you prefer that the CPBS 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

7. Do you encourage the students to establish such a system?							Response Percent	Response Total
1	1.Strongly agree						50.00%	1

7. Do you encourage the students to establish such a system?							Response Percent	Response Total
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

8. What are the places that the CPBS 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

2.1. Project Scheduling:

The project is divide into two parts:

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

CPBS Gantt chart



Figure 2.1. Gantt chart.

2.2. Purpose:

The purpose of this document is to present a detailed description of the CPBS Web 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 intend for both the stakeholders and the developers of the system.

2.3. Scope of project:

This software system will be a Car Parking Booking System 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.

2.4. Glossary:

Term	Definition
CPBS	Car Parking Booking System. CPBS 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.

2.5. 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.

2.6. 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.

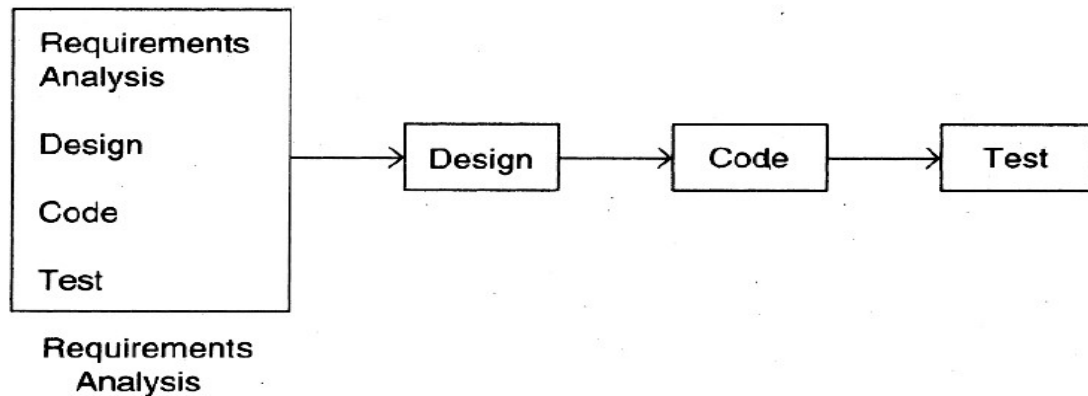


Figure 2.6. Prototyping model process

2.7. Advantages of prototype model:

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

2.8. Disadvantages of prototype model:

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

2.9. Overall description:

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

2.10. 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.

1. The system will save customer details like:
 1. Email address.
 2. Phone number.
 3. Name.
 4. User ID.
5. The system must save reservation details.
6. The CPBS must allow the user to make changes to their original booking and information.

2.11. 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.

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

2.12. Performance requirements:

1. The CPBS shall be available 24/7
2. The CPBS shall be able to accommodate 50 simultaneous users at a time.

Chapter 3: SYSTEM DESIGN

3.0. System environment:

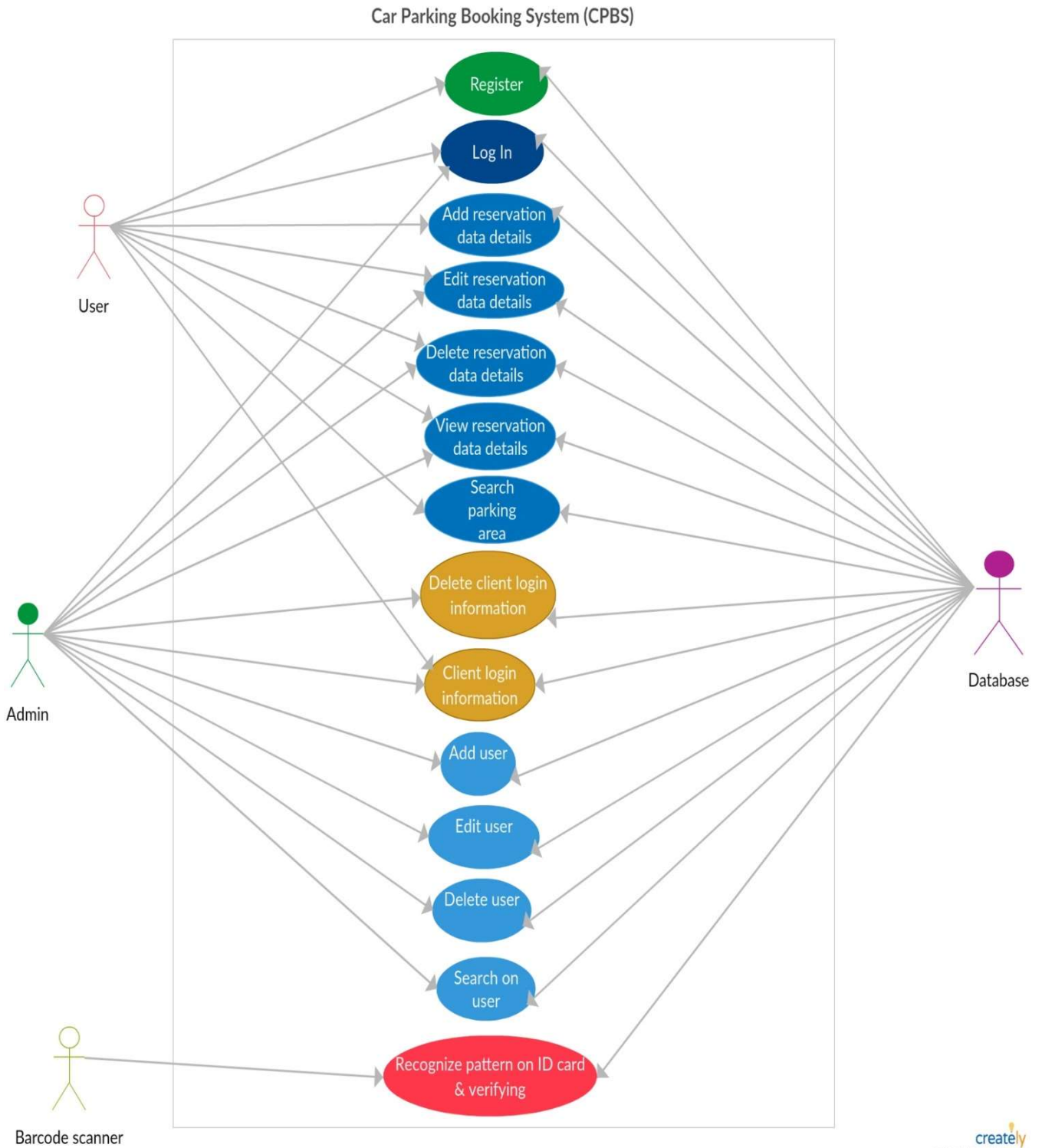


Figure 3.0. Use case diagram

3.1. Use case diagram:

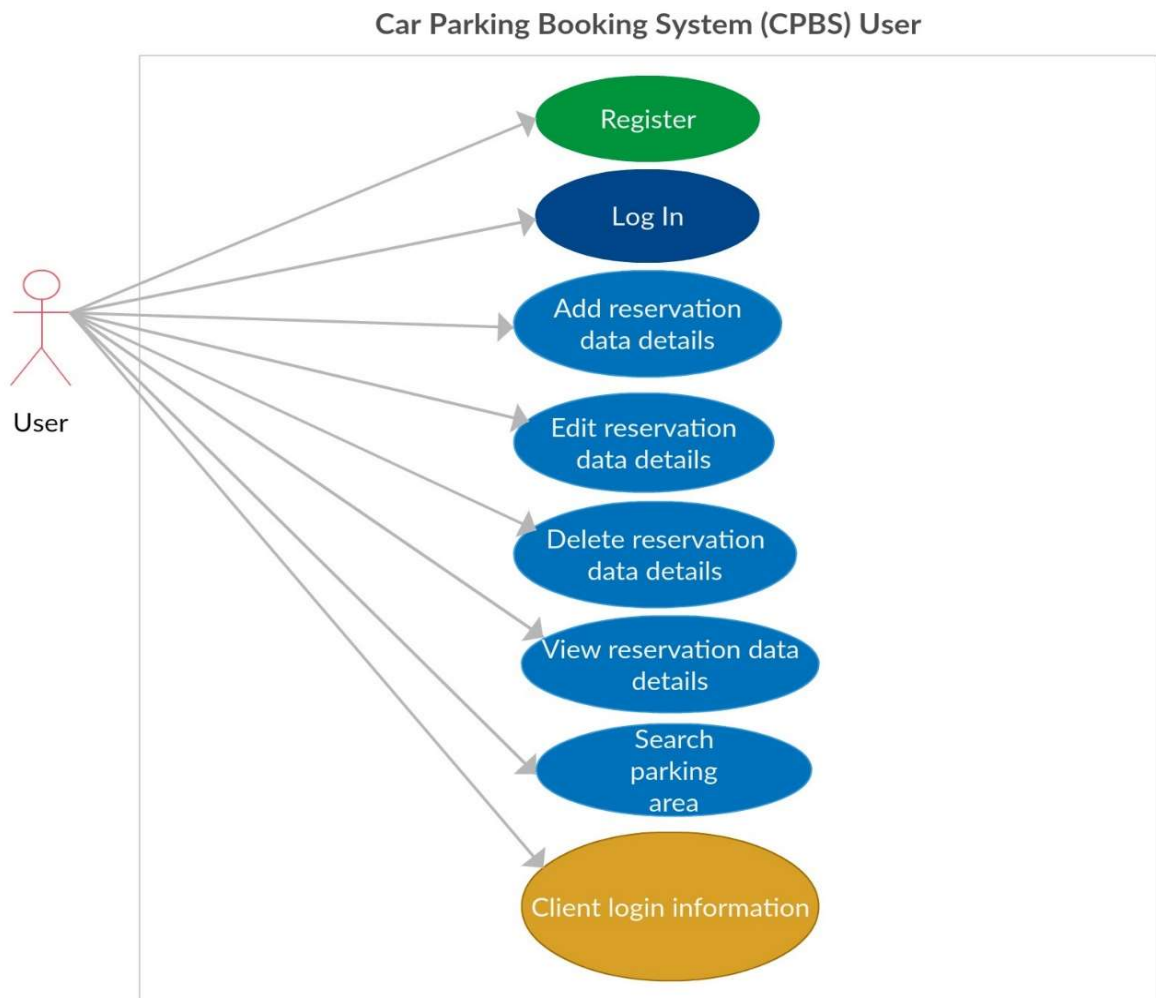


Figure 3.1. Use case diagram (User)

Use case name: CPBS manage booking.

Primary actors: User.

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

Database (CPBS) – 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 CPBS website to book a parking space.

Normal flow of events:

1. User open to the CPBS website.

2. User shall register his information and his car information to the CPBS.
3. User can log in to the CPBS.
4. User access to the CPBS website
5. User chooses what parking area based on list of locations that has registered if it is available.
6. User inserts his information regarded to the reservation such as time duration, date duration and the location.
7. User confirm his order.
8. User receives verification of booking.
9. User can access his log in information to modify it.



Car Parking Booking System (CPBS) Admin

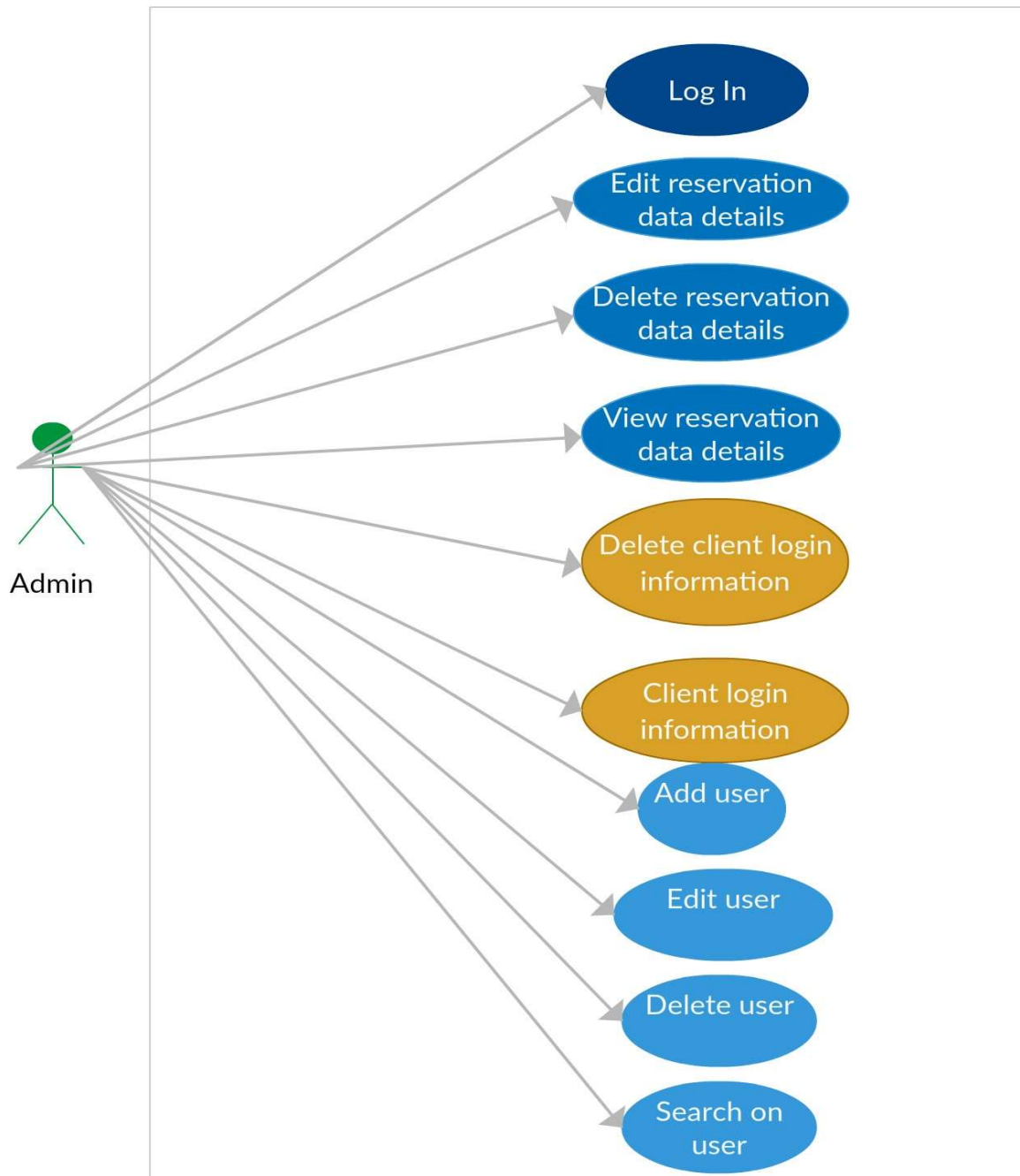


Figure 3.1.0 Use case diagram (Admin)

Use case name: CPBS manage user.

Primary actors: Admin.

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

Database (CPBS) – 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 CPBS.

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

Normal flow of events:

1. Admin shall register his information to the CPBS.
2. Admin can log in to the CPBS.
3. Admin access to the CPBS website.
4. Admin manage the user reservations and check for user information.



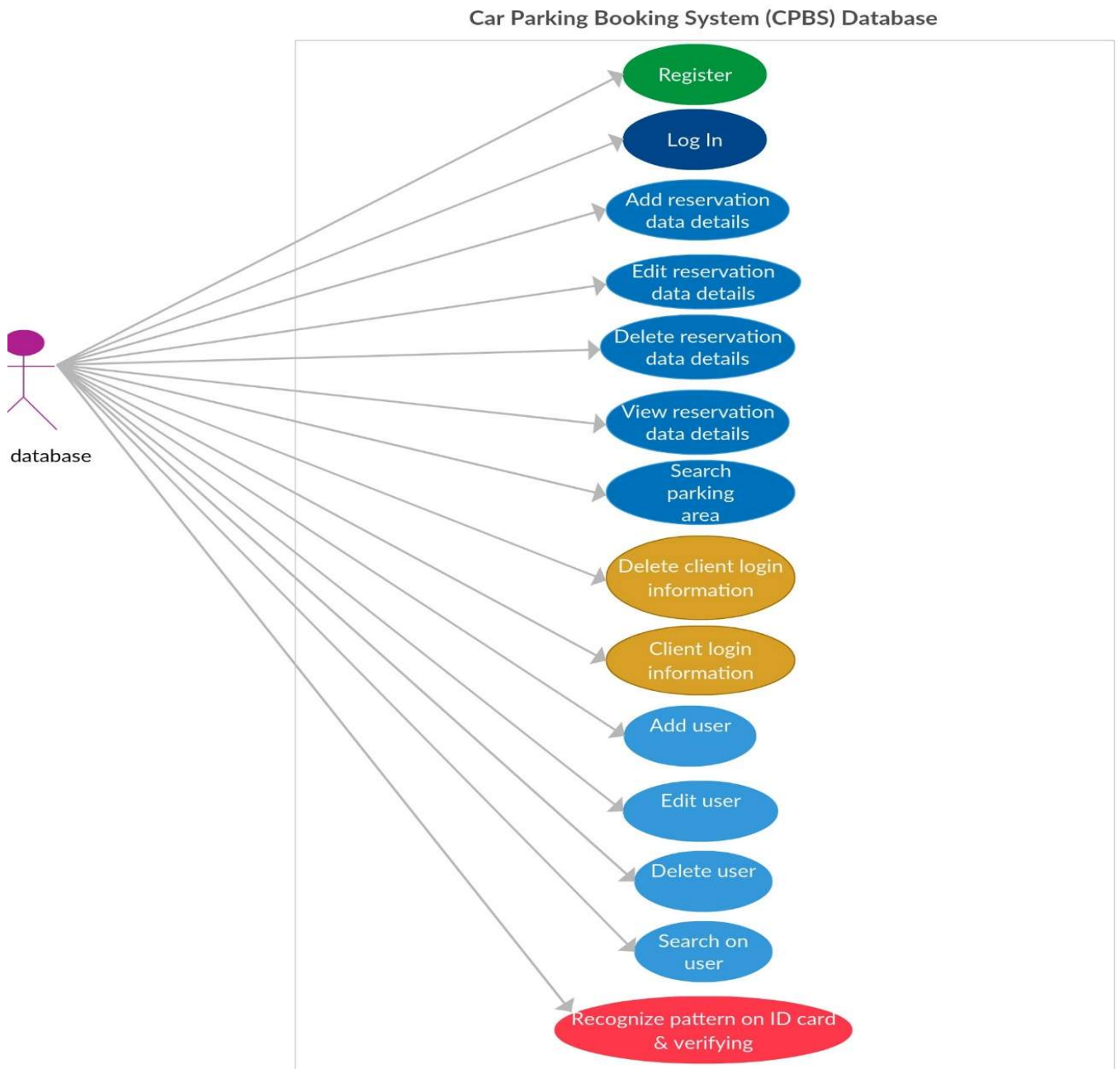


Figure 3.1.1 Use case diagram (Database)

Use case name: CPBS database.

Primary actors: Database.

Brief description: Database (CPBS) will ensures that users and are able to book parking places.

In addition, to store information data and interact with the user and the other actor, it will give permission access to the barcode when it is verifying the user.

The database will allow the administrator to manage the user reservation and log in information.

Normal flow of events:

1. Database will be always update.

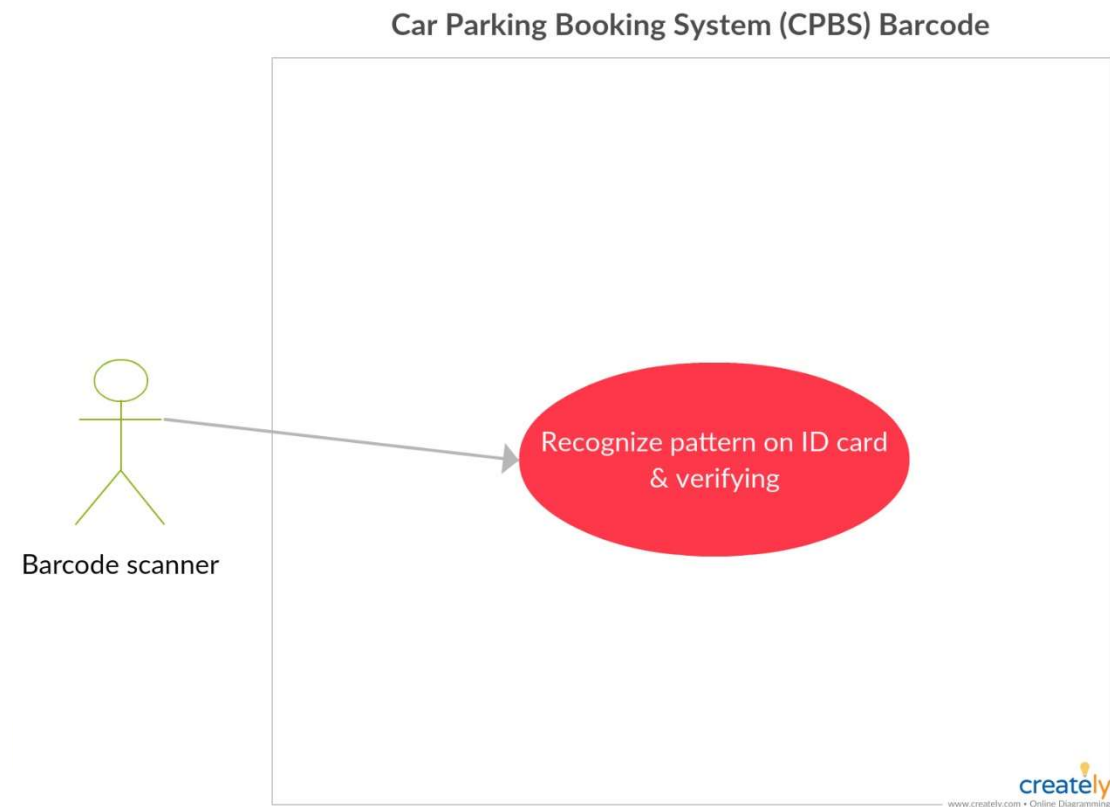


Figure 3.1.2 Use case diagram (Barcode)

Use case name: CPBS Barcode.

Primary actors: Barcode scanner.

Database (CPBS) – check the ID number that has scanned on the barcode and compare it with the data on the website.

Brief description: when the user pass his card on the device and when it read the ID number the barcode will compare it to the information on the database and when comparing is done and verified the user it will give the user permission to go.

Trigger: The barcode should be to identify the user.

Normal flow of events:

2. Barcode recognize the number on the ID card.
3. Barcode compare the ID number with information that entered in the website.

4. Barcode should give permission to the user that has verified.

3.2. Use case description:

Use case name	CPBS booking parking.
Trigger	Selection menu.
Precondition	User – wants to book a parking online.
Basic path	<ol style="list-style-type: none">1. User access to CPBS.2. User chooses what place he want to park in based on a list of available slots.3. User chooses the date and time duration to reserve a paring place.4. User confirm the order.5. User receives verification of booking.
Alternate path	N/A
Exception	If there is a connection failure the departemental server returns to the wait state.

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3.3. Sequence Diagram:

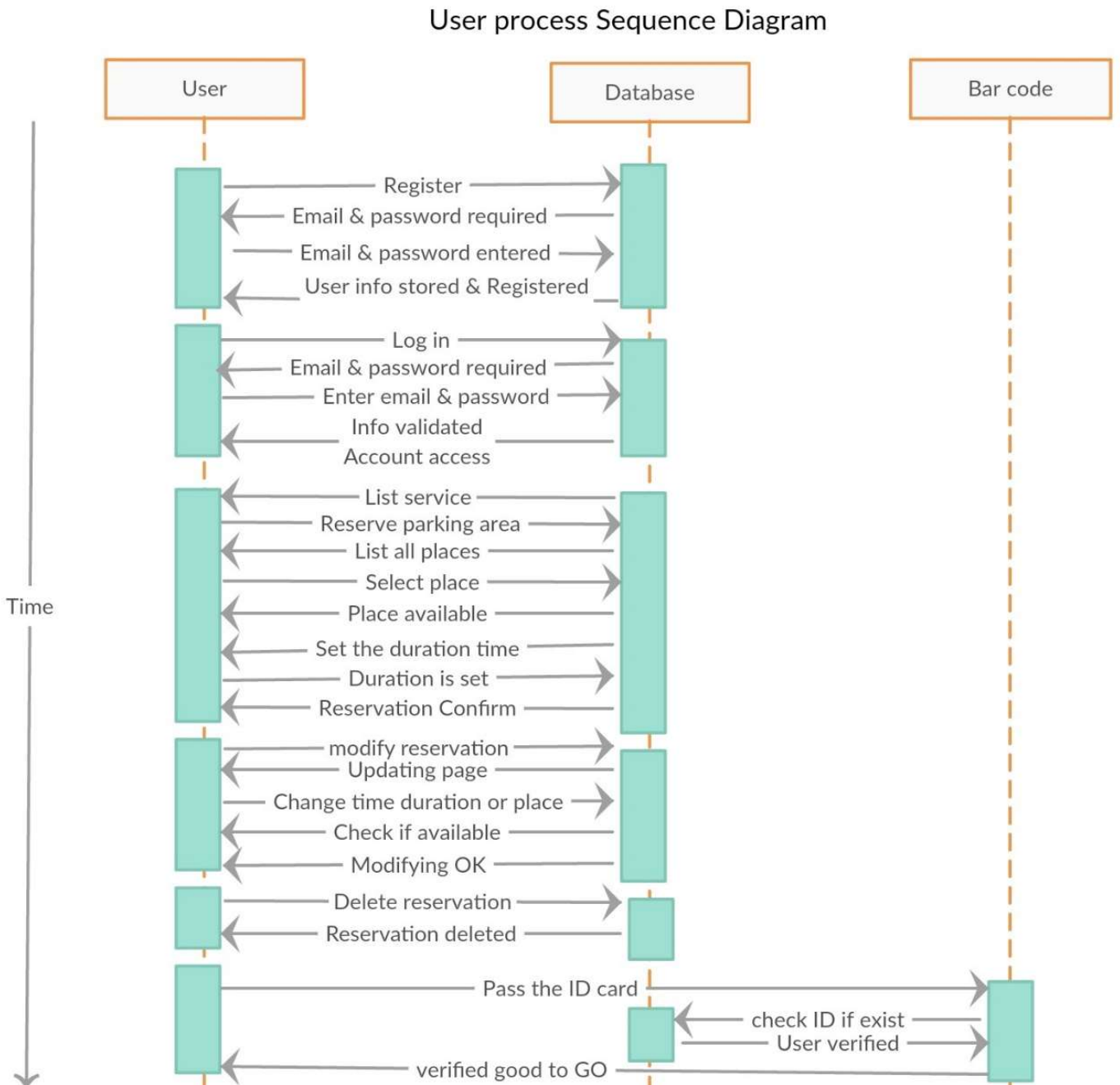


Figure 3.3. Sequence diagram (User)

Admin process Sequence Diagram

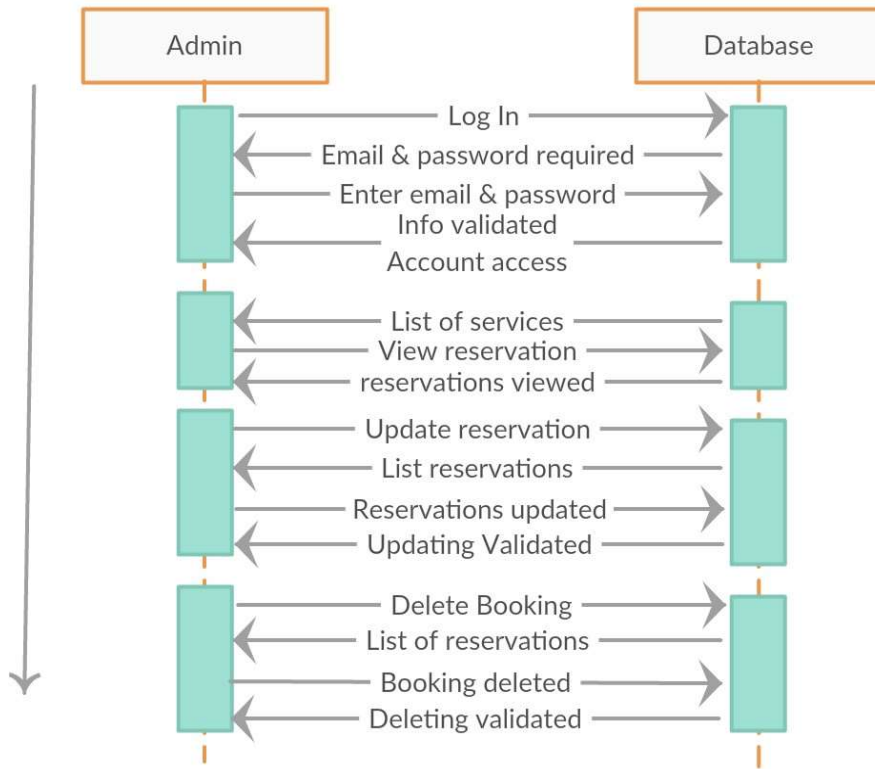


Figure 3.3.0 Sequence diagram (Admin)

3.4. Activity diagram:

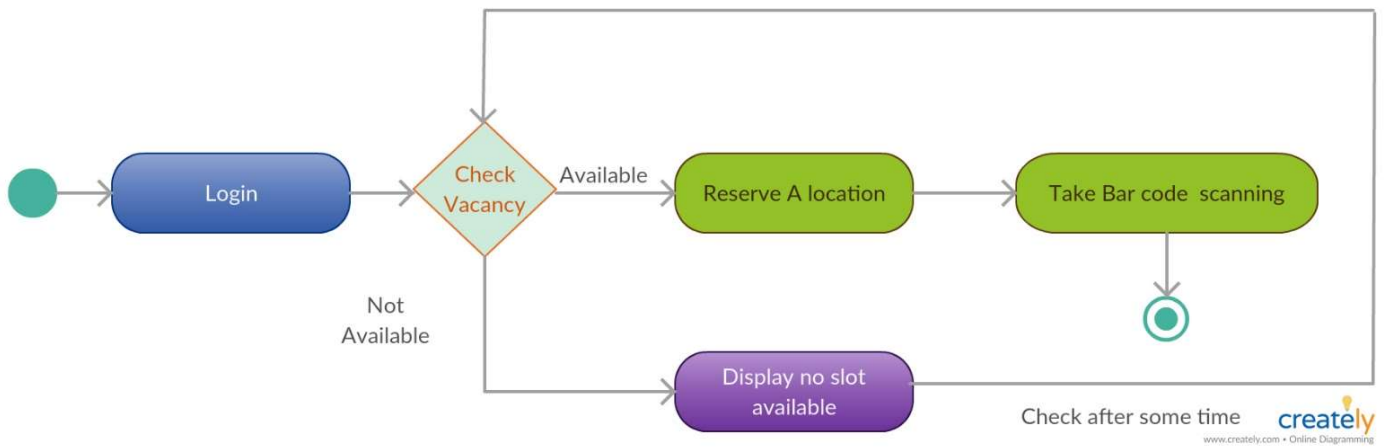


Figure 3.4. Activity diagram

3.5. Entity relationship diagram (ERD):

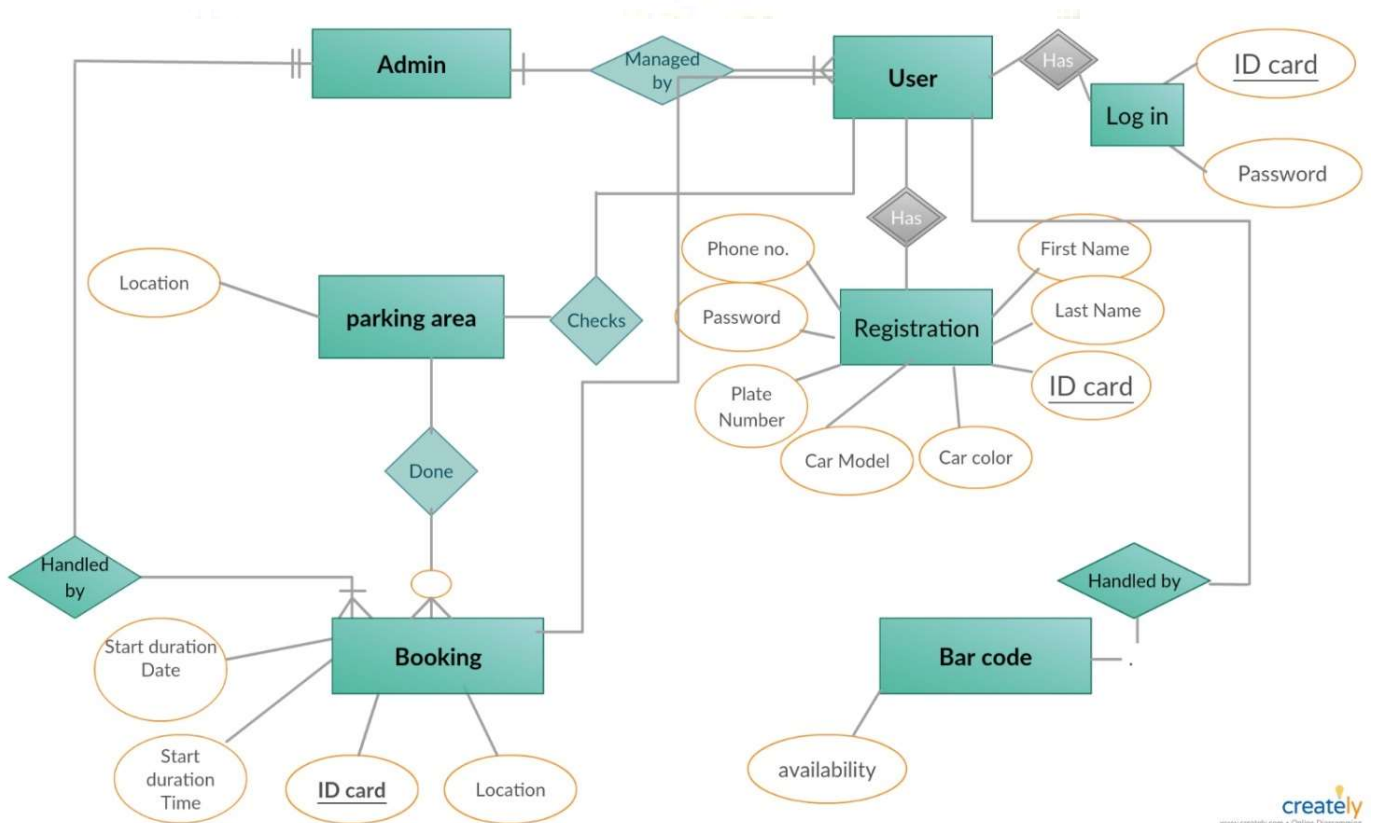


Figure 3.5. Entity Relationships diagram (ERD)

3.6. Class diagram:

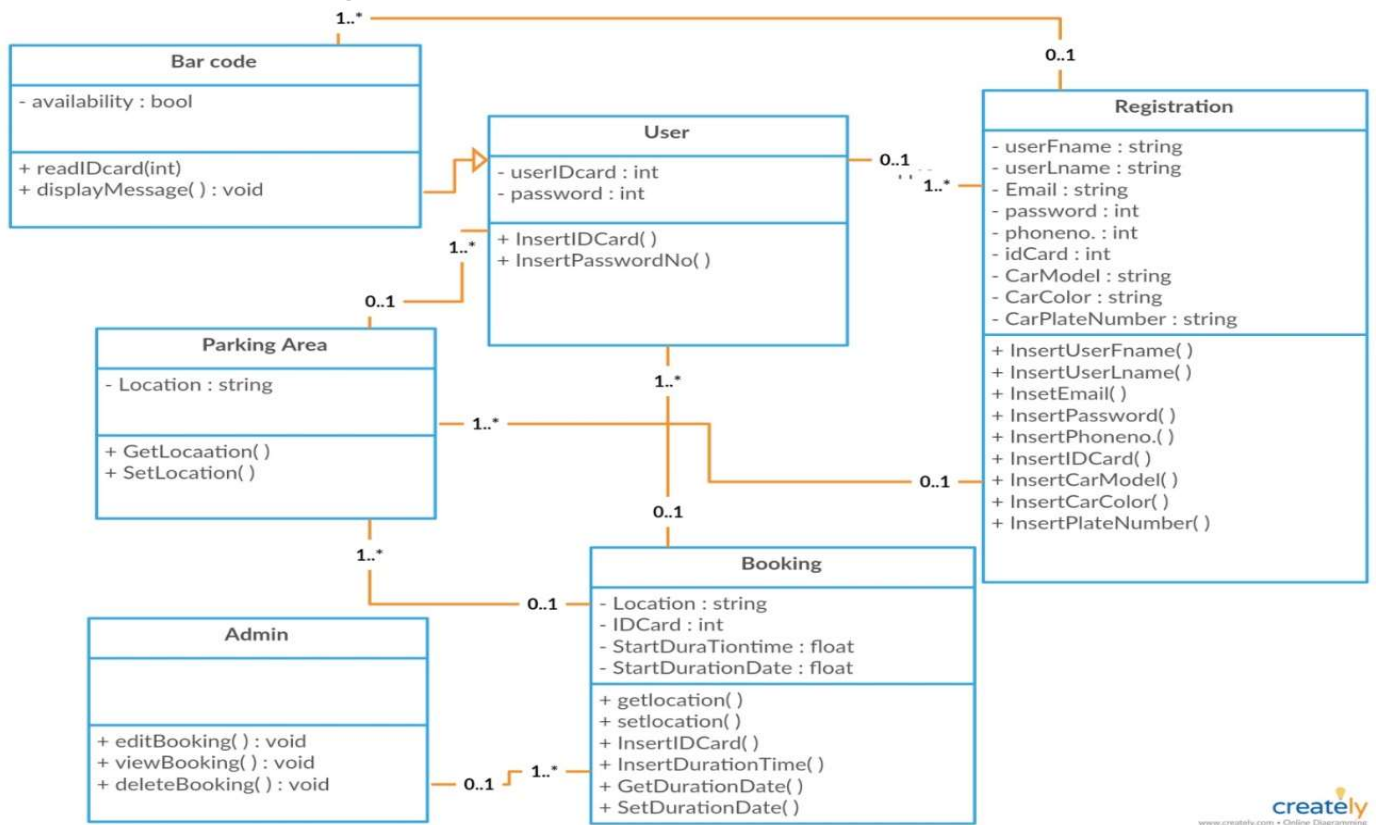


Figure 3.6. Class diagram

3.7. Data flow diagram (DFD):

DATA FLOW DIAGRAM

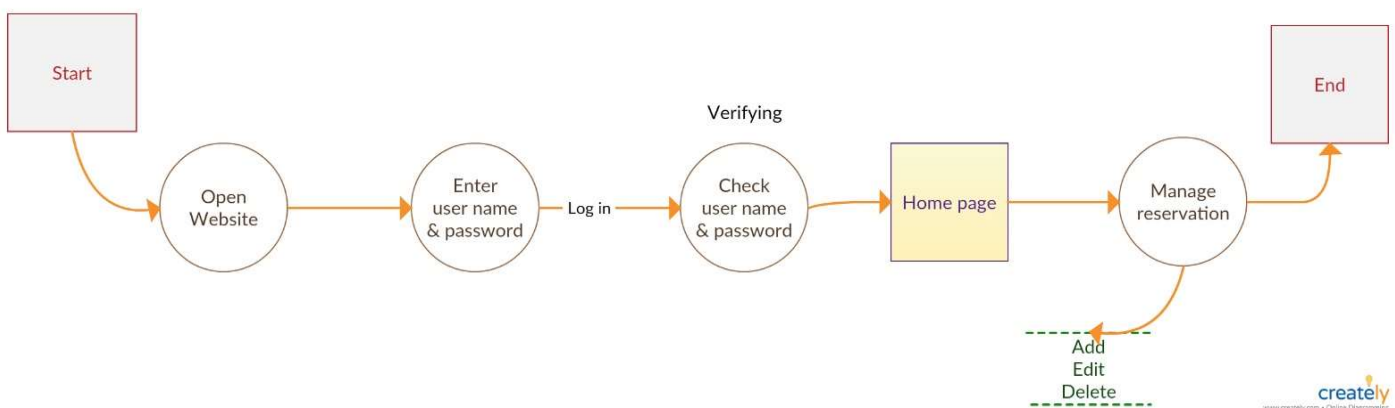


Figure 3.7. Data flow diagram (DFD)

3.8. Simple design of CPBS website:

Registration

User information

First name* Last name* Gender*

Rakan Aljjakli Male

Date of birth* ID Number*

10/06/1994 2192305571

Phone number* Email address*

+966501220122 r.aljjakli@gmail.com

Password* Reenter Password*

Car information

Car Model* Plate Number*

Nissan Skyline GT-R 1234 B G L

Car Color*

Dark Blue

Submit

1

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Figure 3.8. CPBS simple website (Registering interface)

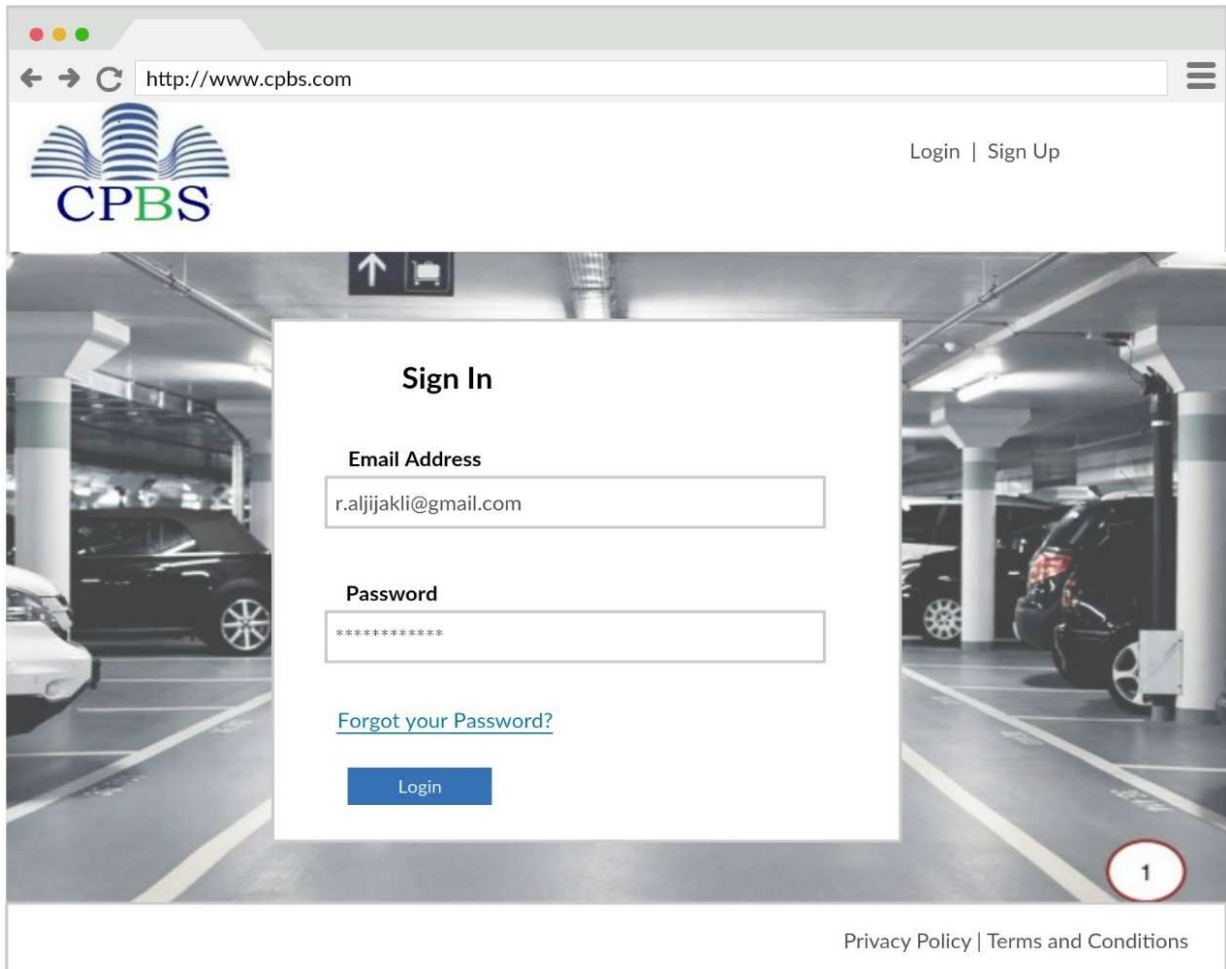


Figure 3.8.0 CPBS simple website (Signing in interface)

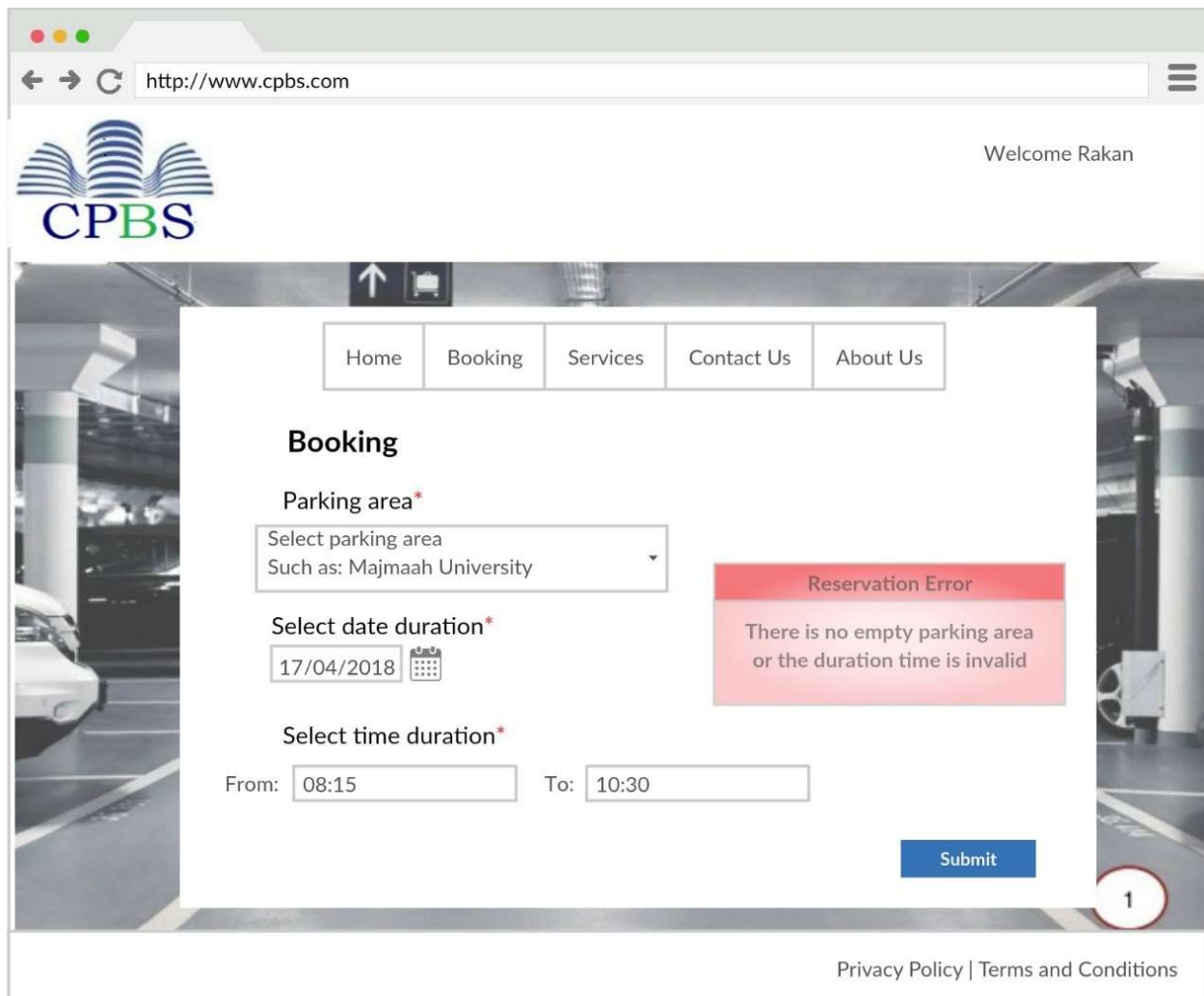


Figure 3.8.1 CPBS simple website (Booking interface)

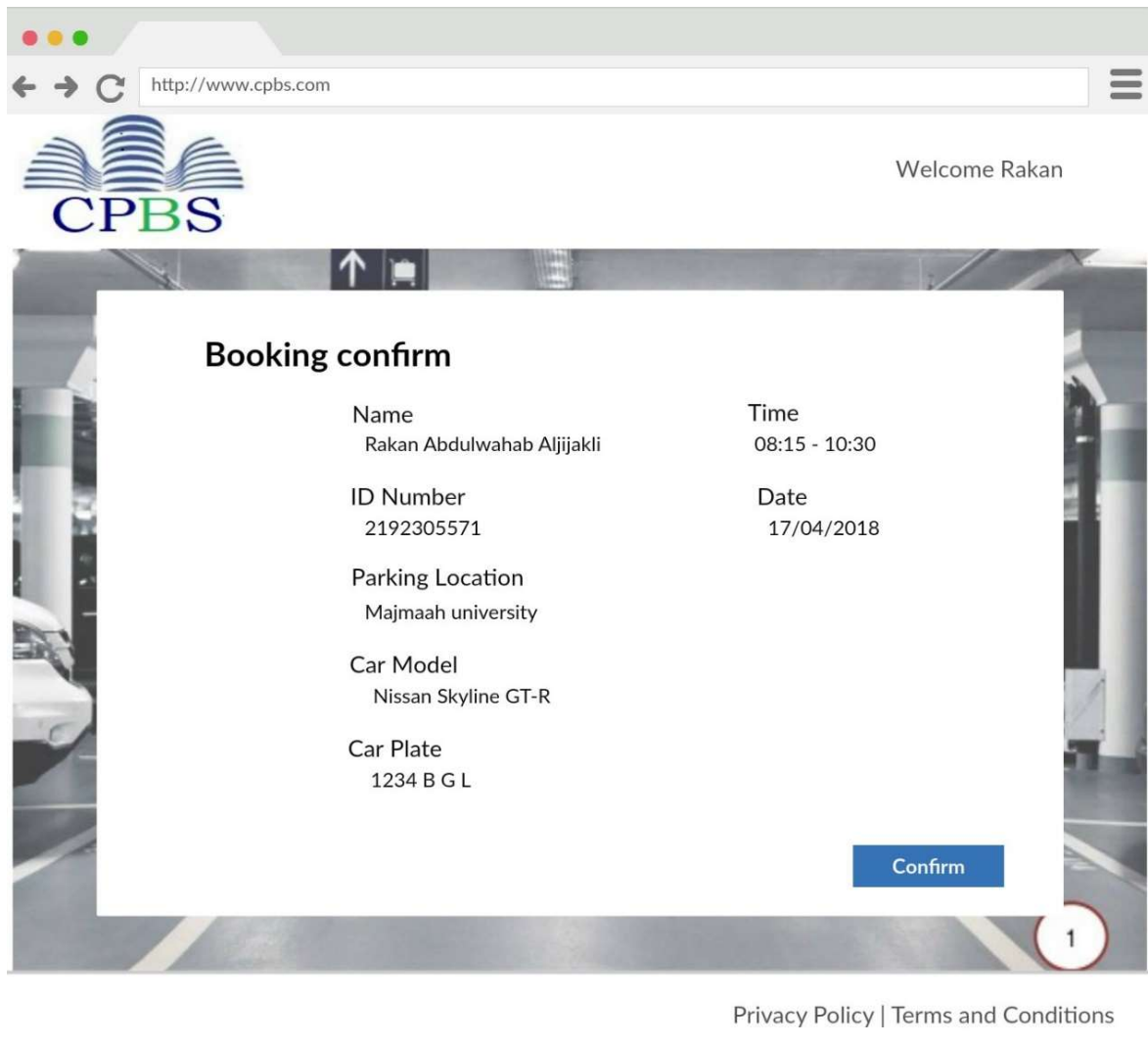


Figure 3.8.2 CPBS simple website (Confirming interface)

3.9. Conclusions:

From this concept, I conclude that CPBS 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 Booking System.

3.10. References:

1. <https://creately.com/>
2. https://en.wikipedia.org/wiki/Software_requirements_specification
3. <https://www.youtube.com/watch?v=QpdhBUYk7Kk>
4. <https://app.smartsurvey.co.uk/login?g=1&r=%2fsurvey%2fcollect%2fid%2f431045%3flive%3d1>
5. 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