Lab 9: Methods (Group A)
CS133, Beginning Programming: C#

Introduction

The objective of this lab is to give you practice defining and calling methods.

Assignment

<u>Part 1:</u> Chapter 6, Modularizing Your Code with Methods – Tutorials

Complete tutorials 6-3 through 6-5, at the end of chapter 6 in the textbook. (The starting files for chapter 6 are in the source code provided with the textbook.)

<u>Part 2:</u> Chapter 6 Programming Problems:

1. Retail Price Calculator
Create an application that lets the user enter an item's wholesale cost and its markup percentage. It should then display the item's retail price. For example:

- If an item's wholesale cost is $5.00 and its markup percentage is 100 percent, then the item's retail price is $10.00.
- If an item's wholesale cost is $5.00 and its markup percentage is 50 percent, then the item's retail price is $7.50.

The program should have a method named CalculateRetail that receives the wholesale cost and the markup percentage as arguments and returns the retail price of the item. (Gaddis 384)

3. Kinetic Energy
In physics, an object that is in motion is said to have kinetic energy. The following formula can be used to determine a moving object's kinetic energy:

$$KE = 1/2\ m\ v^2$$

In the formula KE is the kinetic energy, m is the object's mass in kilograms, and v is the object's velocity in meters per second. Create an application that allows the user to enter an object's mass and velocity and then displays the object's kinetic energy. The application should have a function named KineticEnergy that accepts an object's mass (in kilograms) and velocity (in meters per second) as arguments. The function should return the amount of kinetic energy that the object has. (Gaddis 384)

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8a. Prime Numbers
A prime number is a number that can be evenly divided by only itself and 1. For example, the number 5 is prime because only 1 and 5 can evenly divide it. The number 6, however, is not prime because 1, 2, 3, and 6 can evenly divide it. Write a Boolean function named IsPrime that takes an integer as an argument and returns true if the argument is a prime number or false otherwise. Use the function in an application that lets the user enter a number and then displays a message indicating whether the number is prime. (Gaddis 387)

8b. isPrime with *out* parameters
Modify the Prime Number problem so that the IsPrime method checks the value passed in to be sure it isn't a 1, or negative- these are invalid inputs. Add two *out* parameters to the method. The first *out* parameter will be a *bool* that is set to true if the input is invalid and the second *out* parameter will be a *string* that holds an error message. The code that calls the IsPrime method will display an error message when the value passed to the IsPrime method is invalid.

Gaddis, Tony. Starting out with Visual C# 2012, 3rd Edition. Pearson, 20130528. VitalBook file.

Files to Submit to Moodle

- A document containing screenshots of the applications you wrote for the Programming Problems running (label each screen-shot).
- Zipped VS solution folders for each problem.
- The completed code review form for your lab work.
- A copy of the code review you gave your code review partner.