Inter Planetary Weights Using Dictionaries and Pickling

This is a throwback to one of the first Python programs you wrote in a previous class. You can calculate a person's weight on the different planets within our solar system by multiplying their mass by the gravity factor on the surface of the planet.

Weight = Earth Weight x Surface Gravity Factor

Planet	Surface Gravity Factor
Mercury	0.38
Venus	0.91
Moon	0.165
Mars	0.38
Jupiter	2.34
Saturn	0.93
Uranus	0.92
Neptune	1.12
Pluto	0.066

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For example if you weigh 100 pounds on earth on Mars you would be:

Mars Weight 38 = 100 x .38

You Must Code the following:

1. You will need to code a main() function.
2. Create a dictionary that contains the conversion factors for each planet. You will need to figure out the **Key** and the **Value** portions.
3. Open up the Pickling file that stored previous values when the program was run in the past.
   - Name the file with your initials and PlanetaryWeights such as **bcPlanetaryWeights.db**
   - Code a try/except to handle if the file does not exist
   - Transfer the contents of the .db into a dictionary called **dictPlanetHistory**
4. Prompt the user if they wish to see the history with a **Y** or **y** or **N** or **n**. If **y** print out the previous entries in the dictionary **dictPlanetHistory**
5. Code a loop that does the following:
   - Prompt the user for a unique Name you will have to handle upper and lower case spelling to make sure the same name does not exist more than once. Check if the name is already in the dictionary **dictPlanetHistory**. If it is already there ask for another unique name.

- A blank name entered will should exit the loop
- Prompt for Earth Weight. Make sure you have try/except to handle invalid numeric data and keep prompting until a valid number isentered.
- Declare another dictionary called **dictPersonWeights**
- Code another loop:
  - Use the Surface Gravity Factors Planetary Weights dictionary to compute and output the Earth Weight for each of the planet's Surface Gravity Factors
  - For each planet add the Planet Name and the computed Planet Weight to the dictionary **dictPersonWeights**
- Add the Person's Name and the **dictPersonWeights** to the history dictionary **dictPlanetHistory**

6. When you exit the loop from step 5 and before the main() function ends pickle/output the **dictPlanetHistory** to the db file created in step 3.
7. Refer to the sample output below and make sure you include the following requirements and you **<u>MUST use Python's f-strings syntax</u>** we covered in a previous class.
   - Output the inputted name and make sure the words Solar System's includes the single quote
   - Make sure all the computed planet weights are lined up exactly in the sample output
   - The outputted weight needs to take up 10 positions with 2 decimal points.
   - Test with 70.5 to make sure code works. Then try your own weight.
8. Use comments to document your code
9. Put **s** prefixes in front of variables that contain string values and **f** prefix for variables that contain numbers.

Sample Output:

```
What is your name (enter key to quit): Moose
What is your weight: 70.5
Moose, here are your weights on our Solar System's planets.
Weight on Mercury:        26.79
Weight on Venus:          64.16
Weight on our Moon:       11.63
Weight on Mars:           26.79
Weight on Jupiter:       164.97
Weight on Saturn:         65.56
Weight on Uranus:         64.86
Weight on Neptune:        78.96
Weight on Pluto:           4.65
What is your name (enter key to quit):
```

Output sample with History: Red box is the history and Green box is the new computation:

```
Would you like to see the history y/n: y
Moose, here are your weights on our Solar System's planets.
Weight on Mercury:        26.79
Weight on Venus:          64.16
Weight on our Moon:       11.63
Weight on Mars:           26.79
Weight on Jupiter:       164.97
Weight on Saturn:         65.56
Weight on Uranus:         64.86
Weight on Neptune:        78.96
Weight on Pluto:           4.65
What is your name (enter key to quit): bentley-louis
What is your weight: 49.5
Bentley-Louis, here are your weights on our Solar System's planets.
Weight on Mercury:        18.81
Weight on Venus:          45.05
Weight on our Moon:        8.17
Weight on Mars:           18.81
Weight on Jupiter:       115.83
Weight on Saturn:         46.04
Weight on Uranus:         45.54
Weight on Neptune:        55.44
Weight on Pluto:           3.27
What is your name (enter key to quit):
```

```
Would you like to see the history y/n: n
What is your name (enter key to quit): Moose
Moose is already in the history file.  Enter an unique name.
What is your name (enter key to quit):
```

Grading Rubric

Criteria	Meets (100%)	Somewhat (50%)	Not Present (0%)
Declared a Dictionary with the correct key and values. 10 points	A dictionary is present and coded as specified in this assignment.	A dictionary is present but not coded as specified in this assignment.	A Dictionary is not present.
Calculations 15 points	Calculations were done properly with the correct results.	Calculations were attempted but with some errors or incorrect results.	Calculations were not attempted.

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Output Formatting 20 points	Output was correctly formatted using f-strings per the sample.	Output was attempted using f-strings but did not match the sample.	No f-strings formatting was attempted.
dictPlanetHistory dictionary is created 25 points	Dictionary was created and is coded correctly.	Dictionary was attempted created and is coded mostly correctly.	Dictionary was attempted.
Pickling file dictionary is created 25 points	Pickling was created for both input/output and is coded correctly.	Pickling was attempted for either input or output and is coded correctly.	Pickling was attempted.
Comments and Variable Prefixing 5 points	Comments present and variable prefixing.	Either Comments present or variable prefixing.	No Comments present and No variable prefixing.