Lab 12a Final Embedded System

This laboratory assignment accompanies the book, Embedded Microcomputer Systems: Real Time Interfacing, Second edition, by Jonathan W. Valvano, published by Thomson, copyright © 2006.

Goals • Build and test an embedded system.

Review • none

Starter files • Examples in gcc11.zip

Background

Finally, you will develop and test the final application as approved by your TA in Lab 8. There will be a "Science Fair"-like public demonstration for Lab 12. I will present special awards to the team of two with the best design. The preliminary round will be judged by your TA during your lab session, and the final round will be judged by an independent panel (e.g., Daryl Goodnight, Paul Landers, and Perry Durkee etc.)

Preparation (do this before your lab period)

1: Write the main application that implements the final objective of the embedded system. If you want change what your system does, please get approval from your TA.

Procedure (do this during your lab period)

1: Finally debug your embedded system application.
2. If your project is selected for the final round competition, please
   Create printouts of hardware circuit diagrams
   Create a 1 page printout of the PCB layout
   Generate 1 or 2 pages of program listing illustrating interesting or critical software components
   Modify the system so it is easy to see internal components (judges like to see inside the box)

Deliverables (exact components of the lab report)

A) Objectives (1/2 page maximum)
B) Hardware Design
   Detailed circuit diagram of the system (from Lab 8)
C) Software Design (no software printout in the report)
   Briefly explain how your software works (1/2 page maximum)
D) Measurement Data
   As appropriate for your system
E) Analysis and Discussion (1 page maximum)

Checkout (show this to the TA)

You should demonstrate the operation of the embedded system.
A hardcopy printout of your software will be given to your TA, and graded for style at a later time.

Hints:

1: Take the system with you on job interviews.

2. Sometimes the 6811 will not start with a **E000g** command (i.e., interrupts will not occur). If you software runs on the TExaS simulator, but not on the real 6811, try removing the MODA MODB jumper and starting the system with a reset switch.