

CompEng 3151 – Spring 2019

Final Project: Take Home – 90 pts

For your final project in CompEng 3151, you will choose from one of the following projects and implement it using the AVR Simon Board and other items you may have used in the lab course (LCD, joystick, LEDs, switches).

Egg Timer

You created a working clock in Lab 7 (or Lab 5/6). Create an egg timer from this implementation. Use the push buttons on the Simon Board to set your initial time to count down (1-90 minutes). When the egg timer counts to 0, the alarm should sound (some sort of annoying buzzer sound from the piezo speaker). There should also be a pause button implemented that stops the timer until the pause button is re-pressed.

User-Controlled Message Board

Using the LCD and 2 push buttons on the Simon Board, make a message board that the user can change the letters on using the 2 push buttons (up/down alphabetic characters). A button on the AVR board should be used to enter edit mode. In edit mode, the 2 push buttons will change (up/down through the alphabet) which character is being changed on the LCD. Two other buttons on the board will scroll through the different characters that can be selected (side-to-side). As the side-to-side push buttons are used, the letters that are selected for each place on the display will be saved. When the user is done editing the message on the screen, the edit mode button will be pressed again. From there, the board will enter scroll mode and continuously scroll the message until powered off or edit mode is entered again. Your board should start up in scroll mode with a default message on it.

Your Idea

Do you have an idea for a microcontroller project that you'd like to implement as a final project for this course? Discuss it with your lab TA and make sure it is of the same caliber as the projects outlined above.

Selection

You will need to choose your project no later than a week before it is due, as designated by the GTA.

Deliverables

You will need to submit the following items to be graded on this assignment:

- Documentation of your solution, how it works and a schematic showing any connections made to peripherals used in its implementation (30 points)
- C code (fully commented) (30 points)
- Hardware verification (working) – Your Lab TA will need to see your implementation working and check to make sure he/she cannot break it. (30 points)

Given this assignment is take-home, you can use any resources you would like to complete the assignment. Ultimately, you will be submitting your own solution to the assignment and will be responsible for understanding how every part of it works.