

CS/EE 3720
Spring 2006
Myers

Midterm Exam 1

- Fill in your name:
- This exam is open book and open notes.
- The exam is 80 minutes and worth 100 points.
- Show all your work.

Question	Score
1	
2	
3	
Total	

1. **Short Answer** (10 points)

(a) What are pseudo instructions and what are they used for? Give two examples.

(b) When should you not use global variables? When must you use global variables? Be sure to explain your answer.

3. Interrupts (50 points)

In this problem, you are to design a simple interface to a single switch. In this interface, we wish for the STAF bit to get set each time the switch changes from being open to closed or from closed to open. We also want there to be a high pulse on STRB each time the switch changes state. You may assume that the switch starts in the open state which produces 5V. Your solution should use interrupts. Assume that a ROM is not available, so you must use pseudo vectors (see Table 4.8 on page 226 of the text). Be sure to show how the pseudo vectors are setup in your answer.

(a) Draw a schematic for your design.

(b) Show bit by bit your choice for the parallel I/O control register's initial value.

(c) Show the ritual that is called by the main program.

(d) Show the interrupt handler that is called when the switch changes state. You do not need to write the main program as the interrupt handler should do everything specified anyway.