Group Project Proposal Outline

Team: OCSG

Optimized Course Schedule Generator

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Introduction

The Optimized Course Schedule Generator is a software tool to assist universities in scheduling course sections for a semester. Schools have to manage thousands of students, and hundreds of teachers and classrooms; many like Embry-Riddle Aeronautical University do this task by hand. A software that can generate a master schedule requiring minimal edits would decrease the labor required by a university.

Software similar to this project exists, for example, Common Goal System's School Insight or USA Scheduler's Class Schedule Maker[1][2]. Both systems provide a level of master schedule creation with Common Goal's system being more complex, meaning that while the Optimized Course Schedule Generator is a cheaper option due to reduced complexity.

Project (Research)

The aim of this project is to develop a software project that can be utilized by schools and universities to generate a master schedule for class times and locations, easing the jobs of school administration. This software should be able to resolve schedule conflicts including but not exclusive to, classroom timing, classroom location, teacher workload/subject expertise, and classroom student capacity. The software should allow students to easily follow their major flowcharts. This project will be considered a success if less than 10% of the generated schedule must be changed manually.

There are a number of things that we plan on learning from working on this software project. First, we plan on getting some hands-on experience for how to write a requirements documentation. Next, we aim to learn about the different elements and factors that go into the generation of the master schedule for universities and schools. We plan to learn how the design of a system utilizing complex rules and regulations is developed and implemented. Finally, we aim to understand how the rules and regulations for this system can be applied to our course scheduling algorithm and how it can be used to resolve conflicts.

Methods

For programming the actual system, all work will be run on prclab1. The programming languages used will be MySQL and Python 2.7.5. Input and output data will be stored in a MySQL database. The database will then be used to generate classes based upon projected student enrollment, and then assign those classes to professors and classrooms based upon availability. The output information from the system may be accessed with a text-based user interface which will be styled similar to the class schedule PDFs on Ernie. In addition, research will be done on similar existing systems,

and interviews will take place with professors and/or administrators involved in class allocation.

There are three distinct use cases; Student, Professor, and Administrator. Students will use the system to view classes they are interested in so they may manually construct a schedule. A student using the system would be presented with several options for selecting a course, such as subject and meeting times. Once these options are selected, the system will display classes meeting the selected criteria. Professors will use the system to view the classes they have been assigned, and to notify an administrator if there is an issue. A professor using the system is presented their class schedule immediately after logging on, and is given the option to notify administration in case of errors. An Administrator using the system may view classes as a Student or Professor, but also has permission to add, remove, or edit courses as needed.

Time Schedule

The following is a tentative schedule for completing the software requirements specification (SRS) and a demo of the project. Full completion is not within the scope of this semester so the given date is theoretical.

Date	Event
2021-03-01	SRS Start
2021-03-08	SRS Introduction Completed
2021-03-29	SRS Overall Description Completed
2021-04-05	SRS External Interface Requirements
2021-04-12	SRS Non Functional Requirements
2021-04-20	SRS Polished
2021-04-21	Demo Implementation Begins
2021-05-05	Demo Implementation Complete
2022-05-05	Full Completion of Project

References

[1] “Advanced Scheduling,” Advanced Scheduling - SchoolInsight - Common Goal Systems, Inc. [Online]. Available: https://www.teacherease.com/advancedscheduling.aspx. [Accessed: 24-Feb-2021].

[2] U. S. A. Scheduler, “Home,” Best Scheduling Software - School Master Schedule Software. [Online]. Available: https://usascheduler.com/index.php/usa-scheduler/class-schedule-maker. [Accessed: 24-Feb-2021].