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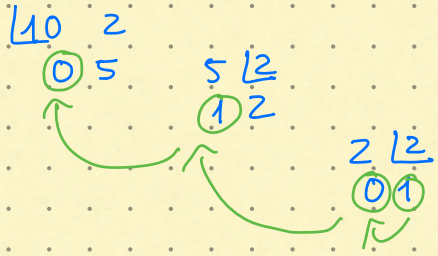
00329229

1. Transform the following numbers from one base to another

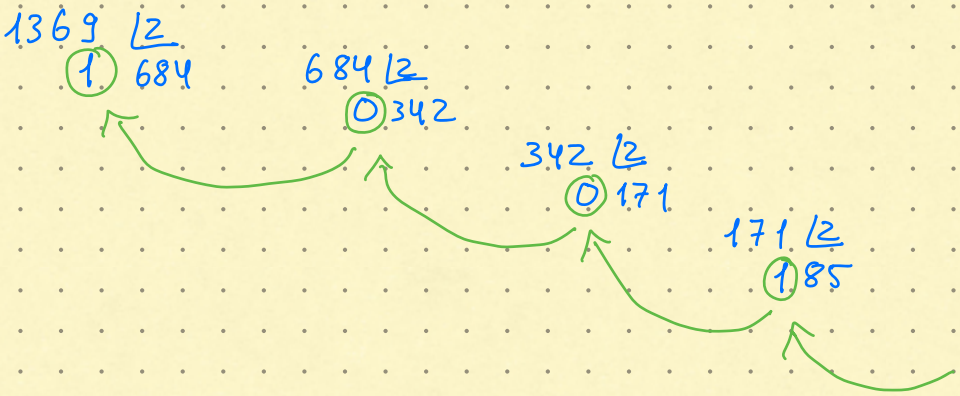
Decimal to binary | Reference: https://byjus.com/maths/decimal-to-binary/

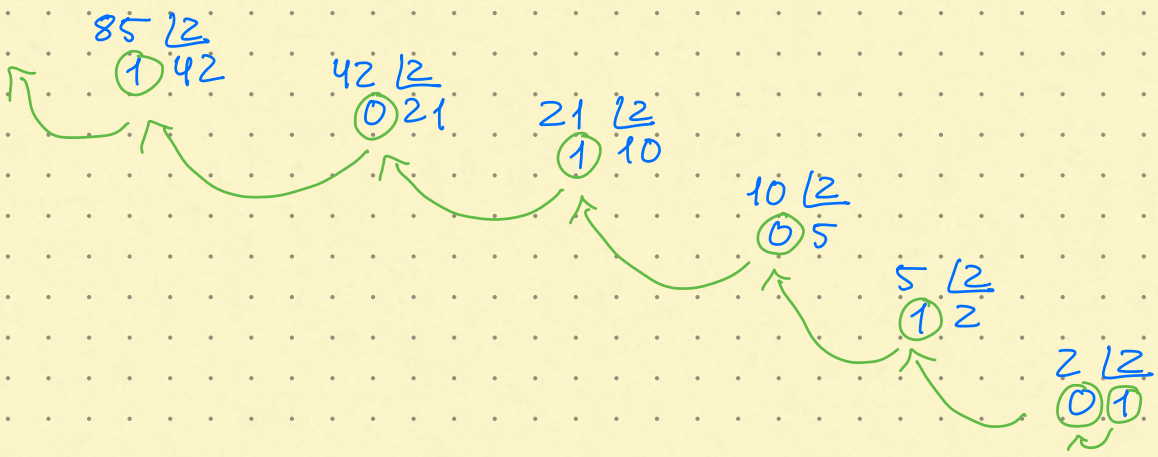
- 10



$\Rightarrow (10)_{10} = (1010)_2$ //

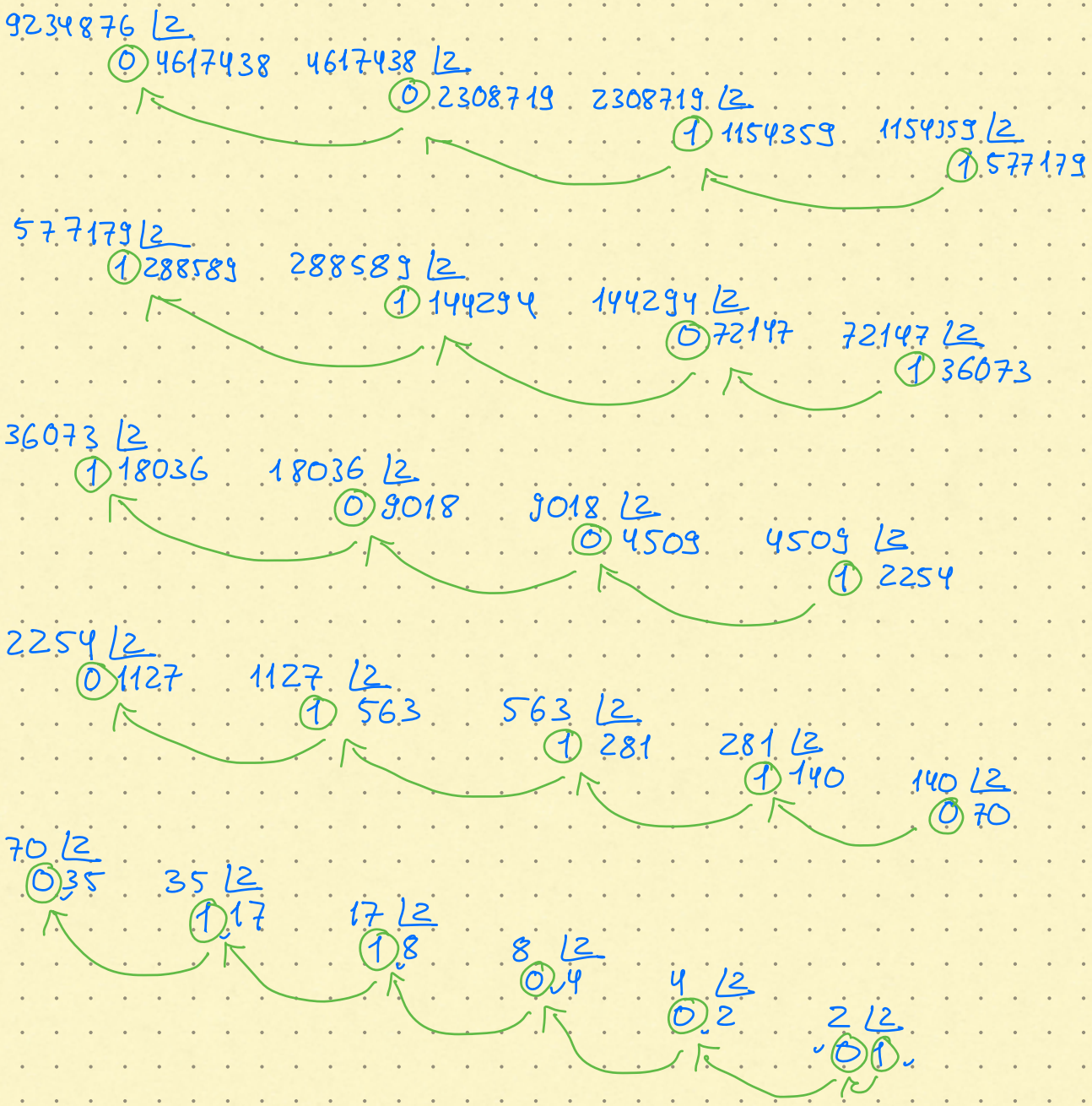
- 1369





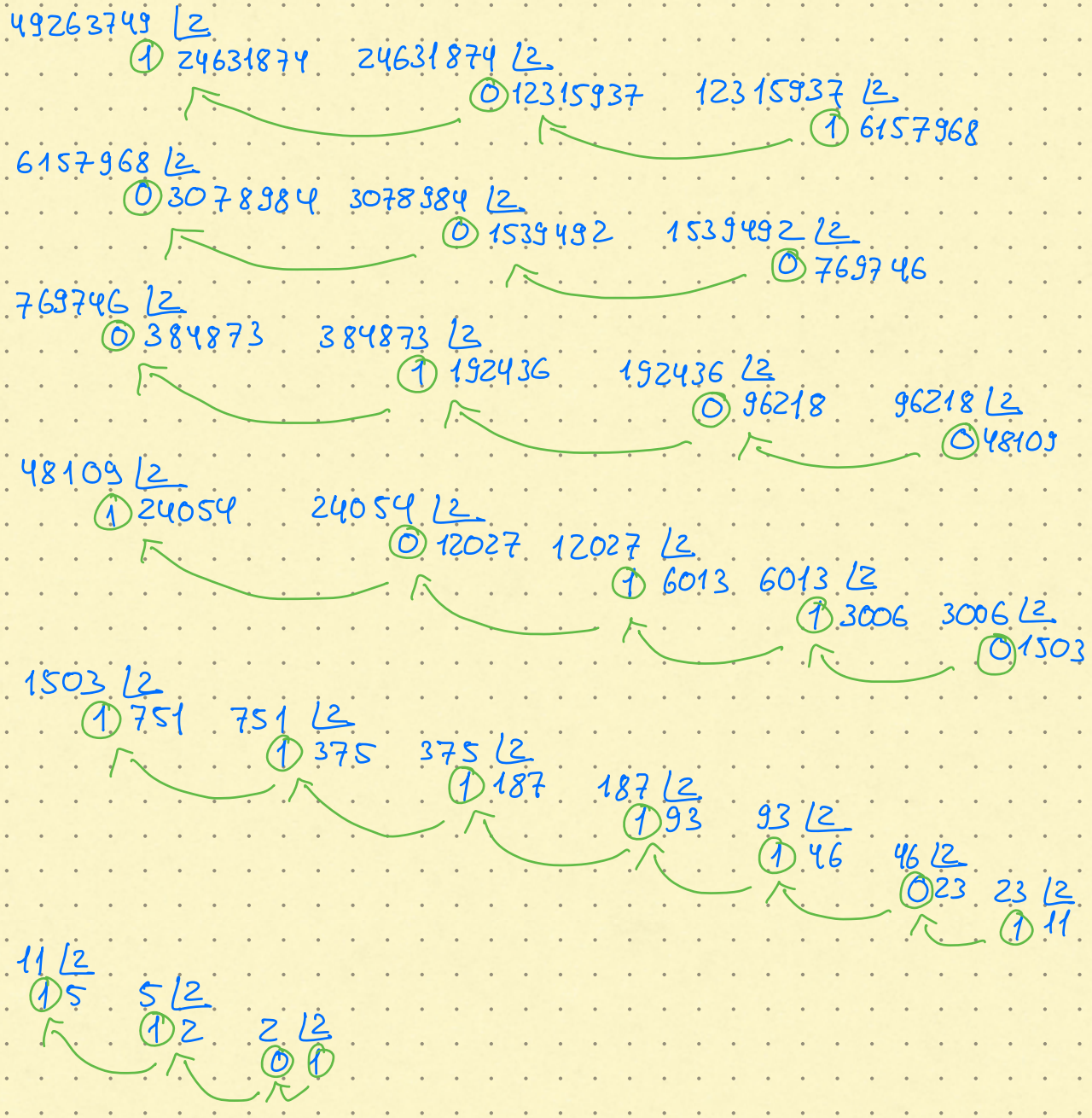
$(1369)_{10} = (10101011001)_2$ //

- 9234876



$\Rightarrow (9234876)_{10} = (100011001110100110111100)_2$ //

- 4926 3749



$$\Rightarrow (4926749)_{10} = (10011011111010100100000101)_2 //$$

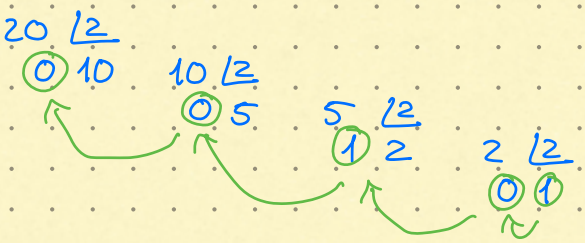
Decimal to binary using 2's complement

-> Use the minimum number of bits required to express the number

Reference: https://www.exploringbinary.com/twos-complement-converter/

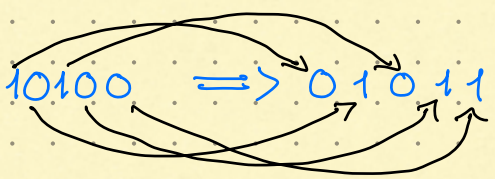
- -20

=> empiezo por pasarle a binario (a la magnitud solamente)



$$\Rightarrow (20)_{10} = (10100)_2$$

Ahora, ya en binario, saco el complemento de todo el número:



Como se vio en clase, se suma 1 para obtener el 2's complement:

$$(01011)_2 + (1)_2 = (01100)_2$$

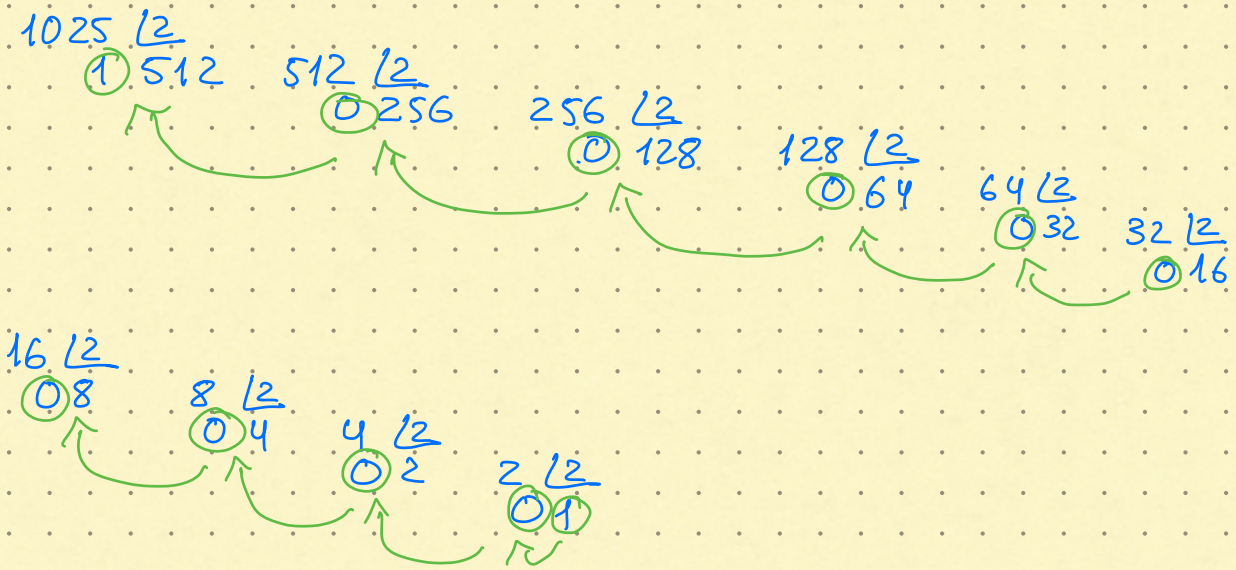
Finalmente para agregar el signo, se añade 1 al inicio del complemento

$$(1)\,01100$$

Obteniendo: $(101100)_2 = (-20)_{10}$ //

→ El proceso y razonamiento es similar para los demás casos:

- -1025



$(1025)_{10} = (10000000001)_2$

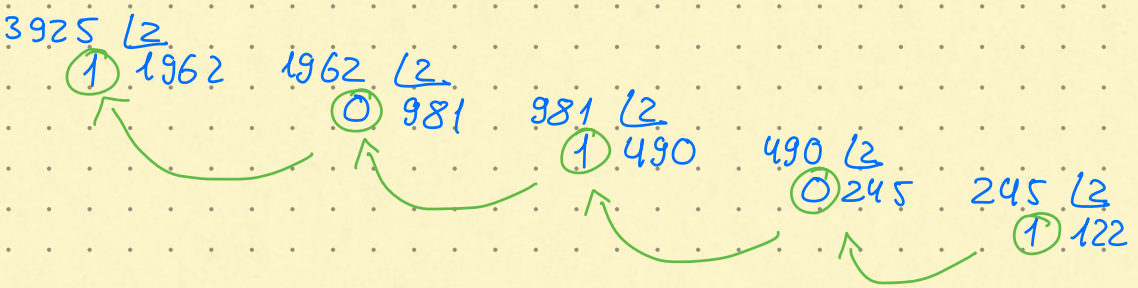
$(10000000001)_2 \Rightarrow (01111111110)_2 + (1)_2$

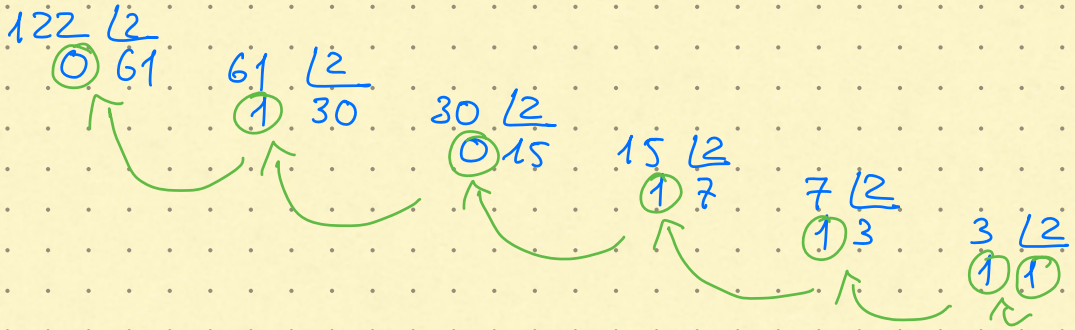
$= (01111111111)_2$

$\Rightarrow$ (1) 01111111111

$\Rightarrow (-1025)_{10} = (11111111111)_2$ //

- -3925





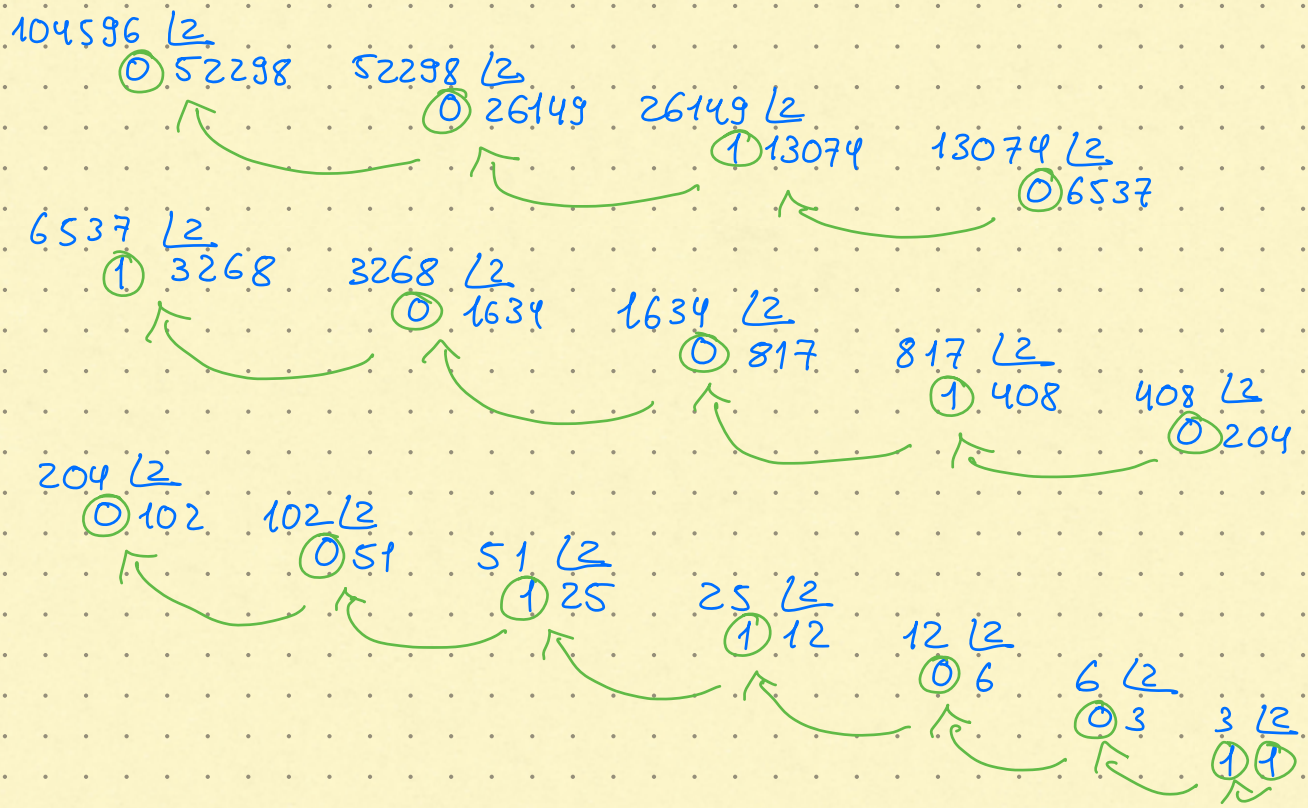
$(3925)_{10} = (111101010101)_2$

$(111101010101)_2 \Rightarrow (0000101010101 0)_2 + (1)_2$

$\Rightarrow (0000101010101 1)_2$

$(-3925)_{10} = (100001010101 1)_2$ //

- -104596



$(10596)_{10} = (1100111000101001 0100)_2$

$\Rightarrow (0011001110110101 1)_2 + (1)_2$

$\Rightarrow (0011001110110 1100)_2$

$(-10596)_{10} \Rightarrow (1\,0011001110110 1100)_2$ //

Unsigned binary to hex

Método Corto:

Reference: https://www.tutorialspoint.com/how-to-convert-binary-to-hexadecimal

- 1100|1111|0101|0110|0110|1110|1101|1000|0010|1001

  8421 8421 8421 8421 8421 8421 8421 8421 8421 8421

  8400 8421 0401 0420 0420 8420 8401 8000 0020 8001

  12 15 5 6 6 14 13 8 2 9

  ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

  C F 5 6 6 E D 8 2 9 //

- 1000|0111|1000|1110|0011|1000|1110|0011|1111|0011

  8421 8421 8421 8421 8421 8421 8421 8421 8421 8421

  8000 0421 8000 8420 0021 8000 8420 0021 8421 0021

  8 7 8 14 3 8 14 3 15 3

  ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

  8 7 8 E 3 8 E 3 F 3 //

- 1010|1101|0101|1100|0110|0101|0100|1010|1010|1010

  8421 8421 8421 8421 8421 8421 8421 8421 8421 8421

  8020 8401 0401 8400 0420 0401 0400 8020 8020 8020

  10 13 5 12 6 5 4 10 10 10

  ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

  A D 5 C 6 5 4 A A A //

- 1010 | 0010 | 1010 | 1010 | 1010 | 1010 | 1011 | 1111 | 1100 | 0000

8421 8421 8421 8421 8421 8421 8421 8421 8421 8421

8020 0020 8020 8020 8020 8020 8021 8421 8400 0000

10 2 10 10 10 10 11 15 12 0

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

A 2 A A A A B F C 0 //

Signed binary to octal

Método Corto

Reference: https://byjus.com/maths/binary-to-octal-conversion/

- 111 | 111 | 000 | 001 | 111 | 100 | 000 | 001 | 110 | 101 | 011

↓ 2's complement

000 000 111 110 000 011 111 110 001 010 100

\+ 1

---

000 000 111 110 000 011 111 110 001 010 101

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

\- 0 0 7 6 0 3 7 6 1 2 5 //

- 010 | 101 | 010 | 101 | 111 | 111 | 111 | 111 | 110 | 000 | 000 |

↓

101 010 101 010 000 000 000 000 001 111 111

\+ 1

---

101 010 101 010 000 000 000 000 010 000 000

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

2 2 5 2 0 0 0 0 2 0 0 //

• (1) 110 | 001 | 110 | 000 | 001 | 111 | 111 | 100 | 000 | 101 | 010

000 001 110 001 111 110 000 000 011 111 010 101

\+ 1

---

000 001 110 001 111 110 000 000 011 111 010 110

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

- 0 1 6 1 7 6 0 0 3 7 2 6 //

• (1) 010 | 101 | 010 | 100 | 000 | 101 | 010 | 101 | 011 | 111 | 000

000 101 010 101 011 111 010 101 010 100 000 111

\+ 1

---

000 101 010 101 011 111 010 101 010 100 001 000

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

- 0 5 2 5 3 7 2 5 2 4 1 0 //