Midterm Project

Due Oct 14, 2020 by 5pm   **Points** 16   **Submitting** a file upload

The fully online setup that we are adhering to for this quarter makes this course a little less conventional. In order to properly assess your knowledge of the topics we've been covering in a compelling way, you will instead have a one-on-one assessment.The idea is that you have the opportunity to show your knowledge of the concepts we have covered, in addition to being able to flex some creativity when it comes to writing and designing code.

Project

Prior to the assessment, you will create and implement a program of your own design. There are essentially no limits to what you can do for your project with one important caveat: you must *meaningfully* include the following aspects as part of your program:

- **Basics**
  - Variables
  - Variable Manipulation
  - Functions
  - Variable Scope
- **Control Flow**
  - If Statements
  - For Loops
  - While Loops
- **Strings**
  - String Manipulation
- **Data Storage**
  - Lists
  - Dictionaries
  - Sets

- ○ Tuples

To earn full credit, you must meaningfully use at least 3 of the above 4 bold topics in your program. The key word here is "meaningfully". For example, claiming that the code uses the string "hello", and claiming to fulfill the String section would not be a meaningful use. On the other hand, Defining a function that searches for strings in a larger text would be a meaningful usage.

Your program must consist of a single, unified idea. That is, writing 5 different python files for 5 different topics does not demonstrate how to incorporate each topic into a larger program.

If you're unsure if your program is "big enough" to count for this assignment, consider if the project would be something you would be willing to talk to a recruiter about. There will be a section of the grading that refers to the "ambition" of the project, which is mainly just a portion to make sure you are pushing yourself some. If you have any questions, please feel free to reach out to me (Dalton).

Start Small!

Part of the challenge of this project is to maintain realistic expectations for yourself while working on this. Your imagination may run wild and you'll want to create the next industry-level video game with the basics of python programming, which is completely unrealistic. Start small, get some extremely simple idea working correctly. From there, add on little by little until you have a reasonable final product. If time permits, add on extra functionalities to spice things up. You will likely have ideas you were not able to implement; this is totally fine. **The most important thing is that you demonstrate your understanding of the topics we've covered and that you were able to implement them in code. Even if you are not able to make a fully usable project, that is okay, as long as you can show your attempt to meaningfully use it, and an overall understanding of the concept.**

Some Project Ideas

You are free (and encouraged!) to come up with your own project idea. This is an extremely open-ended assignment which will hopefully get you to think creatively about your code. To help you brainstorm, here are some ideas for what you could create for your project:

- A simple dice game with user input
- A text based adventure game **(https://www.puzzleplayground.com/g/brick-breaker)**
- Basic statistics on a dictionary of data **(https://www.mathsisfun.com/games/connect4.html)**
- A simple card game with user input

- Fun drawings using lists and loops
- Simulation of tasks like gardening **(https://bitstorm.org/gameoflife/)**
- Simple "database" using lists to store something like books on a bookshelf

Assessment

The assessment portion of this assignment may seem a little strange for a computer science class. One-on-one assessments are more like what you may have done for classes in subjects like foreign language, music, or art. The idea remains the same: you will meet with either your instructor or your TA over Zoom and walk them through the design of your project, critical decisions you made when creating the project, how you incorporated the above topics, and things you wanted to get to but couldn't finish in time. You will then be graded based on your demonstrated understanding of the code you wrote and the integration of each topic.

Midterm Rubric

Criteria	Ratings	Pts
Concept 1 Used Meaningfully		2 pts
Knowledge of Concept 1 Shown		2 pts
Concept 2 Used Meaningfully		2 pts
Knowledge of Concept 2 Shown		2 pts
Concept 3 Used Meaningfully		2 pts
Knowledge of Concept 3 Shown		2 pts
Project is Ambitious		3 pts
Good Coding Practices Are Used Comments, Organization, etc.		1 pts
		Total Points: 16