EE213 Computer Organization and Assembly Language
Quiz I (Section B | D) – Fall 2018
September 24th, 2018
Paper-B Solution

Answer the following questions.

1. Elaborate how the following task is achieved by computer? (*your response should be limited to memory and registers for this purpose and busses).* **(2 Points)**

```
ADD AL, BYTE PTR [EBX]
```

FREE RESPONSE QUESTION

2. Given the code snippet below, fill in the register value/status of FLAGS where indicated:**(3 Points)**

```
1. C15100F7h    MOV AL, 0FFh

2. C15100F8h    MOV BL, 0Ah
3. C15100F9h    MOV CL, 14h     ;EIP: C1510199h

4. C1510199h    ADD AL, 1       ;CF: 1 OF: 0 ZF: 1 SF: 0

5. C151019Ah    SUB BL,CL       ;CF:1 OF: 0 SF: 1
6. C151019Bh    DEC AL
7. C151019Ch    INC BL
8. C151019Dh    INC CL
9. C151019Eh    SUB BL,CL
```

3. Executing the following code snippet, what value will be stored in **EAX**? **(2 Points)**

```
.data
      val64  LABEL  QWORD
      var1   BYTE   12h,13h,14h
      var2   WORD   2 DUP (41h,42h), 2 DUP('AB')
      var3   DWORD  $,$

.code
      MOV    EAX,DWORD PTR val64
```

A. 41121314h **B.** 42411413h **C.** 14131241h
D. 42141312h (*41141312h was correct, though, this was closest to answers provided, others even don't make sense*)

4. Assuming that data segment in Question#3, above, starts at **1000FFF9h.** Draw out byte by byte memory look up with addresses **var3**. (**4 Points**)

Solution:

1001 000Ch	0Ch
1001 000Dh	00h
1001 000Eh	01h
1001 000Fh	10h
1001 0010h	10h
1001 0011h	00h
1001 0012h	01h
1001 0013h	10h

Whole data segment may be seen as following, it is also considerable if a student has reserved a single byte for each of 'A' and 'B'

1000 FFF9h	12h	**1001 0001h**	00	**1001 0009h**	00	**1001 0011h**	00h
1000 FFFAh	13h	**1001 0002h**	42h	**1001 000Ah**	42h ('B')	**1001 0012h**	01h
1000 FFFBh	14h	**1001 0003h**	00	**1001 000Bh**	00	**1001 0013h**	10h
1000 FFFCh	41h	**1001 0004h**	41h ('A')	**1001 000Ch**	0Ch		
1000 FFFDh	00	**1001 0005h**	00	**1001 000Dh**	00h		
1000 FFFEh	42h	**1001 0006h**	42h ('B')	**1001 000Eh**	01h		
1000 FFFFh	00	**1001 0007h**	00	**1001 000Fh**	10h		
1001 0000h	41h	**1001 0008h**	41h ('A')	**1001 0010h**	10h		

5. With the help of LOOP replace each of the following NEGATIVE elements in **dArray** with its mathematical TWICE without using MUL, write only the code part. (**5 Points**)

```
dArray    SDWORD        -1,2,-7,6,-15,12,-25,20,-37,30
```

Solution:

```
.code
   MOV ECX, 5
   MOV ESI, OFFSET dArray
   L1: MOV EAX,[ESI]
   ADD EAX, EAX
   MOV [ESI], EAX
   ADD ESI, 8
LOOP L1
```