

Mini Project

Team Members:

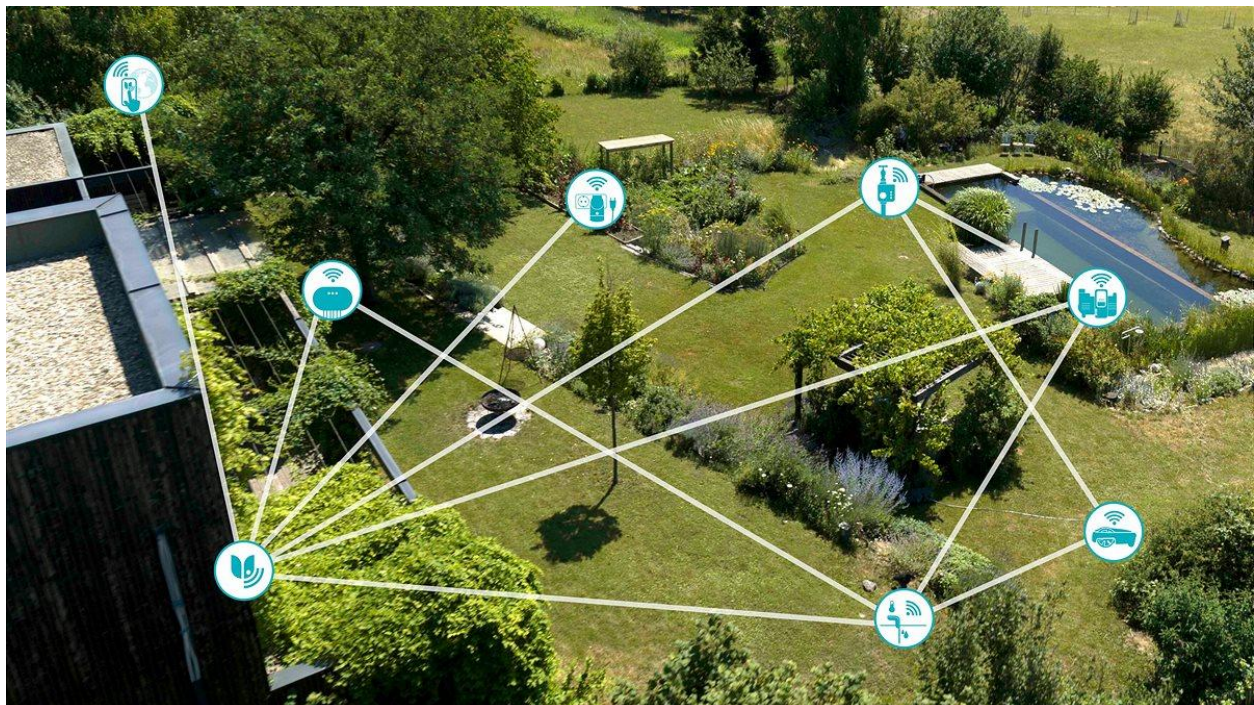
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Problem Statement:

Digitalization of data for Garden, turning it into a smart one.



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Solution:

1. Communication Protocol:

We used : MQTT and HTTP protocols

- We used MQTT to connect between the device and the RP, we have four topics (temperature, money, capacity, fire).

```
13 broker_ip = '192.168.137.178'  
14 client = mqtt.Client("Smart-Garden")  
15 client.connect(broker_ip,1883)
```

- Temperature is made for transferring data of temperature of the garden
 - Money is made for transferring data of money collected till the current time stamp
 - Capacity is made for transferring data of the current capacity of people in the garden
 - Fire is made for indicating whether there is a fire in the garden or it's safe
- We used HTTPs to transfer the collected data to the dashboard (Blynk)

2. Version control:

- We divided our work into branches, continuing on the work of the last time.
- We added some new features on the project from the last time, like smoke sensor for detection of fire

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in the garden, making a branch for this feature, then merging this branch to the main branch.

- The version on the main branch is the more stable one.

3. IoT platform Integration (Blynk):

- We started to create a new template for our project, then we added the device and started to make data streams.
- Then, start to design our dashboard and add the labels for each topic: (temperature, money, capacity, fire detection). and connecting with their data streams.
- We gain the token from BLYNK and added to the code to make the authentication key and defined our virtual pins.

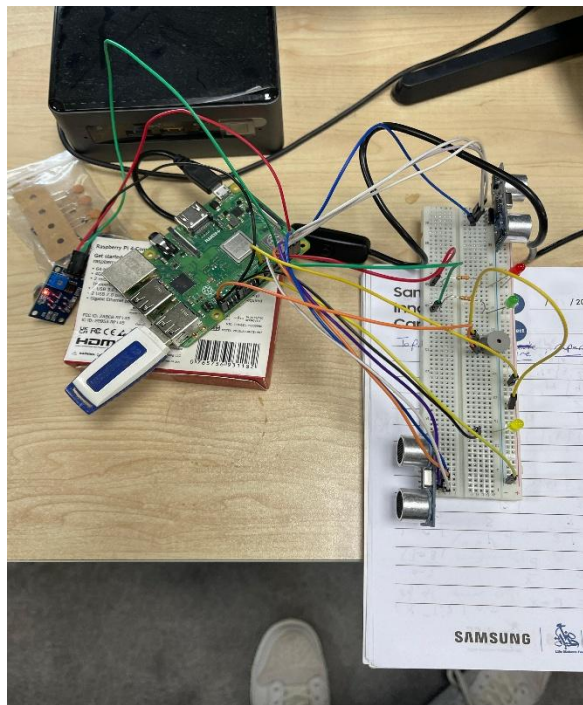
4. IoT Components:

- Sensors:
 - i. Smoke sensor → Detection whether there's a fire in the garden or not.
 - ii. Ultrasonic sensor → Detection of people entering the garden and exiting from the garden
 - iii. LDR → Detection of the light when the day is ended and getting into night to give signal to the bulbs to turn on

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iv. DHT → Detection of temperature and humidity to turn fans and water pumps on when the temperature gets hot

- Actuators:
 - Leds: Indications for signals coming from sensors
 - Buzzer: Indications for the Smoke sensor when there's a fire in the garden



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