TEACHING THE TOPICS OF PHYSICS ON THE BASE OF SOFTWARE EDUCATIONAL TOOLS

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Abstract: *In the world, the organization of the educational process through independent learning (Simulators), the widespread use of distance learning forms (Moodle, Ilias, Dokeos, etc.), the continuity and practical orientation of learning in an information and educational environment (e-learning), the creative development of students, the development abilities, the development of the process of innovative training for professional activities, the improvement of the methodology for using training software is of great importance. Alignment with the levels of the International Standard Classification of Education (ISCED) adopted by UNESCO; full implementation of the National Qualifications System in the educational process; innovative design of educational content so that trained personnel can take their rightful place in the labor market; division of professional competencies into components; special attention is paid to the creation of new methodological models of teaching and their application in specific educational practices.*

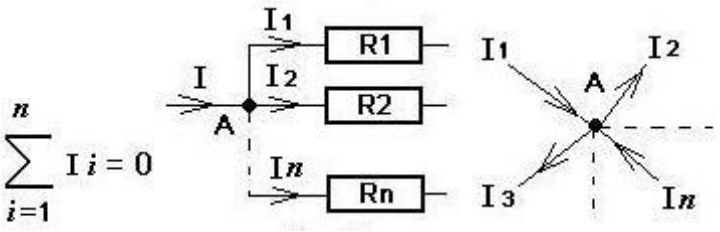
Professionals who develop and customize software are called programmers. They can control the PC through a single line, which includes encoded pieces of data. Several characters in a certain sequence turn on music, send a document to print, or open a specific page on an Internet resource.

The advantages of using models created with the help of computer programs are many, they are financially inexpensive and safe, and students will have the opportunity to see the experiments several times, as well as apply the knowledge gained during the lecture in a virtual form. Models created with the help of computer programs are used in lectures, practical and laboratory classes. This is especially convenient for demonstrating physical experiments. The following are examples of physical models developed using the Crocodile Technology software.

The program "Crocodile Technology" also provides opportunities to use modern information technologies in mastering the topics of the physics course, especially when studying the section "Electrodynamics". It is also effective in creating models for electrical engineering course topics, especially those related to electrical circuits. At Crocodile Technology we will show you models designed to highlight the topic of Kirchhoff's Laws.

Kirchhoff's first law

- The algebraic sum of the currents entering the node of the electrical circuit is equal to the algebraic sum of the currents leaving the node, and the resulting value of the current at this point is zero:



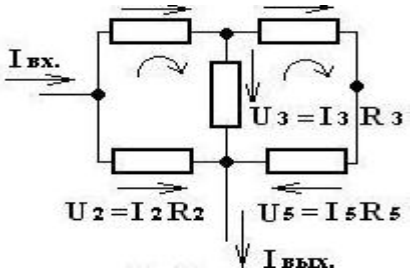
1- picture

Kirchhoff's second law.

- The algebraic sum of the currents multiplied by the corresponding resistances in sections of an arbitrary closed circuit of a branched electrical circuit is equal to the algebraic sum of the AAU in this circuit:

$$\sum_{i=1}^{n} Ei = \sum_{i=1}^{m} Ui = \sum_{i=1}^{m} Ri^{*}Ii$$

$U_1 = I_1 R_1 \quad U_4 = I_4 R_4$



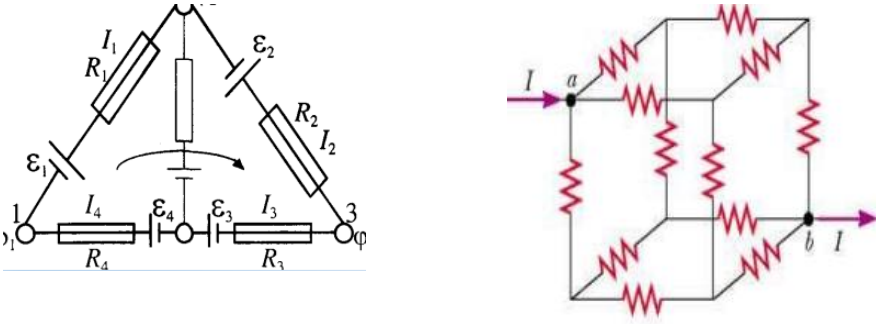
2- picture

In our example, this can be expressed as follows:

$U_1+U_3-U_2=0$ $U_4+U_5-U_3=0$

Also according to Kirchhoff's first law:.

$I_{вх} - I_1 - I_2 = 0$, $I_1 - I_3 - I_4=0$, $I_4 - I_5=0$, $I_2 + I_3 + I_5 - I_{вых}=0$,



3- picture

The program is an electronic constructor that allows you to simulate the process of assembling electrical circuits on the monitor screen, as in real experiments, and measure electrical quantities with a multimeter (3-dimensional), ammeter and voltmeter.

In conclusion, any software is required to perform certain actions. They can be flexible and adjustable or fixed - depending on the needs of the future owner, the system can be adapted to the requirements, universal - suitable for a wide range of different tasks, Complete - filling in the algorithm, no other utilities are required after. cycle is complete. Problem-Based - There is a solution to a problem in a specific domain that needs to be solved with any available software.

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