

Bank Management System – Project Report

1. Title Page

Project Title: Bank Management System

Course: Object-Oriented Programming (OOP)

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2. Abstract

This project is a graphical Bank Management System developed using C++ and Qt framework. It allows users to interact with banking functions such as creating accounts, depositing/withdrawing money, and viewing account details through a user-friendly GUI. The system demonstrates key Object-Oriented Programming principles like encapsulation, inheritance, and abstraction.

3. Introduction

Managing customer accounts and transactions efficiently is vital for any banking system. This project simulates a basic bank management application, featuring a Qt-based graphical user interface and back-end logic built with C++. It provides an intuitive environment for users to manage bank account operations.

4. Objectives

- Implement real-world OOP concepts in C++.
 - Design a user-friendly GUI for basic banking operations.
 - Ensure data encapsulation and class-based modularity.
 - Gain hands-on experience with the Qt framework.
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5. Tools & Technologies Used

- **Programming Language:** C++
 - **Framework:** Qt (for GUI)
 - **IDE:** Qt Creator
 - **Libraries:** Standard Template Library (STL), QtCore, QtWidgets
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6. System Design

The system consists of two primary components:

- **Frontend (GUI):** Built using Qt Designer (`mainwindow.ui`) and managed by `mainwindow.cpp`.
- **Backend (Logic):** Handled via custom C++ classes like `Account` which encapsulate data and functions.

Key class:

```
cpp
CopyEdit
class Account {
    QString name;
    int accountNumber;
    double balance;
    // Functions for deposit, withdraw, display, etc.
};
```

7. Features

- Account creation
- Balance inquiry

- Deposit and withdrawal functionality
 - Account data validation
 - Error handling with message dialogs
 - Persistent user-friendly interface
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8. Code Structure

- `main.cpp`: Launches the Qt application.
 - `mainwindow.cpp/h`: Handles UI logic and slots.
 - `mainwindow.ui`: Designed in Qt Designer for interface layout.
 - `Account.h`: Contains class for account handling.
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9. Conclusion

The Bank Management System successfully fulfills the requirements of a basic banking simulation using OOP in C++ with a GUI interface. It helped in deepening the understanding of GUI design and event-driven programming in C++.

10. Future Scope

- Add login/authentication system for different users.
- Integrate with file/database system for persistent data storage.
- Include transaction history logs and statements.