EECE.3170: Microprocessor Systems Design I
Summer 2016

Homework 1
Due **1:00 PM**, **Thursday, 5/19/16**

Notes:
- While typed solutions are preferred, handwritten solutions are acceptable.
- Any electronic submission must be in a single file. Archive files will not be accepted.
- Electronic submissions should be e-mailed to Dr. Geiger at Michael_Geiger@uml.edu.
- This assignment is worth 100 points.

1. (50 points) Given each of the binary or hexadecimal number below, determine what the decimal value is if the number is (i) an unsigned integer, and (ii) a signed integer. Note that, in some cases, your answers for both will be the same.

a. 01101001_2
b. 10100110_2
c. 8Eh (or 0x8E—recall that, in x86 assembly notation, the "h" at the end of a number signifies that the previous value is in hexadecimal)
d. 6AD7h
e. CAB5h

See the next page for Question 2.

2. (50 points) Assume the contents of memory are shown below. All values are in hexadecimal. The table shows four bytes per line; the given address is the starting address of each line.

Each block in the table contains a single byte, with the low and high bytes per line indicated as shown. Each byte has its own address, so the byte at address 11570h is 20h, address 11571h is 16h, address 11572h is EEh, and address 11573h is CEh.

You should assume all multi-byte values are stored in little-endian format.

Address	Lo			Hi
11570h	20	16	EE	CE
11574h	31	70	FF	EF
11578h	01	4E	DB	AB
1157Ch	CF	09	49	22
11580h	55	15	3A	68
11584h	3B	87	29	D7
11588h	51	30	B2	95

For each address and amount of data listed, answer the following:

- What data are stored at that address?

- Would an access to the given amount of data at that address be aligned?

- If the data represents a signed integer, what is the sign of that value?

For example, given "Address: 11570h, Data size: word," your response would be that the word at 11570h is 1620h, the access is aligned, and the data represents a positive integer.

a. Address: 11576h, Data size: word

b. Address: 11581h, Data size: byte

c. Address: 1157Ah, Data size: double word

d. Address: 11573h, Data size: word

e. Address: 11582h, Data size: double word