

The  
Story  
of

# COMPUTER



Benita Sen

## From the Desk of Dr R K Pachauri

We live in a world where our concept of a good life is defined largely by the extent to which we have access to and use of a range of goods and services. We also see all around us a substantial expansion of the means by which transportation and communication make it possible for us to achieve mobility across space and gain access to information and knowledge in very short periods of time which were unimaginable several decades ago. We are living in a period of unprecedented change with major implications for the environment.

A large range of human activities have resulted in damage and degradation of our ecosystems. The Working Group-I Report which forms part of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which was released in September 2013 has clearly stated “Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since recent past. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-twentieth century”. The term extremely likely applies to a probability of over 95 percent, which should provide compelling evidence to human society that we need to reduce the emissions of greenhouse gases in order to stabilize Earth’s climate.

In particular, the youth of the world who have their lives ahead of them need to take the lead in ensuring that firstly we create awareness on the scientific reality of climate change and secondly in mobilizing action to deal with this challenge. “The story of” series deals with subjects like food, paper, cloth, computers, home, and transport. Essentially we human beings have become addicted to consuming a range of products and then throwing them away for a variety of reasons, often not even dictated by the economic life of the product involved, but for other reasons which essentially constitute our current lifestyles and are part of the inertia in our systems which inhibit change and the adoption of new directions. The youth of the world are in a unique position to make use of existing knowledge and make contributions to the protection of our ecosystems throughout their future. They have to become agents of change by conquering the inertia in our minds and established systems.



**R K Pachauri**

Director-General, TERI

Chairman, Intergovernmental Panel on Climate Change

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**Author:** Benita Sen

**Publishing Head:** Anupama Jauhry

**Editorial and Production Teams:** Nandita Bhardwaj, Rupak Ghosh,  
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# WHAT IS A COMPUTER?

Once upon a time, when there were fewer gadgets around us, it was easier to say what a computer is, and what is not! The word "computer" comes from the Latin word *computare*, which means "to count". Initially, computer didn't mean a machine, but a person who calculates! It was only from 1897 that computer meant a machine that calculates!

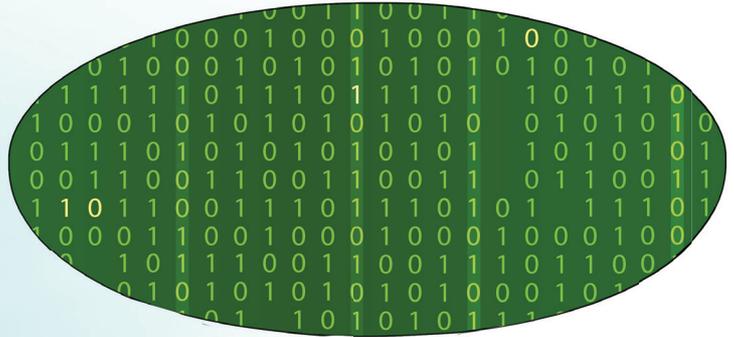
A tablet with a blue screen. The text on the screen reads: **BIT OF DATA**  
Did you know the term "computer" is an abbreviation for "Common Operating Machine Particularly Used for Trade, Education, and Research"?

Today, a computer is defined as an electronic machine that can store and work with large amounts of information. Inside it lies the microprocessor (the central processing



unit), which acts as the “brain”. To perform different tasks, a computer can contain more than one microprocessor.

The power of a microprocessor is measured in “bits”. “Bit” is the short form for binary digits. Higher the number of bits, greater the amount of information a computer can handle. Bits are almost always bundled in collections of eight. Eight bits make one byte.

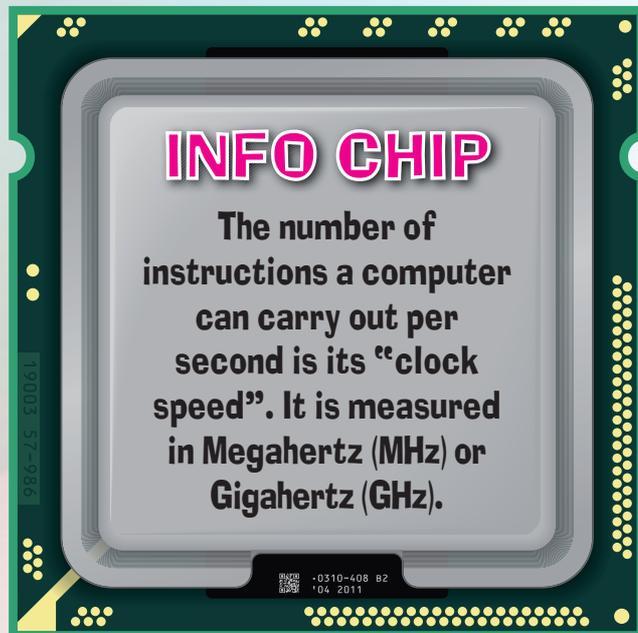


Close-up view of a computer screen with binary code on it.



Computers use a special code, called binary code, to work. It consists of just two symbols – 0

and 1. In other words, everything a computer does is based on 0s and 1s.

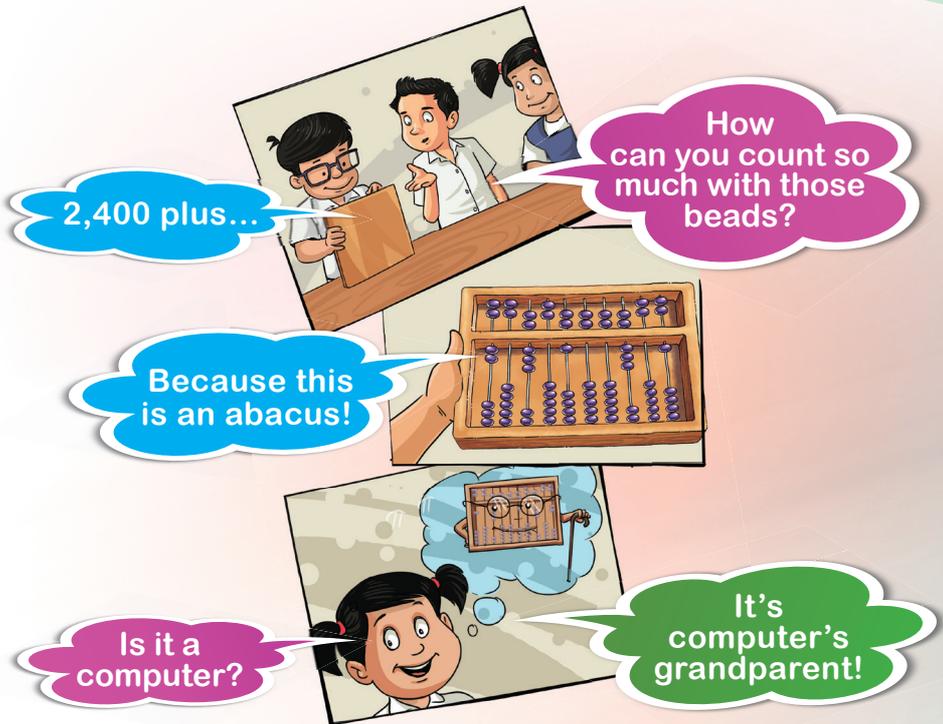


A computer can only do things it has been instructed to do. These instructions are known as computer programmes. These programmes are usually created by a computer programmer.



# YESTERDAY'S COMPUTERS

One of the oldest calculating devices is the abacus. It was invented over 4,000 years ago! Also called a counting frame, it consists of parallel rods, along which beads are moved up and down.



In 1642, thousands of years after the first abacus, a French mathematician, Blaise Pascal, invented a machine, called *Pascaline* or the *Arithmetic Machine* to help his father carry

out calculations for taxation. It had eight dials, which were moved by hand to do addition and subtraction.

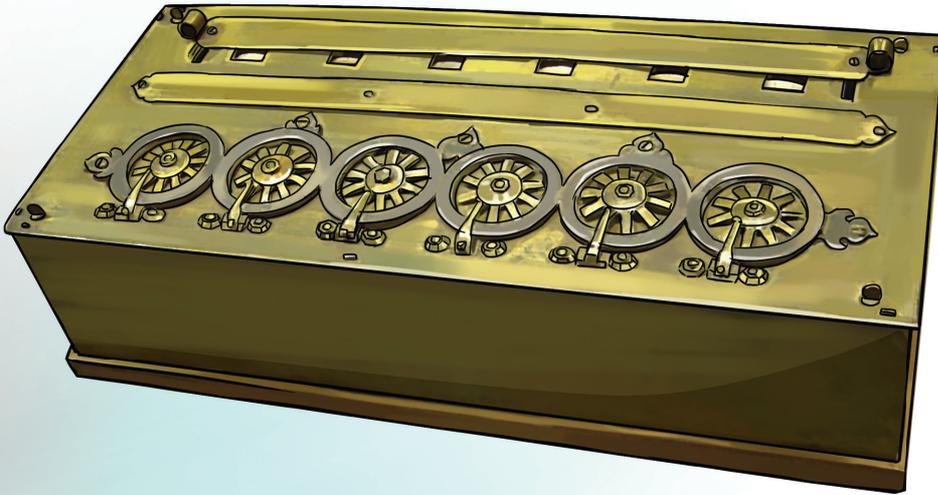
In 1820, Charles Xavier Thomas de Colmar, another

**BIT OF DATA**

The Z1 was a computer built in the 1930s by Konrad Zuse, a German inventor. It was one of the first to use binary calculations and run on electricity.

The image shows a tablet with a blue screen. The text on the screen is in white and green. The title "BIT OF DATA" is in green. The rest of the text is in white. The tablet has a black border and a small blue dot at the bottom center.





Pascal built 50 more *Arithmetic Machines* over the next 10 years for business purpose.

French mathematician, built a machine that could add, subtract, multiply, and divide. Because it performed these simple arithmetic calculations, it was called the *Arithmometer*.

In the 1800s, Charles Babbage, an English mathematician,

wanted to design a machine that could perform long calculations. So, he built the *Difference Engine* that could carry out a whole series of calculations! Few years later, Babbage designed – but did not build – the first computer, called the *Analytical Engine*. This is why Babbage is known as the “father of computing”.

A graphic of a computer chip with a central text box. The text box has a pink and white border and contains the following text:

**INFO CHIP**

In 1617, John Napier, a Scottish mathematician, invented the Napier's bones. These were a set of square columns that helped perform multiplication and division.

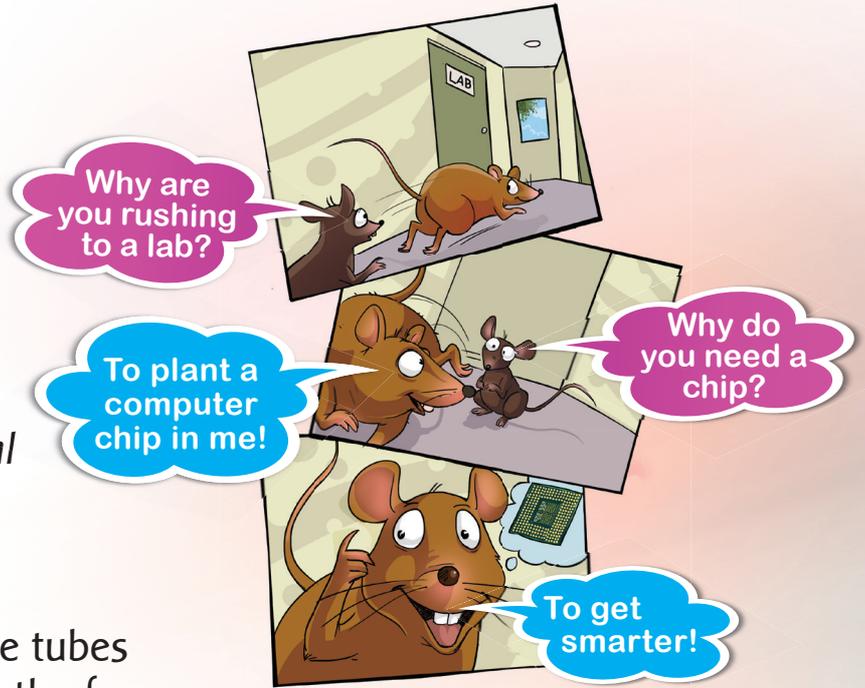
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# TODAY'S COMPUTERS

The first computers were really huge. For example, the *Harvard Mark I*, built in 1944, weighed about 4,500 kg! A year later came the *Electronic Numerical Integrator and Computer (ENIAC)*. It contained 17,468 vacuum tubes. These tubes increased the strength of electric signals and could also stop and start the flow of electricity. However, they warmed up fast and broke down frequently. So, the search began for something better.



In 1947, vacuum tubes made way for transistors. Transistors were smaller, cheaper, and gave out almost no heat. The next important invention in computer technology was the integrated circuit, or the semiconductor chip, which contained a large number of transistors.

**BIT OF DATA**

The biochip contains parts of a gene taken from a plant or an animal. It can be used to study illnesses.

In the 1970s, Ted Hoff of Intel invented a chip that



# The Story of Computer (Recycle or reuse computers! Help to keep the environment clean and green)



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