

# 1 | Digital Logic

## 1.1 | Binary

$$1011010.0 \Rightarrow 1 * 2^6 + 0 * 2^5 + 1 * 2^4 + 1 * 2^3 + 0 * 2^2 + 1 * 2^1 + 0 * 2^0$$

- In binary, 2 conditions could represent all numbers
- Low Voltage  $\Rightarrow 0$
- High Voltage  $\Rightarrow 1$

$$1011010 + 011101$$

Here's a truth table:

Signal A	Signal B	A OR B	A AND B	A XOR B	A NOR B	A XNOR B
0	0	0	0	0	1	1
0	1	1	0	1	0	0
1	0	1	0	1	0	0
1	1	1	1	0	0	1

## 1.2 | Logic gates

**OR Gates:** a mystery?

## 1.3 | Binary Operations

- $A+B \Rightarrow \{A \text{ XOR } B \Rightarrow \text{ones digit}; A \text{ AND } B \Rightarrow \text{carry digit}\}$