

Embotelladora

A.)

	Bits	Hexadecimal
T. Llenado	110011000000	1.98
T. Procesado	111001100000	3.98
Hora	111000010000	1.C2

1 hora

Normalizado

11,1001100000 $\times 2^0 = 1,1100110000$

mover la coma a la DERECHA lo hace más negativo

mantisa 10 bits

1 1100110000 $\times 2^1$
 0 1110011000 $\times 2^2$
 0 0111001100 $\times 2^3$
 0 0011100110 $\times 2^4$
 0 0001110011 $\times 2^5$

Rango 1
 Delta = 3,59375

* 00000111011 $\times 2^6$

+ 1
 00000111010 $\times 2^6$

Nuevo Delta = 11,1010 $\times 2^0$
 Delta = 3,625

* 0000001110011 $\times 2^7$

1
 00000011101 $\times 2^7$

Delta = 11,101 $\times 2^0$

000000011100 $\times 2^8$

000000001110 $\times 2^9$

Nuevo Delta = 11,10
 = 3,5

* 0000000001111 $\times 2^{10}$

+ 1
 000000000100 $\times 2^{10}$

Nuevo Delta = 100 $\times 2^0$
 = 4

000000000011 $\times 2^{11}$

1 10
 000000000010 $\times 2^{11}$

Delta = 100 $\times 2^0$

000000000001 $\times 2^{12}$

1
 000000000000 $\times 2^{12}$

Delta = 100 $\times 2^0$

000000000000 $\times 2^{13}$

cancelación catastrófica

Valor máximo = $(2 - 2^{-10}) \cdot 2^5$ valor sin ceros

Valor máximo = $(2 - 2^{-10}) \cdot 2^5 = 63,96875$

Valor máx = 63,96875

Antes de que exista el error

Rangos:

$$2^6 - 2^0 = \frac{64}{\Delta = 3,54375} = 17,80$$

Sistema

Reales
17,80

$$2^8 - 2^6 = \frac{192}{3,625} = 52,96$$

53,42

$$2^{10} - 2^8 = \frac{768}{3,5} = 219,42$$

213,7043

$$3600 - 2^{10} = 2576 \text{ seg (faltan)}$$

$$\frac{2576}{4} = 644 \text{ envases}$$

B.)

Envases por el sistema 1 hora = 934,18 envases

Envases reales esperados = 1001

C.)

$$2^{13} - 2^{10} = \frac{7168}{4} = 1792$$

$$1792 + 219,42 + 52,96 + 17,80 = 2082,18 \text{ (envases max)}$$

	Signo	Exponente		Mantisa		Notación	Valor
Normalizado	0	0	0	0	0	0	0
	0	0	0	0	1	$0,01 \times 2^0$	0.25
	0	0	0	1	0	$0,10 \times 2^0$	0.5
	0	0	0	1	1	$0,11 \times 2^0$	0.75
	0	0	1	0	0	$1,00 \times 2^0$	1
	0	0	1	0	1	$1,01 \times 2^0$	1.25
	0	0	1	1	0	$1,10 \times 2^0$	1.5
	0	0	1	1	1	$1,11 \times 2^0$	1.75
	0	1	0	0	0	$1,00 \times 2^1 \rightarrow 10,0 \times 2^0$	2
	0	1	0	0	1	$10,1 \times 2^0$	2.5
	0	1	0	1	0	$11,0 \times 2^0$	3
	0	1	0	1	1	$11,1 \times 2^0$	3.5
	0	1	1	0	0		
	0	1	1	0	1		
	0	1	1	1	0		
	0	1	1	1	1		
NaN Infinito	1	0	0	0	0	0	0
	1	0	0	0	1	$0,01 \times 2^0$	-0.25
	1	0	0	1	0	$0,10 \times 2^0$	-0.5
	1	0	0	1	1	$0,11 \times 2^0$	-0.75
	1	0	1	0	0	$1,00 \times 2^0$	-1
	1	0	1	0	1	$1,01 \times 2^0$	-1.25
	1	0	1	1	0	$1,10 \times 2^0$	-1.5
	1	0	1	1	1	$1,11 \times 2^0$	-1.75
	1	1	0	0	0	$1,00 \times 2^1 \rightarrow 10,0 \times 2^0$	-2
	1	1	0	0	1	$10,1 \times 2^0$	-2.5
	1	1	0	1	0	$11,0 \times 2^0$	-3
	1	1	0	1	1	$11,1 \times 2^0$	-3.5
	1	1	1	0	0		
	1	1	1	0	1		
	1	1	1	1	0		
	1	1	1	1	1		

	sesgo	1	
	recta	4	
	Exponentes		Recta
No se usa	0	0	-1
	0	1	0
	1	0	1
No se usa	1	1	2