



ITCS 209 Object Oriented Programming	Name:	Lab Score	Challenge Bonus	Peer Bonus
	ID:			
	Group:			

Lab05: Arrays and ArrayLists

You are provided with the BankTester class and BankAccount class. Do not modify these classes. Your task is to implement the methods in the Bank class.

Implement getTotalBalance() which

- Takes no parameters
- Return *totalbalance* in double data type

Implement countBalanceAtLeast(double atLeast) which

- Takes 1 parameter which is the balance required to count an account
- Returns *the number of accounts* having at least the given balance

Implement find(int accountNumber) which

- Takes 1 parameter which is the account number to find
- Returns a *BankAccount* corresponding to the accountNumber, or null if there is no such account.

Implement getMin () which

- Takes no parameters
- Returns a *BankAccount* which the smallest balance, or null if the bank has no accounts. If there are more than one BankAccount with the minimum balance, return one of them.

Noted that: You can see the comments in *Bank* class for more information.

Expected Output:

```
Total balance: 45000.0
Account number with the smallest balance: 1015
Account number with having balance at least 10000: 3
Balance of matching account: 15000.0
```

Since this lab aims to test specific aspects of Java/OOP, you are only allowed to use the following mechanisms available in Java: loops, arrays, List, ArrayList, primitive data types, Double, String, methods, and classes. You may NOT use Math and other computation libraries, except for Math.sqrt() and Math.pow(). All the computation must be implemented from scratch using loops, arrays, and/or Lists. You may not use other container libraries (e.g., Set, Map, etc.) other than ArrayList. You are also NOT allowed to use third-party Java libraries. Your code should be able to compile and run without having to install external jar files.

Challenge (BONUS)

Write a Java program to check palindrome. A palindrome is a word, phrase, number, or other sequence of characters which can be read the same way from backward or forward. For example, “madam”, “mom”, “abcba”, and “123321” are single word palindrome. “Don’t nod.”, “Top spot” and “No lemon, no melon” are multiple words palindrome. (*Punctuation and spaces between the words or letter is allowed.*) “Java”, and “Array” are NOT palindrome. The longest palindrome in Oxford dictionary is “tattarrattat”.

- You may write a Class or simply have everything in the `main(String[] args)` method.
- Your program has to accept input `String` from users and check whether the input `String` is a palindrome or not. An example output is shown in the box below:

```
Enter a word or phrase to check if it is a palindrome: tattarrattat
The input word "tattarrattat" is a palindrome

Enter a word or phrase to check if it is a palindrome: I love java
The input phrase "I love Java" is not a palindrome
```

Peer Bonus (Optional):

To claim this extra bonus, once you finish your program, help other friends and make sure they understand what’s going on. You must stick to the following rules:

- Do not write code for nor dictate your friend!
- Make sure your friend understands and can reproduce the solution on his/her own if given a similar problem.
- A friend can be helped by at most one friend.

To earn this peer bonus, after your friend finishes his/her lab, ask him/her to give you a sticker. You will earn the peer bonus for the first three stickers, but keep helping your friends still.

