

Lab Manual 04

Inheritance with Money Inheritance

Your grandfather recently passed away and left you with a huge inheritance. You, being the savvy programmer that you are, decided to write a program that will allow you to sort through all the money objects and determine the true value of each coin or paper bill. To determine the true value, you will use the following formula:

Paper (authentic) : True Value = denomination value + \$10 if autographed

Paper (counterfeit) : True Value = 0

Coin : True Value = denomination value + \$20 if golden

Examples:

1. An authentic autographed 20 dollar bill is worth 30 dollars.
2. A 5 dollar golden coin is worth 25 dollars.
3. A counterfeit autographed 50 dollar bill is worth 0 dollars.
4. A 10 dollar coin is worth 10 dollars.
5. An authentic 10 dollar bill is worth 10 dollars.

In the end, your program should be able to read a text file and determine the true value of each Money object as well as the total true value for all Money objects.

Data File Example:

Paper 20 autographed authentic
Coin 5 gold
Paper 50 autographed counterfeit

Console Output Example:

Object #1 is an authentic autographed 20 dollar bill worth 30 dollars.
Object #2 is a 5 dollar golden coin worth 25 dollars.
Object #3 is a counterfeit autographed 50 dollar bill worth 0 dollars.
The total value is 55 dollars.

Your program should have exactly 7 classes :

Coin, FakePaper, Money, Paper, Assignment, RealPaper, Wallet

These classes must meet the following requirements:

1. All classes, whenever appropriate, should **utilize the power of inheritance**. Lack of/improper use of inheritance in areas where inheritance is deemed much more advantageous will result in point deductions.
2. All classes and methods should be **abstract** if appropriate.
3. All variables should be protected if appropriate.
4. The **Money class and its subclasses must not** have a variable that holds the authenticity of the bill. Utilize the class type (RealPaper and FakePaper) instead. You may, however, have one in the Project02 class. This, of course, is only a temporary variable to help you call on the appropriate constructor.
5. **FakePaper** class should have a method called ***getTrueValue()*** in its body. **RealPaper should NOT!** It will inherit it from Paper instead.
6. **Wallet** class should contain an array and a count as variables. For methods, it should have a constructor, 2 *addMoney* (for Paper and Coin), *getTotalValue()*, and *printSummary()*.
7. You are only allowed to import the appropriate classes for file reading. Do not utilize any other class that requires importing.
8. Only **Assignment** and **Wallet** should be around 50-70 lines each. The other classes should have around 20 lines or less. If your classes are too big, you are doing something wrong.
9. Make sure your program can read the text file in the following format.

[Type] [Denomination] [other values #1] [other values #2]