

Application of Data Acquisition System at Remote Location

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Abstract

Wireless Packet information Networks, like GPRS, hold nice promise for applications that deem machine to machine (M2M) communication. The quickly advancing mobile communication technology and therefore the decrease in prices create it attainable to include mobile technology into home automation systems. Supported an SMS/GPRS (Short Message Service/General Packet Radio Service) mobile cell module and a microcontroller, a home automation server is established, Powerful microcontrollers are used as elements of most home and workplace appliances of these days. Desegregation net servers to those intelligent devices can aid in dominant them over the net and conjointly in making effective user interfaces within the kind of sites. This paper presents the event of AT electronic equipment driver, text based mostly command process computer code, output for Associate in Nursing Atmel micro-controller to facilitate in causation and receiving information via the cell module. The planned style is enforced mistreatment SMS (commonly called text messages) and GPRS (Internet based mostly protocol) because the main communication protocol.

Key words: *LPC2148 development board, GPRS Modem, cell phone which can support JAVA application, intelligent appliances*

INTRODUCTION

Remote control via the net isn't a replacement feature and utilized in home automation systems. However, providing a mechanism for interaction between devices during this setting is sort of difficult. The net has been principally wont to connect personal computers to this point, however shortly all types of appliances with embedded computers can exchange data over the net. An enormous variety of microcontrollers are available in today's devices which might be connected to the net. If these intelligent appliances may be connected to the net at low price, the method we have a tendency to management and manage their functions would amendment entirely. An embedded internet server ought to use the protocol pr protocol to transmit sites from the embedded system to the hooked up to the appliance. The embedded system needs a network interface, like local area network, a TCP/IP protocol stack, embedded internet server software package and static

and dynamic sites that type the programme for that specific device.

The Hardware System

Micro Controller

This section forms the management unit of the complete project. This section primarily consists of a Microcontroller with its associated electronic equipment like Crystal with capacitors, Reset electronic equipment, Pull up resistors (if needed) and then on. The Microcontroller forms the guts of the project as a result of it controls the devices being interfaced and communicates with the devices per the program being written.

ARM7TDMI

ARM is that the abbreviation of Advanced RISC Machines, it's the name of a category of processors, and is that the name of a sort technology too. The RISC instruction set, and connected decrypt mechanism square measure abundant less complicated than those of advanced Instruction Set laptop (CISC) styles.

Liquid-Crystal Display (LCD) is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.

Thermistor

Thermistors are a temperature sensing devise. It is used to sense the temperature. In this project by depends on the value of temperature the exhaust fan will run.

Design of Proposed Hardware System

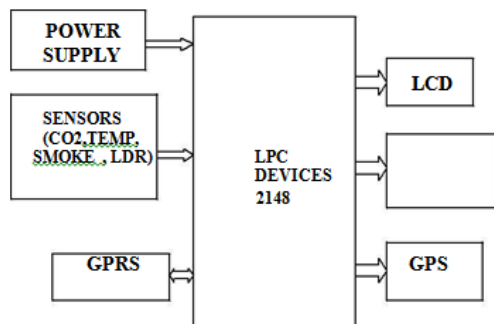


Fig.1: Block diagram.

We can overcome the disadvantage of the present methodology by remote via the web and it's a replacement feature and employed in home automation systems. However, providing a mechanism for interaction between devices during this atmosphere is kind of difficult. The web has been principally accustomed connect personal computers up to now, however shortly every kind of appliances with embedded computers can exchange data over the web. An enormous no of microcontrollers area unit obtainable in today's devices which might be joined to

the web. If these intelligent appliances may well be connected to the web at low value, the manner we tend to management and manage their functions would amendment entirely. The embedded system needs a network interface like local area network, a TCP/IP protocol stack, embedded net server computer code and static and dynamic web content that type the program for that specific device. The system uses a compact electronic equipment designed around LPC2148 (ARM7) microcontroller programs area unit developed in Embedded C. Flash magic is employed for loading programs into Microcontroller.

LDR

LDRs or lightweight Dependent Resistors ar terribly helpful particularly in light/dark device circuits. unremarkably the resistance of Associate in Nursing LDR is extremely high, typically as high as one thousand 000 ohms, however after they are lit with lightweight resistance drops dramatically. However, once lightweight shines onto the LDR its resistance falls and current flows into the bottom of the primary semiconductor then the second transistor. The semiconductor diode lights on. The predetermined electrical device are often turned up or all the way down to increase or decrease resistance, during this means it will create the circuit a lot of or less sensitive.

HUMIDITY SENSOR

Humidity is that the quantity of vapor within the air. In daily language the term "humidity" is generally taken to mean ratio. Ratio is outlined because the quantitative relation of the partial pressure of vapor in a very parcel of air to the saturated pressure of vapor at a prescribed temperature. Wetness may additionally be expressed as absolute wetness and specific wetness. Ratio is a vital metric utilized in prediction weather. Wetness indicates the probability of precipitation, dew, or fog.

High wetness makes individuals feel hotter outside within the summer as a result of it reduces the effectiveness of sweating to cool down the body by preventing the evaporation of perspiration from the skin. Absolute wetness is that the amount of water in a very specific volume of air. The foremost common units are grams per kilolitre, though any unit of measurement and any cubic measure might be used. Ratio is outlined because the quantitative relation of the partial pressure of vapor in a much aerosolized mixture of air and vapor to the saturated pressure of water at a given temperature. Ratio is expressed as a share. Specific wetness is that the quantitative relation of vapor to air (including vapor and dry air) in a very specific volume. Measure and control wetness.

SMOKE SENSOR

Smoke device is employed to observe an escape of smoke and any unsafe gases specified an alarm will be initiated to avoid any damages within the industries. These sensors are employed in several applications like company and in any paperwork areas these are coupled to fireplace alarms. And buzzers through the micro-controller. There are 2 main forms of smoke detectors: Ionization detectors and photoelectrical detectors. A warning device uses one or each ways, generally and a heat detector, to warn of a fireplace. Ionization detectors have an measuring device and a supply of radiation. The supply of radiation could be a minute amount of americium-241 (perhaps 1/5000th of a gram), that could be a supply of alpha particles (helium nuclei). The measuring device consists of 2 plates separated by a couple of metric linear unit. The battery applies a voltage to the plates, charging one plate positive and also the different plate negative. Alpha particles the positively-charged O and N atoms are drawn to the negative plate and also the electrons are drawn to the positive plate,

generating a tiny low, continuous electrical phenomenon. When smoke enters the measuring instrument, the smoke particles attach to the ions and neutralize them, so that they don't reach the plate. The call in current between the plates triggers the alarm. In one variety of photoelectrical device, smoke will block a light-weight beam. During this case, the reduction in light-weight reaching a sensor activates the alarm. Within the commonest variety of photoelectrical unit, however, light-weight is scattered by smoke particles onto a sensor, initiating an alarm. During this variety of detector there's a T-shaped chamber with a crystal rectifier (LED) that shoots a beam of sunshine across the gymnastic apparatus of the T. A sensor, positioned at the lowest of the vertical base of the T, generates a current once it's exposed to light-weight. Beneath smokeless conditions, the sunshine beam crosses the highest of the T in AN uninterrupted line, not placing the sensor positioned at a right angle below the beam. Once smoke is gift, the sunshine is scattered by smoke perpetually discharged by the metallic element knock electrons off of the atoms within the air, ionising the gas and element atoms within the chamber. Particles, and a few of the sunshine is directed down the vertical a part of the T to strike the sensor. Once ample light-weight hits the cell, the present triggers the alarm.

Web Servers

Recent technological developments change us to engraft internet servers into everyday appliances with low prices. What will we hope to realize by golf stroke our devices online? Essentially, the net allows users to fetch web content and show them on their own browsers in a very platform-independent manner. Moreover, info returning from an appliance's sensors may be wont to generate dynamic hypertext mark-up language documents by common entrance interface (CGI) scripts.

Therefore, any device connected in this fashion may be monitored and controlled through CGI scripts and also the results may be sent to the user's browser as an online page. Not solely users, however, jointly makers will use internet access to update their products' computer code just by uploading the new computer code to devices remotely or appliances may be programmed to often check the manufacturer's data processor for computer code updates and transfer them mechanically once they are accessible. Moreover, once an appliance needs maintenance, it will mechanically inform the technical workers while not interrupting the user.

Web-based interfaces are a unit cross-platform and easier to develop. The prices associated with product documentation, coaching and support are unit lower. These will be instrumental in finding computer programme connected issues. Most advanced appliances have several unused functions, as a result of users realize them too tough to use. There are a unit many reasons for poor interfaces. A vital one among these is that since makers economize on buttons and displays, advanced options will be used solely by button mixtures with no or terribly laborious to know indications on the button labels. Moreover, the feedback given to the user once a performed action is sometimes not satisfactory (Nichols and Myers, 2003).

On the opposite hand, as manifested by the exponential growth of the quantity of internet users globally, standard folks will use internet primarily based interfaces effortlessly with none information of the underlying hardware and package.

Board Hardware Resources Features

GPRS

GPRS (General Packet Radio Service) could be a packet based mostly communication service for mobile devices

that permits knowledge to be sent and received across a mobile phone network. GPRS could be a step towards 3G and is commonly observed as two.5G. Here are some key edges of GPRS. GPRS usage is often charged supported volume of knowledge transferred, contrastive with circuit switched knowledge, that is typically beaked per minute of affiliation time. Usage higher than the bundle cap is either charged per MB or disallowed. GPRS is a best-effort service, implying variable outturn and latency that depend upon the amount of alternative users sharing the service at the same time, as hostile circuit change, wherever a definite quality of service (QoS) is secure throughout the affiliation. In 2G systems, GPRS provides knowledge rates of 56–114 kbit/second [1–3]. 2G cellular technology combined with GPRS is typically delineate as 2.5G, that is, a technology between the second (2G) and third (3G) generations of mobile telephone [4–8]. It provides moderate-speed information transfer, by exploitation unused time division multiple access (TDMA) channels in, for instance, the GSM system. GPRS is integrated into GSM unleash ninety seven and newer releases. As mentioned earlier GPRS isn't a totally separate network to GSM. Several of the devices like the bottom transceiver stations and base transceiver station controllers square measure still used. Usually devices got to be upgraded be it computer code, hardware or each. Once deploying GPRS several of the computer code changes may be created remotely. There square measure but 2 new useful parts that play a significant role in however GPRS works. The Serving GPRS Support Node (SGSN) and also the entree GPRS support node (GGSN).



Fig. 2: GPRS module

DEVICES

There are two devices ,device1 and device 2,controlled by the web pages, these web pages are communicated to the controller using TCP/IP protocol , parallely we create web switches in web page , using these web switches we will controle the devices when the sensor are reached the threshold values.

GPS: Global Positioning System tracking is a method of working out exactly where something is. A GPS tracking system, for example, may be placed in a vehicle, on a cell phone, or on special GPS devices, which can either be a fixed or portable unit. GPS works by providing information on exact location. It can also track the movement of a vehicle or person. So, for example, a GPS tracking system can be used by a company to monitor the route and progress of a delivery truck, and by parents to check on the location of their child, or even to monitor high-valued assets in transit.

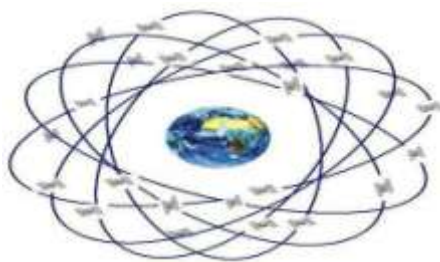


Fig. 3: GPS location tracking.

A GPS tracking system can work in various ways. From a commercial perspective, GPS devices are generally used to record the position of vehicles as they make their journeys. Some systems will store the data within the GPS tracking

system itself (known as passive tracking) and some send the information to a centralized database or system via a modem within the GPS system unit on a regular basis (known as active tracking) or 2-Way GPS.

CONCLUSION

The developed system can be used for home and industry controller prototypes. It is very economical and prevents the wastage of time and labor as well. The aim to automate the industry and home has been achieved and results are obtained.

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