

Objective:

Use I2C to create a temperature control in fahrenheit and celsius. Create a speed control for a fan with IR sensors all with an LCD screen output.

Summary:

In part one, we programmed the LCD screen to display the semester, academic year, session and table number, temperature in celsius and fahrenheit, time, date, timer mode and time, the fan's desired temperature and mode, fan power switch position, duty cycle of the fan, RPM of the fan, and the voltage of the photoresistor.

In part two, we programmed the IR remote to set the desired temperature and to set the time and date. We used the “Ch-” button to open the time set up screen and the “Ch+” button to open the fan temperature set up screen. In both cases the “+” button will increase the value and “-” will decrease the value. To exit without saving we press the “EQ” button and to exit with saving we press the “Play/Pause” button.

In part three, we programmed two modes for the fan, the first one made the temperature sensor control the speed of the fan by making the duty cycle three times the difference between the current temperature and the set temperature when the temperature is more than the set temperature. The set temperature is bounded between fifty and one-hundred ten degrees fahrenheit. When the current temperature is less than the set temperature, the duty cycle is set to zero. The second mode would make the duty cycle be controlled by the IR remote.

In part four, we programmed a timer operation that contains three times and an off mode. The three timer modes will have different time values. The timer mode will be set by the IR remote.

Data Collected:

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Conclusion:

This project used parts from many previous labs and added them together to make one system. We used the I2C for the temperature sensor and real time clock. We also used interrupts for the IR sensor and the system ON/OFF button. This project relied on understanding the code inside all the support files used so we could use the functions to create the desired system.