

# Generation of IBM



Computer hardware

- A personal computer is a set of technical electronics in a single hardware system. Accepted all the devices that are part of the PC share by function into two parts: the system unit and peripherals.

# Some Milestones of Information Technology

- *The Abacus*. A counting aid, may have been invented in Babylonia in the fourth century B.C. Not an automatic device, but rather a memory aid for intermediate calculations. Very used in China and Japan
- In 1623 **Wilhelm Schickard** (1592- 1635) built the first mechanical calculator. Capable of working with six digits, and carry digits across columns. Did not make it beyond the prototype stage.
- In 1642 **Blaise Pascal** (1623-1662) built a mechanical calculator with the capacity for eight digits. It had trouble carrying its computations as its gears tended to jam.
- In 1670 **Gottfried von Leibniz** (1614-1716) built a mechanical calculator capable of multiplication and division.
- **Charles Babbage** (1791 – 1871) conceived the *Difference Engine* which was a special-purpose digital computing machine for the automatic production of mathematical tables.
- Babbage working with **Ada Lovelace** (daughter of Lord Byron) also designed the *Analytical Engine* which was to have been a general-purpose mechanical digital computer with a memory store and a central processing unit.



- **Herman Hollerith** (1860-1929) devised a system of encoding data on cards through a series of punched holes. Hollerith's machine, used in the 1890 U.S. census, "read" the cards by passing them through electrical contacts.
- In 1935 **Alan Turing** (1912-1954), invented the principle of the modern computer: the *Universal Turing Machine*. It is an abstract digital computing machine consisting of a limitless memory and a scanner that moves back and forth through the memory, symbol by symbol, reading what it finds and writing further symbols.
- **John Von Neumann** (1903-1957) worked the concept of *stored-program*, *general-purpose* electronic computing, including the possibility of allowing the machine to modify its own program in useful ways while running.
- *Semi-conductor Transistors* were invented by **John Bardeen**, **Walter Houser Brattain**, and **William Bradford Shockley** at Bell Laboratories in December 1947. They were awarded the Nobel Prize in physics in 1956. Transistors function switches: devices for making or breaking an electric circuit, that is, for choosing between several states, between "on" and "off", "1" or "0".
- *Integrated Circuits* were first conceived by **Geoffrey W.A. Dummer** of the Royal Radar Establishment of the British Ministry of Defense in 1952. They were first manufactured independently by two scientists: **Jack Kilby** of Texas Instruments on February 6, 1958 and **Robert Noyce** of Fairchild Semiconductor (Silicon) on April 25, 1961. They consist of at least two interconnected semiconductor transistors, as well as passive components like resistors, assembled on a thin chip. They are used to build microprocessors which are the Central Processing Unit (CPU), that is, the part of a computer that interprets and carries out the instructions contained in the software.

The computer is a universal electronic device that is required to search for, collect, store and use information. The concept of COMPUTERS was introduced in 1946 by American **John Von Neumann**.

The main component of a PC is:

- • Central processing unit;
- • Input device;
- • Storage device;
- • Output device.



- The CPU performs all calculations and information processing. Processor, consisting of a single integrated circuit called a microprocessor. In more complex systems processor consists of a set of integrated circuits.
- The input device is used to enter information into your computer.
- The storage device is intended for storage of programs, data, results of work.
- The output device is used to retrieve the individual performance.

# 4 basic COMPUTER generation

COMPUTER generation	CHARACTERISTICS			
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>
Years of	1946-1958	1958-1964	1964-1972	1972 - now
Main element	Electronic lamp	Transistor	integrated circuit	large integrated circuit
The Number IBM of worldwide	Dozens	Thousands	Tens of thousands	Millions
Throughput (transactions per second)	$10^3$ - $10^4$	$10^4$ - $10^6$	$10^5$ - $10^7$	$10^6$ - $10^8$
Media information	Card, Punched Tape	Magnetic Tape	Disc	Flexible disc and laser disc
Size of IBM	Large	Significantly less	Mini-IBM	Macro-IBM

## The fifth **COMPUTER** generation

- "The fifth" — nanotechnology. Computers on the basis of individual molecules or even atoms. Neural networks, modeling the structure of the human nervous system. "Biological computers".