Prac Exam: Thursday

This prac requires iterating through an array of LED patterns. The patterns are available on the Vula chatroom as things don't copy well from the PDF.

You can assume that only 1 push button will be interacted with at a time.

Part 1: (2)
If SW0 is **held** down, the LEDs should cycle through the patterns to the next pattern every 0.5 seconds. When they get to the end of the sequence they should start at the beginning again.
Suggested implementation: The timer is always triggering an IRQ. In the ISR, check if SW0 is held and conditionally go to the next pattern.

Part 2: (2)
In the event that SW1 is **PRESSED,** the LEDs should go to the next pattern in the sequence. Holding the button should have no effect.
You will need to debounce to cater for noisy edges.

Part 3: (1)
If SW2 is **held**, the LEDs should cycle through the patterns **backwards** with a transition occurring every 0.5 seconds. This is like part 1 but now running backwards.

Part 4: (2)
Extend parts 1 and 3 such that the time between transitions is modulated by POT**0.**
In the event that the pot is outputting 3.3 V the transitions should be every 0.5 seconds.
In the event that the pot is outputting 0 V, the transitions should be every 0.05 seconds.

Part 5: (3)
In the event that SW3 is held, the LEDs should flash between 0 and the value of POT1, changing every 0.1 seconds.

If POT1 is outputting 0 V, the LEDs should flash between 0 and 0 (whatever that means!). If POT1 is outputting 3.3 V, the LEDs should flash between 0 and 0xFF.
Linear in between.

Bonus (1)
The brightness of the green LED at the bottom right of the board (D9) should vary smoothly between fully off and fully on as POT0 is rotated from 0 V to 3.3 V.

DO NOT TURN OVER

Until Instructed