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Computers

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Computer is an electronic device that can receive a set of instructions called program and then carry them out. The modern world of high technology could not be possible without computers. Different types and sizes of computers find uses throughout our society. They are used for the storage and handling of data, secret governmental files, information about banking transaction sand so on [1].

Computers have opened up a new era in manufacturing and they have enhanced modern communication systems. They are essential tools in almost every field of research, from constructing models of the universe to producing tomorrow's weather reports. Using of different databases and computer networks make available a great variety of information sources [2].

The first computers were developed during the Second World War to break the codes or send secret information. They were also used to do calculations for the first atom bomb. Generally, all that computes do is calculate. They turn numbers into pictures, words and sounds. The Japanese have already created the device which responds to human language.

Computers have opened a new era in many spheres of life, especially in manufacturing and communication systems. The word “computer” was first used in 1613 in a book, written by English writer. It referred to a person, who carried out calculations. Soon the first mechanical calculator was invented by Blaise Pascal. However, the actual father of the first

recognizable computer was Charles Babbage. In the first half of the 19th century he created a fully programmable mechanical device. The sophisticated analog computers appeared in the 20th century. First functional computer was called Z1 and was created by Konrad Zuse [3].

Unlike the analog computer, which operates on continuous variables, the digital computer works with data in discrete form – i.e. expressed directly as the digits of the binary code. It counts, lists, compares, and rearranges these binary digits, or bits, of data in accordance with very detailed program instructions stored within its memory. The results of these arithmetic and logic operations are translated into characters, numbers, and symbols that can be easily understood by the human operator or into signals intelligible to a machine controlled by the computer.

Digital computers can be programmed to perform a host of varied tasks. The hybrid computer combines the characteristics and advantages of analog and digital systems; it offers greater precision than the former and more control capability than the latter. Equipped with special conversion devices, it utilizes both analog and discrete representation of data.

Computer memory is a physical device that is used to store such information as data or programs (sequences of instructions) on a temporary or permanent basis for use in an electronic digital computer. The memory of a typical, digital computer retains information of this sort in the form of digit 0 and 1 of the binary code. It contains numerous individual storage cells, each of which is capable of holding one such binary digit (or "bit") when placed in either of two stable electronic, magnetic, or physical states corresponding to 0 and 1 [4].

Most digital computer systems have two levels of memory – the main memory and one or more auxiliary storage

units. Besides the main memory, other units of the computer (e.g., the control unit, arithmetic- logic unit (ALU), and input / output units) also use transistor circuits to store electronic signals. The flow of electric current through the transistors in memory units is controlled by semiconductor materials.

Semiconductor memories utilizing very-large-scale integration (VLSI) circuitry are extensively used in all digital computers because of their low cost and compactness. Composed of one or more silicon chips only about a quarter of an inch in size, they contain several million microelectronic circuits, each of which stores a binary digit. Semiconductor memories provide great storage capacity but are volatile, i.e. they lose their contents if the power supply is cut off [5].

A computer must be given instructions in a “language” that it understands – that is, a particular pattern of binary digital information. On the earliest computers, programming was a difficult, laborious task, because vacuum-tube ON-OFF switches had to be set by hand. Teams of programmers often took days to program simple tasks such as sorting a list of names. Since that time a number of computer languages have been devised, some with particular kinds of functioning in mind and others aimed more at ease of use – the “user-friendly” approach. Unfortunately, the computers own binary-based language, or machine language, is difficult for humans to use. The programmer must input every command and all data in binary form, and a basic operation such as comparing the contents of a register to the data in a memory-chip location might look like this: 1100101000010111 11110101 00101011. Machine-language programming is such a tedious, time-consuming task that the time saved in running the program rarely justifies the days or weeks needed to write the program [6].

Computers are very useful and necessary in our lives. I think that a computer is the very important machine.

References:

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