**Final Project Overview & Expectations**

**DSA/CIS 230/492/593: Introduction to Data Science I**

**Cleveland State University**

**Fall 2024**

**Project Overview & Motivation:** The Final Project is intended to provide the opportunity for you to demonstrate what you’ve learned this semester. This is hopefully achieved as you apply your personal interests to build a Python program of your design. The project, as described below, will be fairly open ended, allowing you to express your creativity and understanding of the fundamentals. As for the deliverables, you must submit a Project Proposal, Project Presentation, and Project Source Code. You may work with up to two other students in the course, but this must be communicated in the Project Proposal.

**Expectations for your Software and Presentation (a.k.a. the Project):**

* **The software should be written in Python!**
* **The presentation should use a slidedeck, like Google Slides or Powerpoint!**
* **The project should be purposeful and personally meaningful!**
  + **What does your code do, and why is it interesting to you?**
  + *Software:* *Create a software program that serves a purpose related to your personal interests and/or goals.*
  + *Presentation: Describe the overall purpose of the software and how it connects to your interests and/or goals.*
    - **Guiding Questions:** Overall, what does the software do? At a high level (i.e. without getting into any code/programming terms), how does the software do this? Who is the target audience of the software? What are the primary use cases of the software? What are your personal interests/goals? How does the software connect to those interests/goals?
* **The project should be intentionally designed and clearly written!**
  + **How did you build?**
  + *Software:* *Organize the software in Python files and directories. Use appropriate data types, logical variable and function names, type hinting, correct iteration and branching, and comments when necessary. Test the code by running it to ensure it’s (mostly) error free.*
  + *Presentation: Describe the design and implementation of your software.*
    - **Guiding Questions:** What is the architecture (i.e. structure) of the software? What is the functionality of each file/class? Without reading your code line for line, how does the file/class implement its functionality? How does the user run/interact with the software? How does the software load/save data with the disc (if at all)?
* **The project should contain at least 1 class of your creation!**
  + **How did you use OOP?**
  + *Software:* *Create and instantiate at least one class that makes sense given the software’s purpose.*
  + *Presentation: Describe at least one class you created for the software.*
    - **Guiding Questions:** Why did you choose to create this class? What are the attributes and methods of this class? Where do you instantiate this class in your code? Is this class used within any other class? If so, why that class and how is it used?
* **The project should contain at least 1 external library of your choosing!**
  + **What library did you use?**
  + *Software:* *Import and use at least one library that makes sense given the software’s purpose.*
  + *Presentation: Describe at least one library you imported for the software.*
    - **Guiding Questions:** What is the library, and what does it do? Why did you choose this library? Where did you find it? How did you use this library in your code?
* **The project should contain at least 1 novel (i.e. “from scratch”) algorithm (i.e. function or method)!**
  + **What code did you write from scratch?**
  + *Software:* *Program at least one novel algorithm that helps the software realize its purpose.*
  + *Presentation:* *Describe at least one algorithm you wrote for the software.*
    - **Guiding Questions:** What does the algorithm do? Provide pseudocode if you’d like. What are the inputs and outputs? Where do you call the algorithm in the software? Why did you choose this algorithm to highlight in your presentation?
* **The project should inspire reflection on what you learned in the course!**
  + *Presentation:* *Describe your journey creating the software and how it connected to the goals of the course.*
    - **Guiding Questions:** What lectures/concepts were most relevant in creating the software? What new concepts did you have to learn yourself? How did you learn them? What were some of the biggest frustrations or obstacles? How did you overcome them? What were some of the biggest successes? Overall, how do you feel about this project? Was it successful? Did it inspire any future work?
* **The presentation should include a live demo or screen recording of the software being used!**
  + *It is up to you how to execute this, but make sure to practice it ahead of time so it's smooth and free of errors!!!*
* **The presentation should contain a list of references used in creating the software!**
  + *Each reference should be, at a minimum, the website name and the URL. Don’t just have a slide of URLs because that’s impossible to read!!!*

**Deliverables:**

* **Thursday 10/10: Project Proposal** 
  + Be present in the class on 10/10 for a group of three people and provide the TA with your group information. Discuss the project with your group, complete the project proposal document, and submit it on Blackboard by 11 59 p.m. on 10/10.
* **Tuesday 12/10: Project Code & Presentation** 
  + Complete your presentation and submit your PowerPoint and all your `.py files` to Blackboard by 11:59 p.m. on 12/10.