PFP – Practical Exam Fall 2023

Q1 (4 marks).

1. *(1 mark)* Write a function that requires the user to input a positive decimal number. In case of incorrect input, the function asks the user to input again. This function returns the input number.

Expected output

```
input_float("Input a decimal:")

Input a decimal:abba
Please input a positive decimal!
Input a decimal:-5
Please input a positive decimal!
Input a decimal:8

8.0
```

2. *(1 mark)* Write a function with a parameter ***weight*** that converts weight from pounds to kilograms, knowing 1 lb. = 0.453592 kg. This function returns weight by kilograms.
3. *(1 mark)* Write a function with a parameter ***height*** that converts height from inches to centimeters, knowing 1 inch = 2.54 cm. This function returns height by meters.
4. *(1 mark)* Write a function that performs the following requirements:
    - Ask if the user wants to enter their weight and height in SI units (kg / m) or imperial units (lb. / inches)
    - Ask the user to input weight and height. If the user chose to input in imperial units, convert them to SI units.
    - Calculate BMI for users, knowing BMI is calculated with the formula $weight/height^2$ $(kg\ /\ m^2)$
    - Inform the users about their BMI classification according to the following table

Classification	BMI range - kg/m^2
Severe Thinness	< 16
Moderate Thinness	16 - 17
Mild Thinness	17 - 18.5
Normal	18.5 - 25
Overweight	25 - 30
Obese Class I	30 - 35
Obese Class II	35 - 40
Obese Class III	> 40

Expected output

```
You want to input your weight and height in SI units or Imperial units:
               0. SI Units (default)
               1. Imperial Units

Input your choice:
Input your weight (kg): 70
Input your height (m): 1.7
Your BMI is 24.2, your class is Normal
```

Q2 (3 marks).

1. *(1 mark)* Write a function that accepts **scores** and **weights** as parameters.
   This function returns the average score calculated as weighted average of score in scores and weight in weights.

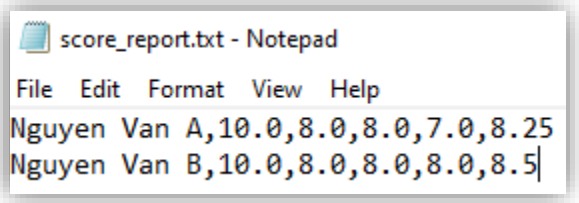
Expected output

```
weight_average((10, 5, 6, 7), (1, 2, 3, 4))
6.6
```

2. *(2 marks)* Write a function that requires the user to input the students' names and scores of 4 subjects CSI105, MAD101, MAE101, PFP191 (scale of 10).
   Known that the weights of the subjects are 3, 3, 3, 3, respectively.
   Calculate the average score and write in the file *score_report.txt* the name, score of each subject and the average score.

Expected output

```
Please input student name: Nguyen Van A
Please input score of CSI105: 10
Please input score of MAD101: 8
Please input score of MAE101: 8
Please input score of PFP191: 7
Continue? (y/n)
Please input student name: Nguyen Van B
Please input score of CSI105: 10
Please input score of MAD101: 8
Please input score of MAE101: 8
Please input score of PFP191: 8
Continue? (y/n)n
```



Q3 (3 marks).

1. *(1 mark)* Write a function with two parameters ***filepath*** and ***keyword***.
   This function reads the file according to ***filepath*** and returns the number of sentences containing the ***keyword*** (case - insensitive).
   Use this function to count the number of sentences contains keyword "independent" in *Vietnamese_Declaration_of_Independence.txt*

Expected output

```
There are 6 sentences in Vietnamese_Declaration_of_Independence.txt contains keyword 'independence'
```

2. *(2 marks)* Write a function with one parameter ***filepath***.
   This function reads the file according to the ***filepath*** and returns a dictionary, where the keys are the words in the text and the values are the number of occurrences. (case-insensitive)
   Use this function to print the top 10 words that appear most often in *Vietnamese_Declaration_of_Independence.txt*

Expected output

```
the 79
of 44
and 39
our 32
have 31
to 29
they 20
in 18
people 17
french 16
```