FINAL PROJECT

CS 125

The final project of CS 125 is your opportunity to apply what you have learned in this course to solve a problem of interest to you. You may work alone, or in a team of up to three people.

Choosing a Project

Choose a problem of interest to you that you can solve by writing a computer program. Here are some possible project ideas:

- Write a program that analyzes and visualizes a large set of data (e.g., more than 1000 lines) using NumPy, Matplotlib, or other Python data-processing packages.
- Write a program that simulates a real-world system, such as the stock market, traffic on a busy road, population dynamics, chemical reactions, elevators in a building, or some other system. Use graphics to visualize your simulation.
- Create a storage and retrieval system for some sort of information, such as data about music or movies.
- Design and program a game.

A project proposal (one proposal per team) is due on Tuesday, November 10. The proposal should contain a brief description of your project. The professor is happy to discuss ideas with you as you plan your project.

Project Requirements

Your project must satisfy the following requirements:

1. Your project must involve writing a Python program that goes well beyond the level of complexity of the homework problems in this course.
2. You must use appropriate Python data structures, objects, and methods in your code.
3. Your code must be well-documented using comments, so that a human can read it and understand what it does.
4. You must write a short "user manual" that explains what your program does and how to use it.
5. You must give a brief presentation (5 minutes per person max) about your program to the class during the final exam time period.

Project Schedule

- **Tuesday, November 10: Project proposals due.** Each person or group should hand in a brief description of their proposed project.
- **Thursday, November 12:** Class time will be devoted to work on projects; Prof. Wright will be available for consultation.
- **Tuesday, November 17:** Class time will be devoted to work on projects; Prof. Wright will be available for consultation. **Project status update due:** this update should indicate what has been accomplished so far, and what remains to be done.
- **Saturday, November 21, 2:00 – 4:00pm: Project presentations.** These will occur via Zoom. Code and user manual are due on Moodle. Everyone must also complete the self/peer evaluation on Moodle.

Grading criteria

Your project will be graded out of 100 points, according to the following criteria:

- **Complexity (10 points):** project is of a level of complexity that goes well beyond the exercises assigned in this course
- **Functions (10 points):** code is organized using functions to break large problems into smaller pieces
- **Objects (10 points):** code is structured using appropriate data structures and objects
- **Code Quality (10 points):** code is well-designed, appropriately using the data structures and constructs that we have learned in this course
- **Documentation (10 points):** code is well-documented, using comments to indicate what the code is supposed to do
- **Code Runs (10 points):** the code runs and does what it is supposed to do
- **User Manual (15 points):** a user manual, to accompany the code, thoroughly explains what the program does and how to use it
- **Presentation (15 points):** a brief (3–5 minutes), clear explanation of project, and a demonstration of your code
- **Deadlines (10 points):** work completed on time, according to the schedule above

In addition, self and peer evaluations may affect your project grade by up to 40% in either direction. Different people in the same group might receive different grades depending on their contributions to the project. If you have questions or concerns about the grading criteria, please talk with the professor.