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CptS 466
Project #2

Report

A. Requirements Document

1) *Overview*: This project is required to implement a stoplight-like system. This system will be using buttons to simulate incoming traffic and pedestrians signaling to cross. We will also be using LEDs to represent the lights of the stoplight. We will be using a Launchpad microcontroller to build the prototype of this system as a proof of concept.

2) *Functional Description*: Functionally, the stop light should start and remain green until a pedestrian sends the crossing signal. At which point, the light will transition to yellow after a predetermined amount of time and then finally transition to red. The LED will remain in the red position until the oncoming car signal has been activated. At this point the light will then transition back to green and remain green until the pedestrian signal is again triggered. The oncoming traffic signal will be simulated with a press of one of the buttons on the launchpad. The pedestrian signal button will be activated by the pressing of the other button in the system.

3) *Deliverables*: The deliverables for this project will include, a working stoplight launchpad that uses switches to simulate inputs and LEDs to simulate a stoplight changing. Another deliverable will be the C code that runs the launchpad system. Finally, a report documenting the whole process and explaining the system shall be submitted as well.

B. Design Document

See appendix A for the hardware schematic data flow diagram. (Schematic)

See appendix B for the software data flow diagram. (Flow Chart)

C. Discussions

The way that I implemented the delay function in my program is by using calculated 1 millisecond interval discovered in project #1. Some difficulties during design included figuring out the best way to wire up the components. Another trouble I faced was figuring out that we don't need to supply power to the led if we are going to be powering the device through a wire from the launchpad. Some of the limited capabilities of the board that could be improved upon in the future include its ability to sense incoming traffic and pedestrian signals. If I were to expand this proof of concept I would implement a better system of sensors to allow for more precise measurement of these values.

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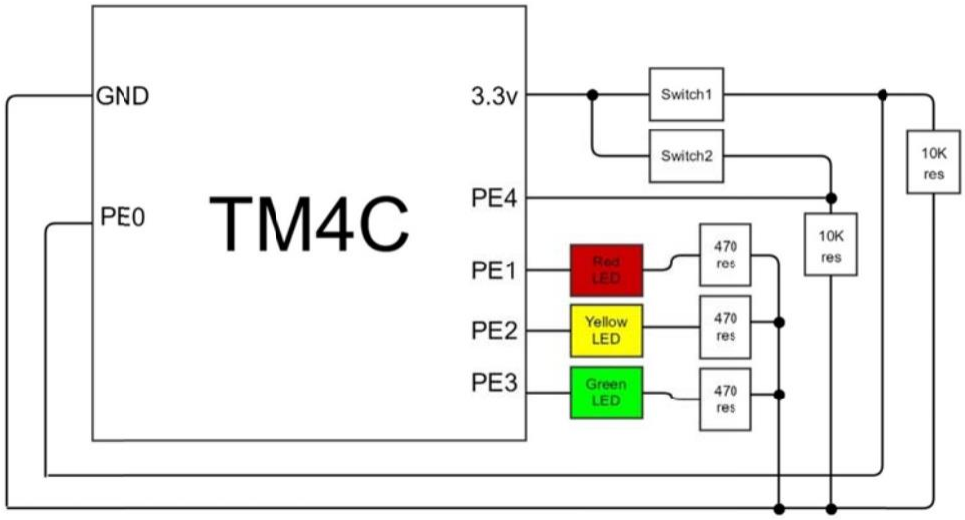
Appendix A – Hardware Schematic



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Appendix B – Software Flow Chart