

Homework #2 C/C++ Programming

Due: February 1, 2014 (Saturday at 11:59 PM)

Paint Job Estimator Program

A painting company has determined that for every 115 square feet of wall space, one gallon of paint and eight hours of labor will be required. Additionally, for every 130 square feet of ceiling space, one gallon of paint and 6 hours of labor will be required. The company charges \$20.00 per hour for labor. Write a program that asks the user to enter the dimensions of the room (i.e., length, width, and ceiling height), the price of the wall-paint per gallon, and the price of the ceiling-paint per gallon. Your program should assume that the room is a box so you do not need to worry about window or door cutouts.

Since a homeowner might want to consider painting only the walls or ceiling, your program should display the information about the walls and ceiling separately. It should print:

- The number of gallons of wall paint required
- The hours of labor required for painting the walls
- The cost of the wall paint
- The labor charge for painting the walls
- The total cost of painting just the walls

- The number of gallons of ceiling paint required
- The hours of labor required for painting the ceiling
- The cost of the ceiling paint
- The labor charge for painting the ceiling
- The total cost of painting just the ceiling

- The total cost of painting both the walls and the ceiling

When you write your program, be sure you:

- use meaningful variable names with good style (i.e., useCamelCase)
- use comments (`//` single-line or `/*` Multi-line Comment `*/`) at the start of the program, to label tricky blocks of code, and to explain the contents of variables
- use global constants where appropriate with good style (`ALL_CAPS_AND_UNDERSCORES`), e.g.,
`const double LABOR_COST_PER_HOUR = 20.00;`
(Put your global constants after your `#include` compiler-directives and before your main function definition so they can be found and changed easily in future versions of your program.)
- format the output nicely (dollars amounts should look like \$45.67)

Submit the single file, hw2.zip containing the following: (see directions on the back as necessary)

- `paintEstimator.cpp` (your C++ program)
- `out.txt` (text file containing a “script” of your program as it runs with a room that is 10 feet by 15 feet with a ceiling height of 10 feet, wall paint \$20.50 per gallon, and ceiling paint \$18.75 per gallon)

The steps for the homework submission system are:

1. Design, write, debug, and test your program in a hw2 folder on student.cs.uni.edu. When you are ready to submit your homework:
 - copy the hw2 folder to your local computer using a secure ftp client (e.g., FileZilla, WinSCP, etc.)
 - zip the hw2 folder by right-clicking on it and selecting `Send to | Compressed (zipped) folder`. This will create a new file called `hw2.zip` which you will submit electronically. (This assumes Windows OS....)
2. Log on to the submission system at: https://www.cs.uni.edu/~schafer/submit/which_course.cgi
(It is very likely that you will get some security certificate warnings when trying to use this. You may add an exception and accept the existing security certificate.) Use your CatID user-name and password.
3. Select the course and section number of "CS 1160, C/C++ Programming, Fienup". Click the "Continue".
4. Select the homework that you wish to submit: "HW 2: Paint Estimator". Click the "Continue" button.
5. Specify how many extra files you want to submit. Just leave it at 0. Click the "Continue" button.
6. Upload your program by Browsing and selecting your `hw2.zip` file. Click the "Continue" button.
7. The next page reports on the status of the upload(s). You can always continue to upload a better version of the program until the deadline. The newer file will replace an older file of the same name.
(If you miss the deadline, you'll need to submit it as above, but select "Late Homeworks" in step 4 above.)