

## CS 150 Lab 13

### Functions

**Date:** Tuesday, November 18, 2008

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 submit your solution to CS150-01 Lab when you are done (By Friday, Nov 21, 5pm)
- Show the instructor or TA your solution before submitting it

### Lab 13.1

For this lab, you will need to create a new Visual Studio project that will contain your source code. Name this project "13a-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 **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?

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

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What will be in the main function?

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## Lab 13.2

For this lab, you will need to create a new Visual Studio project that will contain your source code. Name this project "13b-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 two functions for this program; (1) `celsius` will convert a Fahrenheit temperature to Celsius, and (2) `fahrenheit` will convert a Celsius temperature to Fahrenheit. You may use any additional functions that you might need.

```
*****  
*      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?

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

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What will be in the main function?

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