

ECE 411

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Automatic Radiator

Summary

Our device is a universal automatic cooling fan for electronic devices like computers, gaming systems, monitors, etc or even just components. The 3 steps in this device include the detection system, alarming system and the final step is the execution of the cooling with fans turning on. It will have a temperature sensor that can be placed under or on any electronic device and the temperature readings will be separated into three thresholds, corresponding to three different leds, which are green for low temperature, yellow for cautious temperature and red for overheating. The leds will represent the health of the device and the only time that the fans will come on is when the microprocessor reads high temperature and displays the red led, and once the temperature cools down into the green light threshold they will shut off.

We are creating this device because many electronic devices have very poor cooling systems and it causes damage to the hardware and it can also freeze the system and make you lose data/work. The people that will use this device are anyone that uses their electronic devices frequently and experiences issues due to the heat dissipated. This can include gamers, office workers, teachers, etc. Our device will be compact and simple to use, in which there will be a temperature sensor attached to a wire that can be stuck on any device or component and the fan

would be facing the vents or the main heating area of the device, and finally powered through USB.

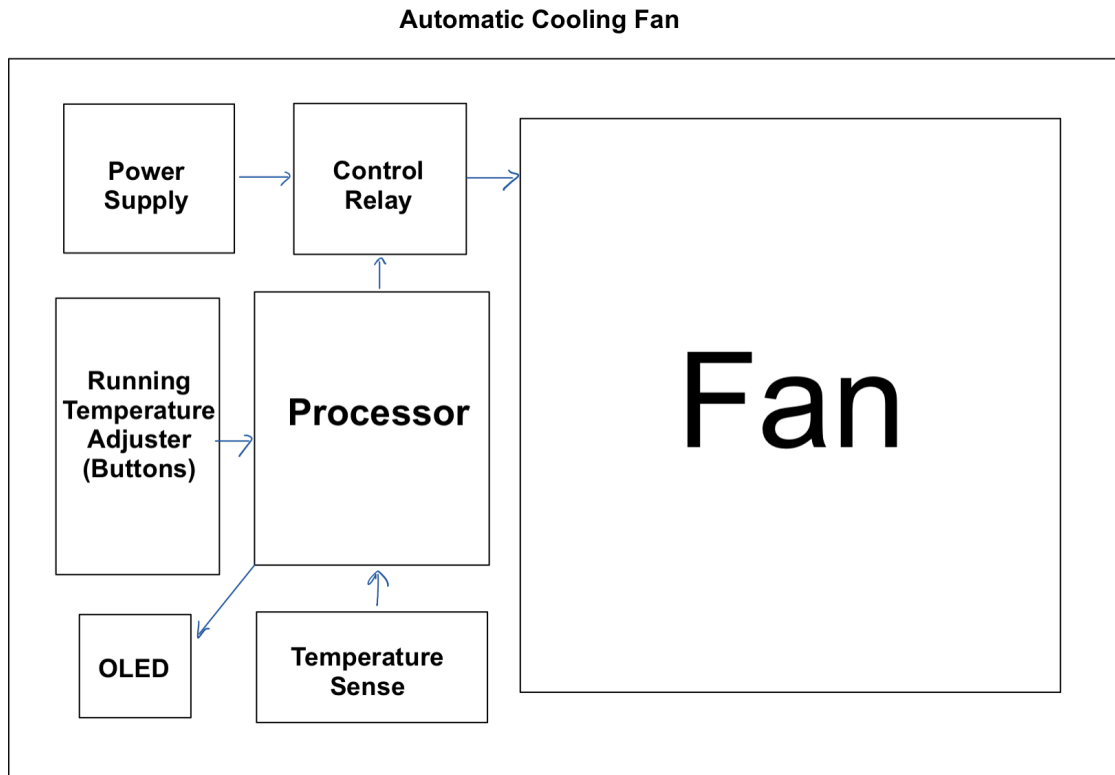
Market Analysis

The intended target market is for anyone who owns electronic devices and experiences issues due to heat. This includes gamers, office workers, teachers, students, etc. From what we could find there are no direct competitors to our features, there are similar devices, but they are very specific to a certain device, for example theatre cooling systems, computer cpu fans, etc. There was one product we found very similar to ours which was named “Multifan s1 cooling fan”, but it was manual and had no way to check the current temperature on the device. Our product is very different from the ones explained because ours will be fully automatic and universal with an alarm system displayed by the LED’s. The price we decided was about \$14.99 dollars and that was because the Multifan S1 was priced at \$10.99 dollars, but it was manually operated.

Requirements

- Must read Temperature
- Must Emit LED light
- Must power fans on threshold
- Must be lightweight
- Must plug in through USB

System Architecture



Design Specification

There is a temperature sensor in this automatic cooling fan to read the real-time temperature of the device that needs heat dissipation, and then transmit it to the Processor. There are some buttons connected with the processor to adjust the fan's working temperature. The two temperature information will be displayed on the OLED after processing by the processor. At the same time, the processor will compare the temperature read by the sensor with the set operating temperature. If the temperature read by the sensor is large, the processor will transmit a signal to the control relay to run the fan.

- Actuator: Case Cooling Fan
- Processor: Arduino ESP32
- Sensor: Temperature Sensor LM35

- Power: Computer USB
- OLED Screen Module - Uctronics 0.96in 12864
- Control Power Relay
- LED's