

Laborator Proiectare Logică 3

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Reprezentarea numerelor

(a) Numerele întregi $y \in \mathbb{Z}$

- [illegible]

$$v_{\uparrow} = 247$$

$$\begin{array}{r|l} 2 & \\ 247 & 1 \\ 123 & 1 \\ 61 & 1 \\ 30 & 0 \\ 15 & 1 \\ 7 & 1 \\ 3 & 1 \\ 1 & 1 \\ 0 & \end{array} \quad \begin{array}{c} \uparrow \\ \text{MSB} \end{array}$$

(b) **Numero reale** $x \in \mathbb{R}$

De regulă se reprezintă pe 64 de biți. (k=11)

$$0,00031 = 3,14 \times 10^{-4} = 3,14E-4$$

$$247,32 = 2,473 \times 10^2 = 2,473E + 2$$

10 - baza noastră

$$0,0247_{10} = 0,0000011001_2$$

$0,0247 \times 2 = 0,0494$	0	LSB
$0,0494 \times 2 = 0,0988$	0	
$0,0988 \times 2 = 0,1976$	0	
$0,1976 \times 2 = 0,3952$	0	
$0,3952 \times 2 = 0,7904$	0	
$0,7904 \times 2 = 1,5808$	1	
$0,5808 \times 2 = 1,1616$	1	
.	0	
.	0	
.	1	

$$\begin{aligned} \text{exp} &= \text{offset} + e_{\uparrow} \\ \text{exp} &= 2^{k-1} - 1 + e_{\uparrow} \\ e_{\uparrow} &= -6 \\ k &= 11 \\ \text{offset} &= 2^{k-1} - 1 = 2^{10} - 1 + (-6) \\ &= 1024 - 1 - 6 = 1023 - 6 = 1017 \end{aligned}$$