

Laboratorio # 1

Ejercicio 00002

$$1. 4310_5 \rightarrow 4(5^3) + 3(5^2) + 5^1 = 4(125) + 3(25) + 5$$

$$= 500 + 75 + 5 = 580$$

$$R/ 580_{10}$$

$$2. 198_{12} \rightarrow 1(12^2) + 9(12) + 8 = 144 + 108 + 8 = 260$$

$$R/ 260_{10}$$

$$3. 435_8 \rightarrow 4(8^2) + 3(8) + 5 = 4(64) + 24 + 5 = 285$$

$$R/ 285_{10}$$

$$4. 345_6 \rightarrow 3(6^2) + 4(6) + 5 = 137$$

$$R/ 137_{10}$$

Ejercicio 00012

$$\begin{array}{cccc} F & F & F & F \\ | & | & | & | \\ | & | & | & | \\ | & | & | & | \end{array}$$

$$2^4 + 2^{10} + 2^9 + 2^8 + 2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0 = 65,535_{10}$$

$$= FFFF_{16}$$

Ejercicio 00102

$$1. 0x64CD = 6(16^3) + 4(16^2) + 12(16) + 13 = 25805_{10} //$$

$$= 0110\ 0100\ 1101\ 1101_2 //$$

$$2. 6ED3A = 14(16^3) + 13(16^2) + 3(16) + 10 = 40730_{10} //$$

$$= 1110\ 1101\ 0011\ 1010_2 //$$

$$3. 403FB0_{16} = 4(16^5) + 3(16^4) + 15(16^3) + 11(16^2) + 1 = 167369729_{10}$$

$$= 0100\ 0000\ 0011\ 1111\ 1011\ 0000\ 0001_2 //$$

$$4. 0x7C = 7(16) + 12 = 28_{10} //$$

$$= 0111\ 1100_2 //$$

Ejercicio 00112

$$1. \begin{array}{r} 43 \overline{) 215} \\ \underline{86} \\ 129 \\ \underline{129} \\ 0 \end{array}$$

$$\begin{array}{r} 107 \overline{) 214} \\ \underline{214} \\ 0 \end{array}$$

$$\begin{array}{r} 53 \overline{) 106} \\ \underline{106} \\ 0 \end{array}$$

$$\begin{array}{r} 26 \overline{) 52} \\ \underline{52} \\ 0 \end{array}$$

$$\begin{array}{r} 13 \overline{) 26} \\ \underline{26} \\ 0 \end{array}$$

$$\begin{array}{r} 4 \overline{) 12} \\ \underline{12} \\ 0 \end{array}$$

$$\begin{array}{r} 3 \overline{) 6} \\ \underline{6} \\ 0 \end{array}$$

$$\begin{array}{r} 1 \overline{) 2} \\ \underline{2} \\ 0 \end{array}$$

~~11111~~

$$R/ 11010111_2$$

2.
$$\begin{array}{r} 26 \\ 16 \overline{) 431} \\ \underline{32} \\ 111 \\ \underline{96} \\ 15 \end{array} \quad \begin{array}{r} 1 \\ 16 \overline{) 26} \\ \underline{16} \\ 10 \end{array} \rightarrow \text{h1 AF}$$

h1 AF = 00011010111

3. El segundo método ya que realicé menos divisiones y ~~por~~ convertir de hexadecimal a binario es muy sencillo

Ejercicio 0100₂

1. $1011_2 + 101_2$

Caso 1: binario base 2

$$\begin{array}{r} 1011_2 \\ + 101_2 \\ \hline 10000 \end{array} \rightarrow \text{Existe overflow}$$

$R / 10000$
↑ bit overflow

Caso 2: binario 2's complement

$$\begin{array}{r} 1011_2 \\ + 1101_2 \\ \hline 11000 \end{array}$$

$R / 11000_2$
↑ bit overflow

$$\begin{array}{r} 2 \text{ E}_{16} \\ + 3 \text{ 4}_{16} \\ \hline 0 \text{ 2}_{16} \end{array}$$

$$\begin{array}{r} 3. \text{ C } 2_{16} \\ \text{ A } 4 \\ \hline 1 \text{ 4 } 6_{16} \\ \swarrow \text{over flow} \end{array}$$

$$\begin{array}{r} 4. \text{ ~~1001 1001~~ } \\ 1 \text{ 001 } 1001_2 \\ + 0 \text{ 100 } 0100_2 \\ \hline 1 \text{ 101 } 1101 \end{array}$$

Ejercicio 01012

$$\begin{array}{r} 1. \text{ 0001 } 0002 \\ 1 \text{ 110111}_2 \rightarrow 1's \\ 1 \text{ 111000} \rightarrow 2's \end{array}$$

$$\begin{array}{r} 5. \text{ 1000 } 6101 \\ 0111 \text{ 1010} \rightarrow 1's \\ 0111 \text{ 1011} \rightarrow 2's \end{array}$$

$$\begin{array}{r} 2. \text{ 0000 } 0000 \\ 1111 \text{ 1111} \rightarrow 1's \\ 0000 \text{ 0000} \rightarrow 2's \end{array}$$

$$\begin{array}{r} 6. \text{ 1111 } 1111 \\ 0000 \text{ 0000} \rightarrow 1's \\ 0000 \text{ 0001} \rightarrow 2's \end{array}$$

$$\begin{array}{r} 3. \text{ 1101 } 1010 \\ 0010 \text{ 0101} \rightarrow 1's \\ 0010 \text{ 0110} \rightarrow 2's \end{array}$$

$$\begin{array}{r} 4. \text{ 1010 } 1010 \\ 0101 \text{ 0101} \rightarrow 1's \\ 0101 \text{ 0110} \rightarrow 2's \end{array}$$

Ejercicio 01102

1. 6514

$$\begin{aligned} R/ \quad 6 &= h36 \\ 5 &= h35 \\ 1 &= h31 \\ 4 &= h34 \end{aligned}$$

$$R/ 36 35 31 34_{16}$$

2. 97

$$\begin{aligned} R/ \quad 9 &= h39 \\ 7 &= h37 \\ 97 &= h61 \end{aligned}$$

$$R/ 39 37_{16} ; h61$$

3. 63

$$\begin{aligned} R/ \quad 6 &= h36 \\ 3 &= h33 \\ 63 &= h3F \end{aligned}$$

$$R/ 36 33_{16} ; h3F$$

4. 1988

$$\begin{aligned} R/ \quad 1 &= h31 \\ 9 &= h39 \\ 8 &= h38 \end{aligned}$$

$$R/ 31 39 38 38_{16}$$

Ejercicio 01112

"G. Boole" = 47 2E 20 42 6F 6F 6C 65

1 100 0111 0010 0000 1 100 0010 1 110 1111 1 110 1011

1 110 1100 1 110 0101

Ejercicio 1000₂

53 74 65 76 65 20 4A 6F 62 73₁₆
 s t e v e J o b s

R/ Steve Jobs

Ejercicio 1001₂

$$1. 16 + 9 = \begin{array}{r} 010000 \\ + 001001 \\ \hline 011001 \end{array}$$

R/ 011001

$$2. 27 + 31 = \begin{array}{r} 011011 \\ + 011111 \\ \hline 111010 \end{array}$$

R/ 111010

$$3. -4 + 19 = \overbrace{000100}^4 + 010011 = \overbrace{111100}^{-4}$$

$$\begin{array}{r} + 010011 \\ \hline 100111 \end{array}$$

R/ 001111
 existe overflow

$$4. 3 + (-32) = 000011 + \overbrace{100000}^{32} = \overbrace{100000}^{-32}$$

$$\begin{array}{r} 000011 \\ \hline 100011 \end{array}$$

R/ 100011