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AN EFFICIENT LOW COST OF DATA LOGGER TRACKING SYSTEM

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ABSTRACT

The system provides a compact battery-powered system that monitors the temperature, gas, humidity, and intensity of light in indoor areas, which sends the measured data using the existent wireless infrastructure, supported the IEEE 802.11 b/g standards. The resulted device's characteristics and performance are comparable to those provided by recognizing solutions, such as ZigBee-based device nodes. By replacing ZigBee with Wi-Fi property with close sensors, this resolution is often used for the remote gathering and more process of measuring the sensor data in real time manner. Hence it is easy to monitor the data through IP address via WI-FI module and can also the view the data in smart mobile phone where it should require internet connection.

Keywords: ***WI-FI, Humidity, LDR, Gas and Temperature Sensor***

I. INTRODUCTION

INDOOR air quality (IAQ) represents a very important issue affecting the comfort, the health and conjointly the protection of building occupants. IAQ issues result in a collection of symptoms, including headaches, dizziness, difficulties in concentration and others, brought up as "sick building syndrome" (SBS). Basic measurements and CO2, will offer data helpful in determination such problems. the current paper presents the event of a compact powered system, that monitors the humidity ,and temperature, the carbonic acid gas level, absolutely the pressure and therefore the intensity of sunshine in indoor areas, and that sends the measuring information exploitation the existent wireless infrastructure supported the IEEE 802.11 b/g standards. This provides the likelihood of the remote gathering and more processing of information from an outsized range of such wireless sensing systems. What is more, by combining wireless property with close sensors, this answer is used for reducing the overall energy consumption of a whole building.

The characteristics of the developed device, specifically reduced dimensions, low power consumption, high flexibility and robustness, create it appropriate for its use as a node in an exceedingly wireless sensor network (WSN) or in a web of Things (IoT) scenario. The reduced energy profile is achieved by the employment of a coffee power core microcontroller, associated of a non-dispersive infrared detector (NDIR) for dioxide measurements, having the lowest power consumption on the market. The temperature and ratio detector includes a power consumption that's comparable to the one in all the gas detector (1 mA), while the other hooked up

sensors, mensuration pressure and lightweight intensity, are less power hungry than these, intense five μA and 0.24 mA, severally. Moreover, a Wi-Fi module with associate advanced API software package, named Wi-Fi, that permits economic power management, was chosen for information transmission. These combined with appropriate power saving methods, and relying on planned measuring rates, result in the action of a battery life between one month and a number of other years. Though the acquired close information are often displayed regionally on the hooked up LCD, for testing the foremost probable usage state of affairs, they were visualized employing an industrial resolution, provided by Lively, a "Public Cloud for the net of Things".

The device conferred during this paper could be a little battery hopped-up close (temperature, ratio, CO2, absolute pressure and light-weight intensity) wireless detector permitting measure rates between one and sixty samples per hour. Once taking one measure per hour, it will last up to a few years while not requiring maintenance. The tests showed battery time period of ups to a few years, comparable the one among the devices. ZigBee communication consumes less energy than Wi-Fi.

II. LITERATURE REVIEW

In the present system, the ZigBee is used to monitor the environment conditions of different kind of sensors. The system which provides only measuring data of corresponding sensors like humidity, temperature sensor, intensity of light etc. In this system, the main drawback is range and power consumption. We replaced ZIGBEE with WIFI TECHNOLGY, it is easy to monitoring the continuously data from sensors and also measure the data from mobile phone via Wi-Fi technology within high speed range of data. For particular purpose our proposed system comes to exit.

We propose the system based on WIFI technology. ZigBee has often been regarded as a mini version of Wi-Fi. Keeping some features like reliability, less power consumption apart, ZigBee and Wi-Fi are often used in similar applications in terms of household based wireless communication. Wi-Fi is a short range wireless communication even share common ISM band of 2.4 GHz.The information of sensors will be updated on the PC through wirelessly by using WIFI technology. We can monitor the different sensors like humidity, gas, light and temperature etc. The system can also view the data from mobile phone but it should require internet connection. Through internet connection via WIFI, we can easily monitor the data from sensors. The WI-FI Module which we used in this project are ESP8266.it has inbuilt features such as GPIO, UART, SPI and so on. It is very less cost, low power consumption, portability and easy to communicate the data in real time manner.

III. HARDWARE DESIGN

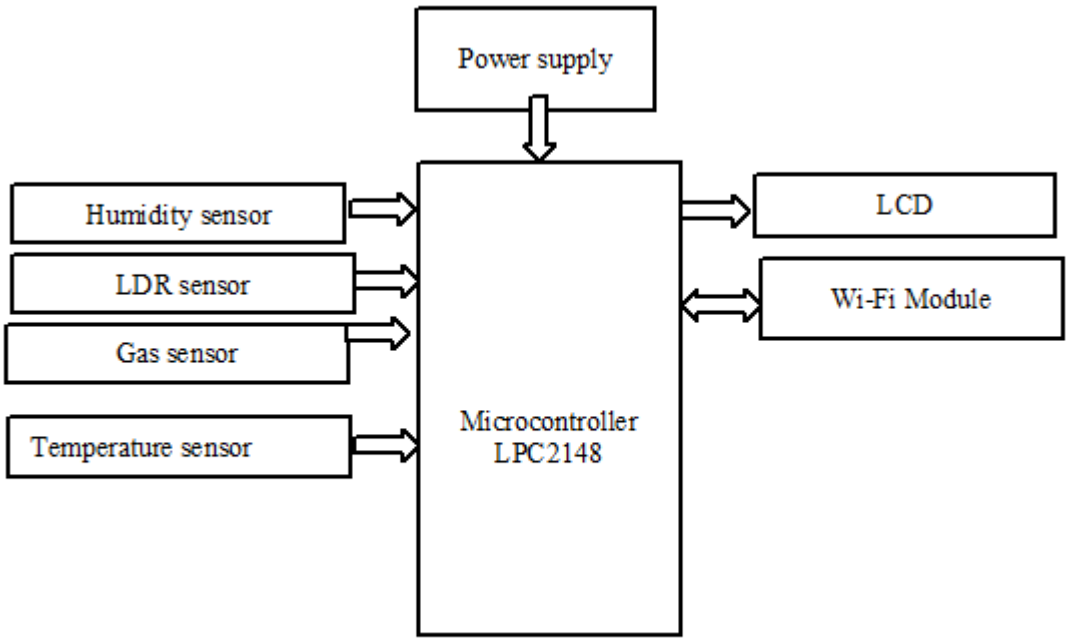

Fig 1: Block Diagram

It is composed of various hardware and software modules. The following block diagram indicates the evaluation of hardware components blanketed in the device. It consists of Lpc2148 microcontroller, LCD module for display purpose, wifi module for data logging purpose and various sensors for monitoring the environment.

3.1 LPC2148 Microcontroller

The LPC2148 microcontroller board based totally on a sixteen-bit/32-bit ARM7TDMI-S CPU with real-time emulation, sixteen-bit/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package deal, 8 kB to 40 kB of on-chip static RAM and 32 kB to 512 kB of on-chip flash memory; 128-bit huge interface/accelerator allows high-pace 60 MHz operation, In- system Programming (ISP), unmarried 10-bit DAC affords variable analogue output, 32-bit timers/outside event counters (with four capture and 4 examine channels every), PWM unit (six outputs) and watchdog, Low strength actual-Time Clock (RTC), more than one serial interfaces which includes two UARTs , rapid I2C-bus (400kbit/s), SPI and SSP with buffering and variable information length competencies.

3.2 WI-FI Module

ESP8266 is an effective, low rate Wi-Fi module suitable for including wireless practicality to partner diploma existing microcontroller assignment thru a UART serial association. The module will even be reprogrammed to act as a standalone Wi-Fi linked tool–simply upload energy. The device which is communicate through AT Commands. The following commands represents the AT Commands.

- AT Command
- AT+RST

- AT+CWMODE=1
- AT+CWLAP
- AT+CWJAP=”SSID”,”PASSWORD”
- AT+CWLIF
- AT+CIPSTART=”TCP”,”192.168.88.35″, 80
- AT+CIPSEND=50
- GET /status.html HTTP/1.0\r\nHost: 192.168.88.35\r\n\r\n
- AT+CIPCLOSE

By using above commands we communicate the data in real time manner.

IV. SOFTWARE DESIGN

In this proposed gadget, as we used LPC2148 we want to use following software equipment to program for it.

1. KeiluVision
2. Flash Magic

The KeiluVision is an IDE for Embedded c language. in this IDE, we want to import the utilities and libraries according to the controller we're the use of. This IDE is very less difficult and in user friendly way to apply. It consists of all the C/C++ compilers, assemblers, and debuggers in it. It simplifies the manner of embedded simulation and trying out in conjunction with Hex file technology.

The flash magic is a programming utility. The C/C++ software written in IDE may be processed into Hex document i.e. in .hex layout. By using hex file we dump the code into microcontroller and perform the task with respective application.

V. WORKING DESCRIPTION

The most objective of the project is to watch the sensor information and conjointly transmit the data through local area network technology. Thus we will simply monitor the information from the sensor in a predefined manner. In this project the microcontroller plays a vital role to perform the desired task. The microcontroller we used in this project is ARM 7 LPC2148 which has several inbuilt features such as ADC, SPI, I2C, PWM, and RTC. The sensors which are interfacing directly with microcontroller and we write the code in such manner to communicate with the microcontroller and perform the specific task. The WI-FI module is interfaced with microcontroller which is used to measure the corresponding sensor data and monitor the information through IP address. The system can also view the data from a mobile phone, but it should require internet connection. We can easily monitor the data from sensors through internet connection via WIFI.

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VI. RESULTS

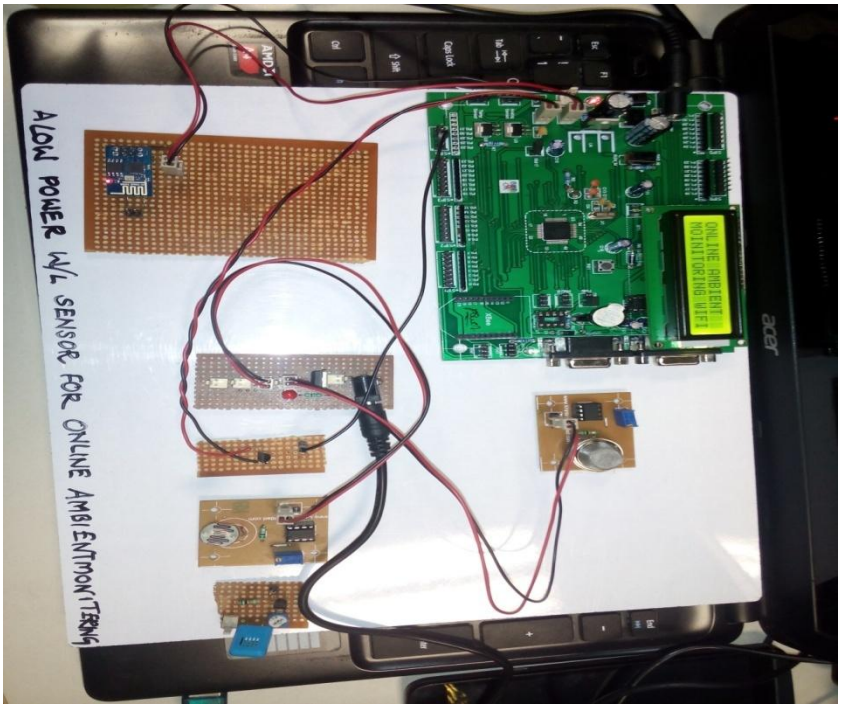

Fig2: The System Setup and Output Results

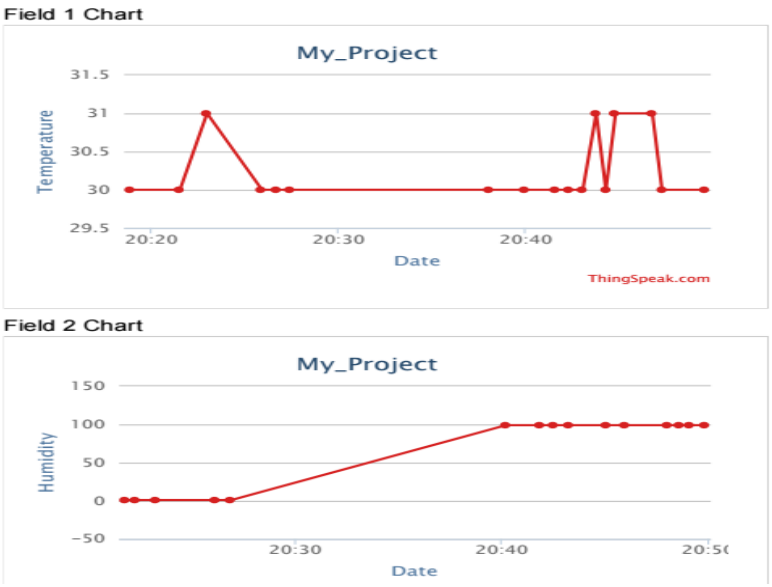

Fig 3: Humidity and Temperature graphical representation

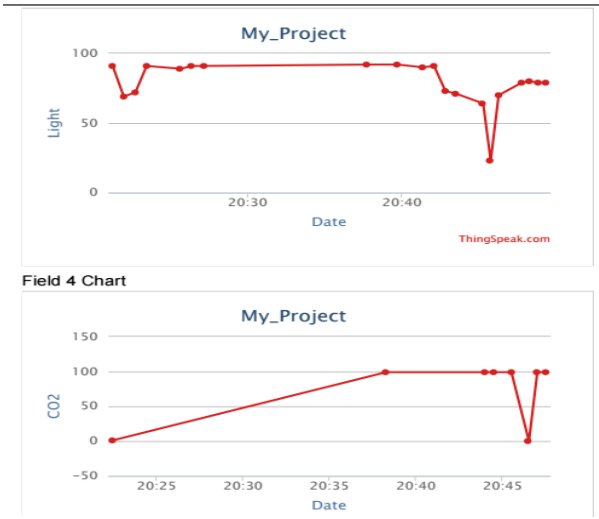

Fig 4: Graphical representation of Co2 and Light

The above figure represents the overview of sensor data monitoring via Wi-Fi module through IP address. By mentioning IP address in web Brower, we can easily monitor the data from different sensor in efficient manner .By implementing this concept we can use different applications like agriculture field, industries in real time manner with in less cost and low power consumption.

VII. CONCLUSION

The implemented system is based on WIFI technology which is easily monitor the data of all sensor values and update the data through IP address. The system is much efficiently to communicate the real time manner and consistent in nature.

VIII. FUTURE SCOPE

The system provides only monitoring the sensor values but we can't control the devices with respective sensors. In future scope we can do both i.e. Monitoring as well as controlling the appliances. By implementing this concept we can use in several appliances like agriculture, Health monitoring etc.

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