E-PARK PROJECT

Project Members:

Bertan Silleli (20180601036)

Yarkin Ata (20180601007)

Eylul Alara Ceztirnak (20180601014)

Lecturer:

Assoc. Prof. Dr Senem Kumova Metin

Hande Aka Uymaz

Date:

16/06/2020

Contents

1.OVERVIEW

Parking is the one of the most common traffic problems in Turkey. Especially, in big cities it is getting worse. In our experience as a driver encourage us to find a solution for this problem. In Turkey, the cities planned years before that is why, there are not so many parking places for everyone. Some drivers when try to park their car they cause a traffic accident. And sometimes when the traffic is heavy it causes more problem. People are getting stressful and wasting their time for it, to fix this problem we wanted to develop a program. We wanted to be a bridge between drivers and parking area owners. With our program people can make a reservation before they arrive the place that they wanted to go. They do not need to wait in queue or look for a place they just can make a reservation and can show their QR code to get in the parking area.

1.1 OBJECTIVES

Objective of the project is making people life easier when they drive a car. We are providing a better condition for drivers. With extra services when they park their car their car can be cared or washed, and they do not need to waste any time for it**.**

- Minimizing the waste of time while looking for a place to park.
- Saving the fuel.
- Stress level will be reduced while parking.
- Online payment will be reducing the amount of paper usage for ecosystem.
- Parking mistakes can be reduced.

2.High-Level Functionality

E-Park project will be making drivers parking problems solved.

E-Park is an application and website which can provide parking area for drivers.

E-Park has two different type of registration type which are for drivers which is customers and parking area owners. After registration both users get a verification e-mail for safety. Parking area owners while registration progress must provide some information such as tax number, full address and legal documents. Customers can just register to program with their name phone number and e-mail address. Programs provide a confirmation for customer when they done a reservation. It shows them a total cost before payment and ask for if there are any extra services they want. Also, customer can check from google maps the closest place that they can park. Program send notifications when every operation done. System has a security system for credit cart information's. We have clear interface and capacity which can provide 1 million users. As performance our aim is maximum 60 seconds for every process. System can be accessed from both app and web browser.

3.STAKEHOLDERS

- **Parking Area Owner**

Parking area owners who are the solution to our problem. With their place and our program, they can make money easily and get their job easier. Owner can check every process in the place online and can send message to the employees.

- **Customers**

Customers are our main stakeholder. With their usage in our program will be reduce waste of time and level of heavy traffic. Our program will provide them an easier parking when they wanted to go somewhere. With QR code technology they do not need to get a ticket they can just show it and do the parking.

- **Parking Area Personal**

Parking area personal is an employee of the parking owner who is responsible from vehicle safety, extra services, approving the processes when its necessary and if something come up interfere at the moment. İf our project would be successful, parking area personal do not have to describe the services of parking area one by one. Plus, with online reservation there will be no queue in front of the parking area entrance and all payments will be with QR code technology. On the other hand, if our Project would be failing, parking area personal needs to describe all the services of parking area. Furthermore, there will be entrance and payment queue.

- **Developer**

Developer responsible for developing the system, doing application requirements, saving customers' time. They must be in contact with the customer (Parking area owner) and for any other problems. Developers must be able to handle it in time.

İf our project would be successful; developers will gain experience and make money for that. For a long time, usage of this application and more online user can bring more benefits as an advertisement. User which are the parking area owners can be reference for them for any other project.

On the other hand, if our Project would be failed, developer's profile will be damaged. They cannot make money from unfinished job. Moreover, failure of project leads to fire of their jobs.

4.PROJECT STAFFING

1.1 Project Manager (Bertan Silleli)

Project manager in our program who plan and organize the meetings and schedule for the project. Also, who oversees the control after the end of every process. Project manager is responsible from managing and planning. Manager is the bridge between all the team and the customer requirements.

1.2 Designer (Yarkin Ata)

Designer is who can handle the design of the website and mobile application. Designer must handle all the things that is on the front which have to be clear and interesting for people. Designer should bring new ideas or extensions for the projects.

1.3 Developer (Eylul Alara Ceztirnak)

Developer is the coder of the project. Developer is the responsible person for the program, which can handle when some errors occurred. When the new requirements wanted developer should implement them as wanted if possible.

We needed more developer. We were unable to handle coding as a team.
Another roles in this project changed when needed.

5.SOFTWARE PROCESS MODEL

Our reason the choose this iterative waterfall model is our experience in college experience. As a small project we wanted to sequentially be developed project, because we are not able to test every step we have done. With Iterative Waterfall Method we can turn to the other steps that we done before and fix the errors or change it as requirements. We can reduce the risk and the amount of cost.

The iterative waterfall model is kind of feedback path. The feedback paths allow for correction of the errors committed during a phase, as and when these are detected in a later phase.

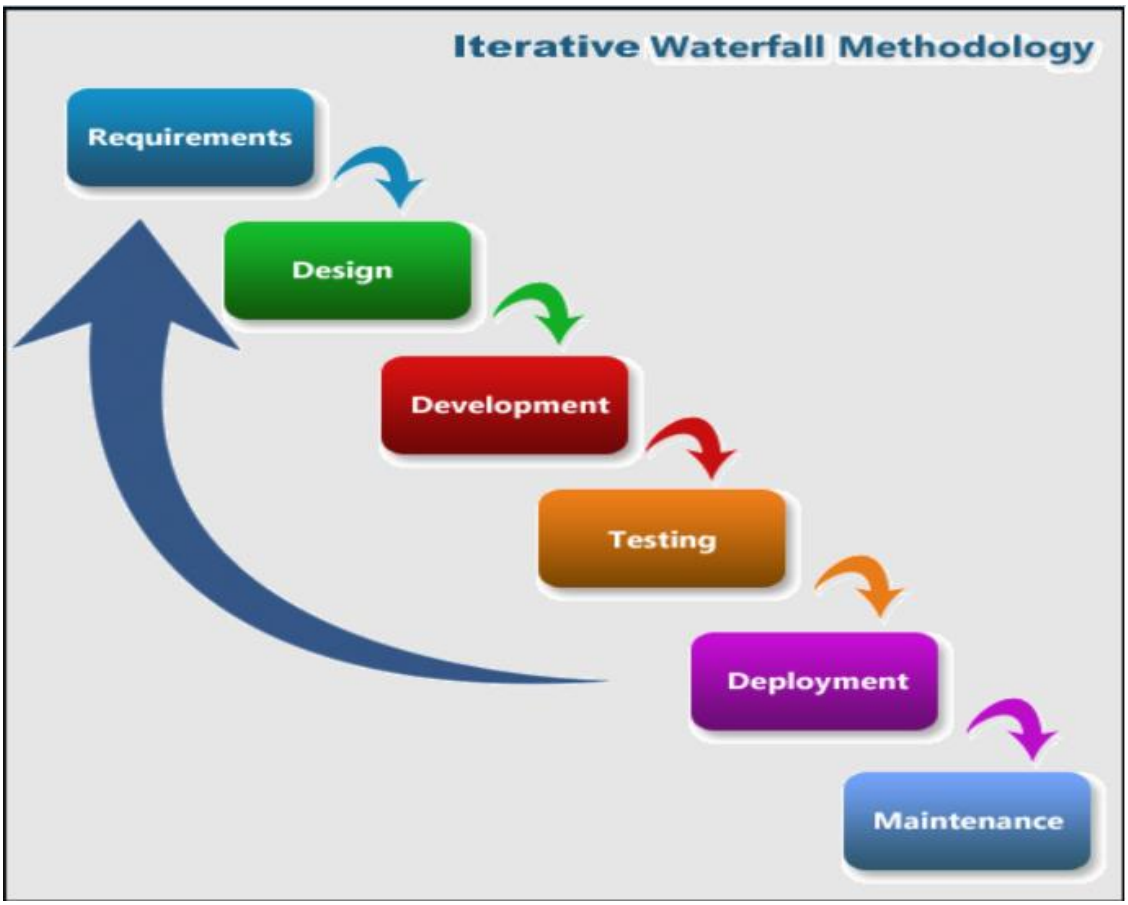
For example, if during a testing a design error is identified, then the feedback path allows the design to be reworked and the changes to be reflected in the design documents. However, observe that there is no feedback path to the feasibility stage. This means that the feasibility study errors cannot be corrected.

Feedback Path: iterative waterfall allows the mechanism of error connection because there is a feedback path from one phase to its preceding phase which it lacks in the Waterfall Model.

Simple: iterative waterfall model is simple to understand and use. It is the most widely used software development model evolved so far.

Parallel development: can be done.

Risks can be resolved, and it is easy to manage.

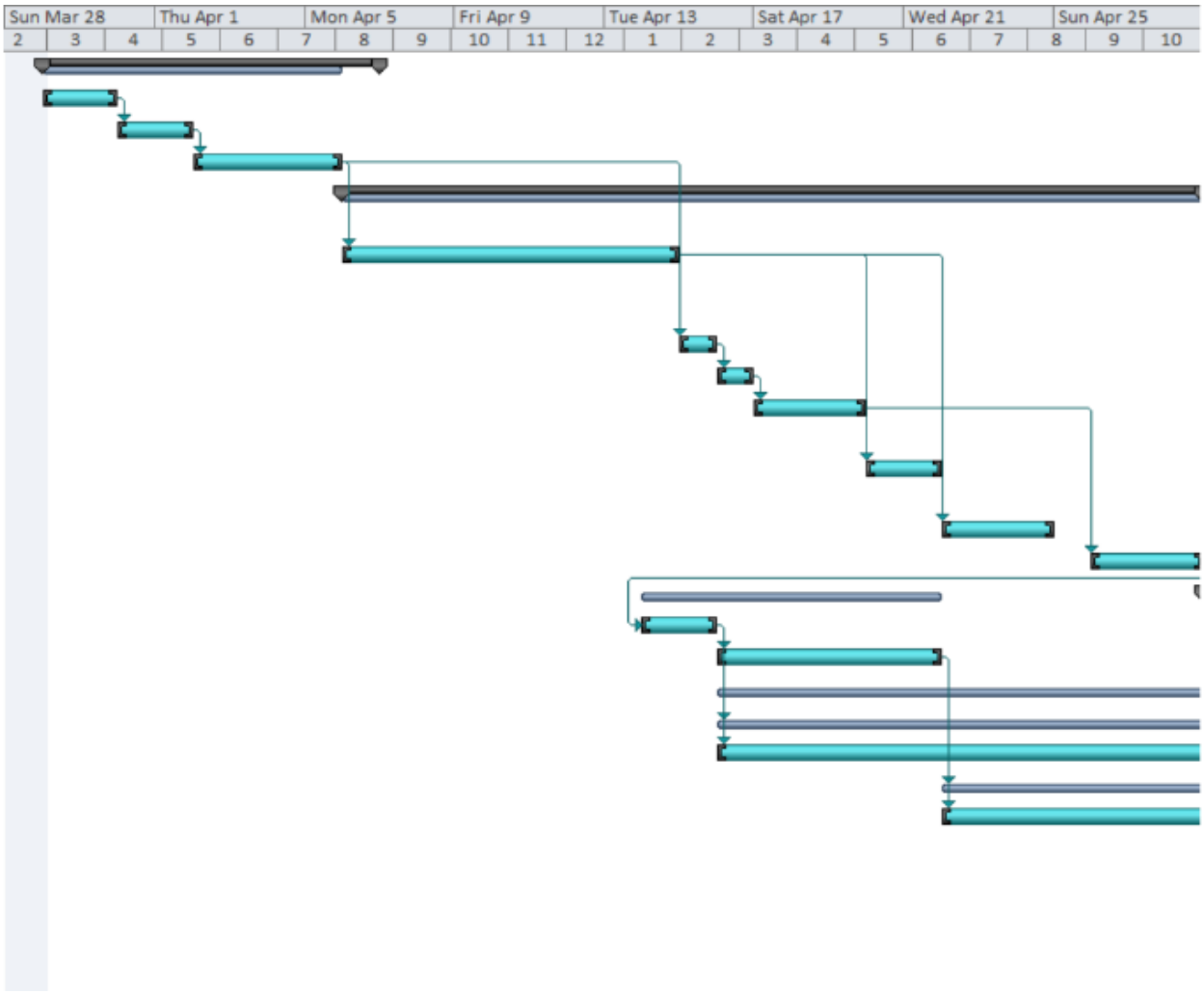

Iterative Waterfall Methodology
Requirements
Design
Development
Testing
Deployment
Maintenance

6.SCHEDULE AND EFFORT

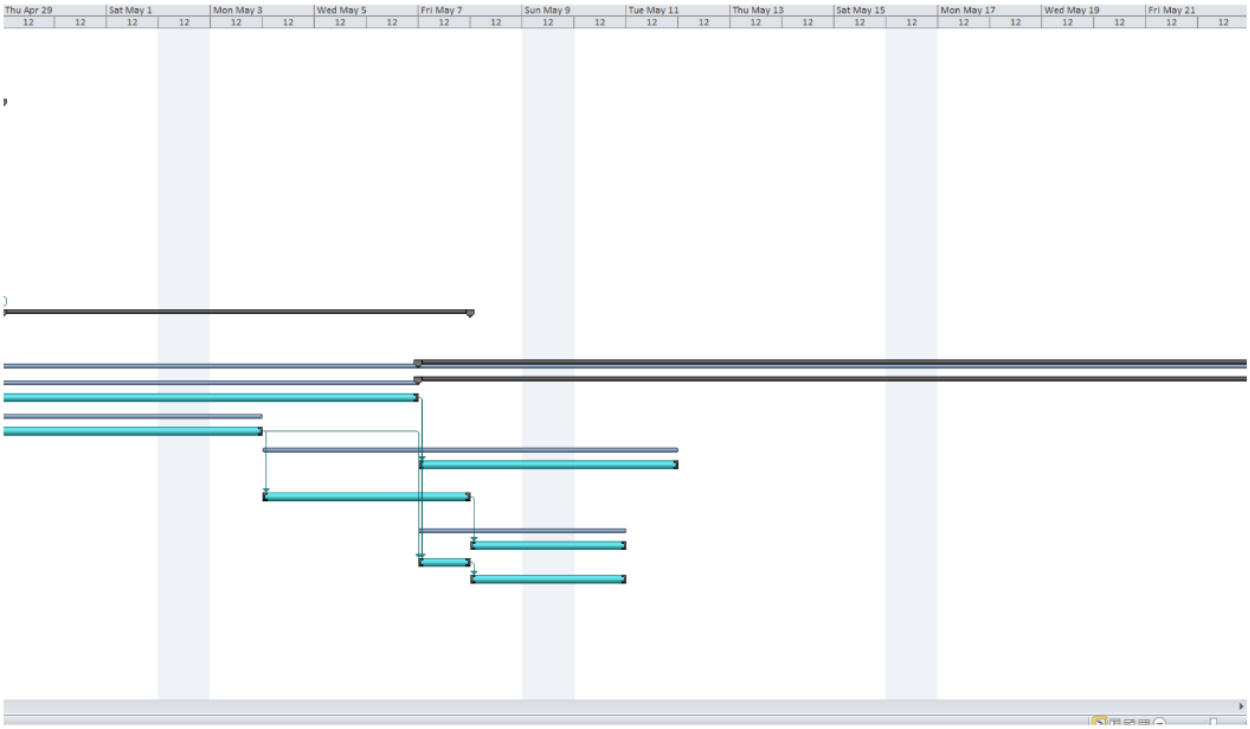
	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Product Background**	**8 days**	**Mon 3/29/21**	**Tue 4/6/21**	
2		Background Reading	2 days	Mon 3/29/21	Tue 3/30/21	
3		Background Research	2 days	Wed 3/31/21	Thu 4/1/21	2
4		Background Analysis	3 days	Fri 4/2/21	Mon 4/5/21	3
5		**Overview and Requirements**	**20 days**	**Tue 4/6/21**	**Wed 4/28/21**	
6		Software Requirements Specification	8 days	Tue 4/6/21	Wed 4/14/21	4
7		Arrange Meetng	1 day	Thu 4/15/21	Thu 4/15/21	4
8		Conducts Meetings	1 day	Fri 4/16/21	Fri 4/16/21	7
9		Prepearing Meeting Reports	2 days	Sat 4/17/21	Mon 4/19/21	8
10		Analysis Requirements	2 days	Tue 4/20/21	Wed 4/21/21	6
11		Cost Estimation	3 days	Thu 4/22/21	Sat 4/24/21	6
12		Analyzing Reports	3 days	Mon 4/26/21	Wed 4/28/21	9

13		**Design**	**8 days**	**Thu 4/29/21**	**Fri 5/7/21**	
14		UML Design	2 days	Wed 4/14/21	Thu 4/15/21	12
15		Graphical Design	5 days	Fri 4/16/21	Wed 4/21/21	14
16		**Implemantation**	**28 days**	**Fri 5/7/21**	**Tue 6/8/21**	
17		**Mobile Programming**	**18 days**	**Fri 5/7/21**	**Thu 5/27/21**	**14**
18		Flutter	18 days	Fri 4/16/21	Thu 5/6/21	14
19		**Web Programming**	**10 days**	**Fri 5/28/21**	**Tue 6/8/21**	**15**
20		Word Press	10 days	Thu 4/22/21	Mon 5/3/21	15
21		**Testing**	**8 days**	**Wed 6/9/21**	**Thu 6/17/21**	
22		Mobile Application Testing	4 days	Fri 5/7/21	Tue 5/11/21	18
23		Web Application Testing	4 days	Tue 5/4/21	Fri 5/7/21	20
24		**Evaluation**	**5 days**	**Fri 6/18/21**	**Wed 6/23/21**	
25		Tester Evaluation	2 days	Sat 5/8/21	Mon 5/10/21	23
26		Customer Evaluation	1 day	Fri 5/7/21	Fri 5/7/21	18,20
27		General Evalutaion	2 days	Sat 5/8/21	Mon 5/10/21	26

28 March – 28 April

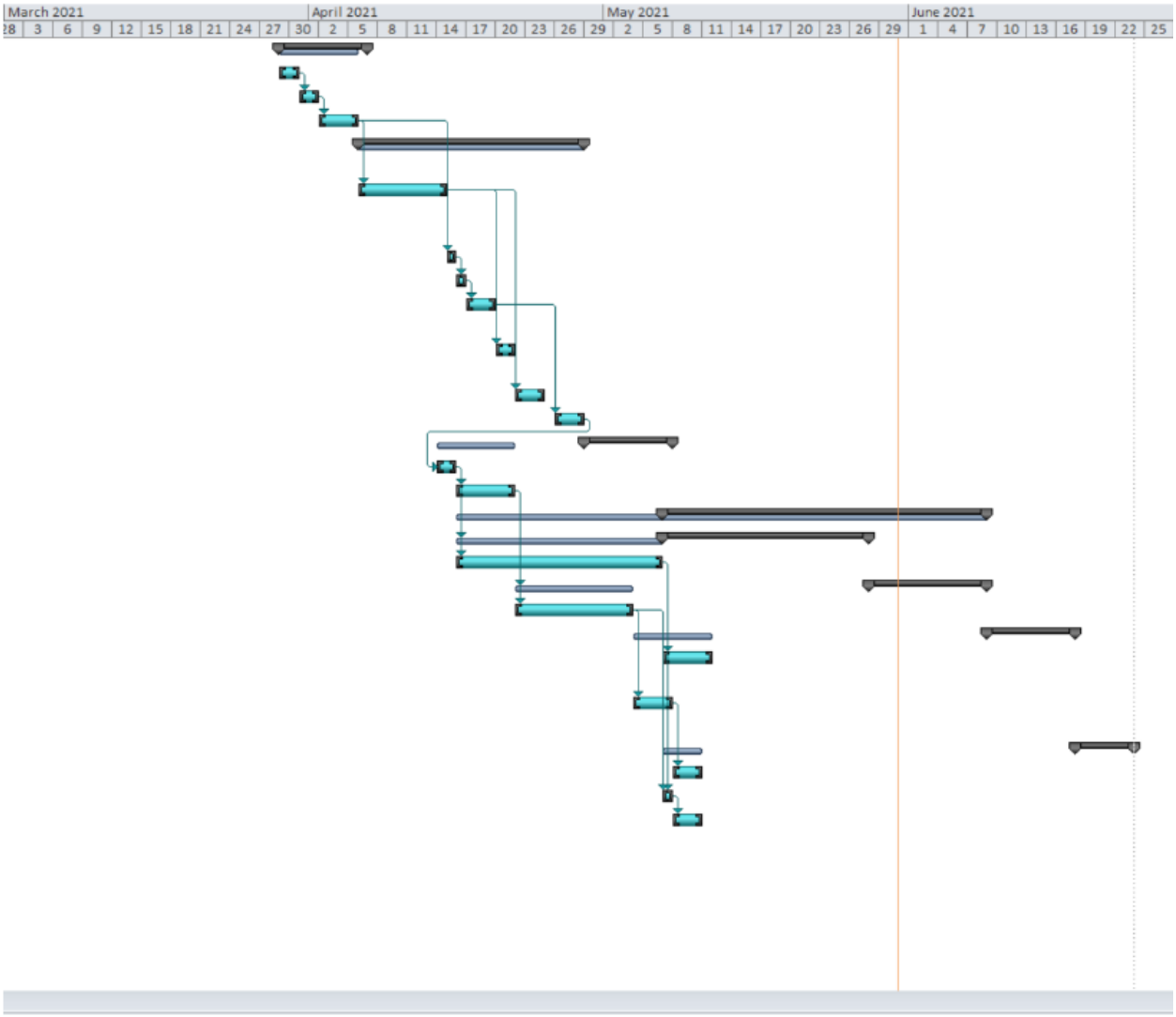


29 April – 19 May



19 May – 25 July

28 March – 25 July Full Schedule



7.MEASUREMENTS

Defining the E-Park program measurements we ask some questions.

- How efficient the product?
- Is the progress is going on as scheduled?
- What did the team produce?
- How many changes was required?
- How much time the team spend on every process?

Identification of measurements:

Our product is evolved as customers using style. We had a flexibility for our project schedule. Team produced a footprint of the project. When we have the problems in parts, we had to change them to fix it. We planned the timetable for each process and then we create a timeline for each sequence.

Measurement storage and collection:

We planned our time for spending to code, test and meetings. %20 of our time was for meetings, %50 for weekly tasks and the rest of them for coding and testing. We evolved our program after the meetings. We scheduled the program for our team members and customers. Before the meeting every member had to prepare their weekly reports and after the meeting, they got their new tasks to do.

Measurement Types:

- **Organizing**

We prepared a timetable, and we followed that timetable, with our weekly meetings we support that timetable.

- **Example the type of measurement:**

Hours spend each week; hours pend on main activities.

- **Management Data**

The data that we collect for project. We got some comments, additional information and perspective of professionals.

- **Example the type of measurement:**

Cost of the tools, staffing levels, project deadline.

- **Testing**

We observed the critical errors by tester.

- **Example the type of measurement:**

Number of logs that done by tester, number of tests and bugs.

- **Efficiency**

Product is evolved as the client's needs.

- **Example the type of measurement:**

Special requirements, reviews and tests

- **Quality**

Determination of the comments by customers.

- **Example the type of measurement:**

Maintaining, requirements and changes.

8.PROJECT RISKS

The case of handling software project risks according to eight elements for our project. These are hardware acquisition, design complexity, training, requirements volatility, tools, installation, debugging and testing.

If we look at all there is an implementation hardware and communication network installed and contact protocol issues. We must know how to use the production. Specifications are uncertain sometimes we must fix these kinds of problems. We must support our project with tools. With the installation we can confirm the software product. In practice, testing goes in parallel with coding. Usually, big projects are divided into several sections. Each section has their own team which have developers and its standalone functionality. These sections are combining the form of overall software product. That is why each part must have their own testing process to make sure it runs properly before it is added the main project.

LIKELIHOOD RANK	IMPACT RANK	COMBINED RANK	RISK DESCRIPTION
1	4	5	Hardware Acquisiton: İmplementation hardware and comminication network installed.
4	2	6	Requirements Volaitily: Specifications are uncertain sometimes.
7	1	8	Debugging: Necessitating the use of transaciton record.
6	3	9	Installation: To confirm the software product
2	7	9	Design Complexitiy: Contact protocol issues.
5	6	11	Tools: To support Project.
3	8	11	Training: How to use the production.
8	5	13	Testing: To research of failures

9.SOFTWARE TOOLS

1.1Mobile Application Development Tools

We decided to select the Android Studio. The major reason is the cost. Android studio is a completely free compiler. In addition, training days are less than other compilers. Another advantage is Android studio has an emulator which is easy to set up.

SOFTWARE TOOLS FOR TASK 1:Mobile Application Development

Tool Cost/Training/Functionality Data

Tool	Android Studio	Visual Studio	Intellij IDE
Cost	$0	$3000	$650
Training Days	5	15	10
Functionality	55	65	50

Normalized Cost/Training/Functionality Data

Tool	Android Studio	Visual Studio	Intellij IDE
Cost	0	100	**21.6**
Training Days	33.3	100	**66.6**
Functionality	84.6	100	**76.9**

1.2 Mobile Web Development Tools

We chose Visual Studio because we are already familiar with it. In addition, the compiler's capability is greater than that of the others. We chose Visual Studio because of the capabilities. Training days are a little longer and the cost is a little higher than others.

SOFTWARE TOOLS FOR TASK 2: Web Development

Tool Cost/Training/Functionality Data

Tool	Intellij IDE	Visual Studio	NotePad++	NetBeans
Cost	$650	$3000	$0	$0
Training Days	12	15	8	10
Functionality	70	85	40	65

Normalized Cost/Training/Functionality Data

Tool	Intellij IDE	Visual Studio	NotePad++	NetBeans
Cost	21.6	100	**0**	0
Training Days	80.0	100	**53.3**	66.6
Functionality	82.4	100	**47.05**	76.5

1.3 Mobile Database Design Tools

We decided to select to use Oracle has its own Data Guard, which is the most essential reason for us. They provide a service that is only a phone call away. When we compare it to the others, the cost is the average. We are quite pleased with the functionality.

Tool Cost/Training/Functionality Data

Tool	MySQL	SQL Lite	Google Cloud FireStore	Oracle
Cost	$5000	$1500	$6500	$5800
Training Days	12	10	20	15
Functionality	55	45	70	65

Normalized Cost/Training/Functionality Data

Tool	MySQL	SQL Lite	Google Cloud FireStore	Oracle
Cost	76.9	23.1	**100**	89.2
Training Days	60.0	50.0	**100**	75.0
Functionality	78.6	64.3	**100**	92.9

10.PROJECT NEEDS

1.1 SOFTWARE NEEDS

1. **Android Studio**

We need a compiler to develop a mobile application.

2. **Flutter**

We need to choose a framework to develop our project's mobile part.

3. **Database**

Users' information must be stored because of that we need a database system.

4. **Operating System (Windows Linux or Mac OS)**

We need an operating system to use both the framework and compiler.

1.2 HARDWARE NEEDS

1. **Smart Phone**

   The mobile application part of our project, we need a smart phone to test the application.

2. **Monitor**

   Monitor selection is important because of the health of the staff and efficiency of the product.

3. **Storage Equipment (HDD, SSD or Server)**

   Storage all the version of the application from the start and store the information about application.

4. **Computer**

   We need a computer to run all the compilers and emulators.

5. **Ethernet Connection**

   We need a wired internet connection without interruption.

6. **Camera**

   For the meeting, using camera is the best way to get more efficiently communication.

1.3 SUPPORT NEEDS

1.Stackoveflow

Most of developers gets some exceptions or errors during the development parts. Stakeoverflow can help us to find these problem's solutions easily.

2.Start-up Investor

Startup investor can invest us the money that program needed.

3.Applicaiton Users

User comments can be beneficial for us to maintain our product.

4.Marketing Department

Someone who has knowledge and experience about marketing can do the advertisement in a proper way.

5.Parking Area Owners

Parking area owner can provide some useful information and feedbacks.

11. Graphical User Interface

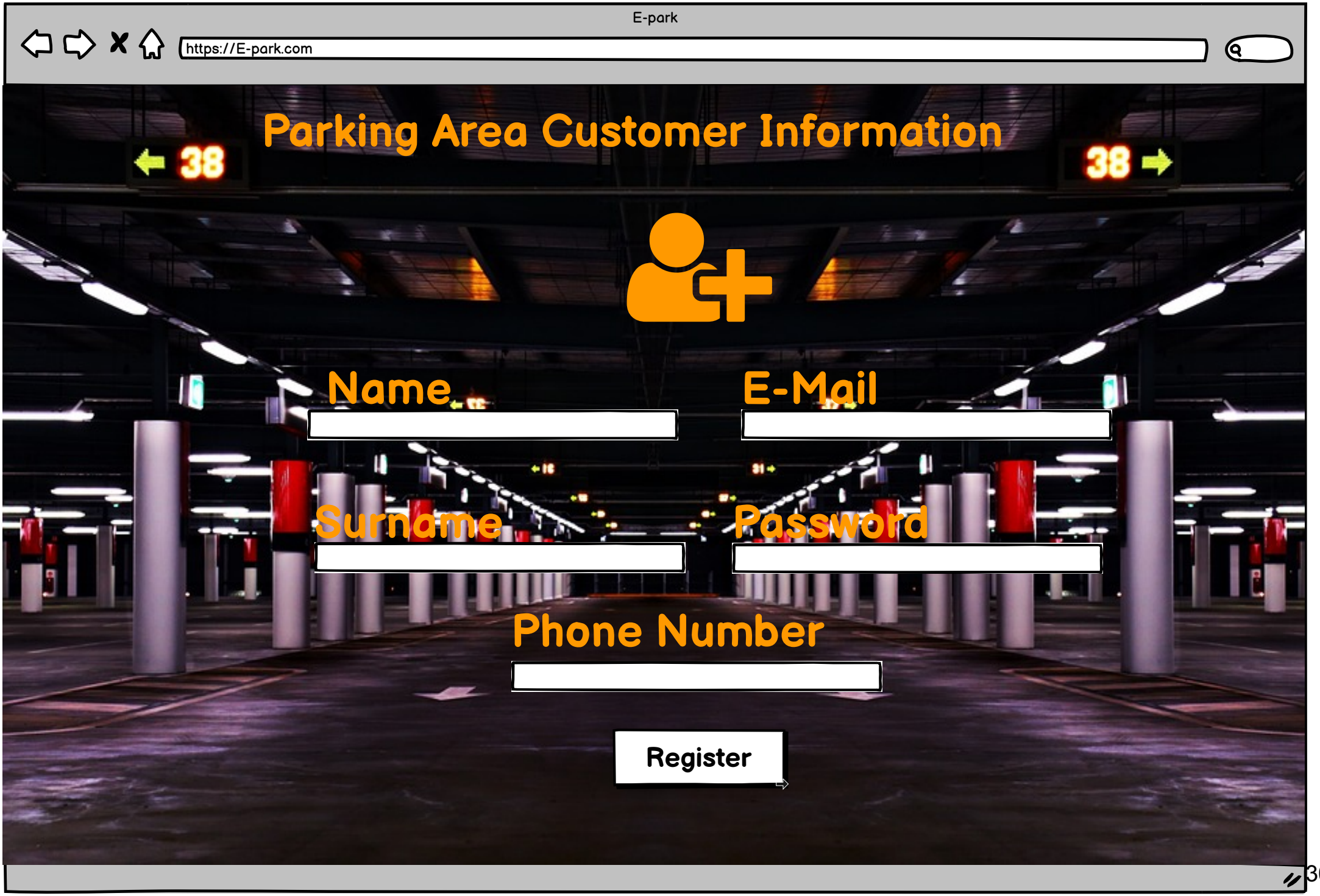
SE 216 – SOFTWARE PROJECT MANAGEMENT

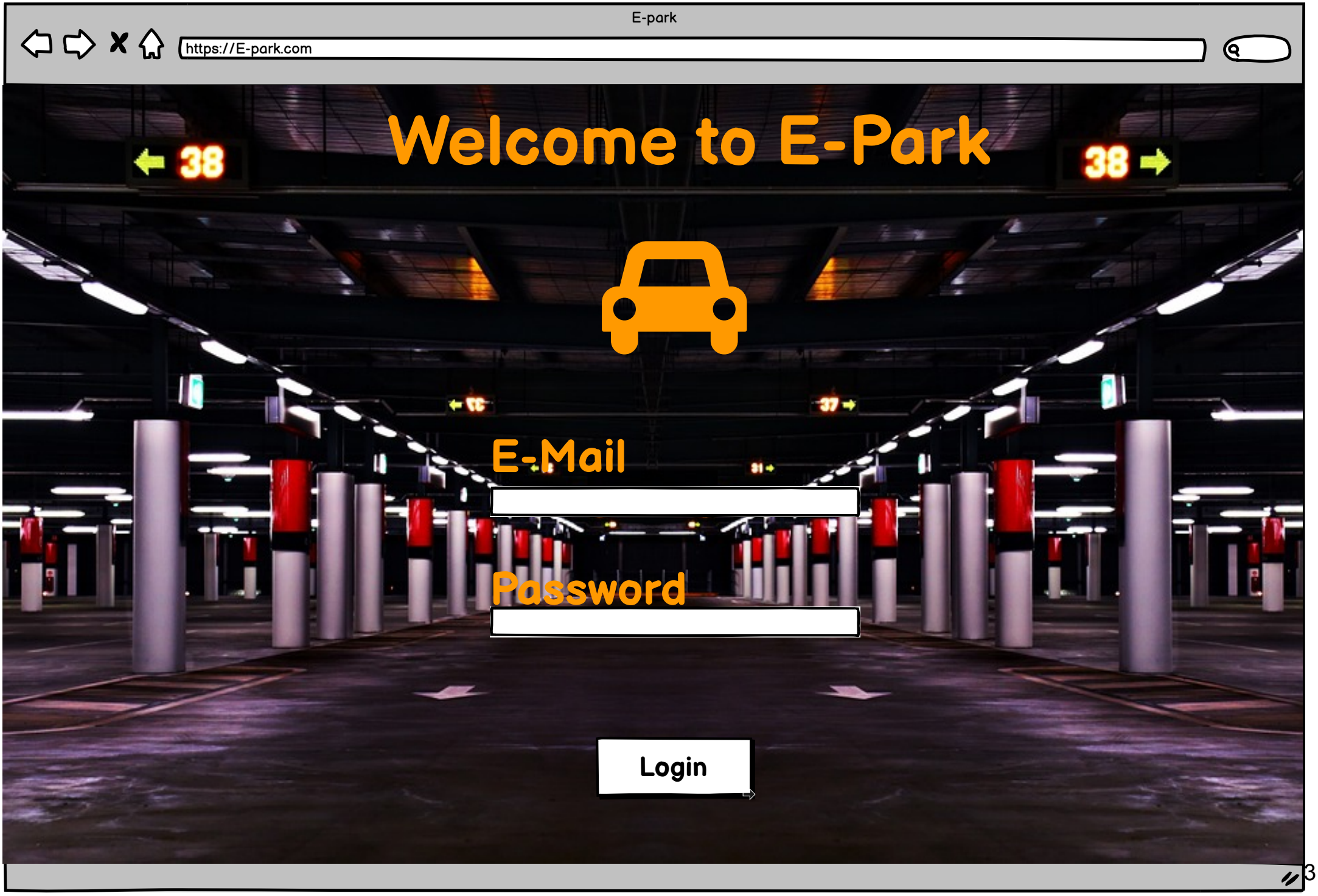
GRAPHICAL USER INTERFACES

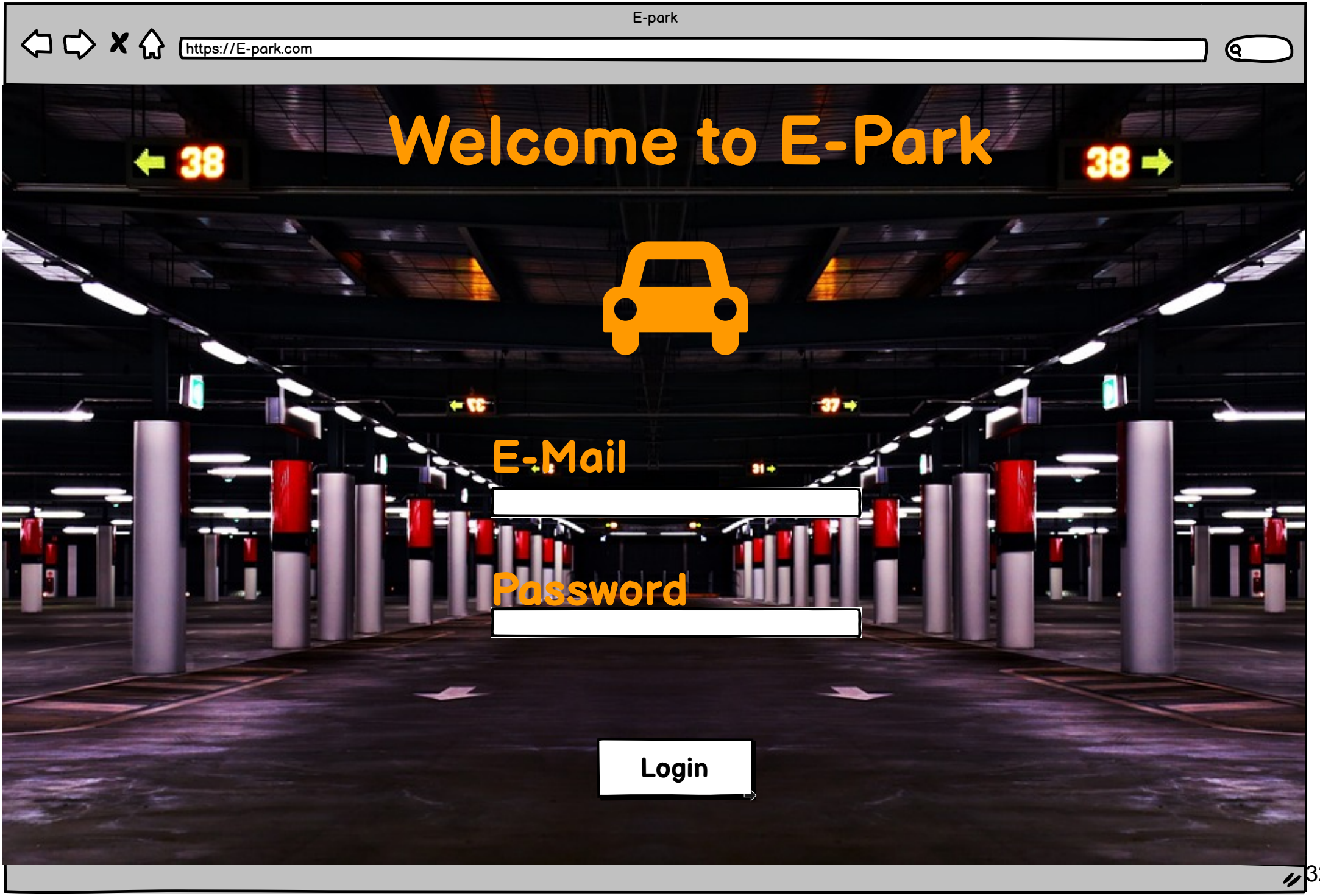
PROJECT NAME: E-PARK

GROUP MEMBERS: Bertan Silleli – Yarkin Ata – Eylul Alara Ceztirnak


E-park
https://E-park.com
Welcome to E-Park
No more Ticket QUEUE
No more STRESS
Sign Up Owner
Login Owner
Sign Up
Login
Need a Parking Area??
No more WASTE OF TIME

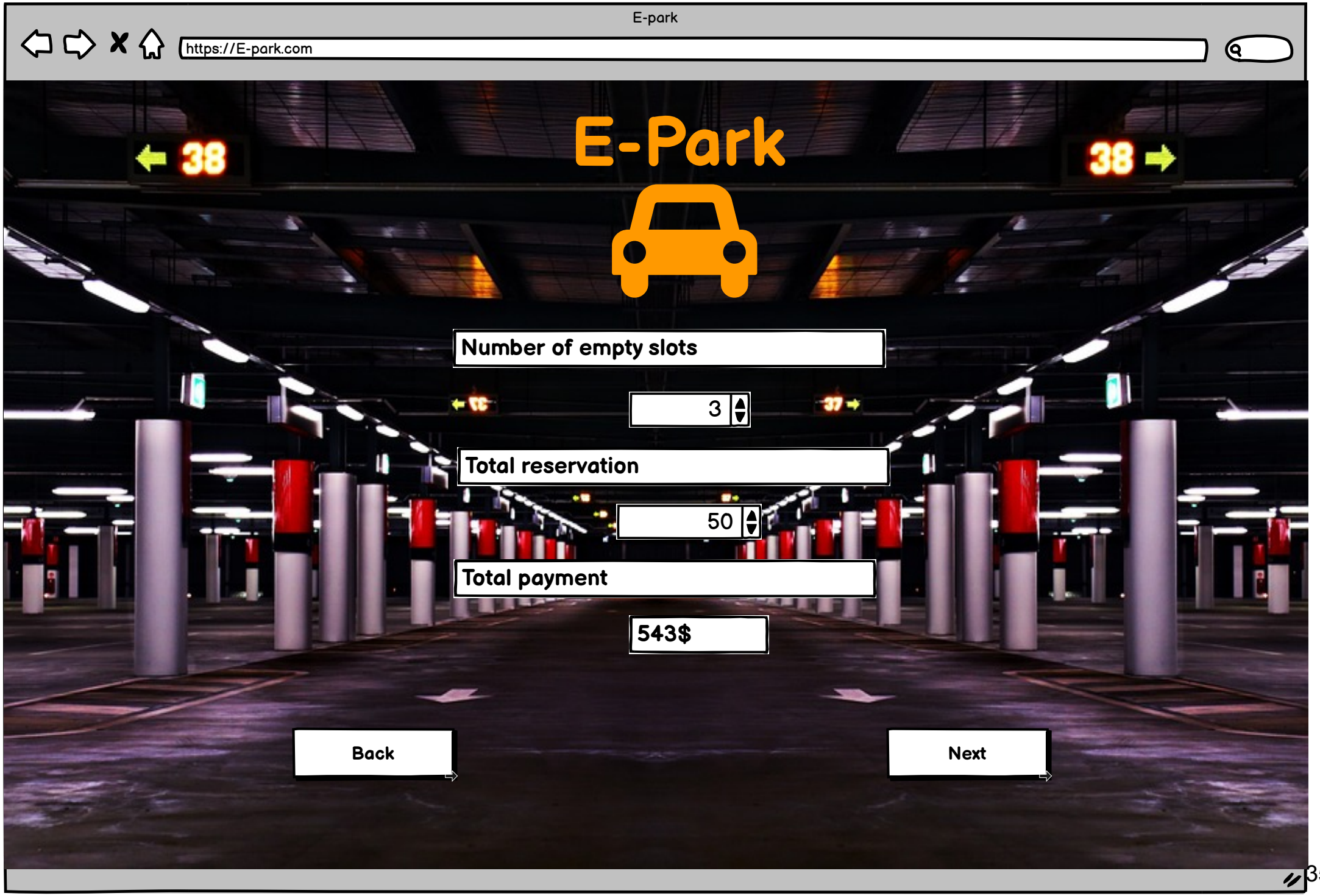

E-park
https://E-park.com
Parking Area Customer Information
38
38
Name
E-Mail
Surname
Password
Phone Number
Register

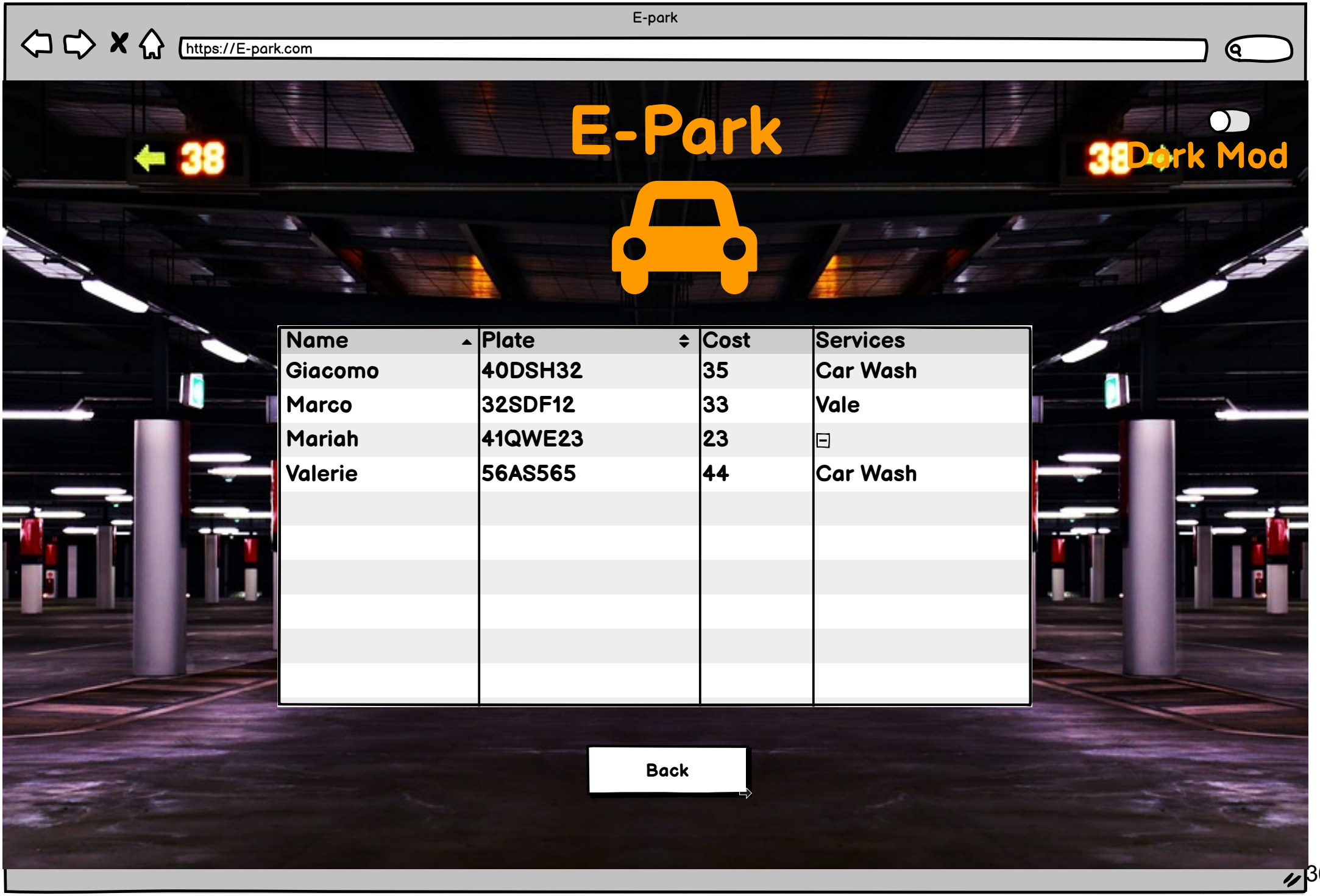

E-park
https://E-park.com
Welcome to E-Park
E-Mail
Password
Login


E-park
https://E-park.com
Welcome to E-Park
38
38
E-Mail
Password
Login

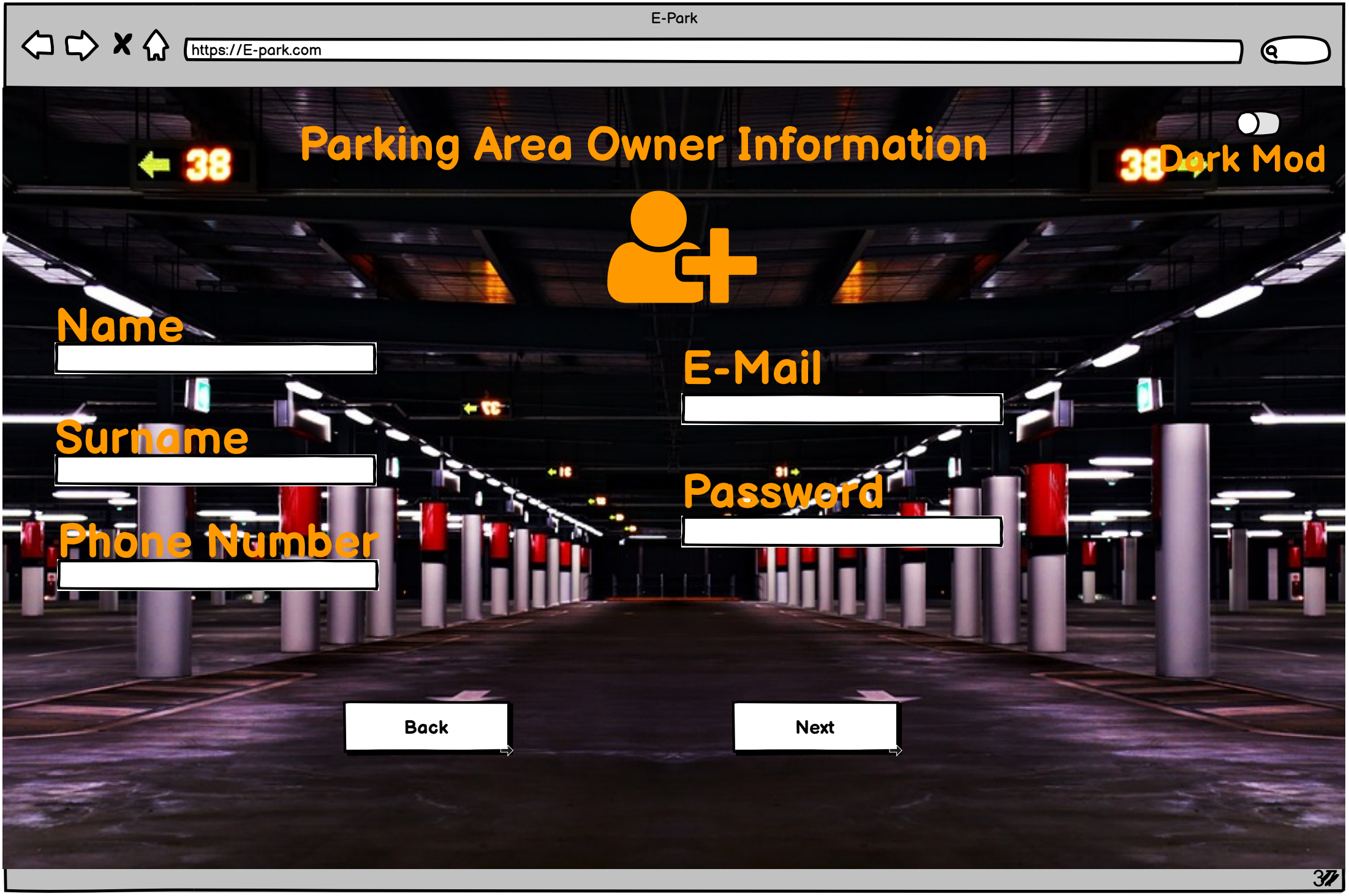

E-park
https://E-park.com
Need a Parking Area??
Search a parking area
Choose a place
Parking area 1
Parking area 2
Parking area 3
Reservation Date
/ /
I accept the terms
Next

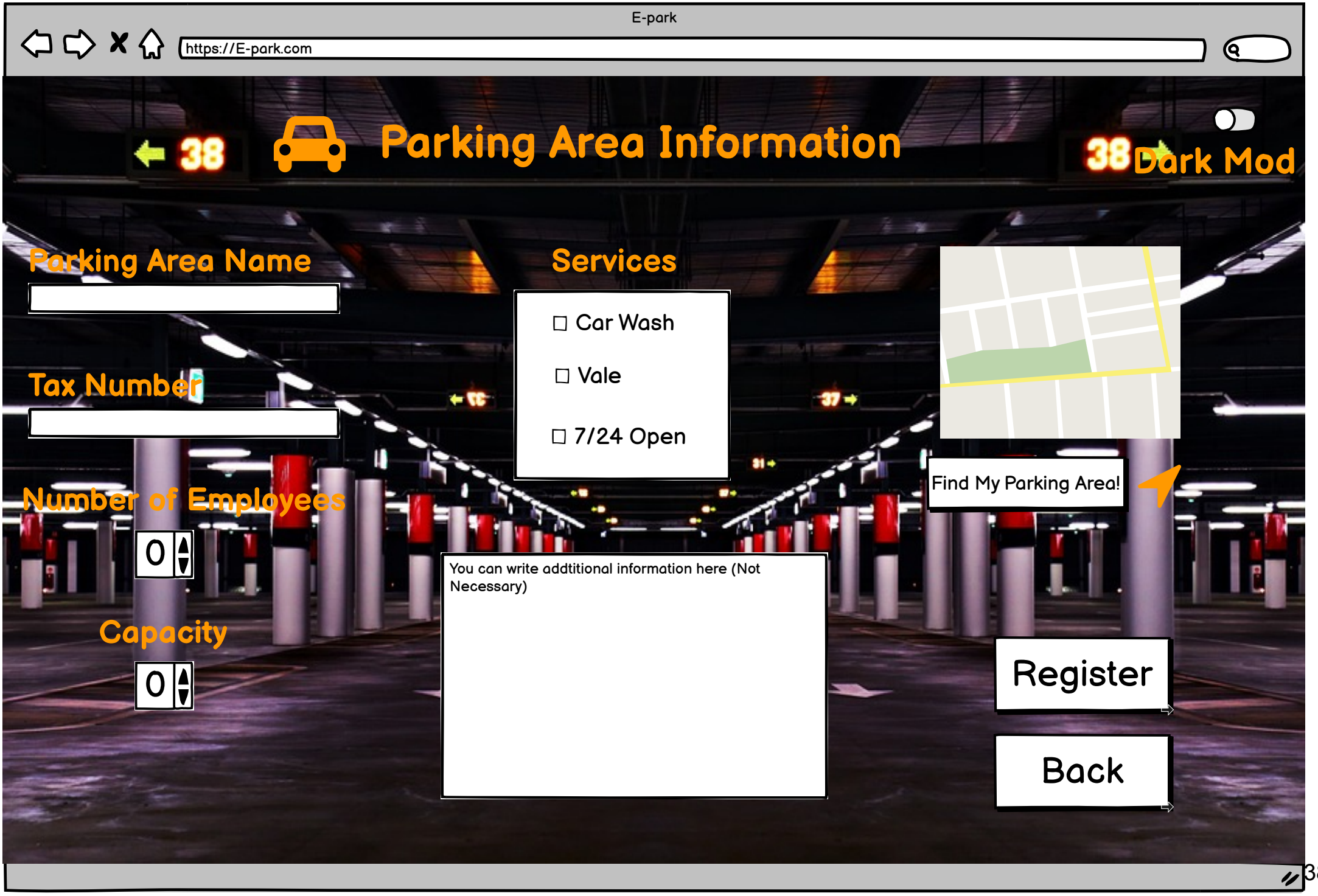

E-park
https://E-park.com
E-Park
Visa
Master
Other
Card owner
Expire Date
Card Number
CVV
I accept
Total Price
3D Secure
Accept My Payment

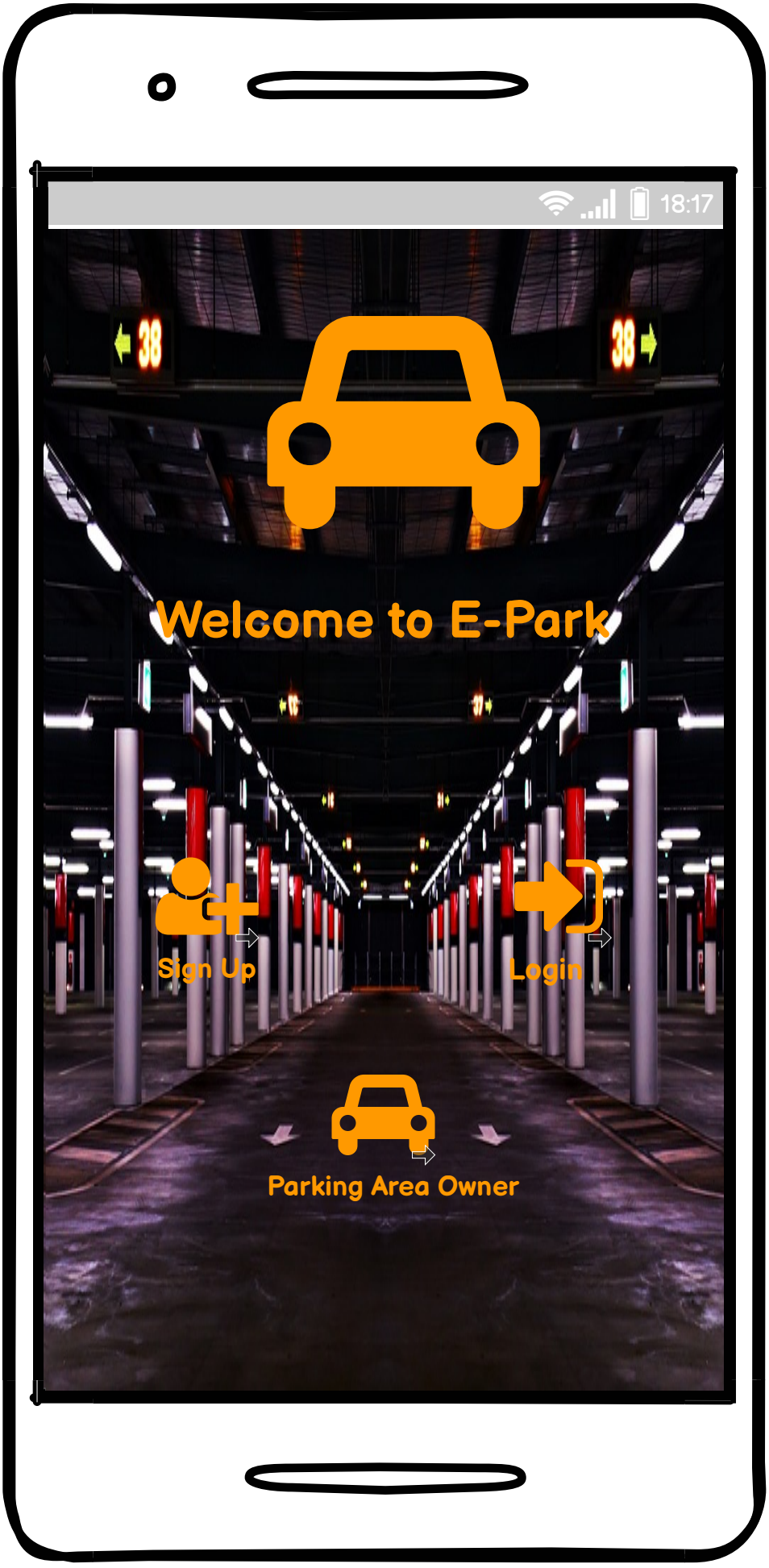

E-park
https://E-park.com
E-Park
38
38
Number of empty slots
3
Total reservation
50
Total payment
543$
Back
Next


E-park
https://E-park.com
E-Park
38
38
Dark Mod
Name
Plate
Cost
Services
Giacomo
40DSH32
35
Car Wash
Marco
32SDF12
33
Vale
Mariah
41QWE23
23
Valerie
56AS565
44
Car Wash
Back

Owner Sign up

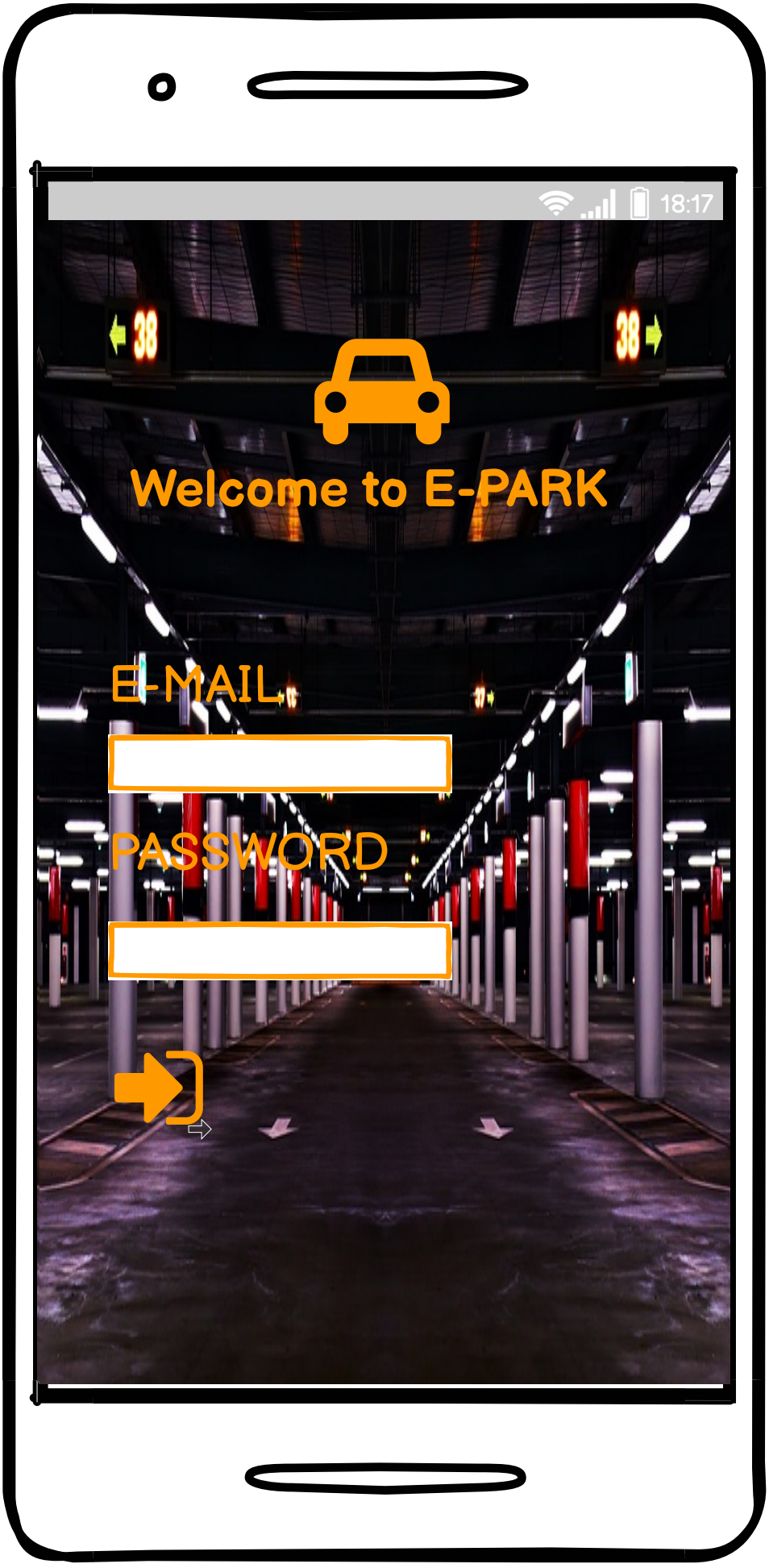



E-park
https://E-park.com
38
Parking Area Information
38
Dark Mod
Parking Area Name
Tax Number
Number of Employees
0
Capacity
0
Services
Car Wash
Vale
7/24 Open
You can write addtitional information here (Not Necessary)
Find My Parking Area!
Register
Back


18:17
38
38
Welcome to E-Park
Sign Up
Login
Parking Area Owner

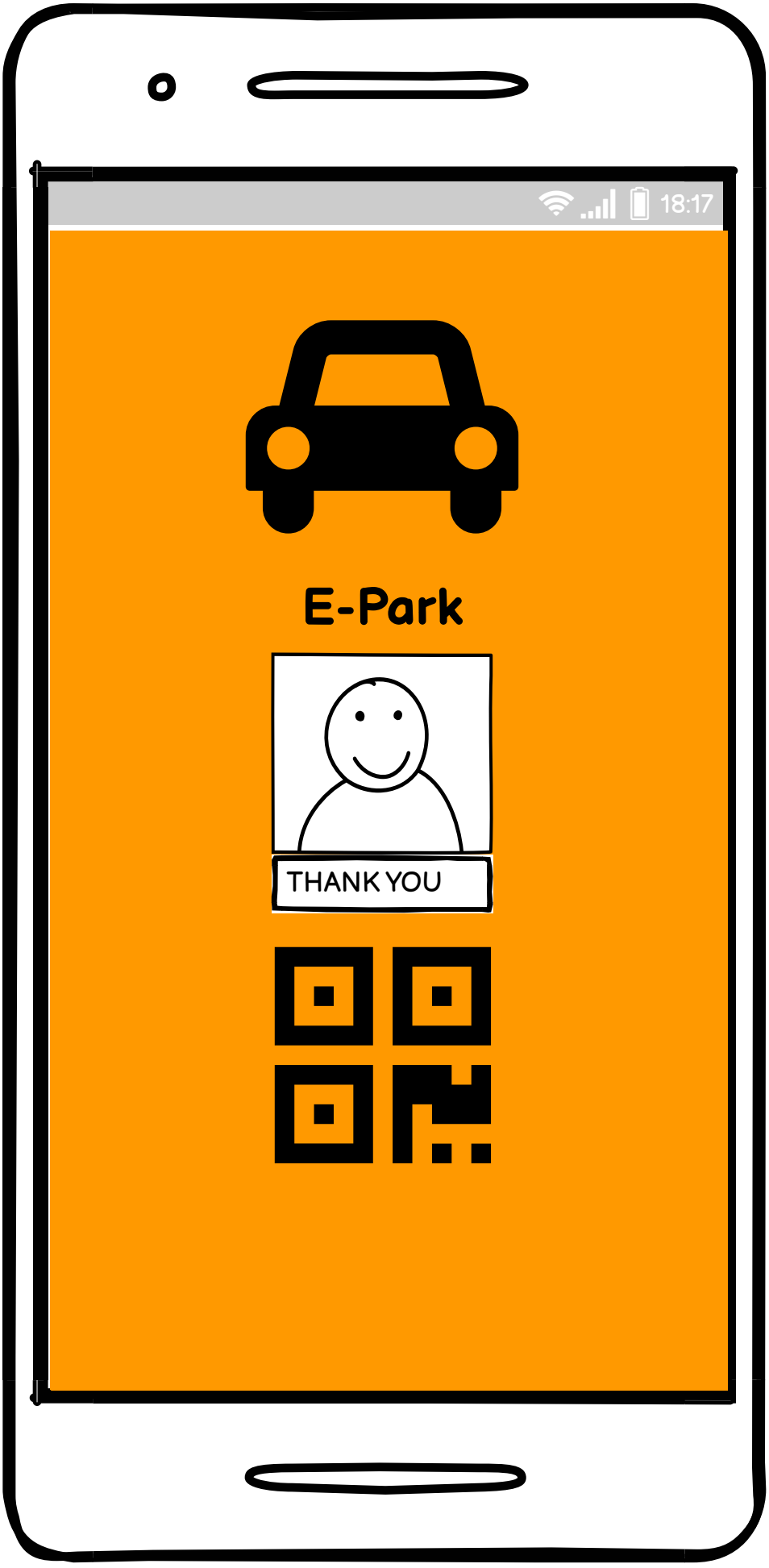

18:17
Name
Surname
E-Mail
Password
Phone Number

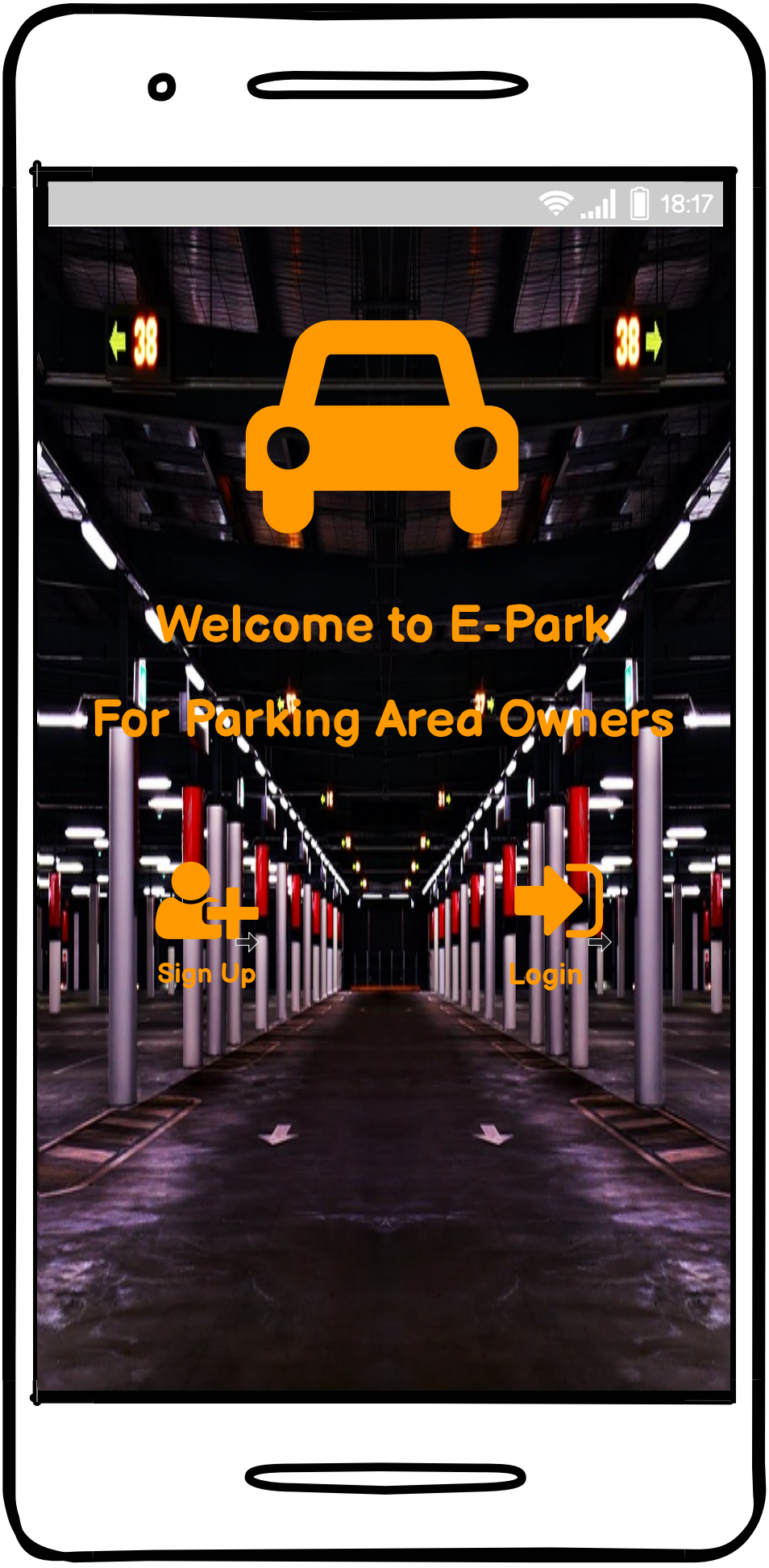
Mobile Log in



Mobile Park Screen

Mobile Payment Screen

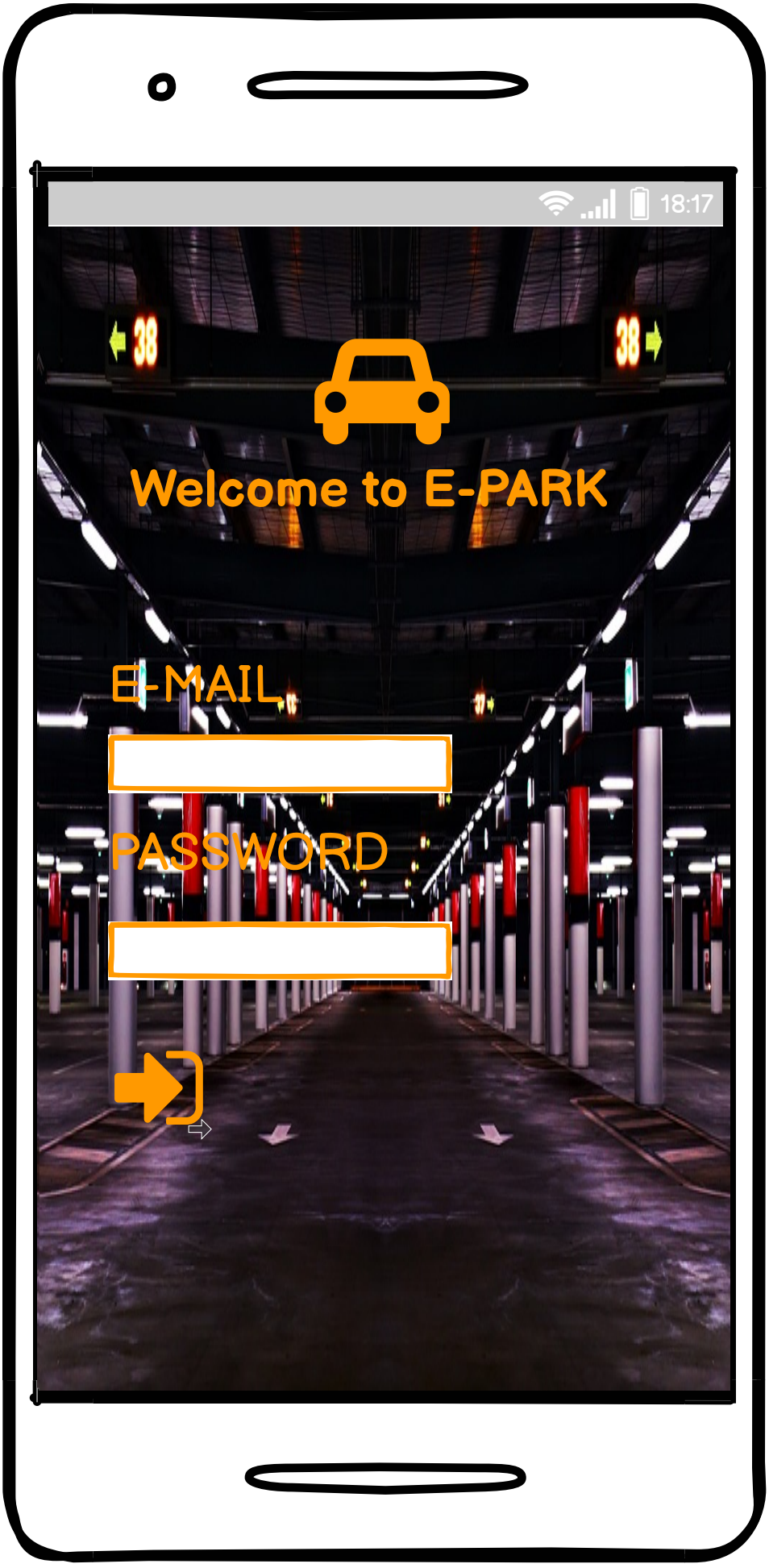

18:17
E-Park
THANK YOU


18:17
38
38
Welcome to E-Park
For Parking Ared Owners
Sign Up
Login

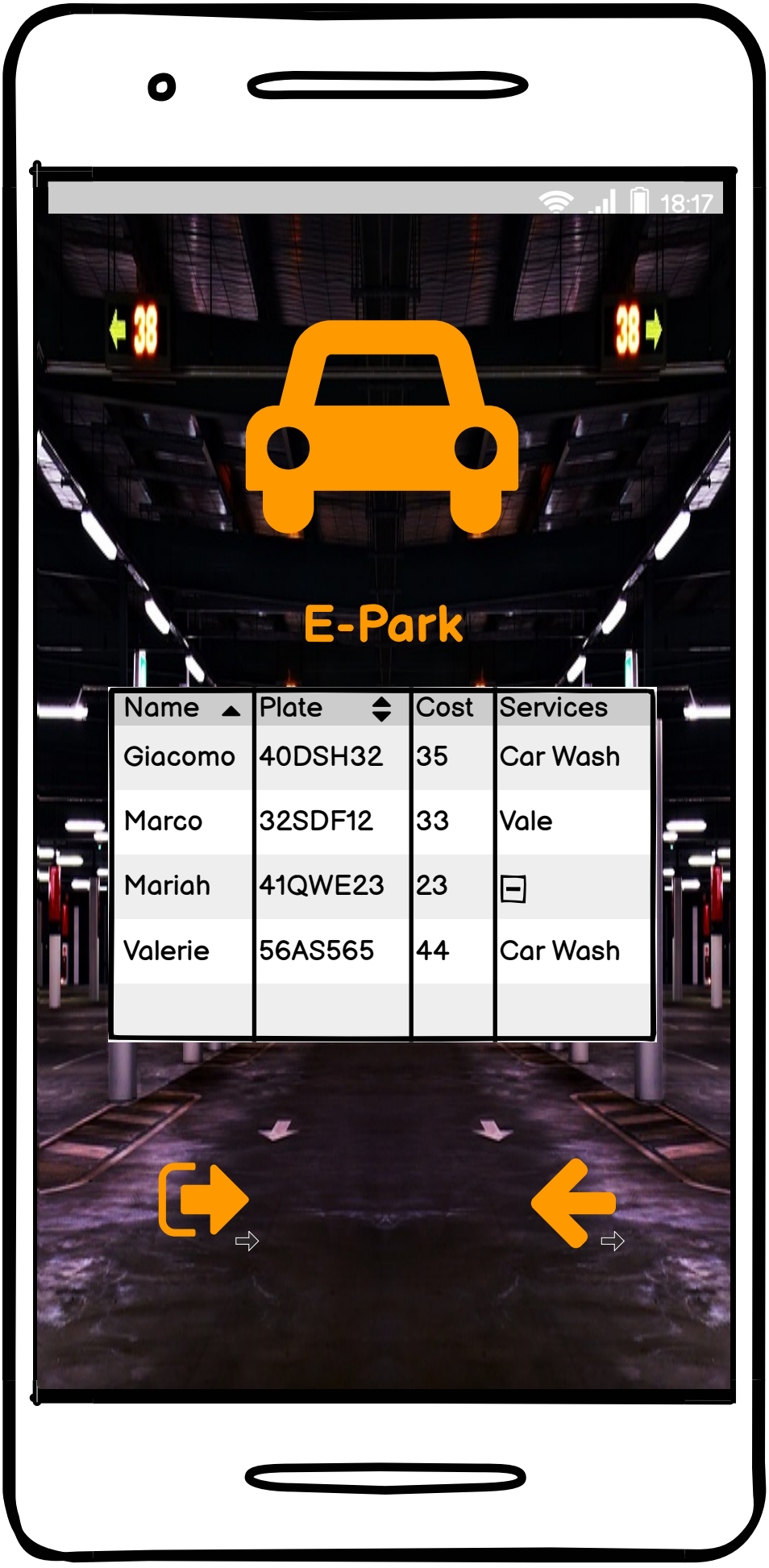

18:17
38
38
Name
Surname
E-Mail
Password
Phone Number


18:17
38
38
Parking Area Name
Tax Number
Number of Employee
5
Capacity
5
Services
Car Wash
Vale
7/24 Open


18:17
38
38
Find My Parking Area!
You can write additional information. (Not necessary)


18:17
38
38
Welcome to E-PARK
E-MAIL
PASSWORD

Mobile Parking Area Owner Screen


18:17
38
38
E-Park
Name
Plate
Cost
Services
Giacomo
40DSH32
35
Car Wash
Marco
32SDF12
33
Vale
Mariah
41QWE23
23
Valerie
56AS565
44
Car Wash

12. Conclusion

We decided to develop a program for parking problem. We decided that project from our experience while driving. We get stress when we trying to park and waste our time a lot. These reasons encourage us to develop that program.

In this document, everything is explained crystal clear. All the content in the report and definitions are explained.