

# DESIGN AND DEVELOPMENT AUTOMATIC FAN

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## ABSTRACT:

As we know that automatic system and automation is the requirement of today's technology. In this project we will provide two functions. First one is, control the turned on/off the fan with respect to the human detection rather than the use of manual switching system. Other function is control the speed of a fan with respect of temperature set. In this project Arduino Uno forms the processing part. Which firstly detect the human with the use of PIR sensor and senses the temperature with the use of temperature sensor. Arduino Uno senses the temperature and control the speed with the sensor. When the current temperature is greater than or equal to the set temperature the fan turned on otherwise it will stay off. For turning on here should be two condition supposed to be true. One is object detection and other one is temperature should be appearing at set temperature. After turning on the fan speed will be change accordingly with temperature. Whenever the temperature will be increase fan speed will be increase. We also have discussed that how much effective of our project in practical life. In the conclusion we gave some statement about the limitations and the scope of future enhancement of the project.

**Keywords:** Arduino, Speed control, LM35 sensor, PIR sensor, Liquid Crystal Display (LCD).

## INTRODUCTION:

In our country especially in rooms switching on or off electrical fans is still commonly made by manual switches Hence, people are becoming so busy that they forgot to turn off switches after leaving the room. The world temperature [1]is increasing rapidly so a new technology is required to adapt to this varying temperature The need for automatic [2]system is the concern of today's technology. There are two functions in this system. Fan speed will be changed automatically according to temperature using LM35 and fan will be turned on when the temperature will appear to 270 C and when human will enter the room. Fan will be turned off when human will leave the room. Temperature and speed information will be displayed in a LED screen. Temperature sensor (LM35) will senses the room temperature. The speed of the fan is controlled by using PWM technique according to the room temperature. PIR sensors used to detect the people who are entering or leaving in the room .PIR sensors allow to sense motion, almost always used to detect whether a human has moved in or out of the room.

**Automatic Temperature Controlled Fan Using Thermistor:** In this paper for sensing the temperature Thermistor has been used. Here also described that how the speed of a fan can be controlled, based on temperature sensor. A sensor is a type of transducer. In a broader sense, a transducer is sometimes defined as any device that converts energy[3] from one form to another. Besides that, the component that made up the temperature sensor is known as thermistor. Thermistor is a kind of temperature

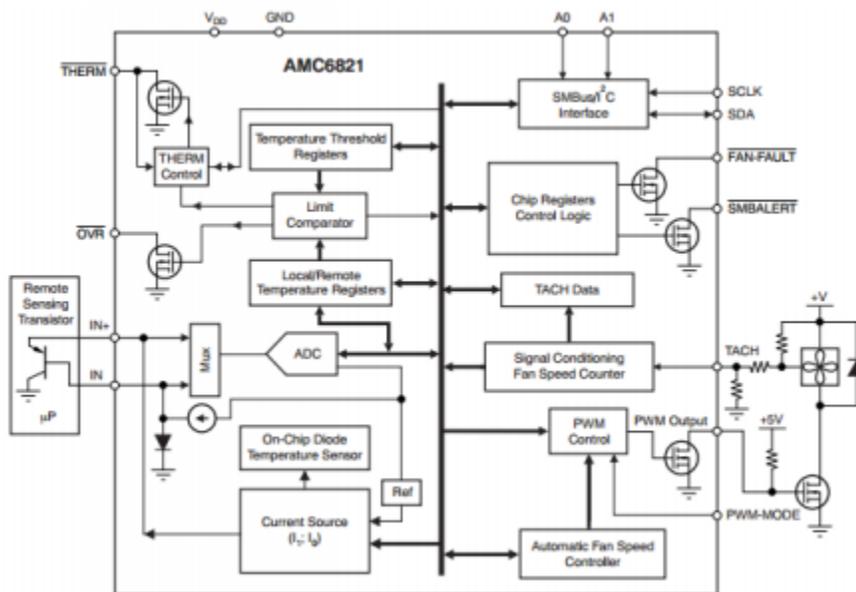
dependent resistor and its resistance varies depending on the temperature in its vicinity. It can also be used to control the room temperature, depending on the property of Thermistor.

### Temperature Monitor and PWM Fan Controller:

**Controller:** In this system for the monitoring of temperature the AMC6821 has been used. It is designed for noise-sensitive or power-sensitive applications that require active system cooling. Using either a low-frequency or a high-frequency PWM signal The AMC6821 has three fan control modes:

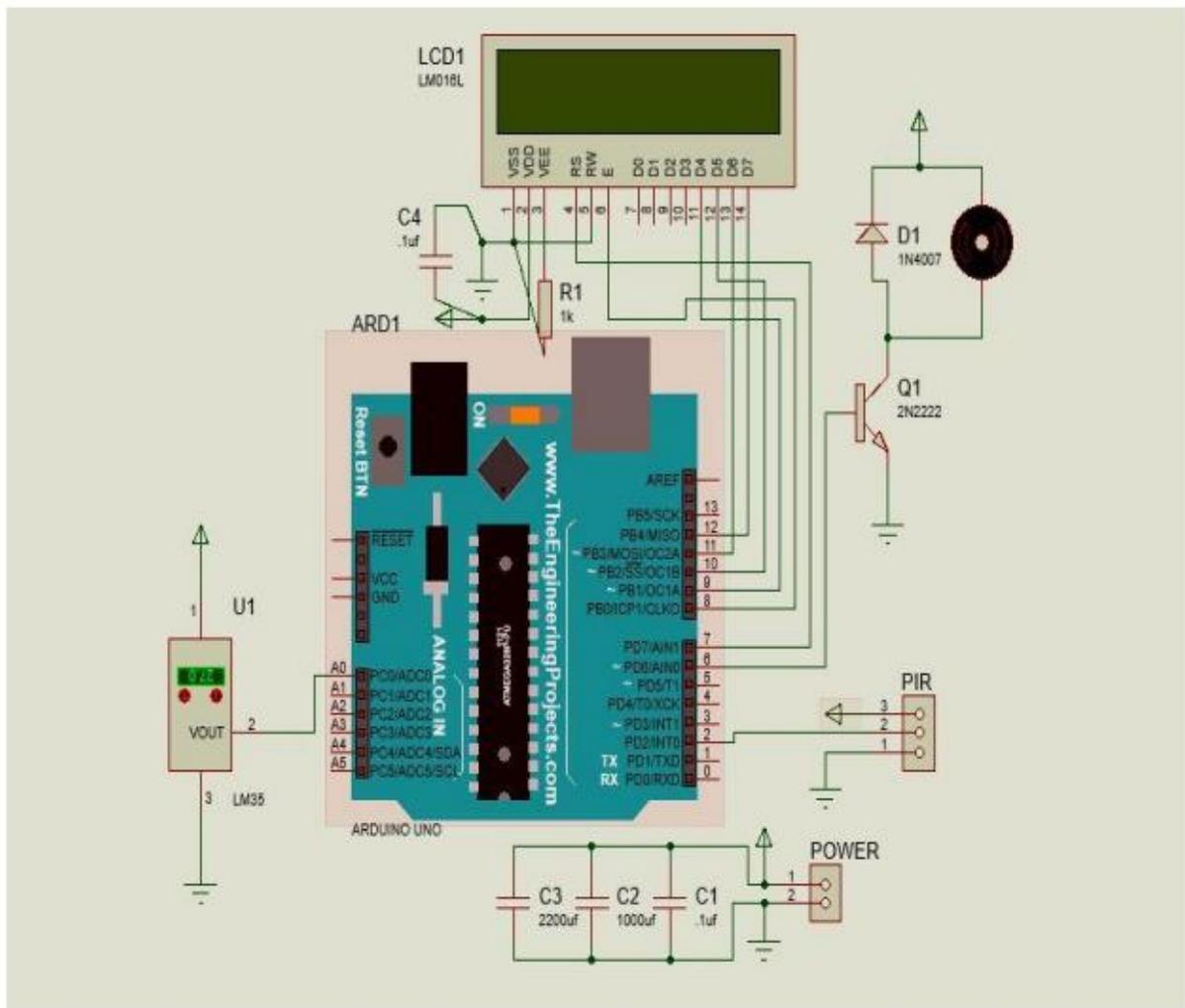
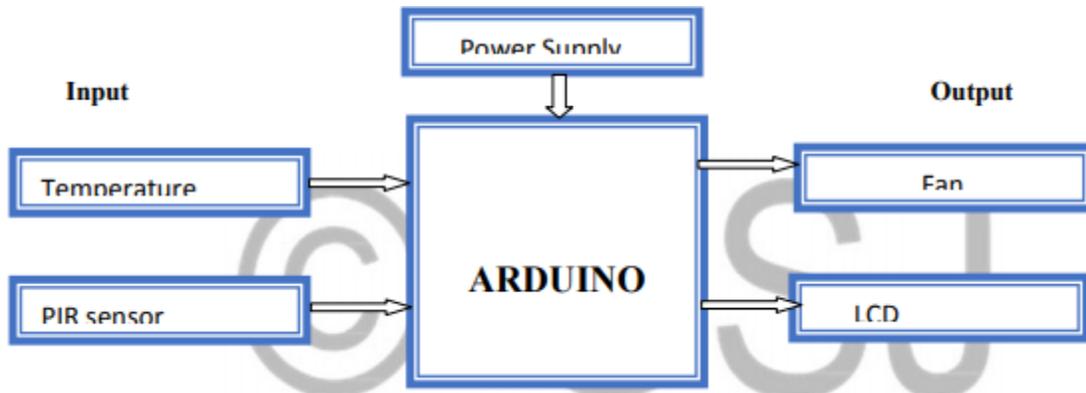
- Auto Temperature-Fan mode
- Software-RPM mode
- And Software-DCY mode

Each mode controls the fan speed by changing the duty cycle of a PWM output. Auto Temperature-Fan mode is an intelligent, closed-loop control that optimizes fan speed according to user-defined parameters. The AMC6821 adjusts the PWM output to maintain a consistent fan speed at a user-specified target value that is, the device functions as a fan speed regulator. Software-RPM mode can also be used to allow the AMC6821 to operate as a stand-alone device.



**Automatic Fan Speed Control System Using Microcontroller:** PIC16F877A Microcontroller has been used for the main controlling system. LM35 sensor has been used for sensing temperature. Which can decode written instructions and convert them to electrical signals? The microcontroller will then step through these instructions and execute them one by one. As an example of this a microcontroller could be used to control the fan speed according to the temperature of the room.





Necessary Components:

- Arduino UNO
- LM35 (Temperature Sensor)

- PIR (Human Sensor)
- Motor 1.5 volt-6.7 volt
- Resistor (1K,10K)
- 2N2222 Transistor
- 1N 4007 Diode
- LCD 16\*2
- LCD (Liquid Crystal Display)
- Adaptor
- Breadboard

**Conclusion:** This paper elaborates the design and construction of fan speed control system to control the room temperature and turned on/off control automatically with the human detection. The temperature sensor was carefully chosen to gauge the room temperature, and motion sensor was chosen for detect the human Besides, the microcontroller had been used to control the fan speed using the fan speed in rpm and the Arduino was successfully programmed using C/C++ Language to compare temperature with standard temperature and set fan speed and their values displayed on LCD. Moreover, the fan speed will increase automatically if the temperature room is increased. As conclusion, the system which designed in this work was perform very well, for any temperature change and can be classified as automatic control.

#### References:

- [1] S. Verma *et al.*, "a Utomatic Room Temperature Controlled," *Int. J. Sci. Eng. Res.*, 2015.
- [2] Z. I. Rizman, K. H. Yeap, N. Ismail, N. Mohamad, and H. Rabi 'ah Husin, "Design an Automatic Temperature Control System for Smart Electric Fan Using PIC," *Int. J. Sci. Res.*, 2013.
- [3] S. Schiavon and A. K. Melikov, "Energy saving and improved comfort by increased air movement," *Energy Build.*, 2008.