A NEW METHODE FAN AUTOMATIC WIND FLOOR USING TEMPERATURE AND INFRARED SENSOR BASED AVR MICROCONTROLLER ATMEGA8

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Abstract: *The objective of the project is to show how to manufacture and assemble the automatic fan control system with ATmega8 AVR microcontroller and design an automatic working microcontroller controller equipped with infrared sensor and temperature sensor. With the creation of this design, no manual fan operation is required. Because the life or death of the fan adjusted to the room temperature, it can save the power used from the fan. Stages of collecting data in writing, the author refers to the sources of the internet because of the limitations of the author to collect the original data. This system works by detecting the existing temperature in the room and the movement of activities in the room by using the temperature sensor and infrared sensor, and display on the LCD a temperature detected.*

Key words: *Temperature Sensor, Infrared Sensor, LCD.*

1. INTRODUCTION:

Along with the development of knowledge and technology, the human need for instant things is increasing as well. Especially to be able to control electronic equipment without having to manually operate [1]. This is commonly called automation in the electric world. Automation aims to alleviate and reduce the role of personal (human) for the purpose of more efficient work processes of an equipment (in this case electronic equipment) [2]

In today's world, changes and technological advances also affect the climate and temperature of the earth. It also requires people to find alternatives to overcome such things or circumstances. Especially the warmer the temperature of the earth also affects the comfort in the activity every day. For the upper middle class people can certainly find something more comfortable associated with the above without having to think about the cost issues that must be issued [3]. Because temperatures are quite hot usually elite housing and large offices now have chosen to use air conditioner as an in-room cooler [4].

Unlike the case with the middle class down. Cost issues will certainly greatly affect. So although sometimes it will need the above, but choose not to wear them. Because of the inability in terms of cost. For the middle class down would certainly prefer to use a fan [5]. Of course because the price is affordable and also still can overcome the above mentioned temperature problems. Although the fan is not as good as the air conditioner in cooling the temperature in the room [1].

From the above problems, the authors make an automatic fan based on microcontroller ATmega8. This tool is also equipped with infrared and sensors. So it can work without having to touch the setting button speed or speed setting on the fan [6].

2. LITERATURE REVIEW.

There are some abstractions of publications which are relevant to our proposed system. According to those publications we have included the information about existing system. The existing system has scope of upgrade. And existing system has some limitations. We have gathered lot of information from the literature and have discussed here. The information we have gathered which are about Automatic control fan using various electronic component and Arduiono as well. We have got additional knowledge from particular publication about human sensing device. We have gathered knowledge about our proposed system
from some article as well which has been published by an organization.

We gathered some knowledge from some publications regarding our project. We have discussed here the main principal of those
relevant projects.

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 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.

3. RESEARCH METHODS:

In the preparation of this journal, the authors use casual design (experimental) that is the writing of experiments and testing of the language programming created and by studying the literature - literature related to the design material using C programming language .

Data collection techniques used in the preparation of this journal is by Research Documentation, which is a method with the form of data collection from the literature media. This data can be in the form of supporting materials such as theories and concepts derived from official literaturedesign technique used with CodeVisionAVR application. Microcontroller programming using C language.

The LM35 sensor is a temperature sensor in the form of an integrated circuit and has a voltage output that changes linearly and is proportional to temperature (Celsius scale).

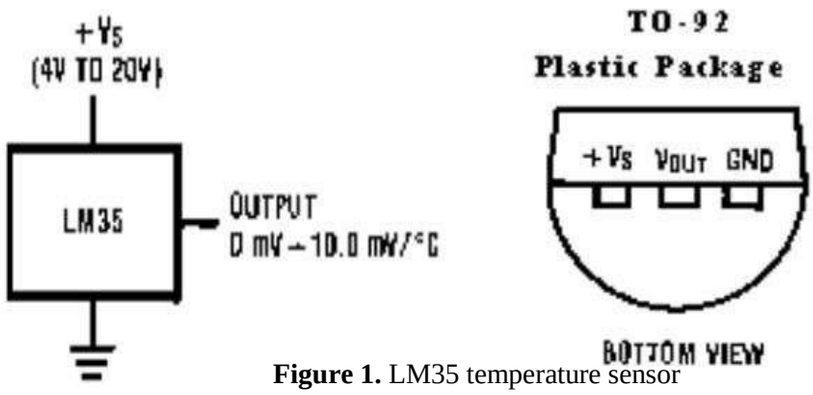

Figure 1. LM35 temperature sensor

The accuracy of LM35 temperature sensor is quite accurate compared to other temperature sensors. The sensor will detect the room temperature which will give the output a voltage. The voltage resolution of the temperature sensor is 10mV / 0c and is directly proportional. Thus for a temperature of 10c the output voltage is 0.01 volts. If the room temperature is 280c then the output voltage is 0.28 volts.Sensor Inframerah

Infrared sensor used is a PIR (Passive Infrared Receiver) sensor, this sensor is an infrared-based sensor but not the same as the IR LED and phototransistor. The difference with the IR LED is that the PIR sensor does not emit anything, but it responds to the energy from the passive infrared emission that any object detects. One of the objects that have a passive infrared beam is the human body. The heat energy emitted by an object with a temperature above absolute zero will be captured by the sensor.

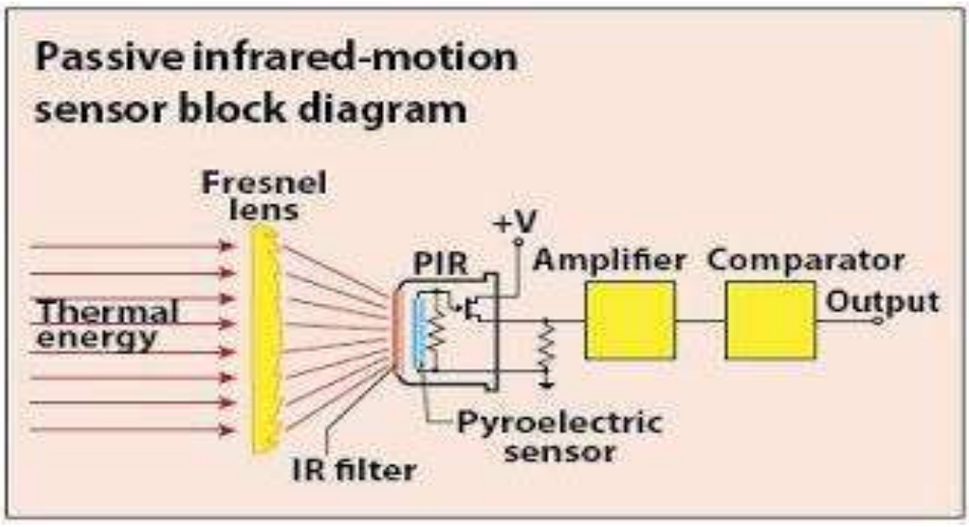

Figure 2. Block PIR Sensor

3.1. AVR Atmega 8 Microcontroller Diagram

Microcontroller is a small computer inside IC containing CPU, memory, timer, serial and parallel communication channel, input /output port, ADC. ATmega8 AVR microcontroller is an 8-bit CMOS microcontroller with AVR RISC architecture that has 8 Kb in Programmable Flash system. Microcontroller with low power consumption is able to execute instructions with a maximum speed of 16 MIPS (Millions of Instructions per Second) at a frequency of 16 MHz. This microcontroller can work with voltages between 4.5-5.5 V

3.2..CodeVisionAVR

CodeVisionAVR is a C compiler that has been equipped with integrated development environment (IDE) facility and was instructed to generate program code automatically for Atmel AVR microcontroller. CodeVisionAVR is one of the programming tools that work in an integrated development environment (IDE).

Program C is a collection of one or more subprograms, called the C programming function is one of the popular programming languages that have proven to be widely used by practitioners and scientists to develop large-scale programming programs such as games (games program on the computer), programs for research in the field of science, embedded systems and others.

3. RESULTS DISCUSSION:

3.1. Block diagram

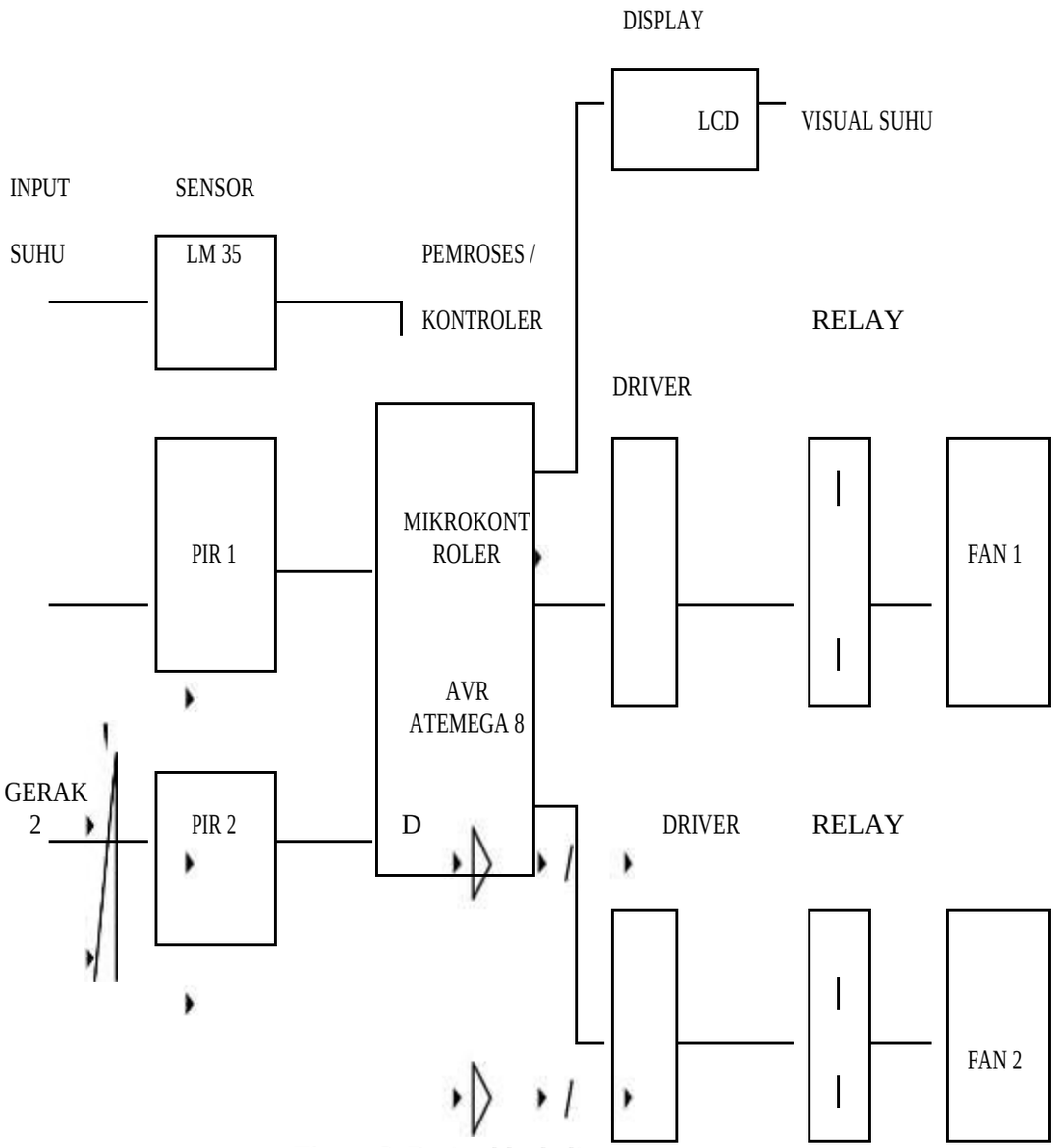

Figure 3. Design block diagram

Block diagram above is a block diagram system is a diagram describing the system configuration, input, output, and system work processes. There are several parts, namely the input section consisting of sensors, the processing part is the part of a controller, amplifier and relay parts that amplify the current and run the fan. With the system input temperature conditions and presence or absence of human circumstances in the room. While the processor reads the input temperature and motion to determine the action is to turn on or turn off the fan. below set point, the system will not activate the cooling system, for example the set point temperature is 260c and the room temperature is 250c. If the room temperature is above set point, the fan is not necessarily activated because the circuit must detect the human presence as well. If no motion or human presence is detected in the room, the fan will not be activated. If the PIR sensor detects motion and also the room temperature above the set point then the fan will be activated. And the fan will be discontinued if the temperature is below the set point or no activity detected by the sensor

The components in the panel box include the safety components and control components. The physical shape of the panel box is shown in Figure 4 below:

Figure 4 Overall Hardware View

4. CONCLUSION

From the explanation in the previous chapter, it can be simplified :

1. The design is made by defining the circuit block diagram and creating the program design. Once this is accomplished, then every equipment or component in the design is placed in such a way as the block diagram.

2. When the system is on, the distance detected by the infrared sensor in the room reaches a radius of ± 5 meters. The fan will work if the temperature sensor detects temperatures above 26 ° C and the PIR sensor detects only human movement.

3. In this design the making of program using AVR codevision application with program language that is C language. The program has been made then downloaded into IC microcontroller Atmega8. The downloaded program will process the input signal from infrared sensor and temperature sensor.

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