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GSM Based Wireless Weather Monitoring System Using IOT

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ABSTRACT: The concept of weather play important part in our daily life, hence designing wireless technology to monitor weather conditions which in turn it can be used as useful tool to impact the human life daily. In this system we design a wireless system to monitor the current environmental conditions such as humidity, temperature levels instantaneously in addition to that storing the collected information and comparing it data with the past gathered data to predict the future changes in the weather conditions. According to our design we will set a clear recommendations and precautions that help in escalating the adverse effects of changes in weather conditions and helping to sustain good and hygienic environment. To develop such project we will use Arduino microcontroller as the heart of the system and GSM-module as a wireless counterpart and other supportive sensors. Finally achieving high degree of reliability, compactness, modularity, and cost effectiveness for our design is the aim and final goals targeted.

KEYWORDS: DHT11, Arduino, GSM modem, LCD.

I. INTRODUCTION

Climate conditions play major role in our day-to-day life in many areas Such as agricultural sector to industrial sector etc. Weather monitoring permit us to observe various climates behavior such as temperature and humidity. The problem driving us to select project on wireless weather monitoring system is most of developed systems are designed to sense a limited numbers of weather parameter values restricting the system to an exact application and move to reducing its functionality.

II. LITERATURE REVIEW

The need of this review to provide us with an idea about the accomplished work and the recent state of research in this arena, it also picture us to see how enormous this area is and how faraway it can go in the future, hence only selected research, based on their significance and inspiration to our project, are presented in this section:

- Bulut F. Ersavas survey concluded A wireless system can be used provided monitoring of environmental, soil, or climate conditions and controlling irrigation or climate control systems at an agricultural or landscape site.so it focus on the importance of the environment monitoring for agricultural field.
- Kirankumar G. Sutar, "Low Cost Wireless Weather Monitoring System." This survey discuss, the use of many sensors that are able to continuously read some factors that indicate the weather conditions such as temperature, humidity and light intensity in an industrial environment.
- ZigBee based weather monitoring system by Nisha Gahlot, Varsha Gundkal, SonaliKothimbire, Archana Thite it is based on the fact of reduction of agricultural output and designing a system that help in reducing the effects of weather changes on agricultural output for the benefits of framers.
- Wireless Portable Microcontroller based Weather Monitoring Station: this paper discussed about designing and implement inexpensive Wireless Moveable Weather Monitoring Station using PIC16F887 microcontroller. The implemented Weather Monitoring Station is armed with sensors to measure weather parameters such as comparative humidity, atmospheric pressure, rainfall, solar radioactivity, wind speed, surface and ambient temperature. Similarly of these competences, the considered Weather Monitoring station also contains some exceptional features like Modbus communication protocol, which provides flawlessly announcement of real time

weather quantities to the BS over both guided (wires) and unguided interfaces. Additionally, at the BS, the received information is recorded and uploaded to an internet data server to permit universal access to the weather information.

III. PROPOSED SOLUTION

Our proposed system is GSM based weather sensing and reporting project. The system monitor temperature, as well as light and humidity and conveys this to the user through wireless. Our system uses temperature sensor to sense and record current temperature. Also a humidity sensor is used to sense current humidity conditions. All this data from sensors is conveyed to the Arduino microcontroller. The microcontroller now processes this information and passes it on to a GSM module interfaced to it. The GSM modem now encodes this information as SMS message and sends this message to programmed user. This puts forward a wireless GSM based weather monitoring system where the person does not need to be near the equipment to continuously monitor weather reports. The data is automatically sent to the user via a SMS through GSM.

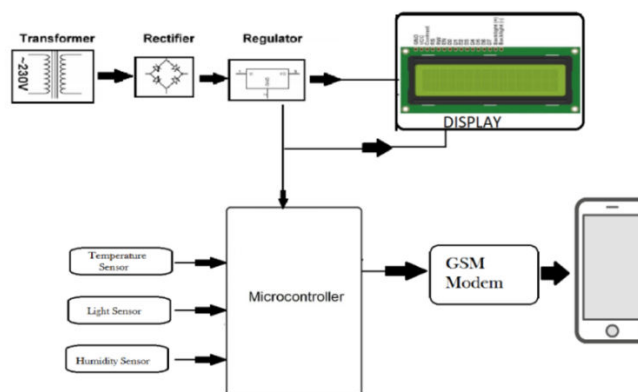


Fig 1:Block Diagram

IV. SOFTWARE REQUIREMENT

The Arduino is open source Integrated Development Environment or Arduino Software (IDE). It contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus.

V. HARDWARE DESCRIPTION

- **Power supply:** As per the power requirement of the hardware of the efficient traffic light control system, supply of +5V with respect to GND is developed. The complete circuit is operated with TTL logic level of 0V to 5V. It comprise of 0V to 9V transformer to step down the voltage of 220V AC supply to 9V AC. Further a bridge rectifier converts the 9V AC into 9V DC. It is further filtered through a 1000uF capacitor and then regulated using 7805 regulator to get +5V. To isolate the outputvoltage of +5V from noise further filtering 220uF capacitor is used.
- **Arduino :** This microcontroller which can be easily programmed, erased and reprogrammed at any time. Introduced in 2005 the Arduino technology was manufactured to provide an inexpensive and easy way for students and professionals to create devices that interact with their environment using different sensors and actuators. Based on Arduino microcontroller boards, it is an open source computing and developing platform that is used for constructing and programming electronic components. It is also capable of acting as a small computer just like other microcontrollers by receiving inputs and controlling the outputs for a variety of electronics devices and components. It is also capable of receiving and sending data over the internet with the help of various Arduino versions, which are discussed in this paper.



Fig 2: Arduino

- GSM Module:** GSM/GPRS Modem-RS232 is built with Dual Band GSM/GPRS engine-SIM900A, works on frequencies 900/1800 MHz. The Modem is coming with RS232 interface, which allows for connecting PC as well as microcontroller with RS232 Chip (MAX232). The baud rate is configurable from 9600-115200 through AT command. The GSM/GPRS Modem is having internal TCP/IP stack to connect with internet via GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface. The onboard regulated power supply allows the wide range unregulated power supply. Using this modem, audio calls, SMS, Read SMS (attend the incoming calls and internet etc.) is made through simple AT commands. Features: Dual band GSM/GPRS 900/1800MHz. Configurable baud rate. SIM card holder. Built in network status LED. Inbuilt powerful TCP/IP protocol stacks for internet data transfer over GPRS. Control via AT commands. Low power consumption: 1.5mA (sleep mode).



Fig 3: GSM Module

- DHT11 Sensor:** The DHT11 is a temperature and humidity sensor. It is calibrated against a digital signal output. The DHT11 ensures reliability, high efficiency and stability for a long time which is present with the help of this digital-signal-acquisition exclusive technique. This temperature and humidity sensor have an NTC temperature component for measuring the temperature and a very high-performance 8-bit microcontroller connected for humidity, which is cost effective and provides an excellent quality and fast response ability with anti-interference. It consists of 4 pins from left to right Vcc, Data, NC (not connected) and GND. There are mainly three (Vcc, Data and GND) pins which are used. Features: Full range temperature compensated. Relative measuring of humidity and temperature. Calibrated digital signal. Outstanding long-term stability. Extra components not needed. Long transmission distance. Low power consumption. 4 pins packaged and fully interchangeable.

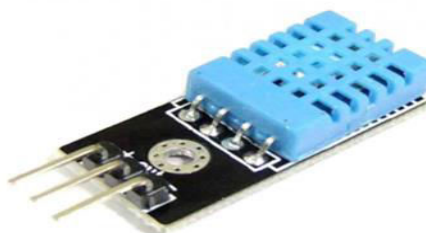


Fig 4: DHT11 Sensor

- Liquid Crystal Display (LCD) :** A liquid crystal display (LCD) is a display module with liquid crystals and backlight by LEDs. A 16x2 LCD display consists of two rows of display with each row consisting of 16

characters. LCD Module has 16 pins and operates with 5V. Power pins i.e. pins 1, 2, 3, 15 and 16 are used to supply for the module as well as the backlight LEDs. The voltage to the contrast adjust pin (Pin 3 or VEE) is usually given from a potentiometer and will control the contrast of the actual display when the POT is adjusted. There are 8 data pins for transmitting 8bits of data i.e., 1 byte of data at a time. The LCD can be used in either 8bit mode or 4bit mode.



Fig 5: Liquid Crystal Display (LCD)

• ADVANTAGES

- Affordable cost.
- High efficiency.
- Low error probability.
- Reduces human tensions.
- Ease of installations.
- Display accurate information.
- Guarantees instant handover of information.
- Weather Information is distributed at considerable scale.

• APPLICATIONS

- This project can be used by:
 - Meteorological sector.
 - Weather stations.
 - Individuals.
 - Farmers.
 - Civil engineers.
 - Agricultural sectors.

VI. CONCLUSION

This paper presents the research and implementation of a system for monitoring the environmental parameters using GSM scenario is accomplished. As the applications are limitless, other weather parameters can also be monitored easily with the addition of related sensors to the system architecture. The data can be stored online, which can be used to forecast weather and eventually analyze climate patterns, as well as for other meteorological purposes. The system is tested in an indoor environment and it is successfully updated the weather conditions from sensor data.

REFERENCES

- [1] Brian W. Evans. Arduino Programming Notebook. San Francisco, California, USA. First Edition August 2007.
- [2] Ph.D Jack Purdum. Beginning C for Arduino. 233 Spring Street, 6th Floor, New York. Copyright @2012.
- [3] Karthik Krishnamurthi, Suraj Thapa, Lokesh Kothari, Arun Prakash. "Arduino Based Weather Monitoring System", International Journal of Engineering Research and General Science Volume 3, Issue 2, March-April, 2015.
- [4] P. Ramchandrarao, S. Sanjay Kumar, Ch. Rajendra Prasad. "Garbage Monitoring System using Arduino", International Journal of Trend in Scientific Research and Development (IJTSRD), Volume 1, Issue 6, Sep – Oct, 2017.
- [5] Prof. P. R. Jawale, Mr. V. S. Ghayal, Mr. D. M. Shende, Ms. S. N. Ghogale, Ms. V. B. Nagare. "Prepaid Energy Meter using Arduino and GSM Module", International Journal of Research in Advent Technology (IJRAT), E-ISSN: 2321-9637, April 2017



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