

# Lahore Garrison University

## Assignment 04

**Due Date: 18 June 2021 (11:59 PM)**

**Submission only on LMS (Garrison)**

**Instructor: Waqar Ali**

## Banking System

### **Goal**

To design and build a banking management system in C++ using learned Object Oriented techniques.

### **Deployment**

The built system will be deployed in a bank, so should work from both user and bank employees perspectives.

### **Introduction**

Banking System is developed in C++ to replaced manual System by a computerized system.

This system allows to create a new account and Allows to deposit and withdrawal amount facilities.

## **Account Holder**

ABS must record the detailed information of each account holder, such as

- Type of his account (see next slides for more info)
- Type of Credit card (see later slides for more info)
- First name, middle name, and last name
- CNIC number Address Telephone number Date of birth
- In addition it must allocate a unique account number to each account holder

## **Account Information**

An account holder can have two different types of account those are:

- Checking account
  - ◆ Customer is not paid any interest
- Saving account
  - ◆ Customer is paid 1% interest per month over the minimum balance maintained during that month.

In addition, both types of account will be liable to service charges and government taxes (details are given on the next few slides).

## **Service charges**

- All withdrawal transactions over Rs. 5000/- are subject to a 0.2% service charges deducted automatically from the account

## **Government Tax**

- Any withdrawal transaction over Rs. 50,000/- during one day is subject to a 2.5% tax to be deducted from the account automatically
- The profit/interest paid to the customer is subject to a 0.5% tax to be deducted from the account automatically (applicable only to saving accounts)

# Credit Card

An account holder can possess a credit card of any of the following type:

**1. Master card**

- It has an interest rate of 18%, and an upper limit of Rs 50,000.

**2. Visa card**

- It has an interest rate of 10% and an upper limit of Rs 100,000. In addition, Visa card holders can earn frequent usage points for every Rs they spend (spend 1 Rs earn 1 frequent usage point).

**3. Local card.**

- A local card is for people with a bad credit history. The interest rate is 25% and there is a Rs 10,000 charge limit. However, a local card holder can get a better deal by consistently paying off the entire balance. If a last chance card holder pays off the balance three times in a row, then their interest rate drops to 20% and their limit increases to Rs 1,5000.

**Note that each credit card must have a unique number.**

**Following few slides show the desired functionality via output screens.**

# Banking System

## Welcome Screen

1. Login as Bank Employee
2. Login as a bank customer

## 1. Mini-statement

- ❖ A customer can request to see mini-statement for any of his accounts
- ❖ INPUT:
  - Account number
  - CNIC number
- ❖ OUTPUT:
  - Last 10 transactions

## 2. Withdraw money Via Credit Card

- ❖ A customer can withdraw money from his account via credit card.
- ❖ INPUT:
  - Credit Card Number
  - Amount to be withdrawn
- ❖ OUTPUT:
  - System response containing amount withdrawn and the balance
- ❖ CHECKS:
  - Perform the necessary checking according the specifications

## 3. Withdraw money Via Check book

- ❖ A customer can withdraw money from his account via check book.
- ❖ INPUT:
  - Account number
  - CNIC number
  - Amount to be withdrawn
- ❖ OUTPUT:
  - System response containing amount withdrawn and the balance
- ❖ CHECKS:
  - Make sure that the customer has sufficient funds in his account

## 4. Balance inquiry

- ❖ A customer can check the balance in his account
- ❖ INPUT:
  - Account number
  - CNIC number
- ❖ OUTPUT:
  - Amount in the account

## 5. Transaction history

- ❖ A customer can request to see transaction history for any of his accounts
- ❖ INPUT:
  - Account number
  - CNIC number
- ❖ OUTPUT:
  - Transaction history

## 6. Manager (Employee) Perspective

- ❖ Create, Delete and Update account holders information.
- ❖ Find account holders information using account number or CNIC number.
- ❖ Display all the account holders of a particular account type/credit card.
- ❖ Deposit or withdraw amount to a particular account.
- ❖ In addition, other operations that you deem necessary (Can get you bonus marks).

## Implementation

### Instructions

- Before writing code, build the class hierarchy i.e. identify different classes and their interaction (composition vs inheritance)
- Using goto statements or global variables or any other poor design or programming practice will cost you marks. (-1 Marks for each violation).
- You must have virtual functions read and write in base classes where required and invoke them via polymorphism. (+2 Marks)
- Using Proper STL will earn you bonus points. (+2 Bonus)

### Honor Policy

- This Project is a learning opportunity that will be evaluated based on your ability to think, work through a problem in a logical manner and write a 1 page report on your own. You may however discuss verbally or via email the project with your classmates, but you are to write the actual code for this project without copying or plagiarizing the work of others. You may use the Internet to do your research, but the written work should be your own.
- **Plagiarized code will get a zero**



