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# IoT based Greenhouse Monitoring & Weather Reporting

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**ABSTRACT:** The aim of this paper is to implement a IOT based greenhouse monitoring and weather reporting. Plants are grown and cultivated in a closed area is called green house. Green house is also known as land of controlled crops and plants. There are some important parameters to bemonitored inside the greenhouse are light, humidity, temperature and soil moisture etc. It will start monitoring when its sensors are connected to the microcontroller.
Key Words: IoT, ARDUINOIDE SOFTWARE Greenhouse, ARDUINO UNO microcontroller

## I.INTRODUCTION

To protect plants from pollution and enivornmental conditions plants are grown in a closed surface called green house. It helps in sustainability and efficiency in growing the plants for one particular year.The soil moisture,light,temperature and humidity are the main factors that effect the plant growth. Many methods are determined to check the water content in soil .Wi-Fi along with IOT is a trending technolog gives access to remote control areas for different data's.

The ultimate aim of this paper is to continuosly check the weather parameters monitoring and update the status to the user over internet for famers. In this paper,we can also allow light to fall on the automatic control over the climatic conditions inside the greenhouse. Manytypes of crops grow only under certain conditions. Onlyfor some winter crops like garlic, onion, shallots etc. cold conditions are required for their growth.Melons, cucumber, etc. require hot or warm climatic conditions because they are summer crops.

In this prototype we are using ,dry/wet sensors, humidity sensors and temperature sensor[7] which are connected with ESP8266 and the data recieved by ATMEGA318 microcontroller is kept on board called Arduino uno[8].The condition of soil and the temperature maintained are being displayed on LCD and the same values are updated in the internet through IOT[8] module interfaced to the controller.

A regulated 5v, 500mA power supply is used in this project. The voltage regulator is a 7805 three terminal voltage regulator.
The ac output of the secondary of a 230/12v step down transformer is rectified using a bridge type full rectifier.

## II.LITERATURE REVIEW

Design of a ZigBee and embedded technology-based intelligent greenhouse environment monitoring system was designed by WeiminQiu, Linxi Dong, Fei Wang, and Haixia Yan[1]. Upper machine processors, environmental factors acquisition nodes, and intelligent control terminal block are the three primary components of this system.

The server is connected to relay hardware circuits that control the household appliances. The user can choose the appropriate device thanks to the communication with the server. Design of a ZigBee and embedded technology-based intelligent greenhouse environment monitoring system The intelligentgreenhouse environment monitoring control system was designed by WeiminQiu, Linxi Dong, Fei Wang, and Haixia Yan[3] and is based on ZigBee and embedded technologies.Upper machine processors, environmental factors acquisition nodes, and intelligent control terminal block are the three primary components of this system.

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Hesong Huang, Hongning Bian, and Shuchuan Zhu [5] devised a greenhouse remote monitoring system based on GSM, with STC89C51RC as the CPU and SIM900B as the GSM/GPRS communication module.Design and analysis of a multi-sensor information fusion-based intelligent greenhouse climate control system Computing,BaoJieJi Wan Zhong Lei [7]designed the greenhouse environment management system hardware using a single chip processor AT89S52 and a LAN universal interface chip as the basic architecture. The intelligent survey based on the Internet of Things (IoT) Smart Homes system, IoT-based Smart Homes were developed by Pranay P. Gaikwad, Priyadarshini, Jyotsna P. Gabhane, and Snehal S. Golait[8]. Zhao, Zheng Xiangyang, Duan Chen, Chen Zhaohui Sang Shangming, Zhang Zhaohui[4] designed and implemented a greenhouse monitoring system based on GSM and RF technologies for small and medium-sized greenhouse environmental monitoring.A Remote Monitoring System for Greenhouses Hesong Huang, Hongning Bian, and Shuchuan Zhu [5] created a system based on GSM, including an STC89C51RC CPU and a SIM900B GSM/GPRS communication module.The greenhouse environment management system hardware was designed by BaoJieJi Wan Zhong Lei
[7] using the fundamental architecture of a single chip processor AT89S52 and a LAN universalinterface chip.

## III.PROPOSED SYSTEM

In this system we use different sensors to calculate different parameters such as temperature, humidity, light and soil moisture. These four sensors are connected to a micro controller and the information sent trough wifi module.Wifi module which is connected to micro controller sends information to the farmer through cloud called thingsspeak.

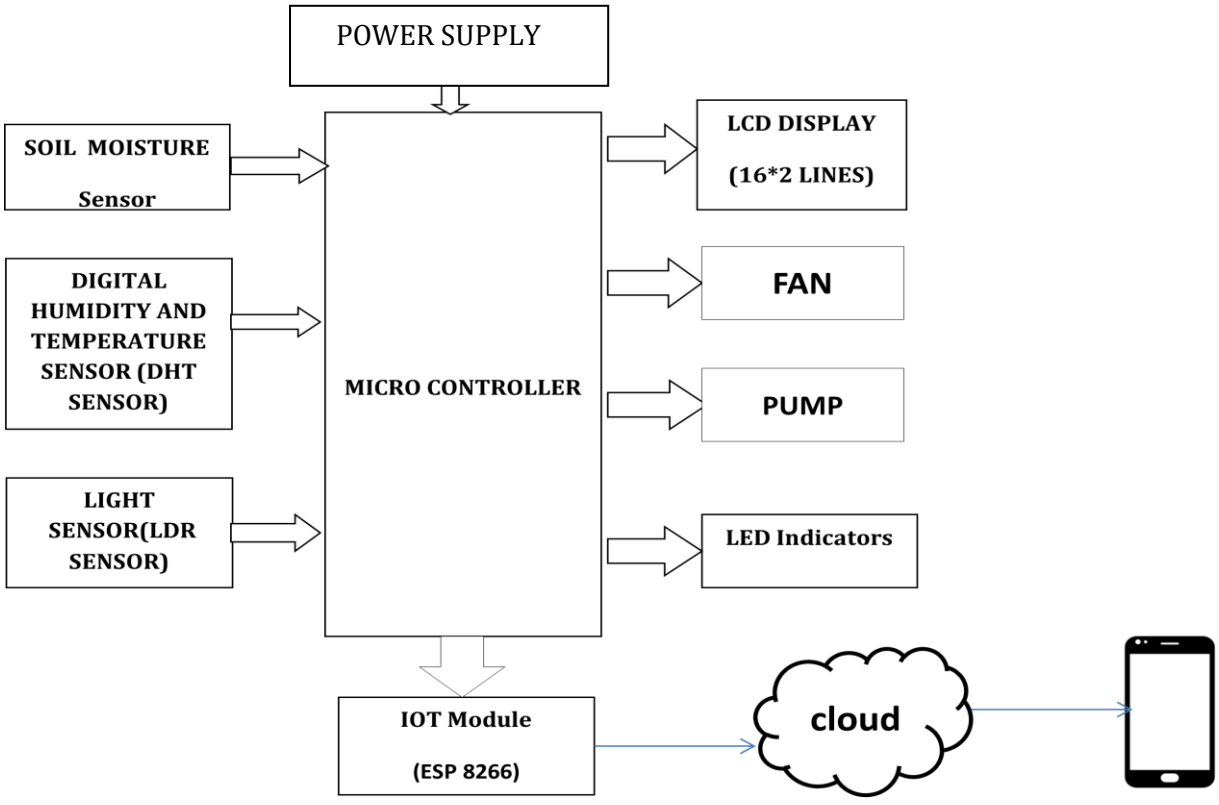


FIG 1: BLOCK DIAGRAM

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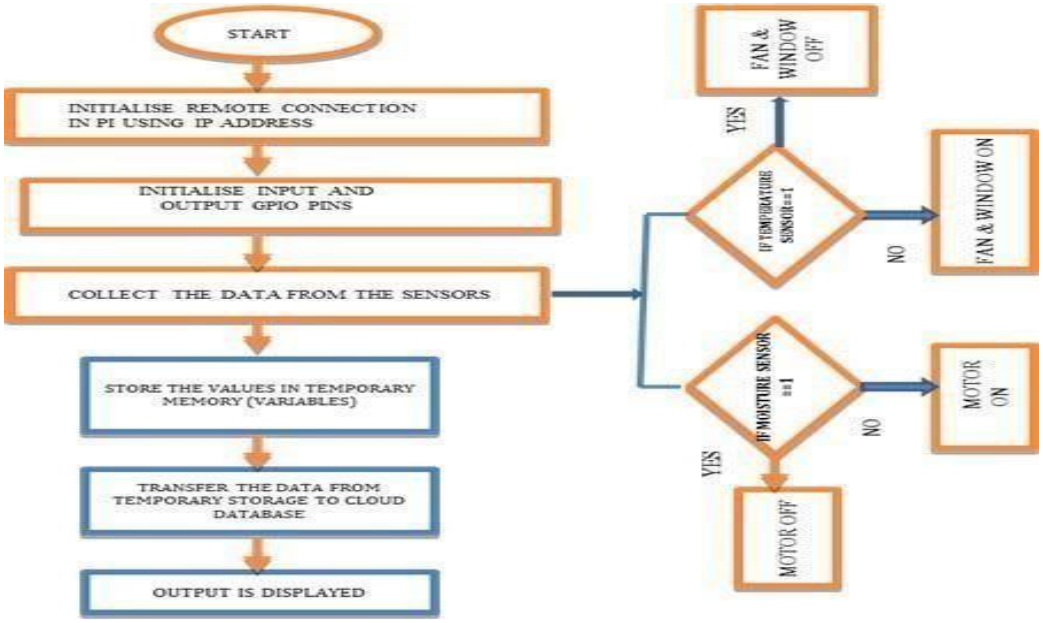
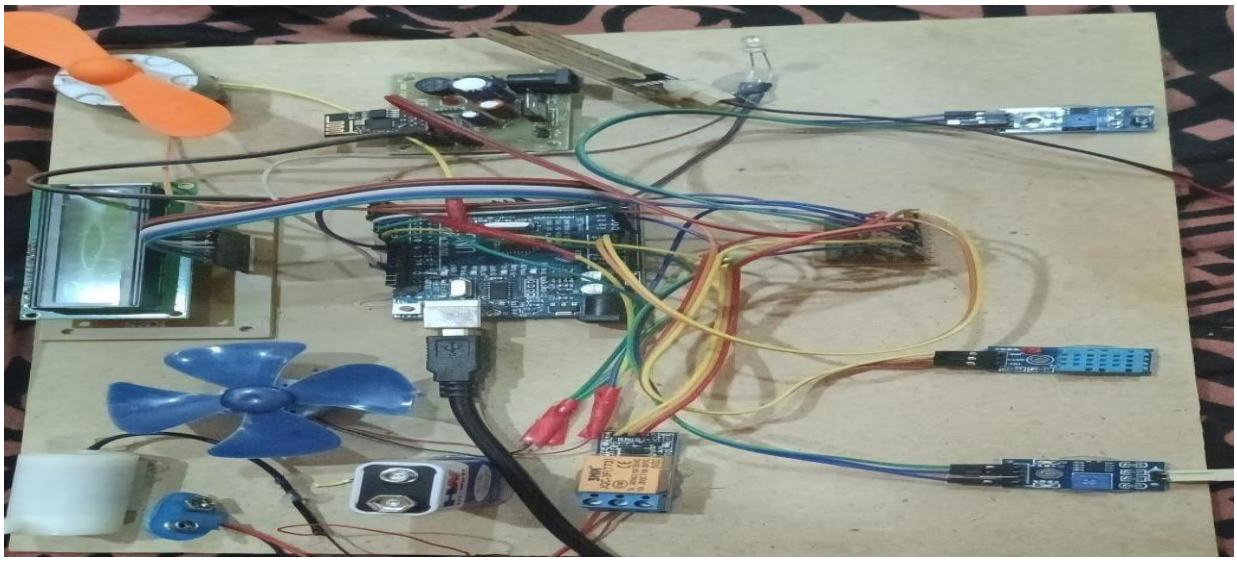



FIG 2: FLOW CHART

## IV.RESULTS

We have implemented a project that comes from the field of embedded system. Green house monitoring system measures various parameters inside the green house using sensors and IOT.The values measured by the sensors are used to activate the microcontroller by which necessary and sufficient actions are taken to maintain the green house in an optimum and efficient level.The values measured by the sensor is displayed on the user's mobile and the microcontroller can be activated to take necessary actions from any part of the world by the user through his mobile



## VI.CONCLUSION

The greenhouse monitoring and weather reporting system based on the internet of things can provide precision in a

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timely manner, and the greenhouse environment has been continuously monitored. The proposed research involves developing software for a development board with sensor using embedded system and communication technologies in order to create a greenhouse monitoring and weather reporting system based on the internet of things.The graph shows the sensor's temperature, relative humidity, and carbon dioxide levels. The outcome of this project demonstrates that a recent proposed green house monitoring system has a significant advantage in remote monitoring as well. The internet of things is now being implemented in a more stable manner.

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