Midterm Exam #2 Study Guide

The exam will be open book. The class text book and the Instruction Set/DOS function/BIOS function handout may be used. Calculators may be used.

The exam will cover Chapters 6 through 12 of the text. Additionally, material from Lab 5 through Lab7 may be included.

The following sections of each text Chapter are covered: (Sections not listed below will not be covered)
   6.2, 6.3 6.4, 6.5, 6.6, 6.10
   7.2, 7.3, 7.4, 7.6,
   8.2, 8.3, 8.4, 8.5, 8.7, 8.12,
   10.2, 10.3, 10.4, 10.6,
   11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8,
   12.2, 12.3, 12.4, 12.5

You do not need to know any 32 bit addressing modes or instructions. There will be no questions on the exam that pertain to any processor other than the 8088.

Know how to do simple conversions between HEX, BINARY, and DECIMAL.

Stack Frames: You are expected to be familiar with the way stack frames are used by the C compiler, how parameters are passed, and how local automatic variables are allocated on the stack.

Interrupts: You are expected to be familiar with the 8088/8086 interrupt system, how interrupt vectors are set using DOS functions 25h and 35h, and how to hook a hardware interrupt and then pass control on to the previous interrupt handler.

Instruction Encoding and Execution Times: You are expected to be able to determine the encoding of instructions, particularly how addressing modes are encoded. You are also expected to be able to determine the number of clock cycles required for the execution of a sequence of instructions. You will have use of the tables in Appendix B of the text.

8088 Min Mode Signals: You are expected to be familiar with the signals generated by the 8088 CPU operating in min mode. You should be familiar with the purpose and timing of each of the signals. You should particularly understand the signals and timing that control memory read/write and i/o read/write cycles. (These signals include ALE,..)
**Memory and I/O Decoding**: Be familiar with the design of logic to decode specific memory and i/o port address ranges. You are expected to be familiar with the use of basic gates and decoder ic’s (specifically the 74LS138) to generate all necessary decoding and timing logic to decode memory and i/o read and write cycles. The 74LS138 is described briefly on page 413 of the text. The full data sheet can be obtained from the TI or On Semiconductor web sites.

**PC Printer Port**: Be familiar with the general operation of the LPT ports on IBM PC type computers. You should know what the various ports (DATA, STATUS, and CONTROL) are, and which relative ports (BASE+0, BASE+1, BASE+2) they are. You should also be reasonably familiar with the functions of the various control and status bits in the control and status registers. Documentation will be provided for specific bit positions if required.