

decimal	binary	hex
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F
16	10000	10

$100 \rightarrow 2^2$
 $2 \rightarrow 2^1$
 $1 \rightarrow 2^0$
 $4 = 2^2$

bit = binary digit
 4 bits $\frac{2 \cdot 2 \cdot 2 \cdot 2}{2^4 = 16}$ possible

$10101 \rightarrow$ decimal
 $16 + 4 + 1 = 21_{DEC}$

$77_{DEC} \rightarrow$ binary
 $64 + 13$
 $64 + (8 + 5)$
 $64 + 8 + 4 + 1$
 1001101_{BIN}

$200_{HEX} \rightarrow$ decimal
 $16^2 = 256$
 $200_{HEX} = 2 \cdot 256 = 512_{DEC}$

$77_{DEC} \rightarrow$ hex
 $77 = 4 \cdot 16 + 13$
 $64 \rightarrow D$
 $= 4D_{HEX}$
 $0x4D$

$0xA12 \rightarrow$ decimal
 256
 16
 1
 $= 10 \cdot 256 + 1 \cdot 16 + 2 \cdot 1$
 $= 2560 + 16 + 2$
 $= 2578$

$0x29A \rightarrow$ decimal
 $= 666_{DEC}$

$0x4D \rightarrow$ binary
 01001101

octal: base 8

$123_{OCT} \rightarrow$ decimal
 64
 8
 1
 $= 1 \cdot 64 + 2 \cdot 8 + 3 \cdot 1$
 $= 83_{DEC}$

$123_{OCT} \rightarrow$ binary
 $001, 010, 011$
 $1 \quad 2 \quad 3$
 001010011

8 bits high nibble \rightarrow low nibble \leftarrow
 $= 1$ byte 2^8 possible $= 256$

- 1 kilobyte = 1024 bytes
 \parallel
 2^{10}
- 1 mega byte = 1024 kb
 $= 2^{20}$ bytes
- 1 giga byte = 2^{30} bytes
- 1 tera byte = 2^{40} bytes (tetra)
- 1 peta byte = 2^{50} bytes (penta)
- exa byte = 2^{60} bytes (hexa)