Assignment #3

Introduction to C Programming – COP 3223

Objectives

1. To reinforce the use of If-Else statements
2. To practice using characters as input
3. To learn how to use while loops

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: Heart Rate (heart.c)

Exercise UCF has been teaching its participants about the best methods for reaching their goals. Almost all workout plans include at least three cardio workouts per week. In order for participants to get the maximum benefit from their cardio workouts, Exercise UCF wants a program that monitors how often a participant is reaching their target heart rate.

For this program, the user will enter their gender and age. The program should then calculate the target heart rate. This number is *226 – age* for men and *220 – age* for women.

Then, participants should be asked to enter their recorded heart rates. These will be an integer and they should be entered one at a time. The final number will be a -1, to indicate that there are no more heart rates to be entered. You should use a while loop for this input process.

The program should keep track of how many times the heart rate met or exceeded the target heart rate and print this result to the user.

Input Specification

1. The age will be a positive integer less than 100.
2. The gender will be one of two characters: ‘f’ or ‘m’.
3. Each heart rate will be a positive integer.
4. The last integer will be -1 to indicate there are no more values. This integer is not a heart rate value.

Output Specification

The output should be a single line that tells the user how many times they hit their target heart rate:

```
You hit your target heart rate X times out of Y!
```

Output Samples

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 gender?
f
What is your age?
27
Enter your recorded heart rates:
200
198
180
-1
You hit your target heart rate 2 times out of 3!

Sample Run 2

What is your gender?
m
What is your age?
25
Enter your recorded heart rates:
200
202
199
200
201
206
198
195
190
210
-1
You hit your target heart rate 4 times out of 10!

Deliverables

One source files – *heart.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.