Construction of a Course Scheduling Program for Credit-Based Training in the Department of Information Technology

ICTU Student 128
Thai Nguyen University of Information and Communication Technology
Thai Nguyen University, Thai Nguyen, Vietnam
student128@ictu.edu.vn

***Abstract*—This thesis focuses on developing a course scheduling program for credit-based training in the Department of Information Technology. The program ensures that teachers' schedules do not overlap, prioritizes teacher preferences, and guarantees that all students can choose their courses. The scheduling algorithm is designed to minimize classroom fragmentation and ensure classroom capacity. The program includes a user-friendly interface and error handling mechanisms. Despite the limitations, the algorithm still faces challenges in handling combined classes and physical education courses. The program successfully addresses the needs of students and teachers, but further improvements are necessary to fully meet all requirements.**

***Index Terms*—course scheduling, credit-based training, teacher preferences, student choices, classroom capacity, algorithm**

I. Introduction

The thesis introduces the development of a course scheduling program for credit-based training in the Department of Information Technology. It covers the basics of the .NET Framework, C# programming, and the ADO.NET model. The program aims to ensure that teachers' schedules do not overlap, prioritize teacher preferences, and guarantee that all students can choose their courses. The development process involved understanding the complexities of course scheduling and implementing a solution that can handle various constraints and preferences. The program is designed to be user-friendly and robust, with mechanisms to handle errors and ensure the accuracy of data input [1]. Published books on the methods and subject of this project provide context for this English summary [10].

II. Methods

The thesis presents a scheduling algorithm that ensures non-overlapping teacher schedules, prioritizes teacher preferences, and guarantees that all students can choose their courses. The algorithm is designed to minimize classroom fragmentation and ensure classroom capacity. The program includes a user-friendly interface and error handling mechanisms. The scheduling algorithm is implemented using C# and the .NET Framework, with ADO.NET used for database operations. The program's functionality is tested through various scenarios, including different teacher preferences and classroom capacities, to ensure its effectiveness and reliability [1].

Supervisor: ICTU Teacher 81, Thai Nguyen University of Information and Communication Technology.

III. Results

The scheduling program successfully ensures non-overlapping teacher schedules, prioritizes teacher preferences, and guarantees that all students can choose their courses. The program also minimizes classroom fragmentation and ensures classroom capacity. The algorithm's execution time is acceptable, and it effectively handles user errors. The program has been tested with real-world data, and the results show that it can handle a wide range of scenarios, including different teacher preferences and classroom capacities. However, the program faces challenges in handling combined classes and physical education courses, which require further optimization [1].

IV. Discussion

The scheduling program effectively ensures non-overlapping teacher schedules, prioritizes teacher preferences, and guarantees that all students can choose their courses. However, the program faces challenges in handling combined classes and physical education courses. The algorithm still needs improvement to fully address these issues. The program's success in meeting the needs of students and teachers is evident, but there is room for improvement in terms of handling more complex scenarios. Future work will focus on improving the algorithm to fully address these issues and ensure that the program can handle all types of courses and schedules [1].

V. Conclusion

The thesis concludes that the developed scheduling program successfully ensures non-overlapping teacher schedules, prioritizes teacher preferences, and guarantees that all students can choose their courses. However, the program still faces challenges in handling combined classes and physical education courses. Future work will focus on improving the algorithm to fully address these issues. The program's success in meeting the needs of students and teachers is a significant achievement, but there is still potential for further development to enhance its functionality and robustness [1].

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