**Question\_1**

In this question you are to author 2 functions. One function each to calculate the median and mode of a list supplied as an argument. You **must** craft both solutions without the use of any external modules.

Author a program that:

1. opens the test data file
2. ingests the test data
3. Uses a **function** to return the statistic implied by its name (median, mode)
4. Displays the value returned by the function.

**Function Requirements**

Your functions must:

1. Accept an iterator as an argument
2. Calculate the statistic implied by the function name (median, mode)
3. Return the statistic as the datatype indicated by the function signature

**Function Example - median:**

* *Given Input:* [1,2,3,4]
* *Expected Output:* 2.5

**Function Example - mode:**

* *Given Input:* [1,2,3,3,2]
* *Expected Output:* [2,3]

**Required Function Signature**

def median\_from\_iter(it: Iterable) -> float:

def mode\_from\_iter(it: Iterable) -> list:

Author your solution using the test data provided in the code-cell below.o

2. In this question you are being asked to construct a frequency table of the MPG data. Craft your solutions without the use of any external modules.

Author a program that:

1. opens the test data file
2. ingests the test data into an iterable object
3. computes the frequency distribution for the test data values
4. displays the all distribution values and counts by descending order of frequency.
5. displays the relative frequency in parentheses to the right of the frequency counts (see example below)

**Example:**

* *Given Input Line Values:* 4,4,4,4,4,1,1,1,2,2,3
* *Expected Output:*
* 4 5.00 (0.4545)
* 1 3.00 (0.2727)
* 2 2.00 (0.1818)
* 3 1.00 (0.0909)

Author your solution using the test data provided in the code-cell below.o