A BIDIRECTIONAL VISITOR COUNTER AND AUTOMATIC ROOM LIGHT CONTROLLER USING ARDUINO UNO AND IOT BASED

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Abstract: This project title "A BIDIRECTIONAL VISITOR COUNTER AND AUTOMATIC ROOM LIGHT CONTROLLER USING SOLAR PANEL AND IOT BASED" that means automatic room light controller and Arduino as the master controller, 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 exciting visitor of the auditorium or hall or any other place, where it is placed. Depending upon the sensors interruption, 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 or hall or room. This is an economical cost reducing system when implemented in places where the visitors can be time consuming so it helps to maximize the efficiency and effectiveness of employees, time saving and sales potential of an organization, etc. The main purpose of our project is that we have also save the electricity by using solar system. This activity is also seen in the mobile via Blink application.

Keywords: Visitor Counter, Bidirectional Count, Arduino UNO, Node MCU, LCD Display, Sensor system, Temperature control system, Solar Panel.

I.　INTRODUCTION

In today's world, there is continuous need of automatic appliances. With the increase is 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 places like shopping mall. To provide solution for this we are going to implement a project called "A Bidirectional Visitor Counter and Automatic Room Light Counter using Solar Panel and IOT Based". This project has a 'visitor counter'. Basic purpose 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 persons inside the room. We can use this project to count and display the number of visitors entering inside any seminar hall. This works in two way so named as bidirectional. We have mentioned in flowchart that there is two parts, I part: when there is increment in number of persons and II part: when there is decrement in number of persons. In addition, it will automatically control room lights. When the room is empty the lights will be automatically turn off. The main thing is that our project is also operated by solar as well as IOT based using mobile via blink app.

Explanation: This circuit will work when the use of

II. BLOCK DIAGRAM AC supply is given and also with

solar panel by using solar energy. At first when person enter in the room the LDR

sensor sense the person. The number of persons will be counted and it will be displayed on LCD screen. It is IOT based so it can also be seen on mobile. Here the fan works on the basis of temperature means it works according to room temperature.

Hence, we have put temperature sensor.
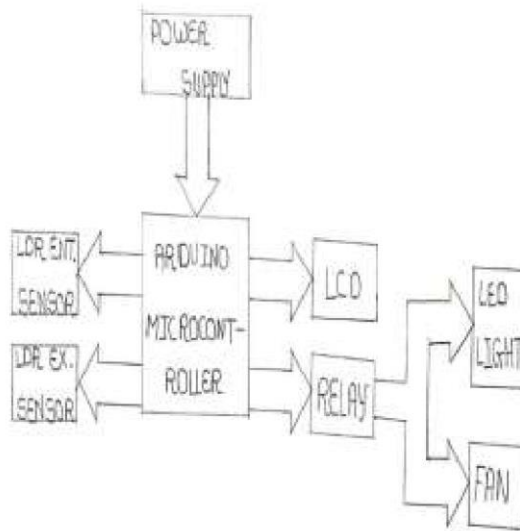
I   Part: When persons are entering in the room.

i)   When one person will enter in the room then one tube light or bulb, one fan and socket will be switched ON automatically. ii) When more than four persons will enter in the room then two tube light or bulb, one fan and socket will be switched ON automatically.

iii)   At last, when more than eight persons will enter in the room then three tube light or bulb, one fan, socket will be switched ON automatically.

II   Part: When persons are leaving from the room.

i)   When there is less than eight persons in the room then out of three tube light or bulb one will be switched OFF automatically.

ii)   When there is less than four persons in the room then two out of three tube light or bulb will be switched OFF automatically.

iii)   When there is no person in the room all electrical appliances will be switched OFF automatically.

III. FLOW CHART
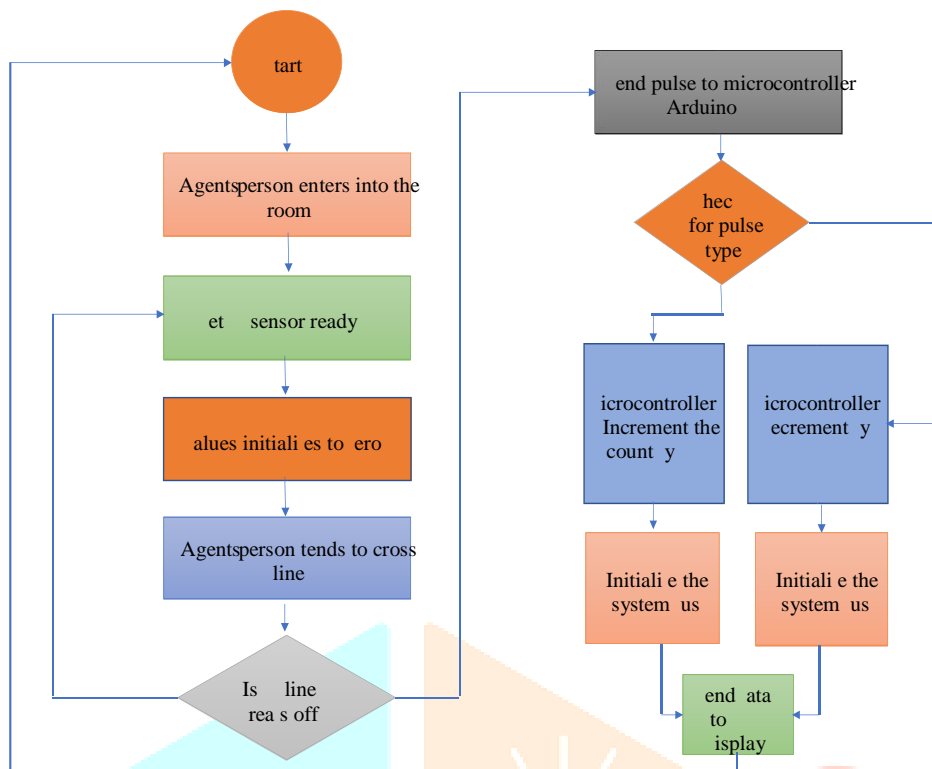
The operation of the system is already been discussed in previous section. In this section we will discussed about the flowchart that how it works. So above flowchart shows that the system iterates for infinite times until and unless the system is switched OFF or power cut. This is because the LDR sensors after break off, automatically adjusted to go to previous state that is the LDR line is again connected in each sensor set. The pseudo codes for the operation are shown below:

Start:

Sensor goes to initial state;

Setting sensor value (S_{val})=0;

Setting count (M_{count} (n)) =0;

When

People cross the LDR line;

LDR line breaks off;

    Sval ==1;

    Send pulse (Psensor) to Arduino UNO;

Arduino UNO check for pulse type;

If

  P_{sensor} == incoming;

    M_{count} = 1;

  Data send to LCD display;

  S_{val} =0;

Else

  P_{sensor} == outgoing;

  M_{count} =M_{count} (n-1);

  Data send to LCD display;

  S_{val} =0;

Goto Start;

IV. COMPONENTS

A. Solar Panel

Definition: Solar panel are those devices which are used to absorb the sun's rays and convert them into electricity or heat.

Description: A Solar panel is actually a collection of solar (or photovoltaic) cells, which can be used to generate electricity through photovoltaic effect. These

cells are arranged in a grid-like pattern of the surface of the solar panels. Thus, it may also describe as a set of photovoltaic modules,

mounted on a structure supporting it. A photovoltaic (PV) is a packaged and connected assembly of 8*10 solar cells. When it comes to wear-and-tear, these panels are very hardy. Solar panels wear out is extremely slow. In a year their effectiveness decreases about one to two percent (at times, even lesser . ost solar panels are made up using 'crystalline silicon solar cells.

B. Arduino UNO

The Arduino UNO is an opensource microcontroller board based on the microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of

digital and analog input/output pins that may be interfaced to various expansion boards and other circuits.

CPU: Microchip AVR (8-BIT)

Memory: SRAM

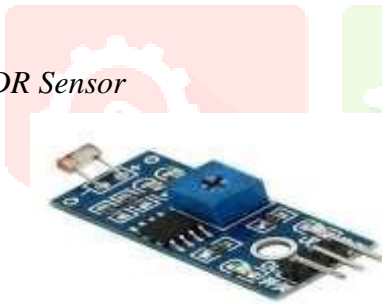Storage: Flash, EEPROM

B. LDR Sensor

Photo resistors, also known as light dependent resistors (LDR), are light sensitive devices most often used to indicate the presence or absence of light. Here instead of light we have make such that it can detect the number of persons.

D. LCD Display

A liquid crystal display is a flat panel display or other electronically modulated optical device that uses the light modulating properties of liquid crystals combined with polarizes. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in color or monochrome.

V. CONCLUSION

In today's life every human eing is ecoming lazy and mostly dependent on electronic gadgets. So, to reduce human efforts we have done this project of "A idirectional isitor Counter and Automatic Room Light Controller using Solar Panels and IOT Based. Here number of persons entering and leaving the room is counted and display on LCD display as well as mobile via Blink app, along with it, automatically all electrical appliances will be switched ON and OFF.

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