

CS 208

W 17 Sep 2025

Decimal

$$197$$

1×10^2 9×10^1 7×10^0

Hexadecimal
(base 16)

$$C5$$

12×16^1 5×16^0

11
192

197 decimal

Base 16

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	a
B	b
C	c
D	d
E	e
F	f

197 decimal $\rightarrow$ binary

Symbols

0

1

① What's the biggest power of 2 $\leq$ 197?

$$128 = 2^7$$

$$197 - 128 = 69$$

$$\begin{array}{r} 197 = 128 \\ + 64 \\ + 0 \\ + 0 \\ + 0 \\ + 1 \\ + 0 \\ + 1 \end{array} \begin{array}{l} (69) \\ (5) \\ (5) \\ (5) \\ (5) \\ (1) \\ (1) \\ (0) \end{array}$$

$$1 \times 2^7 = 128$$

$$1 \times 2^6 = 64$$

$$0 \times 2^5 = 32$$

$$0 \times 2^4 = 16$$

$$0 \times 2^3 = 8$$

$$1 \times 2^2 = 4$$

$$0 \times 2^1 = 2$$

$$1 \times 2^0 = 1$$

197 (decimal)

= 11000101 (binary)

$\dots 1 \times 2^2 \quad 1 \times 2^0$

0xC5 → 0b ?
hex. bin.

C	5
1	1
1100	0101

0xC5 = 0b 1100|0101

0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

$0xC5$ — $0?$
hex. base 8
 octal

$0xC5 \rightarrow 011000101$
 ↓ ↓ ↓
 03 0 5
 octal

0
1
2
3
4
5
6
7

int x = 0xB4;

x << 2 ?

10110100

← 2

1011 0100
==

0x2D0