EECE.3170: Microprocessor Systems Design I
Fall 2016

Homework 2
Due **2:00 PM, Wednesday, 9/21/16**

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 <u>Michael_Geiger@uml.edu</u>. <u>Please include your name as part of your filename</u> (for example, mgeiger_hw2.pdf).
- This assignment is worth 100 points.

Assume the state of an x86 processor's registers and memory are:

EAX: 0xEECE3170
EBX: 0x00000001
ECX: 0x00000002
EDX: 0x00000004
ESI: 0x00020100
EDI: 0x00020110

Address	Lo			Hi
0x20100	10	00	08	00
0x20104	10	10	FF	FF
0x20108	08	00	19	91
0x2010C	20	40	60	80
0x20110	02	00	AB	0F
0x20114	30	99	11	55
0x20118	40	AA	7C	EE
0x2011C	FF	BB	42	D2
0x20120	30	CC	30	90

What is the result of each of the instructions listed below? Assume that the instructions execute in sequence—in other words, the result of each instruction may depend on the results of earlier instructions. Correctly evaluating each instruction will earn you **10 points**.

Note that you may assume any constant values shown using less than 32 bits are zero-extended to 32 bits if necessary (for example, 0x000F = 0x0000000F).

```
MOV     DL, 0xFE
MOV     DH, AL
MOVSX   BX, BYTE PTR [ESI+0x000F]
MOV     [EDI+ECX], EBX
MOV     [ESI+4*ECX], AX

XCHG    CL, [ESI]

MOVZX   EAX, WORD PTR [EDI+ECX]

MOV     DX, [EDI+0xFFFFFFFA]

LEA     ECX, [ESI+EBX+0x0017]

MOVSX   EBX, BYTE PTR [ESI+4]
```