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Energy Saving and Safety System Automation

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***Abstract*-The main aim of this project is to save energy,Wastage of electricity is one of the main problems which we are facing now-a-days.Manytmes we leave the room and hall without switching of lights and fans,thus electricity is wasted.In this work we have presented a system in which energy will be saved based on number of people entering in or leaving out of the room.If there is no person in the room,then light and fan will be switched OFF.On the other hand as soon as any person enters the room,light and fan will be switched ON. On the basis of the intensity of sunlight we can increase or decrease the intensity of light.**

***Keywords*-Energy saving; Microcontroller; Sensors; Speaker; Safety system.**

I.INTRODUCTION

In our project we use IR sensors to detect the presence of a person. According to this project, two IR sensors are placed apart with a fixed known distance. When ever IR rays are interrupted by a person during first sensor the count up timer is started. This count value is displayed on the LCD; if it is obtained at second sensor then the count will be decreases depending upon the crowd.

Depending on the count the microcontroller takes the decision of switching the lamps. electricity wastage is one of the main problems which we are facing now-a-days. Many times we leave the room and hall without switching off lights and fans, thus electricity is wasted. In this work we have presented a system in which energy will be saved based on number of people entering in or leaving out of the room. If there is no person in the room, then light and fan will be switched OFF. On the other hand, as soon as any person enters the room, light and fan will be switched ON. On the basis of the intensity of sunlight we can increase or decrease the intensity of light. Simultaneously we can vary the speed of the fan sensing the room temperature. The more temperature the more speed of the fan. A smoke sensor module is used for detecting any smoke within the room and provides safety by alarming the audio device then people will be alerted.

II. RELATED WORK

Home automation can be done by different way[1].. Gill k. [2] developed a Zigbee-based home automation that works through a common gateway with Wi-Fi network in order to switch home appliances. Chao-lin Wu [3] established a mobile agent based integrated control architecture for home automation system. The above automation systems only for personal relaxation. When we think to save energy require an intelligent system that can perform switching in the presence of the human body. Reference [4] discussed a system that can perform switching home appliances in the presence of the human body by using PIR sensor. It is costly and we can use visitor counter in the place of intelligence system mentioned above. Golay Marcel J.E [5] worked on the logic of the bidirectional binary counter. This counter has many restrictions and we can follow microcontroller based bidirectional visitor counter [6] and Design of bidirectional coherent counters by Dean K.J [7].

In order to save energy Wei Yan and S.Y.R Hui built a system [8],which has a central energy saving unit that can change the input main voltage of 220v to a variable voltage within 220v to 170v, is used to control a large lighting network and dimming is used to control light intensity. Reference [9] constructed a wireless security control systems & sensor network for smoke and fire detection. They used a smoke detector device that detects smoke & issues an alarm to alert nearby people

III. HARDWARE DESCRIPTION

1. Micro Controller 89C51

A Micro controller consists of a powerful CPU tightly coupled with memory, various I/O interfaces such as serial port, parallel port timer or counter, interrupt controller, data acquisition interfaces-Analog to Digital converter, Digital to Analog converter, integrated on to a single silicon chip.

If a system is developed with a microprocessor, the designer has to go for external memory such as RAM, ROM, EPROM and peripherals. But controller is provided all these facilities on a single chip. Development of a Micro controller reduces PCB size and cost of design.

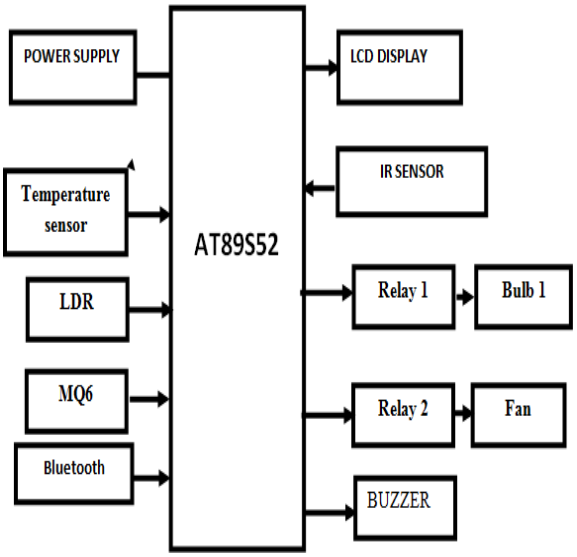

Fig.1 Block Diagram of Automated Energy Saving and Safety System.

One of the major differences between a Microprocessor and a Micro controller is that a controller often deals with bits not bytes as in the real world application.Intel has introduced a family of Micro controllers called the MCS-51.

2. The Main Blocks of This Project Are

- MICRO CONTROLLER (8051)
- CRYSTAL OSCILLATOR
- REGULATED POWER SUPPLY (RPS)
- LED INDICATOR
- IR SENSOR
- LCD DISPLAY
- RELAY

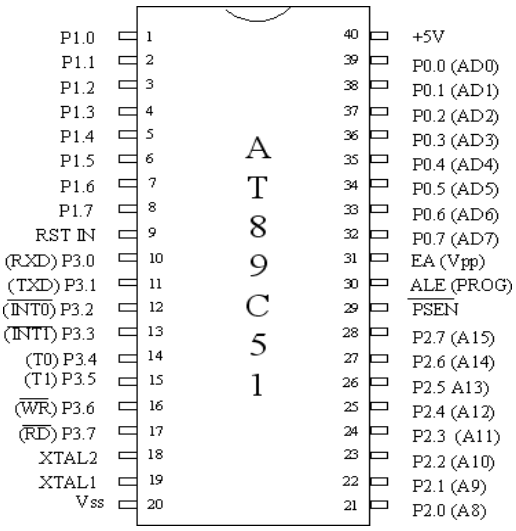

Fig.2 Pin diagram of AT89C51.

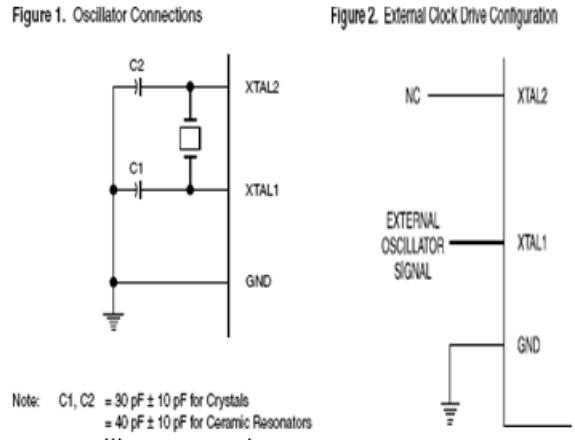

Fig 3 Oscillator Connections.

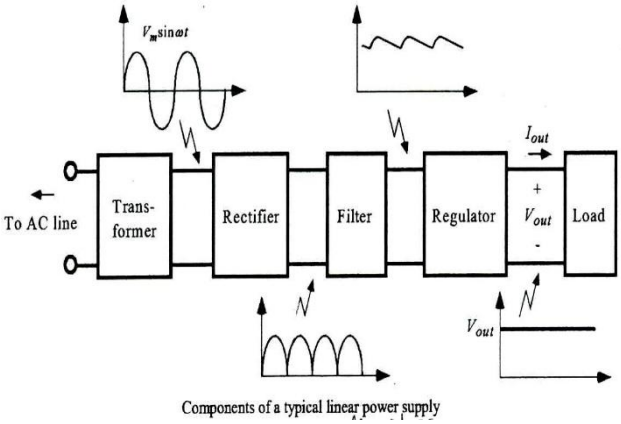

Fig 4 External Clock Drive.

Turns ratio = Vp/ VS = Np/NS Power Out= Power In
VS X IS=VP X IP
Vp = primary (input) voltage
Np = number of turns on primary coil Ip = primary (input) current.

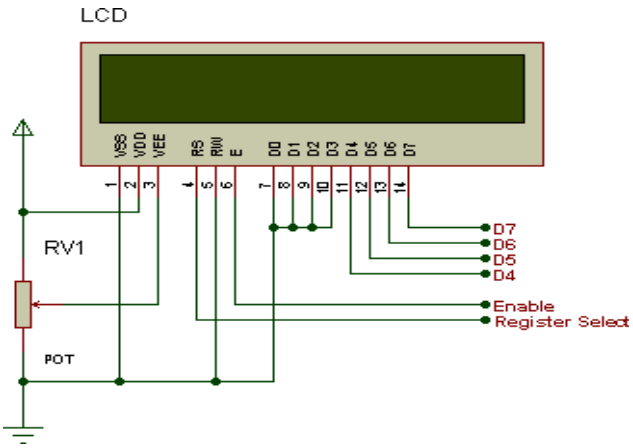

Fig. 5 LCD Pin diagram.

IV. RESULT

The project "AUTOMATED ENERGY SAVING AND SAFETY SYSTEM" wasdesigned such that it counts the number of people and displays the count on the LCD display screen. It automatically switches ON or OFF the devices according to the count which was mentioned in the program code.

V.FUTURE SCOPE

Our project "Power management using Bi-directional visitor counter" is mainly intended in knowing the total number of persons in a hall. This system has two IR modules interfaced to a microcontroller along with an LCD display and relay. The micro controller is programmed in such a way that when a visitor cuts the IR rays it will be counted and shown on LCD display and automatically the devices are controlled if the count reaches a set maximum value. This system is capable of giving IN count as well as OUT count justifying the term bi directional.

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