



What Goes On Inside

To set up a complete computer system and make it ready for use, it is necessary to connect several units together. The silicon chips that make the home computer possible are packed inside the case, usually under the keyboard. Take the lid off and these are the main components you'll find

numbers. For instance, if we want to make a computer produce music, then we certainly wouldn't expect to have real sounds floating inside it; instead we would describe each note of the scale by a number that is proportional to its pitch or frequency. We can arrange for the computer to send the electrical signals that it uses to represent numbers to a loudspeaker instead of a television screen so that we can hear the results. How do we make a missile shoot across the screen towards the oncoming Space Invaders? Merely move some numbers, which represent a missile shape, from one place to another in the part of the computer's memory that acts as a 'map' of the television screen. Pictures, movement, colour, sound can all be given a suitable number code so that the computer can manipulate them, and a suitable 'transmitter', like a television or a loudspeaker, to turn them back into signals that have meaning for us.

So the final answer to the original question "What is a computer?" must go something like this. It is a machine that stores electronic signals that represent numbers. Some of these numbers are instructions that tell the computer what to do with the other numbers. It will follow these instructions, exactly, without tiring, without making mistakes (though it will faithfully reproduce our own programming mistakes) at the rate of many thousands of operations per second. The end result of these tireless manipulations is yet more numbers. These are 'translated' into the information we want, in a form we can understand. It is the activity of human programmers that makes the computer useful, by exploiting its dexterity with numbers to perform tasks that are meaningful to us; taking in information in various forms and transforming it in ways that would otherwise be too tedious, time consuming or complex.