# EcoTopia - A Smart Terrarium

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## Project Group Members:

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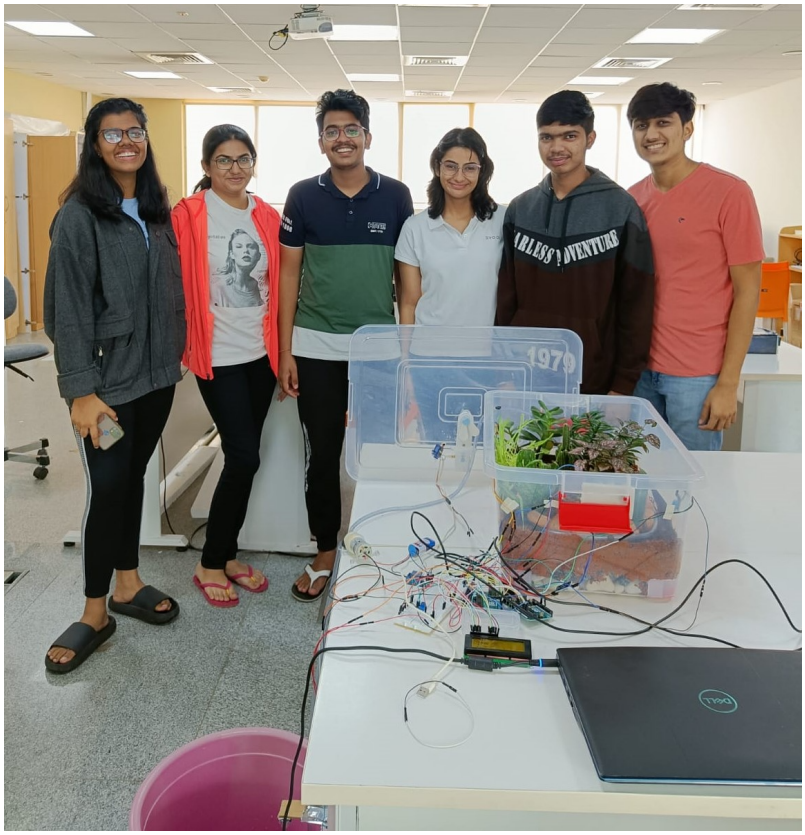

# 1 Project Description

The final project we are sharing has the following functionalities:

- Temperature and Humidity sensor
- Soil Moisture sensor
- LDR sensor
- Ultrasonic sensor

# 2 Responses

Multiple polychromatic LEDs are secured onto the terrarium frame for the optimum growth of plants in dimly lit places and times of the day with lesser lux of light. These imitate all the colors of sunlight and in pitch dark environment the LEDs glow to their brightest potential
The Misting Module and Fan is turned on using the servo motor due to being sensitive to the humidity level and temperature inside the terrarium. When temperature increases above the threshold value, cooling fan gets switched on automatically. When humidity level lowers inside, the Misting Module is enabled.
Self- watering drip irrigation system is used to supply water to the roots of the plant all throughout the terrarium using the soil moisture sensor. When soil moisture reduces, the sensor detects it and as a reflex, switches on the water pump. By using the ultrasonic sensor attached to the external water reservoir, a predetermined amount of water is supplied to the plants by drip irrigation.
We have also used a LCD screen to show all the current values of the different growth parameters of the terrarium to the user which are being updated at regular intervals as different responses in the system are instigated.

# 3 Building the Framework of EcoTopia- Smart Terrarium

Made a false bottom with rocks and pebbles of 3 different sizes. False bottom helps in the drainage of water and moisture without the need for holes.(As it is a closed ecosystem). Here we have drilled holes for easy cleaning up of the system afterwards and to prevent flooding in times of system failure if any.

Soil was added as well as plants such as cacti and succulents.

## 4 Circuit Diagrams

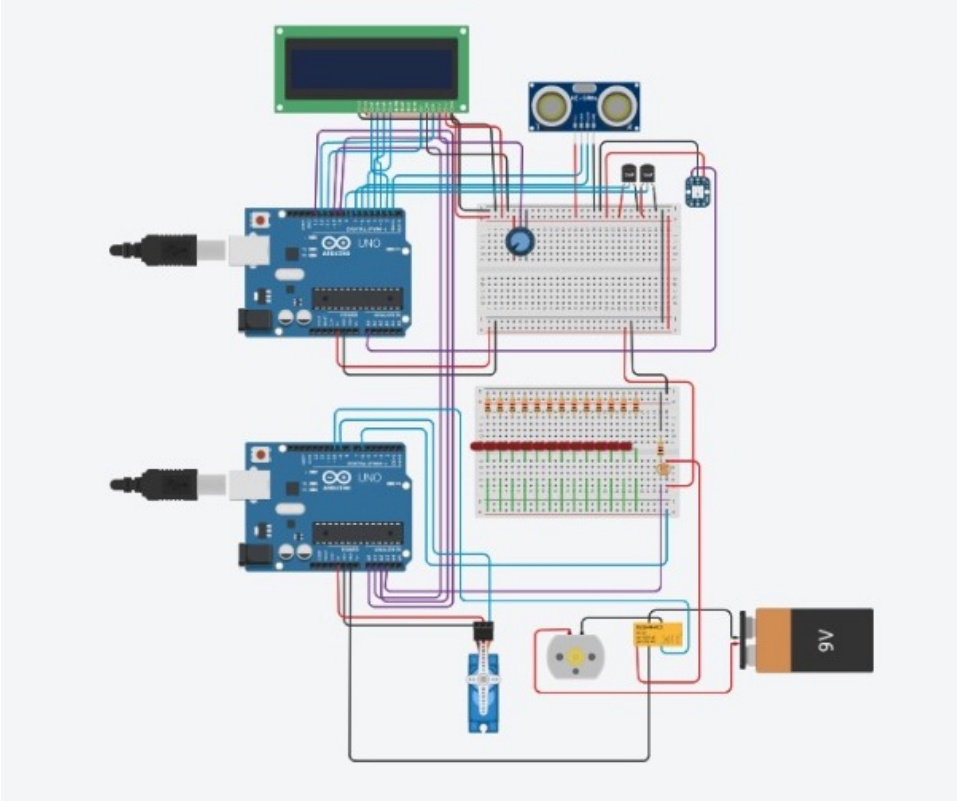


Figure 1: Schematic Diagram of EcoTopia

## 5 Future Scope

- We are planning to scale it to bigger version with more sensors such as pH sensor and wind speed sensors to name a few and powerful motors to get a highly effective and large-scale version of this.
- We also plan to add Infrared lights to control heat present in the system ecosystem.

- Along with that we will also add pH sensor to give suitable water to plants for optimum growth conditions.
- A mechanism of sending timed updates of the terrarium's parameters in form of notifications to different user's phones can be added.
- We can also host a webpage using raspberry pi and GSM Module.