E-Scooty System

ABSTRACTION:

We want to create an application which is integrated with a single person scooty.

Any person can pay the specific amount of money for the distance they want to cover.

The scooty will come to a stop once the distance is covered for which the user paid for.

Steps:

- User will log in to the application.
- After logging in, user will be asked to enter the ID of the scooty.
- Once ID is entered, user will be asked for the distance they want to cover.
- For specific locations (within our Uni lets say) user can select the location from the map.
- Afterwards user will be taken to payment process, where user will know the exact amount, they will have to pay for the specific distance.
- User can pay through easypaisa or any bank card.
- After payment procedure is done, Scooty will be unlocked, and user can ride it for the specific distance.

How to Achieve this task?

To achieve this task we will be in need of microcontroller like Arduino and for the application development Flutter.

Hardware

Microcontroller:

We can use Arduino or ESP32 microcontroller. ESP32 microcontroller is more preferred because of its built in Wifi and Bluetooth modules.

Motor Controller:

We will need a motor controller like L298N or VESC to control electric scooter motor based on the signals received from the micro controller.

VESC (Vedder Electronic Speed Controller):

- A highly customizable open-source controller, popular in electric skateboards and scooters.
- It supports various motor types, offers regenerative braking, and allows for fine-tuning of motor parameters.

Distance Travel:

We can use either GPS module to calculate real time distance travelled by the scooty or we can use rotatory encoder attached to the wheel which will calculate the distance according to the rotations made by the wheel.

Software

Flutter App:

- App will be created in flutter.
- User can create an account and login the app.
- Later will be navigated to the ID screen where user will enter the ID of the scooty to travel.
- Once payment is done, app will send signal to scooty with distance it can travel.

Micro Controller:

- Micro controller will be programmed in such a way that it listens to the commands send by the app.
- The command sent to the scooty will include the distance it can travel.
- Micro controller will calculate the distance travelled by the scooty.
- Once the distance is covered, micro controller will send signals to motor controller and scooty will come to halt.