Grand Valley State University

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GVSU Course Scheduler

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Master's Project

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Background

The GVSU course scheduler was created in response to the void of a proper scheduling tooling through the myBanner System. Every year students at Grand Valley State University are left dreading the daunting task of crafting a schedule that fits their academic needs and optimizes for their preferences. An initial roadblock that strongly discourages the creation of this tooling is the lack of a publicly available API for course data. This challenge drastically limits the access methods and also leaves the program prone to break in the future. The solution that we settled on aimed to minimize this risk while still reliably and safely accessing the course data. With the gathered data, the next challenge will be creating an algorithm to generate and score schedules based on relevant metrics students.

Overview

The GVSU Course Scheduler's objective was to develop a program capable of expediting and simplifying the course selection process in which all students partake. As stated earlier, we were unable to get direct access to any of GVSU's internal data sources related to scheduling. Because of this, we needed to find a creative and innovative way of retrieving this data. The mode we chose to accomplish this through was a chrome extension. By utilizing a chrome extension, we no longer required any special access to GV databases. Instead, we could simply have the user authenticate with gvsu by visiting the banner page, and then take the authenticated token from their chrome cookies. Once we have this token,

we are able to make requests on behalf of the student for schedule related data. By programmatically generating course combinations and computing relevant schedule metrics from this data, students are able to easily compare the very best schedule options available. Metrics such as downtime, days with classes, average start time, average end time, and back-to-back courses are incredibly useful in deciding which of these schedules will lead to academic success. All in all, this program transforms the monotonous and overwhelming task of scheduling into a quick and simple task.

Usage

After downloading the GVSU Course Scheduler extension from the Google Chrome Marketplace, navigate to the GVSU student registration self service page through banner. Next you can open the extension, which will create a new chrome tab with the program running. From here you will see the option to add and remove courses, as well as selecting the term for the schedules. By clicking the submit button, this will use your validated myBanner cookies to gather the required course data and serve you the most optimized schedules. By clicking on a specific row in the table, this will expand out the weekly class schedule overview. If the user does not find a schedule that fits their needs, they have the ability to input a new set of courses and resubmit until they settle on something that satisfies their requirements. The results are sorted by downtime between courses and only the top 200 results will be displayed. Other relevant information will be provided in subsequent columns such as back to back courses, average start and end times and days with courses. The user interface that shows all of these features can be viewed below.

User Interface