Project Report

Project Title: BIDIRECTIONAL COUNTER

Submitted in the partial fulfillment of the requirements for the

Course Title: EMBEDDED CONTROLLERS & EMBEDDED SYSTEMS DESIGN

Course code: 21EC2106A

submitted by

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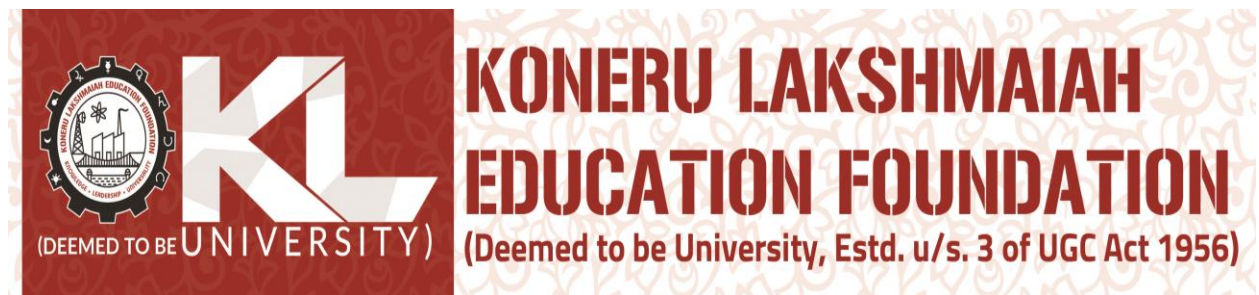
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Declaration

The Project Report entitled "BI DIRECTIONAL COUNTER" is a record of bonafide work of CH Hemanth nag -2100040344, K Moulika-2100040366,M Sreenija Reddy-2100040373,M Thanmaya vishnu phani -2100040375,submitted in partial fulfillment for the subject titled EMBEDDED CONTROLLERS & EMBEDDED SYSTEMS DESIGN (21EC2106A) in Dept of ECE, KL University. The results embodied in this report have not been copied from any other departments/University/ Institute.

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Certification

This is to certify that the Project Report entitled "BI DIRECTIONAL COUNTER" is being submitted by CH Hemanth nag -2100040344,K Moulika-2100040366,M Sreenija Reddy-2100040373,M Thanmaya vishnu phani -2100040375 ,in partial fulfillment for the subject titled EMBEDDED CONTROLLERS & EMBEDDED SYSTEMS DESIGN (21EC2106A) in Dept of ECE, KL University is a record of bonafide work carried out under our guidance and supervision. The results embodied in this report have not been copied from any other departments/ University/ Institute.

Signature of Examiner   **Signature of Supervisor**

Acknowledgement

It is great pleasure for me to express my gratitude to our honorable President Sri. Koneru Satyanarayana, for giving the opportunity and platform with facilities in accomplishing the project based laboratory report.

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Finally, it is pleased to acknowledge the indebtedness to all those who devoted themselves directly or indirectly to make this project report success.

Content

Abstract

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1.

ABSTRACT

This project titled "Bidirectional Visitor counter" is designed and presented in order to count the visitors of an auditorium, hall, offices, malls,sports venue, etc. The system counts both the entering and exiting visitor of the auditorium or hall or other place, where it is placed. Depending upon the interrupt from the sensors, the system identifies the entry and exit of the visitor. On the successful implementation of thesystem, it displays the number of visitor present in the auditorium or hall. This system can be economically implemented in all the places where the visitor is to be counted and   controlled. Since counting the visitors helps to maximize the efficiency and effectiveness of employees, floor area and sales potential of an organization, etc

CHAPTER 1: INTRODUCTION

This project titled "Bidirectional Visitor counter" is designed and presented in order to count the visitors of an auditorium, hall, offices, malls,sports venue, etc. The system counts both the entering and exiting visitor of the auditorium or hall or other place, where it is placed. Depending upon the interrupt from the sensors, the system identifies the entry and exit of the visitor. On the successful implementation of the system, it displays the number of visitor present in the auditorium.
This system can be
economically implemented in all the places where the visitors have to be counted and controlled. Since counting the visitors helps to maximize the efficiency and effectiveness of employees, floor area and sales potential of an organization, etc

CHAPTER 2 : LITERATURE SURVEY

In today's world, there is a continuous needfor automatic appliances. With the increase in standard of living, there is a sense of urgency for developing circuits that would ease the complexity of life. Many times we need to monitor the people visiting some place like shopping mall. To provide solution for this we am going to implement a project called "Bi Directional Digital Visitor Counter" with automatic room light control. This project has a "Visitor counter". Basic concept behind this project is to measure and display the number of persons entering in any room like seminar hall, conference room etc. LCD displays number of person inside the room. We can use this project to count and display the number of visitors entering inside any conference room or seminar hall. This works in a two way. That means counter will be incremented if person enters the room and will be decremented if a person leaves the room. In addition, it will automatically control room lights.When the room is empty the lights will be automatically turn off. Digital Visitor Counter bidirectional visitor counter In today's world, there is continuous need automatic appliance will be increase in standard of living, there is a sense of urgency for developing circuit that would ease the complexity of life. Also if someone wants to know the number of persons present in a room so as not to have congestion, the circuit prove to be helpful.The theme of this project when merged with certain established technologies can be quite effective in number of countries like Germany, France & Japan etc. This Project is useful in developing countries and this project has a bright future. This project helps us to control the light of a room automatically and counts the number of persons/visitors entering and leaving the room. By using this circuit and proper power supply we can implement various applications such as fans, tube lights, etc.

CHAPTER 3 : Requirements

1. Breadboard

2. 1-1602 LCD Display

3. Arduino UNO

4. 2-IR modules

5. 10KHM Potentiometer

6. Jumper Wires

7 LED

CHAPTER 4 : Methodology

Connect the components according to the circuit diagram and check for output accordingly

CHAPTER 5: THEORETICAL ANALYSIS

This **Bidirectional Visitor Counter Project** can be used to count the number of persons entering a hall, Shopping mall, office, functions in the entrance gate. It can also be used at gates of parking areas and other public places. The device counts the total number of people entering through the gate and also the total number of people leaving through the same gate. And finally, it **counts** the **total number of people** currently present inside the room. When no people are inside the room, i.e. the total number of people is zero then the **room light** is turned **off**. When even a single person is found inside the room, the light turns **on**. The light control system is automatic based on the visitors' presence

Arduino Uno R3

It is a microcontroller board based on the ATmega328. Arduino is an open- source, prototyping platform and its simplicity makes it ideal for hobbyistsor novice to use as well as professionals. The Arduino Uno has 14 digital input/output pins , 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with AC-to DC adapter or battery to get started. The Arduino Uno R3 uses an ATmega16U2 instead of the 8U2 found on the Uno . This allows for faster transfer rates and more memory. No drivers needed for Linux or Mac and the ability to have the Uno show upas a keyboard, mouse, joystick, etc. The Arduino Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 microcontroller chip programmed as a USB-to-serial converter.

IR sensor

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion as well as the presence of an object due to intervention or interruption. These type of sensors measure only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes that can be detected by an infrared sensor. The emitter is simply an IR LED and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on thephotodiode, the resistances and these output voltages, change inproportion o the magnitude of the IR light received.

Working Mechanism

An IR sensor is basically a device which consists of a pair of an IR LED and a photodiode which are collectively called a photo-coupler or an opto- coupler. The IR LED emits IR radiation, reception and/or intensity of reception of which by the photodiode dictates the output of the sensor. Now, there are so many ways by which the radiation may or may not be able to reach the photodiode.

Light Emitting Diode

A light-emitting diode is a two-lead semiconductor light source. It is p-n junction diode that emits light when activated. The long terminal is positive and the short terminal is negative. When a suitable current is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons. This effect is called electroluminescence, and the color of the light is determined by the energy band gap of the semiconductor. LEDs are typically small and integrated optical components may be used to shape the radiation pattern.
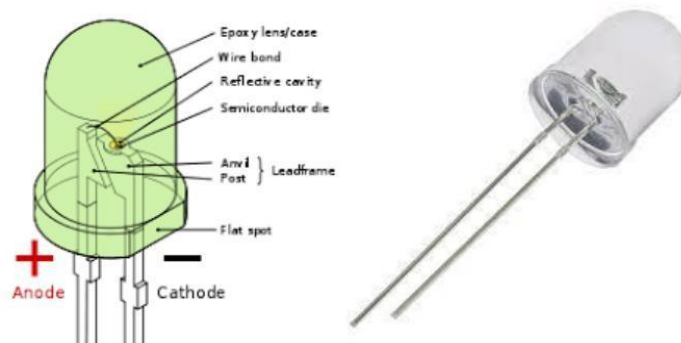
CHAPTER 6: SIMULATION AND RESULTS

CODE

```
#include<LiquidCrystal.h>
LiquidCrystal lcd(2,3,7,6,5,4);


#define in 8
#define out 9
#define led 10


int count=0;


void setup()
{
 lcd.begin(16,2);
 lcd.print("Visitor Counter");
 delay(2000);
 pinMode(in, INPUT);
 pinMode(out, INPUT);
 pinMode(led, OUTPUT);
 lcd.clear();
 lcd.print("Person In Room:");
 lcd.setCursor(0,1);
 lcd.print(count);
```

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```
        }

        void loop()

        {

         int in_value = digitalRead(in);

         int out_value = digitalRead(out);

         if(in_value == LOW)

          {

           count++;

           lcd.clear();

           lcd.print("Person In Room:");

           lcd.setCursor(0,1);

           lcd.print(count);

           delay(1000);

          }

         if(out_value == LOW)

         {

           count--;

           lcd.clear();

           lcd.print("Person In Room:");

           lcd.setCursor(0,1);

           lcd.print(count);

           delay(1000);

          }

         if(count==0)
```
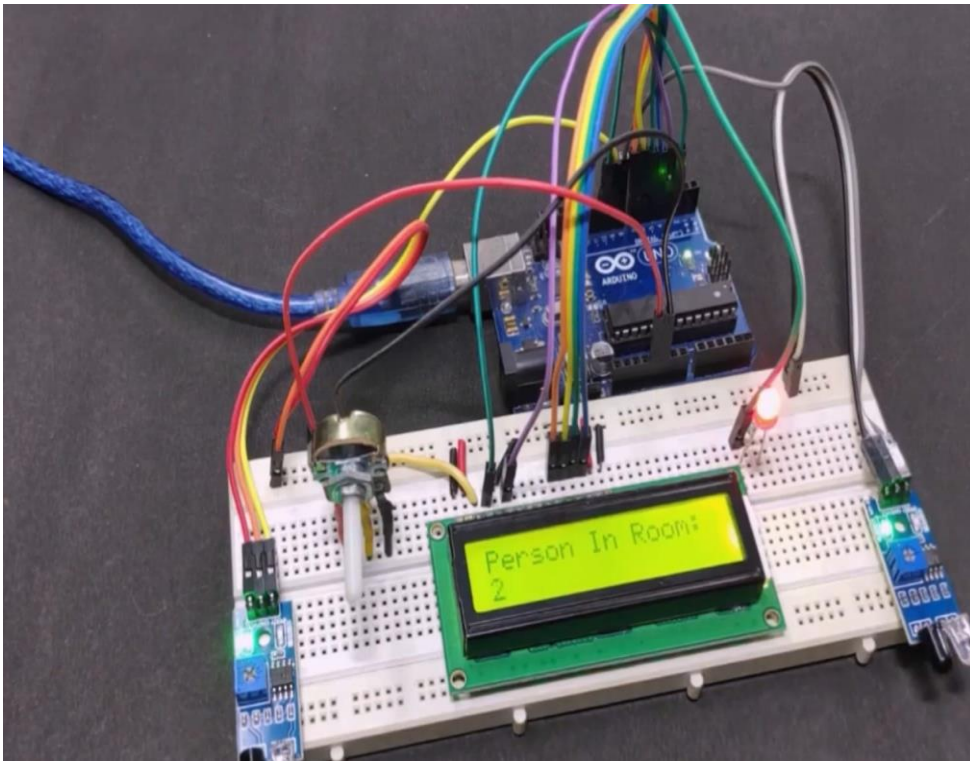
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```
            {

             lcd.clear();

             digitalWrite(led, LOW);

             lcd.clear();

             lcd.print("Nobody In Room");

             lcd.setCursor(0,1);

             lcd.print("Light is Off");

             delay(200);

            }


           else

            {

             digitalWrite(led, HIGH);

            }

          }
```

CHAPTER 7: HARDWARE IMPLEMENTATION

CHAPTER 8: CONCULSION AND FUTURESCOPE

1. Lights can be turned ON/OFF according to the number of people in the room.

2. We can check the ambient light intensity and then decide if the light needs to be turned ON or not.

3. Metal detector can be added for security reasons.

REFERENCES

TEXT BOOK;

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2. Ayala- "INTRODUCTION TO 8051 MICROCONTROLLER"