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Automation And Monitoring of Greenhouse

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***Abstract*-In traditional agriculture, farmers must regularly visit their farmland to measure various environmental parameters such as temperature, humidity, light intensity and soil moisture in order to grow the right crops on the right soil at the right time.Greenhouse cultivation, on the other hand, is a system in which a farmer grows crops in an ecological environment where all ecological parameters are adjusted according to the plant species. Greenhouse automation is a way for farmers to automatically monitor and control the greenhouse environment anytime, anywhere. In this article, the authors propose an automated greenhouse monitoring and control system that includes various sensors such as temperature sensors, moisture sensors, light sensors, and soil moisture sensors for harvesting.**

***Keywords*- IOT; Greenhouse; Automation; Monitoring ,Sensors; Temperature; Humidity; Soil Moisture; Ardino.**

I.INTRODUCTION

As a result, we named the project "Greenhouse Automation Project" because we thought it would be very useful for our greenhouse. A greenhouse is a controlled growing environment for plants. Greenhouses are an important part of the country's agriculture and sector.

In this project, the environment in the greenhouse is automatically monitored and controlled. Monitors the temperature, humidity and humidity of the MCU node hardware. For independent control of climatic and environmental factors, computer hardware / software is required.

The humidity sensor has two probes that measure the flow of electricity through the floor. Lack of moisture (water) in the soil increases its resistance. dry soil. Powered by low voltage 5V.

Moisture sensors have low power consumption and high sensitivity. Sensor data that measures temperature, humidity and humidity in the BLYNK app and turns the LED on or off. When the high temperature exceeds 300, the fan turns on automatically, and when the low temperature exceeds 300, the fan turns off automatically. This project describes the design of a greenhouse monitoring system.

II. RELATED WORK

Currently, the system can monitor and control the environmental parameters of the greenhouse using the Android mobile application via wireless and PC. Android phones connect to a central server via Wi-Fi, which connects to the microcontroller and sensors via serial communication.

This study includes a system for measuring and monitoring soil moisture in a large group of greenhouses based on a dual CAN bus. The system consists of a host, a disabled CAN bus, a slave, a CAN bus, and a slave. Using this system in combination with an agricultural expert system, it is possible to achieve centralized control and management, as well as the necessary measurements and control .

It is a new system for monitoring and controlling the environmental parameters of greenhouses based on a decentralized master-slave system. The system consists of a PC, a module that measures and controls soil moisture, temperature and humidity, as well as controls modules and monitors CO2.

This article describes the development of a large scale greenhouse gas measurement and control system. The systems have been designed to monitor greenhouse environmental parameters such as temperature, humidity, carbon dioxide concentration and soil moisture. The system uses a modular master- slave architecture using a single-chip STC12C5A6052 microcomputer.

Greenhouse environmental monitoring technology is constantly improving, and a good greenhouse environment can improve crop quality, shorten the growth cycle and increase production, which is a very important theoretical and research value. This system uses an Android phone as an environmental monitoring terminal.

III. SYSTEM DESCRIPTION

An integrated system for monitoring greenhouse environmental parameters from your Android phone and controlling environmental parameters using sensors and relays located in multiple locations. Monitoring and control is carried out via Android Mobile over the GPRS

network. 3.1 System and structure The structure of the system is shown in Fig.1. The built-in greenhouse monitoring and control system is based on the measurement of parameters such as temperature, humidity, humidity, illumination, using sensors located in different places, and the Atmega 328 microcontroller, these parameters are

monitored and controlled by the Android mobile platform. Devices can record, compute, operate and intelligently become part of the so-called Internet of Things.The system uses a modular design for embedded systems. Depending on the design, hardware for the interface of the microcontroller with sensors and relays, GPRS networks, Android phones can be used as receivers.

Localized management of greenhouses by region, complete data collection and integration, remote administrators monitor and control greenhouse environmental data and consolidate all data on temperature, humidity, humidity and light intensity in greenhouse fields. Arduino uno microcontroller is a hardware system, remote manager using a mobile phone as a terminal, GPRS is responsible for the communication between the greenhouse control and the remote mobile phone.

IV. SYSTEM DESIGN

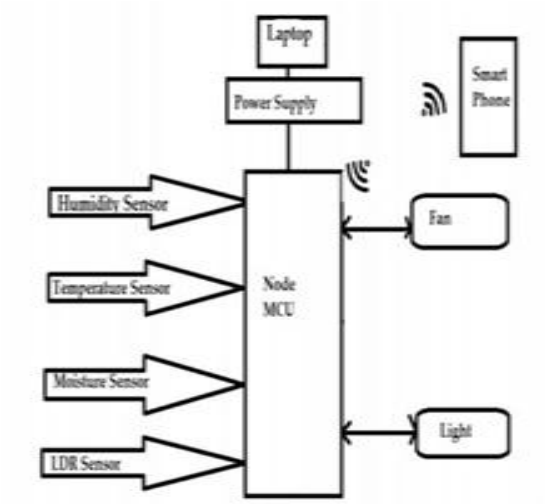

Fig 1.System Design.

V. SOFTWARE DESCRIPTION

The software is designed to process humidity, temperature, humidity and lighting values for greenhouse monitoring and control. The software includes various sensor measurements and continuously displays the values from the Android app, controls the microcontroller from the Android app, and updates the user by sending the sensor values to the greenhouse monitor. Android platform applications are developed because most mobile phones and mobile phones support the Android operating system. For the development and implementation of this system, the Java programming language with the Android Software Kit (JDK, SDK) was used.

VI. HARDWARE DESCRPTION

Fig 2. Connetion in between plants and iot devices

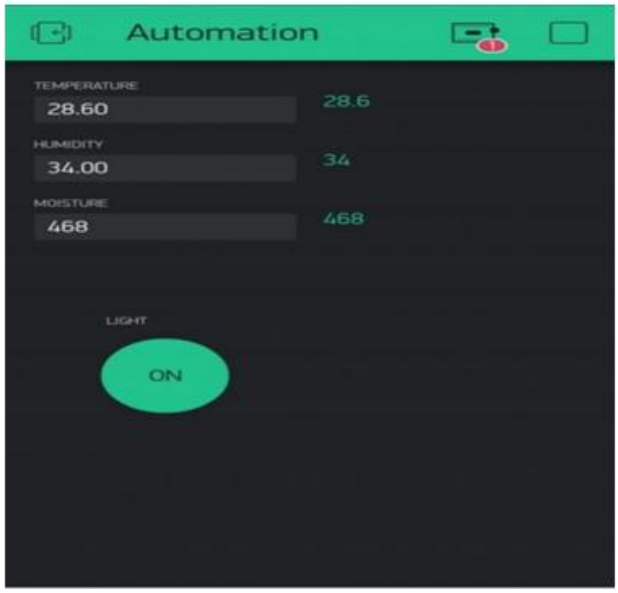

Fig 3.**Implementation of blink app**

VII. RESULT ANALYSIS

The projected system captures environmental parameter values from totally different devices within the inexperienced house. The application on the mechanical man transportable to observe the values of greenhouse parameter is ThingView. This provides the channel on that information is gift. All time values additionally monitored diagrammatically as fallows.

Sample graph for the greenhouse parameter provides the results of the projected embedded system. The graph ar from the screen of Android transportable.

VIII. ACKNOWLEDGEMENT

The completion of any work involves the effort of many mentors, I have been lucky to have received a lot of help and support from all parts of quarters during the making of this project. So with gratitude, I take this opportunity to acknowledge all those guidance and encouragement helped me too successfully.

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IX. CONCLUSION

Here, proposed design is implemented with Arduino platform for greenhouse controlling temperature, humidity, moisture and automatically fan on/off and also LED on/off with the help of BLYNK App.

Temperature, Humidity,Moisture, LDR sensors are the four main sensors used in project which give the exact value of Temperature, Humidity,Moisture, LDR sensors respectively. These results can be seen on the BLYNK App with the help of Wi-Fi.

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