

ATM S 310

MIDTERM #2 (11/08/2023)

1. For the following question, you will need to download **mt2_datafile.txt** (can also be found on Canvas under Files -> Midterms).
 - a. **(5 points)** Using file input/output techniques you learned in this class, open the file and assign it to a file object.
 - b. **(5 points)** Make use of the **split()** function to create a list where each number is its own entry in the list.
Hint: First read the file object's lines as a list, then save the first entry of that list (which should be a long string of numbers separated by commas) to its own variable name.
 - c. **(5 points)** Convert the list to an array, then reshape that array to a 3 row by 7 column array. (If you ran into trouble on the previous part, you can create your own 1 row by 21 column array to test this code on.)
 - d. **(15 points)** Calculate and comment on the mean, median, standard deviation, and IQR of the data (no more than 2-3 sentences!).
2. In the following question, you will create your own Pandas dataframe!
 - a. **(5 points)** Start by creating a **dictionary** that contains all the information contained in the mini-spreadsheet below.

Name	Credits	GPA	Hometown
Garrus Vakarian	37	3.2	Palaven
Matilda Bradbury	43	4.0	Whitestone
Cordelia Vorkosigan	36	3.7	Vashnoi
Kira Nerys	23	3.6	Dahkur
Jean-Luc Picard	50	3.4	La Barre

- b. **(5 points)** Using Pandas, convert your dictionary into a dataframe.
- c. **(5 points)** Using Pandas, set the column "Name" as the index.
- d. **(5 points)** Using Pandas, print the GPA of Kira Nerys.
- e. **(5 points)** Using Pandas, change Matilda Bradbury's credits to **44**.
Hint: Print out the dataframe again to make sure the change happened!
- f. **(5 points)** Using Pandas, summarize statistics (using **describe()**) for the Credits and GPA columns.
- g. **(5 points)** Using Pandas, add a new column with data of your choice **without repeating the data across all five rows**.
Hint: This is a little different than what we did in class. You'll want to start by creating a new list that contains the five data entries the new column will contain, then assign it to your desired new column name within the dataframe.

BONUS: (2 points) Create a meme about programming in general or programming in Python in particular. You can build your own using any image processing software or using <https://imgflip.com/memegenerator>.