



Arthur de Sá Braz de Mota

① 4E3M

$$a) SB = \underbrace{01011011}_{s \quad E \quad m} \quad 1,011 \cdot 2^4$$
$$10110_2 = \boxed{22_{(10)}}$$

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

$$n^{\circ}_{real} = \underbrace{11}_{n^{\circ}_{mag}} - 7 = 4$$

$$b) 9,25_{(10)} = 1001,01$$

$$1,00101 \cdot 2^3$$

$$01010001 =$$

51

(IEEE754-4E3M)

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

$$n^{\circ}_{mag} = \underbrace{3}_{n^{\circ}_{real}} + 7 = 10 \rightarrow 1010_{(2)}$$

② a) 803ACABA (IEEE754-8E23M)

$$\underbrace{100000000110101100101011010}_{s \quad E \quad m}$$

$$Bias = 2^{8-1} - 1 = 127$$

$$n^{\circ}_{real} = 1 - 127 = -126$$

$$0,0111010110010101011010 \cdot 2^{-126}$$

$$1 \cdot 2^{-2} \cdot 2^{-126} = 1 \cdot 2^{-128} = \frac{1}{2^{128}}$$

b) 803ACABA00000000 (IEEE754-11E52M)

$$\underbrace{1000000000110101100101011010}_{s \quad E \quad m} \cdot 00000000 \dots (0000 \times 6)$$

$$Bias = 2^{11-1} - 1 = 1023$$

$$n^{\circ}_{real} = \underbrace{3}_{n^{\circ}_{mag}} - 1023 = -1020$$

$$1,1010110010101011010000 \cdot 2^{-1020} = \frac{1}{2^{1020}}$$

Arthur de Sá Brag de Azevedo

③ a) 14,125₍₁₀₎ → ? (IEEE 754-8E23M)

↳ 1110,001

1,110001 · 2³

$$\text{bias} = 2^{8-1} - 1 = 127$$

$$n^{\circ} \text{mag} = 3 + 127 = 130$$

• Binário = 01090001011000100000000000000000

• hex = 41620000

b) -58,375₍₁₀₎ → ? (IEEE 754-8E23M)

↳ 111010,011

1,11010011 · 2⁵

$$\text{bias} = 2^{8-1} - 1 = 127$$

$$n^{\circ} \text{mag} = 5 + 127 = 132$$

• Binário = 11000100110100110000000000000000

• hex = C2698000

④ a) 0,10000001,011000000000000000000000

S

E

M

$$\text{bias} = 2^{8-1} - 1 = 127$$

$$1,011000000000000000000000 \cdot 2^{-2} =$$

$$n^{\circ} \text{real} = 129 - 127 = 2$$

101,1₍₂₎ → 5,5₍₁₀₎

b) 1,10000001,000100000000000000000000

S

E

M

$$\text{bias} = 2^{8-1} - 1 = 127$$

$$1,000100000000000000000000 \cdot 2^{-2} =$$

$$n^{\circ} \text{real} = 129 - 127 = 2$$

100,01₍₂₎ → -4,25₍₁₀₎

⑤ a) 7F7FF800 = 01111111011111111111000000000000

b) D57F0000 = 11010101111111000000000000000000 * negativo

c) 5F7FF800 = 01011111011111111111000000000000

Ordem crescente : D57F0000 < 5F7FF800 < 7F7FF800

tilibra

Arthur de Sá Bray de Mator

$$\begin{array}{r} \textcircled{5} \quad 112,000 \text{ (10)} \\ + 000,224 \text{ (10)} \\ \hline 112,224 \end{array} \quad \begin{array}{r} 112,000 \\ \times 0,224 \\ \hline 25,088 \end{array}$$

\rightarrow IEEE 754 - 4E3M

$$112,224 = 1110000,00111001 \cdot 2^6$$

$$1,11000000111001 \cdot 2^6$$

112 $\left\{ \begin{array}{l} \text{Bias} = 2^{4-1} - 1 = 7 \\ \text{no mag} = 7 + 6 = 13 \end{array} \right.$

\downarrow IEEE $01101110 = 6E$

\downarrow IEEE

$$25,088 = 11001,00010111$$

$$1,100100010111 \cdot 2^4$$

0,224 $\left\{ \begin{array}{l} \text{Bias} = 2^{4-1} - 1 = 7 \\ \text{no mag} = 7 + 4 = 11 \end{array} \right.$

\downarrow IEEE $01011100 = 5C$

01101110 $\rightarrow ? \text{ (10)}$

S E M

\downarrow dec

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

$$\text{no real} = 13 - 7 = 6$$

$1,110 \cdot 2^6 = 111000 \text{ (10)} = 112 \text{ (10)}$

01011100 $\rightarrow ? \text{ (10)}$

S E M

\downarrow dec

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

$$\text{no real} = 11 - 7 = 4$$

$1,100 \cdot 2^4 = 11000 = 24 \text{ (10)}$

$$\begin{array}{r} 112 \\ + 24 \\ \hline 136 \end{array} \quad \begin{array}{r} 112 \\ \times 24 \\ \hline 2688 \end{array}$$

Soma erro absoluto = 23,776
erro relativo = 21,18%

Multiplicação erro absoluto = 2662,912
erro relativo = 10614%

tilibra

Arthur de Sá Braz de Matos

⑦

112,000₍₁₀₎

112

+ 000,224₍₁₀₎

$\times 0,224$

112,224

25,088

IEEE 754-3E4M

112

Bias = $2^2 - 1 = 3$

$1110000 = 1,11 \cdot 2^6$

↓

nº mag = $3 + 6 = 9$

0 100 1100

IEEE

↓

Bias = 3

$1,1100 \cdot 2^5 = 111000_{(2)} = \underline{56_{(10)}}$

X₍₁₀₎

nº real = $8 - 3 = 5$

0,224

Bias = $2^2 - 1 = 3$

$0,00111001 = 1,11^{-3}$

↓

nº mag = $3 + (-3) = 0$

0,000 1100

IEEE

↓

Bias = 3

$0,1100 \cdot 2^{-2} = 0,0011_{(2)} = \underline{0,1875_{(10)}}$

X₍₁₀₎

nº real = $1 - 3 = -2$

56

56

+ 0,1875

$\times 0,1875$

56,1875

10,5

Erro Ab. = 56,0365

Erro Ab. = 14,588

Erro Rel. = 49,93%

Erro Rel. = 58,14%