

INTELLIGENCE HOME AUTOMATION SYSTEM USING LDR

Priyadarshni.S¹, Sakthigurusamy.S²,Susmedha. U³,

Suryapriya.M⁴, Sushmitha. L ⁵.

Assistant Professor ¹, Student members ^{2,3,4,5}

Department of Electronics and Communication Engineering

Coimbatore institute of engineering and technology

ABSTRACT: This paper presents the “Automatic control of home appliances include Room Light and Fan Controller Using PIC Microcontroller is a reliable circuit that takes over the task of controlling the room fan and room lights as well as counting number of persons / visitors in the room very accurately .The design of Light dependent Resistor (LDR) based circuit that controls the light in a room depending upon the lighting condition (intensity of ambient light). The speed control of fan will depend on PWM signal. It contain temperature sensor that can sense the temperature & gives the control commands for microcontroller .Then microcontroller increases as well as decreases the speed of the fan. The total number of persons inside the room is also displayed on the liquid crystal display. The microcontroller does the above job. The main objective of control is to get the desired output and in energy conservation.

I. INTRODUCTION:

Microcontrollers play a very vital role in the development and implementation of automation technology. Automation is the process of controlling system and information to decrease the need of human participation. Home automation represents the idea of controlling of home appliances in an integrated system. It may include the control

of lighting, heating, ventilation, airconditioning, security, and other appliances. Several sensors i.e. detector for temperature, smoke, fire, gas, PIR, light etc. are used for smart home. These sensors use the input signal to control home appliances. implementation of a unified connectivity between devices and the main controller in cost effective way is very decisive this works includes the control of switching of lights and fan according to the attendance of person, speed control of DC motor(fan) according to the variation of temperature. Thus the speed of dc motor is controlled through duty/PWM signal. In this paper, we present a flexible and reliable control scheme for controlling the dc motor and light control. Results obtained are found in good agreement with the available in data acquainted. Finally the most important section is the conclusion which concludes the purpose of this project

RELATED WORKS: In literature review, this is to be found that in recent years the energy crisis has become main problem which the whole world must confront. Home power consumption makes up the largest part of energy consumption in the world. This is to be found that the automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. Home automation is a widely used automated system. There is an approach to control the electrical and electronic home appliances

according to the attendance of persons [6][10]. Implementation of the PIC microcontroller for Speed control of DC motor fed by a DC chopper has been investigated. The chopper is driven by a high frequency PWM signal. Controlling the PWM duty cycle is equivalent to controlling the motor terminal voltage, which in turn adjusts directly the motor speed [2][5]. The design and simulation of a novel fan speed control system based on room temperature using Pulse width Modulation Technique. The duty cycle is made to vary according to the room temperature and the fan speed is controlled accordingly [3].

PROPOSED TECHNIQUE: The project designed here is a microcontroller based embedded system. In this design, an 8-bit 8051 microcontroller is used. The microcontroller has been programmed using C language according to the required features and hence, keil has been used to compile the code written in programming language C and generate hex file, which is loaded to microcontrollers flash memory with programmer and the circuit configuration has been simulated in PROTEUS software. Speed control of dc motor using PWM technique requires some method of manipulating the width of the pulses. The system here has been designed configuring temperature and IR sensor. Temperature sensor senses the temperature of a room and it gives the microcontroller signal. The speed of fan will increase if the temperature of the room is high and decrease if the temperature of the room is low. IR sensor senses the presence of person. If there is any person in the room the light & fan will be ON after a man entering the room. The more light will be ON according to attendance of person. The light & fan will be only switched OFF until all the person in the room goes out. The total number of persons inside the room is also displayed on the liquid crystal display.

SYSTEM DESIGN DISCUSSION

Software implementation: In this design, an 8-bit microcontroller is used which is of 8051family. The microcontroller is programmed using C language according to the required features and hence, Keil compiler has been used to compile the code written in programming language C and generate hex file, which is loaded to microcontroller's flash memory with programmer and the circuit configuration has been simulated in PROTEUS software.

1. POWER SUPPLY: Five volts power supply w.r.t ground is needed for the operation of the microcontroller.

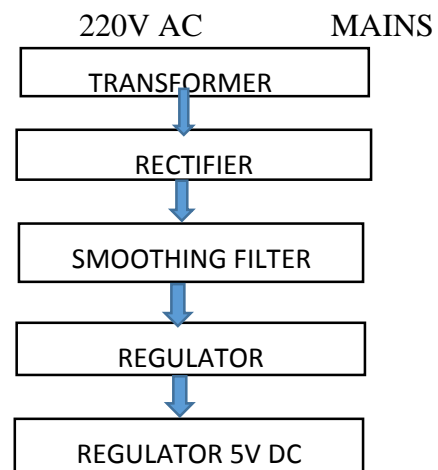
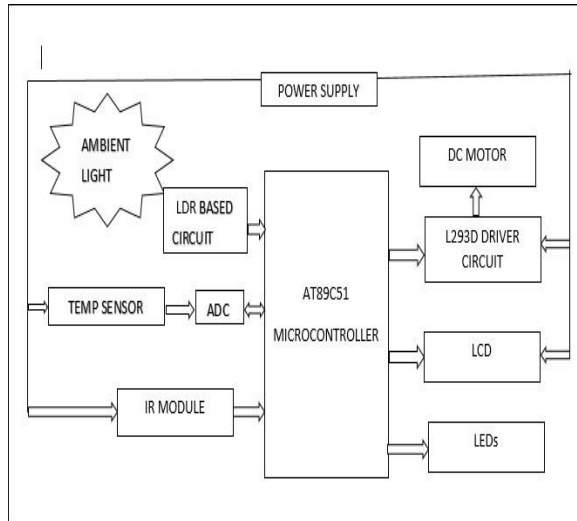


Fig: 1 Power supply unit

2. PIC Microcontroller: PIC is the family of microcontrollers made by microchip technology, derived from the PIC1650 originally developed by general instrument's micro electronic division. PIC initially referred to peripheral interface controller. PIC device are popular with both industrial developers and hobbyists due to their low cost, wide availability, lager user based, extensive collection obligation notes, availability of low cost and free development tools, serial

is an electronic device that radiates and senses infrared radiation with the purpose of sensing some characteristic of its surroundings.



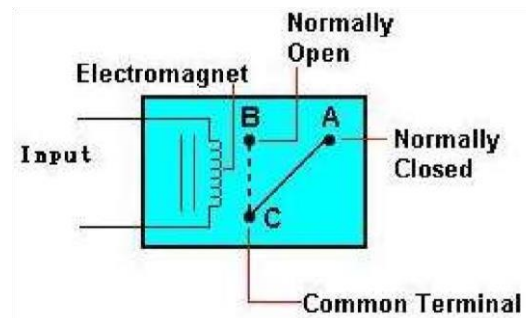
8. DC MOTOR:

A DC motor is a mechanically commutated electric motor driven by dc current. The advantages of using these types of motor over conventionally used AC motors are:

- DC motors have higher controller efficiency.
- DC motors have typical 98% efficiency.
- DC motors have better overload and peak voltage characteristics. DC motors are widely used because its speedtorque characteristics can be varied to almost any useful form

9.Relay: Working of relay as appeared in figure, when the force is supplied to relay, the current begin moving through the control coil subsequently electromagnetic begins empowering. Hear focuses A,B,C are utilized as controlling points. At the point when power supply is given because of electromagnetic impact, B and C are associated accordingly shuts the contacts bringing about a short circuit for supply to the load. Already if relay was deenergized

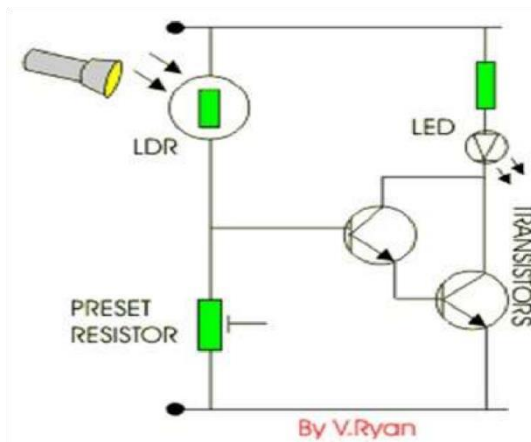
because of closed contacts, then the movement of contact would be inverse and make a circuit open. At the point when supply is made off, point A and C are associated. The force is essentially given by gravity and spring



10. Light Dependent Resistor

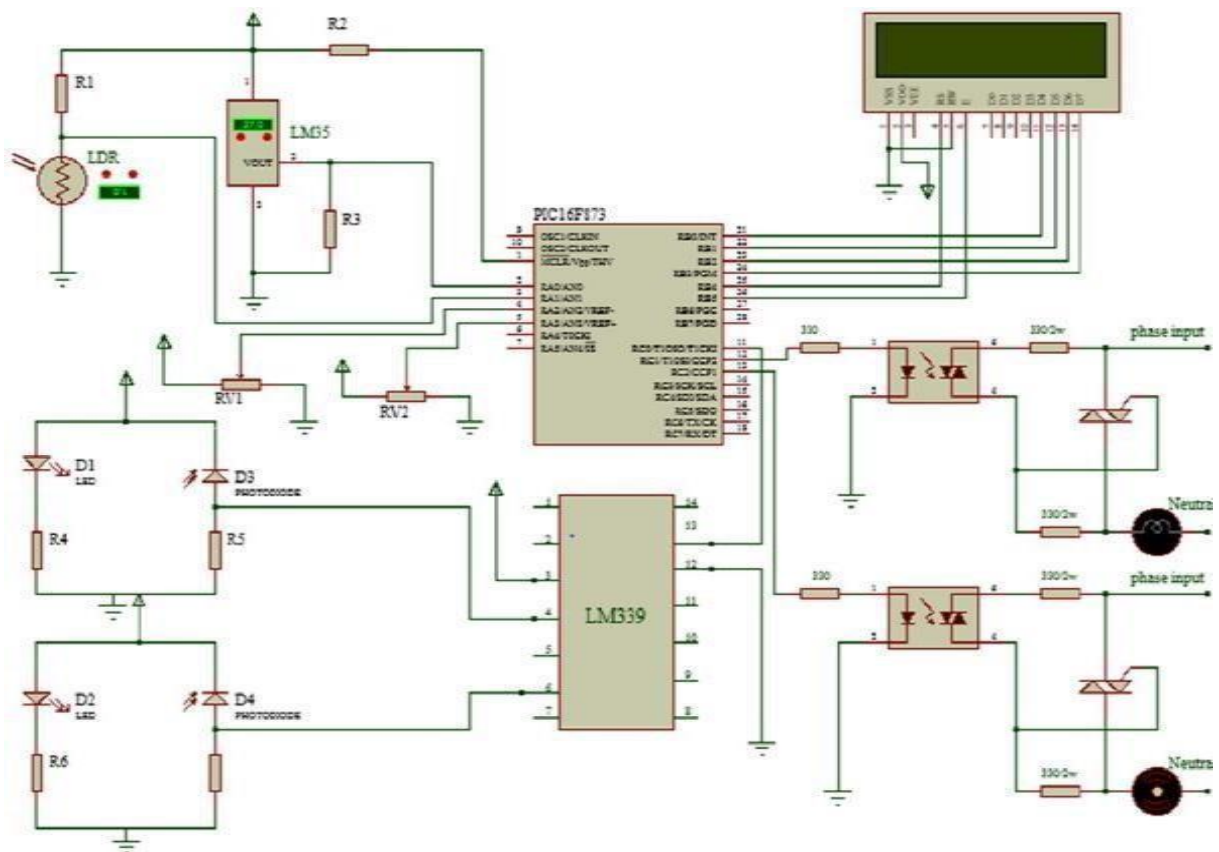
A Light Dependent Resistor (LDR) or a photo resistor is a gadget whose resistivity is an element of the occurrence electromagnetic radiation. Consequently, they are light delicate gadgets. They are likewise called as photo conductors, photo conductive cells or just photocells. They are comprised of semiconductor materials having high resistance.LDRs or Light Dependent Resistors are extremely helpful particularly in light/dim sensor circuits. Ordinarily the resistance of a LDR is high, once in a while as high as 1000000 ohms, yet when they are lit up with light resistance drops drastically. At the point when the light level is low the resistance of the LDR is high. This keeps current from streaming to the base of the transistors. Thus the LED does not light. In any case, when light sparkles onto the LDR its resistance falls

and current streams into the base of the primary transistor and after that the second transistor. The LED shines. The preset resistor can be turned up or down to increment or diminishing resistance; along these lines it can make the circuit pretty much delicate. The figure demonstrates the working hardware of LDR.



V. REAL IMPLEMENTATION

Hardware implementation: The expected results have been obtained from the data acquainted and from simulation by proteus software. A pulse with fixed frequency is generated by the microcontroller which is varied according to the temperature sensor. When the width of the pulse is maximum motor will rotate with maximum speed and at minimum pulse width motor will rotate at minimum speed. Automatic light and fan control is achieved using IR Module and temperature sensor.



Conclusion: The expected results have been obtained from simulation this project by proteus software. The microcontroller based control scheme has been developed for light and fans. Temperature sensor LM35 sense the temperature of the room and based on that microcontroller controls the speed of the fan. The system requires only 5V dc voltage. The work includes knowledge regarding architecture of microcontroller. Hardware and software implementation provide the work more acceptable as the cost is less and other features are more useful.

References:

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