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IOT Based Automatic Green House Monitoring System

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ABSTRACT

In olden days we have used to figure the ripeness of soil and influenced suspicions to develop which to kind of yield. They didn't think about the humidity, level of water and especially climate condition. The Internet of things (IOT) is remodeling the agribusiness empowering the gardening through the extensive range of strategies, for example, accuracy as well as practical gardener to deal with challenges in the crop's yield. IOT modernization helps in assembly information on circumstances like climate, dampness, temperature and fruitfulness of soil, Crop web based examination empowers discovery of wild plant, level of water, bug location, trim development, horticulture.

KEYWORDS–Arduino, Node MCU, Soil moisture, DHT11 Sensor, Moisture level

1. INTRODUCTION

The Gardening Parameters are utilizing an IOT Technology and system availability that draw in these objects to assemble and deal information. "The IOT enables things selected recognized or potentially forced remotely crosswise over completed the process of existing configuration, manufacture open gateways for all the additional obvious merge of the substantial earth into PC based frameworks, in addition to acknowledging overhauled capacity, precision and cash interconnected favoured stance. Precisely when IOT is extended with sensors and actuators, the improvement modify into an occasion of the all the extra wide category of electronic physical structures, which in like manner incorporates headways, for instance, clever grids, splendid homes, canny moving and smart urban groups . All is especially specific through its introduced figuring configuration anyway can interoperate within the current Internet establishment.

2. EXISTING SYSTEM

The existing method of monitoring crops typically involves manual inspection of crops, soil moisture and other parameters, which can be time-consuming, labor-intensive, and human error. In order to overcome these limitations, the proposed method for crop monitoring is the use of an garden monitoring IOT**.** People used to figure the ripeness of soil and influenced presumptions to develop which to kind of product. They didn't think about the dampness, level of water and especially climate condition which horrible an agriculturist more. They utilize pesticides in view of a few suspicions which made lead a genuine impact to the yield if the supposition isn't correct.

3. DRAWBACKS

- **Manual operation:** people combating weeds and pests, using space to allay the competition between plants, attending to feeding, watering, and pruning and conditioning the soil.
- **High operating expenses:** In order to utilize a greenhouse to the best of its ability, you'll need to invest in a kit or supplies that will have a good lifespan and proper characteristics for the plants you want to grow. For example, cheaper film plastics may provide sufficient conditions to retain heat, but more expensive glass windows will last longer and may help ventilate the greenhouse if able to be opened.

With maximum climate control, comes the potential for a very high operating cost. If you choose to heat your greenhouse via electronic heaters or by way of gas, you'll see a serious increase in your monthly bills.

- **High maintenance:** maintenance is more important thing. Your maintenance plan should include routine inspections of your frames, glazing, ventilation, heating, and more.

4. PROPOSED SYSTEM

A crop monitoring IOT in gardening system can be equipped with sensors to measure various parameters such as temperature, humidity, soil moisture. The data collected by these sensors can be transmitted wirelessly to a central database for analysis and decision making.

5. FEATURES

- **Increased efficiency**: It can significantly reduce the time and labor required for manual inspections, leading to increased and productivity.
- **Cost-effectiveness:** The use of a crop monitoring IOT can save people's money in the long run by reducing the need for manual labor and increasing crop yields.
- **Precision gardening:** The use of sensors and data analysis can lead to more precise and targeted application of water, fertilizer, and pesticides, reducing waste and improving crop yields.

6. METHODOLOGY

Automatic Green House monitoring system is the IoT based project. In this paper, we have proposed a low-power, low-cost IoT network for smart irrigation. Low-cost and low-power are the key factors of this project. IT is very useful and acceptable. For monitoring the soil moisture content, we have used Soil moisture sensors and DH11 sensor is used for measuring temperature and humidity. This digital soil moisture sensor is simple to operate. Simply place the sensor in the soil, and it will be able to determine its moisture. By using Blynk Iot we can connect the device by mobile. So, it could be easy to know the moisture content, temperate and humidity level.

7. HARDWARE

- Node MCU
- DHT11
- Soil Moisture Sensor
- LCD
- AC Adaptor
- Relay

7.1 NODEMCU ESP

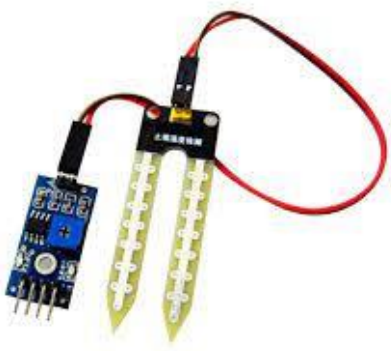
The NodeMCU (***N***ode ***M***icro ***C***ontroller ***U***nit) is an open-source software and hardware development environment built around an inexpensive System-on-a-Chip (SoC) called the ESP8266. The ESP8266, designed and manufactured by Espressif Systems, contains the crucial elements of a computer: CPU, RAM, networking (WiFi), and even a modern operating system. However, as a chip, the ESP8266 is also hard to access and use. You must solder wires, with the appropriate analog voltage, to its pins for the simplest tasks such as powering it on or sending a keystroke to the "computer" on the chip.

7.2 DHT11 SENSOR

Humidity is the measure of water vapor present in the air. The level of humidity in air affects various physical, chemical and biological processes. In industrial applications, humidity can affect the business cost of the products, health and safety of the employees. They are a relative humidity sensor and Absolute humidity sensor. DHT11 is a digital temperature and humidity sensor.

7.3 SOIL MOISTURE SENSOR

Soil moisture sensors measure the volumetric water content in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighing of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy for the moisture content



7.4 LCD

LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation. LEDs have a large and varying set of use cases for consumers and businesses, as they can be commonly found in smart phones, televisions, computer monitors and instrument panels. LCDs were a big leap in terms of the technology they replaced, which include light-emitting diode (LED) and gas-plasma displays. LCDs allowed displays to be much thinner than cathode ray tube (CRT) technology.

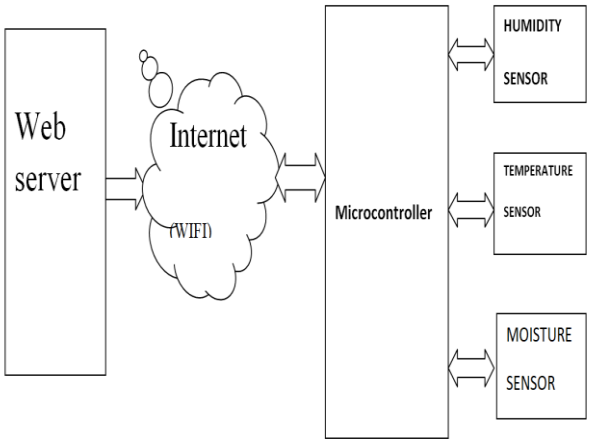
7.5 AC Adaptor

An external power source known as an AC adapter or AC/DC adapter is sometimes housed in a casing that resembles an AC plug. Wall wart, power brick, wall charger, and power adapter are some more common names for this item. Chargers or rechargers are other names for adapters used with battery-operated devices.

7.6 Relay Module

A power relay module is an electrical switch that is operated by an electromagnet. The electromagnet is activated by a separate low-power signal from a micro controller. When activated, the electromagnet pulls to either open or close an electrical circuit.

8. SYSTEM BLOCK DIAGRAM



9. CONCLUSION

Gardening are gradually being replaced and enhanced by more sophisticated and accurate digital and electronic device. A high percentage of gardening revenue is lost to power loss, incorrect methods of practicing. This is reduced by the use of smart sensors. The proposal is to perform the gardening in smart and more efficient way. In addition, this method advocates for the use of the Internet of Things. Internet of Things has enabled the crop monitoring easy and efficient to enhance the productivity of the crop and hence profits for the people. Sensors of different types are used to collect the information of crop conditions and environmental changes and this information is transmitted through network to the person/devices that initiates corrective actions. Gardener's are connected and aware of the conditions of the field at anytime and anywhere in the world.

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