Assignment 1

Comments and Formatting	10 pts.
Variables, Constants, Calculations (source file)	10 pts.
Restaurant Bill	10 pts.
Interest Earned	10 pts.
Vending Machine	10 pts.

TOTAL: 50 pts.

General Requirements

- *Add comments to the source code you are writing:*
  - *Describe the purpose of every variable*
  - *Explain the algorithm you are using for solution*
- ***Turn in the entire projects you created. The project must have .class file in it.***
- *Put all 4 project folders into one folder and archive it using ZIP or RAR utility. Turn it in into the digital drop box.*

Variables, Constants, Calculations

Please start with the file named Vars_Consts_Calculations.java and follow the directions there. The file can be found next to this assignment's PDF.

Restaurant Bill

Write a program that computes tax and tip on a restaurant bill. Ask user to input the bill amount and the tip percentage he/she wants to give to the waiter. The tax should be 10% of the meal cost, and must be set as a constant in your code. The tip should be calculated after adding tax. Display the meal cost, tax amount, tip amount, and total bill on the screen.
Name your project RestaurantBill.java.

Interest Earned

Assuming there are no deposits other than the original investment, the balance in a savings account after one year might be calculated as:

$$Amount = Principal * (1 + Rate/T)^{T}$$

Principal is the balance in the savings account, *Rate* is the interest rate (in decimal form – 0.0425 for 4.25%), and *T* is the number of times the interest is compounded during a year (*T* is 4 if the interest is compounded quarterly).
Write a program that asks for the principal, the interest rate, and the number of times the interest is compounded. See a sample output below.

```
Interest rate:              4.25%
```

```
Times compounded:           12
Principal:                $1000.00
Interest:                 $43.34
Amount in Savings:        $1043.34
```

Name your project InterestEarned.java.

Vending Machine

Write a program that determines the change to be dispensed from a vending machine. An item in the machine can cost between 25 cents and 1 dollar, in 5-cent increments (25, 30, 35,…, 90, 95, 100), and the machine accepts only a single dollar bill to pay for the item. For example, a possible sample dialog might be the following:

```
Enter price of item
(from 25 cents to a dollar, in 5-cent increments):
45

You bought an item for 45 cents and gave me a dollar,
So your change is
2 quarters
0 dimes, and
1 nickels.
```

Requirement: Please DO NOT use if/else statements, loops or recursive methods in your solution. Find a way to solve this problem with only simple arithmetic operations.

Name your project VendingMachine.java.