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PY 371

Project Proposal

Contactless IR Thermometer

Abstract

This project will utilize the Arduino microcontroller to primarily monitor the body temperature in response to the COVID-19 pandemic. I want to create and design an accurate thermometer for anyone to build. Using an IR temperature sensor, the Arduino will read the temperature and display it on the LCD display. It will feature a battery to allow for remote use of the device and a buzzer to alarm the user of high temperature.

Plan of implementation

Below is the plan of implementation with a schematic diagram. There are some essential concepts that include:

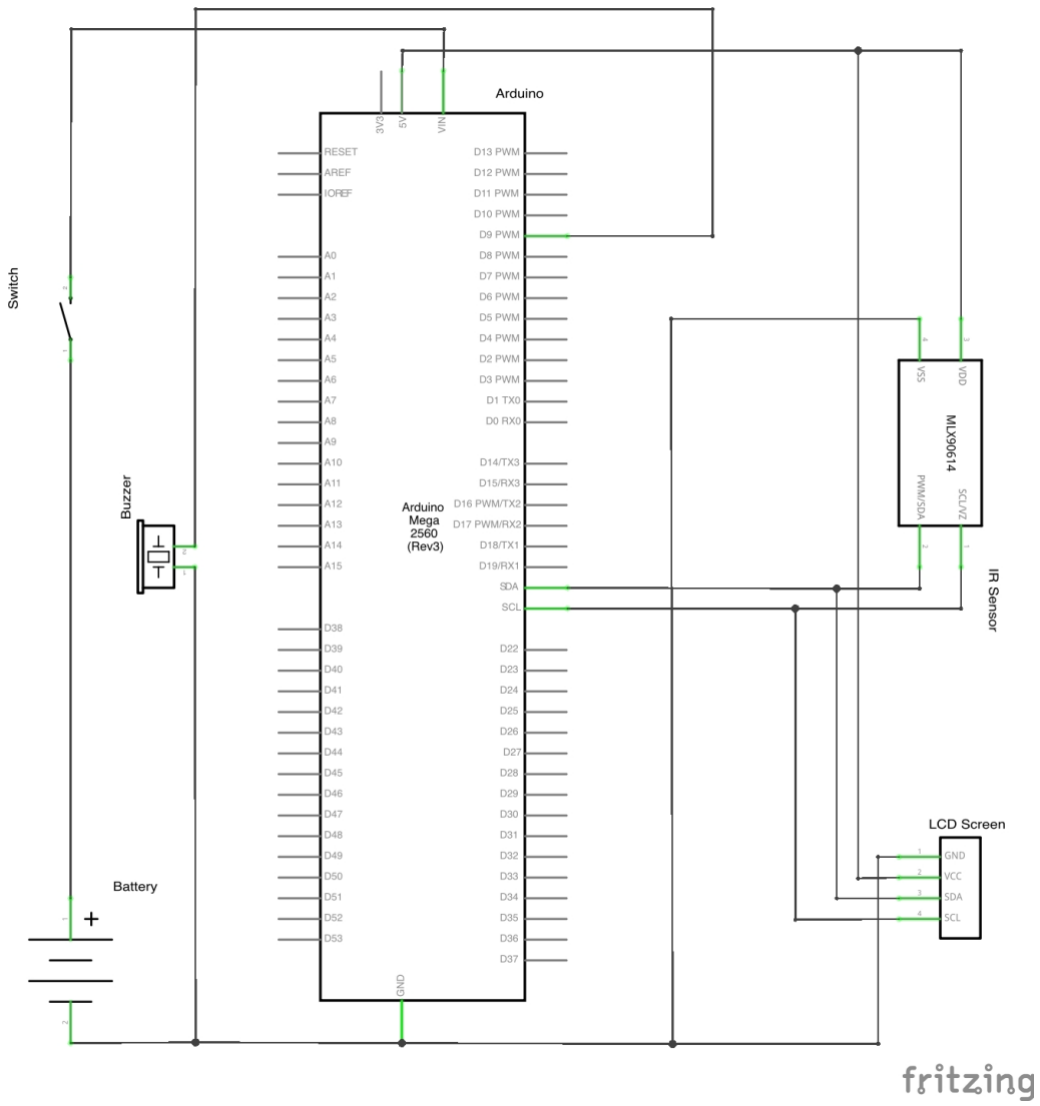
1) Using the LCD display to show the temperature
2) Setting up an IR temperature sensor that can effectively read the temperature
3) Setting up a buzzer to make an alarming noise when temperature is above 37.5˚C

Some optional/additional concepts that may be included (time permitting):

1) Adding a proximity sensor to assure accurate measurement of temperature from constant distance each time
2) Adding a 3D printed case on the thermometer
3) Add a battery and a switch to turn on/off the device
4) Add a Laser diode that will point at the location of measurement (https://techfun.sk/produkt/laserova-hlavica/)

Schematic:

Below is the preliminary schematic, where I also added a battery and a switch for a ON/OFF mode. Also, I added an LED that will light up when the device is ON. Furthermore, if it will not be time permitting to implement the components on the left side of the Arduino (battery, switch, LED, and buzzer), then I will just stick with the key components (LCD screen and the MLX).



List of required parts

1) Arduino – part of kit
2) IR thermometer – order online roughly around $20 (https://www.hwpro.cz/oc/index.php?route=product/product&product_id=593)
3) LCD display – part of kit
4) LED – part of kit
5) Switch – part of kit
6) Buzzer – part of kit

Arduino Pseudo Code

It will be necessary to properly code the whole project. I built a simple pseudo code I want to follow when building my project. As well as I want to run a preliminary test to see if I need to include a distance sensor to make the temperature recording more accurate. If the distance sensor will not have a great impact on the temperature change (i.e. > 0.01˚C), then I will not implement it in my project. Below is a rough pseudo code:

```
Import all necessary libraries

Define all pins

Void setup
      Set pin output for LCD
      Set pin output for IR sensor
      Set pin output for Buzzer
      Set pin output for distance sensor #TBD

Void loop
      Call Temp fxn
            If temp < 37.5˚C then buzzer ON
            Else buzzer OFF
      Print temperature on LCD in ˚C

Temp fxn
      Set display output
      Initiate measurement of temperature
      Return temperature recorded
```