CSCS3541: Computer Organization and Assembly Language

Lab 01

Topic(s): Number Systems

Decimal (Unsigned)	Binary	Decimal (Signed)	Octal	Hexadecimal
0	0000	0	0000	0
1	0001	1	0001	1
2	0010	2	0002	2
3	0011	3	0003	3
4	0100	4	0004	4
5	0101	5	0005	5
6	0110	6	0006	6
7	0111	7	0007	7
8	1000	-8	0010	8
9	1001	-7	0011	9
10	1010	-6	0012	A
11	1011	-5	0013	B
12	1100	-4	0014	C
13	1101	-3	0015	D
14	1110	-2	0016	E
15	1111	-1	0017	F

Question No. 01

Unsigned Numbers	**Signed Numbers**
Binary to Decimal	**Binary to Decimal**
$(0000\ 0010)_2$ = ( )$_{10}$	$(0000\ 0010)_2$ = ( )$_{10}$
$(0000\ 0100)_2$ = ( )$_{10}$	$(0000\ 0100)_2$ = ( )$_{10}$
$(0000\ 1000)_2$ = ( )$_{10}$	$(0000\ 1000)_2$ = ( )$_{10}$
$(0001\ 0010)_2$ = ( )$_{10}$	$(0001\ 0010)_2$ = ( )$_{10}$
$(0010\ 1010)_2$ = ( )$_{10}$	$(0010\ 1010)_2$ = ( )$_{10}$
$(1010\ 1001)_2$ = ( )$_{10}$	$(1010\ 1001)_2$ = ( )$_{10}$
$(1110\ 0110)_2$ = ( )$_{10}$	$(1110\ 0110)_2$ = ( )$_{10}$
$(1001\ 0111)_2$ = ( )$_{10}$	$(1001\ 0111)_2$ = ( )$_{10}$
$(1100\ 0001)_2$ = ( )$_{10}$	$(1100\ 0001)_2$ = ( )$_{10}$
$(1111\ 1111)_2$ = ( )$_{10}$	$(1111\ 1111)_2$ = ( )$_{10}$

Question No. 02

Unsigned Numbers

Decimal to Binary

$(16)_{10} = (\quad)_2$

$(128)_{10} = (\quad)_2$

$(116)_{10} = (\quad)_2$

$(160)_{10} = (\quad)_2$

$(99)_{10} = (\quad)_2$

$(100)_{10} = (\quad)_2$

$(206)_{10} = (\quad)_2$

$(236)_{10} = (\quad)_2$

$(245)_{10} = (\quad)_2$

$(255)_{10} = (\quad)_2$

Signed Numbers

Decimal to Binary

$(16)_{10} = (\quad)_2$

$(127)_{10} = (\quad)_2$

$(-128)_{10} = (\quad)_2$

$(-100)_{10} = (\quad)_2$

$(99)_{10} = (\quad)_2$

$(-99)_{10} = (\quad)_2$

$(-75)_{10} = (\quad)_2$

$(110)_{10} = (\quad)_2$

$(-11)_{10} = (\quad)_2$

$(-1)_{10} = (\quad)_2$

Question No. 03

Unsigned Numbers

Binary to Hexadecimal

$(0000\ 0010)_2 = (\quad)_{16}$

$(0000\ 0100)_2 = (\quad)_{16}$

$(0000\ 1010)_2 = (\quad)_{16}$

$(0101\ 0010)_2 = (\quad)_{16}$

$(0010\ 1010)_2 = (\quad)_{16}$

$(1110\ 1001)_2 = (\quad)_{16}$

$(1100\ 0110)_2 = (\quad)_{16}$

$(1111\ 0111)_2 = (\quad)_{16}$

$(1100\ 0101)_2 = (\quad)_{16}$

$(1111\ 1111)_2 = (\quad)_{16}$

Signed Numbers

Binary to Hexadecimal

$(0000\ 0010)_2 = (\quad)_{16}$

$(0000\ 0100)_2 = (\quad)_{16}$

$(0000\ 1010)_2 = (\quad)_{16}$

$(0101\ 0010)_2 = (\quad)_{16}$

$(0010\ 1010)_2 = (\quad)_{16}$

$(1110\ 1001)_2 = (\quad)_{16}$

$(1100\ 0110)_2 = (\quad)_{16}$

$(1111\ 0111)_2 = (\quad)_{16}$

$(1100\ 0101)_2 = (\quad)_{16}$

$(1111\ 1111)_2 = (\quad)_{16}$

Note: Difference can be observed if M.S.B is one.

10	1010
11	1011
12	1100
13	1101
14	1110
15	1111

Question No. 04

Unsigned Numbers

Hexadecimal to Binary

$(0A)_{16}$ = ($)_2$

$(0E)_{16}$ = ($)_2$

$(1A)_{16}$ = ($)_2$

$(7F)_{16}$ = ($)_2$

$(89)_{16}$ = ($)_2$

$(CD)_{16}$ = ($)_2$

$(FA)_{16}$ = ($)_2$

$(E5)_{16}$ = ($)_2$

$(7F)_{16}$ = ($)_2$

$(FF)_{16}$ = ($)_2$

Signed Numbers

Hexadecimal to Binary

$(0A)_{16}$ = ($)_2$

$(0E)_{16}$ = ($)_2$

$(1A)_{16}$ = ($)_2$

$(7F)_{16}$ = ($)_2$

$(89)_{16}$ = ($)_2$

$(CD)_{16}$ = ($)_2$

$(FA)_{16}$ = ($)_2$

$(E5)_{16}$ = ($)_2$

$(7F)_{16}$ = ($)_2$

$(FF)_{16}$ = ($)_2$