RGB LED Color Control

ECE 4710: Professor Daniel Llamocca
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Introduction

In this project, we designed and implemented a digital system whose outputs manipulate the color of the RGB LED based on inputs from various sensors:
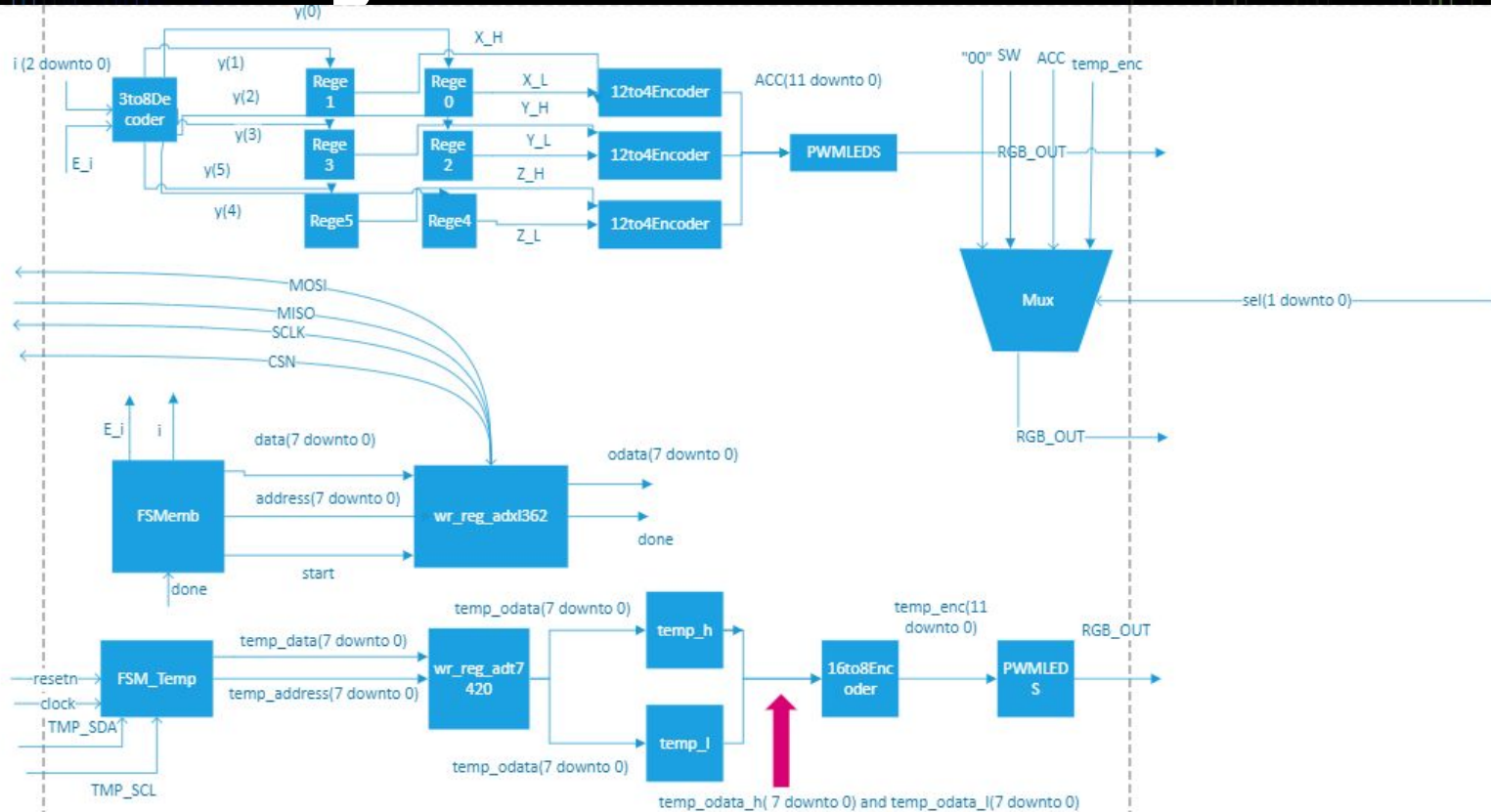
-Switches

-Accelerometer

-Temperature sensor

These components work individually with the use of a selector that can decide between these three modes and an off state

Consists of FSMs (Finite State Machine), two encoders (12 to 4) & (16 to 8), decoder (3 to 8) , accelerometer and temperature sensor drivers, PWM controllers, registers
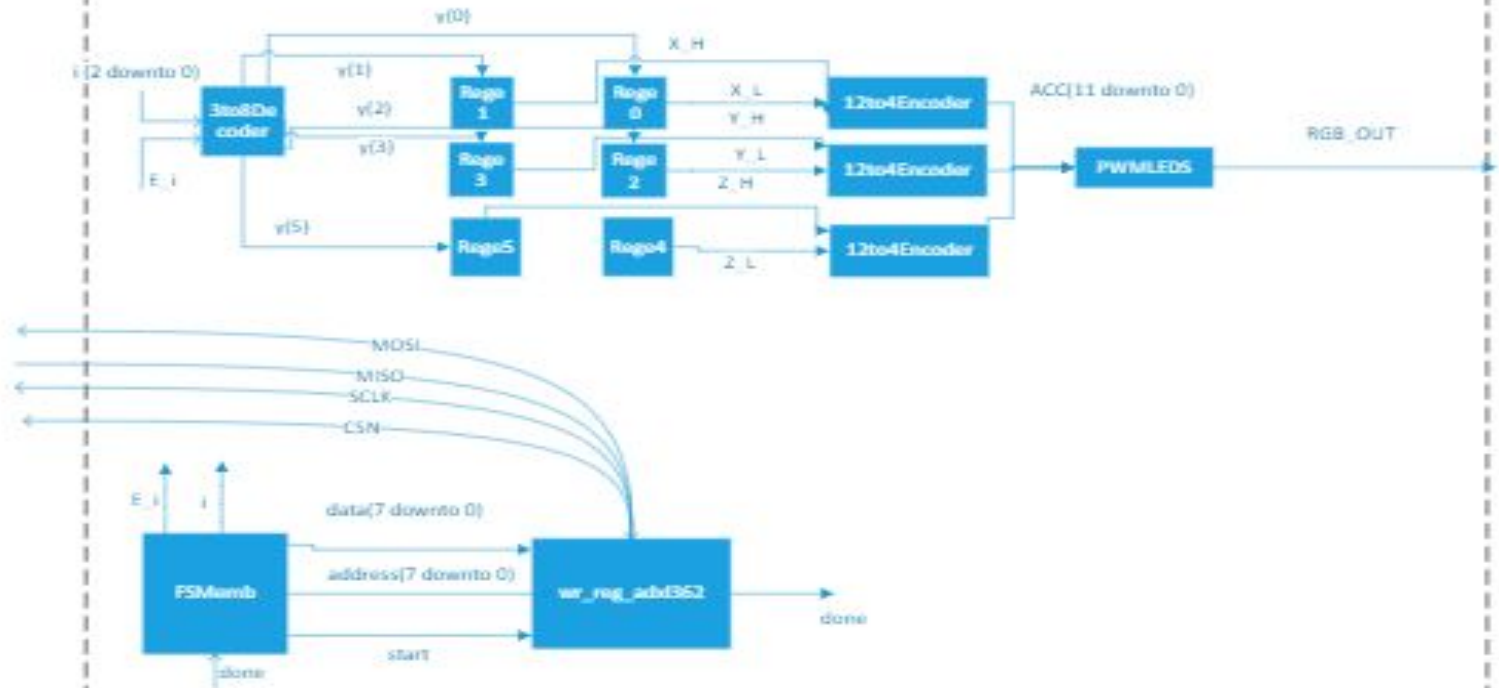
In accelerometer mode, each color of RGB is controlled by one of the axes so changing the orientation of the board will change the color combination displayed

In temperature sensor mode the LED will display solid blue at room temperature, then as the temperature rises it will move through combinations of red and blue until it is solid red.
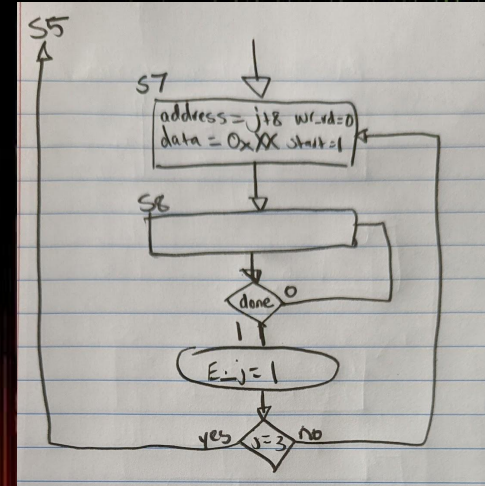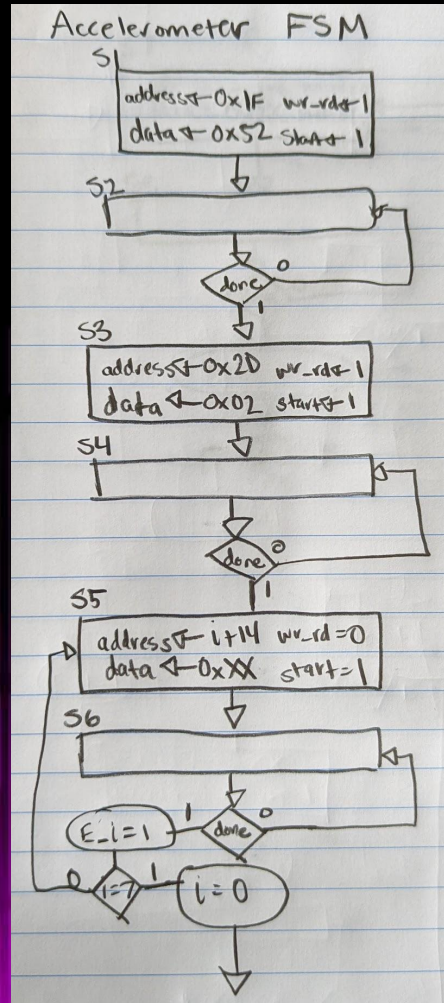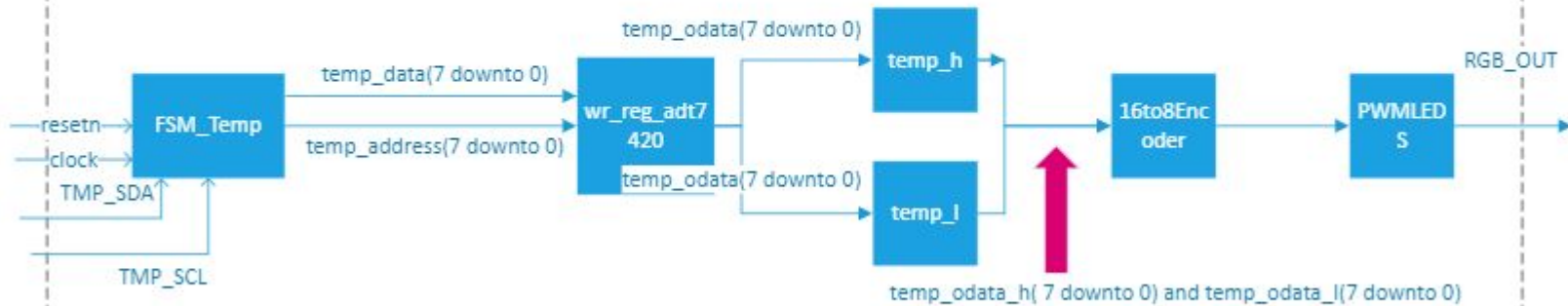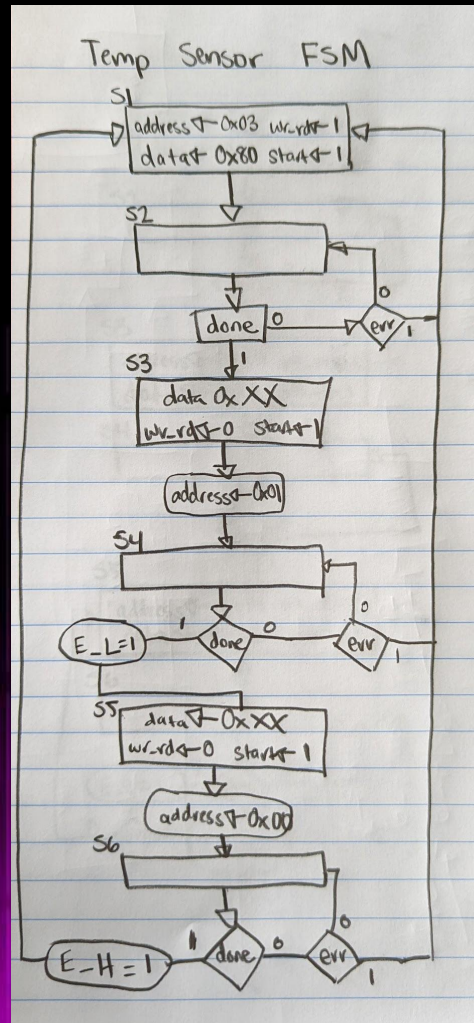
Block Diagram

Accelerometer Circuit

FSM Diagram

Temp Sensor Circuit

FSM Diagram

Implementation

https://youtu.be/tchJBduF9JQ

Thank you