

Lab 4: Classes

Objective

- gain further skills using Netbeans IDE
- create Java Classes
- create Objects in Java
- refer to Objects in Java

What to hand in:

Submit your source code (.java files) to the dropbox no later than 11:59pm the night before your lab section's Lab 5. (Tuesday labs are due the following Monday, Wednesday labs are due the following Tuesday, and Thursday's labs are due the following Wednesday).

- Lab4.java
- Cart.java
- Item.java
- Register.java

Note: Late submissions will be penalized at a rate of 20% per weekday.

Marking Scheme:

Your solution will be assessed based on:

- Following lab specifications
- Commenting
 - Javadoc method comments
 - logic and variables commented
- Compiles
- Matches given output
- Correctly calculates change

Steps:

1. Download the Lab4.zip file and un-compress it and open it in NetBeans.
2. **Complete the Item class**
 - a. An Item represents something you can purchase and put in your Cart.
 - i. It is composed of 3 (private) fields.
 1. name of the item
 2. price of the item
 3. quantity of that item
 - ii. You can create new items by calling a constructor with the following signature:
 1. public Item (String itemName, double itemPrice, int numPurchased)
 - iii. You can access the fields using getter methods with the following signatures:
 1. public double getPrice()
 2. public String getName()
 3. public int getQuantity()
 - iv. The toString method will output information about the Item
 - b. Complete the constructor
 - i. it should use the parameters to set the fields
 - c. Complete the getter methods
 - i. they should each return the appropriate field

3. Complete the Cart class

- a. A Cart represents a shopping cart of items
 - i. It is composed of 4 fields
 1. an array of items
 2. the total number of items in the cart
 3. the total price of all items in the cart
 4. the capacity of the cart
 - ii. You can create a cart by calling its constructor, which sets all fields to their defaults:
 1. array of items is of length 5
 2. initially there are 0 items in the cart
 3. initially the total is 0
 4. the capacity is 5
 - iii. You can add items to the cart using the method with the signature:
 1. `public void addToCart(String itemName, double price, int quantity)`
 - iv. The `toString` method will output information about the cart
 - v. a getter method returns the total price
- b. Complete the constructor
- c. Add the getter method

4. Complete the Register Class

- a. Complete the following methods:
 - i. `public double change(double amountDue, double amountReceived)`
 1. Reuse the code from Lab 2, but you should add some kind of conditional statement to improve your solution
 - ii. `public String toString()`

5. Once you are done, add **JavaDoc method** comments to all methods you completed

- a. They should be of the format:

```
/**
 * Description of what the method does
 *
 * @param param1Name brief description as needed (add one line per parameter)
 * @param param2Name brief description as needed
 * @return brief description (omit if void)
 */
```

6. Add your name as author to each file

7. Bonus:

- a. Add methods to your Lab4.java file to check the user's input and only accept valid input.

NOTES:

1. All class fields must be private
2. Do not change the signature of **any** methods
3. You may add any private methods you wish (but don't need to)

Sample output:

Welcome to Shopper's Paradise

Enter the name of the first item: butter

Enter the quantity: 1

Enter the price: 4.50

Successfully added: butter

Enter the name of the next item or Q to quit: milk

Enter the quantity: 1

Enter the price: 3.99
Successfully added: milk
Enter the name of the next item or Q to quit: chips
Enter the quantity: 4
Enter the price: 2.50
Successfully added: chips
Enter the name of the next item or Q to quit: pineapple
Enter the quantity: 3
Enter the price: 8.75
Successfully added: pineapple
Enter the name of the next item or Q to quit: q

Shopping Cart

Item	Unit Price	Quantity	Total
butter	\$4.50	1	\$4.50
milk	\$3.99	1	\$3.99
chips	\$2.50	4	\$10.00
pineapple	\$8.75	3	\$26.25

Total Price: \$44.74

Please pay... \$44.74
Cash Tendered: 100
Your change is: \$55.26
Change Due: 100s 50s 20s 10s 5s 2s 1s quarters
 0 1 0 0 1 0 0 1