

Max's Binary Bits: A Computing Adventure

Learning objective: To understand the fundamentals of binary code and how computers use bits to represent information.

Read each flashcard to learn how Max the monkey solves math puzzles using binary. Test yourself by covering the answer side and seeing if you can recall the definition or the binary conversion.

What is binary code?

A number system that uses only two digits, 0 and 1, to represent all data in a computer.

What does a '0' represent in a binary circuit?

The 'Off' state, meaning no electrical current is flowing.

What does a '1' represent in a binary circuit?

The 'On' state, meaning an electrical current is flowing.

What is a 'bit'?

The smallest unit of data in a computer, which is either a single 0 or a single 1.

What is the name of the standard number system we use every day (base-10)?

Denary (or decimal).

Why do computers use binary instead of denary?

Because it is much easier for computer hardware to detect two states (on or off) using electricity.

In an 8-bit sequence, what is the value of the first position (the right-most bit)?

1 (as binary uses powers of two: 1, 2, 4, 8, 16, 32, 64, 128).

Convert the binary number '00000001' into denary.

1

Convert the binary number '00000010' into denary.

2

Convert the binary number '00000100' into denary.

4

If Max has an 8-bit sequence, what is the largest number he can represent with all '1's?

255 (128+64+32+16+8+4+2+1).

What is a 'byte'?

A group of 8 bits working together.