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# A Survey on Bidirectional Visitor Counter with Automatic Light and Fan Control for Room

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**ABSTRACT:** The main intention of a Bidirectional Visitor Counter with automatic light and fan control for room is to  
1. Design a system wherein the number of persons entering or leaving a room is kept track of and displayed on a LCD.  
2. To turn on and turn off light and fan according to human presence in room with respect to light intensity & room temperature.

When a person enters the room, count would be increased, whereas on leaving, the count would decrease. IR sensing mechanism is used to sense the entry & exit of visitors and the whole counting operation is done by a microcontroller.

The system will have preset value of Light intensity & temperature, if human is present in room and temperature of room increases above set temperature then fan would be turned on otherwise remain off. Also if intensity of light decreases below set value then lights would be turned on otherwise remain off to save electricity. Temperature & light intensity sensing would be done by temperature sensor and LDR. Availability of person or visitor can be made available from counter value.

Therefore, system would take care of electricity and display count of visitors available in room.

**KEYWORDS:** Automated, LED, counting, IR Sensor, obstruction.

### I. INTRODUCTION

Man has come a long way in term of development over a period of time. In the olden days man used kerosene lamps and hand-held fans in his house. The invention of electricity was a major breakthrough in technology, which has enabled man to simplify many jobs. After the invention of electricity come the electric lamp and the electric fan.

After the invention of electricity came the age of AUTOMATION, in which most operation were automated. Human labour was substitute by machines in most places. Continuous attempts are still being made to dilute man's role in most process.

We through this project wants to bring the advantages of technology into the homes of people by automating their household and to provide a solution to prevent wastage of electricity and thus help in overcoming the problem of scarcity of electricity. Our Project is designed to detect of person entering into the room or leaving the room. In our project we have written program for up and down counter which is also displayed on seven segment display. If number of persons present in a room is equal to zero then all lights and fan will get OFF automatically thus saving power.

This project "automatic room light controller with visitor counter using microcontroller" is a reliable circuit that takes over the task of persons/visitor in the room very accurately. When somebody enters into the room will be switched ON and when any one. The light in room will be only switched OFF until all the persons in the room go out. The total number of person inside the room also displayed on the seven segment displays. The microcontroller does the above job. it receives the signals from the spencers, and this signal is operated under the control of software which is stored in rom.

Micron roller AT89S52 continuously monitor the infrared receivers, when any object pass through the IR rays falling on the receivers are obstructed this obstruction is sensed by the microcontroller.



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## Overview-

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 as 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 and when any one leaves the room then the counter is decremented by one. 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. The microcontroller does the above job. It receives the signals from the sensors, and this signal is operated under the control of software which is stored in ROM. Microcontroller AT89S52 continuously monitors the Infrared Receivers, When any object pass through the IR Receiver's then the IR Rays falling on the receiver are obstructed, this obstruction is sensed by the Microcontroller.

## Literature Survey–

This chapter includes all the discussions on research done prior to take up the project and understand the various methods that were used previously. A detailed analysis of the existing systems was performed. This study helped in identifying the benefits and also the drawbacks of existing systems.

### 1) Automatic room light and fan controller with bidirectional visitor counter

In this paper, The aim of our project is to make a controller based model to count the number of person entering into the room and it lights up the room based on the light intensity of the room and turn on fan automatically where the persons are sitting inside the room. It is made to prevent unwanted electric power waste in schools, colleges, houses and other working places. This whole process is operated totally automatically by using its sensors.

### 2) Automated Room Light Controller with Visitor Counter

In this paper, This Project “Automated Room Light Controller with Visitor Counter” is a reliable circuit that takes over the task of controlling the room lights as well as 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 LED light in the room will be switched ON and when any one leaves the room then the counter is decremented by one. 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 display monitor. The microcontroller does the above job. It receives the signals from the sensors, and this signal is operated under the control of software which is stored in ROM. Microcontroller continuously monitors the Infrared Receivers. When any object pass through the IR Receiver's then the IR Rays falling on the receivers are obstructed. This obstruction is sensed by the Microcontroller.

## II. HARDWARE REQUIREMENT

### Microcontroller AT89S51 :

The AT89S51 is a low-power, high-performance CMOS 8-bit microcontroller with 4K bytes of Insystem Programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard 8051 instruction set and pin out. The on-chip flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with In-system programmable flash on monolithic chip, the Atmel AT89S51 is a powerful microcontroller which provides a highlyflexible and cost-effective solution to many embedded control applications.

### IR sensors :

IR sensor is used to produce IR wave. In this project there are two IR sensors. IR sensor consist of IR transmitter and receiver. IR1 detect the number of individuals entering the room. IR2 detect the number of



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individuals leaving the room. The frequency range of IR sensors varies depending upon its cost. When any object cuts the light emitted by the LED, the light bounces back from the object to the light sensor.

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, which activates the particular relay so that it can select the particular device to operate. Relays can control the charge flowing to the load. Load may be AC device such as light, fan, bulb etc.

LCD Display :

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

Power Supply :

Here we used +12V and +5V dc power supply. The main function of this block is to provide the required amount of voltage to essential circuits. +12voltage is given. +12V is given to relay driver. To get the +5V dc power supply we have used here IC 7805, which provides the +5V dc regulated power supply.

Enter and Exit Circuits :

This is one of the main parts of our project. The main intention of this block is to sense the person. For sensing the person and light we are using the light dependent register (LDR). By using this sensor and its related circuit diagram we can count the persons.

## III.SYSTEM MODEL

### System Development-

Block diagram of bidirectional visitor counter with automatic room light and fan control.

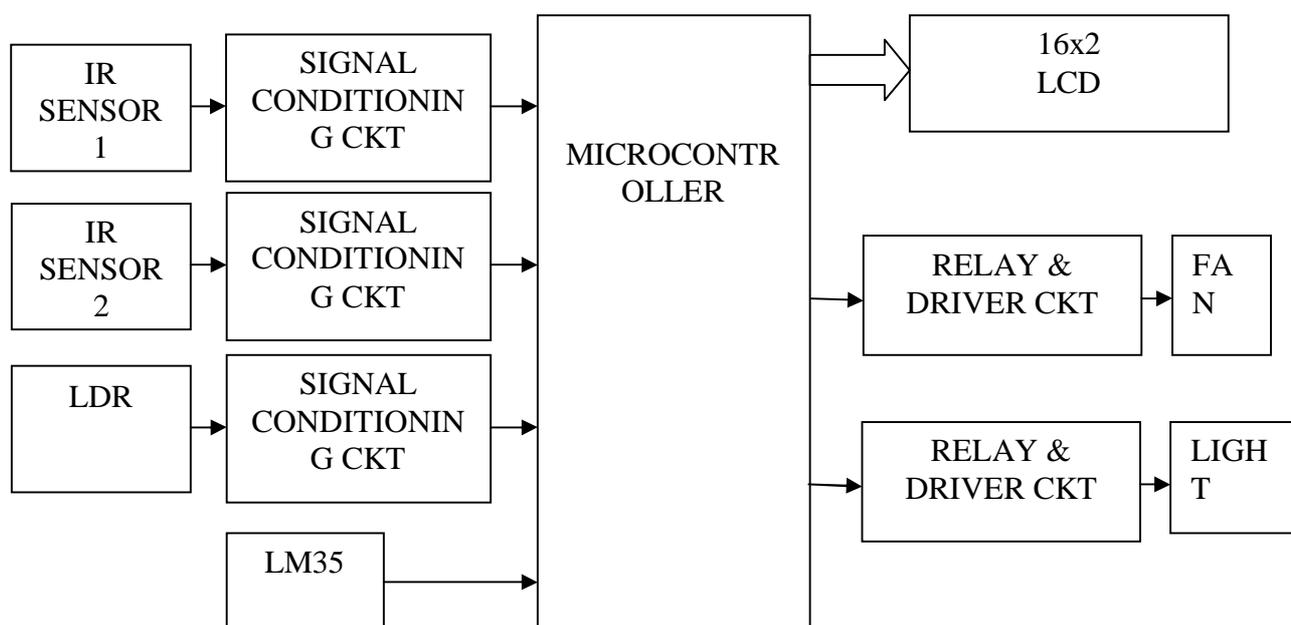


Fig.1. Block diagram of proposed system



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## IV.FUTURE SCOPE

1. Voice alarm system can be added to indicate that room is full & persons can't enter inside.
2. We can increase the maximum number of persons that can be counted by implementing the external EEPROM IC.
3. We can send this data to a remote location using mobile or internet.

## V.RESULT

There are two transmitters and two receiver placed in front of each other. Swap any object ( like mobile ) or your fingers in front of those sensors. Then microcontroller increments or decrements the counter. Ones the count is non-zero , the room light s turned on using relay and turned on fan. Now swap object in reverse direction then the system decrements the count. And room light i turned off and turned off fan and the count become zero.

Input	Output
Person present in room	Count – 1 Turned ON – Light Turned ON - Fan
Person absent in room	Count – 0 Turned OFF –Light Turned OFF - Fan

Table no 1.shows that result of bidirectional visitor counter with automatic light and fan for room.

## VI.CONCLUSION

In our project, we have designed and implemented a Bidirectional Counter & Home Automation using the concept of Embedded System. The target users of the project can be any one right from a common man to any organization. Lets say if any one uses our project for Seminar Purpose then the track record of the persons attending the seminar will give the exact idea about the no. of candidate attending and leaving the seminar and accordingly the Project Model will control the.

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