Materials of Conferences

METHODS OF TECHNOLOGY IN THE TESTBOOK «PROGRAMMING TECHNOLOGIES»

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On the foundation of system analysis a new concept of specialists' training has been developed. It is oriented for mastering way of thought, engineer training of future specialists from the second year of their education. Some chapters of the textbook are also useful for non-programmers.

Intelligence level is defined first of all by a degree of structuring and generality of a man's world model and the degree of mastering this model in his operations. A man's knowledge is not a sum, but a system. Creation of such system that provides for a successful activity in nonstandard situations is the main goal of an education. It isn't enough to read about the system approach in order to master it. It is necessary to solve problems.

Methods and materials. Training for system approach and deductive thinking starts with mastering practical work with functions and structures at examples of creations texts of ordinary instructions, for example, «How to cross a street?». A good text description is: unerring, well-defined, short, its essence must be apprehended quickly. It is formed from general to specific with usage of special sentence constructions – typical elements (typical structures). There is a positive experience of educating non-programmers in accordance with the described method, for example, in development of instructions for employees on carrying out their duties, actions in case of emergency.

As we master the description of a system functioning, we proceed to development of structure of systems. For it there are business games within practical lessons and development of an educative project.

Further we study problems of carrying out early stages of data structures, algorithms and large programmes with usage of analogy methods, morphological synthesis, synthesis on OR-AND graphs, heuristic methods. These methods proved to be effective in generation of ideas of constructing large programmes and program complexes. Approbation of these methods was carried out on tens of projects and program systems that were developed by both authors and graduate year students who worked under their authors' supervision.

Resume. Thus, on the foundation of system analysis a new concept of specialists' training has been developed. It is oriented for mastering way of thought, engineer training of future specialists from the second year of their education. Some chapters of the textbook are also useful for non-programmers.

References

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THE DESIGN PROCEDURE FOR THE TURBINE ROTORS' VIBRATORY CHARACTERISTICS

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The vibrating process, having arisen at the mechanisms' and the machines' operation, is quite able to be told very much on their technical condition. So, properly and competently conducted vibration measurements are allowed to diagnose all these mechanisms' state, sparingly and promptly to be removed many defects produced. The simplified theoretical models knowledge are allowed to the operating engineer to define the units' and the aggregates' individual parts vibratory characteristics, and to judge on the accident – free operation of the unit and the aggregate, or the entire mechanism, as a whole. Let us consider one of such models.

We assume the individual components of the electric motor by the deformable bodies, having united into one mechanical system of the different and the various connections: the rigid, the elastic, and the dissipative ones. For all this, the system's rigid elements and the rigid structures are not allowed the relative linear and the angular displacements and the movements between the bodies, and the elastic connections are allowed the bodies' small movements in one or more directions. For all this, only the geometric dimensions of the units may be changed. We will define the electric motor model by the separate bodies' constant masses and their moments of inertia, and the unchangeable coefficients of rigidity c, and the damping μ, having entered the elements, the structures, and their connections into it. We will consider the vibrations, having arisen in the electric motor's bearings, as the simple linear