Hydronium

Soft & Wet

Members

01

6310545299

Thanatibordee
Sihaboonthong

02

6310546376

Noppharut
Kongsakdinasarn

03

6310546392

Bhokin
Watanapitak

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01
Introduction

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Motivation & Inspiration

In everyday life, we have encountered so many plants and trees but can’t tell what is its name that makes so hard to guess how the behavior of that plant or tree could be, although plants play a very important role in our lives. They make up a large part of our diet, as well as being used to make medicines, soaps, furniture, textiles, tyres, and much more. Although we now live in a highly industrialised society, we have not lost this dependence on plants. We need to be aware of the part that plants play in our lives and we must ensure that we care for them to continue this long relationship. That are the reason why we do this project for tracking the plant's water consumption to study the behavior of the potted plants, and also for future improvements to become “SMART FARM” or Auto Irrigation

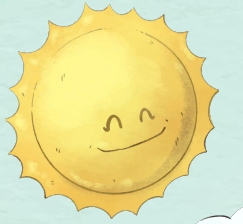
Elephant Ears

Pain Point & Obstacle

Most of the obstacle come from our Hardware device and outer Sensor, since it is an outer sensor, we have to study more about it for a while, and how to connect with kidbright board, how to get data out. For the sensor problems the output data have so many vary data that can't catch up or make a relation with them from our searching, we can conclude that it is missing resistor connection and the resistive principle can't take an accurate soil humidity

ts	value
2022-11-25 13:43:21	9.1
2022-11-25 13:45:22	67.5
2022-11-25 13:47:22	55.3
2022-11-25 13:49:22	9.5
2022-11-25 13:51:22	35.5
2022-11-25 13:53:22	94.5
2022-11-25 13:55:22	93.5
2022-11-25 13:57:22	31.7
2022-11-25 13:59:22	20.2
2022-11-25 14:01:22	100
2022-11-25 14:03:22	58.5
2022-11-25 14:05:23	12.7
2022-11-25 14:07:23	100
2022-11-25 14:09:23	68.5
2022-11-25 14:11:23	34
2022-11-25 14:13:23	100
2022-11-25 14:15:23	33.4
2022-11-25 14:17:23	68.4
2022-11-25 14:19:23	79.8
2022-11-25 14:21:23	8.1
2022-11-25 14:23:23	79.4
2022-11-25 14:25:24	19.2
2022-11-25 14:27:24	10.6
2022-11-25 14:29:24	99.6
2022-11-25 14:31:24	100

Ref: Sensor Error



02
Setup

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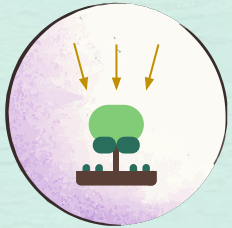
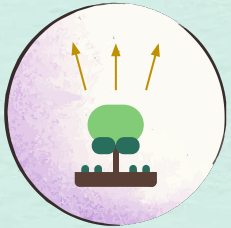
Data Source



Primary Data

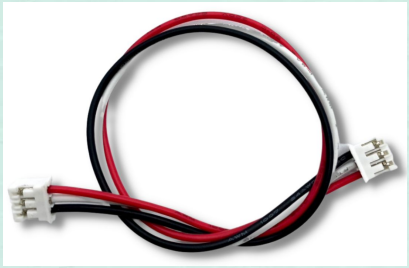
Kidbright's Inner Sensor and Outer Sensor For Inner Sensor, we collected Light Intensity and Temperature, For Outer Sensor, we collected Humidity in the Soil



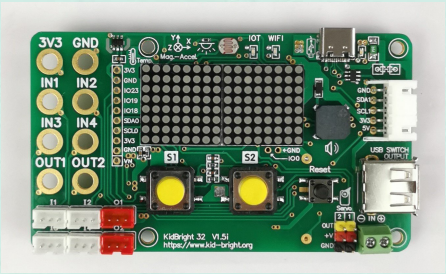
Secondary Data

We use API Data extracted from 2 sources 1. CO2 Signal that will give us Carbon Intensity 2. TMD will give us Rainfall in 3 hours

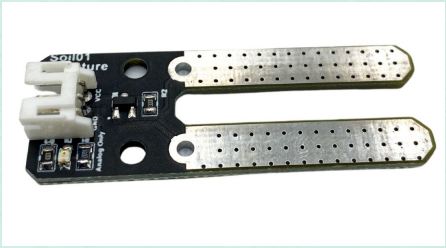
Hardware Components



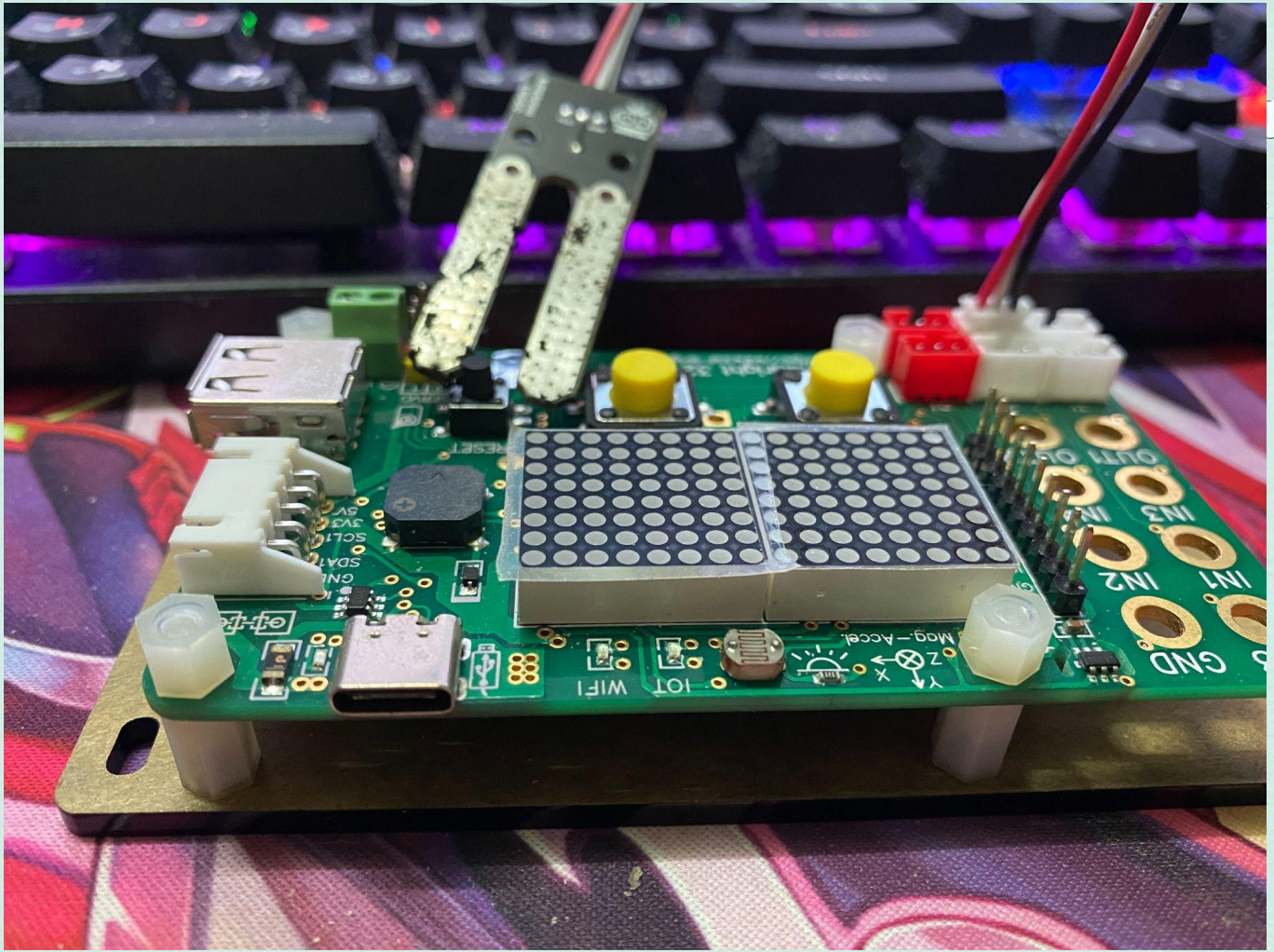
JST wire (3 pins)



Kidbright board



Humidity Sensor

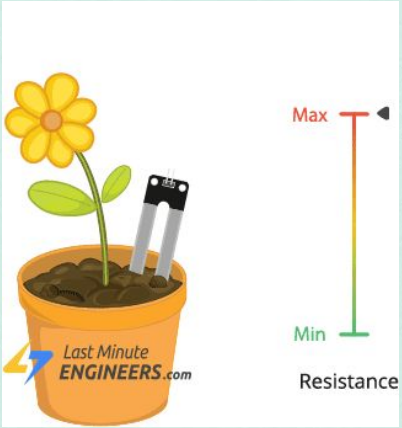

RESET
IOT WIFI
Mag-Accel
GND
IN1
IN2
IN3
OUT1

How does it work?

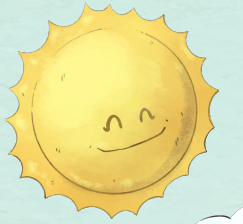
The fork-shaped probe with two exposed conductors acts as a variable resistor (similar to a potentiometer) whose resistance varies with the soil's moisture content. This resistance varies inversely with soil moisture:

- The more water in the soil, the better the conductivity and the lower the resistance.
- The less water in the soil, the lower the conductivity and thus the higher the resistance.

The sensor produces an output voltage which is available at an Analog Output pin, so we can convert ADC value to real value by Linear-Interpolation



Ref: How Sensor Measure



03
Data Integration

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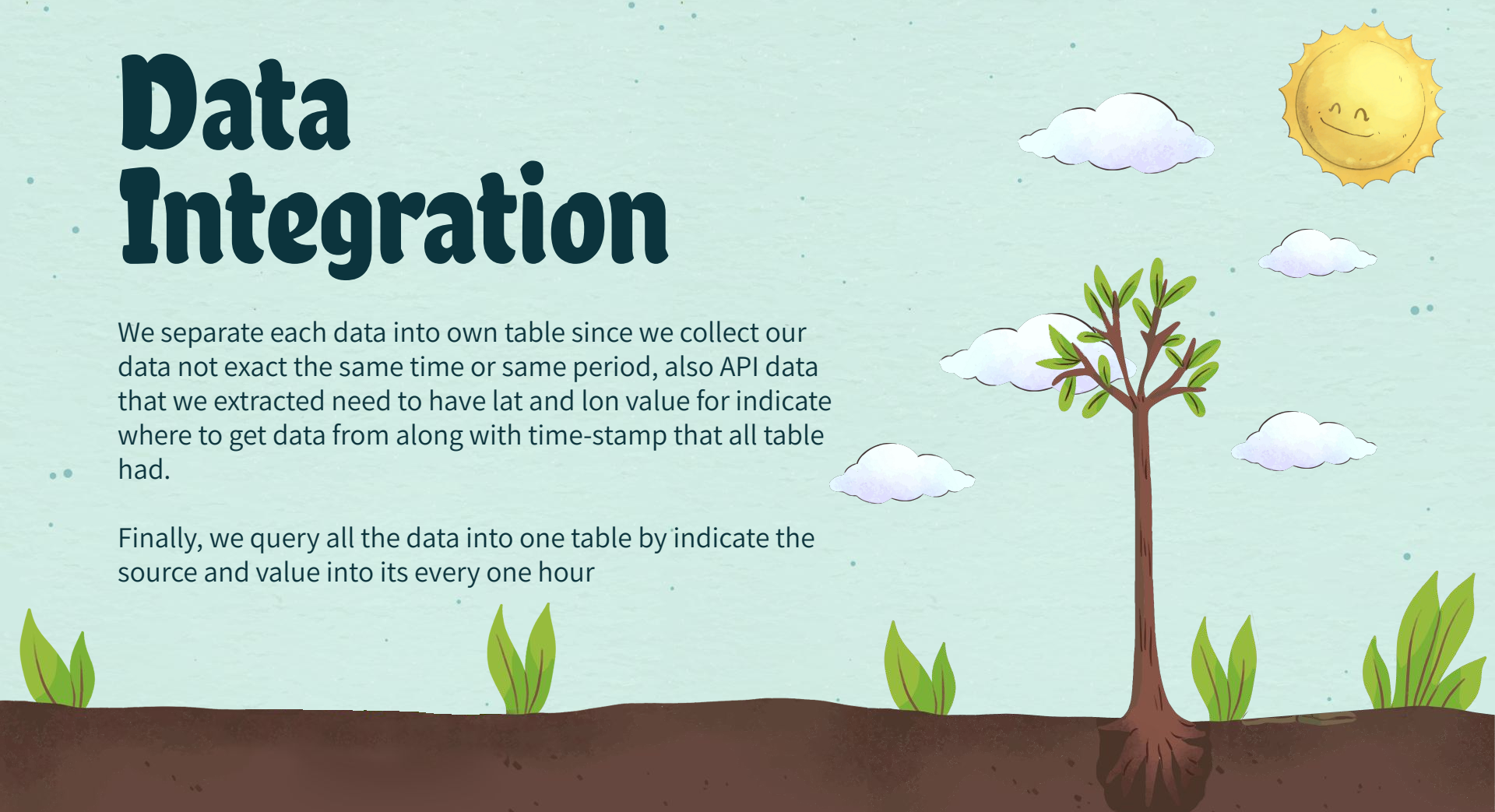
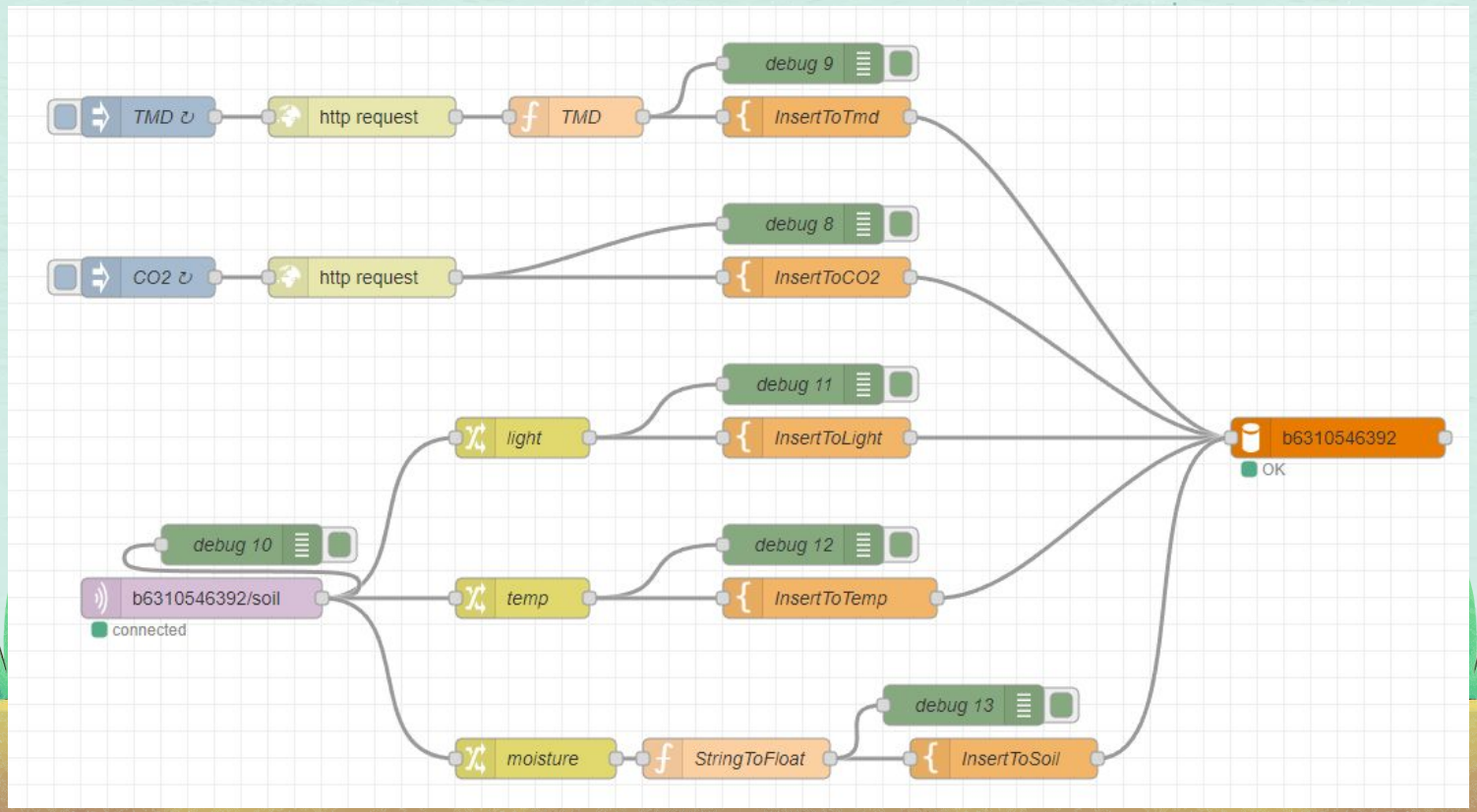
Data Integration

We separate each data into own table since we collect our data not exact the same time or same period, also API data that we extracted need to have lat and lon value for indicate where to get data from along with time-stamp that all table had.

Finally, we query all the data into one table by indicate the source and value into its every one hour



Node-Red

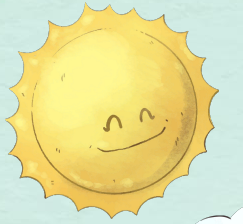

TMD ↻
http request
TMD
debug 9
InsertToTmd
CO2 ↻
http request
debug 8
InsertToCO2
debug 11
light
InsertToLight
b6310546392
OK
debug 10
b6310546392/soil
connected
temp
debug 12
InsertToTemp
debug 13
moisture
StringToFloat
InsertToSoil

	#	Name	Type	Coll
☐	1	ts	timestamp	
☐	2	value	float	

	#	Name	Type	Co
☐	1	ts	timestamp	
☐	2	lat	float	
☐	3	lon	float	
☐	4	carbonIntensity	float	

	#	Name	Type	Collation	At
☐	1	ts	timestamp		
☐	2	source	varchar(100)	utf8_general_ci	
☐	3	value	int(11)		

```
INSERT INTO SoftWet_sensor (`ts`, `source`, `value`)
SELECT * FROM (
(SELECT DATE_ADD(DATE(ts), INTERVAL floor(HOUR(ts)) HOUR) AS
'date', 'co2signal' as source, AVG(carbonIntensity) as value
FROM `SoftWet_co2`
GROUP BY date, source)
UNION
(SELECT DATE_ADD(DATE(ts), INTERVAL floor(HOUR(ts)) HOUR) AS
'date', 'kidbright' as source, AVG(value) as value
FROM `SoftWet_light`
GROUP BY date, source)
UNION
(SELECT DATE_ADD(DATE(ts), INTERVAL floor(HOUR(ts)) HOUR) AS
'date', 'kidbright' as source, AVG(value) as value
FROM `SoftWet_soil`
GROUP BY date, source)
UNION
```



04
Data Visualization

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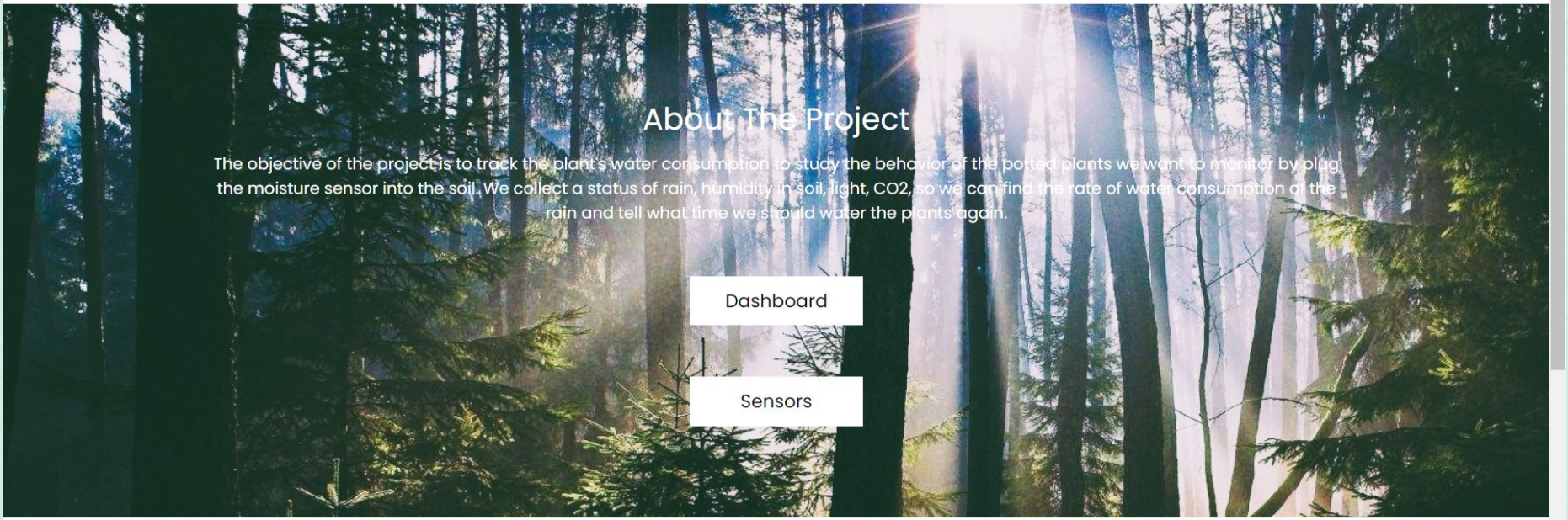
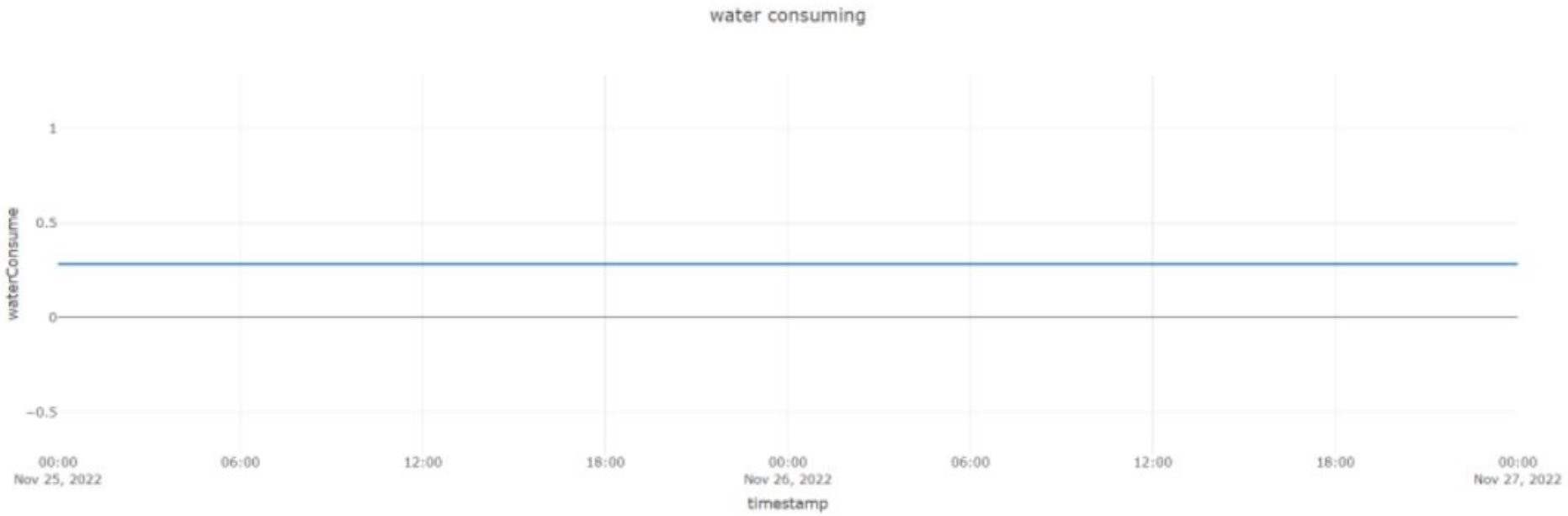
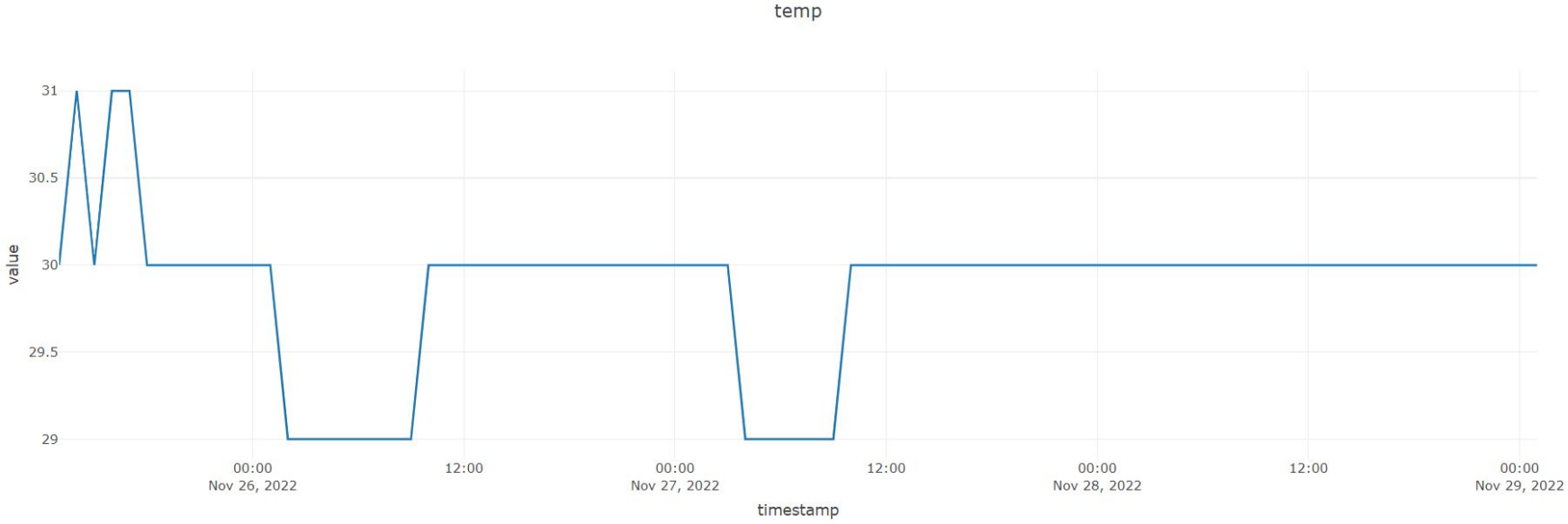


Wait for fetch watering again endpoint



Wait for endpoint watering again

Group members:


temp
31
30.5
30
29.5
29
value
00:00
Nov 26, 2022
12:00
00:00
Nov 27, 2022
12:00
00:00
Nov 28, 2022
12:00
00:00
Nov 29, 2022
timestamp

light

05
Demonstration

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