Assignment 4

Reading and Exercises

Read pages 186-211 from the textbook and Lesson 4 from the Course Contents section

Questions

1) Boolean values in C++ are represented as internally as 0 (false) and anything else (true). What is the result of (3 <4) && (5 > 7) as a boolean value and what is its internal representation ? 2)

Write, using the operators ! (not), <, >, <= , >=, || and && , the opposite of the following:

a < b && c < d

The opposite will be a boolean expression using the operators above such that it is true if the above is false, and false if the expression above is true.

3) When are braces { } needed as part of an if statement ?

C++ Program

Given the incomplete program below, write two functions, one called *integer* and another called *decimal.*

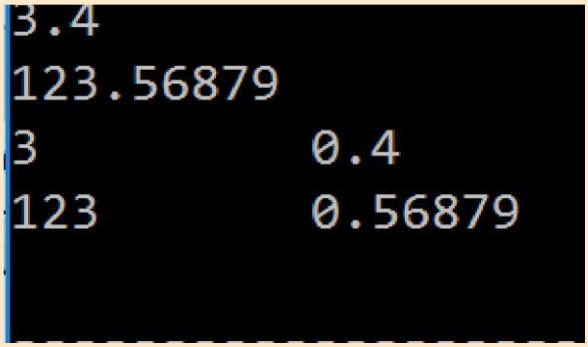
Function *integer* takes a decimal number (a *double)* as a parameter (input) and returns its whole number (no rounding). For example, a call like *integer(3.56)* should return 3 and *integer (-23.99)* should return -23.

Function *decimal* also takes a decimal number (a *double)* as its only parameter (input) and returns the decimal portion of the number. The decimal portion should appear as positive. That is, *decimal (3.56)* should return 0.56, and *decimal (-23.457)* should return 0.457 and not -0.457 .

The *main* function will just define two (or more) variables of type double, values will be read into them from the keyboard, and then functions *integer* and *decimal* will be called for each one of those variables so that, for each, the integer part and decimal part returned by those functions are printed separated by several spaces.

Use the output formatting directives (and add #include <iomanip> to the top of your program) to display the results lined up as shown below.

I suggest you use *setw* to set aside the number of "positions" within which the integer and decimal will be displayed, and use *left* to justify the integer and decimal results. The output should be lined up as shown in the example below that assumes the numbers entered were 3.4 and 123.56879 .



Continued below

You can use following incomplete program. Your assignment is to supply the necessary missing code:

```
#include        <iostream>
#include<iomanip>
using namespace std;


int integer (….)
{
 //REPLACE THE … WITH THE REQUIRED PARAMETER (A DOUBLE)
//WRITE HERE THE CODE TO EXTRACT THE INTEGER AND RETURN  IT
}                                                                                M


double decimal (….)
{
 //REPLACE THE … WITH THE REQUIRED PARAMETER
//WRITE HERE THE CODE TO EXTRACT THE DECIMAL PORTION,
//MAKE SURE IT'S POSITIVE OR CONVERT IT AND RETURN IT
}


int main() {

 double x,y;
cout << "Enter two decimal numbers"<< endl;
```

```
cin >> x >> y;


 //WRITE THE CODE TO DISPLAY THE RESULT OF CALLING THE
//FUNCTIONS //WITH X

//WRITE THE CODE TO DISPLAY THE RESULT OF CALLING THE
//FUNCTIONS //WITH Y

//USE SETW AND LEFT (SEE LESSON 3 NOTES ON OUTPUT) TO LINE
//UP THE //RESULTS AS SHOWN ABOVE


 return 0;
}
```

Function main should be the one in charge of displaying the results.

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