AUTOMATIC ROOM LIGHT AND COOLING SYSTEM CONTROLLER WITH VISITOR COUNTER

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ABSTRACT This Project —Automatic Room Light Controller with Visitor Counter using Microcontroller is a reliable circuit that takes over the task of controlling the room lights as well us counting number of persons/ visitors in the room very accurately. When somebody enters into the room then the counter is incremented by one and the light in the room will be switched ON. The light will be only switched OFF until all the persons in the room go out. The total number of persons inside the room is also displayed on the seven segment displays.

Keywords: IR Sensor, Relay, Bluetooth, Liquid Crystal Display.

I. INTRODUCTION

In the digital word we need every possible thing around us to be automatic which reduces human efforts. There are increasing electronic circuits that make today's life easier and simple. Nowadays a Energy Crisis is the big problem faced by everyone. This project is very useful project. Forgets to turn off lights and fan while leaving a room. The aim of this is to make an automatic controller based prototype to count the number of individuals entering in the particular room and accordingly light up a room and turn on fan.

II.EXISTING SYSTEM:

This section describes about the most commonly used lighting control system used in buildings. Since this method is going to use wireless sensor network it is mandatory to know the operation of existing lighting control system.

DRAWBACKS:

High cost and High current

III.PROPOSED SYSTEM:

This system is designed by using two sets of IR transmitters and receivers. These IR sensors are placed in such a way that they detect a person entering and leaving the room to turn the home appliances. the number of persons inside the room. When a person enters into the room, an IR beam is obstructed between the IR transmitter and the receiver. This IR obstruction from the sensor-1 gives the corresponding signal to the microcontroller. The microcontroller is programmed in such a way that by the reception of the signal from the sensor-1 it turns on the fans and lights inside the room. Thus, the microcontroller gives command signals to a relay driver which turns the relays such that all these appliances turn on. When the person leaves from this room, another set of IR sensors enable and give control signals to the microcontroller. Furthermore, similar to the above process, this system turns off the appliances like fans and lights. Apart from this, the system also takes account of the number of persons inside the room so that this control operation is varied depending on the persons' availability in the room. For every person entering and leaving the room, the microcontroller reads the digital input from two receivers, and calculates the number of

persons inside the room, and then displays it on the LCD. When the persons' count is greater than one, the microcontroller turns on the room light and when the persons' count is zero, it turns off all the lights and fans.
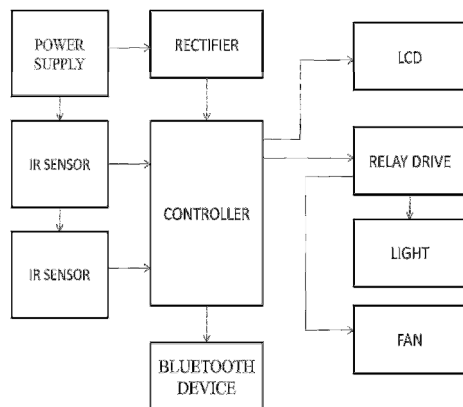

Fig. 1 Block Diagram

If the sensor1 is interrupted first then the microcontroller will look for the sensor2.It is interrupted then the microcontroller will increment the count and switch ON the relay, if it is first time interrupted. If it is interrupted then the microcontroller will increment the count, and switch ON the relay.

V.CIRCUITDIAGRAM

The microcontroller will increment the count and switch ON the relay, if it is first time interrupted. In this optimum energy management system, a microcontroller is the central processing unit of this project which is of 164877 controller from the 8051 family. This system facilitates a bidirectional visitor counter for displaying In the time count is decremented light or fan is switch off.
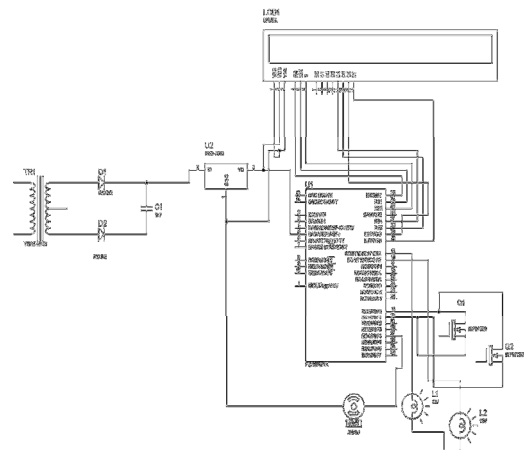

Fig. 2 Circuit Diagram

V.SYSTEM DESCRIPTION

MICROCONTROLLER

A microcontroller is a complete microprocessor system built on a single IC.Microcontroller was developed to meet a need for microprocessors to be put into low cost products. Building a complete microprocessor system on a single chip substantially reduces the cost of building simple products.

IR SENSOR

IR sensor is used to produce IR waves. In this Project are two sensors.IR sensor consist of IR Transmitter and IR receiver .IR1 detects the numbers of individuals entering a room.IR2 detects the number of individuals leaving a room. The frequency range of IR sensors varies depending upon its cost .By using LED light at specified wavelength as required by the sensor; we can look at the intensity of the received light. When any object cuts the light emitted by LED, the light bounces back from the object to the light sensor. This results in a large change in the intensity, which is detected by receiver of IR sensor.
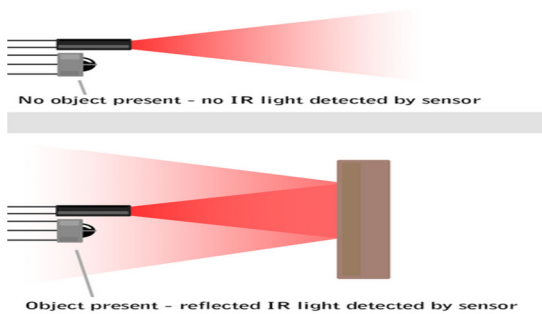
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Fig 3 IR Sensor

LCD DISPLAY

LCD (Liquid Crystal Display) is used to display number of individuals in a room .It is very thin technology based on combination of liquid and crystal. Liquid state produces an image for display

Fig 4 LCD

The LCD display used in this project consists of 2 rows. Each row consists of maximum 16 characters. So using this display only maximum of 32 characters can be displayed

RELAY DRIVER CIRCUIT

In relay driver circuit there are transistor, diodes and the relays. Relay driver circuit is used to control the light. This block can drive the various controlled devices. We are using +12V dc relay .As Microcontroller cannot drive relay directly so output signal from microcontroller is passed to base of the transistor.
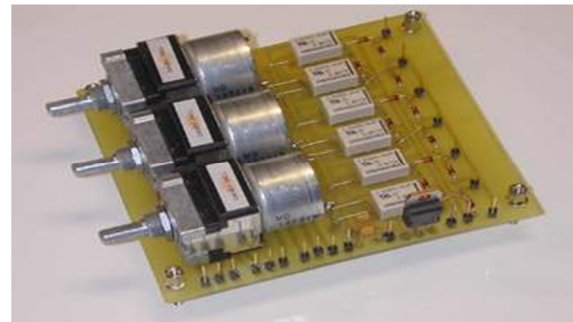

Fig 5 relay drive

VI.SOFTWARE DESCRIPTION

PROTEUS SOFTWARE:

Proteus is software for microprocessor simulation, schematic capture, and printed circuit board (PCB) design. It is developed by lab center electronics; Proteus combines advanced schematic capture. Auto routing to make a complete electronics design system. The Proteus product range also includes our revolutionary VSM technology.

VII. HARDWARE   DESCRIPTION

PIC 16F877

Peripheral Interface Controller (PIC) is microcontroller developed by Microchip; PIC microcontroller is fast and easy to implement program. The ease of programming and easy to interfacing with other peripherals PIC became successful microcontroller.

VIII.SIMULATION RESULT

This is the simulation result when four members used to get in the room, there three bulb will start to glow automatically, and when two person used to get out from the room one bulb stop to glow, remaining bulb will glow as usual.
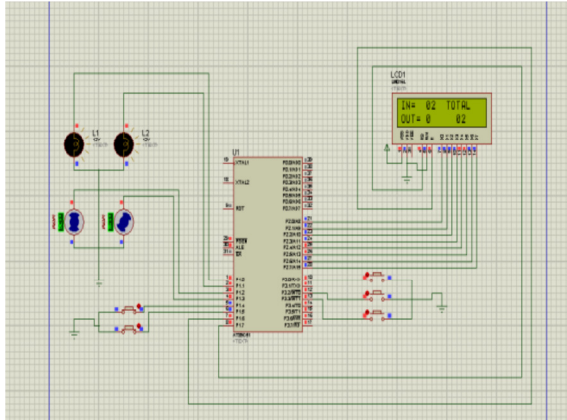
Fig simulation result .1

If the count 1or<only one light will glow
If the count is 6or<11 two lights will glow
If the count is 11or<16 three lights will glow
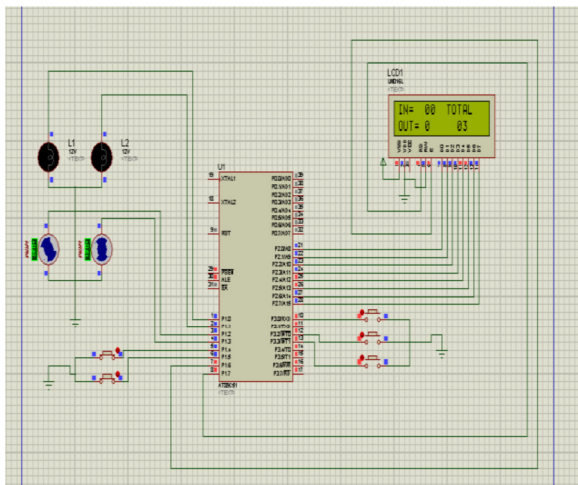If the count is 16or<256 four lights will glow

Fig simulation result.2

IX.CONCLUSION

In this digital world technology very advanced we prefer things done automatically is without any human efforts.also it is very useful to conserve resources.it is very useful in such hospital,malls,office,auditoriums,etc.

In any big hall if we want to count number of individual it is very difficult as its results in congestion and disturbance to the whole class.This project becomes helping hand in situation because it gives the count on LCD display also it controls the lightning system.

Turning On of light will increases with increasing the individuals in a room

Turning On of light will decreases with decreasing the individuals in a room.

X.REFERENCE

[1] Microcontroller- Projects / automatic-room light controller-with bidirectional-visitor counter using Aurdino.

[2]AT989S51-Atmel: http://www.atmel.com/images/doc2487.pdf.

[3] http://www.rashmondal.info/IR-object-detection

[4].http://www.digchip.com/datasheets/parts/datasheet/105/CL100pdf

[5].http://www.datasheetarchive.com/dlmain/Datasheets312/174867.pdf

[6].https://www.fairchildsemi.com/datasheets/LM/LM7805.pdf

[7] www.ijictrd.net

[8] www.slideshare.net

[9] lib.chipresistor.ru

[10]."Sir Syed University of Engineering and Technology (SSUET) students prepare automatic electric consum", Balochistan Times (Baluchistan Province,, Dec 24 2010 Issue