Auto Intensity Control Of Light Using Arduino

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Abstract- *street light controlled manually in olden days but This project plays vital role in saving of power. The main principal of this project is to ocntrol the intensity of street light using arduino.Providing street lighting is one of the most important and expensive responsibilities of a city.peak hours of particular are calculated and according to signal is adjust by arduino to increase or decrease the intensity of light.*

Keywords- IR SENSORS, PUSHBUTTONS, ARDUINO UNO,RTC MODULE, BREADBOARD,RESISTORS ,LED'S

I. INTRODUCTION

Street lights are important for safety or for the feeling of safety. lighting constitutes an important part of total energy consumption. Saving energy in street lamps is therefore important for total energy savings. It is known that street lighting levels are excessive in many cases. For instance, in the case of low traffic volumes, the lighting levels are excessive and could be reduced so that energy savings can be achieved. The majority of streetlights are individually controlled by manual operation and some are by photocell and timer switch. street lights are essential, but expensive, therefore there is need to optimize the system ina way that it is affordable and efficiently conserves energy.

1.1 PROBLEM STATEMENT

The main problem is that manual control of street light taking lot of time similarly waste of energy is done at morning and in evening .even in night there is less traffic the intensity of light ,The intensity of light should be minimum.There is need to comeup with a system which overcomes the problem of existing system.

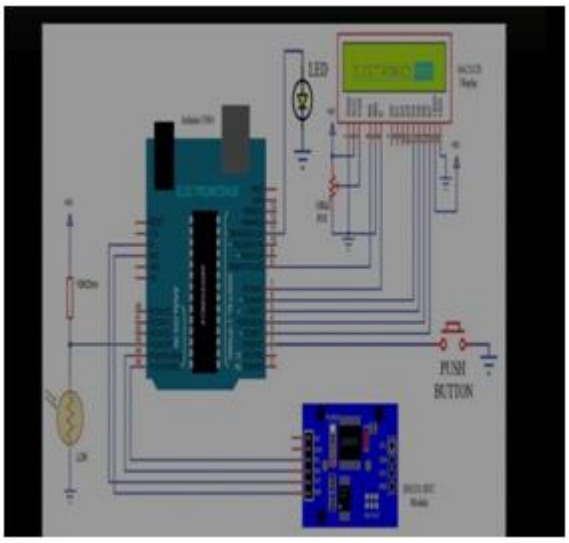
II. COMPONENTS

- LED
- ARDUINO UNO
- LDR
- RTC MODULE
- LCD DISPLAY
- 10K ohm POTENTIOMETER
- 10K ohm RESISTOR
- PUSH BUTTONS
- CONNECTING WIRES
- BREAD BOARD

III. WORKING

After making the connections and uploading the code to arduino ,turn on the power supply to the project.Initially,thearduino runs in rtc mode where there are two times set in the code:the ON time and OFF time .arduino compares the ON time with the time from RTC module and when they match ,the led is turn on after this,thearduino waits for the off time and once the tim from RTC module reaches the off time,theled is turned off.Duringanytime of this operation,if the button is pushed ,the arduino enters LDR mode.In this mode the arduino reads the value of LDR from a3 and based on the value it adjusts the intensity of LED.in order to switch back to RTC mode ,all you have to do is push the Button.

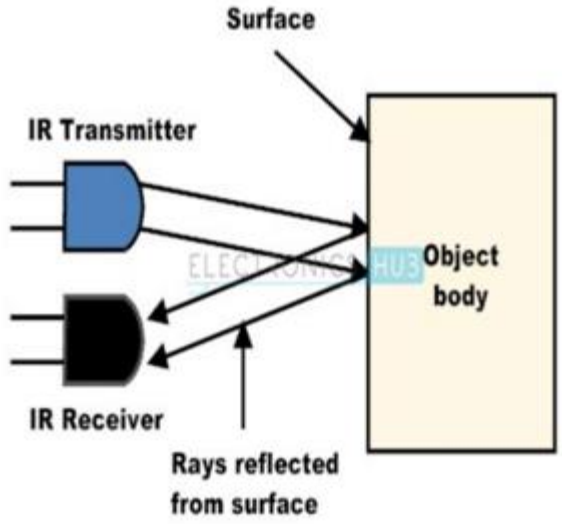
IV. DIAGRAM



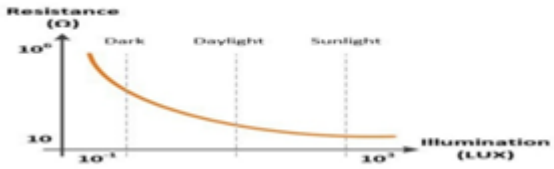
4.1 Principal of operation

Principle of this auto intensity control street light using Arduino depends on the IR sensor and LDR sensor IR sensor is depend on Infrared light and LDR sensor is depend on light. When any object or obstacle is come in between infrared light from transmitter and then ray will incidence on obstacle and return to receiver then LEDs intensity is

increased and when obstacle is goes out of range then intensity of LEDs are goes down .



And LDR sensor stands for light dependant resistor when day light is present resistance of LDR is high therefore current is not flowing and then street lights will OFF. And at night time when darkness is present LDR resistance is low and current start flowing and system will ON.



V. OBSERVATION

After observation inDay time Under Full Brightness .At day time due to full environmental brightness, no LEDs are ON and the value of LDR remains almost constant. The intensity varies as time changes. Time and Intensity under full brightness at day could be seen .

After observation in Night under Full Darkness At night due to zero environmental brightness, all LEDs are ON at their full intensity and the value of LDR here too remains almost constant as the LDR would not sense any light all night. Time and Intensity under full darkness at night could be seen. Table 1 shows the value of power and on the other hand the value of intensity.

Power (v)	Intensity
0	0
1	114
2	226
4	339
4	454

EXTERNAL BRIGHTNESS	LDR INTENSITY
62	514
54	534
51	542
210	119
211	117

VI. CONCLUSION

This arduino based project will provide a complete method for lightning system and make whole process of energy saving easy and efficient.The usage of the smart lightning system will undoubtedly change the whole world that see today

VII. ADVANTAGES

- No man power required
- Efficient method
- Less maintenance
- Easily implementable
- economical

VIII. APPLICATION

- Parking light
- Street light
- Garden lights
- highways

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