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THE ADVANTAGES OF AUTOMATING OF SCHEDULES IN THE MILITARY UNIVERSITIES

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Abstract: As the year passes, we may see the automation of many processes in educational institutions. That is, our students currently studying in all educational institutions mainly pay attention to IT technology, which in turn contributes to the development of technology and science. At the moment, IT technologies are not given much attention in the higher military educational institutions of the Uzbekistan, therefore, many plans for automation in the educational institution are not being implemented. At the same time, we can see that the schedule, which is the main link of the University, is still in the old way. In order to solve this problem, we are working on the automation of the lesson schedule in higher military educational institutions. What exactly we need automation for; we will have it in our article below.

Keywords: Information technology, mathematician, algorithm, informatics, automatic, program, architecture, methodology, Internet, curriculum, plan, scheme.

The rapid development of computer technologies, changes in educational conditions, changes in teaching tools and forms, the expansion of the spectrum of technical tools, as well as the use of large-scale data have led to the development of literature. However, we are witnessing that higher military educational institutions have left behind this system. That is, the specialist employee who prepares the lesson schedule has to come to work early in the morning and prepare the lesson schedule outside of work in the evening. In order to prevent this extremely heavy burden, we set ourselves the goal of developing a system of automating the lesson schedule in higher military educational institutions. Before starting automation, it is necessary to clearly and accurately formulate its requirements. It is necessary to determine which functions should be automated. It should be remembered that the introduction of automated systems often reduces the impact of the human factor on the performance of certain operations. The purpose of the article is to develop and study mathematical, information and algorithmic models, as well as methods, algorithms, software modules and complexes for solving on the tasks of automatic construction of curricula reflect the actual charts of lessons, educational planning and organization, taking into account many demands and wishes [1].

On the one hand, we all know that the quality control and conduct of the educational process in educational institutions depends on the lesson schedule. On the other hand, we face a number of difficulties in creating an automated lesson schedule, namely, the programming language itself is, in short, to reduce the volume of work in a certain area and reduce the time it takes to do it. That is, in the development of the system of automation of the lesson schedule in the Higher Military Educational Institution, as in

all fields, the Python programming language allows us to achieve our goals with the help of a genetic algorithm [2].

We can consider the following new information in the article:

- for the first time, the formalization of the task of creating a lesson schedule is carried out using three types of additional records:
  - mathematical
  - informational
  - algorithmic

Table implementation of models and tasks with the help of computer technology makes it possible to use data structures in the client-server architecture, databases in the computer memory;

- for the first time, it was proposed to separate hard constraints, to determine the physical feasibility of tables for static, which can be considered before the table and should be checked during the process of creating a dynamic table; Algorithms, software modules and data structures for the developed strict verification of restrictions that significantly reduce the cost of computation, the implementation of the main cycles of the search for the optimal table, the processing of the initial data as much as possible;
- a genetic algorithms project based on a consistent local optimization lesson plan, in which the algorithm was first developed and implemented programmatically;
- a general algorithm was proposed and implemented programmatically for the first time

Creating a table using the scheme, using a genetic algorithm that includes an external search circuit, an optimal change of learning units, an algorithm for optimal placement, and an internal search circuit, each learning unit is optimized in a consistent local process [3].

Practical significance of the article:

- demonstrated the effectiveness of the developed formalization methods for complex discrete optimization problems; construction of mathematical, informational and algorithmic models, based on the joint use of set theory, the task of lesson planning, developed methods and algorithms to accelerate computer implementation;
- original program modules developed for the Python programming language, random selection procedures in search engine optimization problems, various distribution laws based on and supported by the Python standard library;
- the initial computational core of the software was developed. Implementation of complex genetic algorithms, including software, using generalized and object-oriented programming programs;
- developed a web-based software package "Automatic Lesson Schedule" with a 3-level architecture that provides important advantages and satisfies everyone's information requests [5].

In automatic planning mode, the program takes into account all the requirements of the developed schedule. In manual planning, the program offers possible options for

organizing the lessons of the selected teacher, possible options for filling in the empty cells in the table, controlling the number of groups, faculties and trainees [4].

The size of the educational institution is not limited. In this system, we can create weekly and monthly schedules, as well as have the opportunity to automatically create training schedules of part-time students, master's degree students. That is, from the development of an automated system that can quickly and without making any mistakes within a certain time, prepare a lesson schedule for all cadets, students and listeners studying at our University, taking into account the wishes and requirements of professors and teachers consists of [6].

The program allows:

- making a schedule for study groups of classes, part-time department, professional development in total at the University;
- creating an optimal lesson schedule based on the requirements of the teachers in the schedule;
- for teachers and students to take into account the days and hours required for classes;
- taking into account wishes for different days of work as full-time employees;
- taking into account the optimal placement of groups (in auditoriums), characteristics of groups, subjects, teachers' priorities;
- entering the class end time and study group rooms into the schedule;
- determining the time of transition (movement) between classes;
- conduct any classes that are easy to connect to streams in any group and faculty (educational groups);
- separate groups (educational groups), foreign language, physical training, laboratory classrooms when conducting classes;
- introduction of combined classes for small groups (for example, "foreign language/ informatics" and laboratory training rooms) in any subjects;
- introduction of special courses and optional subjects (except for basic subjects);
- optimization of uniformity and complexity of the table;
- entering and correcting initial data is easy and fast;
- having any number of table options;
- the ability to automatically change tables when the base is already changed;
- complete databases and table options that are easy to archive, copy and send via e-mail;
- quickly make the necessary corrections to the schedule;
- replacement of temporarily absent teachers;
- automatic management of the schedule, being able to easily manage it everywhere;
- display tables in the form of convenient and visual documents: text, Word, HTML, dBase files and Excel workbooks;
- displaying ready-made tables on local network and Internet pages for public use [7].

In the conclusion of the research, we would like to underline development of algorithms

and programs based on theoretical works, as well as digital experiments solved current scientific and technical problems, creation of effective software tools for compilation, taking into account lesson schedules in automatic mode, which truly reflect many requirements and wishes of universities. Including planning and organization of activities performed the task of solving problems. The developed and implemented digital methods and algorithms allow to solve the problems of creating and forming the best tables, which can be built on the basis of the computing core and information systems of educational management automation institutions.

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