

# CPPE Lab #1

Decimal	Binary	Octal	hex
1	1	1	1
10	1010	12	A
42	101010	52	2A
255	11111111	377	FF
15	1111	17	F
223	11011111	337	DF
129	10000001	201	81
4	0100	4	04
147	10010011	223	93
63	111111	77	3F

$$10 = 2^3 + 2^1 = 8^1 + 2^0 = A$$

$$42 = 2^5 + 2^3 + 2^1$$

$$42 = 5 \cdot 8^1 + 2 \cdot 8^0$$

$$42 = 2 \cdot 16^1 + 10 \cdot 16^0$$

$$255_{10} = 7$$

$$\underline{11111111} \rightarrow 377$$

$$\underline{11111111} \rightarrow FF$$

$$\underline{11011111} \rightarrow 337$$

$$DF = 13 \cdot 16^1 + 15 \cdot 16^0 =$$

Binary
0 0 0 0 0 0 0
Decimal
64 32 16 8 4 2 1
$2^6 2^5 2^4 2^3 2^2 2^1 2^0$

Octal
0 0 0 0 0 0
$8^5 8^4 8^3 8^2 8^1 8^0$

hex
0-9 A-F
dec
0-9 10-15

$n_{10}$	$n_8$	$3 \times n_2$
0	0	000
1	1	001
2	2	010
3	3	011
4	4	100
5	5	101
6	6	110
7	7	111

$n_{10}$	$n_{16}$	$4 \times n_2$
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111

$$\underline{10000001} \rightarrow 201 \rightarrow 8 \cdot 16^1 + 1$$

$$04 \rightarrow 0100 \rightarrow$$

$$\underline{10010011} \rightarrow 93 \rightarrow 223 \rightarrow 9 \cdot 16 + 3$$

$$\underline{00111111} \rightarrow 3F$$

$$\underline{111111} = 77$$

$$111111 \rightarrow 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0 = 63$$