A Remote Home Security System Using Wireless Sensor Network And GSM Technology

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Abstract: Wirelesssensornetworkiscomposedofa largeamountofminiatureself-organizingwirelesssensor nodes. By combining three kinds of technology such as sensor, micromechatronics andwireless communication, WSN can detect, collect and deal with the object information in itscovering area, and send data to the observer. In a word, WSN technology has the advantages ofwidecoveringarea,abletoremotemonitoring,highmonitoringprecision,fastnetworkestablishmentandreasonablecost. Safety is the most important requirement of home for people. With the development of ITtechnology, network and automatic control technology, a remote home security monitoring andalarmingsystem becomes more and morepracticable today. By combiningwireless sensornetwork (WSN) and GSM technology, this paper designs a low-power consumption remotehome security monitoring and alarming system that can detect the theft, leaking of raw gas andfire,andsendalarmmessagetothehouseowner'smobilephone.

Keywords: Microcontroller, Gas sensor, Ir Sensor, Wi-Fi module

I. Introduction

Wirelesssensornetworkiscomposedofa largeamountofminiatureself-organizingwirelesssensor nodes. By combining three kinds of technology such as sensor, micromechatronics andwireless communication, WSN can detect, collect and deal with the object information in itscovering area, and send data to the observer. In a word, WSN technology has the advantages ofwidecoveringarea,abletoremotemonitoring,highmonitoringprecision,fastnetworkestablishmentandreasonablecost.

The system structure is composed of the MCU-based home wireless control center, oneWSN center node module, and several data collecting nodes, GSM module, GSM network andmobile phone. The WSN data collecting node modules are connected with Infrared detector,Temperaturesensor ORPIRsensor,Smoke detector. When the infrared detectorfinds thatsomepeople intrudes into the house abnormally or when the temperature sensor detects too highindoortemperatureandatthesametime, whenthegassensordetectsoverproofcombustiblegasconcentration the sensors will send encoded alarm signal to the home control center through thewireless sensor network established in home. Once the wireless control center receives alarmsignal,itwillsendalarmshortmessagetotheusersthroughtheGSMmoduleandGSMnetworkimmediately.HereweuseGSMforprototypedevelopment.

II. Embedded Systems Introduction

An Embedded System could be a set of component and software, still as mechanical and other components, that's designed to execute a specific task. Microwave ovens are a decent example. Almost every family has one, and tens of several people use them a day, but few people realize that their lunch or dinner is ready employing a processor and software. this can be in stark contrast to the family room's personal PC. It, too, is formed of component and software, in addition as mechanical parts (disk drives, as an example). a private computer, on the opposite hand, isn't meant to execute one job; rather, it's going to accomplish a large range of tasks. to form this distinction clear, many of us use the term general-purpose computer. A general-purpose computer may be a blank slate when it's delivered; the maker has no idea what the customer will do with it. One customer might use it as a network digital computer, while another might use it solely for gaming, and one more might

use it to put in writing the subsequent great American novel. An embedded system is often a component of a bigger system. Many embedded systems are found in modern cars and trucks, as an example. One embedded system monitors and controls the vehicle's emissions, while another displays information on the dashboard. These embedded systems is also connected by a communication network in some circumstances, but this is often by no means a requirement. To avoid any misunderstanding, it's crucial to notice that a general-purpose computer is constructed of multiple embedded systems. My computer, as an example, is formed from an embedded system that has a keyboard, mouse, video card, modem, hard drive, floppy drive, and sound card. Each of those devices is provided with a CPU and software and is meant to hold out a specific task. The modem, as an example, is formed to send and receive digital data over an analogue phone connection. That's all there's thereto, and every one of the opposite gadgets may be summed up in an exceedingly single statement . If an embedded system is well-designed, the presence of the CPU and software may go unnoticed by the device's user. Microwave ovens, VCRs, and alarm clocks are all samples of this. it would even be possible to style an identical device without the processor and software in some circumstances. this might be accomplished by substituting a custom microcircuit for the mixture that accomplishes the identical duties in hardware. When a design is hard-cooled during this way, though, plenty of flexibility is lost. Changing some lines of software is way easier and fewer expensive than redesigning a bit of custom hardware.
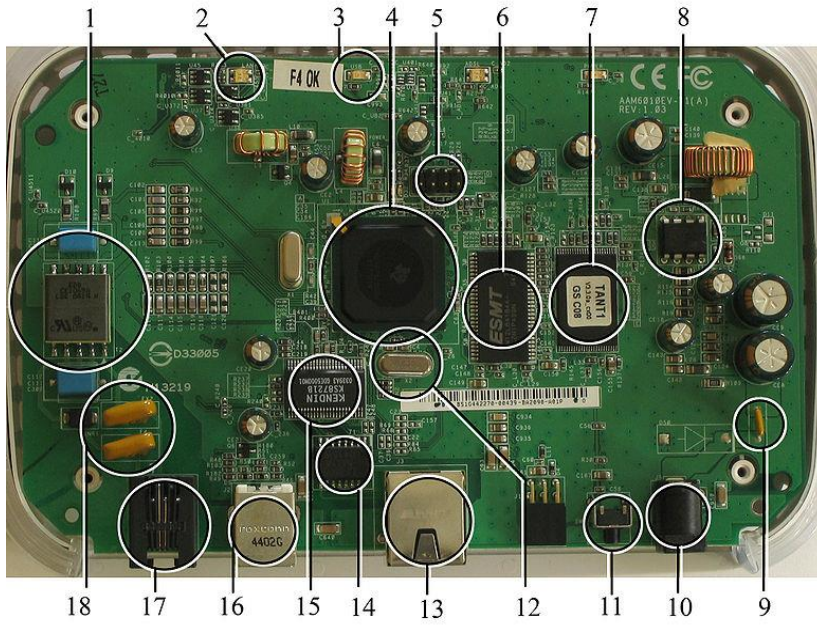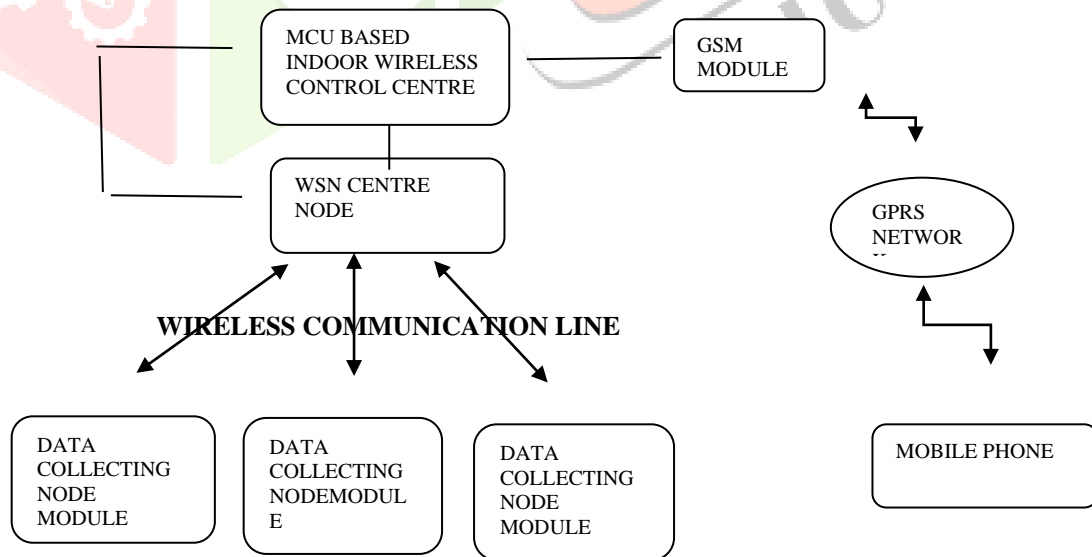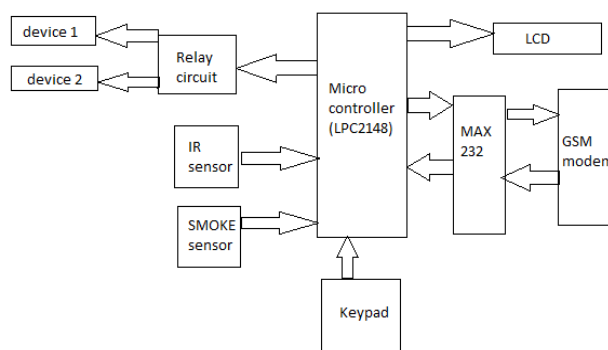

Fig-1: Latest structure of embedded system

III. METHODOLOGY

IV. BLOCK DIAGRAM

- Microcontroller will control all the instruction there are so many types of microcontrollers in that we have used ATMEGA328 due to less circuit complexity and it is better when compared with the 8051 microcontroller, and here ATMEGA328 is used to control the GSM module, and various sensor networks which have been used in this project.

Fig: Gas Sensor

V. CONCLUSION

Therefore in this project we combine various sensor network and GSM technology to design a remote home security monitoring system that can detect theft, fire and control the house hold appliances by sending a message to the house owner's mobile phone

VI. REFERENCES

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