Programming Assignment #2

Macronutrient Ratio Calculator

CS 1428.253, Spring 2020
Instructor: Jill Seaman

Due: Monday, 2/10/2020 (upload electronic copy by 11:59pm)

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Problem:

Your friends are trying to lose weight and build muscle and want to calculate some statistics about their daily food intake. Write a C++ program that will calculate these statistics.

There are three main macronutrients: carbohydrates, fat, and protein.
Each gram of carbohydrate is 4 calories.
Each gram of fat is 9 calories.
Each gram of protein is 4 calories.

Input: The user should be prompted to input the amount of carbohydrates, fat, and protein in grams consumed that day. These will be whole numbers.

Processing: Your friends want to know: the total number of grams consumed and the total number of calories consumed. They also want to know the percent of total calories contributed by each of the macronutrients. For example, if 800 calories are from carbohydrate, 800 calories are from fat, and 400 calories are from protein, then 40% were from carbohydrate, 40% were from fat, and 20% were from protein. And finally, they want to know the Protein:Energy Ratio. This is the number of grams of protein divided by the sum of the number of grams of fat and carbohydrate.

Output: The program should print the statistics described above. All output should be clearly labeled and percentages should include a percent sign (%). Percentages and the Protein:Energy Ratio should be formatted to exactly 1 decimal place.

Sample output:

```
Please enter the amount of carbohydrate in grams: 200
Please enter the amount of fat in grams: 90
Please enter the amount of protein in grams: 100


Total Grams    : 390
Total Calories : 2010

Percent of calories from each macronutrient:
Carbohydrate:   39.8%
Fat:            40.3%
Protein:        19.9%


Protein:Energy Ratio : 0.3
```

Additional Requirements:

- Your program **must compile** and run, otherwise you will receive a score of 0.

- Use appropriate data types. Use **int** unless you know the value could have non-zero digits after the decimal point.

- Don't worry if your output values are off by 0.1. This is due to a rounding error.

- Your program must output the correct values given **any** valid input values.

Style:

See the Style Guidelines document on the class website. In particular:

- Include the **Header comments**, like last time, including a good description

- **Variables**: Use meaningful variable names and use camel case. Each variable declaration must be on a separate line with a descriptive comment.

- **Named constants**: use these for numeric literals, and use uppercase and underscores in their names.

- Source code lines should be less than 80 characters in length, and the program statements should be indented appropriately.

Logistics:

Name your file **assign2_xxxxx.cpp** where xxxxx is your TX State NetID (your txstate.edu email id). The file name should look something like this: assign2_js236.cpp

Submit an **electronic copy** using the Assignments tool on the Canvas course for this class (canvas.txstate.edu). Submit the .cpp file, (NOT a .cbp file!).

See the assignment turn-in policy on the course website (cs.txstate.edu/~js236/cs1428) for more details, including late deadlines and penalties.