Group 4

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Charging Stations

Functionality

The charging stations will be connected to a power grid which will then be used to charge the autonomous vehicles.

Dependency

This system will rely on the Power Grid, GPS system, Payment system (if implemented) and the autonomous vehicle concept that will be present in the city.
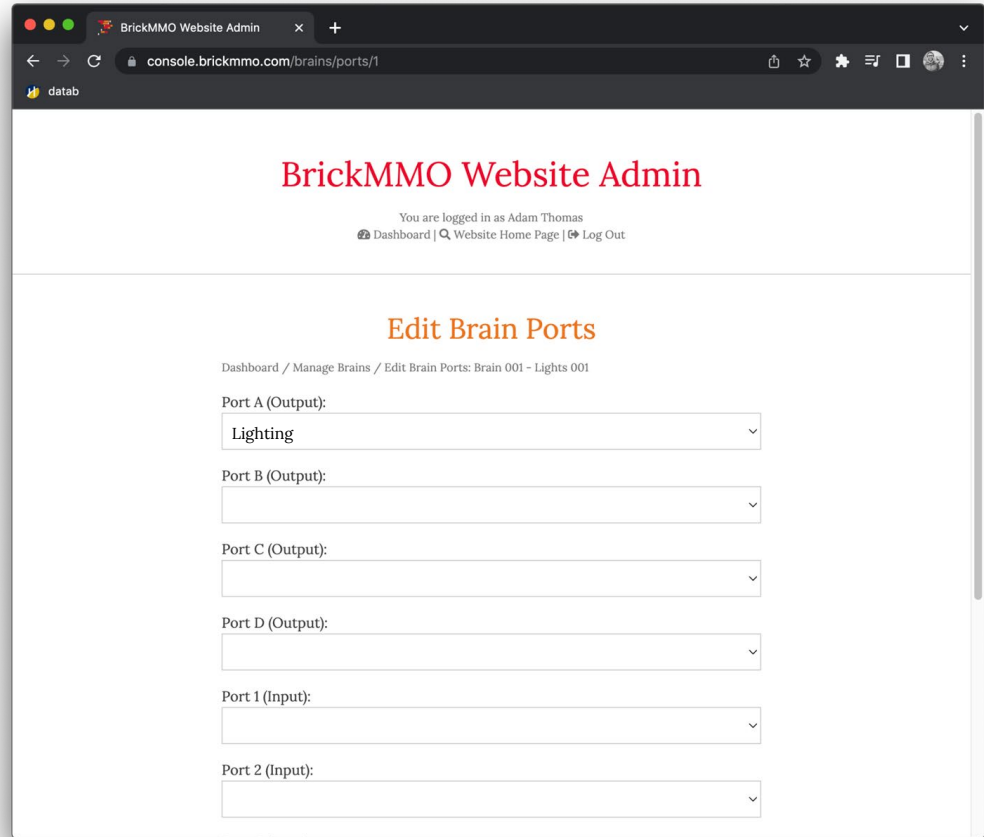
3. Settings and Info

Module: Charging Stations

- Power grid ports

- GPS system ports

- Vehicles charging ports

- Payment system ports

Module Settings

- The stations will be powered if the power grid is turned on (assuming the P.G. is on 24/7).

- There will be an available and occupied status for the charging stations. (GPS system).

- The vehicles can use this feature only if they have been approved by the payment system.
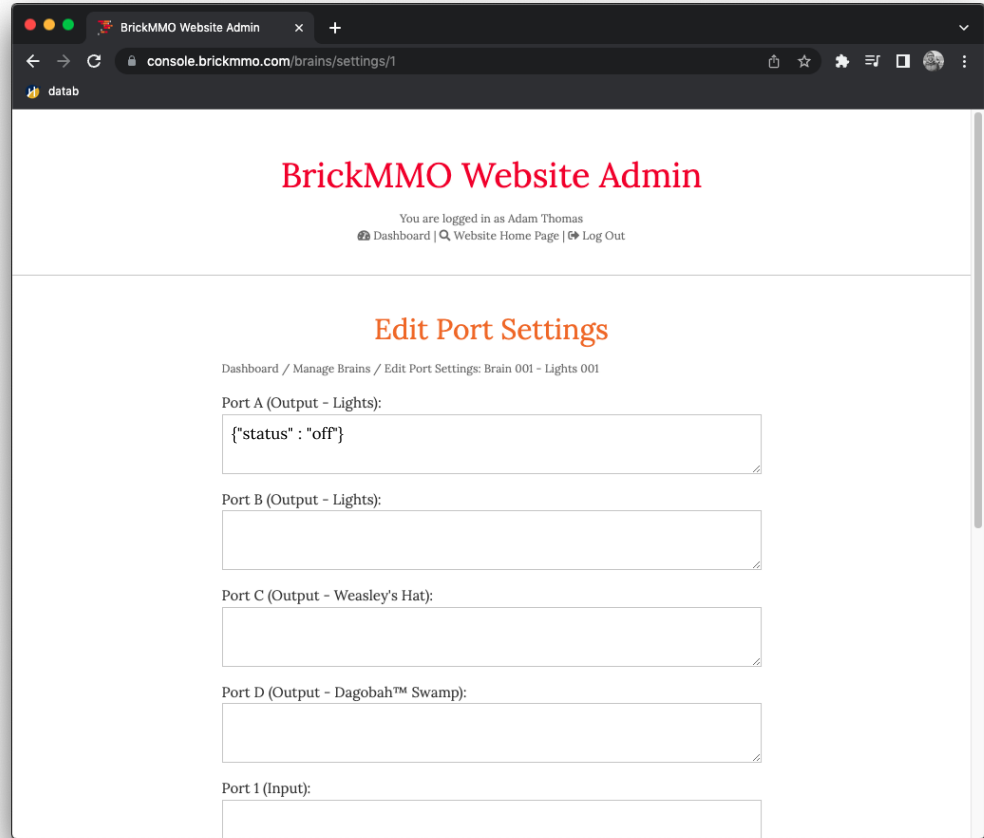
Module JSON

Additional information   will :

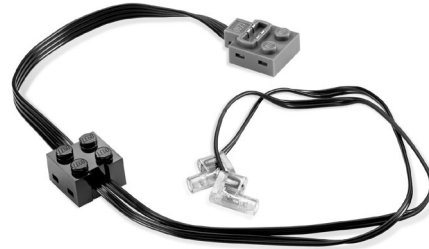- The charging units required for a certain type of vehicle.
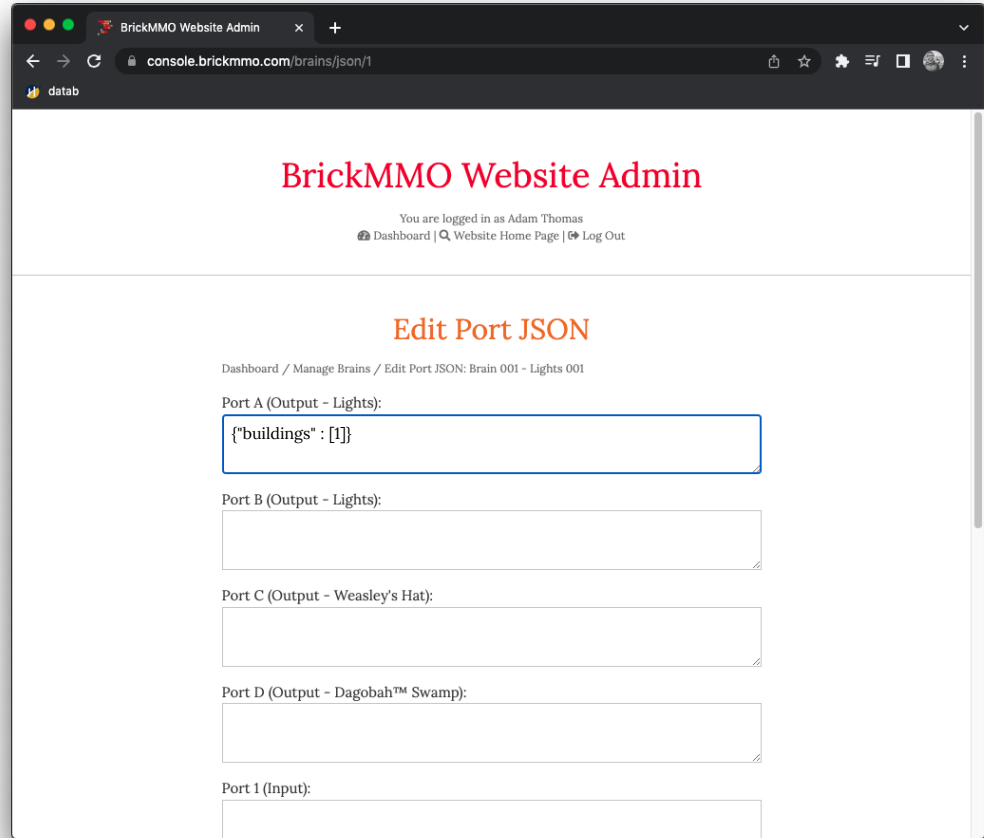
4. Ports, Motors, and Settings

Sensors and Motors

- **Distance sensor** – to check if the charging station is occupied or not

- **Switch** – to start/stop the charging process

- **Lights** – to display the occupancy status for the stations

- **Cables** – for connecting the systems

Admin Control Panel

Admin will be responsible to look after the payments for the service as well as the availability of the stations.
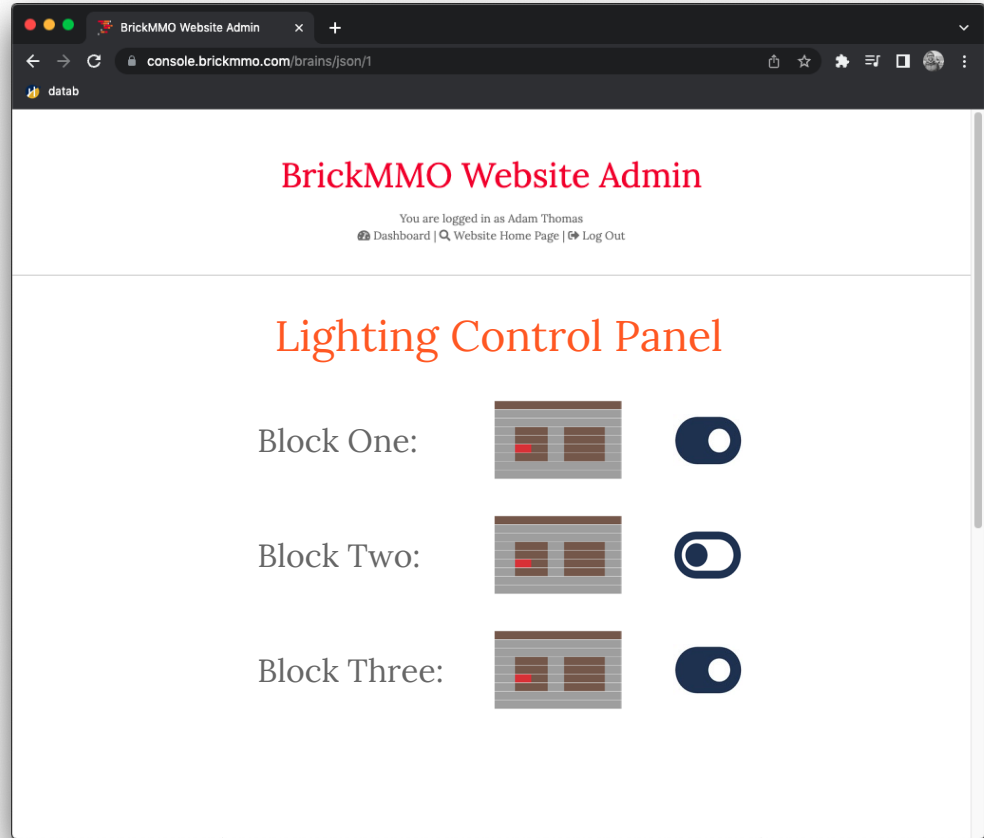
5. Pseudocode

IOT Loop

```
While (availability == true) {

        set lights = "Green";

        UpateGPS( );


        if (payment == successful) {

                Charging( );

        else {

                return "Payment
                unsuccessful";
```

API Endpoints

/api/chargingStation/list
Will return a list of charging station data in
JSON, e.g. location, price, availability .