

ABSTRACT

Explanatory note size – 145 pages, contains 48 illustrations, 39 tables, 5 applications, 30 references.

Topicality. In recent years, the digitalization of educational processes has significantly accelerated, bringing to mind applications that integrate electronic grade books and diaries, various learning platforms, and the innovative "Mriya" app. Typically, school timetable creation is still performed manually. Therefore, software for automated timetable generation would be a logical extension of the digital transformation of Ukrainian schools.

The aim of the study. The main target is to enhance the speed of school timetable generation using software based on an evolutionary algorithm.

The object of research: school scheduling software.

The subject of research: methods and algorithms for automating school schedule generation.

To achieve this goal, the **following tasks** were formulated:

- conduct a comparative analysis of solutions to the timetable generation problem;
- analyze methods for improving existing solutions;
- develop a modified algorithm for the timetable generation task;
- create software to implement the proposed solution;
- investigate the performance and efficiency of the proposed approach.

The scientific novelty of the results of the master's dissertation is the development of a modification to the evolutionary algorithm aimed at improving its computational efficiency. This achievement was made possible by improving existing components and introducing new elements into the algorithm's design.

The practical value of the obtained results is the provision of a user-friendly tool for school administrators, enabling them to create school timetables quickly and

efficiently. Additionally, the system supports the inclusion of constraints tailored to the unique requirements of Ukrainian schools, ensuring flexibility and adaptability in its application.

Relationship with working with scientific programs, plans, topics. Work was performed at the Department of Informatics and Software Engineering of the National Technical University of Ukraine «Kyiv Polytechnic Institute. Igor Sikorsky».

Approbation. The scientific provisions of the dissertation were tested at the Seventh International Scientific and Practical Conference of Young Scientists and Students «Software Engineering and Advanced Information Technologies» (SoftTech-2024) – Kyiv.

Publications. The scientific provisions of the dissertation were published in:

1) Chui O. V., Likhousova T. A. School scheduling software powered by an evolutionary algorithm. Materials of the 7th International Scientific and Practical Conference of Young Scientists and Students “Software Engineering and Advanced Information Technologies” (SoftTech-2024). December 20-22, 2024, Kyiv. – pp. 133-137.

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