# ANDROID APPLICATION FOR AGRICULTURE

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**ABSTRACT**

**Andriod app is developed to monitor and control whether inside green. greenhouse can be considered as microclimate incubator ,the important parameters inside greenhouse are temperature, soil moisture, humidity, light intensity. These values can be easily measured by using different sensors. They can easily get on android app. we can set threshold values and according to sensors values we can control the devices like water spayer, light bulb, fan or ac. Depending on sensor output controlling action is taken by microcontroller. And by pressing a single button we are control the devices through android app. The objective is to design a simple and easy user friendly system to monitor and control whether inside greenhouse, and control water sprayer, light bulb, cooling fan or ac. The achieved result shows that system is appropriate and working properly.**

**KEYWORDS: Greenhouse automation, sensors, android application**

## 1. INTRODUCTION

The climate inside the greenhouse plays very important role in plant growth. The farmers cannot precisely detect the level of temperature, humidity, soil moisture inside greenhouse. They just feel it by themselves. manually ultimately experiences plays a bigger part on their daily operation, if the condition is too much dry then they will give water to plants or soil, but if it is too humid they will open the rooftop of greenhouse. The farmer must physically present in greenhouse to take controlling action.

While designing this system there is limitation to this problems to see how far system can do its tasks.

There are three action performed in this system first action is that monitor the climate inside greenhouse, second is if soil moisture is too dry then water sprayer made on and once it reaches to set threshold value then it is turned off automatically. The system for monitoring and controlling the greenhouse is based on the measuring the temperature, humidity, and soil moisture by sensors that are placed in different places

The sensors sense the change in atmosphere and give it to microcontroller. Microcontroller is heart of our system .sensors are at input side of microcontroller .they sense data which is analog in nature that analog data is converted in to digital form by using analog to digital convertor (ADC). If threshold value is not obtained then controlling action is taken by microcontroller this action is stopped once the values are brought to its optimum level. The data sensed by sensors will continuously display on LCD display to inform farmers about whether conditions inside the greenhouse. This system is easy, simple and cost effective with low maintained and user friendly.

## 2. SYSTEM ARCHITECTURE

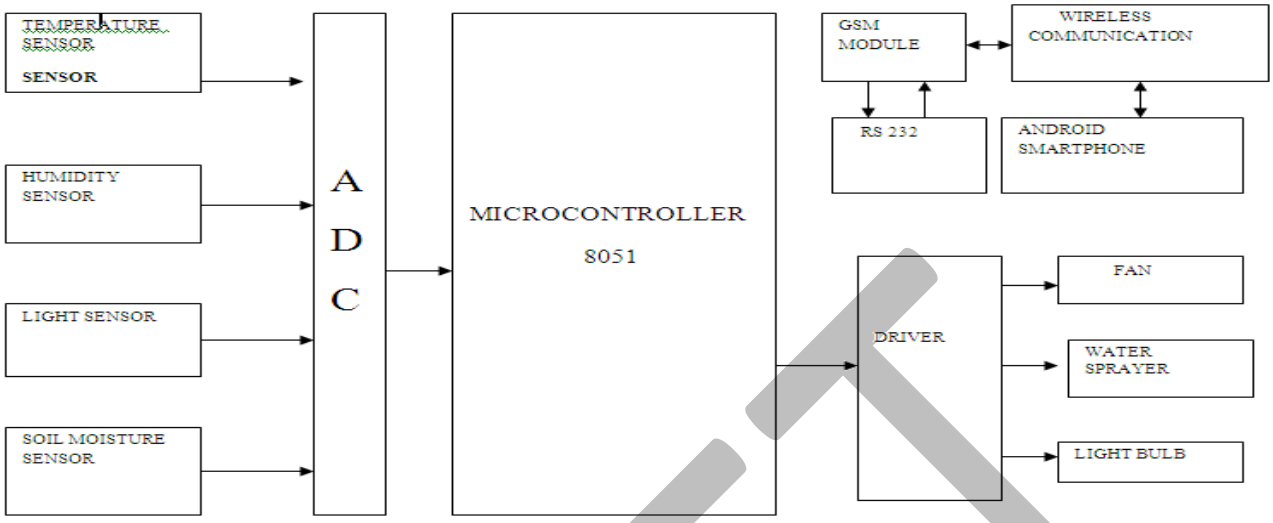


Figure 1 : Basic system model of green house monitor and control

**PARTS OF THE SYSTEM ARCHITECTURE:**

Sensors (Data acquisition system)
Temperature sensor
Humidity sensor
soil sensor
· Analog to Digital Converter
· Microcontroller
· Liquid Crystal Display
· Actuators – Relays
· Devices controlled
Water Pump
Rooftop
Cooler (simulated as a fan)
Artificial Lights

Our system hardware consist of at input side ADC, sensors and at output side relay driver circuit, microcontroller 8051, LCD display and devices which we are going to control like water sprayer, light bulb, fan etc.

## 3. IMPLEMENTATION OF GREENHOUSE MONITORING AND CONTROLLING SYSTEM HARDWARE IMPLEMENTATION

### 3.1TRANSDUCERS

A transducer is a device which measures a physical quantity and converts it into a signal which can be read by the farmer. The sensors used in this system are:

1. Light Sensor (LDR (Light Dependent Resistor))

2. Humidity Sensor (DH 11)

3. Temperature Sensor(LM 35)
4.Soil moisture sensor

### 3.2 ANALOG TO DIGITAL CONVERTER

In our system we are using different sensors, the output of those sensors are analog in nature so to convert it into digital form we are using analog to digital convertor 0808/0809. It it electronic circuit that converts continuous signals into discrete form so that the microcontroller can read the data.

### 3.3MICROCONTROLLER 8051

The microcontroller is the heart of the proposed embedded system. It continously monitors the data given by various sensors and verifies them with the predefined threshold values. It checks if any corrective action is to be taken for the condition at that instant of time. In case such a situation arises, it activates the actuators to perform a controlling action.

### 3.4 LIQUID CRYSTAL DISPLAY

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules

suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other.

### 3.5 RELAYS

A relay is an electrical switch that opens and closes under the control of another electrical circuit. In the original form, the switch is operated by an electromagnet to open or close one or many sets of contacts. Because a relay is able to control an output circuit of higher power than the input circuit.it drives output devices in our system

### 3.6 POWER SUPPLY CONNECTION

The power supply section consists of step down transformers of 230V primary to 9V and 12V secondary voltages for the +5V and +12V power supplies respectively

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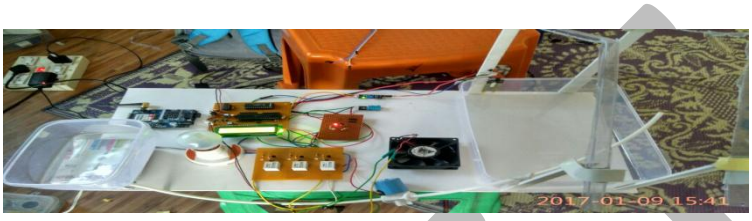


Fig2. system hardware

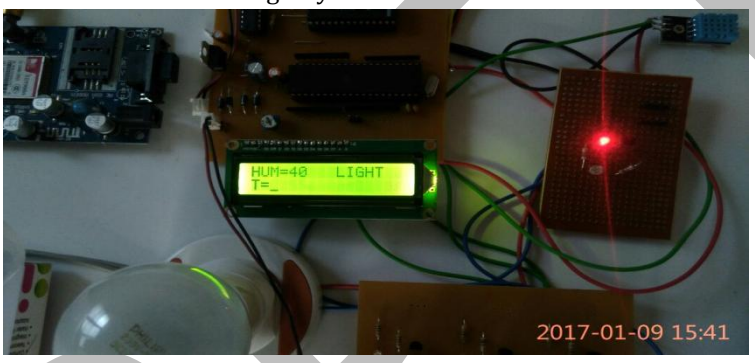


Fig3. system o/p display

## 4. SOFTWARE DESCRIPTION

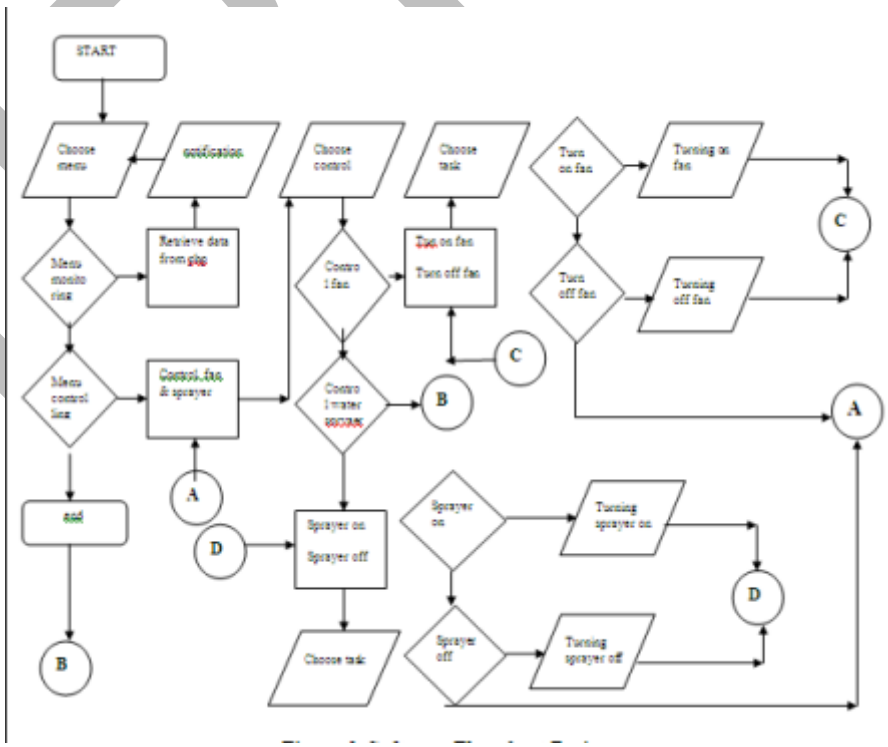


Fig.4 software flowchart

### 4.1 SOFTWARE DESCRIPTION

For software implementation, Figure 3 shows the flow of the software in monitoring and controlling the green house. C program for microcontroller to measure humidity, temperature, soil moisture and send the value to LCD display then to Android Smartphone through serial communication. Next receive input from Android Smartphone then control the water sprayer through stepper motor, light bulb and fan. PHP code use for communication path. Last, Modules for application in android are written in embedded C program.

## 5. CONCLUSION

A step-by-step approach in designing the microcontroller based system for measurement and control of the four essential parameters for plant growth. i.e temperature, soil moisture, humidity and light intensity. The system is successfully designed and implemented in reality, by reducing the power consumption, maintenance and complexity, at the same time providing a flexible and precise form of maintaining the environment. the system has overcome all these problems very precisely.

## 6. REFERENCES

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3) The International Journal Of Engineering And Science (IJES) ||Volume|| 2 ||Issue|| 11 ||Pages|| 129-135 || 2013 || ISSN (e): 2319 – 1813 ISSN (p): 2319 – 1805 www.theijes.com The IJES Page 129 Alausa Dele W.S, 2Keshinro Kazeem Kolawole
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