

TITLE : PLANT MONITORING AND NURTURING SYSTEM

Project proposal : Team 4 Group 1

Group leader : Neelanshi Varia (201501018)

Group members :

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Goal and deliverables:

We aim to make a smart monitoring system for plants in which we are planning to include four aspects of plant growth - Moisture, Temperature, Light and Humidity. Appropriate actions will be taken in case any of the parameter is not within the suitable range.

Many a times the plants die as a result of lack of water or because of water-logging (excessive water). So, we **propose a system where the moisture level of the soil will be constantly tested**. By providing water automatically, by drip irrigation, we **prevent water wastage**. This also stops the need for a farmer/gardener to be physically present on the field/garden. This is very **useful when one is away from home** and cannot water the plants.

Similarly, leafy plants and flowers require a lot of light to grow properly. In case of cloudy atmosphere or lack of light or for any other reason, LEDs will be turned ON automatically. On low temperature or humidity level farmer will be alerted. The whole system reduces a lot of effort for the farmer to manually check the farm and take actions.

Extension:

To make a plant smart (i.e. it can take care of itself!) we decided to include two other aspects also. Data monitoring and IR prison.

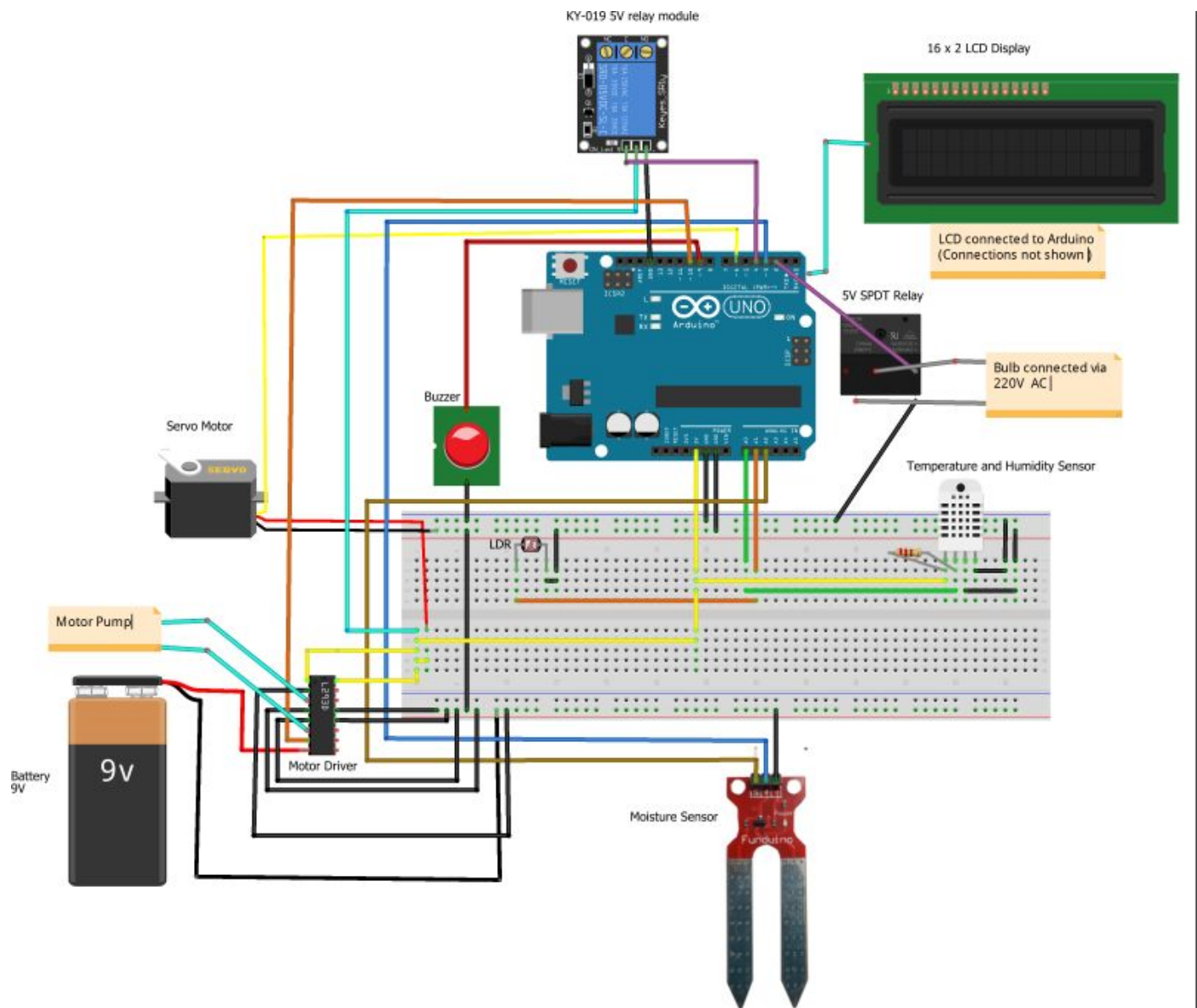
- (A) Data Monitoring - Any supervised learning algorithm will process all the data acquired from the sensors and will generate suggestions of the required parameters for the plant.
- (B) IR Prison : How many times is your tulsi at home eaten by birds? Well, not anymore. To protect the plant from pests like birds and rodents, an IR sensors' ring will be placed around the plant to detect any kind of pest activity and do the needed action.

Hardware required:

1. Arduino UNO
2. Pump motor
3. Pipe
4. Soil Moisture Sensor
5. DHT11 Temperature and Humidity sensor
6. LDR Photosensitive resistor
7. Buzzer for arduino - 5V
8. Servo Motor
9. L293D Motor Driver
10. 5V SPDT Relay (for Bulb)
11. LCD Display (16x2)
12. Ky-019 5V Relay Module (for Moisture Sensor)
13. Breadboard

14. Battery - 9V
15. Connecting wires
16. Resistors
17. IR sensor modules

Circuit diagram:



Working of circuit diagram:

Working of sensors:

A-

DHT11 will constantly sense temperature and humidity. The data will be sent to the LCD screen in real time i.e. data will change every second. A buzzer will ring when the temperature goes above a certain set threshold. The photosensitive LDR resistor will also be measuring the photosensitivity constantly. If it falls below a certain level, then the LED bulb present over the plant will be turned on.

B-

Moisture Sensor - Two types of moisture sensors are available in the market, Contact and non-Contact. A Contact sensor is used in this project because it has to measure soil moisture to measure the electrical conductivity. The moisture sensor provides an analogue output, which can easily be interacted with an Arduino.

Working of irrigation system:

The soil moisture sensor would be monitoring the soil moisture level constantly. In case the reading falls below a threshold level, it will trigger the water pump to start which in turn would start watering the plant. On reaching the sufficient soil moisture level, the pump would switch off.

Work division:

Sr. No.	Task	Person
1.	Moisture sensing	Rutvik and Raghav
2.	Drip irrigation	Rutvik and Raghav
3.	Temperature, humidity sensing and buzzer ringing	Neelanshi
4.	Light sensing and turning lights on	Roshan and Shubham
5.	LCD display	Roshan and Shubham

Future extensions of the project :

1. A pH sensor can also be used to constantly monitor the pH of the soil. In case the soil gets either too acidic or too basic, a message would be sent to the farmer/ gardener or the owner of the plants using a GSM module.
2. In case the temperature surrounding the plant rises above a particular temperature, instead of a buzzer ringing, a cooling fan would turn on that would try to reduce the temperature surrounding the plant.

THANK YOU