TECNOLÓGICO
NACIONAL DE MÉXICO

INSTITUTO TECNOLOGICO NACIONAL DE MEXICO

INSTITUTO TECNOLOGICO DE TLAXIACO

OPERACIONES

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ASIGNATURA:MATEMÁTICAS DISCRETAS

GRUPO:AS

FECHA:30/08/2025. SEMESTRE:1ER SEMESTRE

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

2010E/25

Ejercicio

Numero Binario

$1010 = (1\times2)^3 + (0\times2)^2 + (1\times2)^1 + (0\times2)^0 =$

$8 + 0 + 2 + 0 = 10$

$0011 = (0\times2)^3 + (0\times2)^2 + (1\times2)^1 + (1\times2)^0 =$

$0 + 0 + 2 + 1 = 3$

Ejemplo

25 a Binario

25 ÷ 2 = 12, residuo 1
12 ÷ 2 = 6, residuo 0
6 ÷ 2 = 3, residuo 0
3 ÷ 2 = 1, residuo 1
1 ÷ 2 = 0, residuo 1

16
32
12

Ejercicio

~~32~~ 64

64 ÷ 2 = 32 - 0
32 ÷ 2 = 16 - 0
16 ÷ 2 = 8 - 0
8 ÷ 2 = 4 - 0
4 ÷ 2 = 2 - 0
2 ÷ 2 = 1 - 0
1 ÷ 2 = 0 - 1

1000000

~~64~~ 32

32 ÷ 2 = 16 - 0
16 ÷ 2 = 8 - 0
8 ÷ 2 = 4 - 0
4 ÷ 2 = 2 - 0
2 ÷ 2 = 1 - 0
1 ÷ 2 = 0 - 1

100000

Tarea

10 | 08 | 25

Binario a Decimal

$1011 = 1(2)^3 + 0(2)^2 + 1(2)^1 + 1(2)^0 =$
$8 + 0 + 2 + 0 = 10$

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

Decimal a binario

$58 = 1(2)^5 + 1(2)^4 + 1(2)^3 + 0(2)^2 + 1(2)^1 + 0(2)^0$
$32 + 16 + 8 + 0 + 2 + 0 =$
$= 58$

111010

$49 = 1(2)^5 + 1(2)^4 + 0(2)^3 + 0(2)^2 + 0(2)^1 + 1(2)^0$
$32 + 16 + 0 + 0 + 0 + 1 =$
49

110001

Ejemplo

21 08 25

Binario - Decimal

$111 = 1(2)^2 + 1(2)^1 + 1(2)^0$

$4 + 2 + 1 = 7$

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

$4 + 0 + 1 = 5$

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

$0 + 2 + 0 = 2$

Ejercicio

326 ->

octal -> Binario

$3 = 1(2)^1 + 1(2)^0 =$ 11

$2 + 1 = 3$

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

$2 + 0 = 10$

$6 = 1(2)^3 + 0(2)^1 + 0(2)^0 =$ 100

$6 + 0 + 0 = 6$

1 1 0 1 0 0

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

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

Ejercicios

Octal - Binario

341

123 → Binario

Binario - Octal

10111010 0 →

1 1 1 1 0 1 1 0 1 →

Hex → Bin

3FF →

SAD →

Bin → Hex

10 1 1 1 0 1 1 1 →

1 1 1 1 0 1 1 0 0

Octal a Binario

341 =

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

$0 + 2 + 1 = 3 \quad = 011$

$4 = 1(2)^2 + 0(2)^1 + 0(2)^0 =$

$4 + 0 + 0 = 4 \quad = 100$

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

$0 + 0 + 1 = 1 = 001$

011(3) + 100(4) + 001(1) = 011100001 //

123

$1 = 0(2)^2 + 0(2)^1 + 1(2)^0 = 0 + 0 + 1 = 1 = 001$

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

$3 = 0(2)^2 + 1(2)^1 + 1(2)^0 = 0 + 2 + 1 = 3 = 011$

001(1) + 010(2) + 011(3) = 011010011 //

Binario a Octal

$101110100_2 =$

$1(2)^8 + 0(2)^7 + 1(2)^6 + 1(2)^5 + 1(2)^4 + 0(2)^3 + 1(2)^2 + 0(2)^1 + 0(2)^0$

$256 + 0 + 64 + 32 + 16 + 0 + 4 + 0 + 0 =$

372

$111101101 =$

$1(2)^8 + 1(2)^7 + 1(2)^6 + 1(2)^5 + 0(2)^4 + 1(2)^3 + 1(2)^2 + 0(2)^1 + 1(2)^0 =$

$256 + 128 + 64 + 32 + 0 + 8 + 4 + 0 + 1 =$

493

Hexa - Binario

F = 15

3FF

$3 = 0(2)^2 + 1(2)^1 + 1(2)^0 = 0 + 2 + 1 = 3 = 011$

$F = 0(2)^4 + 1(2)^3 + 1(2)^2 + 1(2)^1 + 1(2)^0$

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

F = 1111 011 111 111

5AD

5 =

$1(2)^2 + 0(2)^1 + 1(2)^0$

$4 + 0 + 1 = 5 = 101$

A = 10

A = 1010

$1(2)^3 + 0(2)^2 + 1(2)^1 + 0(2)^0 = 8 + 0 + 2 + 0 = 10$

8 + 0 + 2 + 0 = 10

Binario = 1010

D = 13

D = 1101

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

8 + 4 + 0 + 1 = 13

Binario = 1101

Binario = 1 | 101 1010 1101

Binario a Hexadecimal

101110111

111101100 =

Binario a Hexadeimal

0 0 1 0 1 1 1 0 1 1 1 1 = 2EF

2 E F

0 0 0 1 1 1 1 0 1 1 0 0 = 1EC

1 E C

28 08 25

15

```
  1 1 1 1
+ 1 0 1 0
```

```
    1 1 1 1
+   1 0 1 0
  1 1 0 0 1
```

25

```
  1 1 1 1 1 1
+ 1 0 1 0 1 0
```

```
      1 1 1 1
  1 1 1 1 1 1   63
+ 1 0 1 0 1 0   42
  1 1 0 1 0 0 1  105
```

```
    1 1 1 0
- 0 1 1 1
  0 1 1 1
```

```
  1 1 1 1 1 1
- 0 1 1 0 1 0
  1 0 0 1 0 1
```

Tarea

28 08 25

Suma

Operaciones

```
  1 1   1
+ 1 1 1 0 1 1 1 0 0
  0 1 1 0 1 1 0 1 1
-------------------
  1 1 0 0 1 0 1 1 1
```

```
    1
+ 1 1 0 0 1 1 0 0
  0 0 1 1 0 1 0 1
-----------------
  1 1 1 1 0 0 0 1
```

Octal

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

```
1 6 4
- 3 2
-----
3 1 6
```

9 - 8 = 1

```
  1 1
+ 5 7
  1 2
-----
  7 1
```

9 - 8 = 1

Hexadecimal

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

F = 15
B = 11
A = 10

```
  F F
+ B 5
-------
1 4 4
```

```
  15
+ 11
----
  26
- 16
----
  10
- 16
----
  14
```

```
  15
+ 15
----
  30
- 16
----
  14
```

```
  + 15
    10
  ----
    25
  - 16
  ----
    09
```

```
  + 5 F
    2 A
  -----
    7 9
```

Resta

Operaciones

```
  1 1 1 0 1 1 1 0 0
-   0 1 1 0 1 1 0 1 1
---------------------
    1 0 0 0 0 0 1 0 1
```

```
    1   1     1   1
  1 1 0 0 1 1 0 0
-   0 0 1 1 0 1 0 1
---------------------
    1 1 0 1 1 0 1 1
```

Octal

$$\begin{array}{r} 64 \\ -\ 32 \\ \hline 32 \end{array} \qquad \begin{array}{r} 57 \\ -\ 12 \\ \hline 45 \end{array}$$

Hexadecimal

F=15 A=10 B=11

15-10=5

$$\begin{array}{r} TF \\ -\ BS \\ \hline 410 \end{array} \qquad \begin{array}{r} SF \\ -\ 2A \\ \hline 35 \end{array}$$

F=15-5=10 F=15-11=4

Multiplicación

$$\begin{array}{r} 1110111100 \\ \times\ 0170110111 \\ \hline 0770710080 \end{array}$$

$$\begin{array}{r} 11001100 \\ \times\ 00110101 \\ \hline 00600100 \end{array}$$

Octal

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

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

$6 \times 3 = 12$

$12 - 8 = 4$

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

$7 \times 2 = 14$

$14 - 8 = 6$

Hexadecimal

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

F = 15 A = 10

B = 11

$$\begin{array}{r} FF \\ \times\ B5 \\ \hline 5B \end{array}$$

$$\begin{array}{r} 15F \\ \times\ 5 \\ \hline 75 \end{array}$$

$F \times B =$

$15 \times 11 = 165 = 5$

* Restamos 165 − 16 hasta llegar a un numero dentro de los digitos *

$165 - 16 = 149$

$149 - 16 = 133$

$133 - 16 = 117$

$117 - 16 = 101$

$101 - 16 = 85$

$85 - 16 = 69$

$69 - 16 = 53$

$53 - 16 = 37$

$37 - 16 = 21$

$21 - 16 = 5$

$5 = B$

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

$F \times A$

$15 \times 10 = 150 - 16$

$= 6$

$5 \times 2 = 10 = A$

División

Operaciones

$$\begin{array}{r} 1110111100 \\ \div\ 0110110111 \\ \hline 0110111001 \end{array}$$

$$\begin{array}{r} 11001100 \\ \div\ 01101101 \\ \hline 00000100 \end{array}$$

Octal

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

62 ÷ 32

$$\begin{array}{r|l} & 1 \\ 32 & 62 \\ & 30 \end{array} = 1$$

57 ÷ 12

$$\begin{array}{r|l} & 4 \\ 12 & 57 \\ & 9 \end{array} = 4$$

Hexadecimal

F = 15 B = 11 A = 10

FF ÷ B5

$$\begin{array}{r|l} & 1 \\ 181 & 255 \\ & 74 \end{array} = 1$$

FF = 15 × 16 = 240 + 15 = 255

B = 11

B5 = 11 × 16 = 176 + 5 = 181

$$\begin{array}{r|l} & 4 \\ 16 & 74 \\ & 10 \end{array} = 4A$$

10 = A

5F ÷ 2A

5F = 5 × 16 = 80 + 15 = 95

2A = 2 × 16 = 32 + 10 = 42

$$\begin{array}{r|l} & 2 \\ \hline 42 & 95 \\ & 71 \end{array}$$

= 2

= B

2B