

## ABSTRACT

Master's dissertation: 105 pages, 17 figures, 37 tables, 2 supplements, 16 sources.

**Topicality:** All modern task scheduling and load sharing systems have a huge number of analogs and implementations for different platforms (Android, iOS, Desktop, etc.) that can be used regardless of the user's location.

The science of enterprise management is constantly enriching the arsenal of its methods and means. The reason for the emergence of mathematical methods was the complication of economics and economic management. Mathematical methods, combined with modern computing in various automated systems, are becoming an extremely important element of financial planning and management in enterprises, industries and interbranch complexes. These methods are increasingly used in the practice and implementation of economic and social development plans. An integral part of this task is the creation of a unified system of optimal task planning based on the widespread use of mathematical methods and computers in everyday life.

Task planning systems in the modern world occupy one of the main roles for the person of the XXI century. A competent allocation of time for a particular cause leads to a successful and correct way to achieve any goal. They all boil down to setting a task and time to complete it, but hardly any additional criteria such as knowledge or skills in a particular task are considered anywhere. For example, in the distribution of tasks, the enterprise should take into account not only the ability of the person to perform the task, but to give this task with the necessary qualifications, skills and desire to perform it.

Thus, systems that allow for the scheduling and allocation of tasks with a large number of side criteria can increase productivity and efficiency and automatically become very demanding in the development, and their implementation is becoming an urgent task everyday.

**Purpose of the study:** The main purpose of this work is to research and develop mathematical and software tools for the development of a system of planning and distribution of problems with many additional parameters.

To achieve this goal, the following tasks were formulated:

- Investigate existing design programs for task scheduling systems;
- Investigate existing load-sharing algorithms;
- Investigate existing methods of setting systems and task scheduling;
- Develop mathematical support for the task scheduling system;
- Develop software for the task scheduling system;

**Research object:** Perform an experimental study of the proposed solutions.

**Object of study:** the process of developing an intelligent task scheduling system in the enterprise

**Subject of research:** methods and algorithms used to optimize the task scheduling system when working with a large number of diverse staff

**Scientific novelty:** research and development work in the dissertation used methods of scheduling tasks with additional parameters, namely the method of multilevel queue Multilevel Feedback Queue.

**The most significant scientific results of the master's thesis are:**

- The method of scheduling methods with additional parameters has been developed.
- Modified the Multilevel Feedback Queue algorithm to solve the problem of finding the best planning solutions.

**The practical significance of the obtained results is** determined by the fact that all the proposed mathematical methods and algorithms are brought to practical implementation within the software used to build a task scheduling system with additional parameters that influence the optimization of the production process.

**Relationship with working with scientific programs, plans, topics:**

**Testing:** The main provisions of the work were reported and discussed at the 3rd All-Ukrainian Scientific and Practical Conference of Young Scientists and Students "Information Systems and Management Technologies" (ISTU-2019)

**Publications:** The materials of the work were published in the abstracts of the international scientific-practical conference "X International Scientific-Practical Conference of Young Scientists" Information Technologies: Economics, Technology,

Education "", as well as within the framework of the All-Ukrainian Scientific-Practical Conference of Young Scientists and Students "Information Systems and Technologies of Management" (ISTU-2019)

**Keywords:**

TASK PLANNING SYSTEMS, TASK PLANNING METHOD WITH  
ADDITIONAL PARAMETERS, MULTILEVEL FEEDBACK QUEUE  
ALGORITHM