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MOVEMENT BASED LIGHT CONTROL

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ABSTRACT

This system explains the design and construction of movement-based light control. With this system, we can remove the present system. Electricity is a very vital resource that must be used carefully. For example, if we leave the room/apartment we forget to switch off lights or fans. By using this system we can prevent it. At the present time, the amount of energy consumed by lighting and street light shares a major energy demand. A proper energy-saving method and lighting control should be implemented are proposed work is to have control like, one is to switch off the light when there is some human movement or object and automatically switch it ON when movement detected and other are to give less intensity light and to switch ON bright mode during the movement. This system analyzes automatically detects the movement and Switch ON and OFF. This system uses sensors called light sensors which are used to sense the light. In this, work the LED light is used, the photodiodes and are used to sense the movement. The control signals of sensors have been fetched to Arduino UNO R3.In this, the control logic is implemented to control light based on movement with the bright and dim modes of operation and to switch OFF when no movement is detected. From the proposed method the overall energy utilized nowadays for lighting can be minimized. Moreover, the automatic and smart controls scheme are required to control the complex lighting system due to growth and standard of living.

Keywords *- Arduino UNO R3, IR sensors, Light Emitting Diode, Automatic, High Intensity Light, Low Intensity Light*

1. INTRODUCTION

Automation in everyday life plays a very important role in daily life. Automatic systems are chosen over any other direct system. The light is compatible with the motion in which it detects the movement of people, cyclists, and cars the light gets ON and it gets bright when there is movement or motionbut diminishes when there is no movement detected. This typeof lighting is different from the existing system which is a dryand light, or dim light that dims at a set interval of time. Research work shows that self-activating light control conserves energy at some point. While the use of tools has provided human operators with tools to assist people automatic tools use massively reduces the energy. By creatinga good lighting system in a city or a town we can take care ofmany aspects like security for people in the nighttime and wecan reduce crimes and accidents. In the old times lighting streets and roadways is the earliest who the roads lights should be ON from the evening for direction finding and protection. We can't maintain many lights at a time so, the automatic lighting system is a very good step and it also savesenergy. Manual controls can liable to mistakes and that leads to energy waste. Nowadays there are very busy lifestyle so many times we forgot to switch OFF the switch. So by this system, we can save energy consumption and make this system cost-effective.

2. EASE OF USE

In our system, we use IR sensors that work on the movementor motion so that when it detects the movement the light getsON, and when there is no movement the light automatically gets OFF. With, this system we can save the energy which isbeing wasted in many places. We can use this system in rooms, streets, classrooms, offices and many other places where mainly wastage of energy happens. Wireless sensors networks help to conserve energy.

3. METHODLOGY

Firstly, we have to make the connection according to the circuit diagram. In this system, the code is very important inmanufacturing all machines' work. Lately, the SmartLighting system is an important part of the megacity's smartarchitecture. An important function is to illuminate the lightof the city using. Present power or energy-saving sensors. The existing system uses regular street lights and bulb lighting in the house. It takes more today and is more costlyso we should use LED lights to save the current and the minimum amount of energy is required. This type of systemis used worldwide. It is used to view all types of the urban areas & rural areas.

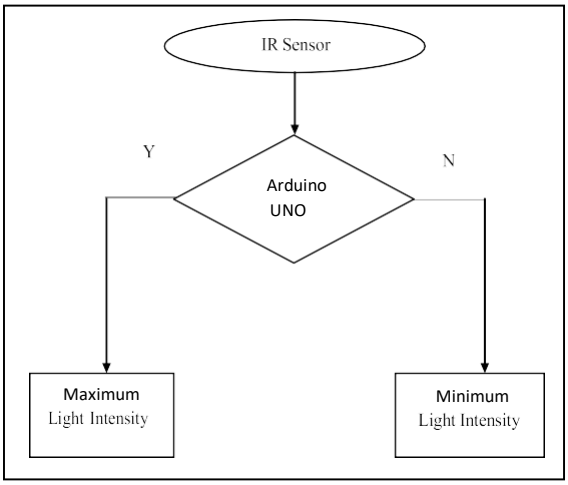

Fig-1:-Block Diagram

4. EXISTING SYSTEM

In the latest days due to the rapid growth of industries and urban societies' connectivity, the lighting outlines are also evolving fast. The automation of effective utilization ofpower and cost reduction is an important factor in present-day to day life. The different types of road light control outlines are executed to control and keep up with complexroad lighting systems. For controlling and diminishing energy utilization of a town's open lighting system, effectivesystems are created. The current work shows utilizing the High-intensity discharge lights. Nowadays the High- intensity discharge lights are utilized for urban roads or street lights where energy is not managed by any methods to decrease or turn off the lights during less-density or unmanned areas.

5. SOFTWARE REQUIREMENTS

In this system, we use the software called Arduino IDE. This is an Integrated Development Environment which is an open software through which we can write the code and upload the code in the Arduino UNO R3. This IDE supports many programming languages like C, C++etc. It also works or supports many operating systems like Linux, Windows, andMac OS X. Due to supporting many operating systems it's easy to use and easily accessible to any user.

6. HARDWARE DESIGN

The figure shows the circuit design of movement-based light control. This system is based on detection using Arduino Uno having features to control the light intensity. In this system, we use 01 LDR sensor, 12 LEDs, 13 resistors,3 IR obstacle detector sensors, and 01 Arduino UNO have been used.

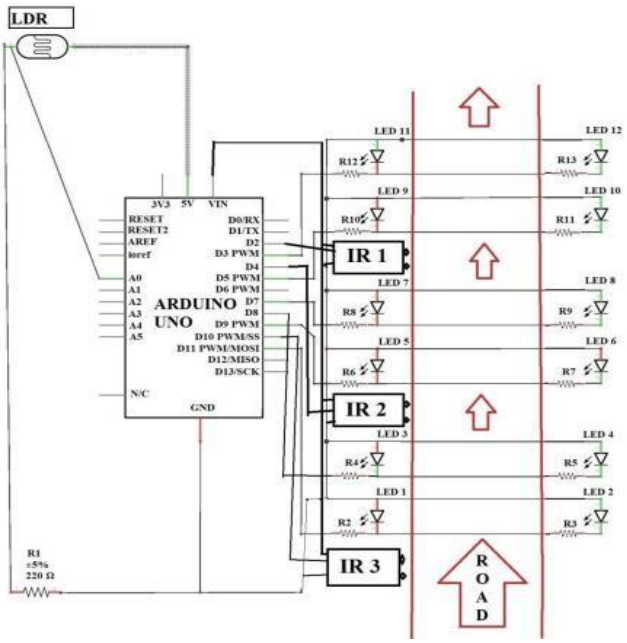

Fig:2:-Circuit Diagram

One pin of LDR sensor is linked to Arduino analog pin number A0 and another leg to VCC pin and same with a resistor to the ground port of Arduino. After joining all these devices to the corresponding pins in Arduino board according to the Arduino Software IDE from the official website "www.arduino.cc" is downloaded and installed. After that Arduino Uno is connected to the desktop/Laptop using the USB cable and connected the driver software on the computerto write the code, compile and run the code on Arduino IDE.

7. HARDWARE REQUIREMENTS

1) **Arduino UNO R3**:- It is a microcontroller which is an open-source programmable microcontroller board that is easyto use, low cost that can be used in many electronic projects.

Fig-2:-Arduino

2) **IR sensors:-** An Infrared sensor is radiation sensitive optoelectronic component that is used to sense the object range up to 780 nm. It is used in an alarm system that is usedto detect.

Fig-3:-IR sensor

3) **LDR:-** LDR refers light dependent resistor which is a component in which the resistance changes according to light intensity fall on it. Through this it helps them to allow to usedthe light sensing circuits.

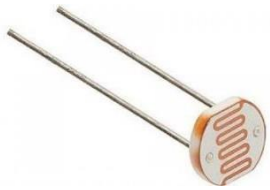

Fig-4:-LDR

4) **Resistor;-**It is a passive component. It has two terminal which is used in electrical resistance s circuit element. It controls the flow of current in the circuit. Its made of many materials like copper.

Fig-5:-Resistor

5) **LCD:-**LCD refers Liquid Crystal Display. It is a planedisplay which used liquid crystals for its primary form ofoperation.

Fig-6:-LCD

8. RESULTS

The hardware has been implemented and the performance ofthe model was tested performance as shown in the figure below with the IR sensor system and Lighting devices as shown in the figure below. The transition of light from brightto dim on movement and motion. When the movement is notdetected, every one of the lights will be in the OFF state. By employment of pulse width modulation(PWM)system through the code put away in the Arduino turning ON/OFF oflights is accomplished. At this point when there is no movement on lights are turned ON for about one millisecondand later for hundred milliseconds, they are turned OFF. From now, we get lights with less shine. At the point when amovement is detected, every light is ON for 1ms and the opening of lights are ignited up for 100mss.

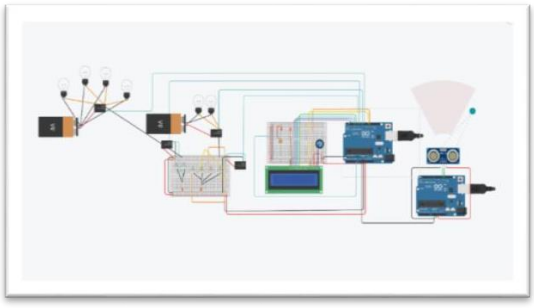

Fig-7:-Object detection

9. CONCLUSION

By using the Smart Lighting system, one can save energy by installing vapor lights with LEDs and adding somethingelse for some safety purposes. Prevents unnecessary poweroutages, caused by the manual replacement of street lightswhen not needed. Provides an efficient and intelligent system for controlling the traffic light with the help of IR sensors. It reduces energy consumption and saves energy.It also saves cost. This system is flexible and fully flexiblefor the use of the users. The system is now only used for way traffic on highways. Continued use of LDR and IR sensors or during the day. It is not open before sunset. TheSmart lighting system can also be expanded to make the current system dual-car, making the system more flexible during rainy days and the introduction of lighting control systems with a GSM-supported service.

REFERENCES

[1] Kapse Sagar Sudhakar, Abhale Amol Anil, Kudake chetan Ashok, Shirsath Shravan Bhaskar "Automatic Street lights control system" International Journal of Emerging Technology and Advanced Engineering vol. 3, May 2013.

[2] MUSTAFA SAAD, ABDALHALIM FARIJ, AHAMED SALAH and ABDALROOF ABDALJALILA "Automatic Street lights control system using microcontroller " International Journal of Emerging Technology and Advanced Engineering

[3] Yashaswini N,Raghu N, Yashaswini S, Prathib Kumar G "Automatic Street Light Control by Detecting Vehicle Movement" in IEEE, vol. III, 05 JULY 2018.

[4] Deepak Kapgate, "Wireless Streetlight Control System"in IJCA,vol.41II,March 2012.

[5] S. Ganesh Moorthi, Mr. V.S. Jagadeeswaran "AUTOMATIC STREET LIGHT CONTROL BY DETECTING VEHICLE MOVEMENT" in IRJET,vol.07,Feb 2020.

[6] Miss. Komal Jadhav, Miss. Apeksha More, Miss. Shrraddha Rakshe, Miss. Payal Shinde, Prof. Arya C. S. "Automatic Street lights control system" International Journal of Advance Scientific Research and Engineering Trends vol. 3, May 2018

[7] Dr.Sreeja Mole S.S., K.Ram Prasad, V.Krishna Veni, M.Swathi, Prof. Arya C. S., L.Soumya "Microcontroller Based Automatic Room Lighting System" Mediterranean Journal of Basic and Applied Sciences vol. 2, Oct-Dec 2018

[8] K.Santha Sheela, S.Padmadevi "Survey on Street Lighting System Based On Vehicle Movements" International Journal of Innovative Research in Science, Engineering and Technology vol. 3, Feb-2014

[9] Sakthi Priya V.1, Mr.M.Vijayan, V.Sakthi Priya "AUTOMATIC STREET LIGHT CONTROL SYSTEM USING WSN BASED ON VEHICLE MOVEMENT AND ATMOSPHERIC CONDITION" International Journal oof communication and computer technologies June 2017.