

Final Project Write-Up

Introduction

Meet Penn Dash, your one go-to stop for your Penn student needs. Using the Penn Labs API server, Penn Dash brings you data about the University of Pennsylvania right to your MATLAB user interface. The four core features include:

- **Dining:** Need to know when to grab a meal? Use the Dining Halls feature, select your desired dining hall, and check if your dining hall is open today.
- **Laundry:** This feature allows you to check if there are any available washers/ dryers in your desired laundry hall. It also lets you see what the typical usage intensity of the hall is throughout the day.
- **Buildings:** If you've ever been curious about the various buildings around campus, check out this Buildings feature; type in a name of a building, and view its description. Along the way, you might stumble upon some other places you didn't know about.
- **Studyspaces:** Need to reserve a study room for your next midterm? Easily select a study place and room, and view the available time slots for a particular date.

Make sure to have a good Internet connection before attempting to run this program.

Note: The GUI and some of the features may require some time for Penn Dash to update; do not fret if nothing shows up immediately!

Motivation & Challenges

Penn students lead very busy lives, and to add an element of convenience to every students' lives would be greatly appreciated by many students. This project was inspired by the current Penn Mobile app, which serves a very similar purpose, with additional features.

Creating this project in MATLAB was a fun and challenging experience. One of the challenging aspects of this project was to figure out how to display the information obtained from the API in a user-friendly manner. Although the information was useful, simply displaying the information on the GUI in its raw format was not enough. This is where communication became essential. I decided, in the Laundry section, to display the usage as a graph, since it is easier to visualize data in a graphical sense. Also, using a green/red color-coding system to display open/closed group study rooms was also done with the idea of communication in mind.

How it Works in MATLAB

The program makes use of the MATLAB built-in function `webread()`, which reads data from a website and, if applicable, parses the data into a nice JSON format. This JSON format was then used to extract specific data via vectorized operations to obtain the values of an element's attributes; for example, the list of titles of buildings can be obtained via the vectorized operation

`{resultData.result_data.title}` (line 242).

The program makes use of a lot of string operations, such as `sprintf()` and `strcmp()`. These string operations were used in order to create nicely-formatted strings in 'text' uicontrol elements.

Further Steps

While the project was very fun to make, there are additional features that could have been implemented:

- Make the API calls faster. This could be done by, perhaps, running functions in parallel.
- Making asynchronous calls (AJAX) when the calls are within the individual sections. AJAX calls allows for user functionality to continue while still loading information from the API.
- More features. There were more features within the API that could have been implemented.