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Smart Classroom Appliances Controlled by GSM

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ABSTRACT: This paper defines a theme for management of power during a category area thereby saving electricity that may be a major concern nowadays. It additionally describes the employment of wireless sensing element networks victimization GSM for sophistication area power observance and management. this method would offer a distant access for sophistication area power management and maintenance. Power saving is a very important issue once there's a severe power cut. If the appliances square measure transitioned once not in use, power is saved. during this work, a GSM based mostly category area power management theme is utilized. The microcontroller employed inthe planned theme is AT89S52. The planned system is extremely secure, since unauthorized users don't seem to be permissible to access the ability management.

KEYWORDS : GSM , AT89S52 MICRO CONTROLLER

I.INTRODUCTION

Embedded systems area unit designed victimization microcontrollers and microprocessors. A microchip may be a general purpose IC like 8085,8086,80386 and therefore the Pentium. These microprocessors don't contain any RAM, ROM, I/O ports. For this reason these area unit referred to as generalpurpose microprocessors. A system designer victimization microchip should add external store, RAM, I/O ports to form his system useful. As a result the system becomes abundant bulkier and far dearer, however they need the advantage of skillfulness specified designer will prefer the number of RAM, ROM, and I/O ports required to suit the task. this can be not the case with microcontroller, that encompasses a CPU(a microprocessor) additionally to fastened quantity of RAM,ROM,I/O ports and timers on one chip. we are able to justifiedly say that the processor, RAM, ROM,I/O ports and timers area unit embedded along on one chip. thus designer cannot add any external memory, I/O ports or timers to. Microcontroller and microchip area unit employed in embedded systems merchandise. Associate in Nursing embedded system uses a microchip or a microcontroller to try and do one and one perform solely. A printer is Associate in Nursing example of Associate in Nursing embedded system since it performs single task, namely, obtaining the information and printing it. distinction to the current, a Pentium based mostly laptop performs several tasks which incorporates application, print server, bank terminal, game player, network server, or net terminal. In Associate in Nursing embedded system, there's just one application software system that's usually burned into store. But, during a general purpose system there area unit several application software, one for every perform.

II.SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

The existing infra-red (IR) or Blue-tooth remote controls present in the market are in general appliance and specific. Electrical appliances connected through Bluetooth making use of Blue-tooth enabled smart phones cannot be managed from a distant location. Thus functions such as being able to turn on an air-conditioner while returning home cannot be done with such systems.

In existing systems, Bluetooth technology and RF modules have been used to transmit the data wirelessly. But these devices and modules have certain limitations and drawbacks. They are not cost efficient, not energy efficient as they consume more power to operate, and have very short transmission and reception range.

2.2 PROPOSED SYSTEM

In this project use GSM in order to control classroom electrical appliances through the SMS. This system uses four loads to demonstrate as lighting and a fan. Our user friendly interface allows a user to easily control these home appliances through the GSM. For this system we use an AVR family microcontroller. This microcontroller is interfaced

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with a GSM module to get user message through mobile phone. Relays are used to switch loads. After receiving user message from mobile, controller processes these instructions to operate these loads accordingly.

2.3 SYSTEM ARCHITECTURE

The system contains six devices: a AT89S52microcontroller,GSM,LCDdisplay,Transfer-shell,Bulb, portable. All the parts are interfaced to the Microcontroller.AT89S52 has 8051 primarily based design microcontroller. it's an occasional value economical Microcontroller. The electrical device helps in providing a relentless voltage of 5v to the microcontroller. A message is shipped from mobile to the GSM through air medium. The GSM that is interfaced to microcontroller sends a symptom cherish the message given from the mobile. as an example If message is 123BULBON then the GSM sends a symptom to the microcontroller to form the relay ON so power is equipped to the bulb via relay. If the message is 456BULBOFF then the GSM sends a symptom to the microcontroller to form the relay OFF so no power goes to the bulb via relay. The show|LCD|digital display|alphanumeric display} is employed to display the standing of the message, that is, it shows whether or not the microcontroller is reading the message or not. It conjointly displays the message that a come back message is shipped to the portable for acknowledgement. thence LCD is a very important part that displays the standing of the operation of our system. The relay acts as Associate in Nursing electric switch. it's operated by the signal from the microcontroller. The relay provides power or bring to an end power as per the signal received from microcontroller.

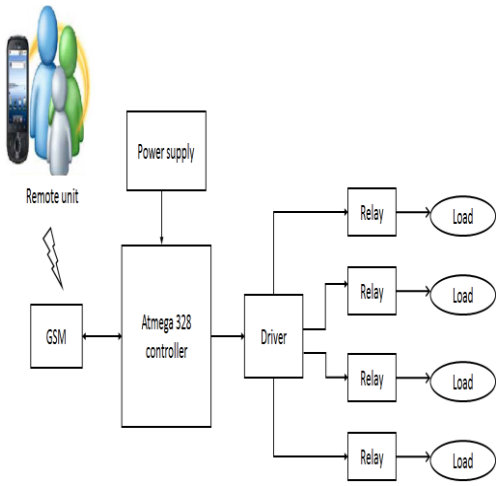

Fig.1Block Diagram

III HARDWARE IMPLEMENTATION

3.1 AT89S52

The AT89S52 is additionally a low-power high performance CMOS 8-bit microcontroller with 8K bytes of in system programmable memory. it's supported the 8051 vogue. The device is ready-made apply at high density nonvolatilizable memory technology and is compatible with commonplace 8051 instruction set and pin out. The AT89S52 provides ensuing commonplace features: 8K bytes of Flash, 256 bytes of RAM, thirty two I/O lines, Watchdog timer, 2 data pointers, 3 16-bit timer/counters, a six-vector two-level interrupt vogue, a full duplex interface, on-chip generator. The microcontroller AT89C52 isn't INSYSTEM programmable however AT89S52 can be programmed even once the microcontroller is place in at intervals the system. The AT89S52 is supposed with static logic for operation right all the manner all the way down to zero frequency and supports 2 code selectable power saving modes. .The IDLE mode stops component whereas permitting the RAM, timer/counters, port and interrupt system to continue functioning. the facility down mode saves down the look contents however freezes the generator, disabling all fully totally different chip functions till succeeding interrupt reset. The on chip flash permits the program memory to be reprogrammed in-system or by a traditional non volatile memory human. By combining a flexible eight bit processor with in-system programmable flash on monolithic chip, the Atmel AT89S52 may even be a powerful microcontroller that offers high flexibility and price effective solutions to several embedded management application.

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Fig. 2 AT89S52 Microcontroller

Internal type of AT89S52". This microcontroller has 5 code selectable power saving modes. The Idle mode stops the processor whereas permitting the RAM, Timer/Counters, SPI port, and interrupt system to continue functioning. the facility down mode saves the register contents however freezes the generator, disabling all fully totally different chip functions till succeeding Interrupt or Hardware Reset..In Power-save mode, the asynchronous timer continues to run, permitting the user to remain up a timer base whereas the remainder of the device is sleeping. The ADC Noise Reduction mode stops the processor and every one I/O modules except asynchronous timer and ADC, to attenuate modification noise throughout ADC conversions. In Standby mode, the crystal/resonator generator is running whereas the remainder of the device is sleeping. this enables in no time start-up combined with low-power consumption.In Standby mode, the crystal/resonator generator is running whereas the remainder of the device is sleeping. this enables in no time start-up combined with low-power consumption.

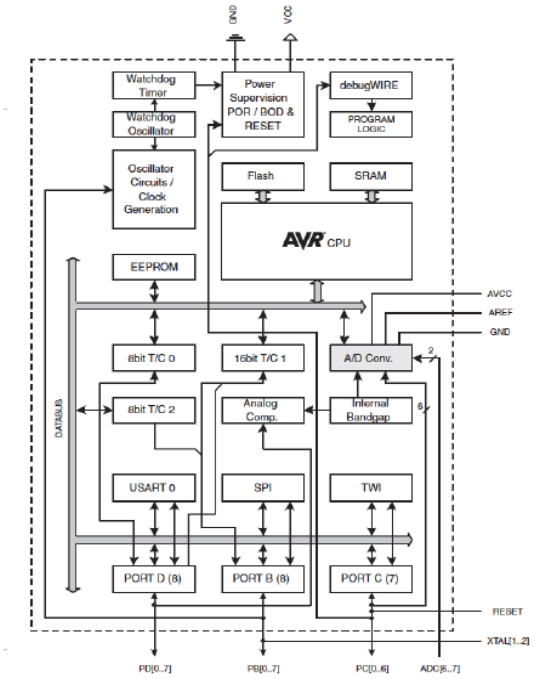

Fig.3 Architecture of AT89S52 Microcontroller

3.2 GMS

GSM(Global System For Mobile communication) is a standard set by European Telecommunication Standards Institute to describe protocols for second generation(2G) digital cellular network used by mobile phones. The GSM standard was developed as a replacement for first generation(1G) analog cellular network, and originally described a

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digital circuit switched network optimized for full duplex voice telephony. This was expanded over time to include data communication, first, by circuit switched transport, then packet data transport via GPRS(General Packet Radio Service) and EDGE(Enhanced data rates for GSM evolution).

Fig.4. Diagram of GSM module

3.3 RELAY :

A relay is associate degree electrically operated switch. Relays ar used wherever it's necessary to regulate a circuit by an occasional power signal or wherever many circuits ar controlled by one signal. it's sometimes associate degree magnetic force device that incorporates a coil .When this coil is provided with power, a magnetic flux is formed that makes it to act as a switch. A solid state contactor may be a heavy solid state relay, together with the required sink, used wherever frequent on/off cycles ar needed, like with electrical heaters, tiny electrical motors, and lighting masses. There aren't any moving components to wear out and there's no contact bounce thanks to vibration. they're activated by AC management signals or DC management signals from Programmable logic controller (PLCs), PCs, Transistor-transistor logic (TTL) sources, or different chip and microcontroller controls.

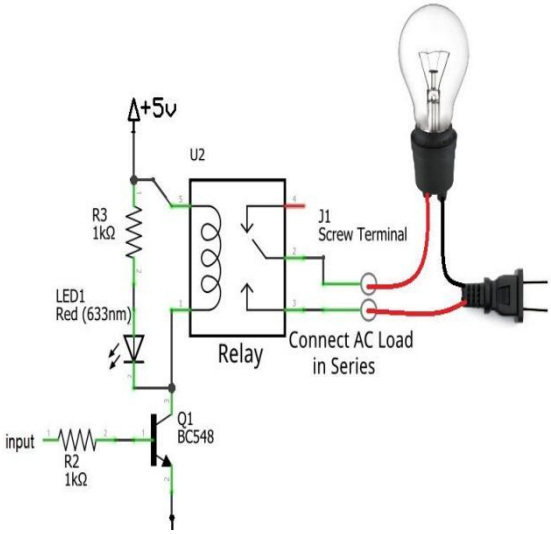

Fig. 5 Relay bulb Connection

3.4 LCD

A liquid show could be a flat panel, electronic visual show device that don't emit light-weight directly. It uses the sunshine modulating properties of the liquid crystals to show the message. The digital display could be a rather more informative output device than one light-emitting diode. The {lcd|liquid crystal show|LCD|digital display|alphanumeric display} could be a display that may simply show characters on its screen. LCDs point size, worth and configuration, from having a handful of lines to massive displays. Some area unit even terribly specifically designed for one application, having solely that ability to show set graphics. digital display is interfaced to the microcontroller that controls the airing message within the digital display. The microcontroller sends specific digital

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signals comparable to the message that's to be displayed by the digital display. These digital signals from microcontroller create {lcd|liquid crystal show|LCD|digital display|alphanumeric display} to display the desired message. thence it displays the standing of the system.

3.5 TRANSFORMER

The electrical device is that the main element within the power provide unit. It step downs the 240v ac provide and provides it to the bridge rectifier. The beating dc output of the bridge rectifier is given to electrical phenomenon filter. The filter provides US the dc signal with some ripples created thanks to the charging and discharging action of the electrical phenomenon filter. The dc signal with ripple is reborn into excellent dc signal of 5v by LM8405 regulator. This 5v dc signal is given to the microcontroller and to any or all its interfaced elements. The electrical device role is extremely necessary in provision the desired low voltage signal from the high voltage signal.

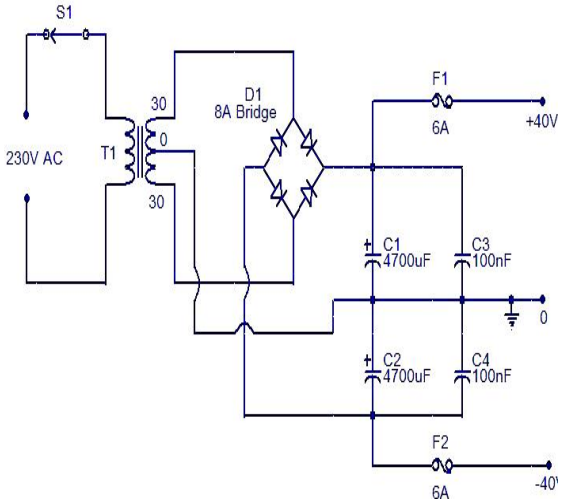

Fig. 6.Power supply unit

IV.CONCLUSION

In this work we have a tendency to introduced a way to management a bulb with message from a mobile exploitation relay capable of handling solely (3-5)A of current solely. the ability during a category area may be done by increasing current handling capabilities of the relay, since the quantity of current flowing at school area circuit is far larger than 3-5 A of current. The electrical device voltage rating should be redoubled for dominant power within the category.

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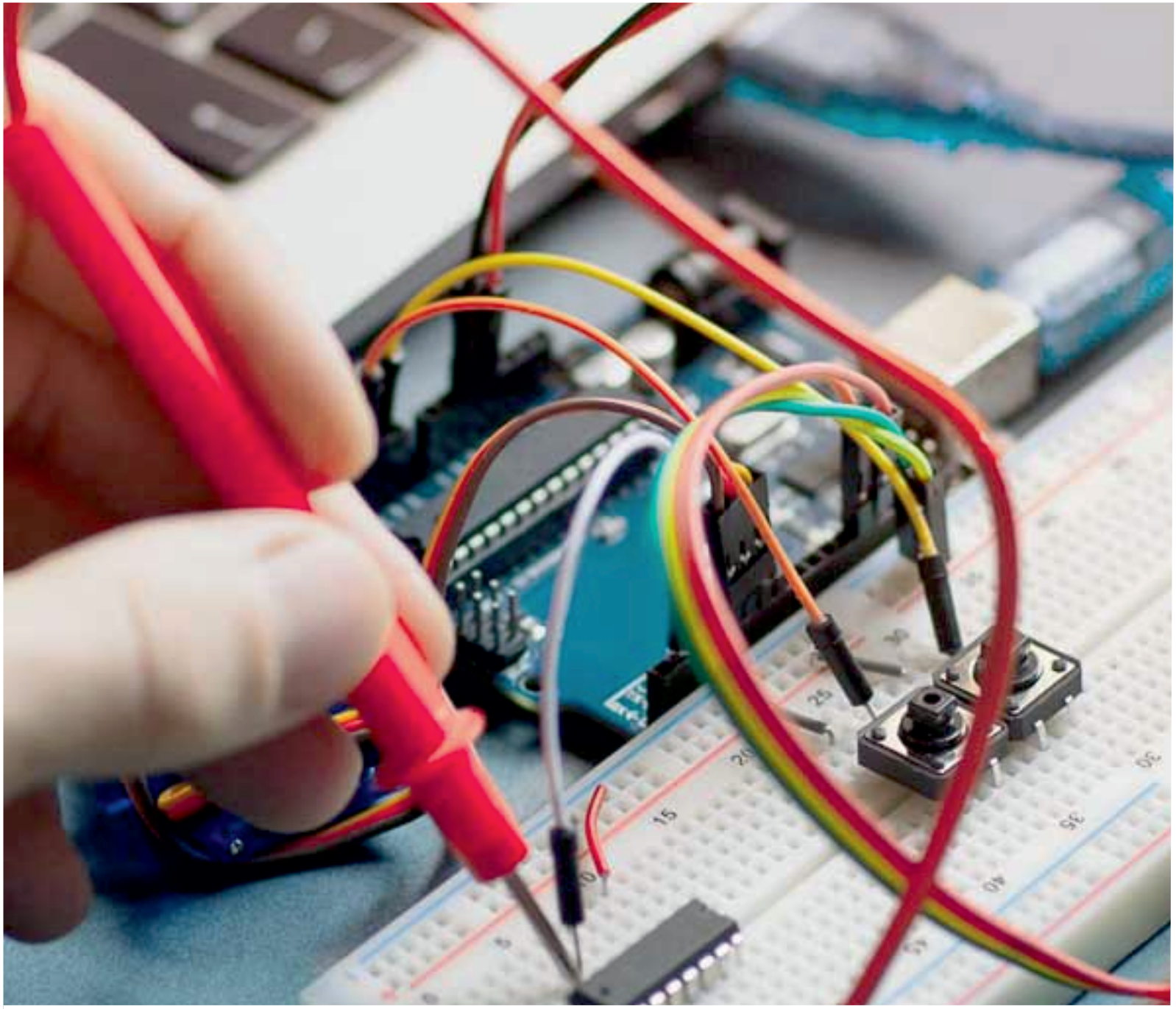

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