মেট্রোপলিটন ইউনিভার্সিটি
Metropolitan University

# Project on

## Banking Management System

Course title: Data Structure Lab
Course code: CSE 134


Submitted by,

Sheikh Mijanur Rahman Oli
ID: 232-115-342
Rayhan Rahman
ID:232-115-344
Muminur Rashid Tonmoy
ID: 231-115-334
Batch: 59th
Section: I
Department of C.S.E.

Submitted to,

Rishad Amin Pulok
Lecturer
Department of C.S.E.


Submission date :12.10.2024

# The Banking Management System

## Introduction

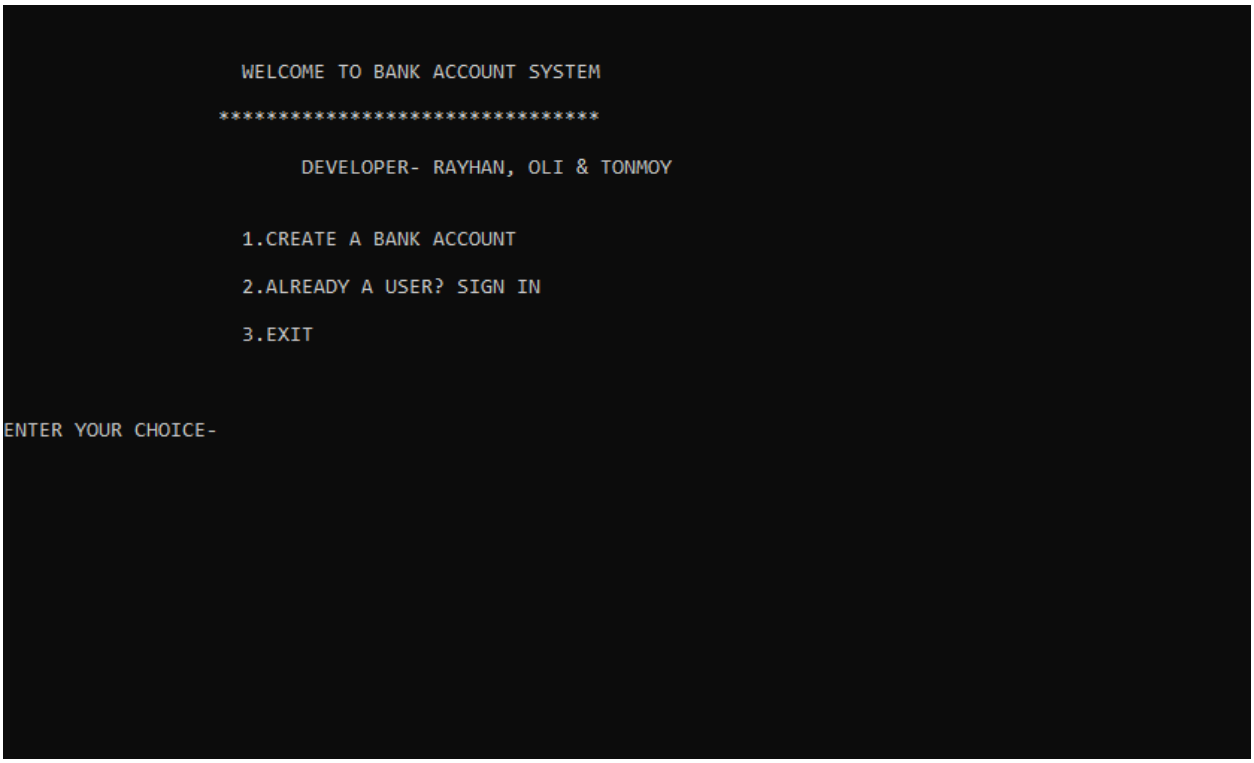
In the modern digital age, the need for effective, user-friendly, and secure banking systems is more critical than ever. The banking sector has evolved, with online platforms becoming a primary mode of interaction for customers worldwide. The **Banking Management System (BMS)** is a C-based application that mimics a basic version of the services offered by commercial banks. It allows users to perform common banking operations such as creating an account, signing in, transferring money, and checking transaction history.

This project is designed to showcase the fundamental operations involved in banking, with a focus on simplicity, user interaction, and effective data management. The program runs in a console-based environment, where users can interact with various banking features through text-based inputs and outputs.

## Key Features and Functionality

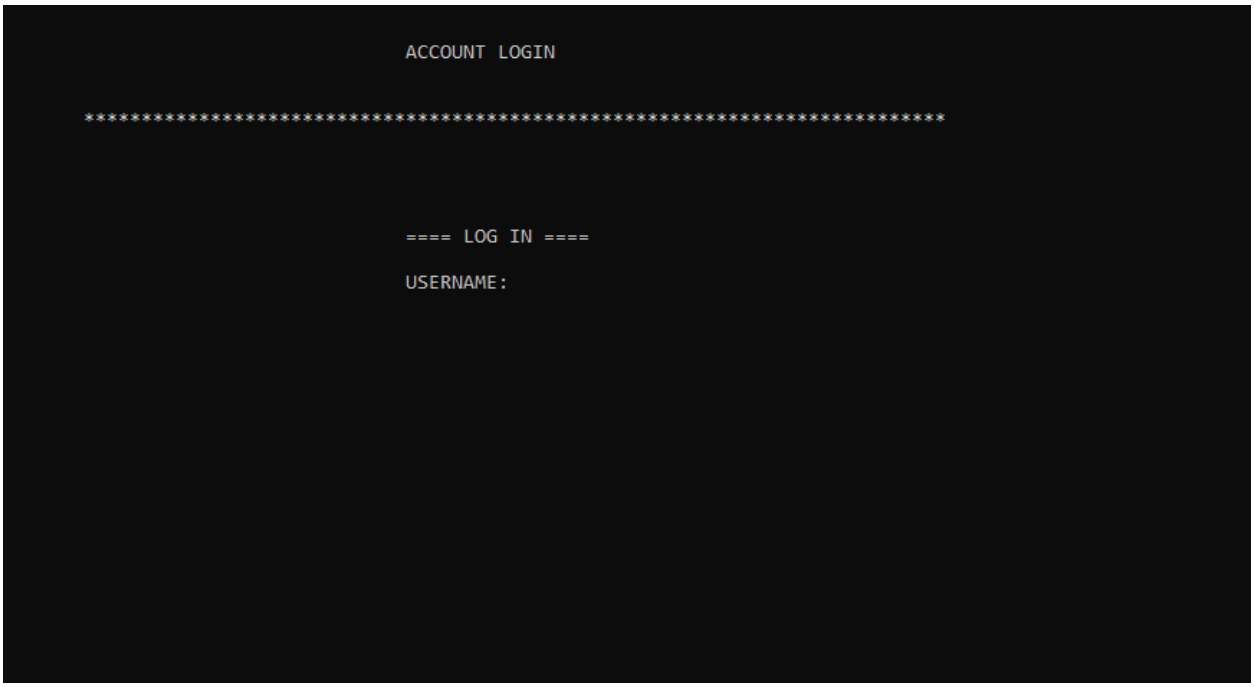
### A. Menu

- **Description:**
  - The main menu is the first screen that appears after a user log in or opens the application.
  - The menu provides options such as "Create Account", "Login", "Exit", etc.
- **Input/Output:**




### C. User Login (Already an Account)

- **Description:**
  - Existing users can log in using their username/email and password.
  - The system checks the credentials and grants access if they are valid.
- **Input/Output:**




## C. Account Dashboard

- **Description:**
  - Once logged in, users are directed to their account dashboard, where they can view their account balance, recent transactions, and available options (e.g., deposit, withdrawal, transfer funds).
- **Input/Output:**
  -


## From where we got Ideas:

**Crowe LLP:** The company helps banks develop operational efficiency by. They cover all branches of the bank-related issues, ranging from technology, marketing, and automation.

**Startups Insights:** The platform is an all-embracing tool for getting an overview of emerging banking trends and technology solutions. Among their topics, they tackle such issues as artificial intelligence, open banking, hyper-personalized banking, and others.

**Thales Group:** They have articles on those start-up technologies that help the mobile banking industry, biometrics, and blockchain technologies to develop.

## Background Study

The concept of banking systems dates back to ancient civilizations, where people started depositing valuables and money with trusted institutions. Over time, the banking industry grew more complex, offering various services to customers such as loans, savings, and transactions.

The introduction of digital banking transformed the sector by allowing users to perform banking tasks through web and mobile interfaces, eliminating the need to visit physical branches.

In this project, the goal is not to replicate a complete modern banking system but rather to implement a simplified version using basic programming constructs. By building a banking system with C programming, students and developers can gain a deeper understanding of core concepts such as:

- **Data Structures:** Handling user information, storing balances, and transaction histories.
- **File Handling:** Saving account details and transaction records to files, ensuring persistence across sessions.
- **Security:** Implementing basic login mechanisms to secure user data.
- **Operations Research:** Creating algorithms to handle transactions such as deposits, withdrawals, and transfers.

The Banking Management System project can serve as a foundation for more advanced banking applications, which may include features like multi-user environments, real-time transactions, and advanced security protocols.

## Features of Banking Management System:

### 1. Transfer Money to the Account:

This feature is a tool for users who need to transfer money between accounts to do this without any hassle. It comprises:

- Internal Transfers: Transfer money between accounts at the same bank.

- External Transfers: Transfer money to other banks' account holders.

- Scheduled Transfers: Enroll in transfers that are recurring or will happen in the future.

- Real-Time Updates: Instantaneously receive confirmation of the transfer status.

### 2. Creation of Account:

This feature of the product, which is time efficient, is a plus for new bank customers. It provides:

- Online Account Opening: Electronically fill out forms and attach documents to the application.

-Verification Process: The process of ID verification and KYC (Know-Your-Customer) compliance is carried out automatically.

-Account Types: Select the type of account like savings, checking, business, etc. from among many others.

- Welcome Kits: Account verification, debit card issuance, and other details immediately.

**3. Check Amount:**

Get access to information about your account balance and transaction history with this function, which includes:

- Balance Inquiry: Check your real-time account balances.

- Transaction History: Go through the details of every transaction, one after the other.

- Mini Statements: Obtain compact briefings on the latest transactions.

- Alerts & Notifications: Get an SMS or email message informing you of a balance change.

**4. Login Functionality:**

Satisfactory login security helps you to gain your banking accounts for a safer and more reliable experience, plus:

-Multi-Factor Authentication (MFA): Increase security by adding more verification steps.

-Biometric Authentication: Use touch ID or face ID for safe login.

-Password Management: Create, modify, or recover your passwords in no time.

-Session Management: Track and control all active login sessions.

-The features are such that the customers get a safe, best, and easy banking experience.

## Limitations:

Although banking management systems have many positives, they also have some deficits that need to be tackled. A few are:

**Cybersecurity risks:** Despite the strong security measures in place, the banking systems are still exposed to the unlawful access by hackers, data breaches as well as fraud activities. Ensuring cybersecurity acts as a main regulation is carried out all the time.

**Technical issues:** Software bugs, server down times, and system crashes are the occasions that can muck up banking by causing delays and making the customers suffer.

**High implementation costs:** A comprehensive banking management system is about the high investment in technology, infrastructure, and skilled personnel driving up the high cost.

**Regulatory compliance:** Observing and adapting to the changing laws and keeping the company in compliance could be a very one and time-consuming process for the business as it is constantly applied by the company.

**User Adoption:** Few customers, particularly the ones who are not comfortable with technology, may face issues while they adjust to the new digital banking systems, which forces them to revert to the traditional methods of banking.

**Data Privacy Concerns:** Managing substantial amounts of important customer data causes fears about data privacy and the moral handling of the information.

**Integration challenges:** The system integration process of ontologism with other legacy systems and third-party applications could be a long-time complex activity and that is why the production of the system must be exceptionally customized.

**Scalability issues:** As the bank expands, the system needs to be able to accommodate an increasing number of transactions and customers and keep the performance intact.

## Future scope:

The future of banking management is expected to see significant transformations driven by advances in technology and evolving customer expectations. Digital and emerging technologies like artificial intelligence, blockchain, and cloud computing are set to revolutionize banking operations, enhancing efficiency, security, and customer experience. Banks will increasingly adopt a customer-centric approach, providing personalized services and seamless digital experiences to meet changing needs. Cybersecurity and financial crime prevention will be critical, with investments in advanced technologies to protect customer data and prevent financial crimes. Data analytics will play a vital role in gaining insights into customer behavior, market trends, and risk management, enabling more informed decision-making.

Regulatory compliance will remain a priority as banks adapt to evolving requirements and implement robust frameworks to ensure adherence to financial regulations. Sustainable banking practices will gain emphasis, with a focus on green financing and support for environmentally friendly projects. Financial inclusion initiatives will continue to develop, aiming to reach underserved populations through innovative products and services. Enterprise agility, the ability to quickly adapt to new technologies and business models, will be crucial for banks to stay competitive and relevant in a rapidly changing market.

These trends highlight the dynamic and evolving nature of banking management, presenting both challenges and opportunities for the industry. Embracing these changes will be key to future success and growth in the banking sector.