

Automated Light Controller with Visitor Counter System

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Abstract: This paper is “Automated light controller with visitor counter system” is a reliable circuit that is controlling the room lights with count the number of visitors or persons in the room. When someone enters into the room counter will be incremented and the light in the room will be switched ON and when any one leaves or comes out of the room then the counter is decremented. The light will be switched OFF until all the persons or visitors leaves from the room. The number of persons or visitors inside the room is displayed on the LCD display. The microcontroller does this work. It receives the signals from the IR sensors, and this signal is operated under the control of source code which is stored in microcontroller. Microcontroller at mega 328 continuously monitor the Infrared sensor. When any object pass in front of the IR sensor signal is send to the microcontroller.

Keywords— Microcontroller (atmega 328); ROM; IR sensor; counter

I. INTRODUCTION

The objective of this project is a controller based model to count number of persons visiting room and light ON the room. Here use Infrared IR sensor it count the no of Persons in the room. In now a day all are like a automatic systems. With standard of living also increases. Automated Light Controller with Visitor Counter system is controlling the room lights with count number of persons in the room. When anyone enters into the room then the counter will be incremented by one(+1) and the light will be switched ON and when any one person leaves from the room then the counter will be decremented by one(-1). The light will be switched OFF until all visitors or persons leaves from the room. The total number of visitors or persons inside the room is displayed on the LCD.

Component used and Explanation

The block diagram of the automated visitor counter with light controller system is shown in the figure.1 mainly this consists of the following different functional blocks.

1. Power Supply
2. Infrared sensor circuit
3. Arduino Uno Microcontroller
4. Relay driver circuit
5. LCD

2.1. POWER SUPPLY

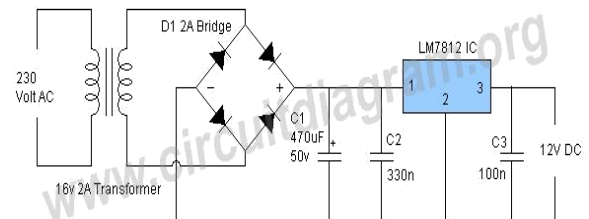


Fig.1: Power Supply

In this project is works a +5v dc power supply. The is circuit convert 230v ac to 12v dc. The 12v is connect to the arduino uno it is used the 5v regulator to convert +12v to +5v.in this circuit used main components are diode, capacitor and +12v regulator. The bridge circuit consist of diodes it convert AC to pulsating DC this signal fed to capacitor it convert pulsating DC to pure DC and regulator helps to constant signal goes out of the circuit.

2.2. Infrared Sensor circuits

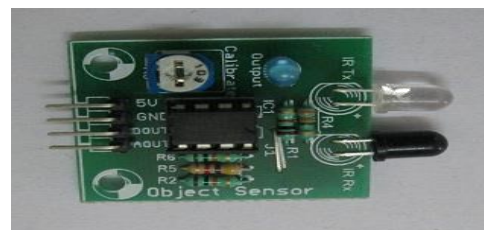


Fig.2: IR sensor

This sensor is count the no of persons vising in the room or hall or mall. If any person enters the room sensor ray will cut so IR reserve cannot receive any signal so IR sensor output will low. This sensor is placed in entry door and exit door.

This project is divided in four different parts: sensors, controller, counter display and gate. The sensor would observe an interruption and give an input to the microcontroller which can counter increment or decrement depending on entering or exiting of the person. And counting value is displayed on a 16x2 LCD through the controller.

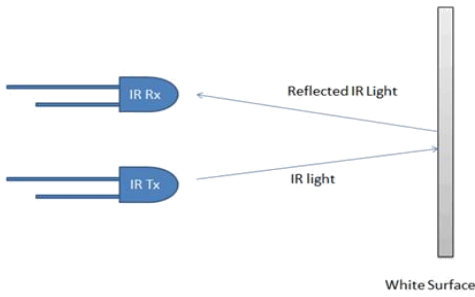


Fig.3: IR Sensor working diagram

2.3. Arduino Uno Microcontroller

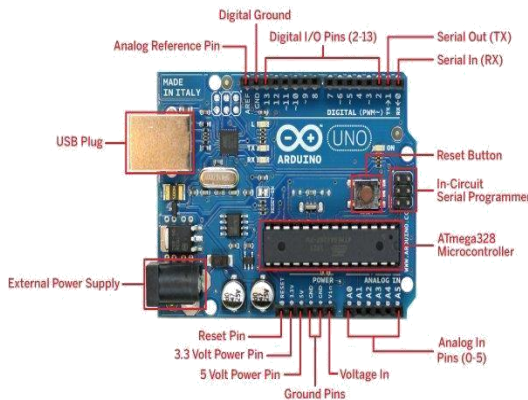


Fig.4: Arduino Uno

The Arduino Uno is a microcontroller based atmega328. It has fourteen digital input/output pins six analog inputs, a sixteen MHz(16 MHz) crystal oscillator, a USB connector, a power connection jack, an ICSP header system , and reset button. It contains everything is support the microcontroller; simply connect it to computer with a USB cable or power it with a AC to DC 12 adapter or battery to get started. The Uno differs from all preceding boards in that it does not used the FTDI USB-to-serial driver chip.

2.4. Relay



Fig.5: relay

The relay is electromagnetic device. When input is high it connect to normally open pin. When input of the relay is high the coil is magnetize to switched the NO pin. The arduino uno output is not exact +5v so we can use BC 547 transistor to drive the relay.

5. LCD



Fig.6: Liquid crystal display

It is a 16*2 display it consist of 16 rows and 2 columns of 5x7 or 5x8 dot matrices. It is a 16 pin display each pin has a different signals require. Ex: data line, vcc, gnd. This LCD is used to display the number or character or symbol etc.

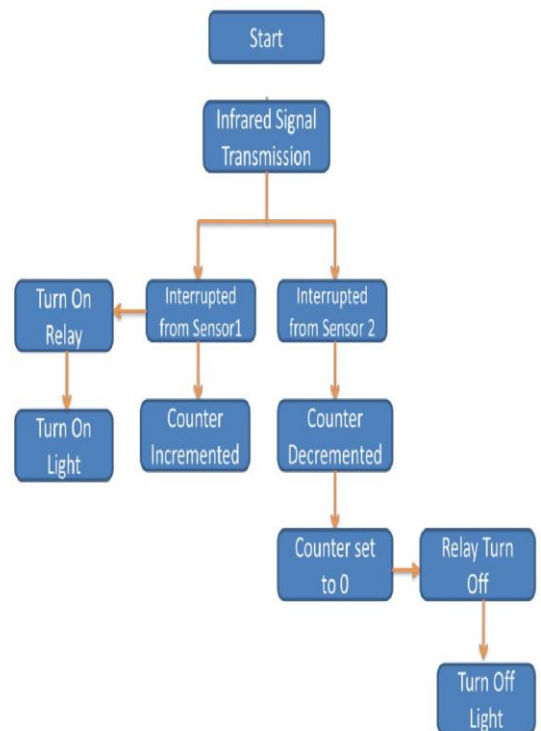


Fig. 7: Dataflow diagram

- The microcontroller is monitor the input continuously which sensor is interrupted is find to decide the increment or decrement the counter first sensor one is interrupted so counter increment by one and relay will turn on and light will be ON.
- If sensor two is interrupted counter will decrement and check the counter, counter is 0 relay will be turn of and light also oFF

INTERFACING DIAGRAM

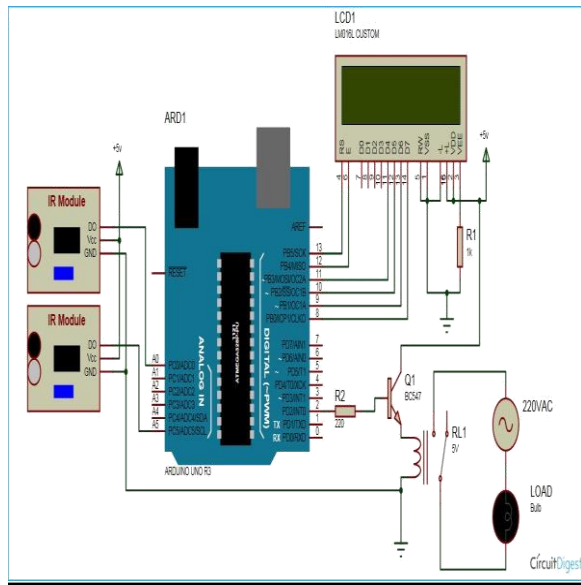


Fig. 8: Interfacing diagram

Opening and closing the door system.

4.4. Operation images (Project model)

1) Nobody in the room so light is OFF



IV. RESULT AND CONCLUSION

4.1 Test and Result

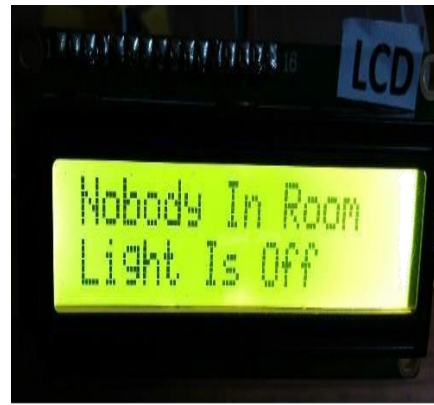
Finally we have tested our project module and came with a result for testing automatic light control with count the how many persons in the room.

4.2 Conclusion

- Automatically control the Room light.
- This project is implementing in real time this will fully automated system and no one can light ON and OFF operate the switch and count the no of persons in the room.

4.3 Future expansion

- In future we can implement different type of applications Such as fans, tube lights, etc.
- In future we can implement automatic



2) One person Enter into the room so light get ON



Fig. 8: Test setup

REFERENCE

- 1) The working principle of an Arduino uno microcontroller :Yusuf, Abdullahi, Badasi.
- 2) An IR Sensor for determine how many persons enter into the room and exit from the room: A.goston, C.otsch, J.zhuravleva, B.Jakoby.
- 3) Relay, LCD and other component details are refer by Wikipedia
- 4) Microcontroller working and programming are refer by Muhammad Ali Mazidi.
- 5) All component working are refer the google.

WEBSITES

1. www.arduino.cc
2. www.8051.com
3. www.myproject.com
4. www.embeddedsystem.com