

ECE 376 - Homework #5

Steppers, NeoPixels, Analog Inputs. Due Monday, October 4th

Please make the subject "ECE 376 HW#5" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

Design an embedded system which uses the keypad and the stepper motor. Some suggestions are...

- Roulette Wheel: Bet on a winning number with the keypad (0..7). Press RB0. The stepper motor then spins two rotations at 10ms / step and then stops at the winning number ($N \times 25$ steps)
- Count-Down Timer: Input how many seconds you want to wait (00 to 99). The stepper motor then turns at a rate of 10ms / step and stops when time is up.
- Stepper Motor Speed Control: Input a number with a keypad (010 to 999) then hit RB0 or RB1. The stepper motor then turns clockwise (RB0) or counter-clockwise (RB1) at one step every N ms.
- Stepper Motor Position Control: Input a number with a keypad (000 to 999) then hit '*'. The stepper motor then turns to that angle (in steps) at a rate of 10ms / step.
- Stepper Motor RPN Calculator. Add, subtract, multiply, and divide using RPN notation. Have the stepper motor point to the answer (# steps = answer in X register)
- Combination Lock: Input the correct password (0000 to 9999) and press '*'. If input correctly, the stepper motor will turn 50 steps (door open), wait 2 seconds, then close (go back to zero steps).
- Other...

- 1) Requirements: Specify the inputs / outputs / how they relate.
- 2) C code, flow chart, and resulting number of lines of assembler
- 3) Validation: Collect data in lab to verify you met the requirements.
- 4) Demo. Video or in person.