Preassessment - Coding

For this preassessment, please do not use any outside resources or references. Answer them as best as you can. It is perfectly ok to also leave questions blank if you don't think you can answer them.

Write your code to each problem in a separate .py file and name it q#.py. For example, q1.py would be your code for question 1, q2.py for question 2, etc. When you submit, include all of your .py files.

PROBLEM 1

Given a list containing names of fruits, you want a new list that leaves out any berries in the original list. For example, given the following list:

```
fruitslist = ["apple", "banana", "cherry", "strawberry", "kiwi", "mango",
"blueberry", "pineapple", "raspberry", "plum", "orange", "blackberry", "pear",
"peach", "avocado", "cranberry"]
```

the new list should be:

```
["apple", "banana", "cherry", "kiwi", "mango", "pineapple", "plum", "orange",
"pear", "peach", "avocado"]
```

Write a list comprehension in Python to achieve this. If you do not know how to do it with a list comprehension, use a for loop.

Tip: You can use the **in** membership operator to check whether a substring is present in a string. For example:

```
txt = "The best things in life are free!"
if "free" in txt:
  print("Yes, 'free' is present.")
```

PROBLEM 2

Given a Python dictionary containing a list of stocks and their price, write a for loop to print out the stocks that have a price lower than *budget*. For example, for the following list:

```
stock_prices = { 'GOOGL': 849, 'FB': 136, 'MSFT': 64, 'AAPL': 137, 'AMZN': 848,
'TWTR': 16, 'CSCO': 43.49, 'PG': 141.96, 'AXP': 154.42, 'HD':289.24 }
budget = 140
```

the result should be:

```
FB, MSFT, AAPL, TWTR, CSCO
```

PROBLEM 3

The following Python dictionary contains names and heights (in cm) of some actors. Write a for loop to iterate over the keys and values of the dictionary to find and print the name of the shortest actor in the list.

```
heights = {"Robert Downey Jr.": 175.26, "Chris Evans": 182.88,
           "Mark Ruffalo": 172.72, "Chris Hemsworth": 190.50,
           "Scarlett Johansson": 160.02, "Tom Hiddleston": 187.96,
           "Cobie Smulders": 172.72, "Samuel L. Jackson": 187.96,
           "Clark Gregg": 175.26, "Stellan Skarsgård": 190.50,
           "Jeremy Renner": 175.26}
```

PROBLEM 4

Below is a list containing Martha's monthly spending. Her monthly spending falls into three categories:

- Low: Less than 2000
- Medium: Between 2000 and 3000 inclusive
- High: Greater than 3000

Analyze `monthly_spending`, create `low`, `medium` and `high` variables, and print the following sentence:

```
'Martha's spending was low for {x} months, medium for {y} months and high for {z} months.'
```

```
monthly_spending = [2689.56, 2770.38, 2394.04, 2099.91, 3182.20, 3267.12, 1746.83, 2545.72, 3328.20, 3147.30, 2462.61, 3890.45, 3000.00, 2000.00]
```

PROBLEM 5

Only one of the functions below is correct. The correct function calculates and returns the average (arithmetic mean) of the numbers in the list *v*.

```
def average(v):
    total = 0
    for n in range(1,5):
        total = total + n
    average = total / len(v)
    return average
```

```
def spam(v):
    sack = 0
    for i in range(len(v)):
        sack = sack + i
    return sack / len(v)
```

```
def foo(v):
    sum = 0
    for i in range(len(v)):
        sum = sum + v[i]
    avg = sum / len(v)
    return avg
```

Write a Python function that receives a list of numbers as parameter and prints the numbers in the list that are ***smaller than the average*** of all the numbers in that list. In your solution you must use (call) one of the functions in the section above, namely, the one that correctly calculates the average.

```
def smaller_than_average(nums):
```