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ADVANCED IOT BASED MONITORING OF HOME ENVIRONMENTAL HAZARDS USING WI-FI TECHNOLOGY

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ABSTRACT

This paper gives the development of a compact battery-powered device that video display units the carbon dioxide stage, temperature, relative humidity, absolute stress, and depth of mild in indoor spaces and that sends the measurement statistics the use of the existent Wi-Fi infrastructure based on the IEEE 802.11 standards. The resulted tool's traits and common overall performance are similar with those provided through diagnosed answers, including ZigBee-based sensor nodes. Through combining Wi-Fi connectivity with ambient sensors, this answer can be used for the faraway amassing and similarly processing of size data checking out located that the system can carry out continuously for up to three years on a single 3 V small battery.

I. INTRODUCTION

The main purpose of this mission has been implemented for safety solution that protects in opposition to attacks via addressing the challenges raised above, assembly each performance and actual-time constraints. The microcontroller LPC2148 is performs an essential position to communicate to all devices. Here in our project fundamental goal is security of the individual. Here we perform the car over Bluetooth the usage of android app. Our android app consists of 5 buttons which suggests left, right, forward, and backward and stop. On every occasion we press a button an android app a coded message is generated and its miles transmitted to govern package thru Bluetooth. The obtained message at controlling segment with the aid of the controller will be decoded and it's far going to govern the car. Our controlling phase includes vibration sensor which response the accident took place in automobile. At that moment we're going to ship a message to close by clinic and family individuals. We track the location through GPS and ship area to particular character.In our assignment, the main purpose is to provide correct effects on vehicle theft incidents passed off in surrounding regions. We layout the venture based on improve generation together with android software. We configure menu on cellular application including left, right, backward and prevent. Accumulating the required records from sensor and communicate cell phone thru Bluetooth. We song the location via GPS in case robbery incident took place in any surrounding areas then getting alertness thru cell telephone via Bluetooth.

II. LITERATUREREVIEW

2.1 Existing System

In the gift machine, the zigbee is used to display the surroundings conditions of different sort of sensors. The system which provides handiest measuring statistics of corresponding sensors like humidity, temperature sensor, intensity of mild and many others. In this system, the primary disadvantage is variety and power consumption. We changed zigbee with Wi-Fi technology, it is easy to tracking the constantly records from sensors and additionally measure the statistics from cell phone via Wi-Fi era within high speed range of facts. For particular motive our proposed device involves go out.

III. PROPOSED SYSTEM

On this paper we propose the system primarily based on WIFI technology. Zigbee has often been appeared as a mini model of wireless. Preserving a few functions like variety, power intake apart, zigbee and Wi-Fi are frequently utilized in similar programs in phrases of family based totally wireless conversation. Wi-Fi is a brief range wireless communication even proportion commonplace ISM band of 2.4 Ghz.The records from the sensors can be up to date at the computer through wirelessly by using WIFI technology. We can reveal the one of a kind sensors like humidity, fuel, mild and temperature and so forth. The system also can view the records from cell smartphone however it ought to require internet connection. Through internet connection thru WIFI, we will easily monitor the data from sensors.

3.1 Hardware Design

Block Diagram

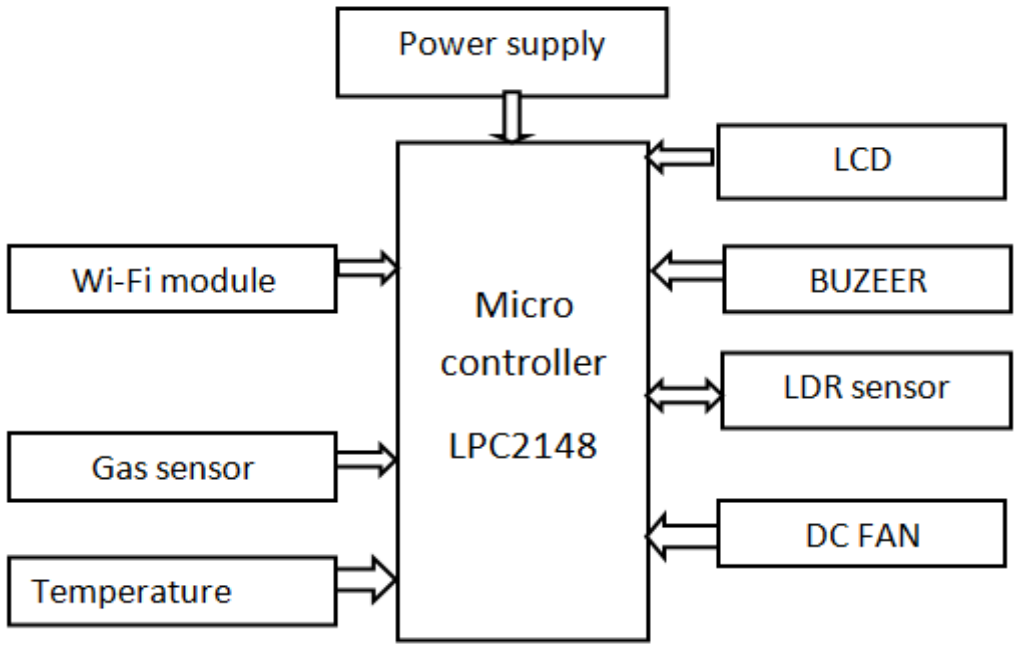


Fig 1: block diagram

3.2 LPC2148 Microcontroller

The LPC2148 microcontroller board primarily based mostly on a sixteen-bit/32-bit ARM7TDMI-S CPU with real-time emulation, 16-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 reminiscence; 128-bit big interface/accelerator lets in excessive-pace 60 mhzoperation, In- system Programming (ISP), single 10-bit DAC gives variable analogue output, 32-bit timers/outdoor occasion counters (with 4 capture and four take a look at channels every), PWM unit (six outputs) and watchdog, Low power real-Time Clock (RTC), multiple serial interfaces which includes twouarts, fast I2C-bus (400kbit/s), SPI and SSP with buffering and variable records length capabilities.

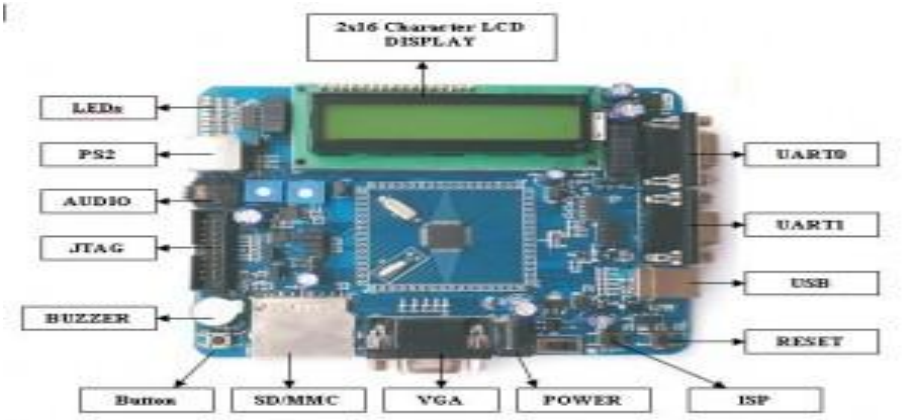


Fig 2: arm 7 board

3.3 Wi-Fi Module

ESP8266 is a powerful, low fee Wi-Fi module suitable for which includes Wi-Fi practicality to partner diploma current microcontroller assignment through a UART serial association. The module may also be reprogrammed to behave as a standalone Wi-Fi connected tool–sincerely upload power. The device that's speak through AT commands.

Fig 3: Wi-Fi module

3.4 Temperature sensor

The LM35 collection is precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 consequently has a bonus over linear

temperature sensors calibrated in Kelvin, due to the fact the person isn't required to subtract a huge steady voltage from its output to achieve on hand centigrade scaling. The LM35 does no longer require any external calibration or trimming to offer ordinary accuracies of ±1/4°C at room temperature and ±3/4°c over an entire -55 to +155°C temperature variety. Low price is confident by way of trimming and calibration on the wafer stage. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or manipulate circuitry specifically easy. It is able to be used with unmarried electricity components, or with plus and minus materials. Because it draws handiest 60 µa from its deliver, it has very low self-heating, less than zero.1°C in nevertheless air. The LM35 is rated to operate over a -55° to +150°C temperature range, even as the LM35C is rated for a -40° to +110°C range (-10° with stepped forward accuracy). The LM35 collection is to be had packaged plastic TO-90 two transistor bundles. The LM35D is also to be had in an eight-lead ground mount small outline package deal and a plastic TO-220 bundle deal.

Fig 4: lm35 sensor

3.5 LDR

A photo resistor or light structured resistor or cods (cadmium sulphide) cell is a resistor whose resistance decreases with growing incident light depth. It can also be known as a photoconductor.A photo resistor is fabricated from a high resistance semiconductor. If light falling on the tool is of excessive sufficient frequency, photons absorbed by using the semiconductor supply bound electrons enough power to jump into the conduction band. The ensuing loose electron behaviour strength, thereby reducing resistance.

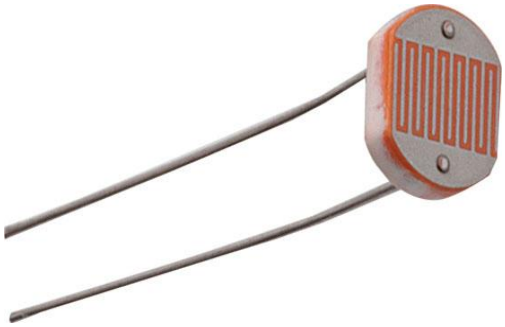


Fig 5: LDR sensor

3.6 GAS SENSOR

An Ionization Smoke Detector has key components: the ionization chamber, and a source of radiation. This deliver of radiation includes a completely minute concentration of Americium-241, which produce alpha debris. The Ionization Chamber includes plates: one plate is negatively charged, and the alternative is undoubtedly

charged. The alpha debris created thru the Americium-241 flow at very high speeds and come upon oxygen and nitrogen molecules in the ionization chamber. The stress exerted through this collision reasons electrons to fall off from every molecule, developing an ion. The now surely charged ions are interested in the negatively charged plate even as the electrons interested in the definitely charged plate. This attraction motives a regular electrical modern-day in the chamber itself. Even as smoke travels into the chamber, its particles hook up with the ionized molecules to neutralize them and pull them a ways from the plate. This disrupts the electrical modern and triggers the alarm.

Fig 5: gas sensor

IV. SOFTWARE PROGRAM DESIGN

On this proposed machine, as we used lpc2148 we want to use following software equipment to application for it.

1. Keil µ vision
2. Flash magic

The keiluvision is an IDE for embedded c programming language. In this ide, we need to import the utilities and libraries consistent with the controller we are using. This IDE is very less tough and in person pleasant manner to use. It includes all the c/c++ compilers, assemblers, and debuggers in it. It simplifies the way of embedded simulation and trying out together with hex record generation.The flash magic is a programming application. The c/c++ software written in ide can be processed into hex file i.e. in.hex format. By means of using hex report we dump the code into microcontroller and carry out the challenge with respective software

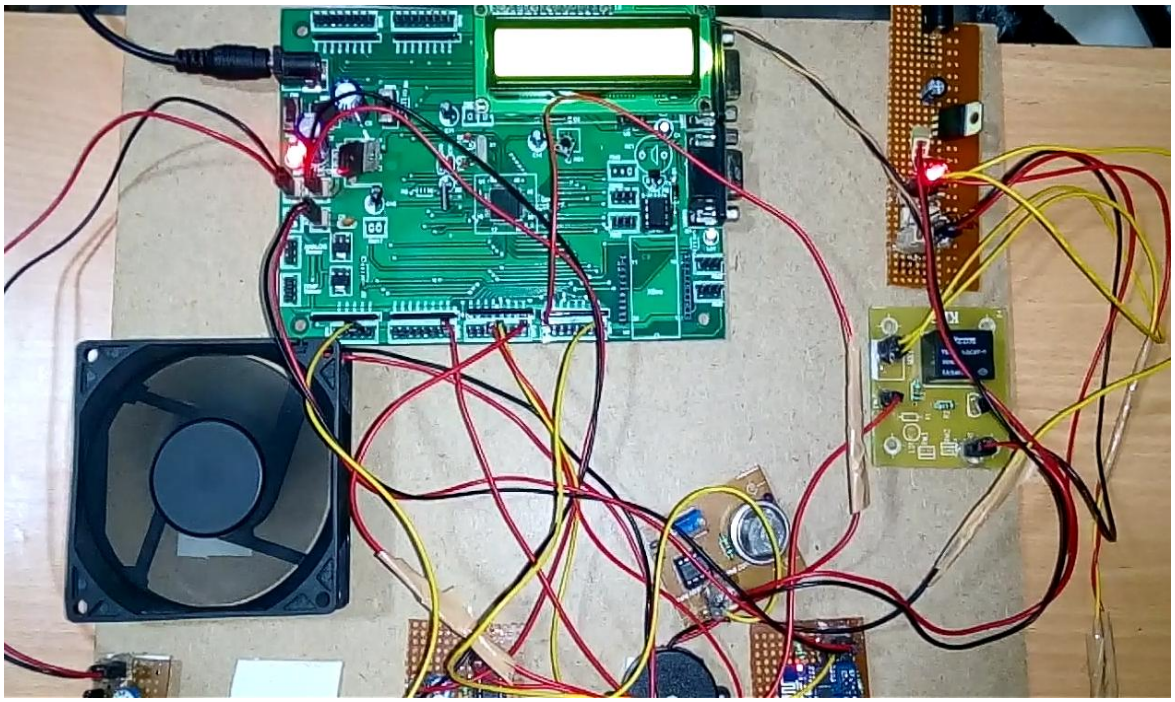
V. OPERATING DESCRIPTION

The most goal of the project is to observe the sensor data and conjointly transmit the facts thru neighbourhood area network era. For that reason we can definitely display the statistics from the sensor in a predefined manner. In this project the microcontroller performs a critical function to carry out the desired challenge. The microcontroller we used in this undertaking is arm 7 lpc2148 which has several inbuilt functions which include ADC, SPI, I2C, PWM, and RTC. The sensors which are interfacing without delay with microcontroller and we write the code in such way to talk with the microcontroller and carry out the unique undertaking. The wireless

module is interfaced with microcontroller that is used to measure the corresponding sensor information and monitor the statistics via IP address. The gadget also can view the information from a cell smartphone, but it must require net connection. Wecan without difficulty display the facts from sensors through internet connection via Wi-Fi.

VI. RESULT

This system monitored the different sensors data like humidity, gas, light and temperature etc. Thissystem had shown the data from mobile phone through internet connection via WI-FI.



VII. CONCLUSION AND FUTURE SCOPE

The applied system is primarily based on Wi-Fi technology that's effortlessly display the records of all sensor values and update the records thru IP cope with. The device is much efficaciously to speak the real time way and steady in nature.

VIII. FUTURE SCOPE

The system provides best tracking the sensor values however we can't control the devices with respective sensors. In destiny scope we are able to do each i.e. tracking in addition to controlling the home equipment. By way of imposing this idea we will use in several appliances like agriculture, fitness monitoring etc.

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