2021 IOT CAPSTONE DESIGN

Everywhere Electric Vehicle Adapter

Chosun University Computer Engineering
Team 4 Iothing

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20185022   Son yung jun,   20184435   Hong min hee

Chart

Chart
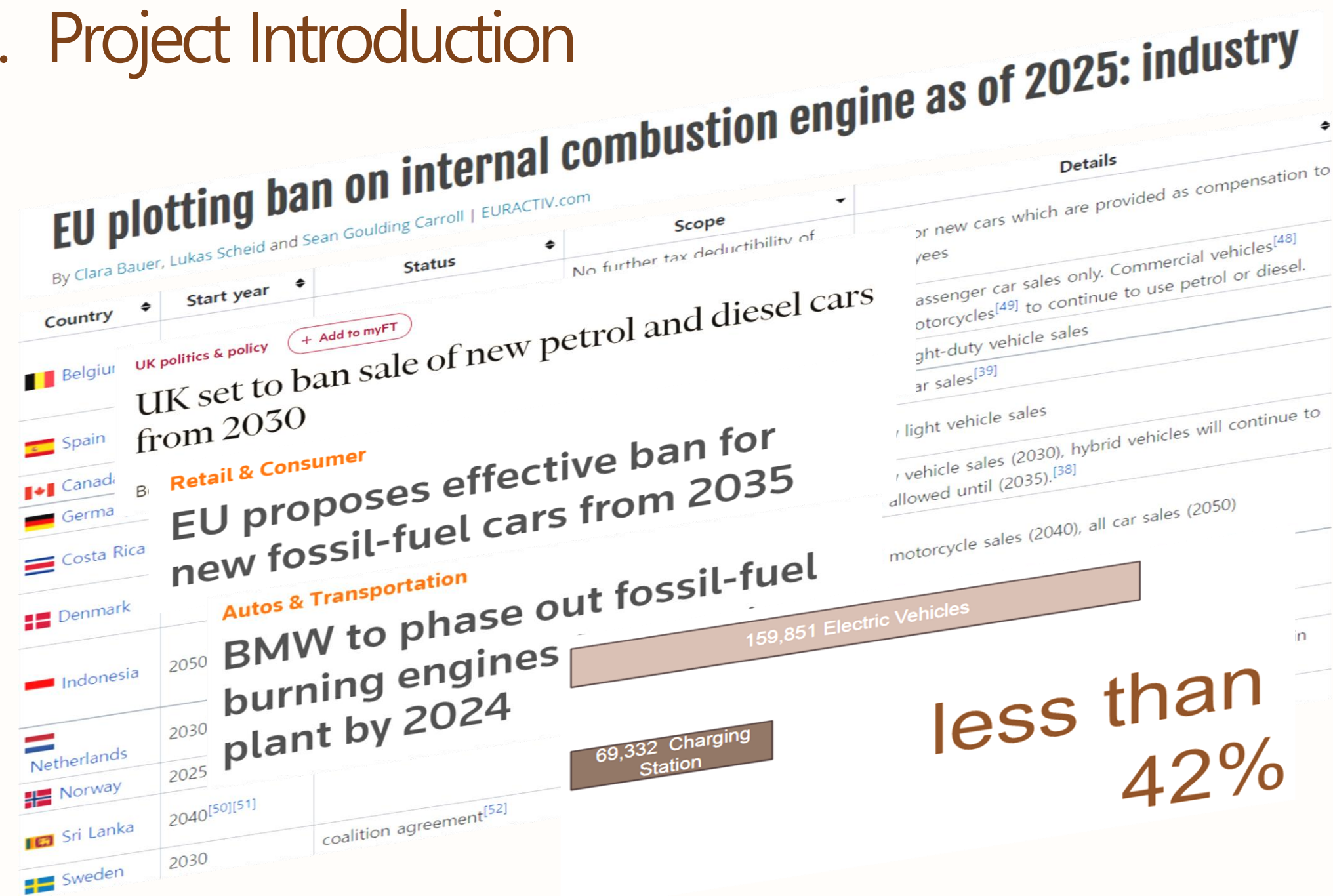
Anywhere Electric Vehicle Adapter

2. Overview of the Project

2. Project Introduction

By simply attaching the electric vehicle charging adapter to the 220V terminal, it is possible to easily and conveniently build an electric vehicle charging station anytime, anywhere, and a power blocking function is mounted to prevent conductive actions. Through the app, functions such as power consumption measurement, charging amount check, and alarm can be used. It is equipped with an NFC payment system to help ensure fair trade between electricity providers and users.

2. 1 Goals to performance goals

1. Efficiency of charging space

3. Power control to prevent electricity shortage

2. Simplification of installation method

4. Improving user accessibility

6. Simplified payment

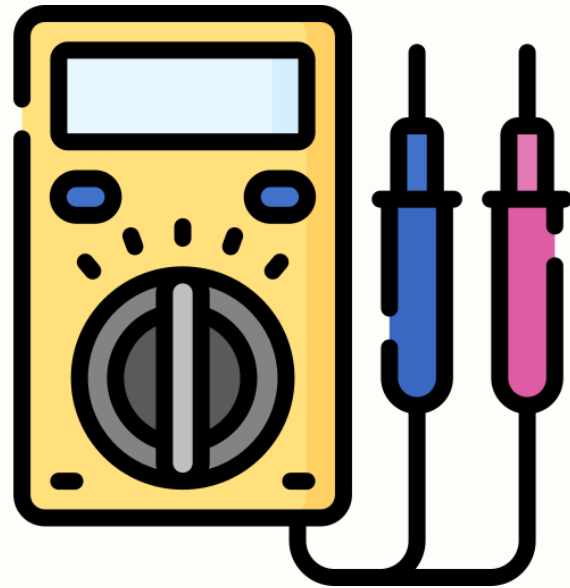5. Transparency in using electricity
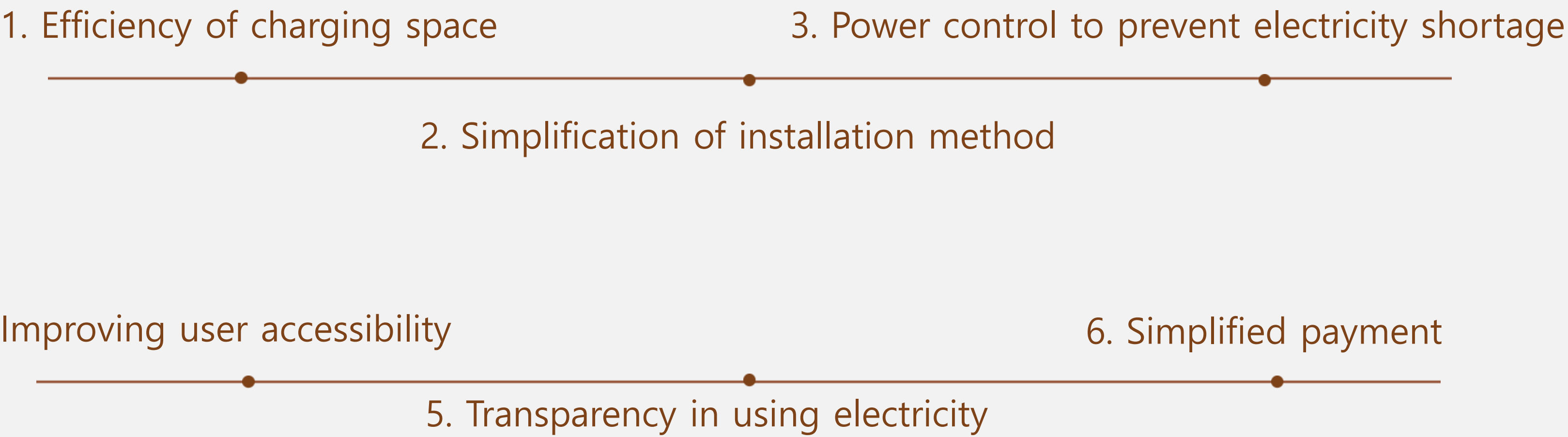
Anywhere Electric Vehicle Adapter

3. Project Introduction
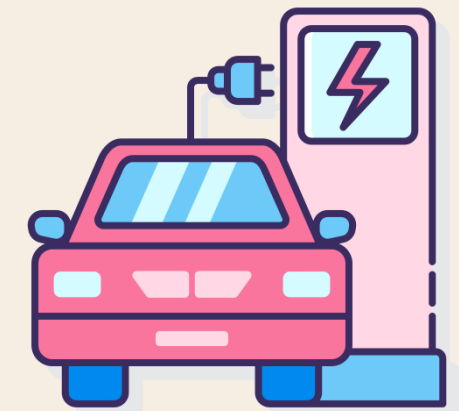
3. 1 Key techniques for making works

- NFC
Payment system through NFC card and NFC sensor

- Power measurement
The electricity from the 220V terminal is measured to calculate the amount of electricity used, and the measured amount of electricity is used as data required for payment

3. 2 System Configuration

NFC Reader

User

Add User

Check Charge

Map Provide.

Report Error

Power Supply

Adapter

DB

Power Control

Power Measurement

Manager

Check Income & Power consumption

Breakdown notification
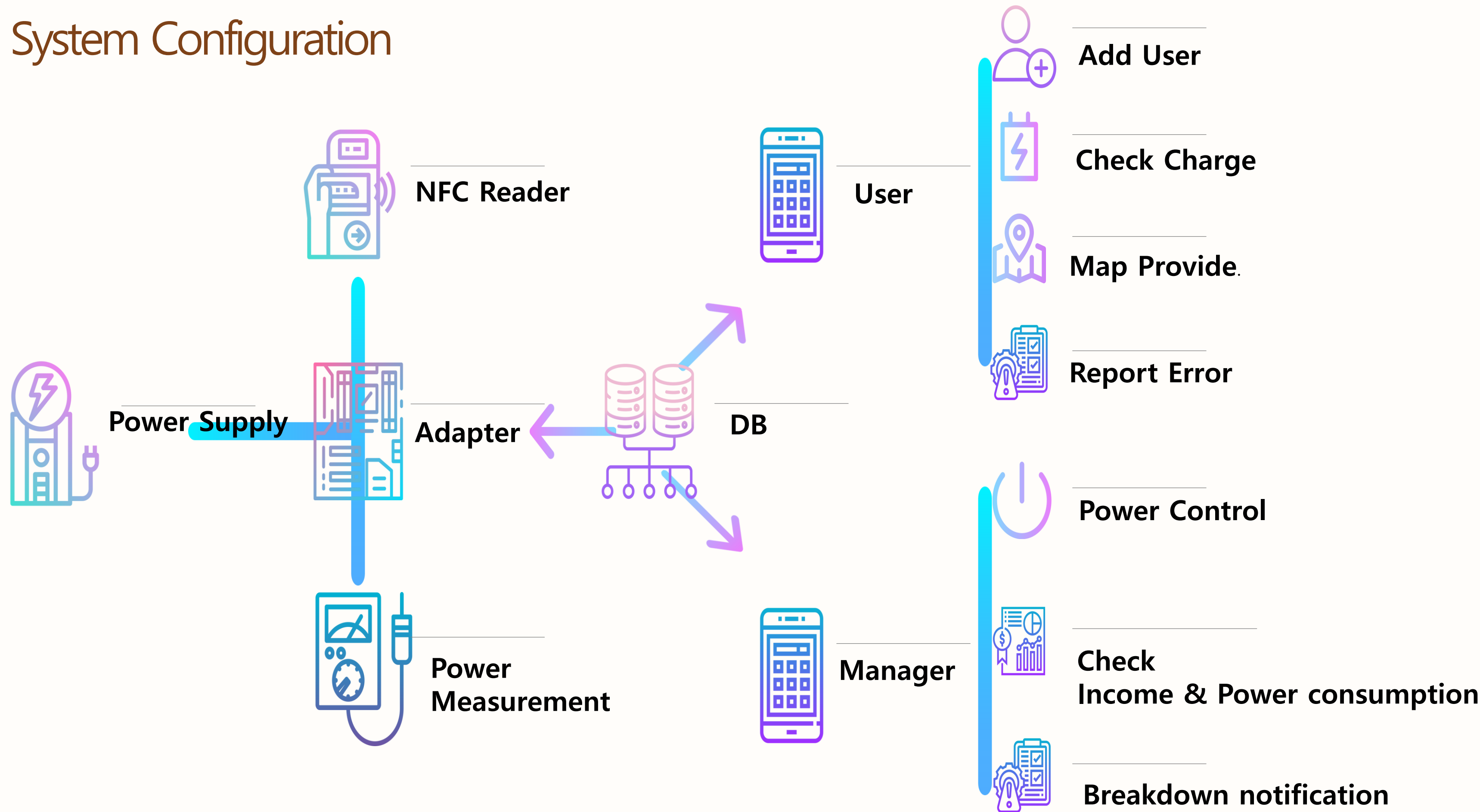
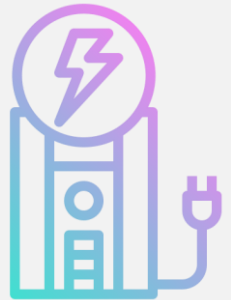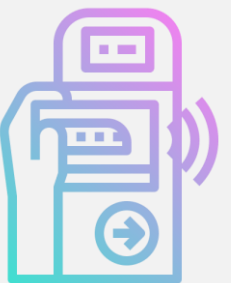# 3. 3 System Function

Functions of Anywhere Electric Vehicle Adapter

1. Power Usage
   measurement function

2. Power cut-off function

3. NFC payment function
   for payment of usage fee

4. For how to use and how to manage it,
   QR code display function

The Functions provided by the App

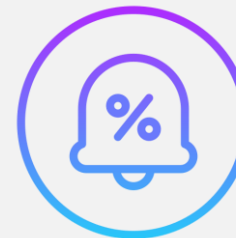1. By entering the license plate,
   Simple use system

2. Available charging station
   location indication function

3. Current charge display function

4. The target charge alarm function

3. 3 System Function

Charger Owner-only function

1. Total power consumption and import confirmation function

2. Power cut-off function

3. Random degradation detection and failure notification function

3. 4 Development environment

- Hardware development environment
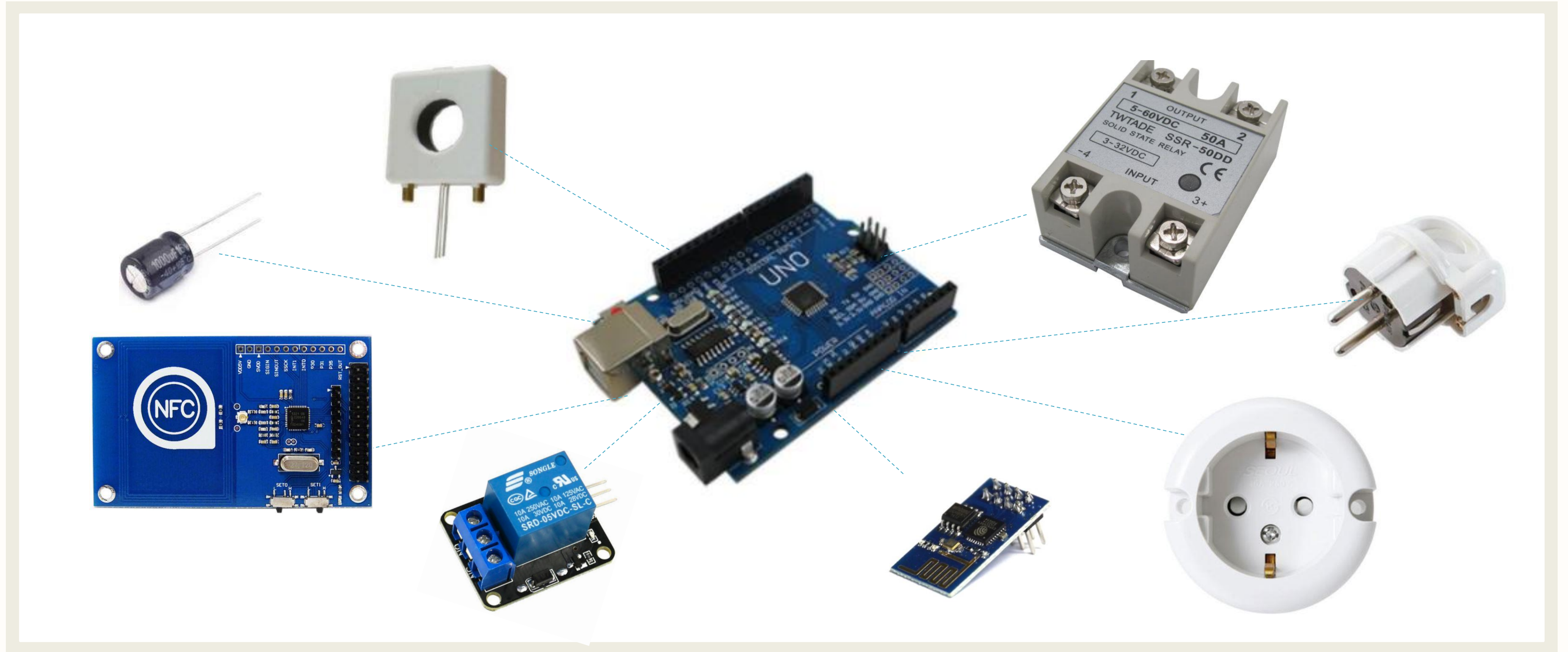
3. 4 Development environment

- Design and manufacture of internal circuits

Arduino Circuit
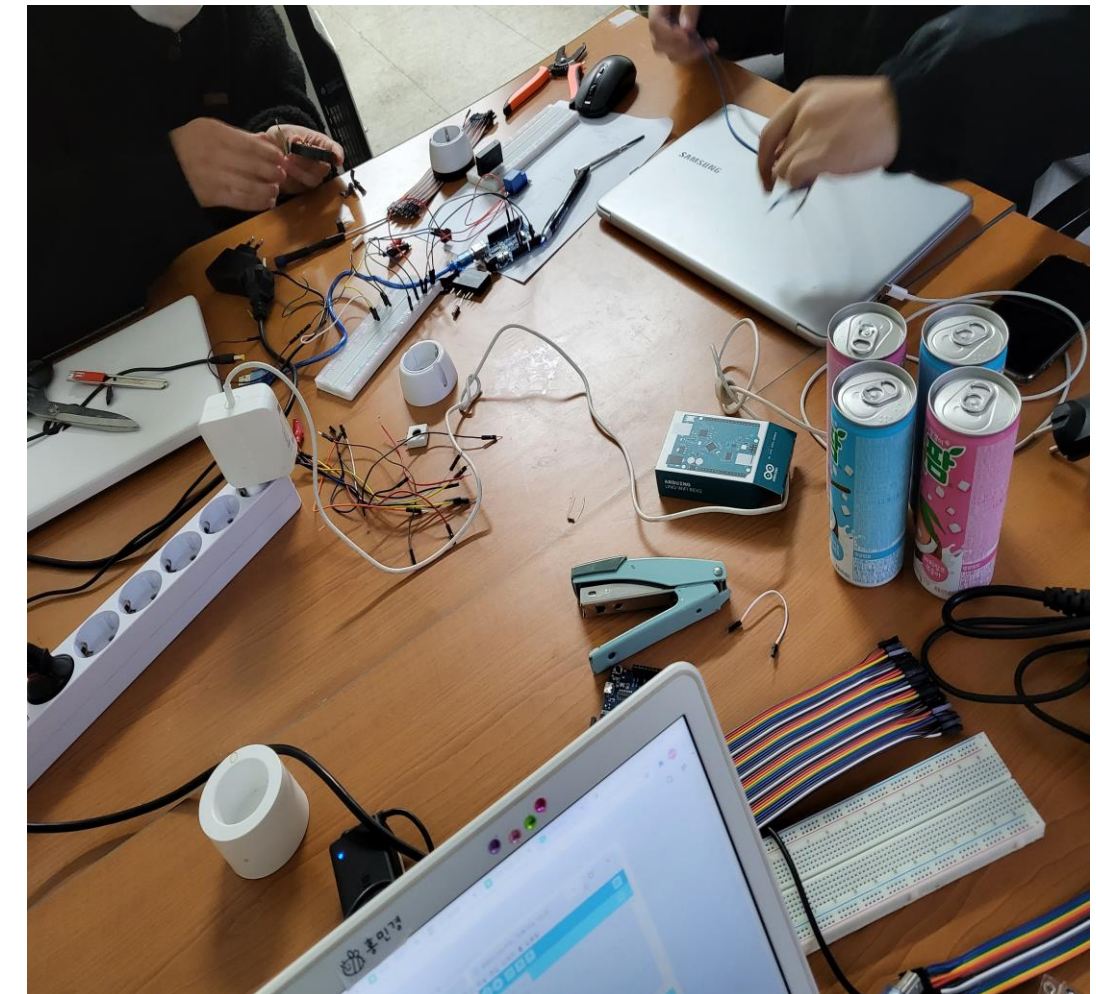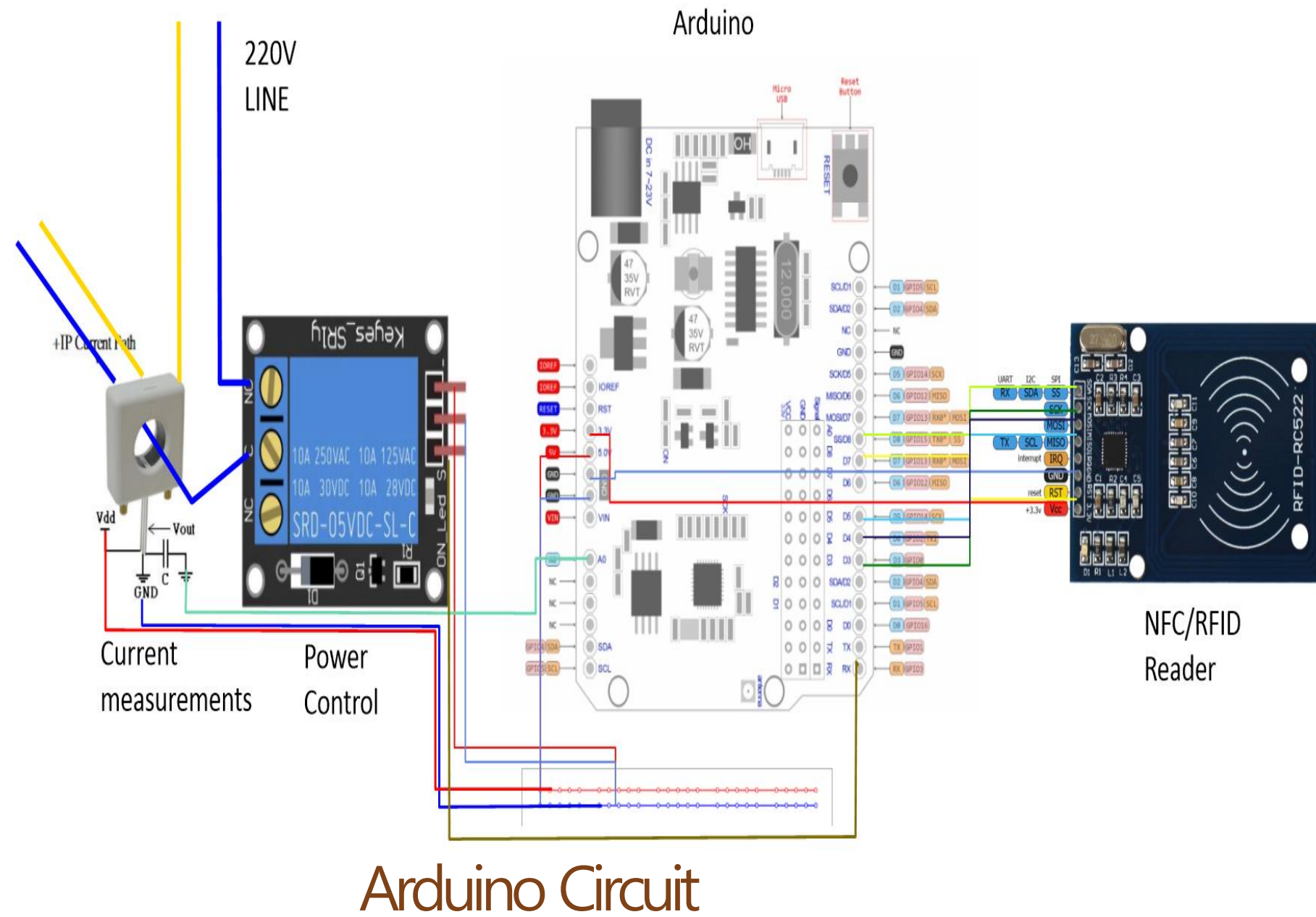
Design Circuit

3. 4 Development environment

- Hardware design and production
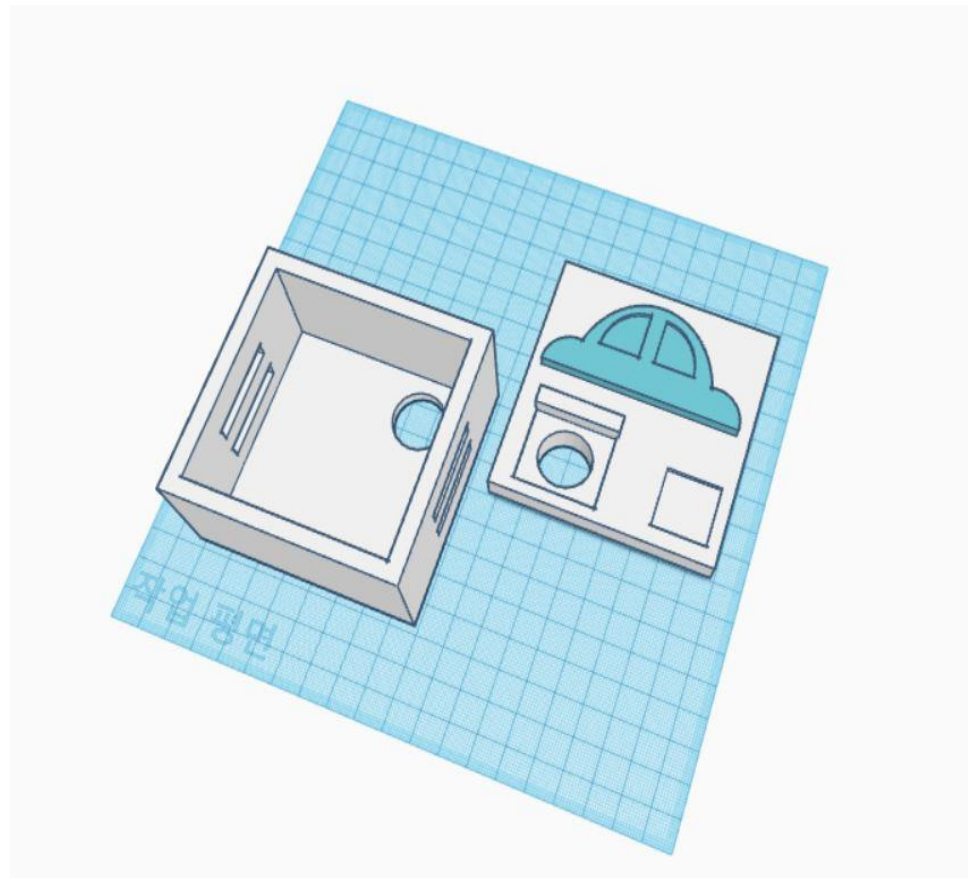
3D Modeling

3D Printing
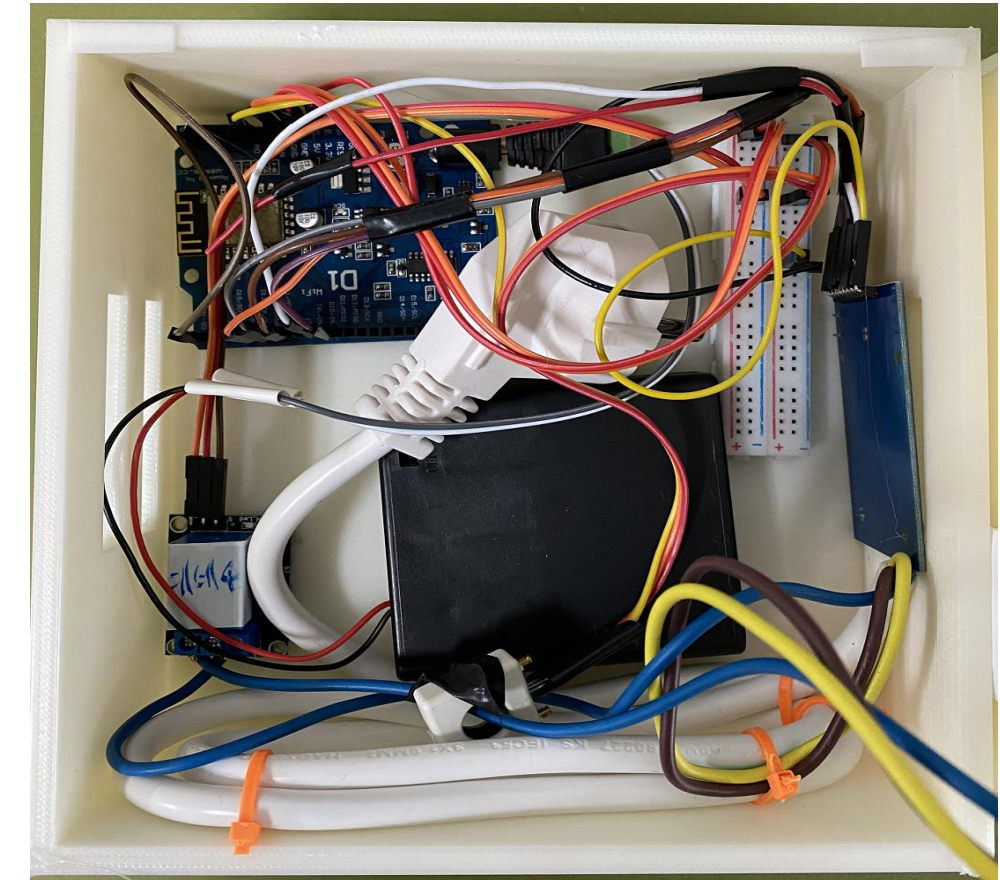
Internal wiring work

3. 4 Development environment

- Software development environment

Anywhere Electric Vehicle Adapter

4. Software description

4. 1 Program structure and file composition chart

4. 2 Derailed description of the program structure
- Arduino

NFC Read

Power Control

Power Mesurement

<< Current calculation Algorithm>>

Edata = (double)analogRead(E)

Volt_E = Edata/1023*5

Current_E = (Volt_E - 2.5) / 0.525

Power_E = (int) (220*Current_E)

4. 2 Derailed description of the program structure
- Database

Client
- Id
- Password
- License Plate
- Charging
- Point
- fee
- Phone Number

Manager
- Adapter Number
- Count Electricity
- Income

Usage History
- Adapter Number
- License Plate
- Fee
- Deposit

Report Problem
- Adapter Number
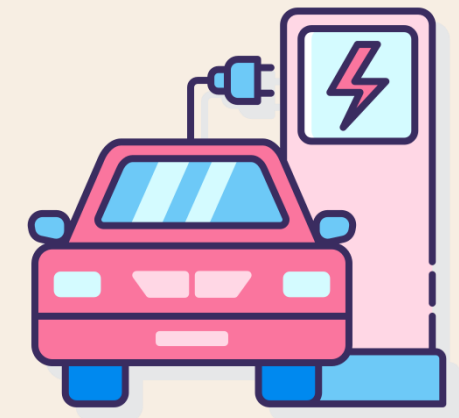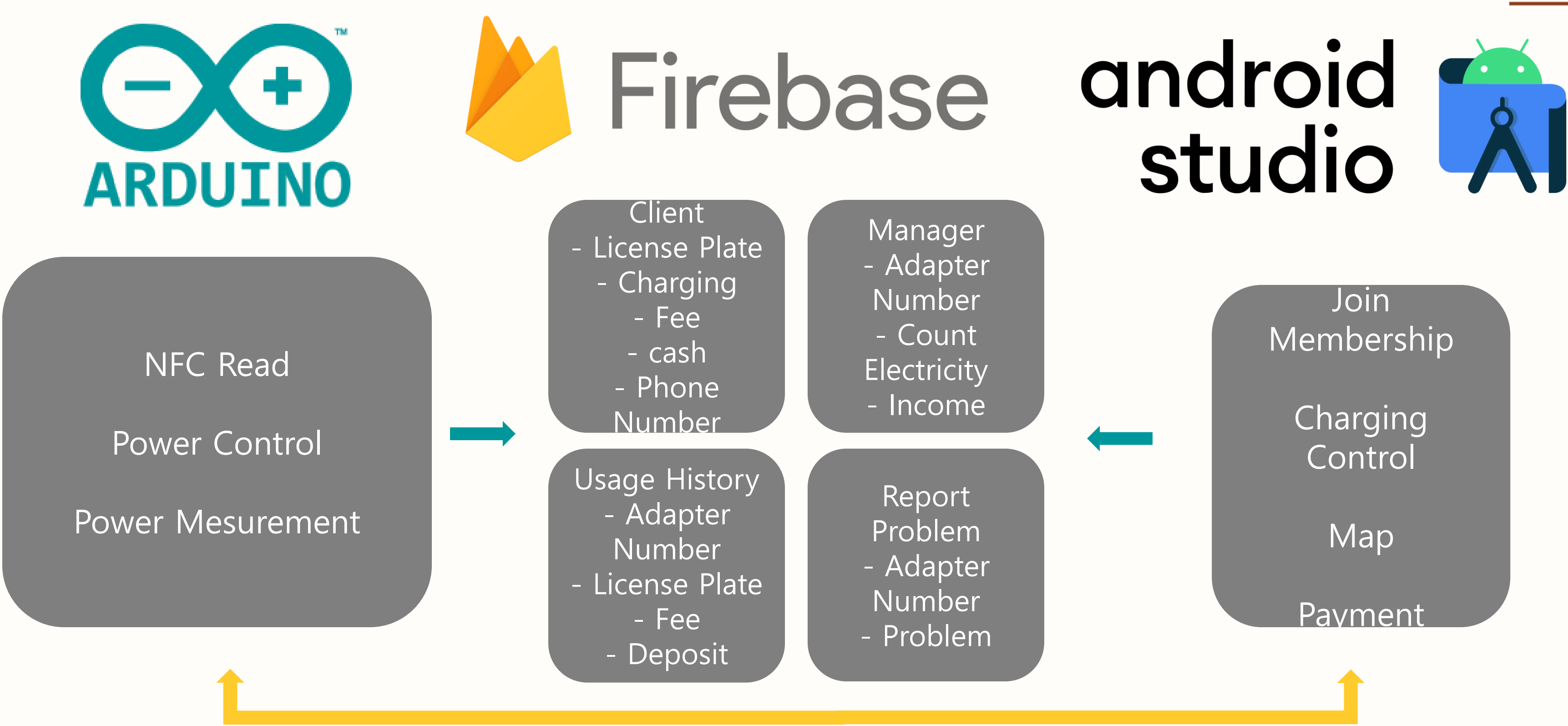- Problem

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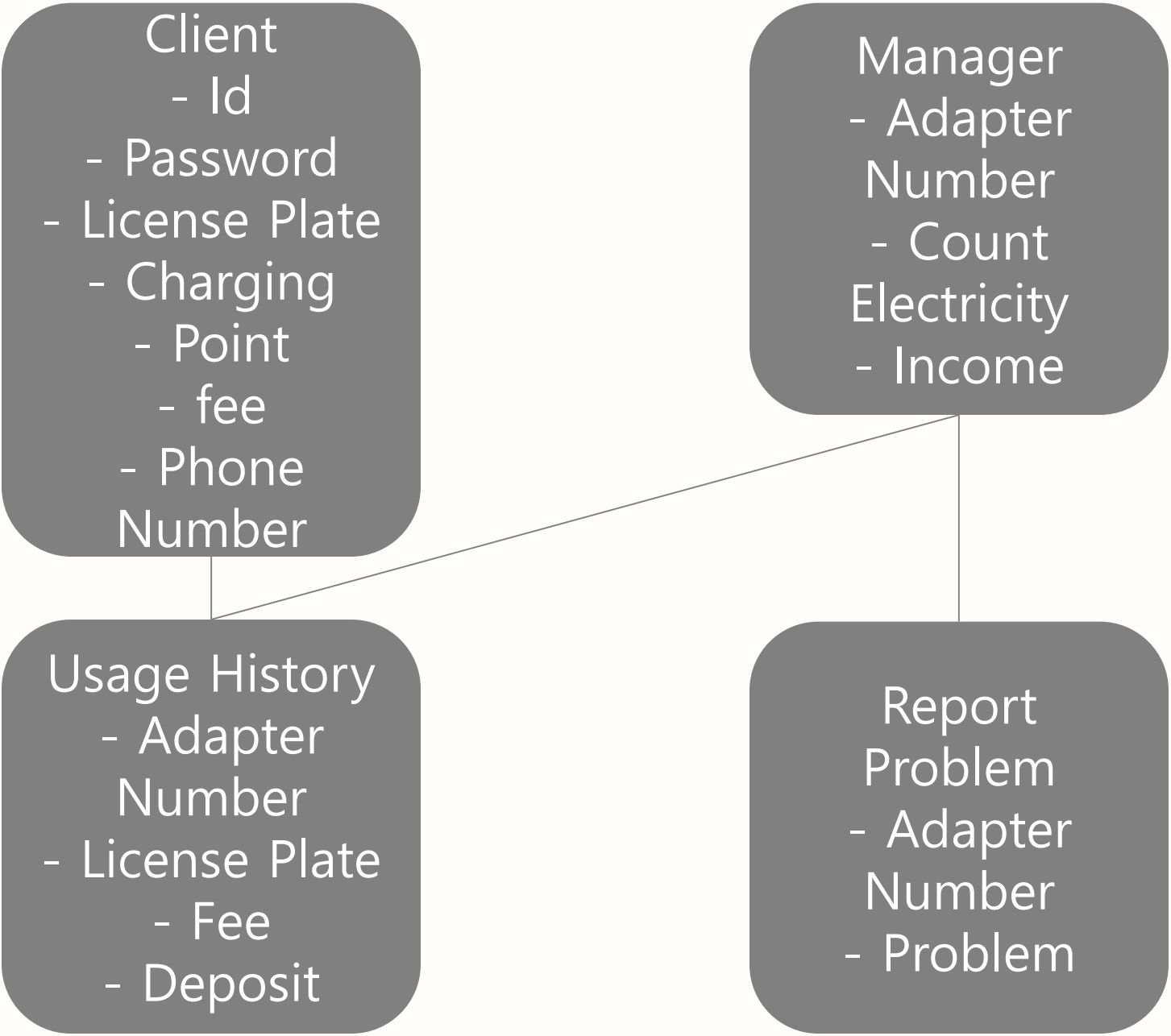
AnywhereAdapter ▾

Cloud Firestore

데이터   규칙   색인   사용량

🏠 › Client › yeonghak

anywhereadapter	Client	yeonghak
➕ 컬렉션 시작	➕ 문서 추가	➕ 컬렉션 시작
Admin	junhyuk	➕ 필드 추가
Client ›	minhee	charging: "85"
PReport	yeonghak ›	fee: "5000"
UsageHistory	yeongjun	id: "hak123"
Users		licenseplate: "19서 2365"
adapter		password: "5432"
		point: "35000"

android studio
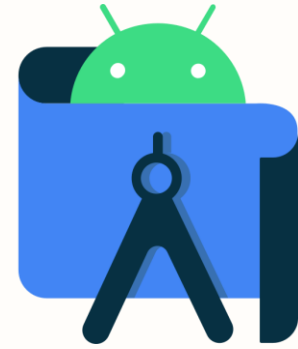
Join
Membership

Charging
Control

Map

Payment

EEVA

E verywhere
E lectric
V ehicle
A dapter

with IOthing

EEVA

Hana Bank
하나은행

Google

0%

충전되었습니다.

with IOthing

Anywhere Electric Vehicle Adapter

5. The Result of the Project
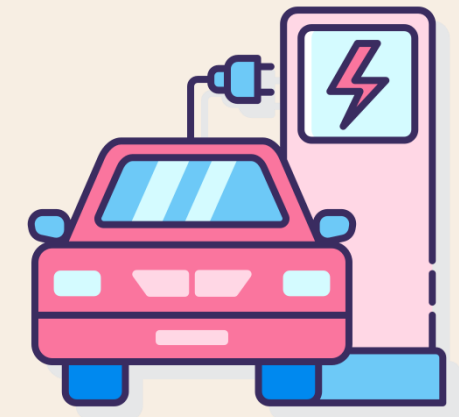
5. The result of the project

The finished product

5.1 Detailed description of the program
- Application
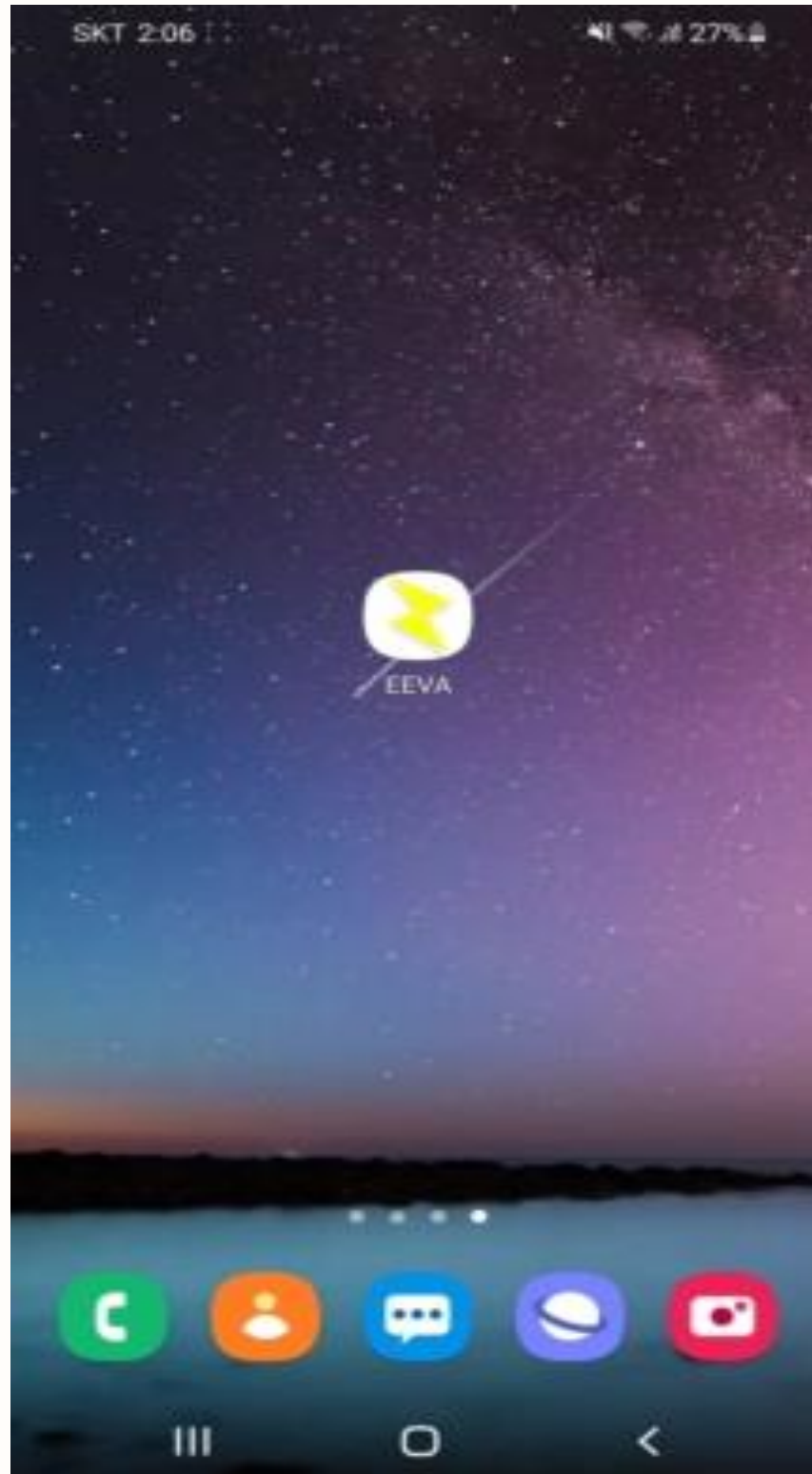
1. Application Icon	2. Start Screen	3. Login Screen	4. Membership Screen
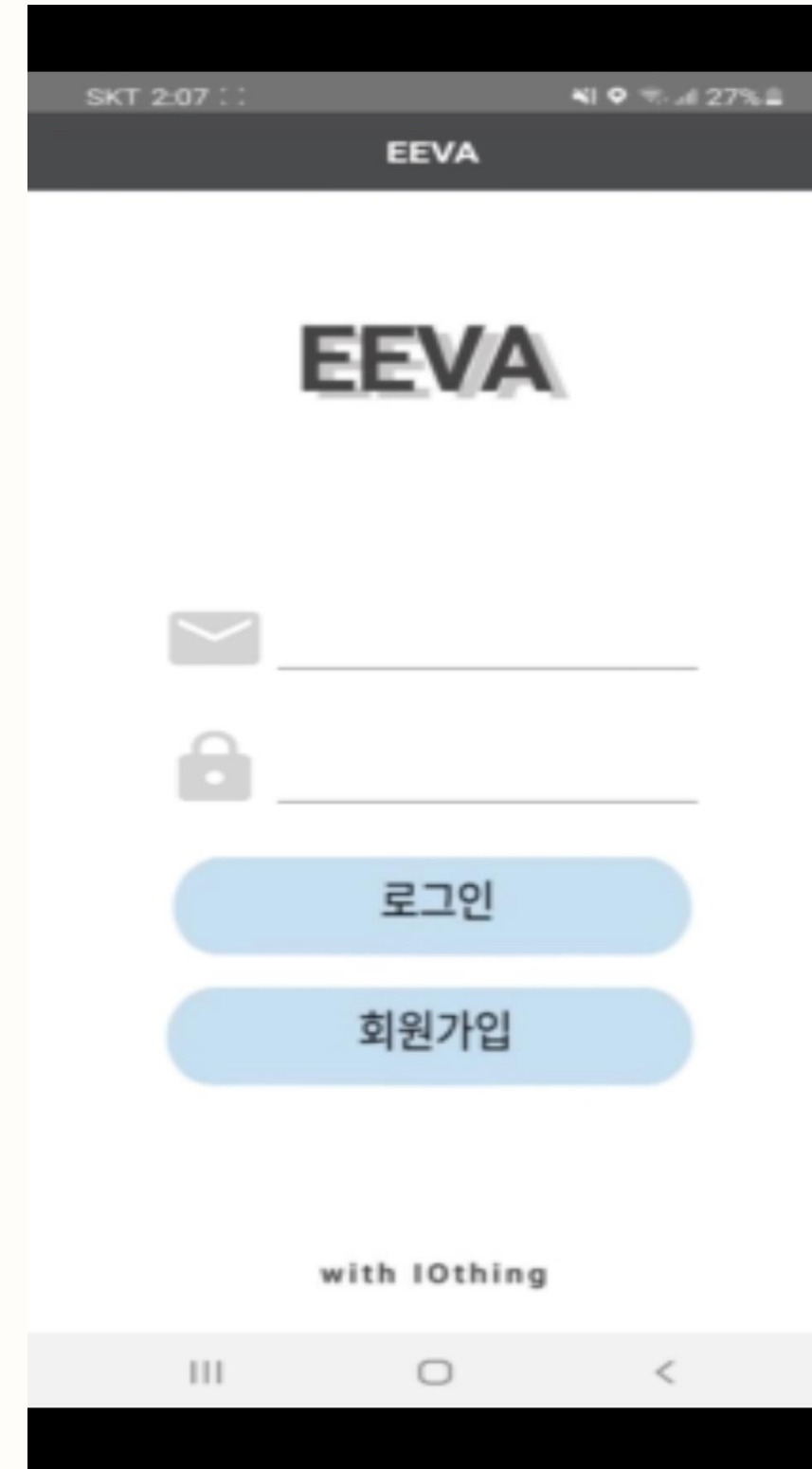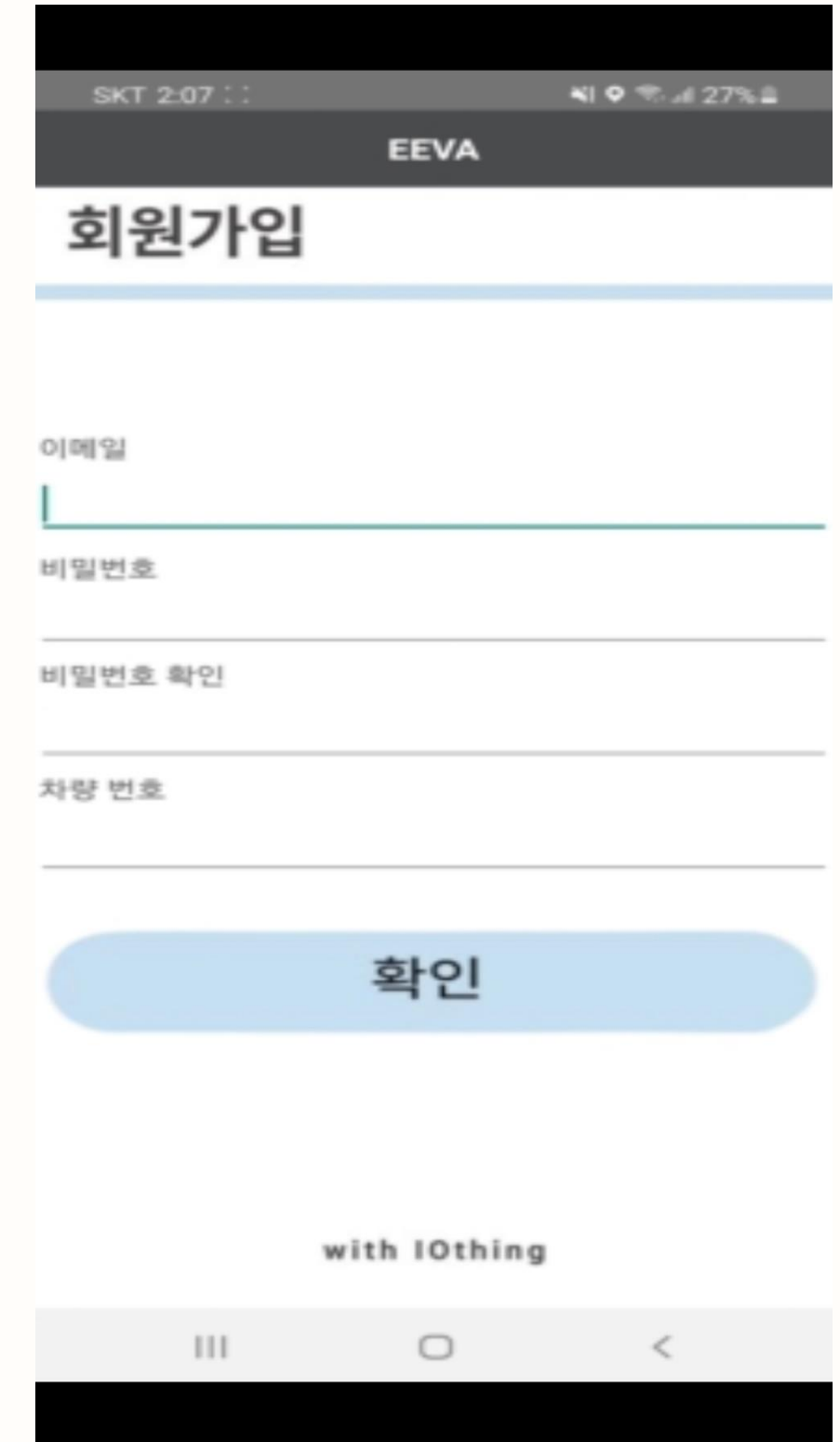
5.1 Detailed description of the program

- Application

5. Main Screen	6. Click on the menu bar at the top left	7. Point recharging menu	8 Payment screen
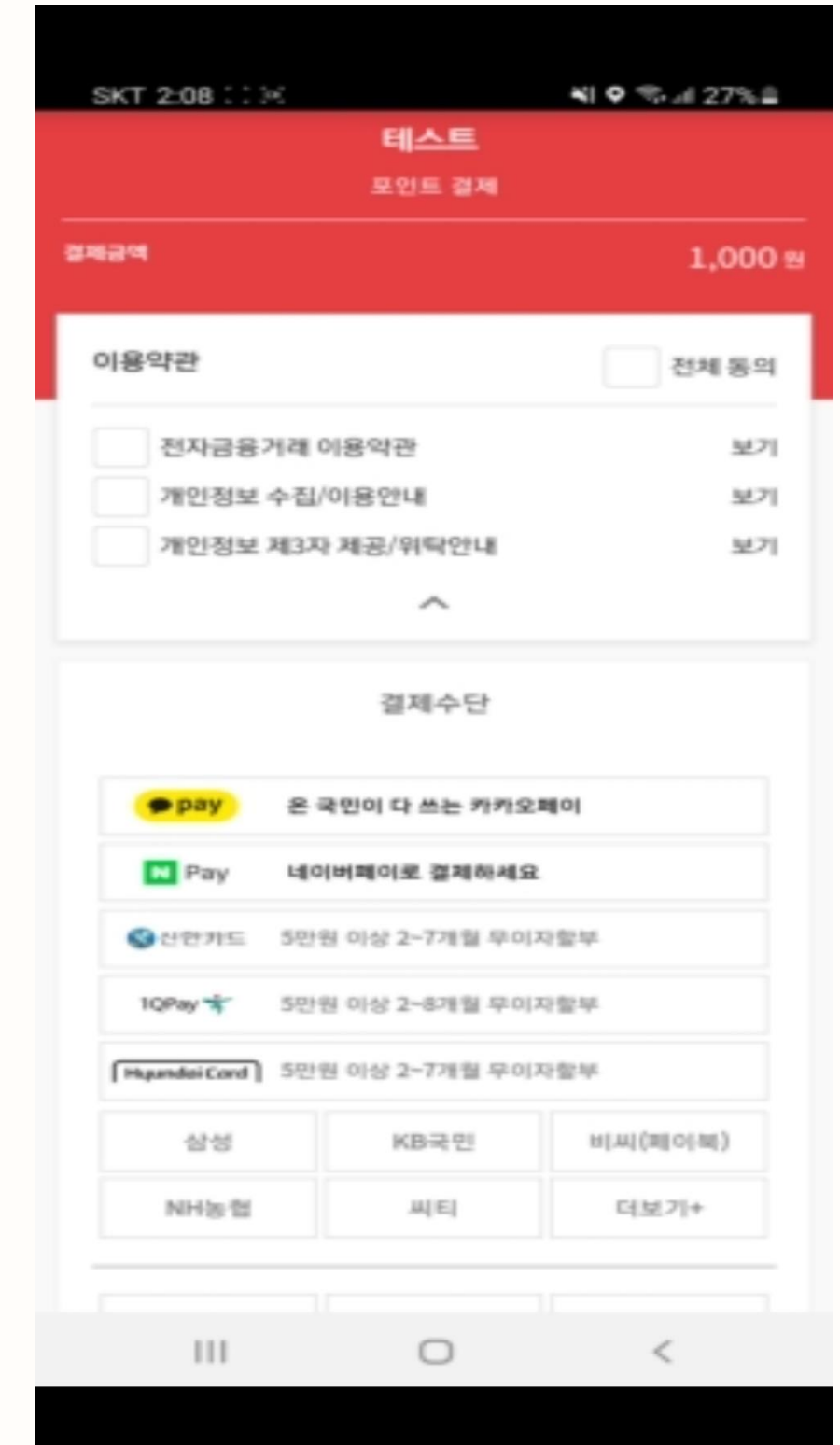
5.1 Detailed description of the program

- Application

9. Click screen on the charger on the map
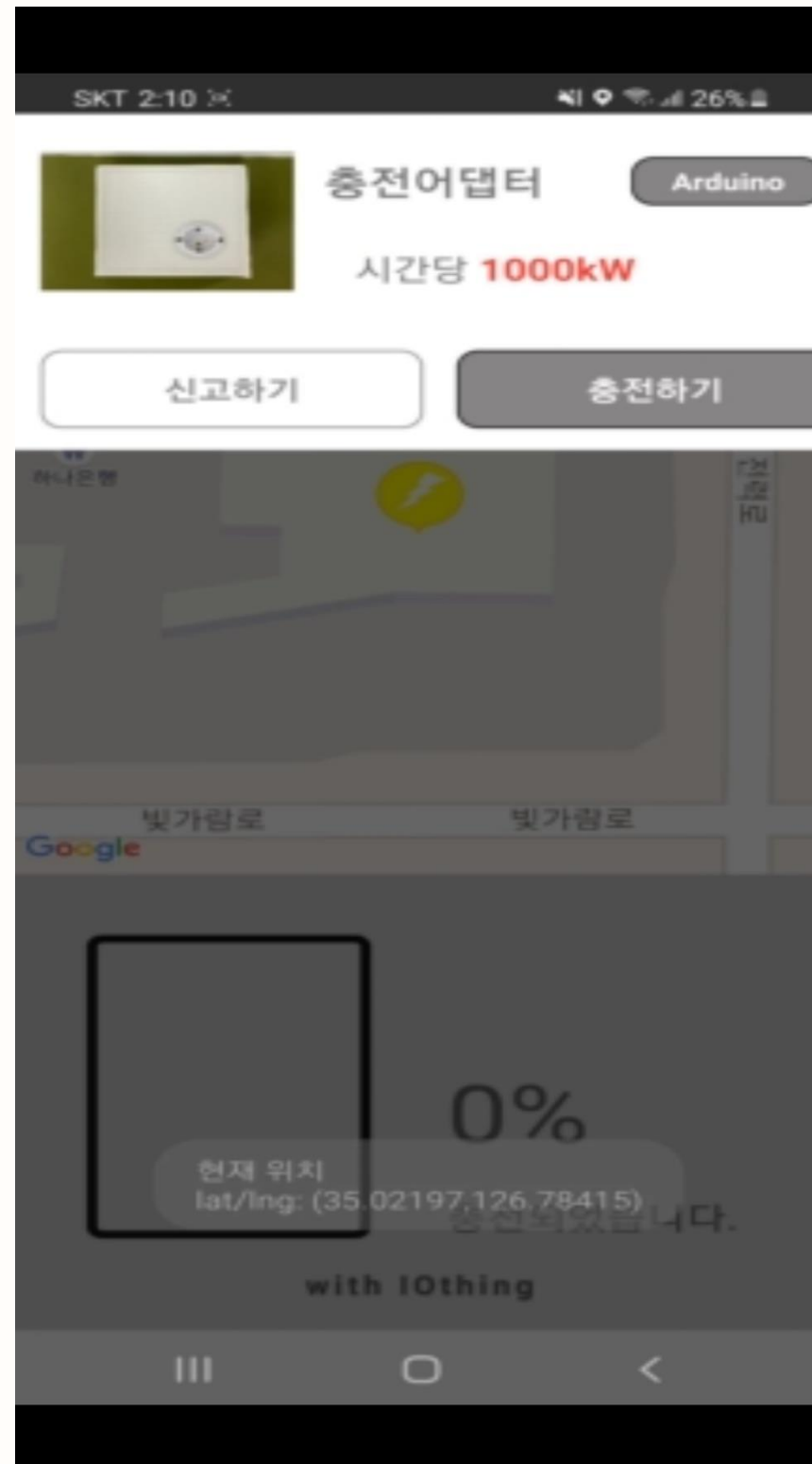
10 . Charge screen after setting the usage point

11. Charging screen
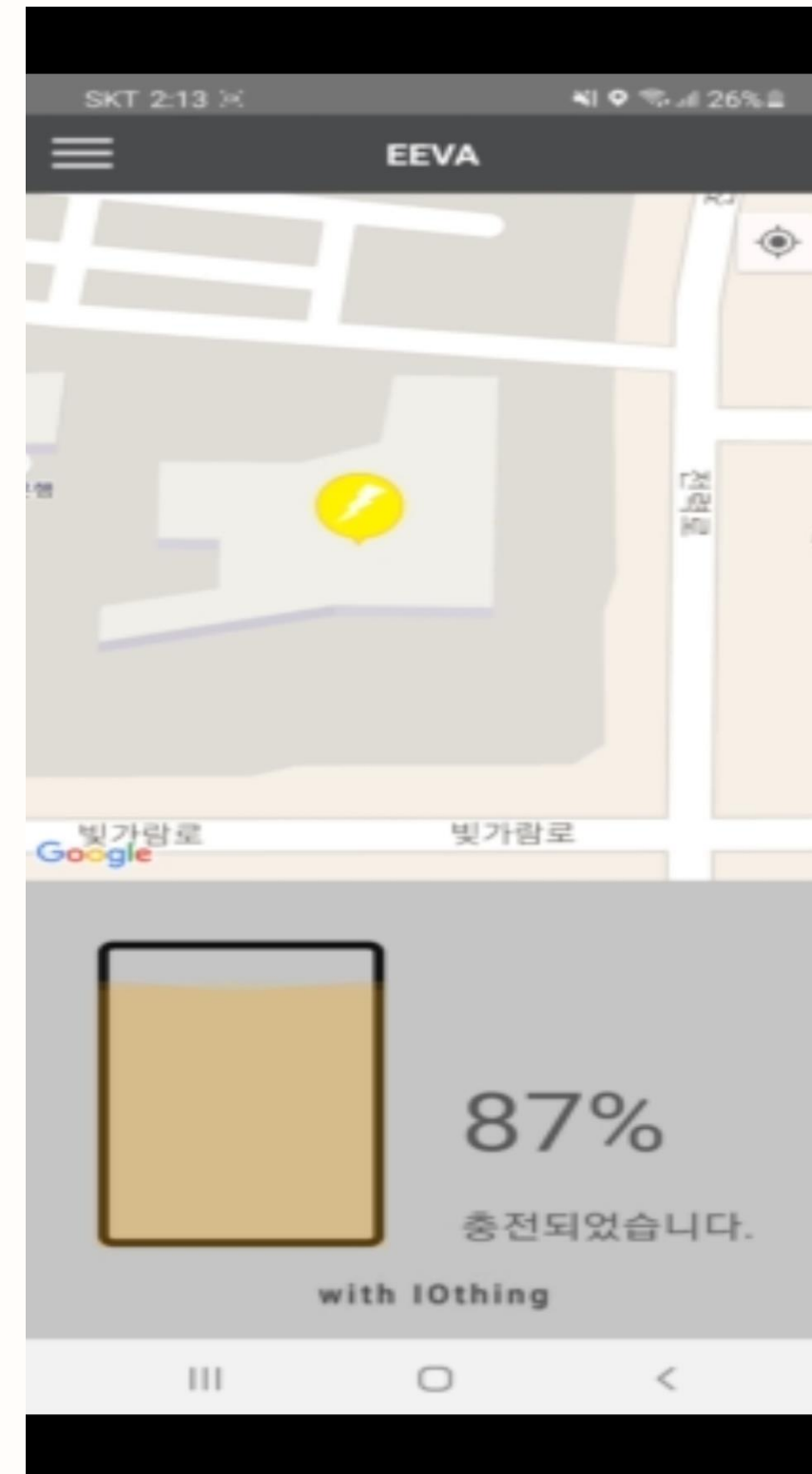
12 Report screen
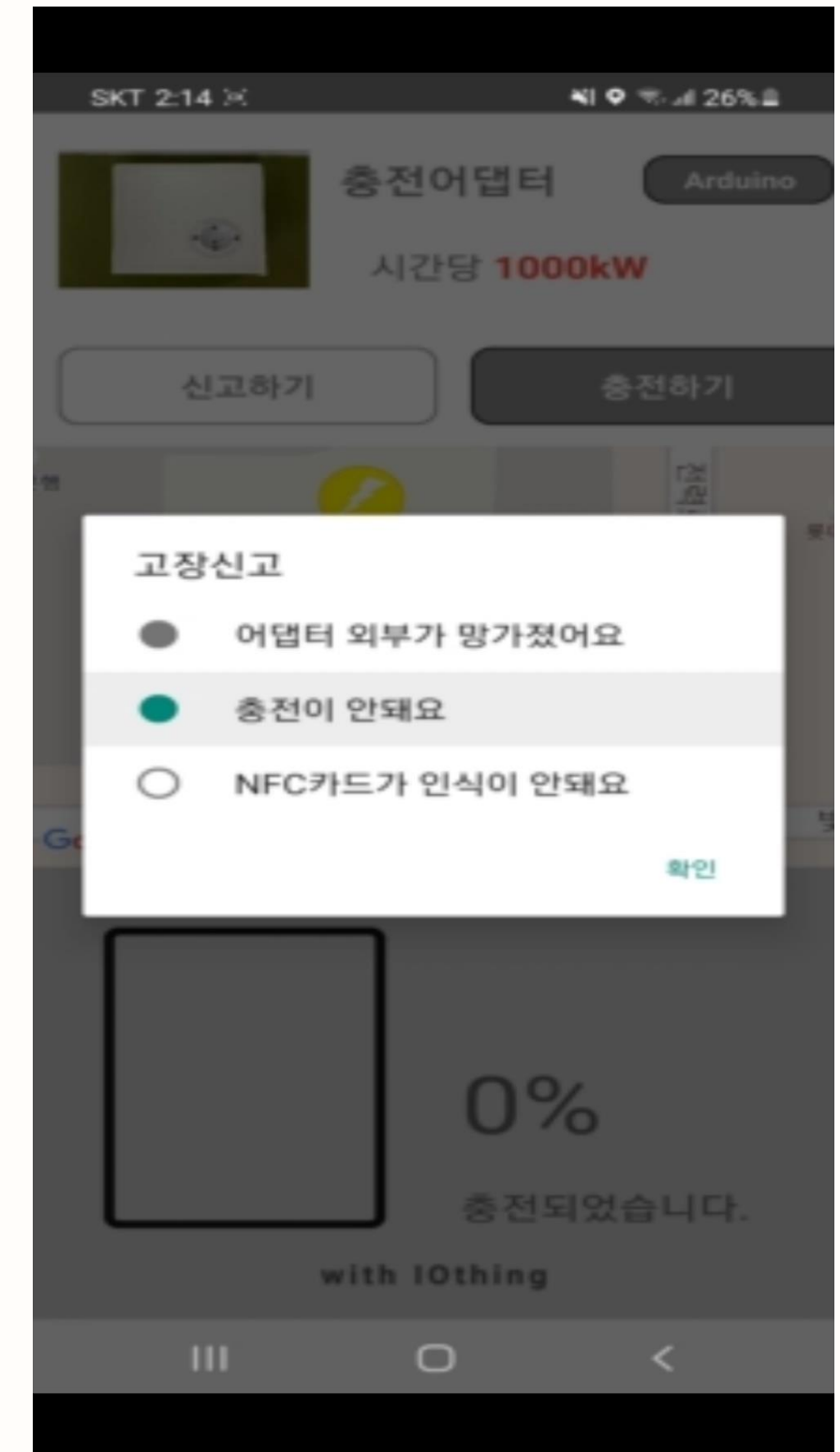
5.1 Detailed description of the program

- Application

13. Date setting screen of the usage history menu
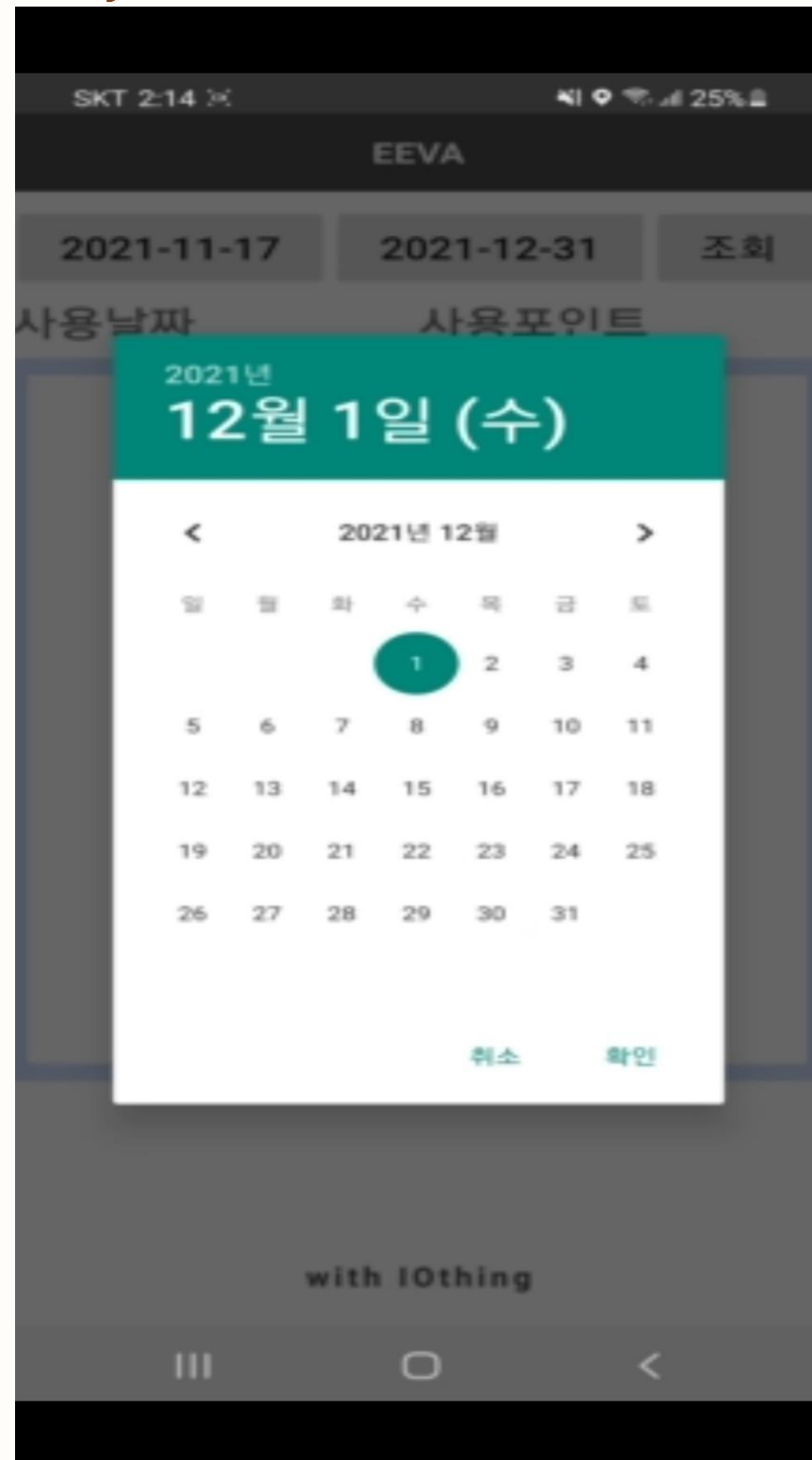
14 . Usage history inquiry screen

15. NFC card registration screen

16 If you're not an administrator, click on the
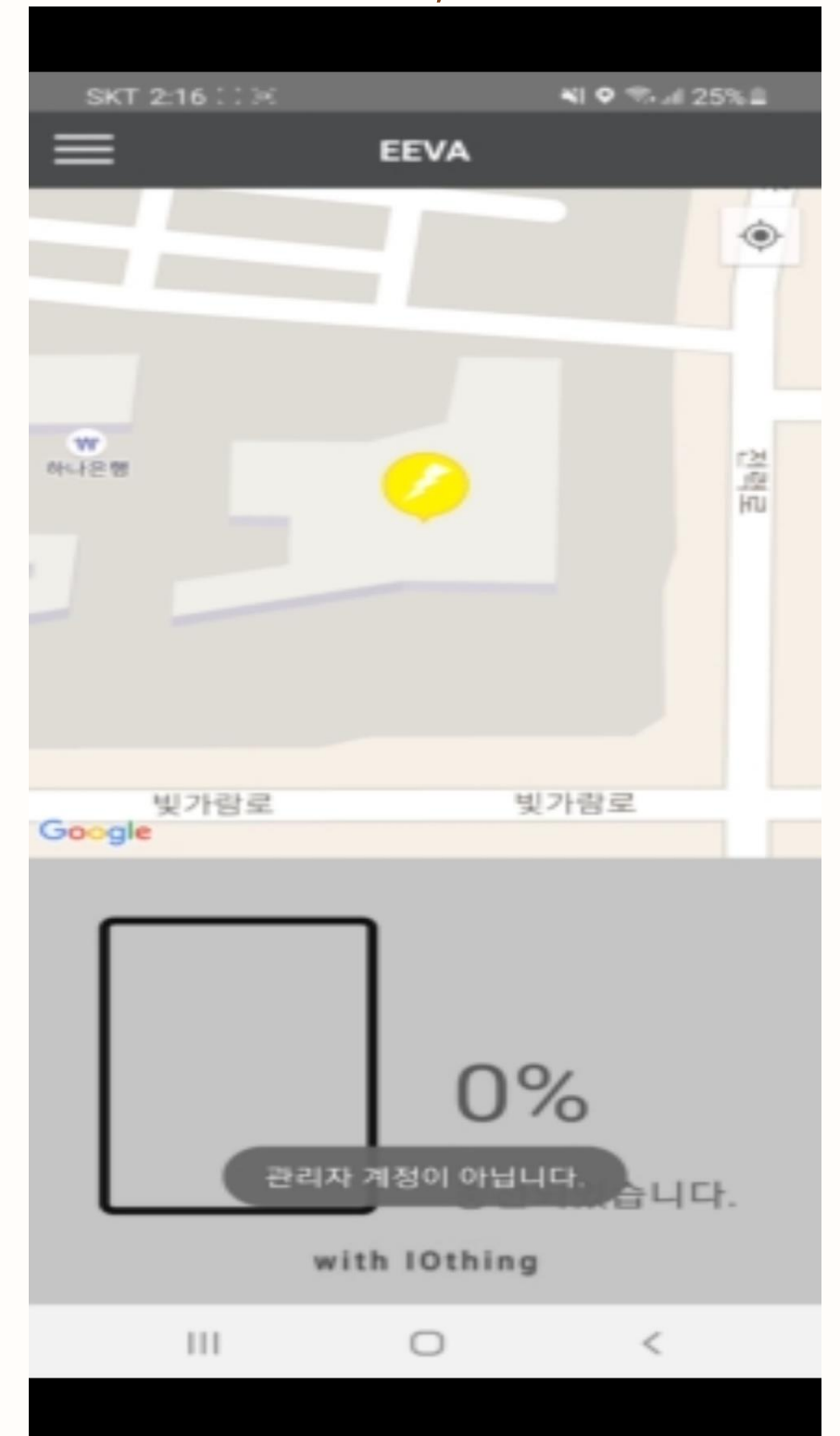
5.1 Detailed description of the program

- Application

17. The Total income of the manager's menu, Power usage history screen

18. Breakdown report screen

5.2 Demo Video

사용자가 처음 전기차 충전 어댑터를 발견한 상황
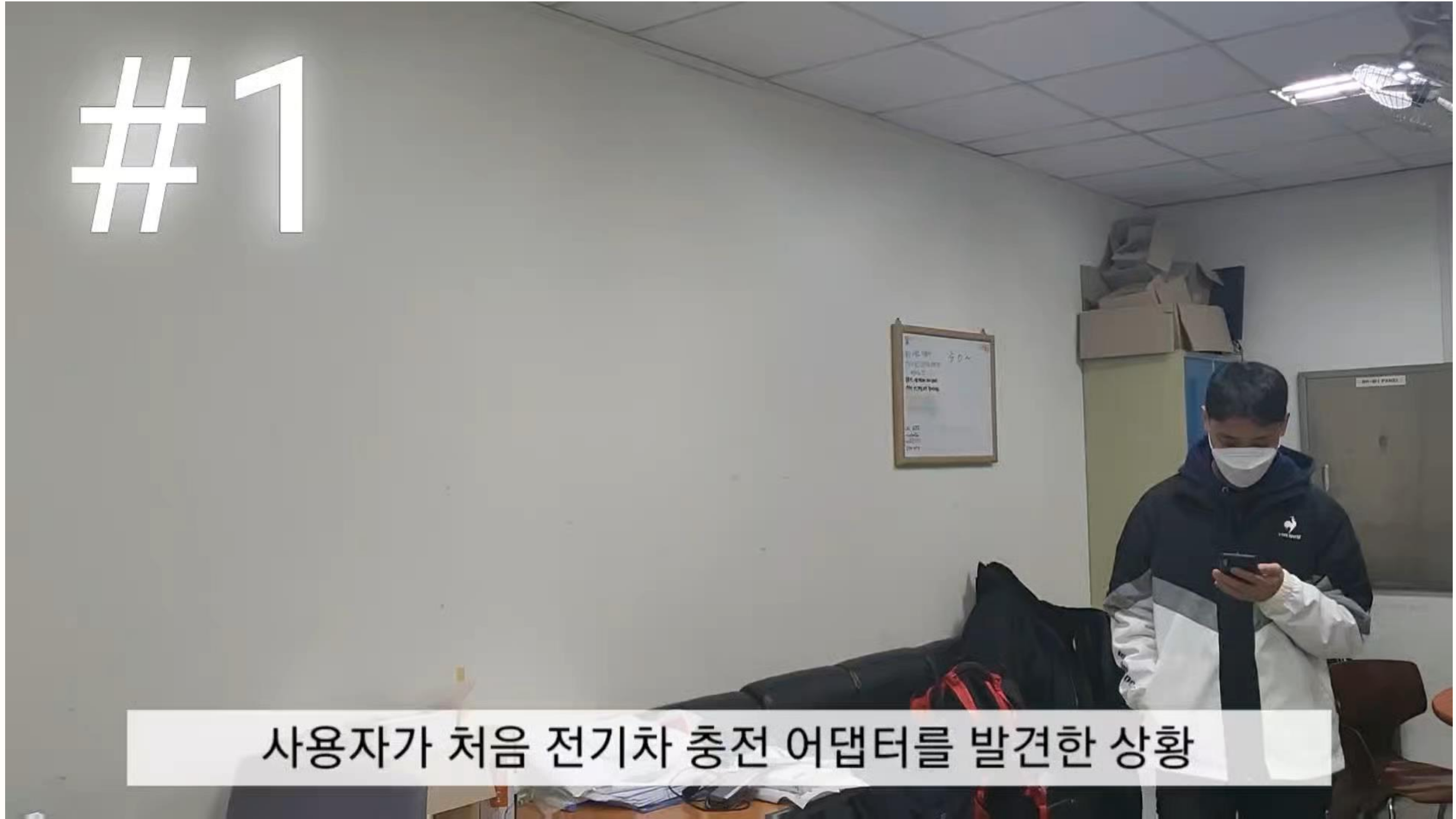
6. Expected Effect & Utilization plan
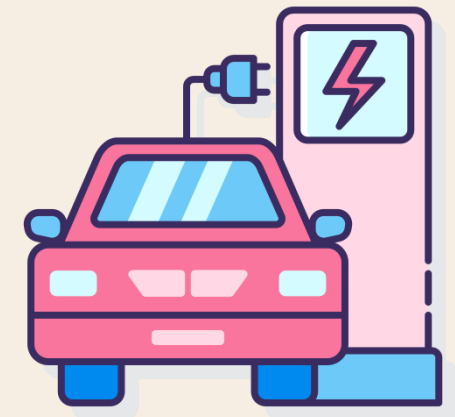
6. 1 Expected Effect
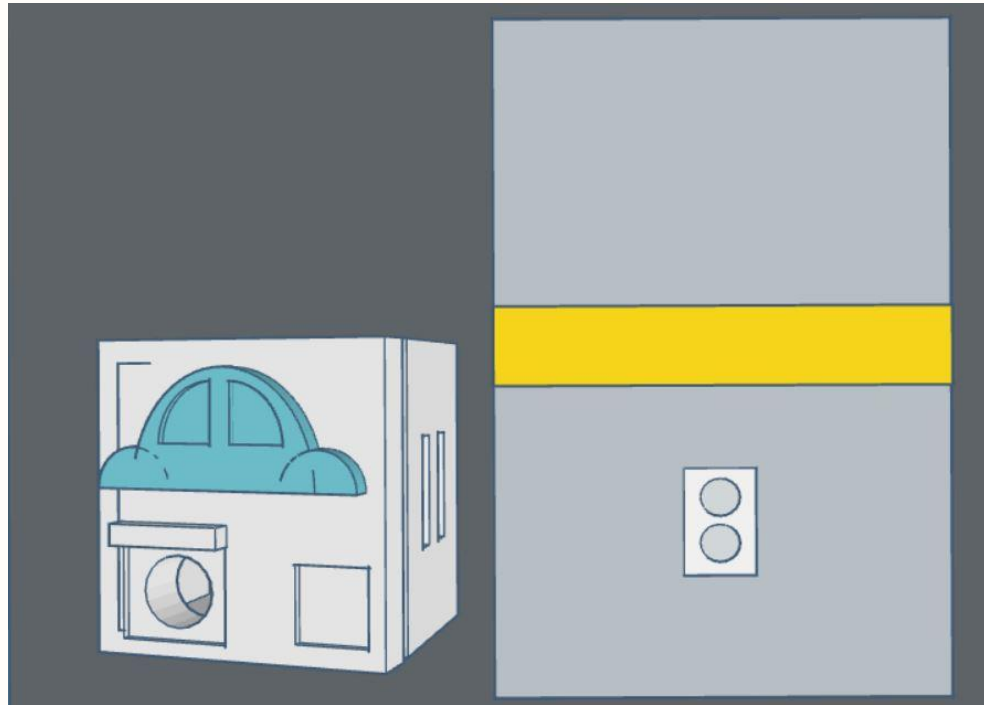
Fast infrastructure expansion with simple installation

To prevent theft of electricity

You can use it as a shared electricity

Fair Power trade

6. 2 How to use it

Electricity vehicle industry

Co-owned electricity filed

Renewable energy filed

Anywhere Electric Vehicle Adapter

7. Team Members

7. Team Members

Yu yung hak	Choi jun hyuk	Son yung jun	Hong min hee

Leader
Project general
manager

Front-end
Developer

Back-end
Developer

Hw Design
Document Writer

Anywhere Electric Vehicle Adapter

8. Schedule

8. Schedule

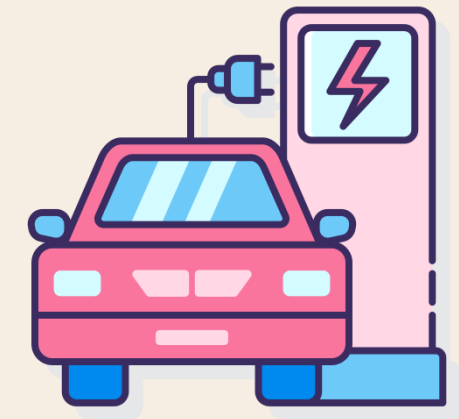|	9/13	9/20	10/4	10/11	10/18	10/25	11/1	11/8	11/15	11/22	11/29	12/6	12/15	12/22
Group Composition Role Sharing and IDEA Conference		■■■ 100%												
Project composition plan			■■ 100%											
Define system requirements and concept				■■ 100%										
Task plan, Ordering parts					■■ 100%									
Hardware 3D modeling and User Interface Design						■■■ 100%								
Hardware design and assembly								■■ 100%						
Object-oriented analysis								■■ 100%						
Interim Announcement, Object Oriented Design and App Development									■■ 100%					
(Hardware) Parts 3D Printing									■ 100%					
Implementation and unit testing											■ 100%			
Prototype Test											■ 100%			
QR code generation and Intro video production											■ 100%			
submission of works to bithgalam energy valley software contest											■ 100%			
IT Festival exhibition of works												■ 100%		
Function improvement & Final Presentation													■■■ 100%	

All Log

Idea meeting on September 15th.
September 27th. Consultation with the professor.
Link Plus project plan is closed on September 30th.
Fill out the assignment application form on October 6th.
Preparation of the first part list on October 6th.
Flee market on October 13th.
Preparation and order of the first part list on October 18th.
October 22nd. 2nd part order list.
2nd order for parts on October 25th.
Getting ready for the mid-term announcement on October 24th.
Mid-term announcement on October 27th.
Check the confirmation on November 3rd and share next week's schedule.
Plans to fill out the file for the KEPCO contest on November 5th.
November 8th, KEPCO Contest Panel Submission, Server Creation and File Sharing, Database Linkage Attempt, KEPCO Contest ppt File Creation Meeting, and App Screen Composition Meeting

Professor's lecture and meeting at 3 o'clock submitted the presentation materials for the KEPCO competition on November 10th.
November 11th, Arduino circuit test and Arduino fire base linkage preparation - Current sensor, relay module check.
November 13th, backend, 3D modeling zoom meeting.
November 14th, server, nfc, 3d modeling.
Submit a statement of settlement of project expenses and modify the contents of the file submitted to the it festival on November 15, create and reserve a 3d modeling file.
November 16th, 3d printing work confirmation (top plate), db configuration refinement and screen design, screen function meeting.
Reservation for 3D printing on November 17th. pla-100a.
Reservation for 3D printing on November 18th. Kakao Talk meeting.
November 19th, 3D printing, real life check, Arduino code complete, non-face-to-face.

Reservation for 3D printing on November 18th. Kakao Talk meeting.
November 19th, 3D printing, real life check, Arduino code complete, non-face-to-face.
Check the progress of November 20th, Arduino. Check Arduino.
November 21st. Error correction.
November 22nd. Integrated confirmation.
Check the operation status of KEPCO KDN on November 23rd and prepare for the announcement.
KEPCO KDN finals on November 24th.
November 26th, it Festival. Exhibition of Outstanding Works.
November 28th, app compatibility improvement.
December 1st, I'll improvement.
Preparing for the final report on December 8th.
Preparing for the final announcement on December 15th.
Final announcement on December 22nd.

Thank you
Q n A