COMPUTER SCIENCE 10A (FALL TERM, 2021)
INTRODUCTION TO PROBLEM SOLVING IN PYTHON

PROGRAMMING ASSIGNMENT 2
DUE: FRIDAY, OCT 1ST, 11.59PM

Program Description:

This assignment will test your understanding of the use of `print`, strings, functions, variables, expressions, and modularity.

Write four scripts to solve the following problems. Write each program in a different file named Problem1.py, Problem2.py, etc.

Problem 1:

Write a program that determines the amount of change to be dispensed from a vending machine, using the minimum number of coins. An item in the machine can cost between 25 cents and a dollar, in 5-cent increments (25, 30, 35, …, 90, 95, or 100), and the machine accepts only a single dollar bill to pay for the item. For example, a possible dialogue with the user might be:

```
Enter price of item
(from 25 cents to a dollar, in 5-cents increments): 45
You bought an item for 45 cents and gave me a dollar, so your
change is:
2 quarters,
0 dimes,
1 nickel
```

Problem 2: Write a program that converts lengths from miles to kilometers.

Prompt the user to enter a length in miles. Then have the program display the equivalent length in kilometers, including the fractional part to **two** decimal points. A possible dialogue with the user might be:

```
Enter a length in miles: 3.2
3.2 miles is, 5.14 kilometers
```

Problem 3: Write a program that calculates the average of three integer values. Prompt the user to enter three integers, your program should calculate the average and display it.

Problem 4: A cookie recipe calls for the following ingredients:
1.5 cups of sugar
1 cup of butter
2.75 cups of flour
The recipe produces 48 cookies with these amounts of the ingredients. Write a program that asks

the user how many cookies he or she wants to make and then displays the number of cups (including the fractional part to **two** decimal points) of each ingredient needed for the specified number of cookies. A possible dialogue with the user might be:

```
Please enter the amount of cookies you want to make: 48
You need:
1.5 cups of sugar
1.0 cups of butter
2.75 cups of flour
```

Guidelines:

Include a comment at the beginning of your program with some basic information and a description of the program in your own words. For example:

```
# Name Student
# COSI 10a, Fall 2021
# Programming Assignment #2
#
# Description: ...
```

For this assignment, you must limit yourself to the Python features covered up to lecture 6.

Submission and Grading:

All your python scripts should be inside a folder named `yourfirstname_yourlastnamePA2`, then zip the folder into a zip file for submission. The zip file should have the following name: `yourfirstname_yourlastnamePA2.zip` (Please make sure to use exactly this file name, including identical capitalization).

Your program should be submitted via Latte the day it is due (for late policy check the syllabus).

You will be graded on:

- **External Correctness:** The output of your program should match exactly what is expected. Programs that do not compile will not receive points for external correctness.
- **Internal Correctness**: Your source code should follow the stylistic guidelines shown in class. Remember to include the comment header at the beginning of your program and comment your code.