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WEATHER LOGGER USING WEATHER CLOUD

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ABSTRACT

In this project, we have proposed an IOT and cloud based Weather Monitoring System. The aim of weather monitoring system is to detect, record and display various weather parameters such as temperature ,humidity. This system makes use of sensors for detecting and monitoring weather parameters and then this collected information is sent to the cloud which can be accessed using the internet. The data displayed as an output can be observed .The system engages an Arduino UNO board, sensors, WIFI Module which sends data to cloud computing services. A web page is also created which exhibits the data and displays it to users.

I. INTRODUCTION

The internet of Things (IoT) is viewed as an innovation and financial wave in the worldwide data industry after the Internet. The IoT is a wise system which associates all things to the Internet with the end goal of trading data and conveying through the data detecting gadgets as per concurred conventions. It accomplishes the objective of keenly recognizing, finding, following, observing, and overseeing things . It is an augmentation and extension of an Internet-based system, which grows the correspondence from human and human to human and things or things and things. In the IoT worldview, many articles encompassing us will be associated with systems in some shape . It is a current correspondence paradigm that envisions a near future, in which the objects of regular day to day existence will be outfitted with microcontrollers, handsets for computerized correspondence, and reasonable convention stacks that will make them ready to speak with each other and with the clients, turning into a vital piece of the Internet. The IoT idea, consequently, goes for making the Internet much more immersive and unavoidable. Moreover, by empowering simple get to and association with a wide assortment of gadgets, for example, home apparatuses, reconnaissance cameras, checking sensors, actuators, showcases, vehicles, et cetera, the IoT will encourage the advancement of various applications that make utilization of the possibly gigantic sum and assortment of information created by such questions give new administrations to subjects, organizations, and open organizations. Present innovations in technology mainly focus on controlling and monitoring different activities. These are increasingly emerging to reach human needs. Most of this technology is focused on efficient monitoring and controlling different activities. An efficient environmental monitoring system is required to monitor and assess the conditions in case of exceeding the prescribed level of parameters (e.g., noise, CO and radiation levels). When the environment equipped with sensor devices, microcontrollers and various software applications becomes a self-protecting and self-monitoring environment, it is also called a smart environment. In such an environment when some event occurs the alarm or LED alerts automatically. The effects due to the environmental changes on animals, plants and human beings can be monitored and controlled by smart environmental monitoring systems.

II. HARDWARE

Arduino:

Arduino is a tool for making computers that can sense and control more of the physical world than desktop computers. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board. Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino systems can be stand-alone, or they can communicate with software running on a

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computer (e.g. Flash, Processing, MaxMSP.) The boards can be assembled by hand or purchased pre-assembled; the open-source IDE can be downloaded for free. The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery.

Figure 1: Arduino UNO

LCD Display:

Liquid Crystal Display also called as LCD is very helpful in providing user interface as well as for debugging purposes. The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. The most commonly used LCDs found in the market today are 1 Line, 2 Line or 4 Line LCDs which have only 1 controller and support at most 80 characters, whereas LCDs supporting more than 80 characters make use of 2 HD44780 controllers.

Figure 2: LCD display

Humidity and temperature sensor:

Humidity and Temperature sensor is a low-cost digital sensor for sensing temperature and humidity. This sensor can be easily interfaced with any micro-controller such as Arduino, Raspberry Pi etc... to measure humidity and temperature instantaneously.

Humidity and temperature sensor is available as a sensor and as a module. The difference between this sensor and module is the pull-up resistor and a power-on LED. To measure the surrounding air this sensor uses a thermistor and a capacitive humidity sensor.

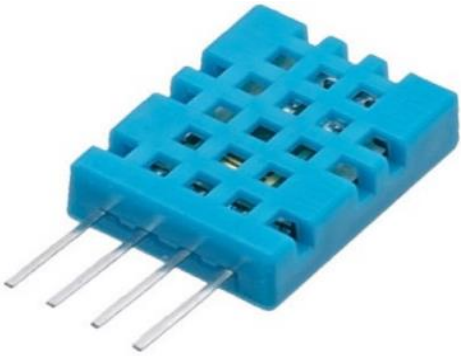

Figure 3: Humidity and temperature sensor

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WiFi Module :

A small device known as a wireless transmitter, or hub, is required; this device receives information from the internet via your home broadband connection. This transmitter (often referred to as a Wireless Access Point, or WAP) then converts this information into radio waves and emits it, effectively creating a small, local area around itself, within which your devices can receive these radio signals if they are fitted with the correct kind of wireless adapter. This area is often termed a Wireless Local Area Network, or WLAN for short. The radio signals aren't very strong, which is why the Wi-Fi signal doesn't travel very far; it will travel far enough to cover throughout the average home and to the street directly outside, for example, but not much further. One wireless hub is usually enough to enable you to connect to the internet in any room in

Figure 4: Wifi Module

III. BLOCK DIAGRAM

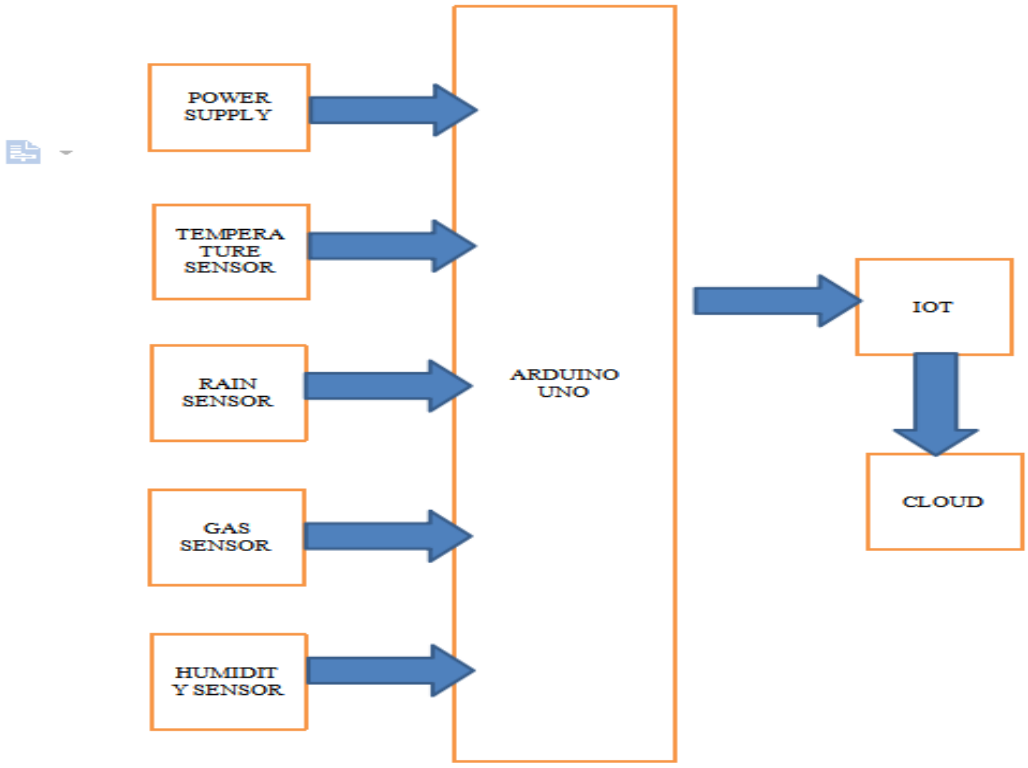

Figure 5: Block Diagram

IV. RESULTS

The first image shows results of the weather logger using a weather cloud kit with the power supply turned off. - The pictures highlight the various components of the kit, including the control unit, sensors, and communication modules. - The images provide a clear representation of the physical setup of the system, giving readers a visual understanding of its components.

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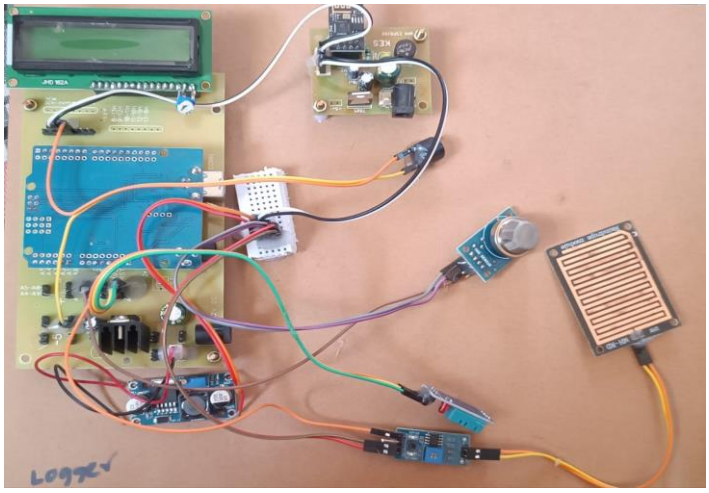

Figure 6: Power Supply Turned OFF

When the power supply is on the circuits get turned on and get connected to the cloud using the internet . It shows the result status of humidity , temperature , gas and rain on lcd display and also shows the graphs on the cloud as below.

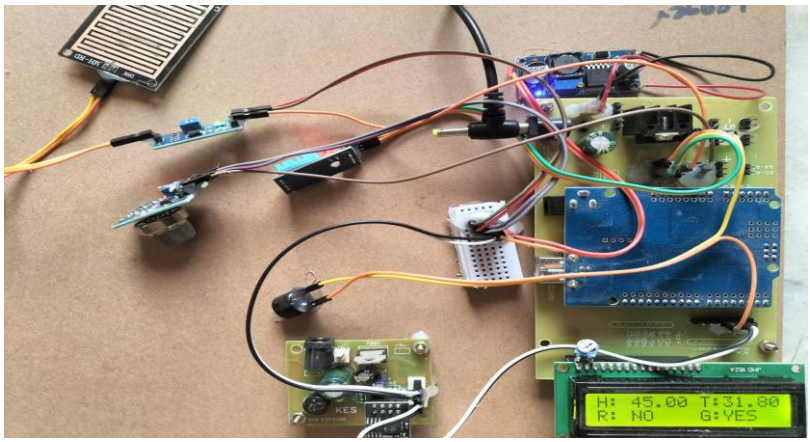

Figure 7: When power supply turned on

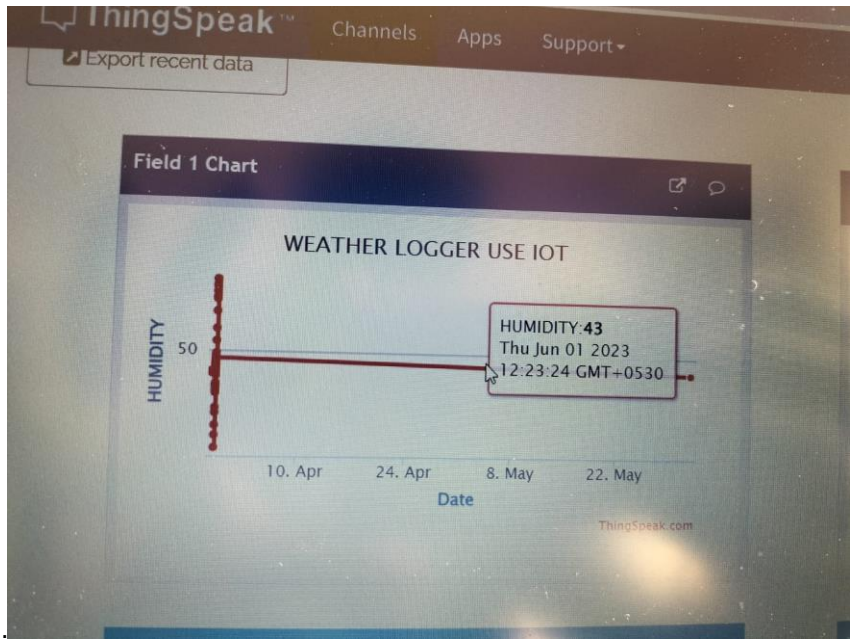

Figure 8: Humidity detection

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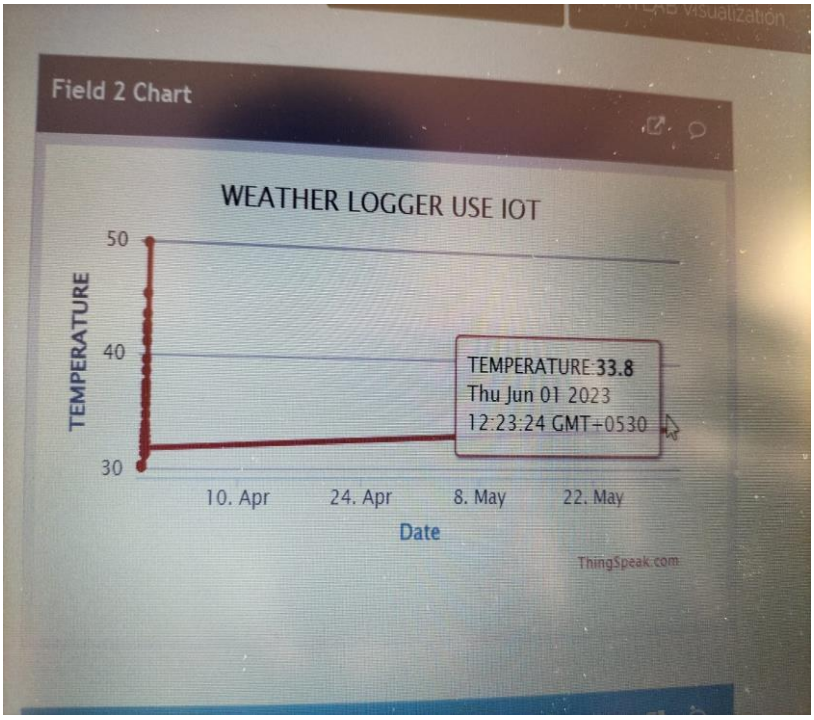

Figure 9: Temperature detection

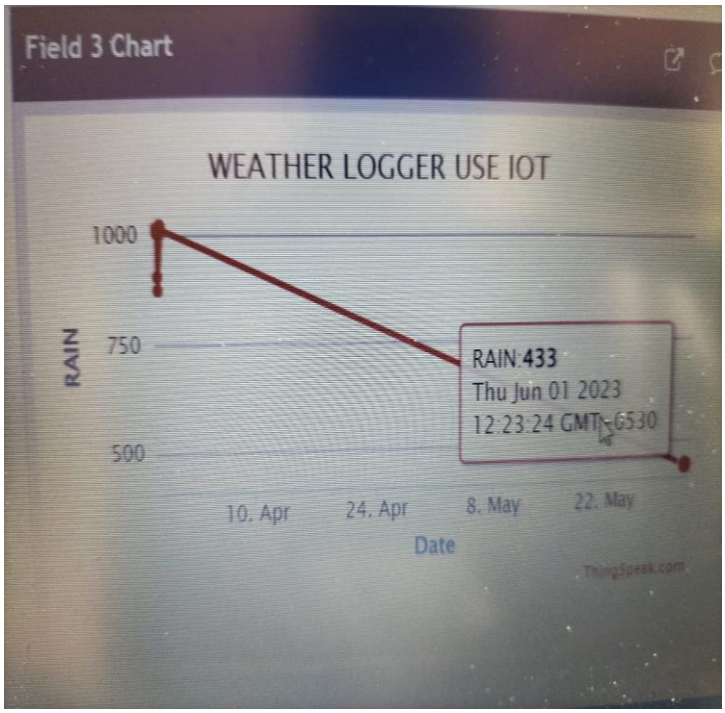

Figure 10: Rain detection

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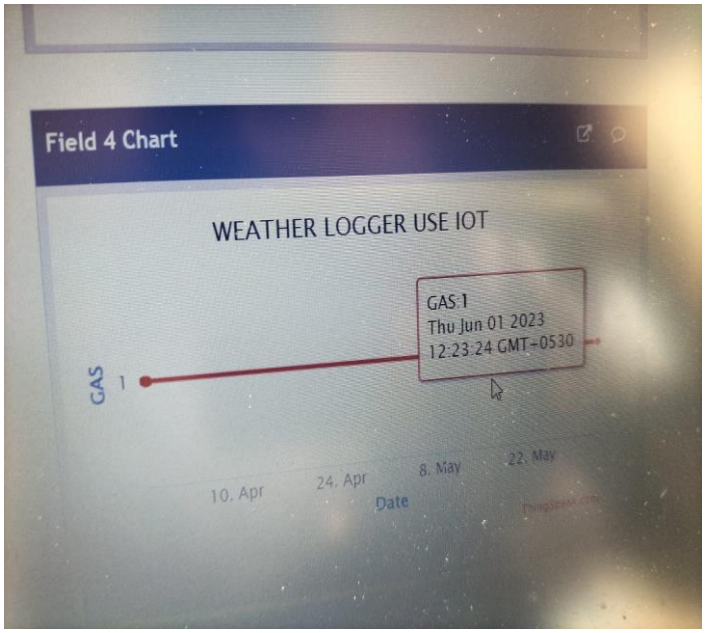

Figure 11: Gas detection

V. CONCLUSION

This project finally concludes that traditional way of agriculture and greenhouse monitoring has lot of defects, following traditional way in this present scenario does not result any fruitful result.To overcome this problem we derived a solution, that is nothing but merging the traditional way of greenhouse monitoring system with a technology called IOT.It provides the comfort of remote monitoring and automation. This whole setup is made as a prototype; it gives an audio output of a weather status report through a speaker. We can get the current weather update . This system is very helpful for Blind peoples, elderly peoples and mainly used for agricultural purposes. We got results which help the elderly and blind people.

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