CS-217 Object-Oriented Programming

ASSIGNMENT 02 (Total Marks: 100)

Due Date: 11:59 PM 2nd, May 2021

INSTRUCTIONS

- Zero marks will be awarded to the students involved in plagiarism.
- All the submissions will be done on google classroom.
- You have to submit a zip folder containing all .java files. The name of the folder should be named after the course section and roll number. i.e. CS217_Section_RollNO
- Naming conventions must be followed strictly.
- No late submissions will be entertained in any case.
- Assignment should be implemented in java
- Apart from correctness and completeness, identifying objects correctly, defining variables and methods in appropriate classes, and implementing encapsulation with proper visibility will also be key factors in the evaluation

Account Management System

You have to implement a console-based account management system in this assignment. An account management system is an application for maintaining a personal account in a bank.

Features of the system

- An account management system needs to store information about Bank Accounts and Customers.
- This system supports two different types of accounts (Checking and Savings).
- All customers have a name, address, and phone number. Each customer has their unique account number and the bank will identify customers by only that account number.

- A customer may open both a savings account and a checking account. However, a customer must not have more than one savings account or checking account.
- All bank accounts must have the account number, balance, and date created.
- There are some features that are defined for all accounts, *checkBalance()*, *printStatement(), makeDeposit(), transferAmount()*, *calculateZakat()* and *makeWithdrawal()* but the withdrawal limit is different based on the account type. Savings account customers cannot withdraw more than their balance but the checking account holders can withdraw more than their account balance (up to a maximum of 5000 PKR).

  - *makeDeposit()*: The Deposit Function will deposit the specified amount in the account. amount will be deducted
  - *makeWithdrawal()*: Withdraw function to withdraw an amount
  - *checkBalance()*: Display function to display name and balance.
  - *printStatement():* show the complete details of the customer, account number, time of the transaction, date of transaction, transaction amount, and remaining balance.
  - *transferAmount():* The transfer method transfers the amount from one bank account to the bank account selected by the user.
  - *calculateZakat()* : This function will calculate zakat annually. It should ensure that the zakat will be calculated if the total balance is greater than or equal to 20,000. Zakat will be calculated using this formula (TotalBalance*2.5)/100. Zakat is only calculated for Savings accounts.
  - *displayAllDeductions()*: This function displays all deductions made along with their details on the said account (e.g., Zakat for Savings and Tax for Checking).

  - Checking accounts have additional functionality that may have transaction fees for deposits and withdrawals. The account holder will get only 2 free transactions per month. After that, the account holder must pay a transaction fee (10 Rs) for each additional transaction such as deposit and withdrawal. A record of all transaction fees should be calculated.
  - Saving accounts have an additional attribute for interest rate and an operation for *calculatelnterest().* The interest rate remains the same for all accounts and can be changed at runtime.
  - The console interface will allow the Admin (the only type of user) to
    - Open a New Account, Close an account
    - Login to a specific account by providing the unique account number
    - Perform account operations as mentioned earlier
    - Specify the Interest Rate, applicable to all Saving Accounts
    - Display all account details, including the bank owner details
    - Display all accounts deductions along with account details