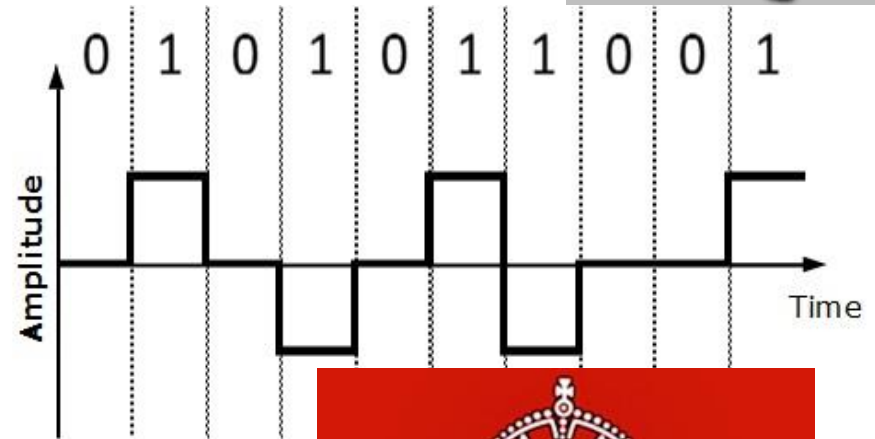
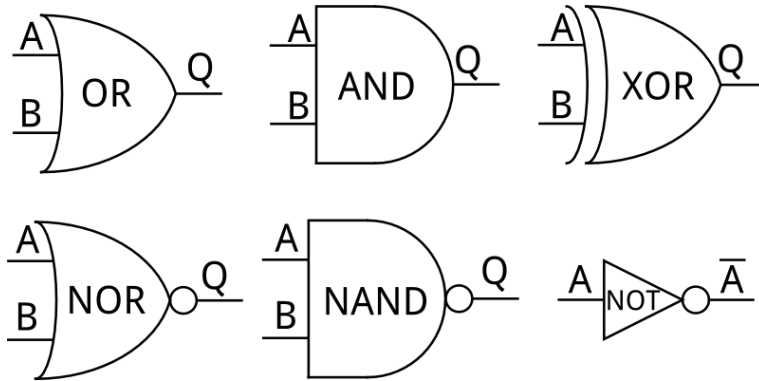


Proiectare Logica

Digital Logic Design

Lab 04



Conversie in virgula mobila

binary64

Algoritm 1. Metoda cu logaritm

Exemplul 1

- $x = -12.0625 \rightarrow \text{semn} = 1$
- in **binary64**: $\text{offset} = 2^{10} - 1 = 1023$
- Se calculeaza exponentul real:
 $\text{er} = \text{partea intreaga din } \frac{\log_{10}|x|}{\log_{10} 2} = 3$
- exponentul:
 $\text{exp} = \text{er} + \text{offset} = 1026_{10} = 10000000010_2$
- partea fractionara a mantisei: $\text{man} = \frac{|x|}{2^{\text{er}}} - 1$
 $= 0.5078125_{10} = 0.10000010...0_2$
- Se trece in baza 2 aceasta parte fractionara pe
 $\text{NCM} - 1 = 52$ biti

Algoritm 1. Metoda cu logaritm

Exemplul 2

- Sa se converteasca numarul -13.1875 in binary64 calculand pentru mantisa 7biti
- semnul=1 offset=1023; $|x| = 13.1875$
- $\lg(|x|) = \lg(13.1875) = 1.1201624726417678842266025510299$
- $\lg(2) = 0.30102999566398119521373889472449$
- $\lg(13.1875)/\lg(2) = 3.7210991887071851341589120805399$
- $er = 3$; partea intrega din numarul de mai sus
- $exp = er + 1023 = 1026 = 1024 + 2 = 100\ 0000\ 0020_2$
- $man = |x|/2^{er} - 1 = 13.1875/2^3 - 1 = 0.6484375$
- $0.6484375_{10} = 0.1010011_2$
- **1**100000000**20**101001100000000000000000000000...

Algoritm 2. Exemplul 1

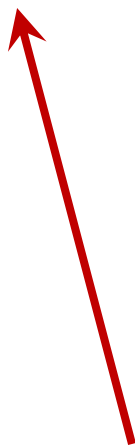
- Fie $x = -12.0625 \rightarrow \text{semn} = 1$
- $x = -1 \times (2^3 + 2^2 + 2^{-4})$
- $x = (-1)^1 \times 2^3 \times (2^0 + 2^{-1} + 2^{-7})$
- $x = (-1)^1 \times 2^{1026-1023} \times (1 + 2^{-1} + 2^{-7})$
- **1**10000000001010000001000...0

exponent 11 biti

mantisa 52 biti

semn 1 bit

Algorithm 2. Exemplul 2

- Fie numarul $x = -13.1875$ Convertiti acest nr in binary64 calculand pentru mantisa 7biti
 - semnul=1 offset=1023; $|x| = 13.1875$
 - $-13.1875 = -1 * (2^3 + 2^2 + 2^0 + 2^{-3} + 2^{-4}) =$
 - $13.1875 * 2 = 26.375$
 - $26.375 * 2 = 52.75$
 - $52.75 * 2 = 105.5$
 - $105.5 * 2 = 211$
 - $13.1875 = 211 / 2^4$
 - $211_{10} = 11010011_2 = 2^7 + 2^6 + 2^4 + 2^1 + 2^0$
 - **110000000020**101001100000000000000000000000...
- 

Algoritm 2. Exemplul 2 altfel

Folosind cele 2 metode convertiti numerele

- $-13.1875 = 13 + 0.1875$

$$= -1 * 1101.0011_2 = (-1)^1 * (2^3 + 2^2 + 2^0 + 2^{-3} + 2^{-4})$$

$$= (-1)^1 * 2^3 * (1 + 2^{-1} + 2^{-3} + 2^{-6} + 2^{-7});$$

$$\text{exp} = 3 + 1023 = 1026_{10} = 100000000010_2;$$

$$\text{man} = 1010011...$$

Tema: convertiti numerele

Folosind cele 2 metode

- -54.375
- -5.875
- -23.75
- -11.6875
- 1.7578125
- 2.421875
- -20.4375
- -17.4375
- -28.375
- -52.75
- -6.4375
- -21.375
- 47.9375
- 7.6875

Conversii in binary64 pt verificare

Folosind cele 2 metode convertiti numerele

- -13.1875

[illegible]

- -28.375

[illegible]

- -52.75

[illegible]

- -6.4375

[illegible]

Pentru $x=-13.1875$

$$\mathbf{er} = \left\lceil \frac{\log_{10}|x|}{\log_{10} 2} \right\rceil = \lceil 3.721... \rceil = 3;$$

$$\text{exp} = \text{er} + \text{offset} = 1026_{10} = 10000000010_2$$

$$\mathbf{man} = \frac{|x|}{2^{er}} - \mathbf{1} = 0.6484375_{10} = 0.1010011_2$$

min-max termeni+forme optimale

- Determinati min-max termenii functiilor:

Tabela de adevar

A	B	C	F (ABC)
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

Tabela de adevar

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1	1	0	0	0
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Diagrame Veitch-Karnaugh

Ordinea de completare este data in
fisierul

[Tabele Veitch-Karnaugh-Ordine
completare.docx](#)

Diagramme Veitch-Karnaugh

- Convertiti tabelle in diagramme V-K

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Diagrame Veitch-Karnaugh

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