CSUS
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE
Department of Computer Science

C Sc 35 – Introduction to Computer Architecture
Spring 2021
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SOLUTIONS TO STUDY QUESTIONS FOR EXAM1

1. The decimal representation of the unsigned binary integer 10000111 is :
   (a) 135
   (b) 7
   (c) 8
   (d) 87

A

2. The decimal representation of the signed binary integer 10000111 is:
   (a) -135
   (b) -120
   (c) -121
   (d) 135

C

3. The minimum number of bits needed to represent the unsigned integer 65 is:
   (a) 65
   (b) 2
   (c) 7
   (d) 6

C

4. What is the sum of the binary numbers 1001 and 0011?
   a) 0011
   b) 1100
   c) 1011
   d) 1110

B

5. In x86 Processors, which of the following registers holds the address of the next instruction?
   (a) EAX
   (b) EBX
   (c) EIP
   (d) ESP

C

6. Which of the following declares an array of bytes initialized to the first four letters of the alphabet?

(a) arrayB BYTE 'A','B','C','D'
(b) arrayB BYTE "ABCD"
(c) arrayB WORD 'A','B','C','D'
(d) Both a) and b)

D

7. In the following declaration, what is the order of the individual bytes as arranged in memory in little endian?
Val1 DWORD 12345678h:

(a) 12h, 34h, 56h, 78h
(b) 78h, 56h, 34h, 12h
(c) 13h, 57h, 24h, 68h
(d) 68h,24h,57h,13h

B

8. What will be the value of the registers at the end of the execution of the following instructions?

```
Mov eax,46
Mov ebx,55
Mov ecx,11
Sub eax,ecx
Add ebx,eax
```

Eax=35, ebx=90, ecx=11

9. How many ASCII bytes will it take store the text "CSC 35!"? Do not count the double-quotes.

(a) 3
(b) 5
(c) 6
(d) 7

D

10. We want to implement the following high level language expression in assembly language:
val1 = val2 - val3 + val4
Assuming that all are 32-bit integer variables write the assembly code.

```
Mov eax,val2
Sub eax, val3
Add eax,val4
Mov val1,eax
```

The following code will be used for the next *3* questions.

```
1. .data
2. varB BYTE 65h,31h,02h,05h
3. varW WORD 6543h,1202h
4. varD DWORD 12345678h
5. .code
6. mov ax,WORD PTR [varB+1]
7. mov bl,BYTE PTR [varD+1]
```

11. What will be value in ax after line 6 is executed?

a) 0231h
b) 0502h
c) 3102h
d) 6531h
A
12. What will be the value in bl after line 7 is executed?
    a) 34h
    b) 12h
    c) 56h
    d) 5678h
C

13. Which of the statements is true after the following code runs?

```
1.      Main PROC
2.        Push 10
3.        Push 20
4.        Call Ex1Sub
5.        Pop eax
6.        Mov ax,4C00h ; exit
7.      Int 21h
8.      Main ENDP

9.      Ex1Sub PROC
10.       Pop eax
11.       Ret
12.     Ex1Sub ENDP
```

(a) Just after execution of line 6, EAX=10
(b) The program will halt with a runtime error on line 10
(c) In Line 6 EAX=20
(d) The program will halt with run time error in line 11

D