Fun Fact: There's more than one way to represent a number.

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Decimal: 15 Binary: 1111

Number Systems are specified by their base number.
Decimal is base 10
Binary is base 2

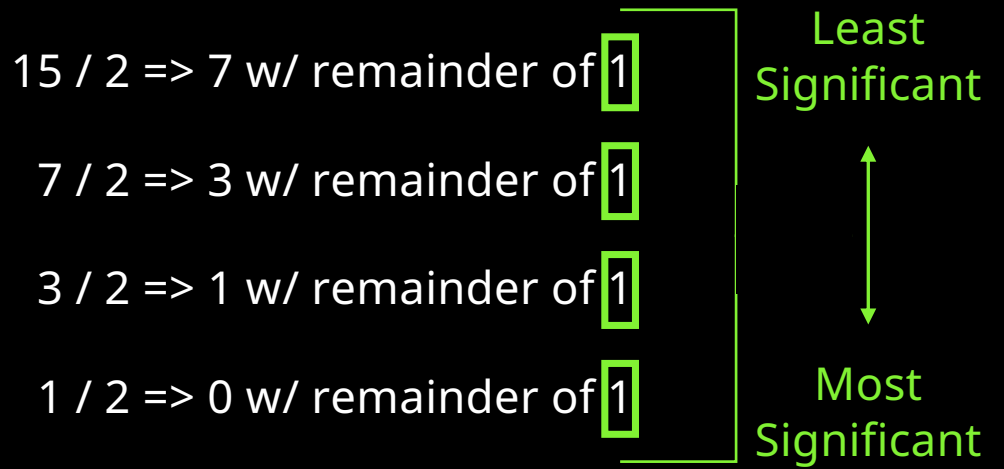
Common Number Systems

Decimal	Binary	Octal	Hexadecimal
Base 10	Base 2	Base 8	Base 16
0 - 9	0 - 1	0 - 7	0 - F (0 – 9 + A – F)

Representing Number Systems in Python

Binary	Octal	Hexadecimal
Prefix 0b	Prefix 0o	Prefix 0x
0b1001	0o7242	0xFF012

Converting the Decimal number 15 to Binary



Binary Number: 1111

Converting back from binary to decimal

Binary Number: 1111

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

Most Significant — Least Significant

$$8 + 4 + 2 + 1$$

$$15$$

Floating-point numbers are stored as binary fractions in memory.

Not all decimals can be represented as binary fractions.

Example: 0.1 can't be represented cleanly

It approximates to something like: 0.1000000000000000055511151231257827021181583404541015625