

Automatic Lights using PIR Sensor

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Abstract: *Automatic Room Light Controller Using Arduino and PIR Sensor can be used to turn ON and OFF the illumination system of home / office routinely by sensing the existence of human [1].” Such Automatic Room Lights structures may be applied on your Classrooms, college cabins, garages, staircases, bathrooms, etc. wherein we do not want steady mild however best whilst people are existing”[1]. Also, with the help of this system, we will shop the electricity invoice as energy can be fed on best whilst human is gift i.e. whilst required lighting fixtures can be spontaneously became ON or OFF. The paper contains system of Automatic room light using Arduino, PIR sensor and relay module. PIR sensor will detect the movement based totally on reaction of PIR sensor will perform accordingly. Proposed approach can assist us to lessen the intake of electricity.*

Keywords: Room light, Arduino UNO, PIR, relay unit

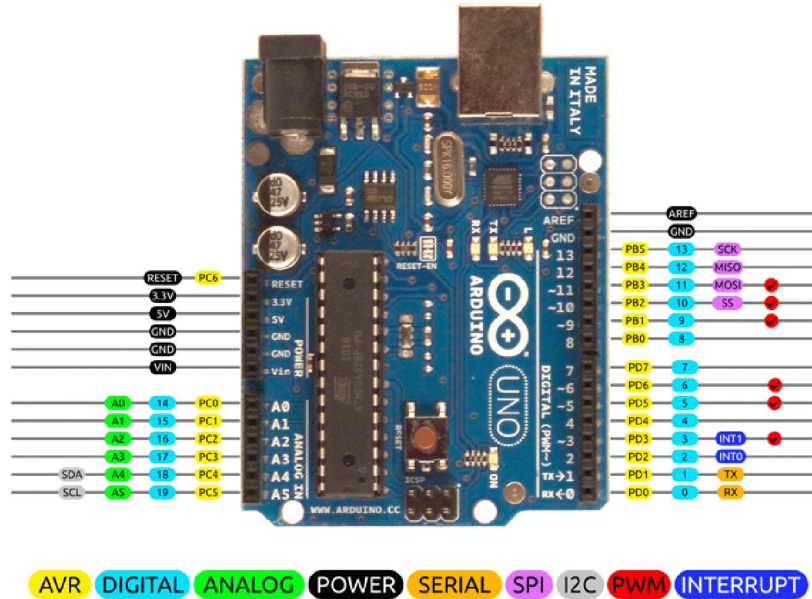
I. INTRODUCTION

Technology is very important part of our lives. since few years the advancement in the technology is a big achievement by human . In Human life Electrical energy has become an crucial part. In recent years ,people are looking forward to automating their daily lives, and People are already keen to reduce energy consumption expenditures. if there is no availability of humans so the huge energy is wasted if the light is remain ON in the absence of human being. Normally in school,private organization, colleges etc they don't want to switch off the light by leaving rooms[1]. As more appliances are used, more power consumption in home area tends to increase. Using the automation in switching the house or workplace lighting fixtures gadget, the intake of power is to be used very less.” Now the humans are in artificial intelligence age in which they are searching ahead for automation . By the usage of advised device wastage of energy can be reduced as electric powered device may be mechanically have become ON or OFF based movement of any object with the help of PIR sensor”. This is the primary number one enhancement of the projected device. The foremost elements of the proposed machine are Arduino, PIR Sensor and the Relay Module. This machine may be taken into consideration as a prime software of PIR sensors. The ultimate paper is ordered as: segment II is set fundamental info of numerous modules and additives used for the machine. Section III Proposed machine description approximately hardware and software program design.

II. SYSTEM DESIGN AND IMPLEMENTATION

Aurdino UNO is an open source MCU board . The Arduino has so many digital and analog pins that can be connected to various development (display) boards and other circuits. The board has 14 digital I/O pins (6 PWM outputs) and 6 analog I/O pins that can be programmed into the Arduino Integrated Development Environment (IDE) via a USB . USB port for external power supply, ICSP port (In-Circuit Serial Programmer) and reset button. Working voltage 5V, input voltage 712V. Pin Name SR.NO Usage 1. Power supply The Arduino USB board can be controlled from a computer via a USB cable. 2. The Arduino board can be powered directly from an AC power source via the power connector. three. Voltage Regulator The function of a voltage regulator is to control the voltage applied to the Arduino board and to regulate the DC voltage used by the processor.

SR.NO PIN NAME USE 1. Power USB Arduino board may be pushed with the aid of using the use of the USB cable from computer. 2. Power (Barrel Jack) Arduino forums may be pushed without delay from the AC mains electricity deliver with the aid of using Power Barrel Jack. three. Voltage Regulator The property of a voltage regulator is to control the voltage supplied to the Arduino board and to stabilize the DC voltage used by the processor. 4. The quantity placed on the Arduino chip indicates its frequency (16MHz).



5.17 Arduino Reset the Arduino board and start this gadget from scratch. 6.7 8.9 pin 3 Supplies an output voltage of 3V - 3.3V 5V - Supplies an output voltage of 5V GND - There are a pair of GND pins, both of which can be used to ground the circuit. 10. Analog Pins There are 6 analog input pins A0-A5. This pin can receive a signal from the sensor and convert it to a digital value that the processor can see. 13. ARDUINO FEATURES: • Microcontroller: Microchip ATmega328P • Operating voltage: 5V • Input voltage: 7-20V • Digital I/O pins: 14 (of which 6 able to provide PWM output) • Analog input pins: 6 The PIR sensor is the abbreviation for passive infrared sensor and performs essential functions for identifying people and particles. Also called PIR sensor (motion sensor) or IR sensor. It is implemented with infinite responsibility with powerful features and low cost benefits..

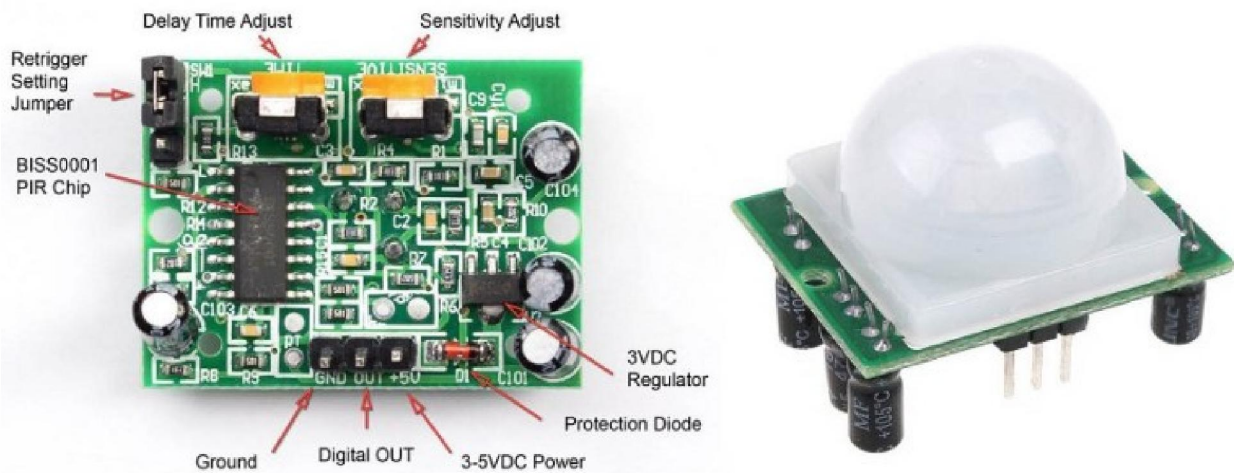


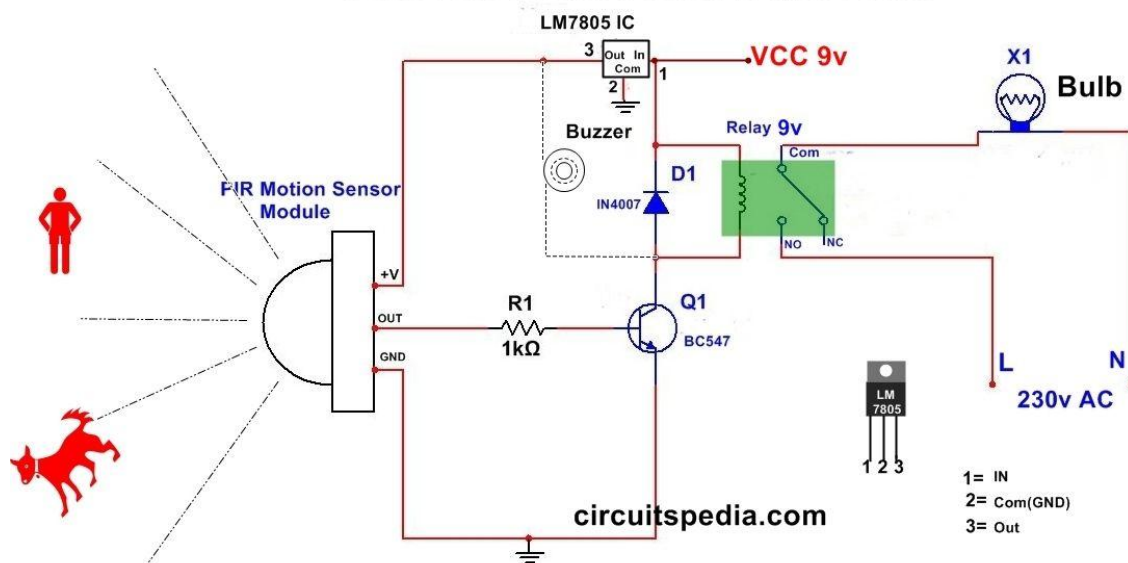
Figure : PIR Sensor Module

The passive infrared alarm does not release energy to space but relies on receiving infrared radiation from the human body to make an alarm. A hot object always emits infrared rays to the outside world. The temperature of the human body is 36270 ° C, and most of its radiant energy is concentrated in the wavelength range of 812 μm.

III. WORKING

Description of the project is like If the person does not move at all, the PIR sensor will not detect the person and its OUT pin will remain LOW. When a person enters a room, a PIR sensor detects changes in the infrared rays in the room. Arduino digital pin 8 is connected to the PIR sensor data OUT. So when it's HIGH, the Arduino pulls the relay pin LOW to trigger the relay. This will turn on the light. The light stays on as long as there is movement in front of the sensor. When a person takes a nap or leaves the room, the IR radiation stabilizes (there is no change), so the PIR sensor data goes LOW. This will cause the Arduino to turn off the relay (set the relay pin to HIGH) and turn off the room light. Schematic When the PIR sensor detects frame movement, its OUTPUT pin is going HIGH, a cause voltage is implemented to the bottom of the transistor, the transistor turns on, and modern begins.

PIR Motion Sensor Detected Light Switch



IV. CONCLUSION AND FUTURE WORK

From the proposed system, we can conclude that an approach is taken to control the lighting of the room using a variety of devices. Because today, a lot of energy is wasted in our daily lives. With the help of this system, you can save energy waste and contribute to significant energy saving. The effective overall cost of the system is very low. In the proposed system, decisions are made based on the presence of humans, but here LDRs (photoresistors) can also be connected to PIR sensors to improve the functionality of the system. This system can also be interfaced with the Bluetooth module so the whole system can be controlled from the mobile by just single click. Applications of this system are: 1. It can be used in college labs, schools, etc. 2. It can also be used in bathrooms, staircases, etc. in the house.

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