

Codice
Sorgente

→
compilatore

programma

LingVass: o
alto livello

C
python
C++

istruzioni
linguaggio macchina

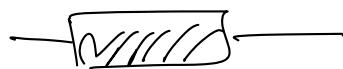
tutto numerico

Numeri in base 2: 0, 1

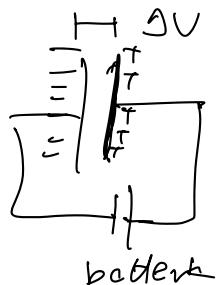
Numeri in base 10: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Numeri

Si realizzano 0, 1:



condensatore



Si stende così:

$$N = \sum_{n=0}^{c-1} a_n b^n$$

b: base

n: potenza della base.

$$123_{10} = 3 \times 10^0 + 2 \times 10^1 + 1 \times 10^2$$

numeri a 3 cifre in base 10.

c: # cifre

a_n: numeri:

$$c = 3$$

$$0, \dots, 999$$

$$b^c = 10^3 = 1000$$

$$a_n: 0, \dots, b-1$$

Base $b = 2$:

$$a_n = 0, 1$$

$$C = 3$$

$$101_2 = 1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2 = 1 + 4 = 5_{10}$$

$$101_2 \neq 101_{10}$$

$$7_{10} = ?_2$$

11 & teutctiv:

$$7 = 4 + 3 = \begin{matrix} 4 & + & 3 & + & 1 \\ & | & | & | & | \\ & 2^2 & 2^1 & 2^0 \end{matrix} = 111_2$$
$$10 \cancel{7} 3_{10} = ?$$

2) metodi algoritmici

$$n = 7_{10} \rightarrow ?_2 \quad \text{resto}$$

$$\begin{array}{r} 7/2 \quad 3 \quad 1 \quad 111_2 \\ 3/2 \quad 1 \quad 1 \\ 1/2 \quad 0 \quad 1 \end{array}$$

$$n = 6_{10} \quad \begin{array}{r} \text{resto} \\ 6/2 \quad 3 \quad 0 \end{array} \rightarrow \text{cifra new significativa}$$
$$\begin{array}{r} 3/2 \quad 1 \quad 1 \quad 110_2 \\ 1/2 \quad 0 \quad 1 \end{array}$$

$$73_{10} = ?_2 \quad \begin{array}{r} \text{resto} \\ 73/2 \quad 36 \quad 1 \\ 36/2 \quad 18 \quad 0 \\ 18/2 \quad 9 \quad 0 \\ 9/2 \quad 4 \quad 1 \\ 4/2 \quad 2 \quad 0 \\ 2/2 \quad 1 \quad 1 \\ 1/2 \quad 0 \quad 1 \end{array}$$
$$\Rightarrow 1001001_2$$

Base 16 numerals: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F
 10 11 12 13 14 15

$$13_{10} = D_{16}$$

$$10_{16} = 0 \times 16^0 + 1 \times 16^1 = 16_{10}$$

$$10_{10} = 10_{10}$$

$$10_2 = 2_{10}$$

$$1F_{16} = 16_{10} + 15_{10} = 31_{10}$$

$$20_{16} = 32_{10}$$

$$16 = 2^4$$

$$\underbrace{100100}_{A} \underbrace{110101}_{B} \underbrace{101}_{D} =$$

$$101 = 1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2 + 1 \times 2^3 = 1 + 4 + 8 = 13_{10} = D_{16}$$

$$1010_2 = 10_{10} = A$$

9 digits in base 2: 0 0 0 0, — — —, 1 1 1
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 0

Base 8 numerals: 0, 1, 2, 3, 4, 5, 6, 7

$$108 = 8_{10}$$

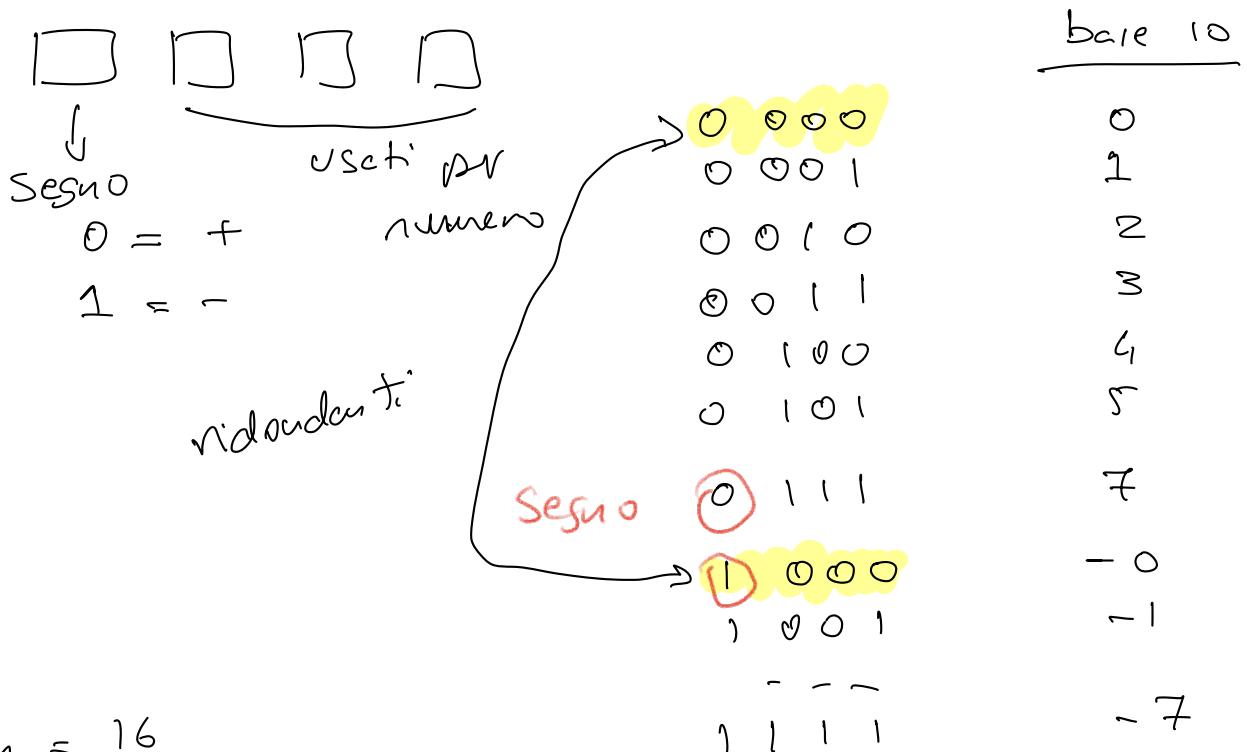
$$\underbrace{101}_{S} \underbrace{101}_{S} = 558$$

$$\underbrace{001}_{S} \underbrace{01}_{S} \underbrace{101} =$$

Base 2 con 4 cifre
1011

0000, --, 1111

0, --, 15 base 10



2^4 combin = 16

2 redundanze per 0

14 numeri distinti

0 0 0 0

numeri a 4 bit

0
1

1 bit = 0, 1