Problem Set 4 Exercise #04: Voucher

Reference: Lecture 10 Unit 1 notes

Learning objective: Object-oriented programming

Estimated completion time: 30 minutes

Problem statement:

It's time to buy goodies for the Chinese New year. Mr. Tan has a couple of vouchers which he plans to use wisely together with cash. His idea is to use as many vouchers as needed, then top-up with cash if necessary, but ensure there is no overpay anytime.

For example, suppose Mr. Tan has 5 vouchers of $10 each. To buy fish maw worth $42, he would pay by 4 vouchers and then $2 cash. To buy bird's nest worth $56, the best choice is to pay by 5 vouchers and $6 cash. To buy a pen worth $4, he would just pay $4 cash.

Complete a **`Voucher`** class to describe vouchers. The attributes are:

- **Name**: a string without any blank space
- **Face value** and **Amount of vouchers**: both are positive integers

You are to complete the following member methods:

- **`String getName()`** to return name of voucher.
- **`int getValue()`** to return face value of a voucher.
- **`int getAmt()`** to return the number of voucher.
- **`int useVoucher(int price)`** to use as many as voucher as possible given **`price`**, but ensure there is no overpay. It returns the number of vouchers been used.

You are also to complete a client program **PS4_Ex04_UseVouchers.java** that helps Mr. Tan plan his payment wisely. After data reading, you should create a **`Voucher`** object with given information. Subsequently please retrieve information from this **`Voucher`** object as much as possible, even though the information is actually in the variables that hold the input data.

Sample run #1:

```
Enter voucher name: NTUC
Enter voucher face value: $10
Enter number of vouchers: 4
Enter the price to pay: $42
Use 4 NTUC voucher(s)
Cash payment: $2
There remains 0 voucher(s)
```

Sample run #2:

```
Enter voucher name: Sapphire
Enter voucher face value: $10
Enter number of vouchers: 4
Enter the price to pay: $38
Use 3 Sapphire voucher(s)
Cash payment: $8
There remains 1 voucher(s)
```

Sample run #3:

```
Enter voucher name: COOP
Enter voucher face value: $5
Enter number of vouchers: 7
Enter the price to pay: $35
Use 7 COOP voucher(s)
Cash payment: $0
There remains 0 voucher(s)
```

Sample run #4:

```
Enter voucher name: Metro
Enter voucher face value: $10
Enter number of vouchers: 10
Enter the price to pay: $5
Use 0 Metro voucher(s)
Cash payment: $5
There remains 10 voucher(s)
```