

History of computer essay



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History of Computer Introduction Man's progress is measured by sophistication of his tools. First, he discovered how to control fire. Eventually, he invented the wheel. He built boats and learned to harness the wind. As soon as commerce developed in the early societies, people recognized the need to calculate and keep track of information. They soon devised simple computing devices and bookkeeping systems to enable them to add, subtract, and simple record transactions. Today, we are witnessing rapid technological changes taking place on a broad and scale.

However, many centuries elapsed before genealogy was sufficiently advanced to develop computers. Without computers, man with technological achievements of the past decade would not have been possible. ANCIENT TIMES Shells, chicken, bones, or any number of objects would have been used but the fact that the word calculate is derived for " calculate". The Latin word for small stone, suggests that pebbles or heads were arranged to form the famous abacus, the first man-made computing device. Early man also invented numbering systems to enable him to compute with ease for sums greater than 10.

Decimal numbering system (Hindu-Arabic influence) uses specific digits representing from 0-9. 600-1900 Blaise Pascal (French Mathematician) invented an adding machine in 1642. The machine adopted partly the principles of the abacus but did away with the use of the hand to move the beads of counters instead, Pascal used wheels. Pascal's machine was one of the first mechanical calculating machines. Gottfried Wilhelm Von Leibniz (1674) made improvements on Pascal's machine, It was possible to divide

and multiply as easy as it could add and subtract. Joseph Jacquard invented the mechanical loom.

With the use of cards punched with holes, it was possible to weave fabrics in a variety of patterns. Charles Babbage, an English Mathematician foresaw a machine that could perform all mathematical calculations, store value in its memory, and perform logical comparisons among values and called it “Analytical Engine”. Babbage analytical engine was never built due to the absence of electronics. Herman Hollering working with Census Bureau in 1890 adopted the punched card concept of Jacquard. Census data were translated into a series of holes in a punched card to represent the digits and the letters of the alphabet.

It was then passed through a machine with a series of holes in the punched cards. These different combinations of off/on situations were recorded by the machine and represented a way of tabulating the result of the census. The code developed by Hollering is still being used today. This is the code on the computer punched cards or paper tapes of telex machines. It is called the Hollering code, a fitting tribute to the man who provided the impetus to modern data processing. 1900-1945 Howard Keen of Harvard thought the technology in 1937 was then right to implement Babbage’s concept.

With the combined efforts of his colleagues in Harvard and MOM, the Automatic Sequence Controlled Calculator (MARK I) was finished in 1944. MARK I could perform division, multiplication, addition and subtraction in a specified sequence determined by the setting of the switches. It typed its answers on a typewriter connected to it or on punched cards after a few

seconds and contained more than 3, 000 electromechanical relays and weighted 5 tons. John P. Cocker and John W. Macaulay (University of Pennsylvania) built a machine using electronics to do rapid calculations of large quantities of information.

It should be remembered that about this time the US was involved in WWI. In the war efforts, they had to use cannons. For cannons to be effective, these should be pointed correctly to hit their targets. This involved using a table of trajectory to ensure the accuracy of the shots. Weather affected strategic and tactical plans of the military. Meteorological information had to be evaluated carefully and precisely. This also involved many calculations. And because weather changed quite fast, calculations had to be made as fast as so that the results would be relevant.

For these considerations, the army built MANIAC (Electronic Numerical Integrator and Computer). 1946-1960 The MANIAC was the first electronic digital computer. It was completed in 1946 at the Moore School of Electrical Engineering of the University of Pennsylvania. The MANIAC had no moving parts. It was programmable and had the capability to store problem calculations. It could add in 0. 2 of a millisecond or about 5, 000 computations per second. It occupied 1, 500 sq Ft of floor space and could process only one program or problem at a time. Remington Rand (1950) manufactured the first commercially available first generation computer.

It was named UNIVAC I (Universal Automatic Calculator). It could calculate 10, 000 additions per second. In 1957, the International Business Machines Corporation (IBM) developed its own first generation computer called IBM

704 which could perform 100, 000 calculations per second. THE AGE OF THE TRANSISTORS In The late sass's transistors were invented and quickly replaced thousands of vacuum tubes used in electronic computers.

Transistor-based computer could perform 200, 000 to 250, 000 calculations per second: The transistorized computer represents the second generation of computers.

It was until the mid sass's that the third generation of computers came into being. These were characterized by solid-state technology and the integrated circuitry coupled with extreme miniaturization. In 1971 , the fourth generation of computers were characterized by further miniaturization of the circuits, increased multi-programming (the concurrent execution of two or more programs by a computer), and by virtual storage memory (secondary storage devices such as disks and tapes are treated as an expanded part of the computer's main memory).

The rate of growth of computers had surpassed all expectations. Now, in sass's the fifth generation computers are operating at spreads of 3 to 5 million calculations per second (for small scale computers) and 10-15 million instructions per second (large computers). THE AGE OF MICROCOMPUTERS The age of microcomputers began in 1975 when a company called MITTS introduced the ALTAIR 8800. It was a computer which one programmed by flicking switches on the front. It came as kit and had to be soldered together. It had no software programs.

But it was a personal computer available to the consumer for a few thousand dollars when most companies were charging tens of thousands of dollars.

Several companies tried to imitate the ALTAIR 8800 but in 1977 both Commodore and Radio Shack announced that they were going to make personal computers. They did, and trotting along right beside them were Steve Jobs and Steve Wozniak who invented their computer in a garage while in college. Mass production of APPLE began in 1979, and by the end of 1981, it was the fastest selling of all personal computers.

Period Year Person Contribution
1642 Blaise Pascal 1st Mechanical Adding Machine
1674 Gottfried Wilhelm Von Leibniz Improved Pascal's machine by adding multiplication & division
1804 Joseph Jacquard Mechanical loom
1890 Charles Babbage Analytical engine
Herman Hollering Adapted the punch card
1937 Howard Keen MARK I
1946 John Cocker & John Macaulay MANIAC
1950 Remington Rand UNIVAC
1957 IBM IBM 704 Generation Characteristics
1951-1958 First Used vacuum tubes (about 18, 000 in number, can do calculations of about 10, 000 additions per second).
1959-1964 Second Transistor-based; can perform 200, 000 to 250, 000 calculations per second
1964-1971 Third Solid state technology and integrated circuit coupled with extreme miniaturization
1971 -present Fourth Increase multiprogramming and virtual storage memory
Onward Fifth Information Superhighway (focus is more on connectivity, that permit computer users to connect their computers to other computers).
What is a computer? An electronic device designed to manipulate data so that useful information can be generated.
Data processing machine or other words a machine for the manipulation of symbols.

These symbols represent information of various kinds, a number or a name. Often compared to the human brain. Like the computer that devised it, a

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computer can take in data and process it. It could store the data either in a raw form or in the form of processing results and can deliver the raw or processed data to the outside world on demand. Human brain can think and make decisions for itself while the computer can only perform its feats when it has been instructed or programmed to do so. And the instruction it receives must be prepared, using the organization and problem solving abilities of the brain.