

Advance Programming (Object Oriented Programming Lab)

Assignment-4

Due Date -1 Week

1. a. Design a class **BankAccount** that simulates a simple bank account. Implement the following:
 - i. Instance variables: **accountNumber** (integer), **accountHolderName** (String), **balance** (double).
 - ii. A constructor to initialize the account number and account holder's name. The initial balance should be set to 0.0.
 - iii. Methods to:
 - Deposit an amount into the account
 - Withdraw an amount from the account (if sufficient balance is available)
 - Display the account information (account number, account holder's name, and balance)
1. b. Design a class **LibraryBook** that represents a book in a library. Implement the following:
 - i. Instance variables: **employeeId** (integer), **firstName** (String), **lastName** (String), **salary** (double).
 - ii. A constructor to initialize the employee's ID, first name, and last name. The initial salary should be set to 0.0
 - iii. Methods to:
 - Set the employee's salary.
 - Increase the employee's salary by a certain percentage.
 - Display the employee's information (ID, full name, and salary)
2. a. Write a program `Parentheses.java` that reads in a text stream from standard input and uses a stack to determine whether or not its parentheses are properly balanced. For example, your program should print true for `[]{}{[(())]}` and false for `[()]`.
- b. Create a class diagram and Java code for the following system and scenario, considering the possibility of future extensions. “The system is a command line utility that prints a short quote of the day”; on the user’s terminal when run. To begin with the quote is selected randomly from a set of hard-coded strings within the program itself, but that might change later on – the quotes might be based on the user’s history, the time of day, the date, etc..
3. Design a **TOLLTAX** class to store the number of cars that crossed the bridge and total amount collected. It must support the following activities.
 - Receiving toll.
 - Display number of cars that crossed the bridge. Tax will be based on car type (such as 2/3/4..wheeler)
 - Display the amount of toll collected.
 - Mode of toll tax will be either prepaid or instant. So support must be there to check the mode before receiving the toll.