How Computers Store Letters, Numbers and Pictures

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Everything is Really Just 1s and 0s

Inside every computer, there is no actual text, numbers or pictures. Instead, everything is stored as tiny switches that are either **on** or **off**. We write these as **1** for on and **0** for off. This system is called **binary code**.

Your computer uses billions of these tiny switches to remember and display everything you see. When you type the letter 'A' on your keyboard, the computer doesn't save a picture of the letter. Instead, it saves a special pattern of 1s and 0s that means 'A'.

Think of it like a light switch in your bedroom. When it's on, that's a 1. When it's off, that's a 0. If you have 8 switches in a row, you can make 256 different patterns. Your computer uses these patterns to represent every letter and number.

How Letters Get Stored

The computer uses a special code called **ASCII** (American Standard Code for Information Interchange). This code gives every letter, number and symbol its own unique pattern of 1s and 0s. For example, the letter 'A' is always the same pattern: **01000001**. The letter 'B' has a different pattern: **01000010**.

When you type or copy text, the computer quickly converts each letter into its code and stores it. When you open the file later, the computer reads the code and shows you the letters again. This happens so fast that you never notice it happening.

How Numbers Are Stored

Numbers work in a similar way. The number **1** might be stored as **00000001** and the number **2** as **00000010**. The computer can use these patterns to do maths really quickly, which is why computers are so good at calculations.

How Pictures Are Stored

Pictures are trickier. A photograph is broken down into millions of tiny dots called **pixels**. Each pixel has a colour, which is also stored as a pattern of 1s and 0s. The computer remembers the colour of every single pixel, and when it shows you the picture, it paints all those pixels on your screen in the right places.

Think of it like a mosaic made from coloured tiles. If you zoom in very close, you see individual tiles. But when you step back, the tiles blend together to make a picture. Your computer screen works the same way with pixels.

The more pixels and the more colours you use, the bigger the file needs to be, because there's more information to store. This is why a high-quality photo takes up much more space than a word document.