

## Assignment 1

Variables, Constants, Calculations (source file)	25 pts.
Restaurant Bill	25 pts.
Interest Earned	25 pts.
Vending Machine	25 pts.

TOTAL: 100 pts.

### General Requirements

- *All files you are turning in must be signed. Please add your name to the source code in comments. Unsigned work automatically loses 5 pts.*
- *Add comments to the source code you are writing:*
  - *Describe the purpose of every variable*
  - *Explain the algorithm you are using for solution*
- *Uncommented work loses up to 5 points per problem.*
- ***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:

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

*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.