International Journal of Innovative Research in Engineering
Volume 3, Issue 4 (July-August 2022), PP: 213-215.
www.theijire.com
ISSN No: 2582-8746

Bidirectional Visitor Counter

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How to cite this paper:
Pooja[1], Sanjana S P[2], "Bidirectional Visitor Counter", IJIRE-V3I04-213-215.

Abstract: *Bidirectional Visitor counter is a circuit that can help to count the number of people present in a particular area. Bidirectional Visitor counter can be used in various fields like schools, function halls, shopping mall, parking slots and areas where large amount of people gathers like other public places. Bidirectional Visitor counter basically keeps a track of people entering and exiting from the place. Whenever a person enters or exits from the place it immediately has a track of it and displays it on the screen. By this way we have the number of person present in that area. If a place is with the electronic facility that is with lights, AC, Screens than if there is no person currently present in a room then it automatically turns off the lights and other electronic devices.*

Key Word: *Bidirectional,IR, Arduino, LED,*

I. INTRODUCTION

Technology is improvising consistently by making a significant impact on day to day life of normal people. It cannot be denied that for every occasion or work, technology is applicable and is making life effortless and smooth. In this growing technology, Bidirectional Visitor counter is one of them, it is helpful to keep a track of the number of people present in an area by sensing people entering and exiting that area. For this, we have two sensors (Infrared sensors) placed at the entering and exiting points of the place. The infrared sensor senses the objects and sends the electric signal to the Arduino (microcontroller) following to this the counter is updated and changes are shown on the LCD (Liquid Crystal Display) screen. This project enables us to know the total number of people present in the area and is also helpful in stopping unavoidable accidents.Bidirectional Visitor counter also helps to manage light control in other terms, according to the person present in an area lights can be controlled. If there is at least one person present in the room lights turn on and if there are no visitors then lights automatically turn off. This will help to manage and reduce electric waste.

II.OVERVIEW

A. Objective

The objective of this project is to make a microcontroller based model to count number of persons visiting particular area. Here we use Infrared sensor to know the number of visitors entering and leaving a place and to measure the accurate number of people present in a place. Infrared sensorsare the devices that generate or sense radio waves. It has an emitter which emits infrared(IR)rays.TheseIRraysaredetectedbyadetector.Thisworksinatwoway thatmeans counter will be incremented if person enters the room and will be decremented if a person leaves the room. Another purpose of the system is to save energy by making lights ON or OFF according to the presence of person in the room. To reduce the efforts required to switch on and off the lights.

B. Existing Systems

Nowadays to measure the number of people gathered at a place the following methods are used:

- Manual System
- CCTV Cameras

Disadvantages of manual system:

A single person is hired and assigned the work of keeping the record of visitors entering and leaving the place by maintaining a registry and manually writing the record of every individual. Such system cannot provide full accuracy, provides limited data and can be costly.

Disadvantage of CCTV Camera:

The main purpose of installing a camera is for security, this is only helpful in understanding who is the visitor but not in measuring how many visitors visited the gathering or public places etc. Privacy is an issue and is costly to install and maintain.

C. Proposed System

After studying the existing system and by referring the related papers we are proposing our work by considering the following features.

- Suggests avaluable route forsensingvisitorpresenceina place.
- The counter will keep the track of number of people present in that area and display the count.
- And most importantly, in case of all people leaving a premise,all electrical appliances will be turned off automatically leading to saving of electricity

D. Block diagram

The block diagram of bidirectional visitor system is as shown below in the following figure 1.

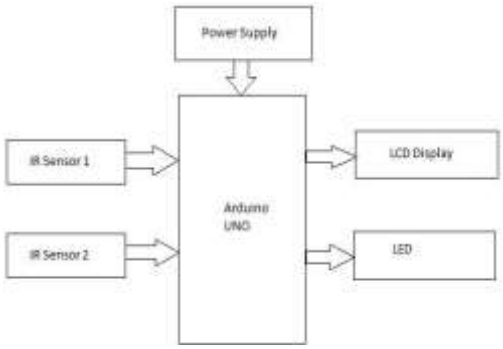

Figure 1 Block diagram of Bidirectional visitor counter.

As shown in the figure 1, the block diagram consists of the following components:

1. Arduino UNO
2. InfraredSensors
3. LCDDisplay
4. LED

Power supply is provided to Arduino UNO which works under the programming of Arduinos IDE.

III.METHODOLOGY

From the below figure 2 the flow diagram shows that the system iterates for infinite loops until the system is switched off or the power supply is turned off.

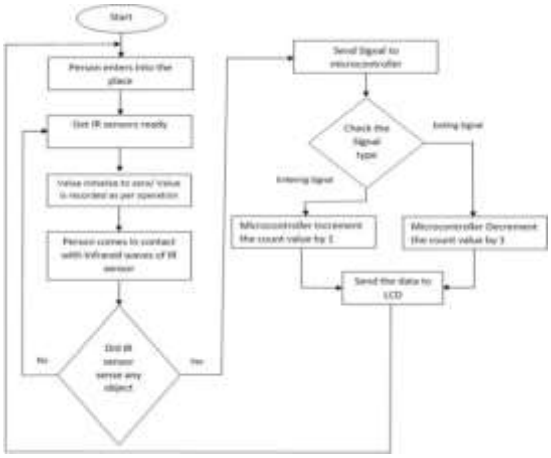

Figure 2 Flow diagram

The pair of IR Sensors can detect the visitor from both directions i.e., the number of entering and exiting visitors.The visitor is detected whenever the visitor comes in contact of IR waves of IR sensors and incoming counter is incremented by '1', After detection, the signal is sent to microcontroller. If the signals are received from IR sensor-1 then the microcontroller increments the count by'1'and if the signals are received from the IR sensor-2 then the microcontroller will decrement the count by '1'. The data is sent to LCD for display. Another purpose of the system is to save energy by making lights ON or OFF according to the presence of person in the room. To reduce the efforts required to switch on the lights.

IV.CONCLUSION

In today's world, where the automation industry is growing rapidly, we have automatic doors, automatic machines, and appliances all over the world and the world is turning towards the automation where every work can be done automatically with low cost and maintenance. Though still there are much more insights to achieve and the experts are involved and improving the technology to fulfill the needs of people and the country. If someone wants to know the total number of persons present in an area Bidirectional Visitor Counter is helpful, it not only keeps the track of the number of people by counting the people incoming and outgoing but also controls the light which saves manpower and electricity. It has a vast use and can be implemented for other purposes.

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