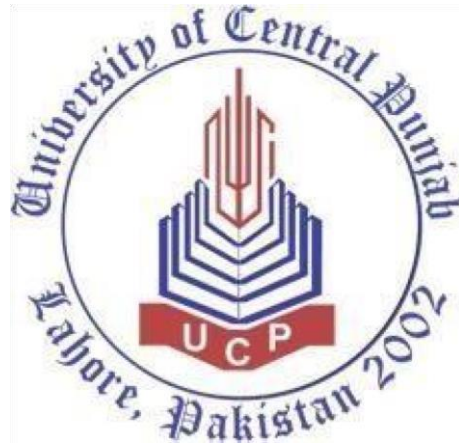


CSCP 2023 - Object Oriented Programming

Assignment # 3

Abstract Class and Polymorphism



Manual Contents

Rules of Inheritance

Access Specifiers

Abstract Class

Polymorphism

Session: Fall 2020

**Faculty of Information Technology UCPLahore
Pakistan**

You will be developing a Bank Management System (BMS) that manages various types of Bank Accounts:

Saving, Checking, Current and Investment Accounts.

All bank accounts have the following characteristics:

- Title (full name of the account holder)
- Account number (a 16 digit unique number)
- Account balance (amount in rupees that is held in the account)
- Function that displays all of the account variables in this format: < Title; Account number; Account balance>
- Function that can deposit to the account
- Function that can do a withdrawal from the account

The other accounts have the following attributes in addition to the ones described above:

Saving

- Interest rate
- Function that calculates interest on the balance using the interest rate

Checking

- Fees that is charged on each account transaction (deposit or withdrawal)

Current

- Fees that is charged on each account transaction (deposit or withdrawal)
- Required Minimum balance

Investment

- Fees that is charged on each account transaction (deposit or withdrawal)
- Required Minimum balance
- Percent profit

Remember: Your Programme should not allow to make an object of Base Class BankAccount.

All these account are held by a bank branch class named as **Branch:**

Attributes:

- Array to hold all the bank accounts
- A counter to maintain number of accounts added and indexing of the array
- Total Balance held by all the accounts of the branch

Methods:

- To add a new account
- To delete an account(with specific Account Tittle e.g. using “**Imran Khan**”)
- To update an existing account(with specific Account Tittle e.g. using “**Imran Khan**”)
- To find an account by **account number**
- To find an account by account title key word e.g. using “**Imran Khan**” will find and display all such accounts that have “**Imran Khan**” in the title of those accounts
- A menu that provides a menu to select and perform a particular function of the **Branch**

Non-Member Function:

- Function that display all accounts on the screen

Hint: Will require indexing [] operator.

What else is Required:

- For each class provide:
 - Parameterized constructor with default arguments and Copy Constructor(use base initializer list with both constructors)
 - Destructor(with no memory leakage)
 - Getters/Setters for all private attributes(with no memory leakage and no returning of original memory handler)
 - Assignment Operator(with no memory leakage)
 - Don't provide function where you can overload operators, therefore must provide the following operators:
 - Equal operator ==
 - Not equal operator !=
 - cin>> and cout<< operators (Do not use **friend** keyword this time)
 - Array index operator [] where applicable