Homework #3: Magic Eight Ball

Background

Using a magic eight ball the user can:

1. Ask a question
2. Roll the ball
3. Receive an answer (prediction about whether the question will come to be)

Example:

1. Magic Eight Ball prompts the user to ask a question
2. User asks: “Will I get an A on HW1 for SI206?”
3. Magic Eight Ball gives one of eight possible answers (listed below)
4. Magic Eight Ball continues to ask for the next question until the user ends the game

Instructions

For this assignment, you will be writing the *MagicEightBall* class with the following methods:

- An **__init__(self, answers)** method: This will initialize a new *MagicEightBall* class
    - Set the attribute **answers_list** to the **answers** argument. This is a list of the eight possible answers a player could receive.
    - Set the attribute **previous_questions** to an empty list.
    - Set the attribute **previous_answers** to an empty list.

- A **__str__(self)** method: Returns a string with all of the questions and answers in **previous_answers** separated by commas.
    - Format:
      """Questions Asked: Q1, Q2, Q3, Q4
      Answers Given: A1, A2, A3, A4"""
    - If no questions have been asked yet, return "Questions Asked: Answers Given:"

- A **get_fortune(self, question)** method:
    1. Checks if the question has been asked before
        - If it has been asked before:
            - return “I’ve already answered this question”

        - If it has *not* been asked before:
            - pick an answer at random from **answer_list**.
            - Add the index of the answer in **answers_list** to **previous_answers** e.g. if **answers_list** is *[‘yes’, ‘no’]* and the answer is *‘yes’*, you should add 0 to **previous_answers**
            - Return the answer as a str

- A **play_game(self)** method: This method controls the game play for the *MagicEightBall* object. As part of a loop it will:
    1. Prompt the user to ask a question: “Please enter a question: ”
    2. If the question is “done”, print “Goodbye” and end the loop
    3. Otherwise
        - Use the **get_fortune** method to generate a fortune
        - Print the fortune
        - Add the question to **previous_questions**
        - Prompt the user to ask the next question: “*Please enter the next question:* ”

- A **print_answer_frequencies(self)** method: This method prints out the answers
    - Using **previous_answers**, count how many times each answer is given.
        - Print out “The answer ‘<answer>’ has been given <number> of times”
            - Hint: You can use the .count() method
            - Hint: “I’ve already answered this question” should not appear in **previous_answers**
        - Returns a dictionary that maps answers to their frequency
    - If there are no answers in **previous_answers,** it will print “I have not told your fortune yet” and return an empty dictionary

- A main() function:
    1. Define the possible answers into a list: Definitely, Most Likely, It is certain, Maybe, Ask again later, Very doubtful, Don’t count on it, Absolutely not

2. Create a MagicEightBall object
3. Print the MagicEightBall object
4. Initiate the game play using the play_game() method
5. Call print_answer_frequencies()
6. Print the MagicEightBall object

Sample output from the main method:

Questions Asked:
Answers Given:
Welcome to the Magic Eight Ball game!
Please enter a question: Will it snow?
Magic Eight Ball says: Definitely
Please enter a question: Will it snow?
Magic Eight Ball says: I've already answered this question
Please enter a question: Will it rain?
Magic Eight Ball says: Most Likely
Please enter a question: Will I be cold?
Magic Eight Ball says: Definitely
Please enter a question: Will it be windy?
Magic Eight Ball says: Most Likely
Please enter a question: Will we have class?
Magic Eight Ball says: Most Likely
Please enter a question: done
Goodbye
The answer 'Definitely' has been given 2 times.
The answer 'Most Likely' has been given 3 times.
Questions Asked: Will it snow?, Will it rain?, Will I be cold?, Will it be windy?, Will we have class?
Answers Given: Definitely, Most Likely, Definitely, Most Likely, Most Likely

Grading Rubric - Total of 60 Points

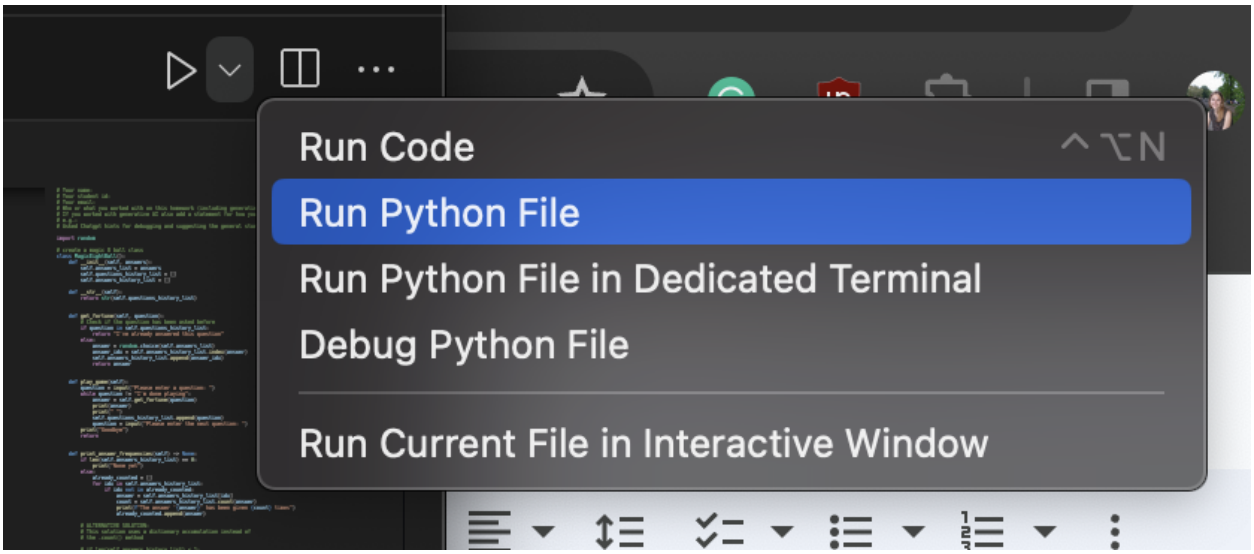
See Canvas for the official grading rubric but the breakdown is as follows:

- the __init__ method : 5pts
- the __str__ method : 5pts

- get_fortune method : 10pts
- play_game : 15pts
- print_answer_frequencies : 13pts
- main function : 12pts

Running Your Code:

If you are having trouble running your code / interacting with the program in VSCode, click the arrow in the top right corner of your VSCode window. Then, hit “Run Python File.”



Submission

Submission will be through Github Classroom.

Extra Credit

There will be an opportunity to earn extra credit on this Homework assignment after the due date. It will be in quiz form during lecture and will ask you to explain the logic and/or syntax of your code.