Workshop - 6

Workshop Value: 10 marks (4.4% of your final grade)

Learning Outcomes

Upon successful completion of this workshop, you will have demonstrated the abilities:

- to decipher and identify a problem
- to analyze and decompose a problem
- to identify the required detailed steps to solve a problem
- to communicate the solution to fellow peers and non-technical business persons

Workshop Grading and Promotion Policy

Workshops for this course will be assessed using the following criteria:

- Workshops must be completed before the class time to be graded
- You must successfully complete 9 workshops (if more than 9 are completed, the best 9 will be used)
- Each student is expected to be a presenter of the workshop solution at least once by the end of the term
- Workshop solutions and presentations will be evaluated using the published workshop rubrics

Workshop Overview

Online calculator tools are very popular – especially when you need an estimate when ordering products/services that have a heavy price tag attached. One example of such a product is paint. Performing an accurate cost estimate can get complicated and have many steps involved. Most customers will not dedicate too much time in doing this accurately themselves and will most likely make errors.

Workshop Details

An online paint estimator tool is required to provide an accurate estimate of the number of cans of paint needed for the customer's needs as well as the total cost (net/sub-total: without tax and gross: with tax). You need to define the overall necessary processes required for this application.

There are some basic requirements you need to account for:

1. **Paint Types**

   Base Paint

   - Base coat paints have less coverage as they are designed to soak into the wall/surface material and seal the pores so a smooth and consistent final coat can be applied for a better professional look.
   - Typically, two (2) coats are applied for best results, but this ultimately is up to the customer if it is even used at all
   - Base coat paints have a coverage of 12 m^2 and cost $40.75 per can

   Finishing Paint

   - Finishing paints are more expensive and provide the final desired colour (they also have higher coverage rates if a base coat was used)
   - Depending on if a base coat paint was applied (and how many coats), the number of suggested coats required of the finishing paint varies:

  - If two (2) coats of base paint were used, one (1) coat of finishing paint is sufficient
  - If one (1) coat of base paint was used, two (2) coats of finishing paint is suggested
  - If no base paint was used, three (3) coats of finishing paint is suggested
  - The number of planned coats is ultimately up to the customer
- Finishing paints have a coverage of 15 m^2 and cost $47.75 per can

2. Input Information

- You need to be able to determine the overall area that needs painting to be able to provide an estimate.
- You can't ask the customer to simply enter the total area – the online tool must determine and calculate this information based on the necessary inputs from the customer
- You must provision for the customer to enter the required dimensions/measurements that reflect their painting requirements
- You can assume metric meter (m) units are used.

Note/Hints

- You should not include openings that don't require painting such as doors and windows
- Don't forget about ceilings…

3. Output Information

- The final output to the customer should include the following details:
  - Total area to be painted
  - Itemized listing of the paint, unit cost/can, quantities, and total cost. This means…
    - Base paint (if applicable) will be on its own line (showing the unit cost per can, number of cans required and the total cost for that paint before taxes)
    - Finishing paint will be on its own line (showing the unit cost per can, number of cans required and the total cost for that paint before taxes)
  - Sub-Total of the detailed itemized total above before taxes
  - Taxes (HST) amount to be applied to the sub-total amount at a rate of 13%
  - Total of the sub-total and taxes combined

Your Tasks

Using the "Computational Thinking" approach to problem solving:

1. Define the process for the online tool.

2. Develop the necessary pseudo code and a flowchart that illustrate and communicate the defined solution.

3. Presenters will prepare a video which presents the problem and solution in non-technical terms and argues why this is a good solution to the problem.

[Logic 1] Calculate area to be painted. This will prompt for the room size and the sizes of door and windows.

[Logic 2] Calculate type and number of cans of paint required. The area will be an input and it will prompt for the number of coats of each paint type.

[Logic 3] Calculate sub-total, taxes and total cost of the required cans of paint. This will take the number of cans of each paint type as input.

[Combined] Combine the three logic portions to yield a final solution.

Task	Subtask	Member(s)	Marks	Comments
Pseudocode	Logic 1	4	40%	
	Logic 2	5	40%	
	Logic 3	6	40%	
	Combined	4-6	60%	
FlowChart	Logic 1	1	40%	
	Logic 2	2	40%	
	Logic 3	3	40%	
	Combined	1-3	60%	
Video	Presentation	3 or 6	100%	Members rotate weekly