Lab 3 – Practice with calculations

The purpose of this lab is to practice calculations and output in Python.

Problem Description

Since you are studying programming, your friends are now asking you to help them figure out their grades. Assuming that homework is worth 20%, labs are worth 20%, quizzes are worth 10%, tests are worth 30%, and the final exam is worth 20%; you need to determine the required grade on the final exam to make some minimum course grade.

Your program must ask the user for their homework average, lab average, quiz average, and their test average. Your program will also ask the user for their desired numeric grade (0-100).

Your program will then calculate the current grade (before taking the final exam) and the required score on the final exam to achieve their desired grade.

Your program will then output a summary of the information and the required score to achieve their desired grade.

Here is an example run:

```
Homework average? 85
Lab average? 95
Quiz average? 88
Test average? 87
Desired numeric grade in class? 90

Component   Your Average        Course grade amount
-------------------------------------------------
Homework              85%                      17.0
Lab                   95%                      19.0
Quiz                  88%                       8.8
Test                  87%                      26.1
-------------------------------------------------
Grade before taking the final:                 70.9

Desired grade:                                 90.0

Grade needed on final to get desired grade:    95.5
```

What to Do

1) Design an algorithm for solving this problem. Write your algorithm, in plain english, as comments at the beginning of your program. Identify any conversion factors required. Also describe how to output the required data in the specified format.

2) After you have written down the steps to solve the problem (as a comment), write your Python solution. Be sure to provide appropriate comments to explain your code.

Requirements:

1. Use good comments. Include your name, date, and purpose. Provide an algorithm for the problem. (10)
2. Use good white space for readability. (5)
3. Use correct named constants and variables of the appropriate types. (10)
4. Program must produce the desired output, with exact formatting. (75)

Submission

Submit your .py file that contains both your algorithm and your solution by the end of lab time today, Sept. 5, 2024.