Assignment #2

Introduction to C Programming – COP 3223

Objectives
1. To give students practice at typing in, compiling and running simple programs.
2. To reinforce knowledge of assignment statements and arithmetic expressions
3. To learn how to use if statements for conditional execution.

Introduction: Exercise UCF
UCF is committed to student health and already has a great Recreation and Wellness center on campus for students to use. To encourage students to find out more about themselves and their fitness, they are implementing some new initiatives.

Exercise UCF is one of their new programs to educate students about weight, calories, and Body Mass Index. UCF would like to the help of the Computer Science division to create some of these programs.

Problem: Calorie Counting (calorie.c)
Exercise UCF recognizes that most people equate health and fitness with reaching a certain weight, rather than a certain BMI. To help participants understand their weight goals, they would like a program that calculates how many weeks it will take a participant to reach their goal based on their daily intake and expenditure of calories.

To begin this program, you must determine whether the user wants to gain or lose weight. Do this by asking them to enter their current weight and their weight goal.

Then, determine their daily calorie profile. Ask them how much time they spend walking, working out, eating, and drinking in minutes. The following assumptions will be used to determine how many calories are made or lost each day.

1) When walking, you burn 5 calories/minute.
2) When participating in an Exercise UCF workout, you burn 10 calories/minute.
3) When you are consuming solid food, you ingest 40 calories/minute.
4) When you are consuming a drink, you ingest 20 calories/minute.

Define appropriate constants for these values.

After you have calculated how much the user gains or loses in calories each day, determine how many days it will take them to reach their goal weight. Assume 3500 calories must be burned in order for a participant to lose 1 pound. Similarly, 3500 calories must be gained in order for a participant to gain 1 pound.

Your output should tell the user how many calories they gain or lose each day, how many more pounds they have left to gain/lose, and how many weeks and days it will take to reach their goal.

Input Specification
1. The initial weight positive integer (in pounds) less than 1000.
2. The goal weight will be a positive integer (in pounds) less than 1000.
3. The 4 calorie values will be non-negative integers less than 720, representing the number of minutes spent for each of the four activities.

Output Specification
If the user is trying to gain weight:

```
You gain X calories per day.
You have Y more pounds to gain.
You will reach your goal weight in A weeks and B days!
```

If the user is trying to lose weight:

```
You burn X calories per day.
You have Y more pounds to lose.
You will reach your goal weight in A weeks and B days!
```

Output Sample
Below are some sample outputs of running the program. **Note that these samples are NOT a comprehensive test.** You should test your program with different data than is shown here based on the specifications given above.

In the sample run below, for clarity and ease of reading, the user input is given in *italics* while the program output is in **bold**. (Note: When you actually run your program no bold or italics should appear at all. These are simply used in this description for clarity's sake.)

Sample Run #1
What is your current weight?
100
What is your goal weight?
120
How many minutes do you walk per day?
30
How many minutes do you exercise per day?
10
How many minutes do you drink per day?
10
How many minutes do you eat per day?
90

You gain 3550 calories per day.
You have 20 more pounds to gain.
You will reach your goal weight in 2 weeks and 5 days.

Sample Run #2
What is your current weight?
260
What is your goal weight?
215
How many minutes do you walk per day?
60
How many minutes do you exercise per day?
40
How many minutes do you drink per day?
17
How many minutes do you eat per day?
90

You burn 3240 calories per day.
You have 45 more pounds to gain.
You will reach your goal weight in 6 weeks and 6 days.

Deliverables
One source files – *calorie.c* – is to be submitted over WebCourses.

Restrictions
Although you may use other compilers, your program must compile and run using Code::Blocks. Your program should include a header comment with the following information: your name, course number, section number, assignment title, and date. Also, make sure you include comments throughout your code describing the major steps in solving the problem.

Grading Details
Your programs will be graded upon the following criteria:

1) Your correctness

2) Your programming style and use of white space. Even if you have a plan and your program works perfectly, if your programming style is poor or your use of white space is poor, you could get 10% or 15% deducted from your grade.

3) Compatibility – You must submit C source files that can be compiled and executed in a standard C Development Environment. If your program does not compile, you will get a sizable deduction from your grade.