

3

- bit, byte (octet)
- datele în memor.
- valori negative
- viteză fixă / mobilă
- variabile

Bit - unitate de măsură pentru informație
 poate lua una din două valori
 posibile
(0, 1)

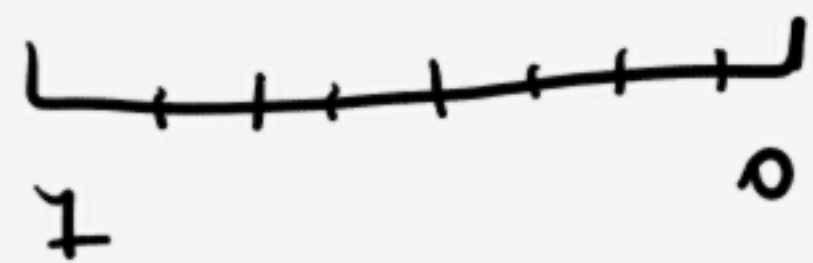
$V_{(10)} \equiv 5_{(10)} \equiv \underline{\underline{101}}_{(2)}$

$10_{(10)} \times 10_{(10)} = 100 \quad 0 \rightarrow 99$

baza 10 $\rightarrow 0, 1, \dots, 9$

baza 2 $\rightarrow \underline{\underline{0, 1}}$

n baza $n \rightarrow n^n$



$\rightarrow 2^8 = 256$

$0000\ 0000_{(2)} = 0_{(10)} \rightarrow 1111\ 1111_{(2)} = 255_{(10)}$

8 bits \equiv 1 byte \equiv 1 octet

kilobyte = 2^{10} bytes = 1024 bytes

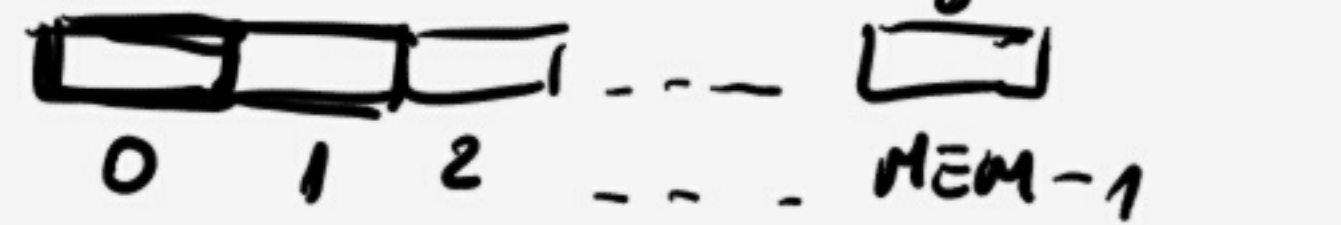
megabyte = 2^{20} bytes = 2^{10} kbytes

gigabyte

terabyte

petabyte

Memoria

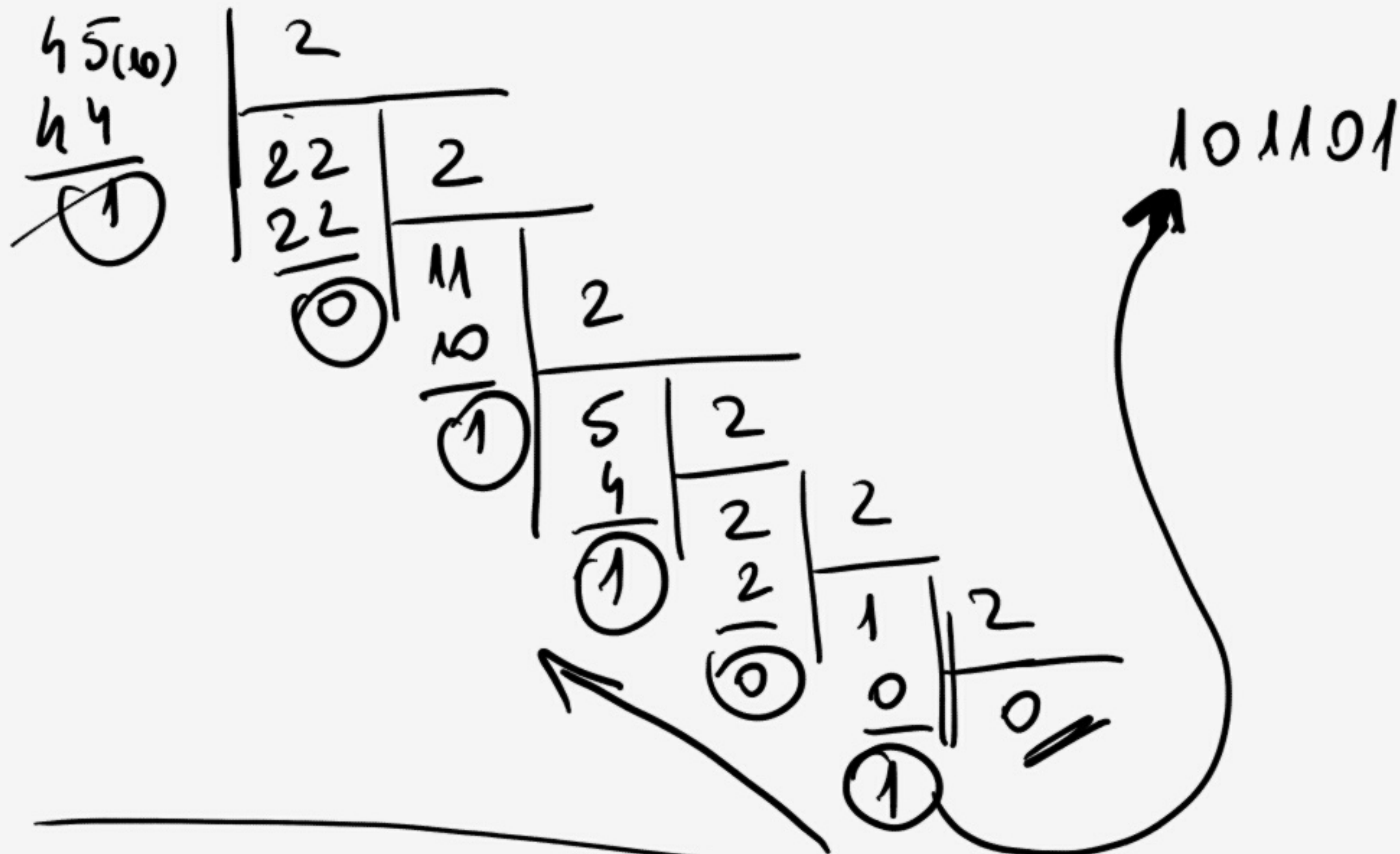


1 kilobit = 1024 bits

Conversion $2 \rightarrow 10$

$$2741 = 1 + 4 \cdot 10 + 7 \cdot 100 = 1 \cdot 10^0 + 4 \cdot 10^1 + 7 \cdot 10^2 + 2 \cdot 10^3$$

$$101101_{(2)} = 1 \cdot 2^0 + 0 \cdot 2^1 + 1 \cdot 2^2 + 1 \cdot 2^3 + 0 \cdot 2^4 + 1 \cdot 2^5 = 1 + 0 + 4 + 8 + 0 + 32 = 45_{(10)}$$



$$\underline{1011} \mid \underline{0100}_{(2)} = 0xB4$$

$$\begin{aligned}
 0xB4 &= 4 \cdot 16^0 + 11 \cdot 16^1 \\
 &= 4 + 176 = 180_{(10)}
 \end{aligned}$$

Base 16 \rightarrow hexa \rightarrow 0, 1, ..., 9, a, b, c, d, e, f

$$(1111)_{(2)} \rightarrow 4_{(16)}$$

$$1011_{(2)} = 11_{(10)} = B_{(16)}$$

$$0000_{(2)} = 0_{(10)} = 0_{(16)}$$

$$1111_{(2)} = 15_{(10)} = F_{(16)}$$



Complement față de 1
 Complement față de 2

se negați pe bitii și se
 adună 1

$$\bar{5}_{(10)} = \bar{5} \quad \underline{00000101}_{(2)}$$

$$C_1 - 5 = 11111010_{(2)}$$

$$C_2 - 5 = 11111011_{(2)}$$

$$4 = 00000100$$

$$C_2 - 4 = 11111011 + 1$$

$$11111100_{(2)}$$

$$\begin{array}{r} 00000100 + 10 \\ 11111100 \end{array}$$

$$\underline{00000000}_{(2)} = 0$$

1011

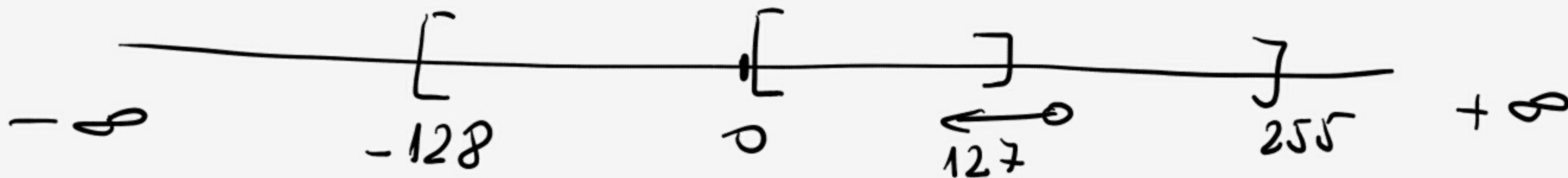
↗ 11₍₁₀₎ fără semn
↘ -5₍₁₀₎ cu semn

8 biti → $2^8 = 256 - [0; 255]$
= - $[-128; 127]$

n biti cu semn $[-2^{n-1}; 2^{n-1}-1]$

0100 +

0101₍₂₎ = 5₍₁₀₎



Vingulă fixă

