EET363 Introduction to Microcontrollers
OIT Portland West, Fall 2010

Homework Assignment #1
Due October 7

1. Name five things that you own or use that have a microcontroller inside.

2. Search the text and list five different I/O interfaces in the 68HCS12 Microcontroller we are using in class.

3. Look at your Dragon12+ documentation and list five different I/O devices that are on the Dragon-12+ board but not in the 68HCS12.

4. Fill in the range of integer values that can be represented for unsigned and two's complement values of lengths 8, 16, and 24 bits. One range has already been provided.

	8 bits	16 bits	24 bits
Unsigned	0 to 255		
2's Complement			

5. The 8-bit unsigned binary values 1010 0001 and 0101 1110 represent what decimal numbers? Hint — use the calculator in Microsoft Windows!

6. The 8-bit 2's complement signed binary values 1010 0001 and 0101 1110 represent what decimal numbers?

7. The last 4 digits of student IDs are to be stored in 2 byte (16 bit) variables. Convert the last 4 digits of your student ID to a 16 bit binary value. For instance, if your ID is 918012345, the last 4 digits are 2345, and the binary value is 0000 1001 0010 1001. Note: if the last 4 digits of your student ID is 2345, pretend it is 5432 for this problem.

8. A two byte value consists of the hexadecimal value 21 in location 1000 and 35 in location 1001. In a *little endian* processor, what decimal value does this represent?

9. Is the 68HCS12 little endian or big endian? If it is big endian, what decimal value does the two memory locations in problem 8 represent. If it is little endian, just say so and you have answered this question.

10. Does a byte have to hold a signed or 2's complement binary value? Justify your answer.