TO: Dr. Winikus
FROM: Miguel Bautista
Subject: Project 2 Overview and Progress Memorandum
Date: October 12, 2021

PURPOSE:
This memorandum serves as a brief overview of the timer system being implemented in Project 2. Furthermore, the next steps and current concerns will be discussed based on the current progress achieved in the project.

SUMMARY:
Project 2 is an implementation of a timer system which utilizes the Nucleo L4R5ZI, a 4x4 matrix keypad, a 1602 LCD with an I2C controller and external LEDS. This system will run indefinitely and be controlled by the 4x4 matrix keypad. The system will have the functionality to count up or count down based on the user input – this timer is set to a limit of 9 minutes and 59 seconds. The system will have 3 modes – Turned Off [B on keypad], Input Mode to enter the timer value [D on keypad], Timer Mode to begin counting up or down [A on keypad]. Finally, C will be used to change the direction of the timer.

UPDATE ON PROGRESS:
Currently, the initial implementation of the requirements has been completed. More specifically, all the code needed for the previous features to operate have been completed and comments have been added to improve code readability and to better understand functionality.

CONCERNS:
There are two concerns currently held with regards to the specific implementation of the project. Without the use of threads to manage switching between handling the powering of the keypad rows and the EventQueue, more verification is needed to ensure correct behavior between interrupts, events, and the rows being powered. Lastly, when requiring MBED to run in bare-metal mode, “events” needed to be added to the mbed_app.json to get EventQueue to work; does this mean EventQueue is not allowed to be used despite it saying in the documentation that it is a bare-metal component?

RECOMMENDATION:
In terms of next steps and in direct response to the first concern held surrounding the project implementation, more testing and logic checks need to be done in order to ensure correct behavior even amidst several edge cases. The code can also be slightly condensed and moved around to improve readability and remove redundancy. Furthermore, more comments can be added or revised to users understand the functionality and why certain aspects are the way they are. After this is done, the concluding report which details all the project implementation details will be completed.