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Automating the Watering Process by Analysing the Soil and Weather Condition using NodeMCU

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ABSTRACT: In your day to day life you perform task related to gardening in which watering is an important task. As your daily life is so much busy because of the tight schedule you might not able to waters the plant or may be sometimes you forgot to water the plant. Even the manual process is so much time consuming and it will waste your time. So, to help you we came up with the idea of automatic watering to the plant. We have create a system which will be start watering the plant automatically by analysing the soil and weather condition. By using this system in the gardening field you will save your time. This system will provide water to each plant with potential amount of water. It will helpful in water conserving. For analysing the humidity in soil and whether condition we used here soilsand temperature sensor respectively. In addition to watering system, this system will help you to manage the water in the tank for this we have used water sensor. We have used here nodemcu and it will send data of humidity level, temperature level to the Blynk app. We hope that this system will help you out by saving your valuable time and will make you to grow more plant in your yard.

KEYWORDS: NodeMCU, Humidity sensor, temperature sensor, Water sensor, Blynk App.

I. INTRODUCTION

nowadays, there are so many electronics and technologies are there in the market who made human's life more simple and comfortable by reducing human efforts and time. One such system which uses node mcu, named as "Automating the watering process by analysing the soil and whether condition", this is a model which control the process of watering by using sensor technology which sense the moisture level of soil and the temperature. Additional to this system water sensor is also used to indicate the water level inside the tank. Plant requires water as per the whether conditions for eg. In summer they need more amount of water as compared to winter and rainy season. Plants are very important for human being in many aspect such as some of them are used as medicinal purposes, some them are helpful in produce oxygen in large amount. Covid-19 pandemic made everyone to understood the importance of oxygen and plants. Plants makes environment healthy. Many peoples are very interested in gardening but because of limited amount of place they grow plants in a muddy pot instead of yards and because of some reason if this plants didn't got much amount water, they got rotten. Many peoples are busy in their hectic schedule, they didn't manage time for the plants.



Our aim is to create a system which will monitor water level, temperature and moisture of soil and according to the moisture level of soil and temperature level it will start watering. It will display the data on mobile device of user of the system and user can easily operate this system from their mobile device. Here, NodeMCU is used to controlled system.

II. RELATED WORK

Moisture Sensing Automatic Plant Watering System Using ArduinoUno[1]. This research paper is based on system architecture based on wireless sensor network. So, In this system, plants can be easily monitored and can be taken care of by automatic plant irrigation system, in where DC motor is used. For this implementation Arduino UNO is used. The main working principle behind this system is in connecting the soil moisture sensor which was previously embedded into the plant to the Arduino microcontroller.

Automated Irrigation System Based on Soil Moisture Using Arduino[2].

This paper is based on the sensor which is required to monitor the water level in the soil and how to implement it. The system has been tested to function automatically. The moisture sensors measure the moisture level (water content) of the different plants. If the moisture level is goes to be below the level which is already mentioned , the moisture sensor sends the signal to the Arduino board then the arduino board will triggered the Water Pump to turn ON and supply the water to the particular plant.

Low Cost Smart Irrigation System Using MQTT Protocol [3]. This paper shows the efforts have been made to make an easy water pump controller based on soil moisture sensor and are useful in the agriculture sector using Esp8266 NodeMCU-12E.Esp8266 NodeMCU-12E is inexpensive, uses a small microcontroller in size and consumes less power which makes the proposed system suitable for the given operation. Transport Layer Security (TLS) and Secure Socket Layer (SSL) cryptographic protocols provide system security. This mobile app and web page displays the soil moisture price and water pump status.

Smart Irrigation System Using Raspberry Pi [4]. This paper presents an smart irrigation system for agriculture farm. This system is developed using Raspberry Pi device . Python programming language is used for automation purpose. This paper contributes an efficient and fairly cheap automation irrigation system. System has less maintenance cost by installing it at once. This system is so simple to use.This paper focuses on online monitoring of agriculture field with the help of wi-fi on android mobiles and parameters such as temperature and soil moisture. It has more advantage rather than the traditional agriculture techniques

III. METHODOLOGY

The main objective of this project is to provide an automatic watering system by saving time, money . With the automated technology of watering, the human work can be minimized.The proposed automatic watering system is designed such that the nodemcu is connected with three sensors which are soil moisture, temperaturesensor,water level sensor, LED and one water pump.

The below Figure III.1is a overall circuit diagram of nodemcu based automatic watering system which consist of three sensors along with pump which are connected to nodemcu, stepper motor and breadboard, the values are sensed from these sensors and are send to theBlynk (mobile) application.

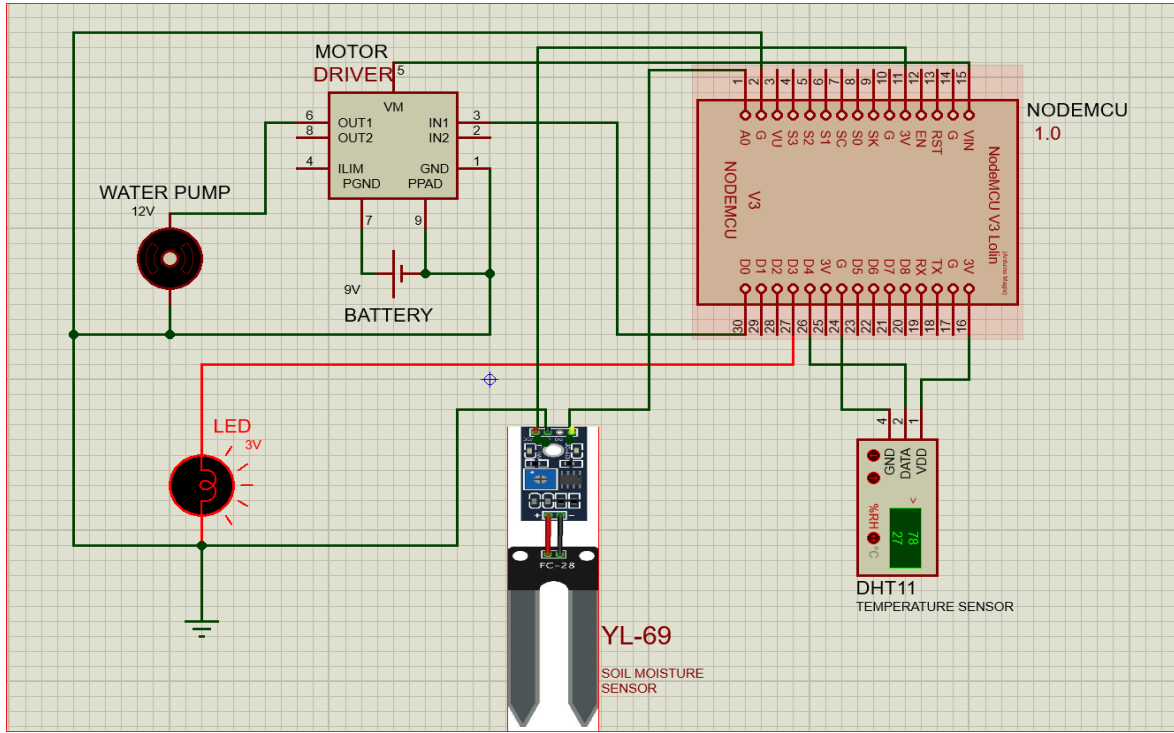


Figure III.I: Circuit Diagram of Automatic watering System

Figure III. Shows the circuit diagram of automated irrigation system with IoT. Farmers start to utilize various monitoring and IoT systems in order to save time and power with help of automation of an agricultural parameters like temperature, humidity and soil moisture. These sensors monitor and control the system which can help to improve the irrigation. The proposed work includes an embedded system for automatic irrigation for analysing the soil moisture and weather. This project includes wireless sensor network for real-time sensing of an irrigation system. This system provides required level of water for irrigation and it avoids water wastage. When the moisture level in the soil reaches below the given value then the water pump is switched ON using the blynk app. When the moisture in the soil shows the soil is wet then the pump is switched OFF. The sensed values and current status of the moisture will be displayed on user's mobile application. Along with this the temperature sensor also sense the temperature and humidity of the weather condition. The parameters of temperature and humidity are shown on the app as well.

IV. RESULT

1. All the connections are done and the soil is dry so the moisture sensor and temperature sensor will send level of moisture and temperature respectively to the NodeMCU .

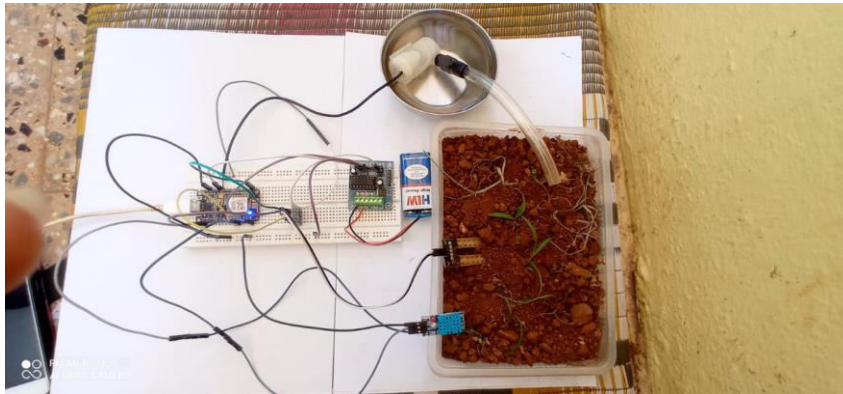


Fig.IV.I : The soil is dry.

2. The Data is display on the screen as the soil is dry.

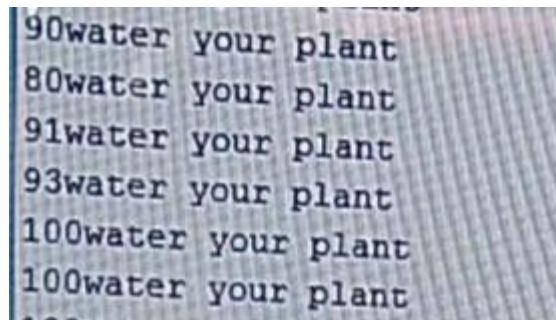


Fig IV.II : Output of the moisture sensor

3. Now the motor start and watered the plant.

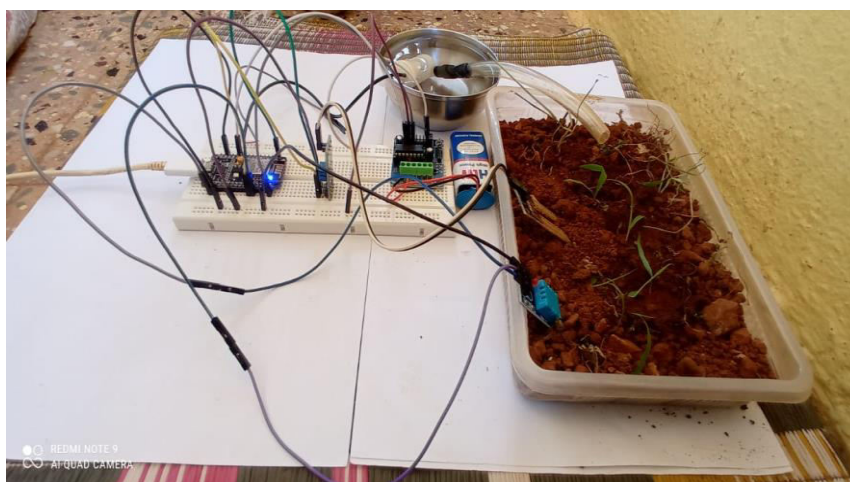


Fig IV.III : The soil is now wet.

- 4. The sensor will sense the moisture and it will send the signal to the system and system will stop watering process.

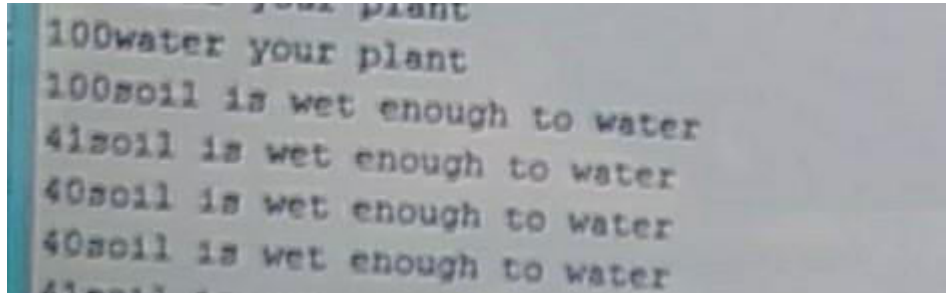


Fig IV.IV : Screen displays the data.

- 5. We have used here blynk app and this app will display the moisture and temperature level on the mobile screen.

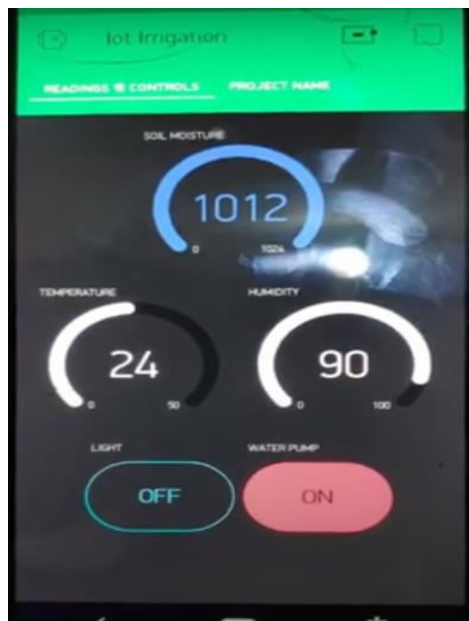


Fig IV.V :Blynk App

V. CONCLUSION

In our course we understood how the NodeMCU and the sensors are worked. We have studied all the approaches and methods which will be useful in creating a unique automatic plant watering system. NodeMCU is a open source firmware and development kit which is based on ESP8266 wifi-soc. The system works effectively , it takes input through sensors and nodeMCU process this data and accordingly the system starts the watering process.

REFERENCES

[1] Tasneem Khan Shifa ,“Moisture Sensing Automatic Plant Watering System Using Arduino Uno”,American Journal of Engineering Research (AJER) e-ISSN: 2320-0847 p-ISSN : 2320-0936 Volume-7, Issue-7, pp-326-330.
[2] Abhishek Kumar , Magesh.S , “Automated Irrigation System Based on Soil Moisture Using Arduino”, International Journal of Pure and Applied Mathematics Volume 116 No. 21 2017, 319-323.



[3] Ravi Kishore Kodali , Borade Samar Sarjerao , “Low Cost Smart Irrigation System Using MQTT Protocol”,IEEE Region 10 Symposium (TENSYMP).

[4] Bhagyashree K. Chate , Prof. J. G. Rana, “ Smart Irrigation System Using Raspberry”, IRJET, Volume: 03 Issue: 05, pp 247-249.



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