Ahsanullah University of Science & Technology

Department of Computer Science and Engineering

Course No : CSE 2214

Course Title : Assembly Language Programming Sessional

Assignment no : 02

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Submitted To : **Ms.Tahsin Aziz & Md.Siam Ansary**

Submitted By:

Name : Mahin opu

ID : 17.02.04.006

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Question no: 01

Suppose that a byte contains the ASCII code of a lower case letter. What hex number should be added to/subtracted from it to convert it to upper case?

Answer: Let's consider the byte contains the ASCII code of a lower case letter 'a'. Now the goal is to convert 'a' into it's upper case letter 'A'.

We know The ASCII code for 'a' =97d=61h

And The ASCII code for 'A'=65d=41h

Now,for this conversion HEX subtraction need to be done.

Hex subtraction:

97d = 61h

65d = 41h

32d = 20h

Therefore, 20h hex number should be subtracted from it to covert into upper case letter .

Question:02

For each of the following 16-bit signed numbers, tell whether it is positive or negative.

a. 9AC4h

b. 78E3h

Answer: a) 9AC4h begins with 9.We know the integers starting with

8-Fh have 1 in their sign bit so that they are negative. Hence 9AC4h is negative.

b) 78E3h begins with 7. We know the integers starting with 0-7h have 0 in their sign bit so that they are positive. Hence 78E3h is positive.

Question:3

Give the unsigned and signed decimal interpretations of each of the following 16-bit or 8- bit numbers.

a. 7FFEh

b. A9h

Answer:

a) 7FFEh = $(7*16^3) +(15*16^2)+(15*16^1)+(14*16^0)$
$=32766d$

This is unsigned decimal interpretation.

As we know that from 0000h-7FFEh the signed decimal

=unsigned decimal interpretation.

Therefore the signed decimal interpretation is also 32766d.

b) A9h = $(10*16^1)+(10*16^0)$

=169d

This is unsigned decimal interpretation.

We know that for 80h - FFh, the signed decimal = unsigned -256

Therefore, the signed decimal interpretation is

= 169d-256d

= - 87d

Question:03

Perform the following subtractions using two's complement addition

a. 10110100 – 10010111

b. 10001011 – 11110111

Answer:

a) 1 0 0 1 0 1 1 1

0 1 1 0 1 0 0 0

+1(2's Complement)

= 0 1 1 0 1 0 0 1

Now , 1 0 1 1 0 1 0 0

0 1 1 0 1 0 0 1

0 0 0 1 1 1 0 1 (answer)

b) 1 1 1 1 0 1 1 1

0 0 0 0 1 0 0 0

+ 1(2's complement)

0 0 0 0 1 0 0 1

now, 1 0 0 0 1 0 1 1

0 0 0 0 1 0 0 1

1 0 0 1 0 1 0 0 (answer)