

This lab is for experimentation of output and input formats in C++.

Setting Up

1. Start Visual Studio as usual and create a new Visual C++ / Windows Console App as usual
2. Be sure to specify “Empty Project” and then Add a new Source File to the project (as usual)
3. Go to <http://www.HAL9K.com/cps171/LabioFormat.cpp>
4. Highlight the whole web page using mouse or <CTRL>A, right click, and choose Copy
5. Paste into the blank source page
6. Choose Build --> Build Solution from the menu (or hit <F7> key)
7. Notice the Warning about “truncation”. Change declarations from float to double to fix that.
8. Turn on Line Number Display: Tools -> Options -> Text Editor -> All Languages -> General and check “Line Numbers” checkbox

Your task is to do some experimenting and fill in the results on the attached table to be handed in. Think of this like a chemistry experiment, where you try something and record the results.

Part I - output formatting

1. Build and run the program as it is now and examine the spacing of the values on the output. Fill in the first row of the attached table to hand in, being sure that you show all characters precisely.
2. Change the **setw** widths in all places of lines 24 – 27 to be **setw(7)**. Build and run again, and use the output to fill in the next row of the table.
3. Repeat Step 2 with **setw(1)**. Experiment with any other values you want to try.
4. Change line 26 to use **setprecision(2)**. Fill in the next row of the table.
5. Use appropriate **setprecision** expressions on lines 26 and 27 so that the cost is printed with 1 decimal place and the tax is printed with 2 decimal places. Fill in the missing code in the table.

Part II - format of input data

Remove the `/*` on line 31 and the `*/` on line 41 and put the **setprecision** expressions on lines 26 and 27 to be **setprecision(2)**.

Build and run the program, entering the following line as data values when you are prompted:

27B3.5 4.7

Look at the output and fill in the values in each of the variables in the first row of the table for Part II.

Run the program several more times using the following data sets (note the spacing) and fill in the rest of the table to show the contents of the variables after each run. Which ones work correctly? Explain what happens for the incorrect ones.

82 P1.2 3.4

431

C 2.1Q 4.7

.5 D 5.6 8.1

99 7.8 .4

If you have any time remaining, try experimenting with the manipulators **left** and **right** for output.

Part I

Output	123456789012345678901234567890
Original program	num= ch= cost= tax=
With setw(7)	num= ch= cost= tax=
With setw(1)	num= ch= cost= tax=
With setprecision(2)	num= ch= cost= tax=
Line 25: Line 26:	cout << "cost= " << _____ << setw(1) << cost << endl; cout << "tax= " << setw(1) << _____ << tax << endl;

Part II

Input	num	ch	cost	tax
27B3.5 4.7				
82 P1.2 3.4				
431 C 2.1Q 4.7				
.5 D 5.6 8.1				
99 7.8 .4				

Explanation: