

Binary format | Part A

Data is knowledge, as simple as that.

It is made up of answers to the questions we asked about something, let's say about an elephant. When you think 'elephant', you see a copy of that elephant that is stored in your brain, it is an imprint, a trace, an analogue of an elephant. Our writing and art are all analogues of actual and imagined objects.

Once you know enough about something you start seeing patterns, and then you start separating your knowledge into categories.

Imagine, instead of describing a woolly mammoth from scratch I told you it is from the same category as an elephant, except with hair. If I numbered all the animals in the world and an elephant was number 57 and if I said hairy animals were 1 and bald animals were 0, I could describe an elephant as 57/0 and woolly mammoth as 57/1. There, I've digitised them, turned them into numbers, into digital information, into data. Libraries do that to book titles – by converting them to shelf and location numbers, while IKEA does that to their self-pick-up furniture.

Here we have an analogue computer – called abacus. These beads slide along the strings and depending on which position a bead is in, it will be counted as a number or as a zero. Clever, isn't it?

But computers don't have surfaces, beads or strings, so we need a different approach. Let's take a side step and recall how computers operate.

Computers run on electricity. In some ways, a computer is just a clever set of on and off switches that use the flow of electrons to control and represent information.

Imagine a circuit with a button on one end and a speaker on the other. When the button is pressed, electrons flow to the speaker and it produces a beep – this is how Morse code works. Computers don't really have ears though, they communicate silently and they only work with numbers, so these electrons sliding down the circuit are like abacus beads and we can use their flow and position to represent numbers.