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MICROPROCESSOR SYSTEMS AND THEIR ORIGIN

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Abstract: *A microprocessor is the central computing device of any computer that performs all the basic computing and control functions. The processor is usually located on a single silicon chip. Microprocessors are used in a variety of devices, including engine control systems, environmental control systems, home appliances, video games, fax machines, copiers, and more.*

Key words : *microprocessor, computing device, information, storage, algebraic and logical operations, arithmetic-logical unit, RAM , ROM , CPU .*

INTRODUCTION:

The CPU performs three functions:

- controls the operation of the system;
- performs algebraic and logical operations;
- stores data (or data) during processing.

The processor works in conjunction with other chips, particularly chips that interface with random access memory (RAM), read-only memory (ROM), and input/output (I/O) subsystems.

A key process in the development of increasingly powerful microprocessor chips is known as microlithography. In this process, the circuit is laid out by a computer, and then the individual circuits are scaled down to 1/100th the size of a human hair. Early miniaturization techniques called large-scale integration (LSI) led to the production of

the first generation of 256 KB memory chips (remember that such a chip actually has a memory capacity of 262,144 bits, where each bit is a binary 0 or 1). Today, very large scale integration (VLSI) can produce chips containing more than a million transistors.

The first microprocessor systems were created in the early 1970s. They were simple and primitive by today's standards, but they were immediately used in the automotive industry, where they were used in engine management and automatic braking systems. Today, microprocessor systems are used in a wide variety of applications, from personal computers to washing machines!

A block diagram of a typical microprocessor system is shown below. (Figure 1)

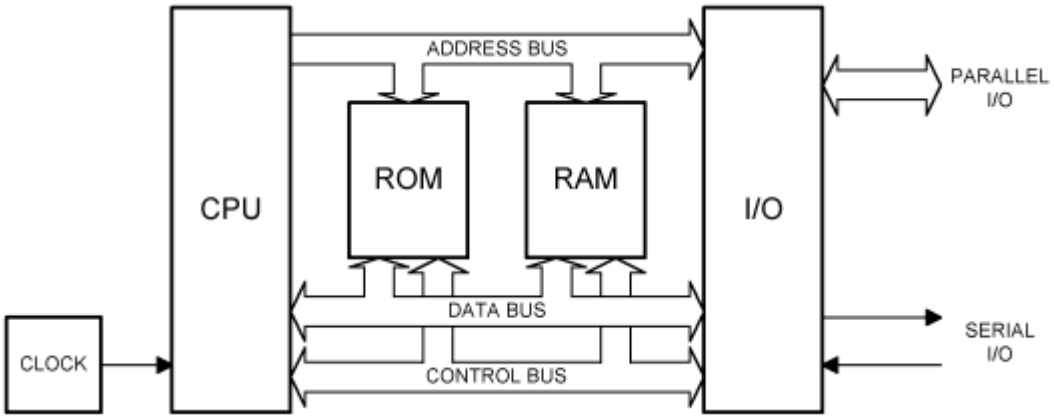

Figure 1. General scheme of the central processor.

The central processing unit (CPU) is usually the microprocessor itself. This device includes the following main blocks:

- storage locations (called registers) that can be used to store instructions, data, and addresses during processing.
- an arithmetic logic unit (ALU) that can perform various arithmetic and logical functions (such as comparing two numbers)
- a control unit that receives and generates external control signals (such as read and write) and provides timing signals for the entire system.

To ensure that all data flows in the system are orderly, all data transfers must be synchronized using a clock signal. This signal is often generated by a clock circuit (similar to the clock in a digital clock, but much faster). To ensure accuracy and stability, the clock circuit is usually based on a miniature quartz crystal.

All microprocessors require read/write access to memory, where data (such as calculation results) can be temporarily stored during processing. Although some microprocessors (often called microcontrollers) have their own small read/write memory, this is usually provided by semiconductor random access memory (RAM).

Microprocessors typically require more non-volatile storage for control programs and, where necessary, operating systems and high-level language interpreters. This is usually achieved using solid state read-only memory (ROM).

To perform any useful function, a microprocessor system must have communication with the outside world. They are usually represented by one or more

VLSI devices that can be configured under software control and are therefore considered programmable. Input/output (I/O) devices fall into two main categories; parallel (when one byte is transmitted over eight wires simultaneously) or sequential (when one byte is transmitted over one wire one bit after another).

The main components of a microprocessor system (CPU, RAM, ROM, and I/O) are connected to each other using multiple connections known as buses. The address bus is used to specify memory locations (such as addresses), the data bus is used to transfer data between devices, and the control bus carries timing and control signals (such as reads and writes, resets and interrupts) is used to provide system).

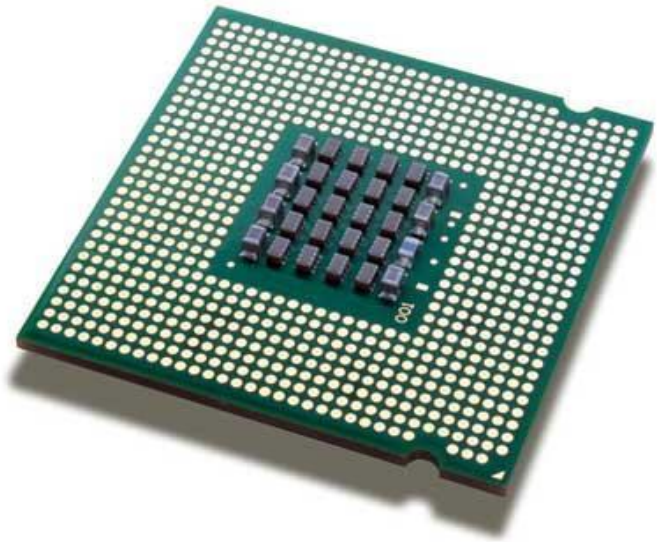

Figure 1.1. Contacts of the line grid area of the processor.

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REFERENCES

1. Tokhirova Sarvinoz Gayratjon kizi, & Siddiqov Murodali. (2023). NATIONAL ECONOMY AND ITS MACROECONOMIC INDICATORS. *Best Journal of Innovation in Science, Research and Development*, 152–156. Retrieved from https://www.bjisrd.com/index.php/bjisrd/article/view/980
2. MILLIY IQTISODIYOT VA UNING MAKROIQTISODIY KO‘RSATKICHLARI. (2023). *Journal of Technical Research and Development*, *1*(2), 402-409. https://jtrd.mcdir.me/index.php/jtrd/article/view/81
3. Обухов, В., & Тохирова, С. (2023). МИКРОПРОЦЕССОРНЫЕ СИСТЕМЫ И ИХ ПРОИСХОЖДЕНИЕ. *Journal of technical research and development*, *1*(2), 32-37.

4. Mahmudova, M., & Toxirova, S. (2023, October). MULTISERVISLI TARMOQ XAVFSIZLIGIDA NEYRON TARMOQLARINI O ‘RNI. In *Conference on Digital Innovation:" Modern Problems and Solutions"*.
5. TURANBAYEVNA, K. N., & XUSENOVNA, T. S. (2020). Development of Communicative Didactic Competence of High School Students. *International Journal of Innovations in Engineering Research and Technology*, *7*(12), 45-47.
6. Toxirova, S. (2023). Python dasturida lug’atlar bilan ishlash . *Conference on Digital Innovation : "Modern Problems and Solutions"*. извлечено от https://fer-teach.uz/index.php/codimpas/article/view/1910
7. Toxirova, S. (2023). METHODS OF WORKING WITH SCHOOLCHILDREN WHO CANNOT LEARN. *Conference on Digital Innovation : "Modern Problems and Solutions"*. извлечено от https://fer-teach.uz/index.php/codimpas/article/view/1909