HW 4: Due at 11:59 Thursday, March 26, 2014

Name:

ID:

Email:

(From homework 3) Write a program that reads in ten whole numbers and outputs the sum of all the numbers greater than zero, the sum of all the numbers less than zero (which will be a negative number or zero), and the sum of all the numbers, whether positive, negative or zero. The user enters the ten numbers one at a time and the user can enter them in any order. The program should not ask to enter the positive and negative numbers separately. The program should also display the numbers used.

1. Modify the above program so that it outputs the sum of all positive numbers, the average of all positive numbers, the sum of all nonpositive numbers, the average of all nonpositive numbers, the sum of all numbers and the total average.
2. Modify problem 1 to use 10 random values between -100 and 100.
3. (3.7 From Book) Write a program that accepts a year written as a four-digit Arabic (ordinary) numeral and outputs the year written in Roman numerals. Important Roman numerals are V for 5, X for 10, L for 50, C for 100, D for 500, and M for 1000. Recall that some numbers are formed by using a kind of subtraction of one Roman “digit”; for example, IV is 4 produced as V minus I, XL is 40, CM is 900, and so on. A few sample years: MCM is 1900, MCML is 1950, MCMLX is 1960, MCMXL is 1940, MCMLXXXIX is 1989. Assume the year is between 1000 and 3000. Your program should include a loop that lets the user repeat this calculation until the user says she or he is done.
4. (2.18 From Book) The Harris-Benedict equation estimates the number of calories your body needs to maintain your weight if you do not exercise. This is called your basal metabolic rate, or BMR. The formula for the calories needed for a woman to maintain her weight is:
   1. BMR = 655 + (4.3 x weight in pounds) + (4.7 x height in inches) – (4.7 x age in years)

The formula for the calories needed for a man to maintain his weight is:

* 1. BMR = 66 + (6.3 x weight in pounds) + (12.9 x height in inches) – (6.8 x age in years)

A typical chocolate bar will contain around 230 calories. Write a program that allows the user to input in the following order: his or her weight in pounds, height in inches, age in years, and the character M for male and F for female. The program should then output the number of chocolate bars that should be consumed to maintain one’s weight for the appropriate sex of the specified weight, height, and age. Allow the user to do this as many times as they wish.

1. Write a program that calculates the total grade for N classroom exercises as a percentage. The user should input the value for N followed by each of the N scores and totals. Calculate the overall percentage (sum of the total points earned divided by the total points possible) and output it as a percentage. Sample input and output is shown below:

How many exercises to input? **3**

Score received for exercise 1: **10**

Total points possible for exercise 1: **10**

Score received for exercise 2: **7**

Total points possible for exercise 2: **12**

Score received for exercise 3: **5**

Total points possible for exercise 3: **8**

Your total is 22 out of 30, or 73.33%.

1. Write a program to score the rock-paper-scissor game. Each of two users types in either P, R, or S. The program then announces the winner as well as the basis for determining the winner: Paper covers rock, Rock break scissors, Scissors cut paper, or Nobody wins. Be sure to allow the users to use lowercase as well as uppercase letters.
2. Using problem 6, allow the user to play the game as many times as they want until they are done.
3. Modify program 6 to allow two computer bots to play the game. The user will control each new game and decide when to stop playing, but the computer bots will make the decisions to choose rock, paper, or scissors. The user should be able to play as many times as they want.
4. Put programs 7 and 8 into one project, specifically, allow the user to select between program 7 and program 8 through some sort of menu-based operation.