**Akmal Ataev**

**NYU Student ID aa44**

**HW4**

**Instructions**

--> This HW assignment should be done individually by each student (teamwork is not allowed).

**Complete Exercises 47 - 51  (up to 80%) from the main textbook.**

**Additional Instructions  (up to 20%):**

Create **one single Jupyter Notebook file** with all your Python code generated and submit that file by responding to this assignment.

* Start the notebook with a Markdown section with your name, student ID and title of the assignment.
* Each exercise solution in your notebook should start with one Markdown section indicating its number (e.g. # EX 40) or the HW code for part B (B1, etc.). They should be ordered as in the book and as above for part B.
* If the exercise provides alternative ways of coding to create the same functionality, use the best option to complete it and ensure that the notebook code runs. If you need to use an alternative solution (e.g. some instructions cannot be implemented using the notebook), you need to add a comment section to describe what you did.
* Any data files used need to be submitted as well and they need to run from a subfolder named "data" (do not include absolute path, use only relative paths in your code).
* Include comments to explain your code, as necessary (when it is not clear what the code does, even if the book explains it). You also need to include, within the respective Exercise section, both the code that does not run and comments with a statement indicating that it cannot run from within Jupyter and concisely stating why it cannot run and what you did to complete the exercise.

Submit:

1. The Jupyter Notebook

2. A PDF copy of your Jupyter Notebook. To obtain a PDF copy you can Save As PDF.  If section of your code is not visible in the PDF, adding a blank line and/or moving sections of your code to another cell will address this issue.

To receive a PASS grade:

* Your code must run without issues. If issues cannot be resolved then comments, as noted above, should be included
* Your code should be minimal so as to answer the stated questions and follow the instructions provided in the exercises (extra unnecessary code will result in No Pass)
* Your files should be named as "Your Last Name your first Name HW#***.ipynb***", and "Your Last Name your first Name HW#***.PDF***" using the assignment title number.
* You need to follow instructions fully and submit the assignment by its due date.

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**HW5**

**B1.**

You have a group of friends coming to visit for your high school reunion, and you want to take them out to eat at a local restaurant.

You aren’t sure if any of them have dietary restrictions, but your restaurant choices are as follows:

    Joe’s Gourmet Burgers—Vegetarian: No, Vegan: No, Gluten-Free: No

    Main Street Pizza Company—Vegetarian: Yes, Vegan: No, Gluten-Free: Yes

    Corner Café—Vegetarian: Yes, Vegan: Yes, Gluten-Free: Yes

    Mama’s Fine Italian—Vegetarian: Yes, Vegan: No, Gluten-Free: No

    The Chef’s Kitchen—Vegetarian: Yes, Vegan: Yes, Gluten-Free: Yes

Write a program that asks whether any members of your party are vegetarian, vegan, or gluten-free, to which then displays only the restaurants to which you may take the group.

**B2.**

Write a program that uses the loop to draw an octagon with the word “STOP” displayed in its center. The STOP sign should be centered in the graphics window.

**B3.**

In this programming exercise, you will create a simple trivia game for two players. The program will work like this:

    Starting with player 1, each player gets a turn at answering 5 trivia questions. (There should be a total of 10 questions.)

When a question is displayed, 4 possible answers are also displayed. Only one of the answers is correct, and if the player selects the correct answer, he or she earns a point.

    After answers have been selected for all the questions, the program displays the number of points earned by each player and declares the player with the highest number of points the winner.

To create this program, write a Question class to hold the data for a trivia question.

The Question class should have attributes for the following data:

* A trivia question
* Possible answer 1
* Possible answer 2
* Possible answer 3
* Possible answer 4
* The number of the correct answer (1, 2, 3, or 4)

The Question class also should have an appropriate \_ \_init\_ \_ method, accessors, and mutators.

The program should have a list or a dictionary containing 10 Question objects, one for each trivia question.

Make up your own trivia questions on the subject or subjects of your choice for the objects.

Note:

Accessors are used to access the state of the object i.e, the data hidden in the object can be accessed from this method, but they cannot change the state of the object; they can only access the data hidden. Name these methods with the word *get*.

Mutators are used to mutate/modify the state of an object i.e, they alter the hidden value of the data variable. They can set the value of a variable instantly to a new value. Name these methods with the word *set*.

Create **one single Jupyter Notebook file** with all your Python code generated and submit that file by responding to this assignment.

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* If the exercise provides alternative ways of coding to create the same functionality, use the best option to complete it and ensure that the notebook code runs. If you need to use an alternative solution (e.g. some instructions cannot be implemented using the notebook), you need to add a comment section to describe what you did.
* Any data files used need to be submitted as well and they need to run from a subfolder named "data" (do not include absolute path, use only relative paths in your code).
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**LAB**

Solve all 3 questions using a Jupyter Notebook by responding to this assignment and attaching a PDF (titled "*YourLastName YourFirstname* S5.PDF") of your Jupyter Notebook:

1.

Write a program that asks the user to enter a distance in kilometers, then converts that distance to miles. The conversion formula is as follows: Miles=Kilometers×0.6214

2.

In a program, write a function that accepts two arguments: a list, and a number n. Assume that the list contains numbers. The function should display all of the numbers in the list that are greater than the number n.

3.

Write a program that opens a specified text file then displays a list of all the unique words found in the file.  Hint: Store each word as an element of a set.

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Please see instructions below.

S3: Ex 40 and 41

S2:  Submit ex13-15 if you submitted HW1 already or Ex1-3 if you joined the course late and have not submitted HW1.

-------- Instructions --------

At the end of each session, starting with session 2, each student is required to submit a PDF of the work completed during session.

The filename used should be the same as the name of the respective HW assignment plus the suffix of "\_LAB".PDF.

Notes:

- Lab work must be submitted before the session ends (by 9:30pm sharp) to count for participation points (late submissions will receive no points).

- A minimum (reasonable) number of exercises due to be completed during lab are to be determined at each session.