

Assignment-3

Mastering Advanced Java with Object-Oriented Programming

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Problem statement 3:

Design a Java program illustrating the concept of encapsulation. Create a class "BankAccount" with private attributes like balance and methods for deposit and withdrawal, ensuring encapsulation principles are followed.

Code:

BankAccount class

```
1  class BankAccount {
2      private double balance;
3
4      BankAccount(double initialBalance) {
5          this.balance = initialBalance;
6      }
7
8      public void deposit(double amount) {
9          if (amount > 0) {
10             balance += amount;
11             System.out.println(amount + " deposited successfully.");
12         } else {
13             System.out.println(x:"Invalid amount for deposit.");
14         }
15     }
16
17     public void withdraw(double amount) {
18         if (amount > 0 && amount <= balance) {
19             balance -= amount;
20             System.out.println(amount + " withdrawn successfully.");
21         } else {
22             System.out.println(x:"Insufficient funds or invalid amount for withdrawal.");
23         }
24     }
25
26     public double getBalance() {
27         return balance;
28     }
29 }
```

The **BankAccount** class encapsulates the **balance** attribute and ensures that it cannot be accessed directly from outside the class.

getBalance() getter is provided to ensure encapsulation.

Testing:

```
31 public class Main {  
    Run | Debug  
32     public static void main(String[] args) {  
33         BankAccount account = new BankAccount(initialBalance:1000);  
34  
35         account.deposit(amount:500);  
36         account.withdraw(amount:200);  
37         account.withdraw(amount:1500);  
38  
39         System.out.println("Current Balance: " + account.getBalance());  
40     }  
41 }
```

Input:

initialBalance: Integer

amount: Integer for **withdraw()** or **deposit()** methods

Output:

```
500.0 deposited successfully.  
200.0 withdrawn successfully.  
Insufficient funds or invalid amount for withdrawal.  
Current Balance: 1300.0
```