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Introduction

The purpose of this project is to design, plan, and build a prototype of an ambient temperature triggered alarm. The thermal sensor will be able to read the environment's temperature in Celsius and use a buzzer and LEDs to indicate when a threshold is passed. This device could be useful for people who live in hot climates by alerting of dangerously hot temperatures. It could be applied to things like machinery to alert of overheating help prevent it. It could also be integrated into temperature-controlled environments, such as large scale refrigerated storage, to prevent loss due to temperature fluctuation.

Specification

1. Inputs:

- I. Temperature

2. Outputs:

a. LCD

- I. Displays Binary State and Temperature

b. LED

- I. Green When Safe State
- II. Red When Danger State

c. Buzzer

- I. Pulsating Alarm

3. Functions:

a. Continuously Store Temperature Read In

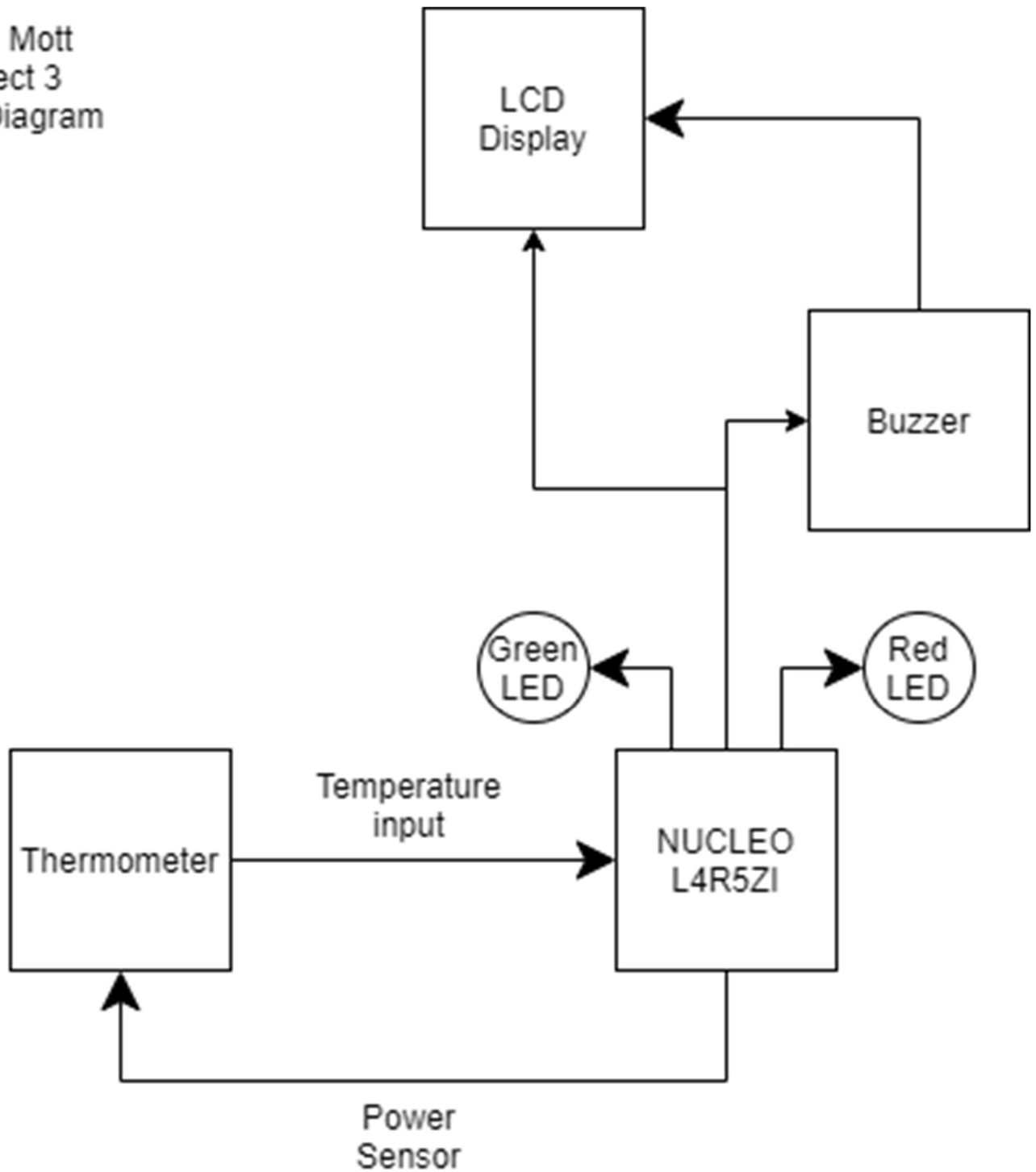
- I. Display Temperature On LCD
- II. Update State Based On Temperature
 - i. If Temperature Is Below A Threshold
 - ❖ Change State To Safe
 - ❖ Power Off Buzzer
 - ii. If Temperature Is Above A Threshold
 - ❖ Change State To Danger
 - ❖ Power Buzzer

Applications & Features Overview

This thermal alarm features a DHT11 ambient temperature sensor that is used to report temperatures to an integrated LCD. This display also displays Safe or Danger to report the current state. The current state is also indicated by a green or red LED for convenience. When the reported temperature enters the defined Danger zone, an alarm is triggered to audibly alert all those in the area. This thermal sensor could be easily applied to refrigerated transport vehicles, commercial refrigerated storage rooms, any ambient temperature control system, or it could be implemented as a heat alarm for public safety in extremely hot climates.

Block Diagram

Louis Mott
Project 3
Block Diagram



Finite State Machine

Louis Mott
Project 3
FSM

