**Home Renovation**

**NOTE please name your file using this format: LastnameHW2.py**

You are working for renovation homes company and you need to calculate a cost of materials for siding and roof for a rectangular house. You should write a program that determines and displays:

**SIDING**

* The total area of walls (for siding). This area should be decreased for 20% for windows and doors.
* The number of profiles (every profile is 9x32 in).
* The number of boxes of siding nails and weather side strips (one box of nails needs for two profiles and two strips is enough for 3 profiles).
* The total cost of materials for siding.

**ROOF**

* Total area of the roof.
* The number of bundles of shingles (one bundle is 33.3 sq. ft.)
* The number of boxes of roofing nails (one boxe of nails are enough for three bundles of shingles).
* The cost of materials for the roof.

**The total cost of materials for the renovation.**

The program will prompt the user for the length, width, and height of the house. Also, you need to ask the cost of each type of materials.

**Some things to note:**

For calculating areas of walls and a roof, it should be considered that the roof and ceiling represent an equilateral triangle. The length and width of the roof should be increased by 5 inches on each side.

60°

60°

60°

L + 5 in

L

L + 5 in

**User Interface Specifications**

**Input**

* At the start, the program should display a brief description of what it does. This is different than a comment (for a different audience).
* The program then prompts for the three measurements of the house in feet.
* After that, the program prompts for the unit prices for each type of materials.

**Output**

Once done with calculations, the program should display a report to the user with the following:

* Total area on the walls.
* The number of profiles, boxes of siding nails, and weather side strips need for siding.
* The cost of materials for siding.
* Total area of the roof.
* The number of bundles of shingles and boxes of roofing nails needed for the roof.
* The cost of materials for the roof.
* The total cost of materials for the renovation.

**Code Specifications**

* include**header** comments at the top of the file that has your name, date, and a brief description of the program. The description should be 1 to 2 lines long describing the purpose of the program.
* include **comments** for each section: input, process, output. An example might be: **# get house dimensions from user**
* include **blank lines** to separate the main sections of the code
* use descriptive **variable names.**

**Suggestions**

I recommend doing this in stages. First just try to get the input and display them. Then focus on 1 calculation at a time, and display that result. Make sure to test your program's calculated results against hand-calculated results to make sure your program is correct.

**Testing**

Test your program to make sure everything works.

* Develop at least 2 test cases, where you calculate the correct results by hand. These are known as the ***expected results***. Then confirm that the program's ***actual results*** match these.
* Document your testing: Include comments at the end of your program describing the test cases you used and the results you obtained.

**Example for testing**

INPUT

Enter a length of house in feet: 50

Enter a width of house in feet: 30

Enter a height of house in feet: 10

Enter a cost of profile in $: 128.75

Enter a cost of siding nails in $: 15.96

Enter a cost of side strips in $: 11

Enter a cost of a bundle of shingles in $: 24.75

Enter a cost of roofing nails in $: 2.98

OUTPUT

The house has length = 50, width = 30, height = 10

SIDING

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Total area of walls is 1600

Total profile is 80

Boxes of siding nails are 40

Weather side strips are 54

The cost of materials for siding $11532.40

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ROOF

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Bundles of shingles are 93

Boxes of roofing nails are 92.38

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TOTAL

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The cost of materials for the roof $2394.13

Total cost of home renovation $13926.53

**Written Report**

Please type up the answers to the following questions as comments at the bottom of your .py file:

1. How did you go about starting this assignment?
2. During development, where did you get stuck, if at all, and how did you get unstuck?
3. How did you test your program? What were your test cases (include the inputs and the expected results)? What works and what doesn't?
4. What did you learn from this assignment? What would you do differently next time?

**Good Luck!**