



TECNOLÓGICO
NACIONAL DE MÉXICO



INSTITUTO TECNOLOGICO NACIONAL DE MEXICO

INSTITUTO TECNOLÓGICO DE TLAXIACO

OPERACIONES

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ASIGNATURA: SISTEMAS NUMÉRICOS

GRUPO: AS

FECHA: 30/08/2025.

SEMESTRE: 1ER SEMESTRE

- 6.- Añadir las fotos de la práctica
- 7.- Realizar una lista de resultados
- 8.- Realizar una conclusión
- 9.- Añadir un índice
- 10.- Guardar el archivo
- 11.- Subir la información

Og

A/F

20108/25

Ejercicio

Número Binario

$$1010 = (1 \times 2)^3 + (0 \times 2)^2 + (1 \times 2)^1 + (0 \times 2)^0 = \\ 8 + 0 + 2 + 0 = \underline{10}$$

$$0011 = (0 \times 2)^3 + (0 \times 2)^2 + (1 \times 2)^1 + (1 \times 2)^0 = \\ 0 + 0 + 2 + 1 = \underline{3}$$

Ejemplo

25 a Binario

$$25 \div 2 = 12, \text{ residuo } \underline{1}$$

$$12 \div 2 = 6, \text{ residuo } \underline{0}$$

$$6 \div 2 = 3, \text{ residuo } \underline{0}$$

$$3 \div 2 = 1, \text{ residuo } \underline{1}$$

$$1 \div 2 = 0, \text{ residuo } \underline{1}$$

~~16~~

~~32~~

~~12~~

Ejercicio

~~64~~ 64

$$64 \div 2 = 32 - 0$$

$$32 \div 2 = 16 - 0$$

$$16 \div 2 = 8 - 0$$

$$8 \div 2 = 4 - 0$$

$$4 \div 2 = 2 - 0$$

$$2 \div 2 = 1 - 0$$

$$1 \div 2 = 0 - 1$$

~~1000000~~ X

~~32~~ 32

$$32 \div 2 = 16 - 0$$

$$16 \div 2 = 8 - 0$$

$$8 \div 2 = 4 - 0$$

$$4 \div 2 = 2 - 0$$

$$2 \div 2 = 1 - 0$$

$$1 \div 2 = 0 - 1$$

~~1000000~~ X

Tarea

10 08 25

Binario a Decimal

$$1011 = 1(2)^3 + 0(2)^2 + 1(2)^1 + 1(2)^0 = \\ 8 + 0 + 2 + 1 = 11$$

$$1110 = 1(2)^3 + 1(2)^2 + 1(2)^1 + 0(2)^0 = \\ 8 + 4 + 2 + 0 = 14$$

Decimal a binario

$$58 = 1(2)^5 + 1(2)^4 + 1(2)^3 + 0(2)^2 + 1(2)^1 + 0(2)^0 = \\ 32 + 16 + 8 + 0 + 2 + 0 = \\ \underline{58} \\ 111010$$

$$49 = 1(2)^5 + 1(2)^4 + 0(2)^3 + 0(2)^2 + 0(2)^1 + 1(2)^0 = \\ 32 + 16 + 0 + 0 + 0 + 1 = \\ \underline{49} \\ 110001$$

Ejemplo

21 08 25

Binario - Decimal

$$111 = 1(2)^3 + 1(2)^2 + 1(2)^1$$

$$8 + 4 + 2 + 1 = 15$$

$$101 = 1(2)^3 + 0(2)^2 + 1(2)^0$$

$$8 + 0 + 1 = 9$$

$$010 = 0(2)^3 + 1(2)^2 + 0(2)^1$$

$$0 + 4 + 0 = 4$$

Ejercicio

326 ->

octal -> Binario

$$3 = 1(2)^1 + 1(2)^0 = \underline{\underline{11}}$$

$$8 + 1 = 3$$

$$2 = 1(2)^1 + 0(2)^0 = \underline{\underline{10}}$$

$$2 + 0 = 2$$

$$6 = 1(2)^3 + 0(2)^2 + 0(2)^1 + 0(2)^0 = \underline{\underline{100}}$$

$$6 + 0 + 0 + 0 = 6$$

1110100

$$1(2)^6 + 1(2)^5 + 1(2)^4 + 0(2)^3 + 1(2)^2 + 0(2)^1 + 0(2)^0 =$$

$$64 + 32 + 16 + 0 + 4 + 0 + 0 =$$

Ejercicios

Octal - Binario

341

123 → Binario

Binario - Octal

101110100 →

111101101 →

1-Hex → Bin.

3 FF →

SAD →

Bin → Hex

101110111 →

111101100

Octal a Binario

341 =

$$3 = 0(2)^2 + 1(2)^1 + 1(2)^0 = \\ 0 + 2 + 1 = \underline{3} = 011$$

$$4 = 1(2)^2 + 0(2)^1 + 0(2)^0 = \\ 4 + 0 + 0 = \underline{4} = 100$$

$$1 = 0(2)^2 + 0(2)^1 + 1(2)^0 = \\ 0 + 0 + 1 = \underline{1} = 001$$

$$011(3) + 100(4) + 001(1) = \underline{011100001}$$

123

$$1 = 0(2)^2 + 0(2)^1 + 1(2)^0 = 0 + 0 + 1 = \underline{1} = 001$$

$$2 = 0(2)^2 + 1(2)^1 + 0(2)^0 = 0 + 2 + 0 = \underline{2} = 010$$

$$3 = 0(2)^2 + 1(2)^1 + 1(2)^0 = 0 + 2 + 1 = \underline{3} = 011$$

$$001(1) + 010(2) + 011(3) = \underline{011010011}$$

Binario a Octal

$$101110100 = 1(2)^8 + 0(2)^7 + 1(2)^6 + 1(2)^5 + 1(2)^4 + 0(2)^3 + 1(2)^2 + 0(2)^1 + 0(2)^0 \\ 256 + 0 + 64 + 32 + 16 + 0 + 4 + 0 + 0 = 372$$

$$11101101 = 1(2)^8 + 1(2)^7 + 1(2)^6 + 1(2)^5 + 0(2)^4 + 1(2)^3 + 1(2)^2 + 0(2)^1 + 1(2)^0 = 256 + 128 + 64 + 32 + 0 + 8 + 4 + 0 + 1 = 493$$

Hexa - Binario

$$F = 152$$

3 FF

$$F = O(z)^4 + T(z)^3 + I(z)^2 + V(z)^1 + N(z)^0$$

$$0 + 8 + 4 + 2 + 1 = 15$$

$$F = 11110110$$

SAD

$$5 = \frac{1}{10} (4(2)^2 + 0(2)^1 + 9(2)^0) = \frac{1}{10} (16 + 0 + 1) = \frac{17}{10} = 1.7$$

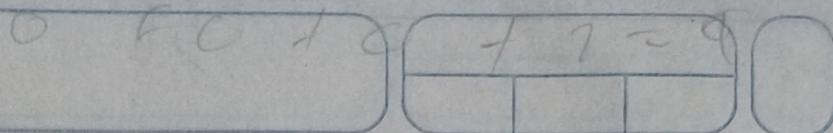
$$64 + 032 + 11 \leq 5 = 107 \quad . \quad + 12 - 21 = 11$$

$$A = 10$$

$$A = 1010$$

$$1(2) + 0(2) + 1(2) + 0(2) = 8 + 0 + 2 + 0 = 10$$

$$0(z) + 0(z) \cdot 10(z) H(z)$$



$$8 + 0 + 1 \cdot 0 = 10$$

$$\text{Binario} = 1010$$

$$D = 13$$

$$D = \begin{matrix} & 1 & 1 & 0 & 1 \\ 1(z)^3 & + & 1(z)^2 & + & 0(z)^1 & + & 1(z)^0 \end{matrix}$$

$$8 + 4 + 0 + 1 = 13$$

$$\text{Binario} = 1101$$

$$\text{Binario} = 1110110101101$$

Binario a Hexadecimal

$$101110111 = 267$$

$$111101100 =$$

Binario a Hexadecimal

$$\underbrace{00}_{2} \underbrace{101}_{E} \underbrace{11}_{F} \underbrace{01}_{E} \underbrace{11}_{F} \underbrace{11}_{F} = E2EF$$

$$\underbrace{00}_{1} \underbrace{11}_{E} \underbrace{11}_{C} \underbrace{01}_{E} \underbrace{11}_{C} \underbrace{00}_{C} = 1EC$$

28 08 25

15

$$+ \begin{array}{r} 1111 \\ 1010 \end{array}$$

$$+ \begin{array}{r} 1111 \\ 1010 \\ \hline 11001 \end{array} \quad 28 \checkmark$$

~~100001~~

$$+ \begin{array}{r} 111111 \\ 101010 \end{array}$$

$$+ \begin{array}{r} 111111 \\ 101010 \\ \hline 1101001 \end{array} \quad 98 \checkmark$$

$$\begin{array}{r} 1110 \\ - 0111 \\ \hline 0111 \end{array}$$

$$- \begin{array}{r} 111111 \\ 011010 \\ \hline 100101 \end{array}$$

Tarea

28 08 25

Suma

Operaciones

$$\begin{array}{r} + 111011100 \\ 011011011 \\ \hline 110610111 \end{array}$$

$$\begin{array}{r} + 11001100 \\ 00110101 \\ \hline 11110001 \end{array}$$

Octal

{0, 1, 2, 3, 4, 5, 6, 7}

$$\begin{array}{r} 164 \\ - 132 \\ \hline 316 \end{array}$$

$$\begin{array}{r} 11 \\ + 57 \\ 112 \\ \hline 71 \end{array}$$

Hexadecimal

Dígitos $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F\}$

$$\begin{array}{r} FF \\ + BS \\ \hline 144 \end{array}$$

$$\begin{array}{r} 15 \\ 17 \\ - 26 \\ \hline 16 \\ - 16 \\ \hline 0 \\ - 16 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 15 \\ + 5 \\ \hline 20 \\ - 16 \\ \hline 4 \end{array}$$

$$F = 15$$

$$B = 11$$

$$\begin{array}{r} 5F \\ + 2A \\ \hline 79 \end{array}$$

$$\begin{array}{r} 15 \\ + 10 \\ \hline 25 \\ - 16 \\ \hline 9 \end{array}$$

Resta

Operaciones

$$\begin{array}{r} 111011100 \\ - 011011011 \\ \hline 100000101 \end{array}$$

$$\begin{array}{r} 11001100 \\ - 00110101 \\ \hline 11011011 \end{array}$$

Octal

$$\begin{array}{r} - 64 \\ - 32 \\ \hline 32 \end{array}$$

$$\begin{array}{r} - 57 \\ - 12 \\ \hline 45 \end{array}$$

Hexadecimal

$$B=17$$

$$\begin{array}{r} - FF \\ - B5 \\ \hline 410 \end{array}$$

$$\begin{array}{r} - SF \\ - 2A \\ \hline 35 \end{array}$$

$$F=15 - S=10 \quad F=15 - 11=4$$

Multiplicación

$$\begin{array}{r} \times 111011100 \\ 011011011 \\ \hline 011011060 \end{array}$$

$$\begin{array}{r} \times 11001100 \\ 00110101 \\ \hline 00000100 \end{array}$$

Octal

Dígitos $\{0, 1, 2, 3, 4, 5, 6, 7\}$

$$7 \times 2 = 14$$

$$\begin{array}{r} \times 62 \\ \hline 32 \\ 44 \end{array}$$

$$6 \times 3 = 12$$

$$12 - 8 = 4$$

$$\begin{array}{r} \times 57 \\ \hline 12 \\ 56 \end{array}$$

$$14 - 8 = 6$$

Hexadecimal

Dígitos $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F\}$

$$F = 15 \quad B = 11 \quad A = 10$$

$$\begin{array}{r} \times 15F \\ \hline 5 \\ 15 \\ -16 \\ \hline 59 \\ -16 \\ \hline 93 \\ -16 \\ \hline 27 \\ -16 \\ \hline 11 \end{array}$$

$$F \times B =$$

$$F = 15 \quad A = 10$$

$$B = 11$$

* Restamos $165 - 16$ hasta llegar a un número dentro de los dígitos *

$$\begin{array}{r} \times 5F \\ \hline 2A \\ \hline A6 \end{array}$$

$$F \times A$$

$$15 \times 10 = 150$$

$$- 16$$

$$= 6$$

$$5 \times 2 = 10$$

$$10 \times 2 = 20$$

$$20 \times 2 = 40$$

$$40 \times 2 = 80$$

$$80 \times 2 = 160$$

$$160 \times 2 = 320$$

$$320 \times 2 = 640$$

$$640 \times 2 = 1280$$

$$1280 \times 2 = 2560$$

$$2560 \times 2 = 5120$$

$$5120 \times 2 = 10240$$

Operaciones

División

$$\begin{array}{r} \div 111011100 \\ \underline{\cdot 011011011} \\ 011011006 \end{array}$$

$$A8 \div 32$$

A 0

$$\begin{array}{r} \div 11001100 \\ \underline{\cdot 00110101} \\ 00000100 \end{array}$$

Octal

{0, 1, 2, 3, 4, 5, 6, 7}

$$62 \div 32$$

$$\begin{array}{r} 1 \\ 32 \sqrt{62} \\ -30 \\ \hline 32 \end{array} = 1$$

$$57 \div 12$$

$$\begin{array}{r} 4 \\ 12 \sqrt{57} \\ -48 \\ \hline 9 \end{array} = 4$$

Hexadecimal

$$F = 15 \quad B = 11 \quad A = 10$$

$$FF \div BS$$

$$\begin{array}{r} 1 \\ 181 \sqrt{255} \\ -16 \\ \hline 74 \\ -64 \\ \hline 10 \\ -8 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ 74 \\ -56 \\ \hline 18 \\ -16 \\ \hline 2 \end{array} \quad = 4A$$

$$FF = 15 \times 16 + 15 = 255$$

$$BS = 11$$

$$BS = 11 \times 16 + 5 = 181$$

$$SF \div 2A$$

$$2A$$

$$\begin{array}{r} 2 \\ \hline 42 \end{array}$$

$$71$$

$$SF = 5 \times 16 = 80 + 15 = 95$$

$$2A = 2 \times 16 = 32 + 10 = 42$$

$$= 2$$

$$= B$$

$$2B$$

3

hexadecimal

$$E8 \div 8$$

1A8