

UNIVERSAL WORKSTATION (DEVELOPER OR STUDENT) FOR RESEARCH (OR STUDY) MICROCONTROLLERS

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In the age of scientific and technological progress, the main emphasis of education should be placed on the development of technical thinking of students. It is necessary to ensure the application of theoretical knowledge in practice. In practice, students will be able to develop the skills they need in the future.

The usage of teaching equipment in the learning process gives the opportunity to consolidate the knowledge gained in theoretical lessons. Laboratory stands allow carrying out works, which are close to real production activities. It gives the learning process a special style and arouses greater interest among students.

In the modern world, electric drive control systems are built mainly on microcontrollers. The microcontroller is a system "on the one chip". At the lowest price, it has a lot of peripheral devices. Microcontroller programming means writing an algorithm using a special programming language and writing it to the controller memory.

The relevance of the topic is due to:

- development of microprocessor technology as control systems;
- the usage of a frequency-controlled electric drive in all industries;
- development of semiconductor conversion technology;
- the need for highly qualified technical personnel;
- the need to use educational equipment in the preparation process of students.

The result of this work is the creation of a training laboratory bench for programming STM32 microcontrollers.

The programming of microcontrollers is a rather specific topic that requires not only theoretical training but also constant practical exercises. It is impossible to learn programming based only on information obtained from all kinds of theoretical sources. Programming skills will not develop without constant practical training.

The result of the work done can be divided into three major stages: theoretical, constructive, and methodical.

At the first stage, the basic information about microcontrollers was considered. An acquaintance with the features of these microcontrollers was carried out. Their main differences from microcontrollers of other companies were mentioned.

The result of the second stage was the creation of a laboratory bench for programming microcontrollers. It houses six microcontrollers. The stand was designed to carry out laboratory work to study the programming of microcontrollers.

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At the third stage, a set of laboratory works was developed. The complex of laboratory works includes six works on programming microcontrollers, which can be carried out on a training laboratory bench using a personal computer. A digital two-channel oscilloscope is used to record signals. Laboratory work allows you to get acquainted with microprocessor technology, to learn the basics of programming.

References:

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