Water Quality Monitoring and Notification System

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Abstract: IoT-based smart water quality monitoring system is used to monitor the quality of water and to control the water supply for the plant. The Internet of Things allows objects to be identified and controlled from a distance using existing network infrastructure. The more efficiency, accuracy, and financial benefit through more direct contact between the real and virtual worlds and computer-based systems. To maximize water consumption and maintain a green environment, it is important to irrigate more effectively as water supplies become increasingly polluted. The goal of this project is to create a smart houseplant watering and monitoring system that analyses and records environmental factors to help plants flourishment. The sensors collect and evaluate data related to changing weather and soil moisture levels before sending timely warnings to the user's Smartphone.

Index Terms - – Soil Moisture, IOT (Internet of things), Blynk.

I. INTRODUCTION

Water is essential natural resource that has been gifted to mankind. But Now-a-day the rapid development of society and numerous human activities the wastage of water is a big problem. The system quickly identifies any changes in the quality and control of water then it reports the same to the officials for immediate action. Supervising and controlling devices along with sensors in real-time saves both water and also human work. Many people have plants in their houses, flats so, they can use this system. Also, a convenient quantity of water along with the normal temperature is essential for plant life. The system will display the moisture, humidity, and temperature of the soil. This system is easy to use and control.

The system depends on soil properties like moisture, temperature, water requirement, and humidity of the plant which is grown in the soil. With the use of IoT and embedded systems, factor like ample use of water can be controlled, thus, helping in reducing the amount of water getting wasted. This paper establishes a system that helps to reduce water wastage, automatic irrigation, best time complexity, and non- intervention of humans. An authorized person can display and monitor the plant now through his mobile or cellular phone, computing device, and laptop.

II. LITERATURE SURVEY

This paper discussion of wireless sensor networks for monitoring the soil moisture level, temperature, and humidity values. This data is sent to the system and the node is increased by using the sleep-wake-up plan. The system in this paper implements the clustering of nodes. Graphical user interface (GUI) is designed in MATLAB software for data handling.

Sonali D. Gainwar and Dinesh V.Rojatkar (2015) proposed a paper that includes a system in which soil parameters such as pH, humidity, moisture, and temperature are measured for getting high yield. This system is automatic, which turns the motor pump ON/OFF as per the level of moisture in the soil.

Watering system for the plant using WSN The paper was proposed by Mr. Ahmad Hussain in 2014. This paper contains a discussion of the usage of WSN in irrigation management by a sensible watering system during which the irrigation method is controlled by valves. It helps to utilize water resources very efficiently.

III. PROPOSED SYSTEM

The water monitoring system and notification system is consists of a soil moisture sensor, TDS Sensor, DHT11 sensor, Relay, Nodemcu, Water pump. The system is immersed with a soil moisture sensor that checks the moisture level in the soil. After analyzing the value, the authorized person can switch on the pump and supply water when the soil is dry. Similarly, when the soil is wet, the pump turns off by an authorized person then the water is stopped. This monitoring is done with the help of a phone. This system prevents excess water from flowing into the soil, thus reducing wastage of water, electricity,

and damage to the soil. The purpose is to focus on parameters such as temperature, humidity, and soil moisture. The system encompasses three sensors.

This IoT-based Smart water quality monitoring system transmits the result to an authorized person via the smartphone application i.e., Blynk App. The development of the project aims to control the water supply and monitor the plant through a smartphone. This is carried out with the help of coding. The code is written in C programming and uses the Arduino IDE software to stimulate the code. We have used an evaluation version of Arduino for C programming.
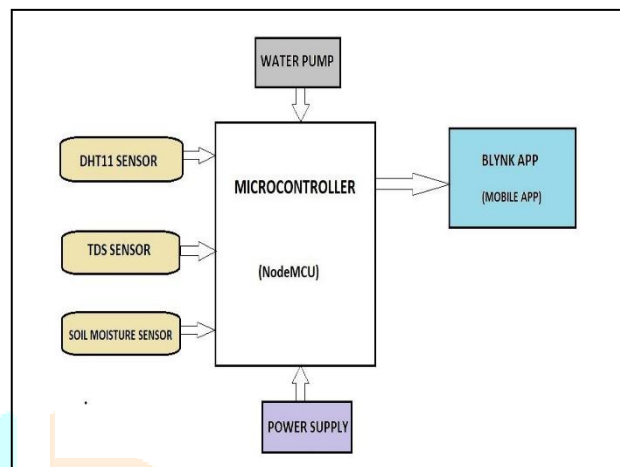
IV. METHODOLOGY

fig. block diagram

HARDWARE REQUIREMENT
NODEMCU-

NodeMCU is an open-source platform. NodeMCU development board consists of ESP8266 wifi enabled chip. The ESP8266 is a low-cost Wi-Fi chip. NodeMCU has 128 KB RAM and 4MB of Flash memory to store programs. It's high processing module with in-built Wi-Fi and Deep Sleep Operating features make it ideal for IOT projects.

DHT11 SENSOR-
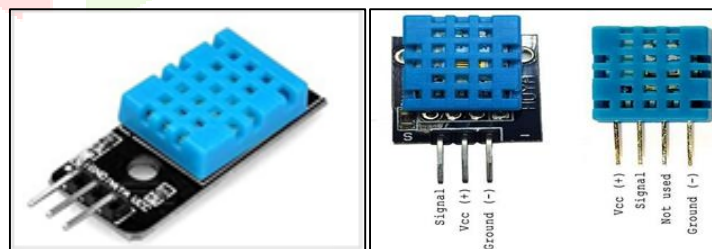
DHT11 temperature and humidity sensor is a calibrated digital signal output of the temperature and humidity combined sensor. It uses dedicated digital modules to capture the temperature and humidity sensor technology to ensure that products with high reliability and excellent stability. This sensor includes a resistive element and a sense of wet NTC temperature measurement devices, with a high-performance 8- bit microcontroller connected.

TDS SENSOR-
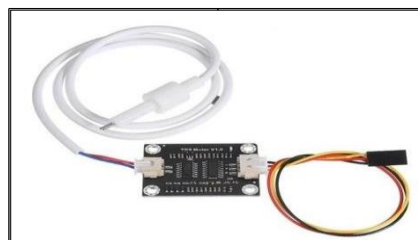
A TDS meter is a device used to indicate the Total Dissolved Solids in a solution, usually water. Since dissolved ionized solids like salts and minerals, increase the conductivity of a solution, a TDS meter measures the conductivity of the solution and evaluates the TDS.

SOIL MOISTURE SENSOR-
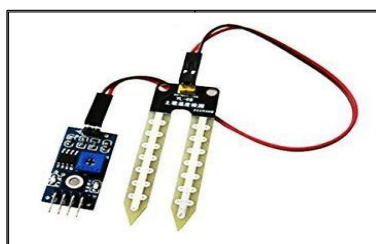
Soil sensors are an important tool for detecting soil health, which can reflect the current soil moisture, temperature in real-time. It provides data support for soil moisture monitoring, agricultural irrigation, and forestry protection industries.
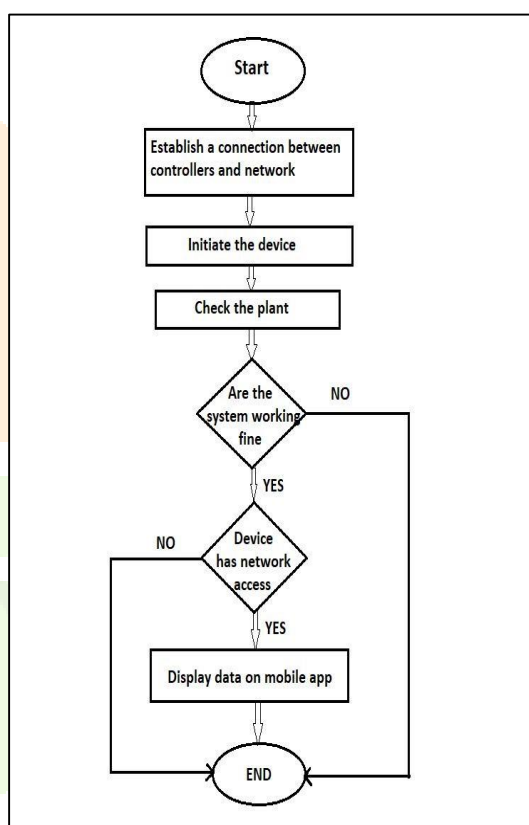
FLOW CHART

fig. flow chart

RESULT

We have identified a suitable implementation model that consists of different sensor devices and other modules. In this implementation model, we used Nodemcu ESP8266 with the Blynk app. Sensors are connected to the Nodemcu board for monitoring, After sensing the data from different sensor devices, which are placed in a particular area of interest. The sensed data will be automatically displayed to the authorized person on his/her smartphone when a proper connection is established.

CONCLUSION

The proposed design of the smart water quality monitoring for the plant is consist of mobile, Blynk app NodeMCU and the internet of things. It provides real-time values of plant environmental factors like moisture, temperature, and humidity, so the local users and gardeners use this system for a houseplant or small gardens in a good manner. The results are transmitted through a mobile application i.e. Blynk app. The system with the Internet of Things (IoT) based NodeMCU ESP8266 Module can be designed with various components hardware and software support so that it can be controlled with the Blynk android application.

FUTURE SCOPE

1]In the future we use advanced IoT concepts in this project

2]Detecting more parameters for the most secure purpose

3]Increasing the parameters by the addition of multiple sensors means the number of parameters to be sensed can be increased by the addition of multiple sensors

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