Homework #3: Magic Eight Ball

Using a magic eight ball the user can:

- Ask a question
- Roll the ball
- Receive an answer (prediction about whether the question will come to be)
- **Example:**
    - Magic Eight Ball prompts the user to ask a question
    - User asks: “Will I get an A on HW1 for SI206?”
    - Magic Eight Ball gives one of eight possible answers (listed below)
    - 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 possible answers a player could receive.
    - Set the attribute ***questions_history_list*** to an empty list.
    - Set the attribute ***answers_history_list*** to an empty list.
- A **__str__(self) method:** Returns a string with all of the answers in ***question_history_list*** separated by commas.
    - If no questions have been asked yet, return an empty string
- A **get_fortune(self, question)** method:
    - Checks if the question has been asked before
        - If it has, this method returns “I’ve already answered this question”
    - If the question has not been asked before, pick an answer at random from ***answer_list***.
        - Add the index of the answer in ***answers_list*** to ***answers_history_list***

            - e.g. if ***answers_list*** is [‘yes’, ‘no’] and the answer is ‘yes’, you should add 0 to ***answers_history_list***
        - Returns the answer
- A ***play_game(self)*** method: This method controls the game play for the ***MagicEightBall*** object
    - Prompts the user to ask a question: “Please enter a question: ”
    - If the question is “I’m done playing” then print “Goodbye” and end the game
    - Otherwise, use the ***get_fortune*** method to generate a fortune
        - Print the fortune
        - Add the question to ***questions_history_list***
        - Prompts 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 the ***answers_history_list,*** 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 answers_history_list
        - Returns a dictionary that maps answers to their frequency
    - If there are no answers in ***answers_history_list,*** it will print “None yet” and return an empty dictionary
- A ***main()*** function:
    - Defines the possible answers into a list: Definitely, Most Likely, It is certain, Maybe, Cannot predict now, Very doubtful, Don’t count on it, Absolutely not
    - Create the ***MagicEightBall*** object
    - Initiate the game play using the ***play_game()*** method
    - Shows the output of ***print_answer_frequences()***

Sample output from the main method:

```
Please enter a question: will it snow today?
Most Likely

Please enter the next question: should I bring my gloves with me?
Don't count on it

Please enter the next question: will it snow today?
I've already answered this question

Please enter the next question: should I study in the ugli?
Maybe

Please enter the next question: I'm done playing
Goodbye
The answer 'Most Likely' has been given 1 times
The answer 'Don't count on it' has been given 1 times
The answer 'Maybe' has been given 1 times
```

Grading Rubric - Total of 60 Points

- 5 points: the ***__init__*** method sets the object's ***answers_list,*** ***questions_history_list,*** and ***answers_history_list*** correctly to the passed arguments, sets both the object's ***questions_history_list*** and ***answers_history_list*** attributes to an empty list
- 5 points: the ***__str__*** method returns a string with all answers in ***question_history_list*** separated by commas
- 5 points: the ***get_fortune*** method returns "I've already answered this question" if the question has already been asked
- 5 points: the ***get_fortune*** method adds the answer to ***answers_history_list***
    - If a question has already been asked, ***get_fortune*** does not add the "I've already answered this question" to ***answers_history_list***
- 5 points: the ***play_game*** method continually prompts the user for a question, using prompt "Please enter a question" as long as they don't input "I'm done playing"
- 5 points: the ***play_game*** method adds the questions to ***questions_history_list***
- 5 points: the ***play_game*** method uses the ***get_fortune()*** method to correctly get the answer
- 10 points: ***print_answer_frequencies*** prints "The answer '<answer>' has been given <number> of times." for each of the answers from ***answers_history_list*** on separate lines

- 3 points: ***print_answer_frequencies*** returns “None yet” if there are no answers in ***answers_history_list***
- 3 points: ***answers_list*** is properly defined and used in the ***main()*** function
- 3 points: the ***MagicEightBall*** object is properly defined and used in the ***main()*** function
- 3 points: the ***play_game*** method is used correctly in the ***main()*** function
- 3 points: the ***print_answer_frequencies*** method is used correctly in the ***main()*** function

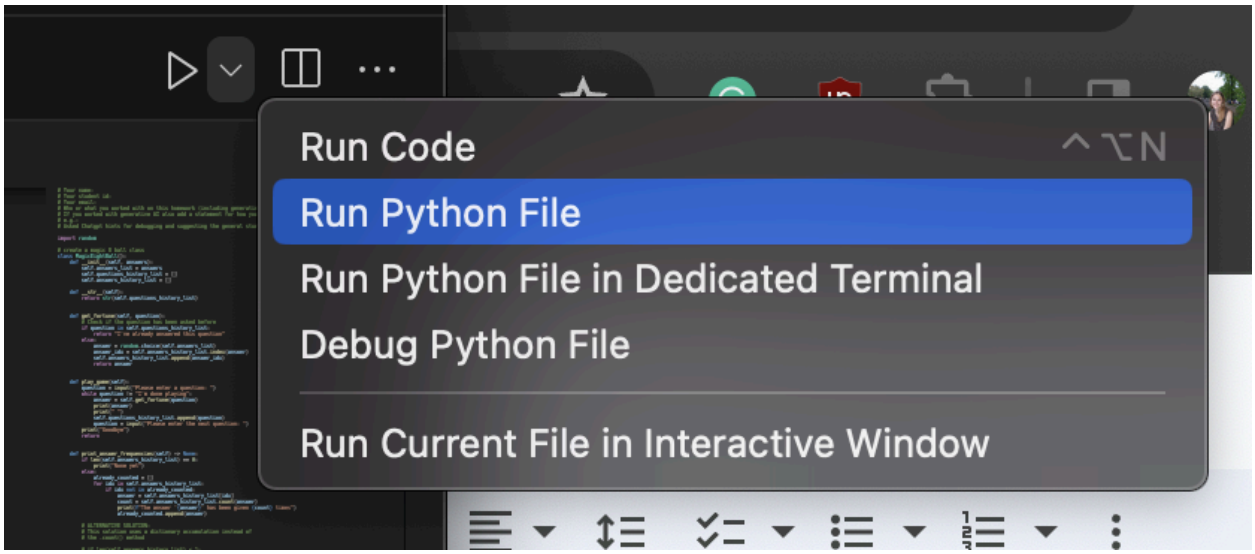
Extra Credit: 6 points

Create a **my_test()** function that creates a MagicEightBall object and tests each of the possible outcomes.

- **1 point:** Correct output from ***print_answer_frequencies*** when no questions have been asked.
- **2 point:** Correct behavior from ***print_answer_frequencies*** when ***answers_list*** is [‘It is certain’, ‘It is certain’, ‘Don’t count on it’] and ***answers_history_list*** is [0, 1, 1]
    - **Hint:** you can modify the value of attributes on a class that’s already been created. For example, if your ***MagicEightBall*** object is called eight_ball, you can make ***answer_history_list*** equal to an empty list by setting eight_ball.answer_history_list = []
- **1 point:** Correct output from ***get_fortune*** when a question has already been asked.
- **1 point:** Correct output from ***play_game*** when the first question asked is “I’m done playing.”

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.”


Run Code
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Run Python File
Run Python File in Dedicated Terminal
Debug Python File
Run Current File in Interactive Window