To

From

Subject

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This memo will serve as a progress update for the CSE321 course digital lock project( project 2). The requirements of this project state that a user must be able to input a 4 digit code though a 4x4 matrix keypad. Each time a digit is entered, a LED shall light to indicate the current input code. Depending on whether the digital lock is locked or unlocked, it will display this on an LCD screen. All processing of this system will take place on the STM Nucleo.

Based on the requirements, it is easy to break the overall system up into the following model.



Any button on the matrix keypad when pressed will trigger an interrupt, that when handled will populate a matrix of bits depending on what button on the keypad was pressed. For example, if the 1 key on the keypad was pressed ( the top right button), the matrix at index [0][0] will be populated with a 1 bit. Once the interrupt service routine handles the triggered interrupt, the 1 bit in the matrix will be unset, and will be parsed as a value for the input code. Thus an LED may light up and the LCD may output unlocked or locked depending on the state of the system. Once the main run loop of the system detects a 4 digit value or times out due to awaiting the next digit for too long, it will either display lock, unlocked, and then an LED pattern will display based on the former.

The following provides some basic pseudocode of this functionality.

The next steps for this project will be to define the actual inputs/outputs for the functions In this mbed program, the global variables, and interrupt service routine behaviors.