ECE 71/191T – Data Structures and Algorithms

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C++ Homework Assignment: Chapter 2

Code Due By: Midnight on Mon, Jan 23
Writeup Due By: Class on Tue, Jan 24

HOMEWORK #3 – Semester Job Program

You found an exciting job for the semester that pays an hourly rate. Suppose that the total tax you pay on your job is 14%. After paying taxes, you spend 10% of your net income to buy new clothes and other accessories for the next school year and 1% for school supplies. After buying clothes and supplies, you use 25% of the remaining money to buy savings bonds. For each dollar you spend on savings bonds, your parents spend $0.50 to buy additional bonds for you.

Specifications:
Write a program that prompts the user to enter the hourly pay rate and the number of hours you worked each week. The program should then output:

1. Your income before taxes.
2. Your income after taxes.
3. The money spent on clothes and other accessories.
4. The money spent on school supplies.
5. The money you spent on savings bonds.
6. Your remaining pay.
7. The money your parents spend to buy additional savings bonds for you.

The tax rate, clothing buying rate, school supplies rate, bond rate, and parent rate should all be stored as global named constants. When prompting for input, you must use a semicolon '`:`' at the end of each string. All dollar values printed out should use fixed precision, with the dollar and cent values appropriately displayed to the screen.

```
Welcome to the Summer Accounting Program

Enter the pay rate per hour: 15
Enter the number of hours worked this week: 37

Income before taxes: $555.00
Income after taxes: $477.30

Clothing costs: $47.73
Supplies costs: $4.77
Bond costs: $106.20

Remaining pay: $318.60
Parent bond contribution: $53.10
```

HOMEWORK #4 – Paint Calculator

A room has one door, two windows, and a built-in bookshelf. The walls need to be painted. Suppose that one gallon of paint can paint 120 ft^2, and that the door, windows, built-in bookshelf, and ceiling will not be painted.

Specifications:
Write a program that prompts the user to enter the length, width of the height of the room in feet. Then prompt for the length and width of the door, windows, and bookshelf. Calculate and print out the total paintable area in ft^2, and number of gallons of paint needed. The number of gallons needed should always be rounded up.

Use a global named constant to store the number of square feet per gallon for a gallon of paint. Assume all variables are floating points, except for the number of gallons needed, which is an integer.

```
Enter the length, width, and height of the room in ft: 8 10 8

Enter the length and width of the door in ft: 3.0 6.0
Enter the length and width of the first window in ft: 2.0 2.0
Enter the length and width of the second window in ft: 3.0 5
Enter the length and width of the bookshelf in ft: 3 6.5

The total paintable area is: 231.5 ft^2.
At 120 ft^2/gallon, 2 gallons of paint are needed.
```

Once you have verified that your programs are working correctly, submit your source code to the Grader Program.