

Exercício Prático 7

Aluno: João Madeira Carneiro Braga de Freitas

Matrícula: 800854

1)

EXERCÍCIO PRÁTICO 7

1) a) 5B(IEEE754 4E3M) = ?(10)

5B \rightarrow $\begin{array}{c} 01011011 \\ \downarrow \quad \quad \quad \downarrow \\ \text{sign} \quad \quad \quad \text{E} \quad \quad \quad \text{M} \end{array}$

Bias = $2^{4-1} - 1 = 7$

Nº real = $11 - 7 = 4$

$1,011 \times 2^4 \rightarrow 10110(2) = \boxed{22(10)}$

4

b) 9,25(10) = ?(IEEE754 4E3M)

$1001,01(2) \rightarrow 1,00101 \times 2^3$

Bias = $2^{4-1} - 1 = 7$

Nº mag = $3 + 7 = 10 = 1010$

$\begin{array}{c} 0 \ 1010 \ 001 \\ \hline \quad \quad 5 \quad \quad 1 \end{array} \rightarrow \boxed{0x51(IEEE754 \ 4E3M)}$

3)

3. a) ~~01~~

$$41011100101101 \times 2^{13}$$

$$\text{bias} = 2^7 - 1 = 127$$

$$n^{\circ} \text{mag} = 13 + 127 = 140 = 1000 \ 1100 (2)$$

$$0 \ 1000 \ 1100 \ 101110010110100000000000 (2)$$

Hexa: 0x465CB400

b) $1,11001000000111 \times 2^{15}$

$$\cdot \overbrace{000111111111001}^{\text{100111111111001}}$$

$$\text{bias} = 127$$

$$n^{\circ} \text{mag} = 15 + 127 = 142 = 1000 \ 1110$$

$$1 \ 1000 \ 1110 \ 1100100000011100000000 (2)$$

0xC7640700

4)

4) a) 0 1000001 011000000000000000000000

$$\text{bias} = 2^7 - 1 = 127$$

$$\text{no real} = \text{no mag} - \text{bias}$$

$$\text{no real} = 129 - 127 = 2$$

$$1,011 \times 2^2$$

$$101,1 (2)$$

$$\boxed{5,5}$$

b) 1 1000001 000100000000000000000000

$$\text{bias} = 127$$

$$\text{real} = 129 - 127 = 2$$

$$1,0001 \times 2^2$$

$$(-1) \cdot 100,01$$

$$\boxed{-4,25}$$

5)

a) 0 11111110 11111111 10000000 0000

$$N_{mag} = 254$$

$$Real = 254 - 127 \\ = 127$$

$$1, 11111111000 \times 2^{(127)}$$

RESPOSTA:

$$b < c < a$$

b) 11010101011111 00000000 0000 0000

Sinal

↳ negativo → menor dos 3 $b < a$
 $b < c$

c) 01011110 11111111 1000 0000 0000

$$N_{mag} = 190 \quad Bias = 127$$

$$Real = 190 - 127 = 63$$

$$1.M \times 2^{(63)}$$

$$127 > 63$$

$$c < a$$

6)

6) 112 0,224

↓
11,0000

$$1,110000 \times 2^6$$

$$\text{bias} = 7$$

$$\text{mag} = 7 + 6 = 13$$

0 1101 110

↓

$$\text{mag} = 13$$

$$\text{real} = 13 - 7 = 6$$

$$1,110 \times 2^6$$

$$1110000 = 112$$

0.00110110011
1.110110011 $\times 2^{-3}$

$$\text{bias} = 7$$

$$\text{mag} = 7 - 3 = 4$$

0 0100 110

$$\text{mag} = 4$$

$$\text{real} = 4 - 7 = -3$$

$$1,110 \times 2^{-3}$$

$$0,00110 = 0,1875$$

Valores reais: 112 e 0,224

Valores representados: 112 e 0,1875

MULTIPLICAÇÃO:

$$\text{Valor real} = 25,088$$

$$\text{valor rep} = 21$$

$$\text{Erro absoluto} = 4,088$$

$$\text{Erro relativo} = \frac{4,088}{25,088} = 0,162946428$$

SOMA:

$$\text{valor real} = 112,224$$

$$\text{valor representado} = 112,1875$$

$$\text{Erro absoluto} = 0,0365$$

$$\text{Erro relativo} = \frac{0,0365}{112,224} \approx 3,252423$$

7)

7) 112
 11000×2^6
 $\text{Bias} = 2^2 - 1 = 3$
 $\text{mag} = 6 + 3 = 9 = 1001_{(2)}$

~~0 100 1100~~
0 100 1100
 $\text{mag} = 4$
 $\text{real} = 4 - 3 = 1$

$1,100 \times 2^1$
 $11,00 = 3$

0.224
 $L: 110110011 \times 2^{-3}$
 $\text{Bias} = 3$
 $\text{mag} = 0$
 $0\ 000\ 1101$
 $\text{real} = 1 - 3$
 $\text{real} = -2$
 $1,1101 \times 2^{-2}$
 $0,011101 \rightarrow 0,25 + 0,125 \dots$
 $= 0,453125$

ERRO ABSOLUTO:
 $\text{SOMA: } 112,224 - 3,453125$
 $108,77$
 $\text{MULTIPLICAÇÃO: } 25,088 - 1,3593$
 $23,7287$
 ERRO RELATIVO
 $\text{SOMA: } 0,969$
 $\text{MULT: } 0,9457$