

CENG 355 LAB PROJECT

The CENG 355 Lab project is to be carried out in groups of two during four 3 hour scheduled lab periods. The following details pertain to the project.

1. The project will use the 68HC11 evaluation boards and equipment contained in the CENG 355 lab room.
2. Programming will be in assembly language. A 68HC11 assembler and other support software is available on the workstations in the lab. Some documentation on the assembler is available in the lab manual.
3. The 68HC11 BUFFALO Monitor is used to control and debug the software. Some documentation on the monitor is available in the lab manual.
4. The project consists of designing, building and testing the hardware and software for a system that does the following.
 - a. determines the duty cycle, X_{dc} , for an input signal, X .
 - b. generates an output signal, Y , with duty cycle, Y_{dc} , where $Y_{dc} = K * X_{dc}$ and K is the fractional representation of an analog input signal generated with a potentiometer..
 - c. displays X_{dc} , Y_{dc} and K on a Hitachi, H2570 LCD display. The details of the display and its built in HD44780 controller are given in the lab manual.
 - d. uses a single switch and 3 leds to select and display which variable is displayed on the LCD display.
5. The project should use a signal generator to generate the input signal, X . The system should work with the highest possible frequency of input signal..
6. Each group will be provided with a lab kit consisting of a H2570 LCD display, 2 potentiometers, a push button switch, 3 LEDs, 4 resistors, a breadboard and an HC11 manual.
7. Your report should carefully specify and describe all aspects of the system.
8. There are many ways to do this project that satisfy the requirements. Give careful thought to the decisions you must make and justify the decisions in your report.