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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Section : A

Question No: 01

Question: 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:

ASCII code of a lowercase letter (a) =97
ASCII code of an uppercase letter (A) =65

The decimal number subtracted to it to convert to uppercase= (97-65)
=32d

Binary equivalent of 32d = 100000

0010	0000
(2)	(0)

So, 20h Hex number should be subtracted from it to convert it to upper case.

Question No: 02

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

a. 9AC4h

b. 78E3h

Answer:

a. 9AC4h

Binary equivalent of 9h = 1001
Binary equivalent of A h = 1010
Binary equivalent of C h = 1100
Binary equivalent of 4h = 0100

Binary equivalent of (9AC4)h is = 1001 1010 1100 0100
(9) (A) (C) (4)

The MSB(most significant bit) of the binary equivalent is 1.So,it is a negative number.

b. 78E3h

Binary equivalent of 7h is = 0111
Binary equivalent of 8h is = 1000
Binary equivalent of E h is = 1110
Binary equivalent of 3h is = 0011

Binary equivalent of (78E3)h is = 0111 1000 1110 0011
(7) (8) (E) (3)

The MSB(most significant bit) of the binary equivalent is 0.So,it is a positive number.

Question No: 03

Question: 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

$7FFEh=7*16^3+F*16^2+F*16^1+E*16^0$

$=(32766)d$

Binary equivalent of 7h is = 0111
Binary equivalent of Fh is = 1111
Binary equivalent of Fh is = 1111
Binary equivalent of Eh is = 1110

Binary equivalent of (7FFH)h is = 0111 1111 1111 1110
(7) (F) (F) (E)

As the MSB of the binary equivalent is 0.So the **s**igned and unsigned Decimal interpretations of (7FFE)h are same.

Signed : (32766)d
Unsigned: (32766)d

b. A9h

$A9h=A*16^1+9*16^0$

= (169)d

As the MSB of the binary equivalent is 1. So we can find Decimal interpretations of **A9h** is

Unsigned: 169d and

Signed:

(169)d =10101001
One's complement= 01010110

+1

Two's complement= 01010111

=(87)d

Signed : -87d
Unsigned: 169d

Question:04

Question: Perform the following subtractions using two's complement addition

a. 10110100 – 10010111

b. 10001011 – 11110111

Answer:

a. 10110100 – 10010111 =10110100+(-10010111)

10010111

One's complement=01101000

+1

Two's complement =01101001

Now,Addition,

10110100

+01101001

100011101

Here Over Flow Bit 1 and Sign Bit 0.

a.10110100-10010111=11101

b. 10001011 – 11110111 =10001011+(-11110111)

11110111

One's complement=00001000

+1

Two's complement = 00001001

Now,Addition,

10001011

+00001001

10010100

Here Sign Bit 1 .So, this is a negative number.

One’s complement=01101011

+1

Two’s complement = 01101100

b.10001011 – 11110111=01101100