# Construction of a Multiple Choice Exam Program and Educational Support

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***Abstract*—This thesis focuses on the development of a multiple choice exam program and educational support system for high school students preparing for important exams. The system aims to enable independent and effective review, making learning easier and more efficient. It also assists teachers in creating exam questions and tests more easily. The author highlights the theoretical understanding of .NET technology and C# programming, as well as practical application in completing initial requirements. However, the program is noted to be simple and lacks comprehensive coverage and optimized error handling. The author suggests future development in web application form, with a more complex user interface and data import capabilities.**

***Index Terms*—multiple choice exam, educational support, C#, .NET, UML, database management**

## I. Introduction

In today's world, information technology plays a crucial role in various industries and fields such as economics, medicine, and industry, gradually becoming more computerized. This has made work easier, faster, and more accurate. In education, the computerization of exams is increasingly important and is being given more attention. This thesis aims to develop a multiple choice exam program and educational support system to help high school students prepare for important exams by allowing independent and effective review, making learning easier and more efficient. It also aims to assist teachers in creating exam questions and tests more easily. The author, a Vietnamese undergraduate, chose this topic to address the need for better exam preparation tools in the educational sector [1]. Published books on the methods and subject of this project provide context for this English summary [7]. Related earlier ICTU undergraduate theses provide context for this English summary [8]. Published articles on the methods and subject of this project provide context for this English summary [9], [10].

## II. Methods

The methods used in this thesis include the study of .NET technology, C# programming, and UML. The system was designed and developed using C# and .NET, with a focus on database management and user interface design. The author utilized UML for system analysis and design, creating use cases for different user roles such as students, teachers, and administrators. The program includes functions for question and test creation, user management, and exam organization. The author also implemented a connection class to manage database interactions, ensuring data integrity and security [1].

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## III. Results

The thesis reports that the program was successfully developed, with a theoretical understanding of .NET technology and C# programming. The author implemented functions for question and test creation, user management, and exam organization. The program includes a database management system to store and retrieve questions and test data. However, the program is noted to be simple and lacks comprehensive coverage and optimized error handling. The author suggests future development in web application form, with a more complex user interface and data import capabilities [1].

## IV. Discussion

The developed program provides a basic framework for creating and managing multiple choice exams, but it has limitations in terms of comprehensive coverage and error handling. The author suggests that future work should focus on enhancing the system's functionality and user interface, as well as improving data management and import capabilities. The program's simplicity and lack of advanced features may limit its effectiveness in real-world applications. However, the author's implementation of database management and user interface design demonstrates a solid foundation for further development [1]. Earlier ICTU undergraduate work by Phạm Thị Huyền addressed online multiple-choice examination systems [6].

## V. Conclusion

The thesis concludes that the developed program is a basic tool for creating and managing multiple choice exams, but it has limitations. The author suggests that future work should focus on enhancing the system's functionality and user interface, as well as improving data management and import capabilities. The program's implementation of database management and user interface design shows potential for future improvements and broader application in the educational sector [1].

## References


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