



# University of Central Punjab

(Incorporated by Ordinance No. XXIV of 2002 promulgated by Government of the Punjab)

FACULTY OF INFORMATION TECHNOLOGY

## Computer Organization and Assembly Language

### Lab 1

Topic

1. Number System

## Reference Table

Decimal (Unsigned)	Binary	Decimal (Signed)	Hexadecimal
0	0000	0	0
1	0001	1	1
2	0010	2	2
3	0011	3	3
4	0100	4	4
5	0101	5	5
6	0110	6	6
7	0111	7	7
8	1000	-8	8
9	1001	-7	9
10	1010	-6	A
11	1011	-5	B
12	1100	-4	C
13	1101	-3	D
14	1110	-2	E
15	1111	-1	F



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### Unsigned Numbers

#### Binary to Decimal

1.  $(0000\ 0010)_2 = (\quad)_{10}$

2.  $(0000\ 0100)_2 = (\quad)_{10}$

3.  $(0000\ 1000)_2 = (\quad)_{10}$

4.  $(0001\ 0010)_2 = (\quad)_{10}$

5.  $(0010\ 1010)_2 = (\quad)_{10}$

6.  $(1010\ 1001)_2 = (\quad)_{10}$

7.  $(1110\ 0110)_2 = (\quad)_{10}$

8.  $(1001\ 0111)_2 = (\quad)_{10}$

9.  $(1100\ 0001)_2 = (\quad)_{10}$

10.  $(1111\ 1111)_2 = (\quad)_{10}$

### Signed Numbers

#### Binary to Decimal

1.  $(0000\ 0010)_2 = (\quad)_{10}$

2.  $(0000\ 0100)_2 = (\quad)_{10}$

3.  $(0000\ 1000)_2 = (\quad)_{10}$

4.  $(0001\ 0010)_2 = (\quad)_{10}$

5.  $(0010\ 1010)_2 = (\quad)_{10}$

6.  $(1010\ 1001)_2 = (\quad)_{10}$

7.  $(1110\ 0110)_2 = (\quad)_{10}$

8.  $(1001\ 0111)_2 = (\quad)_{10}$

9.  $(1100\ 0001)_2 = (\quad)_{10}$

10.  $(1111\ 1111)_2 = (\quad)_{10}$



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## Unsigned Numbers

### Decimal to Binary

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

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

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

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

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

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

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

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

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

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

## Signed Numbers

### Decimal to Binary

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

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

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

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

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

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

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

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

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

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



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## Unsigned Numbers

### Binary to Hexadecimal

1.  $(0000\ 0010)_2 = (\quad)_{16}$

2.  $(0000\ 0100)_2 = (\quad)_{16}$

3.  $(0000\ 1010)_2 = (\quad)_{16}$

4.  $(0101\ 0010)_2 = (\quad)_{16}$

5.  $(0010\ 1010)_2 = (\quad)_{16}$

6.  $(1110\ 1001)_2 = (\quad)_{16}$

7.  $(1100\ 0110)_2 = (\quad)_{16}$

8.  $(1111\ 0111)_2 = (\quad)_{16}$

9.  $(1100\ 0101)_2 = (\quad)_{16}$

10.  $(1111\ 1111)_2 = (\quad)_{16}$

## Signed Numbers

### Binary to Hexadecimal

1.  $(0000\ 0010)_2 = (\quad)_{16}$

2.  $(0000\ 0100)_2 = (\quad)_{16}$

3.  $(0000\ 1010)_2 = (\quad)_{16}$

4.  $(0101\ 0010)_2 = (\quad)_{16}$

5.  $(0010\ 1010)_2 = (\quad)_{16}$

6.  $(1110\ 1001)_2 = (\quad)_{16}$

7.  $(1100\ 0110)_2 = (\quad)_{16}$

8.  $(1111\ 0111)_2 = (\quad)_{16}$

9.  $(1100\ 0101)_2 = (\quad)_{16}$

10.  $(1111\ 1111)_2 = (\quad)_{16}$

Note: Difference can be observed if MSB is one.



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## Unsigned Numbers

### Hexadecimal to Binary

1.  $(0A)_{16} = (\quad)_{2}$

2.  $(0E)_{16} = (\quad)_{2}$

3.  $(1A)_{16} = (\quad)_{2}$

4.  $(7F)_{16} = (\quad)_{2}$

5.  $(89)_{16} = (\quad)_{2}$

6.  $(CD)_{16} = (\quad)_{2}$

7.  $(FA)_{16} = (\quad)_{2}$

8.  $(E5)_{16} = (\quad)_{2}$

9.  $(7F)_{16} = (\quad)_{2}$

10.  $(FF)_{16} = (\quad)_{2}$

## Signed Numbers

### Hexadecimal to Binary

1.  $(0A)_{16} = (\quad)_{2}$

2.  $(0E)_{16} = (\quad)_{2}$

3.  $(1A)_{16} = (\quad)_{2}$

4.  $(7F)_{16} = (\quad)_{2}$

5.  $(89)_{16} = (\quad)_{2}$

6.  $(CD)_{16} = (\quad)_{2}$

7.  $(FA)_{16} = (\quad)_{2}$

8.  $(E5)_{16} = (\quad)_{2}$

9.  $(7F)_{16} = (\quad)_{2}$

10.  $(FF)_{16} = (\quad)_{2}$



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**FACULTY OF INFORMATION TECHNOLOGY**

## **Bit wise AND**

11000101 **AND** 11001010

1111001101010101 **AND** 1011001100101100

11001010 **AND** 10101010

## **Bit wise OR**

11000101 **OR** 11001010

1111001101010101 **OR** 1011001100101100

11001010 **OR** 10101010

## **Bit wise XOR**

1100010100110011 **XOR** 1010110011001100

1111001101010101 **XOR** 1011001100101100

11001010 **XOR** 10101010