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FACTORS OF EFFICIENCY OF MODULAR PROGRAMMING TECHNOLOGY IN C++

The flexibility of software determines its success and competitiveness. Currently, some tasks of IT projects are implemented using the C++ programming language, and the technology of modular programming, which is widespread, allows for improved scalability, easier testing, and simplified code management, enhancing the efficiency of software development [1, 2]. However, the justification for choosing modular programming requires evaluating the effectiveness of this technology. For this purpose, factors of the effectiveness of modular programming technology in C++ are needed.

The aim of the research is to analyze the factors of efficiency of modular programming technology in C++.

This study is based on the results of works [1-4]. Based on an in-depth examination of these sources, an analytical table of the main factors of efficiency in implementing the C++ modular programming paradigm has been developed (Table 1).

Table 1. Main Efficiency Factors of Modular Programming in C++

Factor	Property	Benefit	Potential Risk, Challenge
Code Clarity	Lower, clear support and widespread	Increased support code	Dependence on interfaces and module architecture
Testing	Independent testing of modules	Increased complexity of testing	The need for integrated testing
Management of Changes	Changes in one module do not affect others	Reduced risk	Difficulty in managing dependent modules
Scalability	Easy addition of new modules	Impairment of functionality	Complexity in synchronization and component composition
Development Costs	Lower, savings on re-development	Reduced development costs	Investments in module creation
Use of Modules	Better integration in module architecture	Change in traditional integration	Dependence on technological stack
Reuse of Code	Strict reuse of modules in various projects	Time and resource savings	The need for unification and standardization

Expanding the description in the context of Table 1 will justify the efficiency evaluations of modular programming as a software development technology. As we see, each factor (Table 1) plays an important role in determining the efficiency of creating software products, with modular programming showing significant advantages in all these areas.

In light of the presented information, it can be stated that modular programming not only simplifies each stage of development from planning to testing and support but also makes significant improvements in the quality of the final software product. This makes the technology of modular programming an integral part of modern software development, ensuring not only efficiency but also adaptability to changing market requirements and conditions. Understanding the importance of the modular approach and its proper implementation is key to success in software development.

The paper analyzes the main factors of efficiency in C++ modular programming. The results obtained can be used to evaluate the efficiency and justification of modular programming technology for implementing IT projects. According to the authors, this represents a valuable tool for improving software implementation processes.

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