BMI

Language/Type: C++ interactive programs user input parameters return
Related Links: simpio.h

Write a complete C++ program with a `main` function to calculate 2 people's body mass index (BMI), using the following formula:

$$BMI = weight / height^2 * 703$$

The BMI rating groups each person into one of the following four categories:

BMI	Category
below 18.5	class 1
18.5 - 24.9	class 2
25.0 - 29.9	class 3
30.0 and up	class 4

Match the following example output:

```
This program reads data for two people
and computes their body mass index (BMI).

Enter Person 1's information:
height (in inches)? 70.0
weight (in pounds)? 194.25
BMI = 27.8689, class 3

Enter Person 2's information:
height (in inches)? 62.5
weight (in pounds)? 130.5
BMI = 23.4858, class 2

BMI difference = 4.3831
```

You should break down your program into several **functions**, each of which helps solve the overall problem.

. . .

```cpp
#include <cstdlib>
#include <iostream>

using namespace std;

void BMIprog();
double BMIcalc(int person);
double diffcalc(double bmi1, double bmi2);
double classcalc(double input);

int main(){
   BMIprog();
    return 0;
}

void BMIprog(){
   cout << "This program reads data for two people" << "\nand computes their body mass index (BMI)." << endl;

   double BMI1 = 0.0;
```

```
20    double BMI2 = 0.0;
21    double BMIdiff = 0.0;
22    BMI1 = BMIcalc(1);
23    BMI2 = BMIcalc(2);
24    BMIdiff = diffcalc(BMI1,BMI2);
25    cout << "\nBMI difference = " << BMIdiff << endl;
26 }
27 double BMIcalc(int person){
28    double retval = 0;
29    double height = 0.0;
30    double weight = 0.0;
31    cout << "\nEnter Person " << person << "'s information:" << endl;
32    cout << "height (in inches)? ";
33    cin >> height;
34    cout << "weight (in pounds)? ";
35    cin >> weight;
36
37    retval = (weight/(height * height)) * 703;
38
39    cout << "BMI = " << retval << ", class " << classcalc(retval) << endl;
40    return retval;
41 }
42 double diffcalc(double bmi1, double bmi2){
43    double retval = 0.0;
44
45    retval = bmi2 - bmi1;
46    if(retval < 0){
47       retval *= -1.0;
48    }
49    return retval;
50 }
51 double classcalc(double input){
52    if(input < 18.5){
53       return 1;
54    }
55    else if(input < 24.9){
56       return 2;
57    }
58    else if(input < 29.9){
59       return 3;
60    }
61    else{
62       return 4;
63    }
64    return 0;
65 }
```

Complete program: Write an entire program that you could put into a file and run outside of CodeStepByStep.

Submit

You passed 2 of 2 tests.

test #1: test1

console output:

```
This program reads data for two people
and computes their body mass index (BMI).

Enter Person 1's information:
height (in inches)? 70.0
weight (in pounds)? 194.25
BMI = 27.8689, class 3

Enter Person 2's information:
height (in inches)? 62.5
weight (in pounds)? 130.5
BMI = 23.4858, class 2

BMI difference = 4.3831
```

return: 0
result: pass

test #2: test2
console output:
```
This program reads data for two people
and computes their body mass index (BMI).

Enter Person 1's information:
height (in inches)? 58.25
weight (in pounds)? 94.75
BMI = 19.631, class 2

Enter Person 2's information:
height (in inches)? 72.0
weight (in pounds)? 250.25
BMI = 33.9363, class 4

BMI difference = 14.3053
```
return: 0
result: pass

Need help?

Stuck on an exercise? Contact your TA or instructor.

If something seems wrong with our site, please contact us.