CS115 Introduction to Programming with Python

Project: Programming with Python (20%)

The goal of this project is to explore numpy functionality. For this project you will prepare a lab guide for CS115 students to practice numpy functionality. The lab guide should be comprehensive and cover numpy functionality covered in the numpy lecture materials.

1) **Your lab guide must meet the following requirements**:
   a) You must find a meaningful data set to use in the analysis.
   b) Your dataset and lab guide should be unique. Two students submitting the same or similar exercise will both receive a grade of zero. You may not use any examples or data sets used in class, or labs from this or any semester.
   c) The analysis should be meaningful and should use tools covered in CS115. You should only use functionality that has been covered in CS115.
   d) You may create your program using Jupyter Notebook (ipynb) or another IDE (.py).
   e) Your program must include the following minimum functionality:
      i) Import data from a file.
      ii) Export data to a file.
      iii) Store data in numpy arrays.
      iv) Use Boolean indexing/operations to select and update data.
      v) Use slicing to extract/update data.
      vi) Use numpy array methods and functions for data manipulation and analysis.

2) **What to submit:**
   a) The lab guide explaining the problem (word file or similar).
   b) Your python solution as an .ipynb or .py file.
   c) Your data file.

3) **Grading criteria:**
   a) Meaningful question, data and analysis.
   b) Use a wide range of functionality covered in CS115.
   c) Code should be well formatted, well organized and use meaningful names.

4) Upon submission you may be required to discuss your work with your instructor.