INTELLIGENT MONITORING AND CONTROL RENDERED TO STREET LIGHTING

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ABSTRACT

There are huge drastic changes happening in the world. as a part of that the usage of electric power is also going to be reduced. It's going to replace with the solar energy. Which it is a free source we no need to pay for anyone for using this.   That's why people are looking at this side. In the streets the lights can be turn on\off by manually. Whenever the person not comes the lights will glown in the daytime also, it's the big drawback with the existing system and also in night after midnight there is no one go through in some areas. In that areas its also a drawback. To overcome this we come up with the solution, we are going to attach our system with street lights, it wont need electricity it directly takes the power from the sun and stores in battery in daytime. With the sensors light will operate in night time only, in the night time also if the person detected only. and we will get the information through sms.

Keywords: ARM7 board, PIR sensor, LDR sensor, Solar panel,LCD, Battery, relay, GSM module.

I. INTRODUCTION

Day by day the power consumption is increasing hugely. In a few years we don't know whether we are having the power or not, because the resources like coal and other used to produce the electricity are reducing. By this results the engineers are looking for alternatives. This system mainly designed to utilize the solar energy to reduce the use of thermal electricity. In our system battegy fetch the energy in the day night by solar panel and in night time we will utilize those energy for street lights. Here one another advantage is avoidance of the power cable. It can be placed anywhere like in the public places, streets and at traffic signals.

II. EXISTING SYSTEM

Now a days, Human life style was totally changed as of even the people are not able to turn on and off the lights. In the present system the street lights can be operated by manually. A person will come in the evening time to turn on the lights and will turn off by coming in morning time again. This is happened in the country. But if the person doesn't come in morning time there is huge wastage of electricity. and he doesn't come in evening we have to stay in the dark only. Tot avoid those problem we are proposing this system.

III. PROPOSED SYSTEM

This proposed project operated based on solar energy. And also it wont need human to turn and off the light. In this we are using modern technology sensors to get automated of this work to reduce the manpower and for the modern india. It's a new era of solar energy, because in the future we are mostly going to utilize the solar power only. And we have an another advantage with this is if there is no movable detected in the night time also the light goes to off state, and every time we get an alert via sms to our mobile phone through GDM modem.
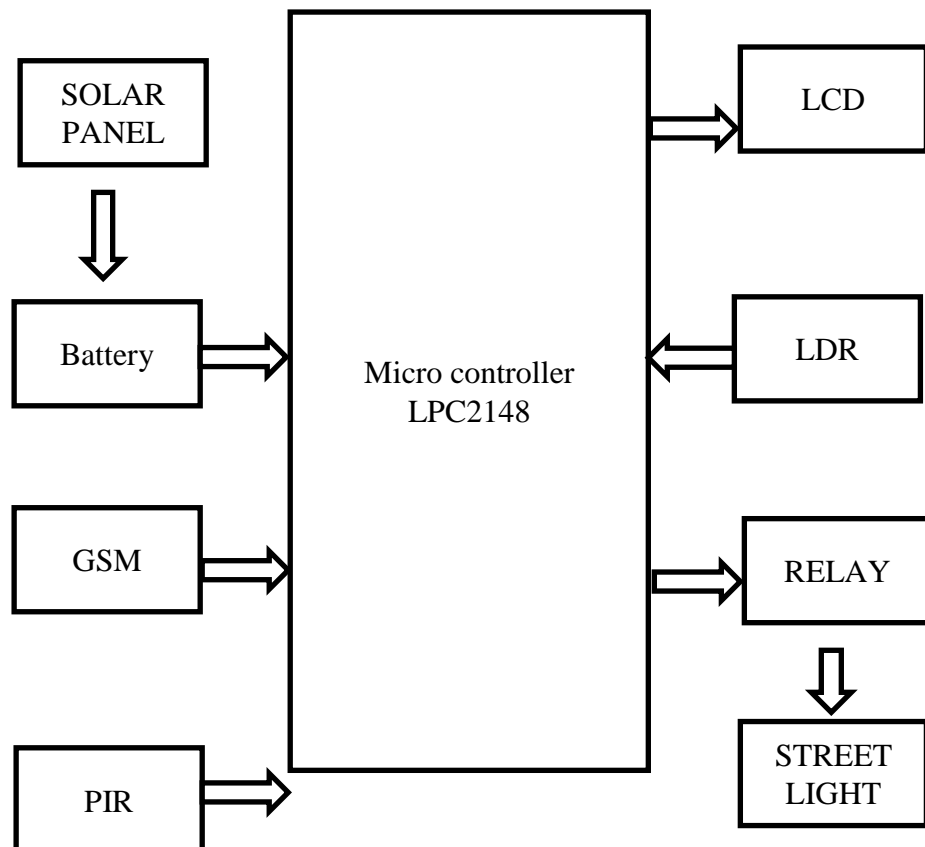
BLOCK DIAGRAM

Block Diagram

Fig1: block diagram

LPC2148 microcontroller

The ARM7 (superior RISC system) pressers board primarily based complete on a 16/32-bit ARM7 its approach of 16/32-bit ARM7 TDMI-S microcontroller, eight computer memory unit to 40 pc reminiscence unit computer memory unit to 512computer reminiscence unit on-chip flash reminiscence; 128-bit In- system Programming (ISP). 32-bit timers/out of doors occasion counters, watchdog, Low electricity of actual-Time Clock (RTC), more than one serial interfaces which has 2 UARTs , speedy I2C-bus (400kbit/. There are sixty four pins of ARM7 processer and a couple of ports (port0, port1) 45 pins are enter/output.
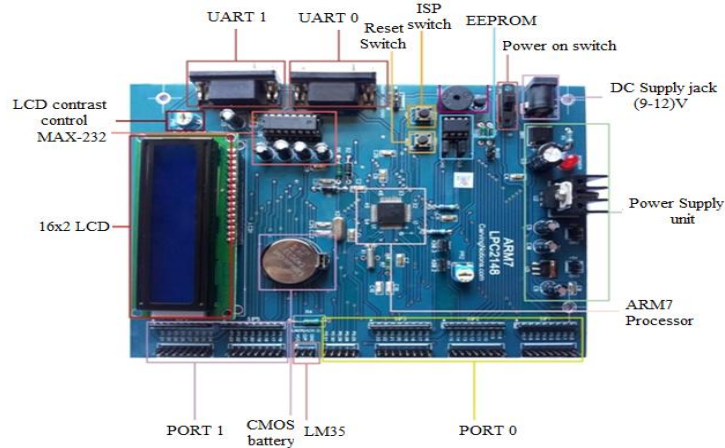
Fig2:-LPC2148 board

GSM/GPRS -Module:

GSM (global tool for cell communications) is a cell community, this means that that that mobile phones hook up with it through way of attempting to find cells in the at once place. GSM networks function in 4 specific frequency degrees. A few international places inside the Americas use the 850 MHz were already allotted. Different bands are assigned in a few international locations, in which those frequencies have been formerly used for first-technology systems.
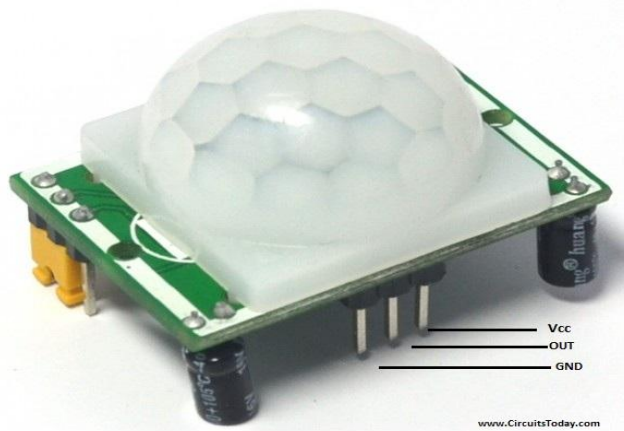

Fig 3: GSM module

Passive infrared sensor:

A passive infrared sensor will only detects energy from the living body and based on that it gives the output pulse but not it throw a signal and anymore. It mainly used to detect the moving objects and for counting purpose.

PIR Sensor - (Motion Sensor or Motion Detector)

Vcc
OUT
GND

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In this we have mainly 3 pins those are,

- VCC
- GROUND
- OUTPUT

It's a type of digital sensor. It gives logic 0 or logic 1 based on reactance of the sensor. Whenever a moving object goes to the near distance from the sensor it detects the IR levels of the movable object's and it reaches its maximum levels of the sensor then it senses and gives logic 1 as output and we will connect it to the microcontroller as input. Base on this input we will perform the operation. Power consumption of this sensor is 5V. and it will detects the movable objects in 180 degrees.

LDR (Light Dependent Resistor) :

This is an resistive based sensor and the main function of this sensor in this project is to detect the daytime and nighttime for switching the street light. Whenever it gets detected then we will offer the operation through circuit board.

Fig: LDR sensor.

LCD (Liquid Crystal Display) :

LCD stands for liquid crystal displays. Digital display is finding wide unfold use substitution LEDs (seven phase LEDs or different multi-phase LEDs) thank to the subsequent reasons:

1. The declining costs of LCDs.

2. The power to show numbers, characters and graphics. This is overcome the disadvantages of LEDS, that area unit restricted to numbers and a couple of characters.

3. controller into the digital display, thereby relieving the processor of the task of refreshing the digital display. In distinction, the crystal rectifier should be reinvigorated by the processor to stay displaying the info.

4. Simple programming for characters and graphics.

These parts area unit "specialized" for being employed with the microcontrollers,

Figure: Liquid crystal display

A model represented here is for its low value and nice potentialities most often utilized in follow. It show the messages in 2 lines with sixteen characters every.

IV. SOFTWARE DESIGN

In proposed system we used below tools for programming and simulation purpose,

1.Keil4 Vision

2.Flash Magic

The Keil4 mVision is an IDE which is used for software programming. In this IDE,we have to select the controller which we need to program .This tool is implemented by c language. We can debug the program, can error check and used to create an HEX file in this software. By the use of hex report we have a tendency to products the code into microcontroller and carry out utility. Flash magic is used to dump the program in the controller.

V.WORKING PROCEDURE

This is mainly developed to make the things automatic and as well as to reduce usage of the power cable. In this prototype we are using advanced components to make the system more effective. Here we are using lpc2148 microcontroller it's the heart of the system. Any operation can be operated through it only. Global system for mobile communication is used to send the messages regarding the state of the system to the concerned mobile number. PIR is for detection of IR ranges in the movable object , LDR is for detection of

Daytime\Nighttime. And the relay is for tripping the street light on\off.

We can place our system anywhere like public places, street lights, and any other. This is completely user friendly system and it doesn't need any other help like human kind. Its very intelligent system where we developed by keeping the future use in mind. In this prototype, the Whole system we are going to place at the street light by replacing the older. It only activated when the LDR is sensed. If its sensed that means evening time. Until in the day till battery gets charged by Solar panel. In the night time if the person\vehicle come across on the road then the PIR sensor immediately gets activated and gives an notification to the microcontroller. Then we will turn on the light. After the person goes out the light will be turned off automatically. And in the evening the ldr detected then we get an alert like message and if the person also detects then also we will get message. This is mainly for saving the power

VI. RESULT

Here the results are shown our project **"Intelligent Monitoring and Control Rendered to Street Lighting"** was successfully implemented. In this project whenever the person was detected, it will checks the sun light if the light is insufficient than only the light will be ON otherwise the light will be OFF condition.
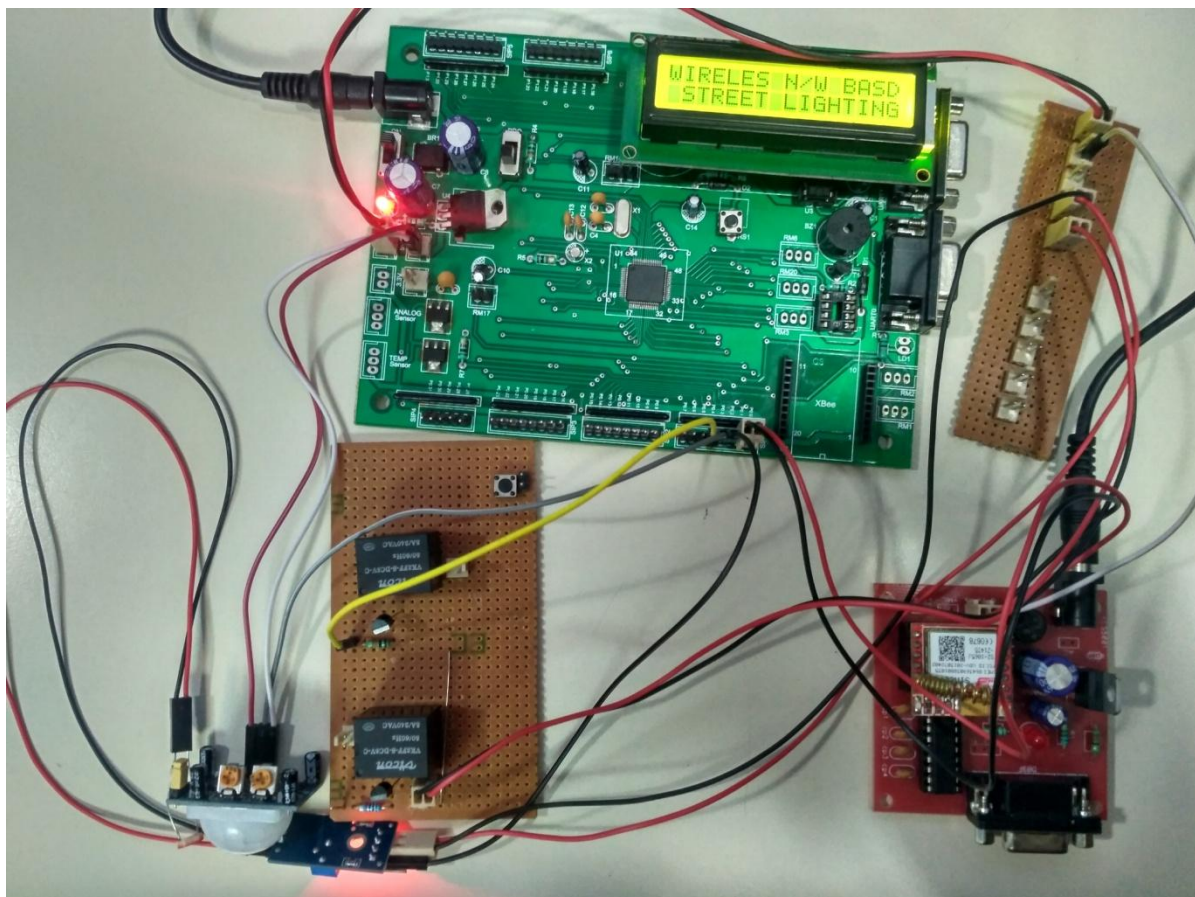
VII. CONCLUSION

By using this project we are saving the power wasting in the highways, in the highways the lights are continuously will on for that so a lot power was wasting to avoid that we using this project. We are eliminating those problems in this.

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