

**Coding Assignment 2**  
**Math 446, Fall 2025**

**Due date: Thursday, December 4th at 23:59 on Gradescope**

Instructions:

1. In this coding assignment, you will be working with implementing some of the concepts we have covered in class. You will also familiarize yourself with existing implementations.
2. The `.ipynb` file **Coding Assignment 2.ipynb** has all the tasks for the assignment. You may either modify the given notebook or create your own notebook.
3. You are expected to use online resources as an aid for coding (i.e. Stack Overflow, Google, Pandas documentation, so on).
4. There are multiple ways to approach the question, and you are encouraged to explore whatever makes the most sense to you.
5. Starter code is given for some exercises, while other exercises do not have such code.
6. I would encourage you to *not* use LLMs, but you can use them as necessary, as the ecosystem is beginning to shift toward having LLMs help in real life. It is still important to understand the foundation behind the topics.
7. Most of the exercises should not require too many lines of code, but will require understanding of what the underlying concept is.
8. **You are allowed to work in groups of 2 to 3 on this assignment. Working alone is fine as well.** I even encourage you to work in groups of 2 to 3, as it is often the case that you will be working with others in data science.

**Submission Guidelines:** Please complete this assignment using a Jupyter notebook. You should submit an `.ipynb` file on Gradescope.

- The submission file should have your code and the output of the code visible.

- It should be written so that either Farhad or Alvin can download the file and run the code, assuming the dataset is in the correct location. One way to check this is to restart your kernel and run the whole notebook and see if this results in what you expect.
- Please write comments as necessary, and make sure your code is readable (e.g. use `#` or markdown or something else). Markdown would be my suggestion for the conceptual questions, but feel free to use something else as long as it is clear.
- Please include the names of all members of your group if you choose to work in a group. **The group only needs to submit one file on Gradescope.** For example, if you are a group of 3, then a single submission from any member would cover all 3 people.