

# EECE.3170: Microprocessor Systems Design I

Spring 2016

Homework 2

Due 1:00 PM, Friday, 2/5/16

## 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](mailto:Michael_Geiger@uml.edu). Please include your name as part of your filename (for example, mgeiger\_hw2.pdf).
- This assignment is worth 100 points.

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

	Address	Lo		Hi	
EAX: EECE3170h	20100H	10	00	08	00
EBX: 00000001h	20104H	10	10	FF	FF
ECX: 00000002h	20108H	08	00	19	91
EDX: 00000004h	2010CH	20	40	60	80
ESI: 00020100h	20110H	02	00	AB	0F
EDI: 00020110h	20114H	30	99	11	55
	20118H	40	AA	7C	EE
	2011CH	FF	BB	42	D2
	20120H	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, 000Fh = 0000000Fh).

```
MOV    DL, FEh
MOV    DH, AL
MOVSX  BX, BYTE PTR [ESI+000Fh]
MOV    [EDI+ECX], EBX
MOV    [ESI+4*ECX], AX
XCHG  CL, [ESI]
MOVZX  EAX, WORD PTR [EDI+ECX]
MOV    DX, [EDI+FFFFFFAh]
LEA    ECX, [ESI+EBX+0017h]
MOVSX  EBX, BYTE PTR [ESI+4]
```