S308 Assignment 1 – Supplies Calculator

Important!

This is an individual assignment. Students are NOT allowed to work together or seek help from anyone else including current and former S308 students. Any questions about the assignment should be sent to the instructor. Anyone found to have received help from another person will receive a zero (0) for the assignment and will be reported for academic misconduct.

Also, please review the important grading notes, at the end of these instructions. The requirements listed will be used to grade your assignment.

Background

To promote campus health and safety, your client, Kelley School of Business, would like to prepare cleaning supplies for all the professors, staffs, and students. Your client is able to provide you the numbers of professors, staffs, and students for this fall. To help you client get accurate estimation, you need to design a calculator to estimate the number of masks, hand sanitizers, and gloves.

Your trusty assistant, Watson, has done some research and provided you with the following information.

- The table below provides expected weekly consumption for a professor, a staff, and a student.

	Mask	Hand Sanitizer	Glove
A professor	5.5	1.2	3.5
A staff	3.5	0.8	2.8
A student	4.5	2.1	2.5

- The costs to prepare a mask, a hand sanitizer, and a glove are $8.5, $15.5, and $6.5.
- Regardless the amounts of supplies the school order, they need to pay $250 shipping fees.
- Kelley School of Business expect such policy can help their professors, staffs, and students save potential medical expenses as follow.

	Potential Medial Expense
A professor	100
A staff	80
A student	150

Your job is to build a program that have the following features.

- The program should allow the client to enter the number of professors, staffs, and students.
- The program should contain a button. After the client clicks the button, the programs should show the numbers of masks, hand sanitizers, and gloves the school needs to order.
- Besides that, the program should also automatically show potential benefits ("potential medical expense" minus "costs of purchasing the supplies").
- The program should have a clear button. Once the client clicks this button, it can empty all the input and output textboxes.

* For this assignment you are required to build both the user interface and write the necessary code to make the application function properly. (All the numbers are made up for the purpose of practicing your programming skills.)

Assumptions

- Assume that the user will always enter a valid number. We do not need to worry about a user will enter a text or punctuation.
- Since it is not impossible to prepare 0.3 masks or 0.7 hand sanitizers, you should always round up to the next whole number. (Hint: Math.Ceiling)
- You should round the benefits up to one decimal number. (Hint: Math.Round)

User Interfaces

There is no restriction about designing your user interface. However, your interface should meet the following criteria.

- A proper window name called Supplies Calculator.
- The window's size should not be resizeable.
- The width should be 600, and height should be 400.
- You should have three Textboxs and corresponding labels for input.
- You should have four Textboxs and corresponding labels for output.
- The output Textboxs cannot be manually modified (Hint: IsEnabled).

Important Grading Notes:

- You must zip the entire solution into one zip file to submit the assignment in Canvas.
  After you submit the file, you should try to download it, extract the files from the zip file, and see if you can open and run the program. If you can't, there is a problem that you need to fix with your submission.
- Name your file ******_A1.zip** where ******** is your IU Network ID
- Choose the appropriate control types to use in the interface.
- Provide titles, instructions, and labels needed for a new user to understand the purpose of and how to work with your application.
- Be sure to use proper naming conventions and meaningful names for your window, all of the controls, and your variables. **This is an important step as it will make the code in your .cs file more readable.**
- Proper tab order is required on the form.
- Include proper comments in your code.
- Remember to convert input to numbers when collecting it and convert numbers back to strings when outputting to the user.
- Output should be formatted with appropriate unit labels and rounded to a reasonable precision (Hint: Math.Round).
- Pay attention to the order of operations in your calculations. (Hint: Sometimes it can be helpful to break complex calculations into smaller pieces.)
- Test your project thoroughly. Several test cases will be run during grading.

Sample data to test your program

This sample data is just for your reference. You should test your program with other data to make sure it calculates correctly.

Input
Professors: 55
Staffs: 60
Students: 150

Output
Masks: 1188
Hand Sanitizers: 429
Gloves: 736
Benefits: 11018.5