Habib University

CS 102 (L5) Data Structures & Algorithms

Spring 2020 Project

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Project Title: One Portal

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Project Description:

There are two aspects of our project.

(a) Construct a data set for certain entities in Habib University (i.e. students, instructors, courses, etc) and link them using graphs and dictionaries.

(b) Utilise a data set for Habib University students in a way that makes it possible for students to access all of their data in one place, all organized and a few clicks away. This would include web scrapping for LMS, PSCS and Microsoft SharePoint to access the data of a particular student just by signing in into one application instead of three different ones. For example, if I want to manage my outlook calendar, see my attendance in a particular course on PSCS and see my syllabus on LMS, I would be able to do so from a single application by signing in only there.

The idea behind this is, that as a student of Habib, it gets very hectic to keep tabs on our grades, assignments, attendances and even files on SharePoint using three different websites. So, we have thought of having a single platform to view and regulate everything that we would otherwise have to do on different sites. Not only will this be less hectic, but one of our aims would also be to make this platform more user-friendly than the options we have at the moment. This will result in students saving a lot more time, which can be dedicated to other important stuff, and not having to worry about typing usernames and passwords on sites again and again. Furthermore, we can integrate aspects (a) and (b) to include features such as calculating the average grade for a particular course by surveying previous students of that course, recommend courses for the next semester to complete a major or minor, expected grade in a course, etc. Also, we can send alerts if there is a sudden change in calculated grade in a subject or if a student's absences exceed the allowed limit of absences.

Project Outcome:

Final demo outcomes:

- Use webscraping to extract relevant data from LMS/PSCS

- Be able to conduct a meaningful analysis of data from our data set, and use it to implement the aforementioned features, such as calculating a student's average grade.

- Have a user interface that lets you add entities directly, without manually changing anything on the backend.

Interim demo outcomes:

- Be able to add or remove entities from the data on the backend.

- Be able to connect the different entities with one another on the backend.

- Add these entities to our data set – which is a graph.

Recourses:

- Graphs
- Dictionaries
- Priority Queues
- Classes
- Math Library
- Tkinter
- O365 API
- WebDev
- Beautiful Soup
- wxPython

We may also use:

- Stacks
- Queues
- Linked Lists
- Trees
- Sorting