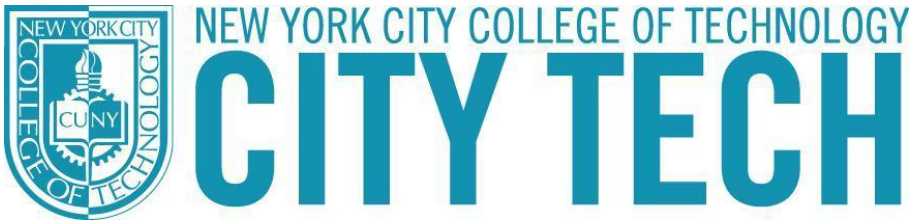


Department of Computer Engineering Technology

Project Title (Proposal): Arduino Temperature Controlled Fan

Course: CET 3625, Applied Analysis Laboratory
Section: HD23
Semester: Spring 2022
Instructor: Prof. Edward Morton, P.E.
Student(s): Touheda Khanom
Date: 03/15/2022

Table of Contents

Objective

In this project I am going to build a Temperature Controlled Fan using MCP9809 precision Temperature sensor. The purpose of this project is to control the speed of the fan according to the temperature. This project will help to operate the fan without any manual changes to the speed. Whenever the temperature is high the speed of the fan is high and when the temperature is low the speed of the fan will be below as well.

List of Material and Equipment

- Arduino Uno
- LCD (16 * 2) LCD
- MCP9808 Temperature Sensor
- Buzzer
- Breadboard
- jumper wires
- 1k Resistors
- DC Fan
- 2n2222 transistor
- Connecting wires

Background

I have done projects using temperature sensors before, therefore, I plan to add more sensors to it to do this project. I want to do this project to avoid manual control of the fan speed. The room temperature decides when to turn the fan on/off. Also, it avoids the unnecessary use of electricity.

Scope and Limitations of the Project

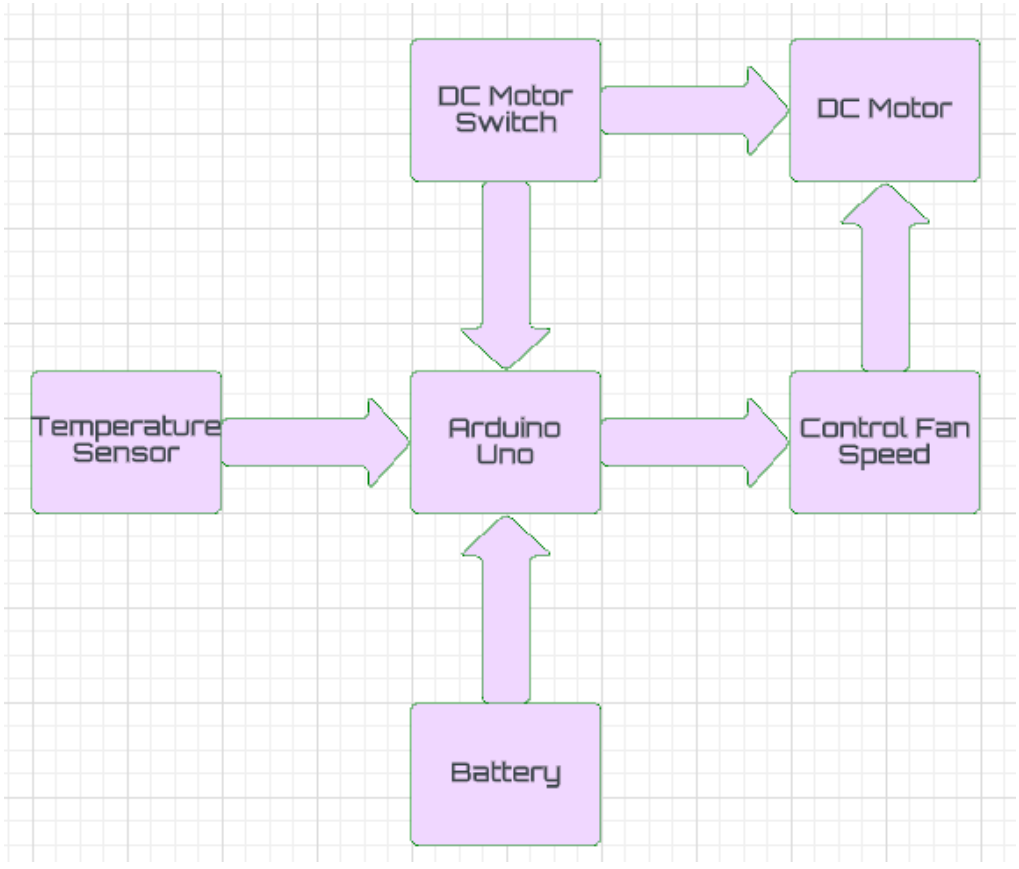
The purpose of making this project is to automate the fans. Automating the fan speed saves a lot of time because you don't have to adjust the speed. Fans with temperature sensors provide consistent comfort and energy savings. If the temperature sensor stops working and is damaged the whole system will not work properly therefore if the temperature sensor is damaged new sensor installation is required so that it can control the speed of the fan.

Detailed Description

The project will be developed using Python Programming, along with Arduino hardware. In this Arduino-based project, I am going to build a temperature-controlled fan using Arduino. With this circuit, I will be able to adjust the fan speed in my home or office according to the room temperature and also show the temperature and fan speed changes on the 16x2 LCD display. To do this I will be using an Arduino UNO Board, LCD, DHT11 sensor Module, and DC fan that is controlled by using PWM. In this project, the temperature sensor MCP9808 will measure the temperature of the room. The temperature will be displayed in Fahrenheit on the LCD display. The speed of the fan will be controlled by using PWM. I have created PWM at the PWM pin of Arduino and applied it at the base terminal of the transistor. The transistor creates a voltage according to the PWM input.

System Design

Block Diagram



Flow Control

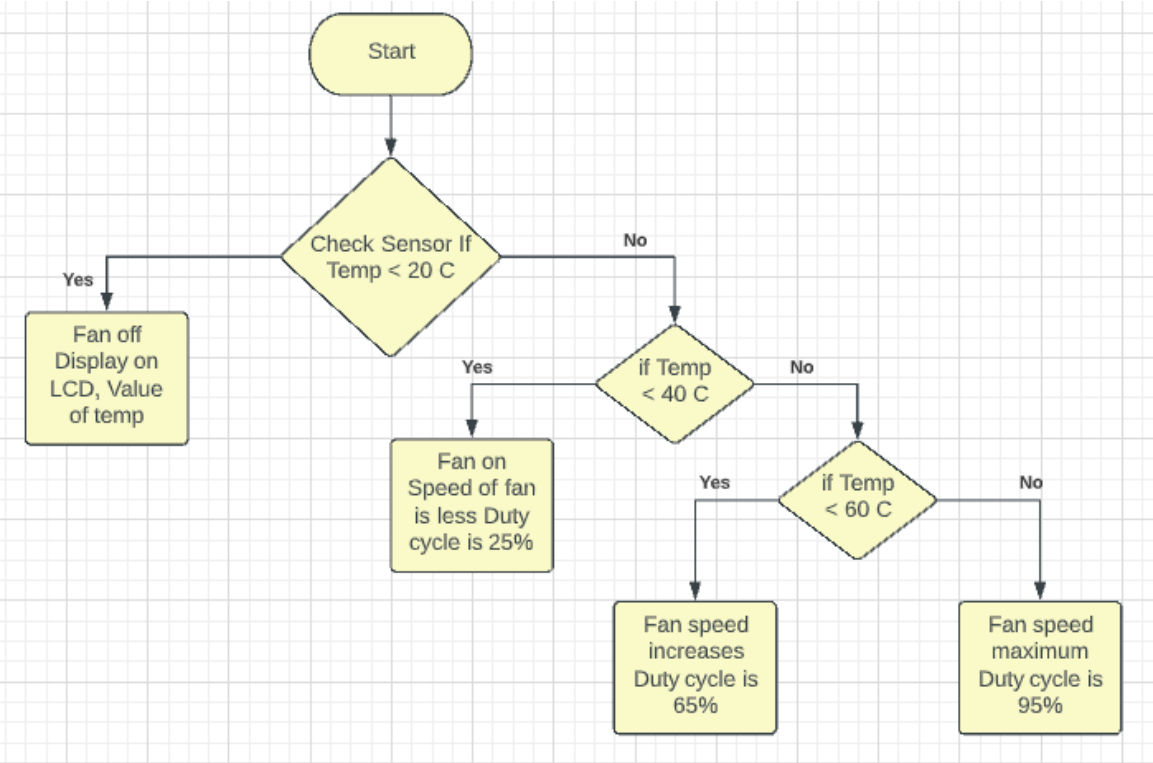
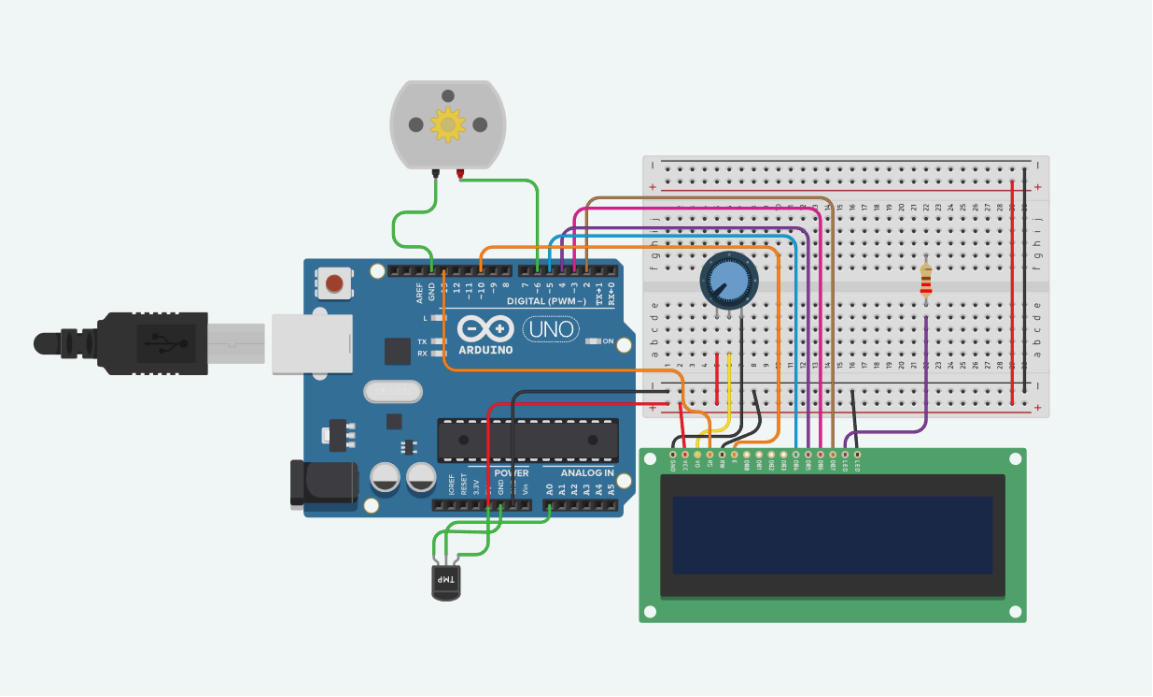


Diagram Wiring



Project Schedule and Activities

	Task Name	Start	Finish	Duration
1	Procure Materials	3/15/2022	3/22/2022	1weeks
2	Construct Circuit	3/23/2022	4/5/2022	2 weeks
3	Develop Software	4/12/2022	4/19/2022	1 week
4	Test and Troubleshoot	4/20/2022	4/26/2022	1 week
5	Complete Circuit and Software	4/27/2022	5/3/2022	1 week
6	Presentation and Demo	5/4/2022	5/17/2022	2 week

Capabilities and Qualifications

I am knowledgeable in programming languages such as Python, C++, and Arduino IDE, and circuit design. I have done some previous projects using the Arduino hardware and the Arduino IDE programming language. I am part of a robotics research program therefore I have worked with many sensors.

Test Plan/Procedure

- Gather all the components required for this project.
- Construct the circuit, and observe the data being collected. using TinkerCad or Fritzing.
- Troubleshoot the circuit if necessary.
- Present the data using a real-time graph and observe changes in measurements.
- Test whether the output signal changes appropriately in response to the input.
- Troubleshoot the program if necessary, until the output is the one that you expect to get.

References

1. Arduino Project Hub. 2022. *Temperature based Fan Speed Control*. [online] Available at:<https://create.arduino.cc/projecthub/embeddedlab786/temperature-based-fan-speed-control-945f9d> [Accessed 16 March 2022].
2. MacroAir Fans. 2022. *3 benefits of fans with automated temperature control*. [online] Available at: <https://macroairfans.com/blog /3-benefits-automated-fan-control/ #:~:text=Using%20the%20automated%20fan%20control,and%20create%20a%20cooling%20effect.> [Accessed 16 March 2022].