CS 150 Lab - Functions

The purpose of today's lab is for you to get some hands-on experience with breaking up your programs into functions.

- **Be sure to answer the given questions before you start**
- Be sure your output looks exactly like the specified output
- Be sure to place each project in a folder called PUNetIdFunctionsLab. When you have completed the required projects, drop your folder in **CS150-01 Lab** when you are done. (By noon on Friday)
- Show the instructor or TA your solution before submitting it

Lab 1

For this lab, you will need to create a new Visual Studio project that will contain your source code. Name this project "MarkupXXXXXXXX", replacing the XXXXXXXX with your PUNetID.

Write a program that asks the user to enter an item's wholesale cost and its markup percentage. It should then display the item's retail price.

The program should have a function named **`printHeading`** and a function named **`calculateRetail`** that receives the wholesale cost and the markup percentage as arguments, and returns the retail price of the item.

Input Validation: If the user inputs a negative number for either the wholesale cost or the markup percentage, then you need to ask the user to enter the numbers again.

```
**********************************
*    Retail Price Calculator     *
**********************************

Enter the item's wholesale cost: $5.00
Enter the item's markup percentage: 100
The retail price is: $10.00
Would you like to calculate the price of another item? Y

Enter the item's wholesale cost: $5.00
Enter the item's markup percentage: 50
The retail price is: $7.50
Would you like to calculate the price of another item? N

Thank you.
```

What data is your function going to need? What will be the function's parameters?

_____

_____

_____

What is the return value of the function, and what will be contained within the function body?

_____

_____

_____

_____

_____

What will be in the main function?

_____

_____

Lab 2

For this lab, you will need to create a new Visual Studio project that will contain your source code. Name this project "TemperatureXXXXXXXX", replacing the XXXXXXXX with your PUNetID.

You are to write a program that will convert temperatures from Celsius to Fahrenheit and vice versa.

The formula for converting a temperature from Fahrenheit to Celsius is:

$C = 5/9 (F – 32)$

The formula for converting a temperature from Celsius to Fahrenheit is:

$F = (C * 9/5) + 32$

Write four functions for this program; (1) **`printHeading`** will print the programs heading for the user, (2) **`getSelection`** will print the selection interface with the user and return the user's selection, (3) **`celsius`** will convert a Fahrenheit temperature to Celsius, and (4) **`fahrenheit`** will convert a Celsius temperature to Fahrenheit. Write a

function and test it. Then write the next function and test it. Do not write more than one function before testing.

```
********************************
*     Temperature Converter    *
********************************

Please select one of the following:
  1. Fahrenheit to Celsius
  2. Celsius to Fahrenheit
  3. Quit

Your selection: 1

Thank you. Please enter the temperature in Fahrenheit: 64

64F is equal to 18C.

Please select one of the following:
  1. Fahrenheit to Celsius
  2. Celsius to Fahrenheit
  3. Quit

Your selection: 2

Thank you. Please enter the temperature in Celsius: 18

18C is equal to 64C.

Please select one of the following:
  1. Fahrenheit to Celsius
  2. Celsius to Fahrenheit
  3. Quit

Your selection: 3

Thank you for using this program. Goodbye.
```

What data are your functions going to need? What will be the functions' parameters?

_____

_____

_____

What are the return values of the functions, and what will be contained within the function bodies?

What will be in the main function?