Resolucion de Ejercicios 2

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1 Ejercicio 5

$(13.25)_{10} = (1101.01)_2$

$(13)_{10} = (1101)_2$
$13 : 2 = 6 \rightarrow$ resto 1
$6 : 2 = 3 \rightarrow$ resto 0
$3 : 2 = 1 \rightarrow$ resto 1
$1 : 2 = 0 \rightarrow$ resto 1

$(0.25)_{10} = (0.01)_2$
0.25x2= $0.5 \rightarrow 0$
0.5x2= $1 \rightarrow 1$

Luego vale que $(13.25)_{10} = (1101.01)_2$

$(1101.01)_2 = (15.2)_8$
Dividimos el numero en grupos de 3 bits:
$001 = 1$ $101 = 5$. $010 = 2$

Luego vale que $(1101.01)_2 = (15.2)_8$

$(1101.01)_2 = (D.4)_{10}$
Dividimos el numero en grupos de 4 bits:
$1101 = D$. $0100 = 4$

Luego vale que $(1101.01)_2 = (D.4)_{10}$

Por lo tanto tenemos que $(13.25)_{10} = (1101.01)_2 = (15.2)_8 = (D.4)_{10}$

2 Ejercicio 6

Binario	*Octal*	*Decimal*	*Hexadecimal*
1101100.110	134.6	6C.C	108.75
011110010.010011	**362.23**	F2.4C	242.297
10100001.00000011	241.006	**A1.03**	161.0117
1001010.01001	112.22	4A.48	**74.3**

3 Ejercicio 7

$(16.25)_{10} = (10000.01)_2$
Dividimos el numero binario en grupos de 4 bits para pasar a hexadecimal:
$0001 = 1$ $0000 = 0$. $0100 = 4$
Luego, $(16.25)_{10} = (10.4)_{10}$
Precision = 1
El rango del formato es: $0 \leq rango \leq 16^2$

4 Ejercicio 8

a)
$(10 - 3)_{10} = (7)_{10}$
$(10)_{10} = (00001010)_2, (3)_{10} = (00000011)_2$

$$\begin{array}{r} \ 1 \\ \ 0000\ 1010 \\ -\ 0000\ 0011 \\ \hline \ 0000\ 1011 \end{array}$$

Acarreo = 0, CF = 0, OF = 0
$(00001011)_2 = (7)_{10}$

b)
$(-39 + 92)_{10} = (53)_{10}$
$(92)_{10} = (01011100)_2, (39)_10 = (00100111)_2 \rightarrow (11011001)_2 = (-39)_{10}$

$$\begin{array}{r} \ 1\ 11 \\ \ 0101\ 1100 \\ +\ 1101\ 1001 \\ \hline 1\ 0011\ 0101 \end{array}$$

Acarreo = 1, CF = 1, OF = 0
Ignorando el acarreo $\rightarrow (53)_{10} = (00110101)_2$

c)
$(-19-7)_{10} = (-26)_10$
$(19)_{10} = (00010011)_2 \rightarrow (11101101)_2 = (-19)_{10}$,
$(7)_{10} = (00000111)_2 \rightarrow (11111001)_2 = (-7)_{10}$

$$\begin{array}{r} 1111\quad 1 \\ 1110\ 1101 \\ +\ 1111\ 1001 \\ \hline 1\ 1110\ 0110 \end{array}$$

Acarreo = 1, CF = 1, OF = 0
Ignorando el acarreo $\rightarrow (11100110)_2 = (-26)_{10}$

d)
$(44+45)_{10} = (89)_{10}$
$(44)_{10} = (00101100)_2, (45)_{10} = (00101101)_2$

$$\begin{array}{r} 1\ 1\ 1 \\ 0010\ 1100 \\ +\ 0010\ 1101 \\ \hline 0101\ 1001 \end{array}$$

Acarreo = 0, CF = 0, OF = 0
$(01011001)_2 = (89)_{10}$

e)
$(104+45)_{10} = (149)_{10}$
$(104)_{10} = (00101100)_2, (45)_{10} = (00101101)_2$

$$\begin{array}{r} 11\ 1 \\ 0110\ 1000 \\ +\ 0010\ 1101 \\ \hline 1001\ 0101 \end{array}$$

Acarreo = 0
Si utilizamos unsigned, el resultado seria correcto:
$(10010101)_2 = (149)_{10} \rightarrow$ CF = 0, OF = 1
Si utilizamos signed:
$(10010101)_2 = (-107)_{10} \rightarrow$ CF = 0, OF = 1

f)
$(-75 + 59)_{10} = (-16)_{10}$
$(-75)_{10} = (10110101)_2, (59)_{10} = (00111011)_2$

$$\begin{array}{r} \ 111\ \ 111 \\ \ 0011\ 1011 \\ +\ 1011\ 0101 \\ \hline \ 1111\ 0000 \end{array}$$

Acarreo = 0, CF = 0, OF = 0
$(11110000)_2 = (-16)_{10}$

g)
$(-103 - 69)_{10} = (-172)_{10}$
$(-103)_{10} = (10011001)_2, (-69)_{10} = (10111011)_2$

$$\begin{array}{r} \ 111\ \ \ 11 \\ \ 1001\ 1001 \\ +\ 0101\ 0100 \\ \hline 1\ 1111\ 0000 \end{array}$$

Acarreo = 1, CF = 1, OF = 1
$(01010100)_2 = (84)_{10} \neq (-172)_{10}$

h)
$(127 + 1)_{10} = (128)_{10}$
$(127)_{10} = (01111111)_2, (1)_10 = (00000001)_2$

$$\begin{array}{r} \ 1111\ 111 \\ \ 0111\ 1111 \\ +\ 0000\ 0001 \\ \hline \ 1000\ 0000 \end{array}$$

Acarreo = 0
Si utilizamos unsigned, el resultado seria correcto:
$(10000000)_2 = (128)_{10} \rightarrow$ CF = 0, OF = 1
Si utilizamos signed:
$(10000000)_2 = (-128)_{10} \rightarrow$ CF = 0, OF = 1

i)
$(-1 + 1)_{10} = (128)_{10}$
$(-1)_{10} = (11111111)_2, (1)_{10} = (00000001)_2$

$$\begin{array}{r} 1111\ 111 \\ 1111\ 1111 \\ +\ 0000\ 0001 \\ \hline 1\ \ 0000\ 0000 \end{array}$$

Acarreo = 1, CF = 1, OF = 0
Ignorando el acarreo $\rightarrow (00000000)_2 = (0)_{10}$

j)
$(-1-1)_{10} = (-2)_{10}$
$(-1)_{10} = (11111111)_2$

$$\begin{array}{r} 1111\ 111 \\ 1111\ 1111 \\ +\ 1111\ 1111 \\ \hline 1\ \ 1111\ 1110 \end{array}$$

Acarreo = 1, CF = 1, OF = 0
Ignorando el acarreo $\rightarrow (11111110)_2 = (-2)_{10}$