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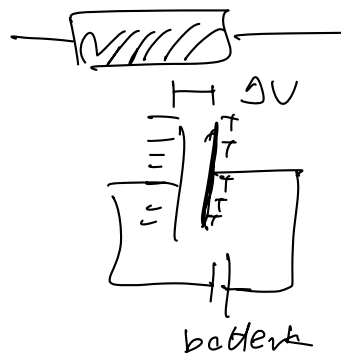
tutto numerico

Numeri in base 2: 0, 1

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

Numerali

Si realizza 0, 1:



condensatore

Sistemi posizionali:

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

b: base

n: potenza della base.

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

numero a 3 cifre in base 10.

c: # cifre

a_n : numerali

$$c = 3$$

0, ..., 999

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

a_n : 0, ..., b-1

Base $b=2$

$$a_n = 0, 1$$

$$c=3$$

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

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

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

1) de tentativa:

$$7 = 4 + 3 = 4 + 2 + 1 = 111_2$$

$\begin{array}{c} | \\ 2^2 \end{array}$

$\begin{array}{c} | \\ 2^1 \end{array}$

$\begin{array}{c} | \\ 2^0 \end{array}$

$$1073_{10} = ?$$

2) método algorítmico

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

		resto	
7/2	3	1	111 ₂
3/2	1	1	
1/2	0	1	

$$n = 6_{10}$$

		resto	
6/2	3	0	\rightarrow cifra menos significativa
3/2	1	1	110 ₂
1/2	0	1	

$$73_{10} = ?_2$$

		resto	
73/2	36	1	
36/2	18	0	
18/2	9	0	\Rightarrow 1001001 ₂
9/2	4	1	
4/2	2	0	
2/2	1	0	
1/2	0	1	

Base 16 numerals: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

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

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

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

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

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

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

$$16 = 2^4$$

$$\underbrace{10010011}_{A} \underbrace{101101}_{D}_2 =$$

$$(101)_2 = 1x2^0 + 0x2^1 + 1x2^2 + 1x2^3 = 1 + 4 + 8 = 13_{10} = D_{16}$$

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

4 cifre in base 2: $\begin{array}{cccc} \square & \square & \square & \square \\ 0 & 0 & 0 & 0 \\ | & | & | & | \end{array}$

0000, — — —, 1111
 0 15
 0 F

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

$$\log = \delta_{10}$$

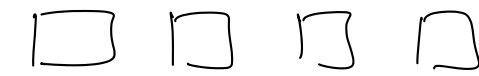
$$\underbrace{101}_S \underbrace{101}_S{}_2 = 55_8$$

Base 2
1011

con 4 cifre

0000, ..., 1111

0, ..., 15 base 10



Segno

0 = +

1 = -

ridondanti

usati per numero

Segno

0 0 0 0

0 0 0 1

0 0 1 0

0 0 1 1

0 1 0 0

0 1 0 1

0 1 1 1

1 0 0 0

1 0 0 1

1 0 1 1

1 1 1 1

base 10

0

1

2

3

4

5

7

-0

-1

-7

2^4 combin = 16

2 ridondanze per

14 numeri distribuiti

0 0 0 0

0

1

numeri a 4 bit

1 bit = 0, 1