

MCS 260 Project One : converting weights due Monday 1 February at noon

The goal of this project is to write a Python program to convert a given weight. The weight once considered in pounds and once in kilograms is converted in the equivalent respective kilograms and pounds. One kilogram (kg) is approximately 2.205 pounds and one pound (lb) is approximately 0.4536 kilograms.

In addition, the program converts the weight into the equivalent weight in gallons and liters of water. One gallon (gal) of water weighs approximately 8.345 pounds or 3.785 kilograms, 1 kg is equivalent to 0.2642 gallons of water, and 1 lb is equivalent to 0.1198 gallons of water. One gallon is 3.785 liters and one liter (l) is the equivalent of 0.2642 gallons.

Write a Python program to convert a given weight considered once in lb and once in kg respectively into kg and lb, and to express the weight in gallons and liters.

The steps in this program are the following:

1. After greeting the user, the user is prompted for a number, and this number is written.
2. All numbers are written with two places after the decimal point.
3. The number is first viewed as a weight in kilograms and converted into pounds, gallons, and liters.
4. Secondly, that number is then considered as a weight in pounds and converted to the other units: gallons and liters.
5. To compute the conversions, the constants given above (with four significant decimal places) are used. So all calculations are done at a larger precision than the precision of the displayed numbers.

If the program is saved in the file `weights.py`, then sessions (using the `$` as symbol for the command prompt) should go as follows:

```
$ python weights.py
Welcome to our weight conversion program!
give a weight : 123.456
-> your weight is 123.46
123.46 kg = 272.22 lb = 32.62 gal = 123.46 l
123.46 lb = 56.00 kg = 14.79 gal = 55.98 l
$
```

Some important points:

1. You may assume the user always types in a number, i.e.: the input is correct.
2. To print floats, use the formatting code `%.2f` as first operand in the `%` operator.
3. The first line of your Python program must be

```
# MCS 260 Project One by <Author>
```

where you replace the `<Author>` by your name.

4. Add documentation to clarify your choice of variables and to indicate the steps of the program.
5. Handing in an incomplete but working program is better than handing in a program that crashes or does not run at all.
6. The computer project must be solved individually. Collaborations are not allowed.
7. Email your solution to the project to `jan@math.uic.edu` before noon on Monday 1 February so the date of the email is proof of an on time submission. Bring also a printed version of your solution to class.

If you have questions or difficulties with the project, feel free to come to my office for help.