UNIVERSITY OF PETROLEUM ENGINEERING AND STUDIES

PROJECT REPORT ON

BANK ACCOUNT MANAGEMENT SYSTEM IN C

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ABSTRACT

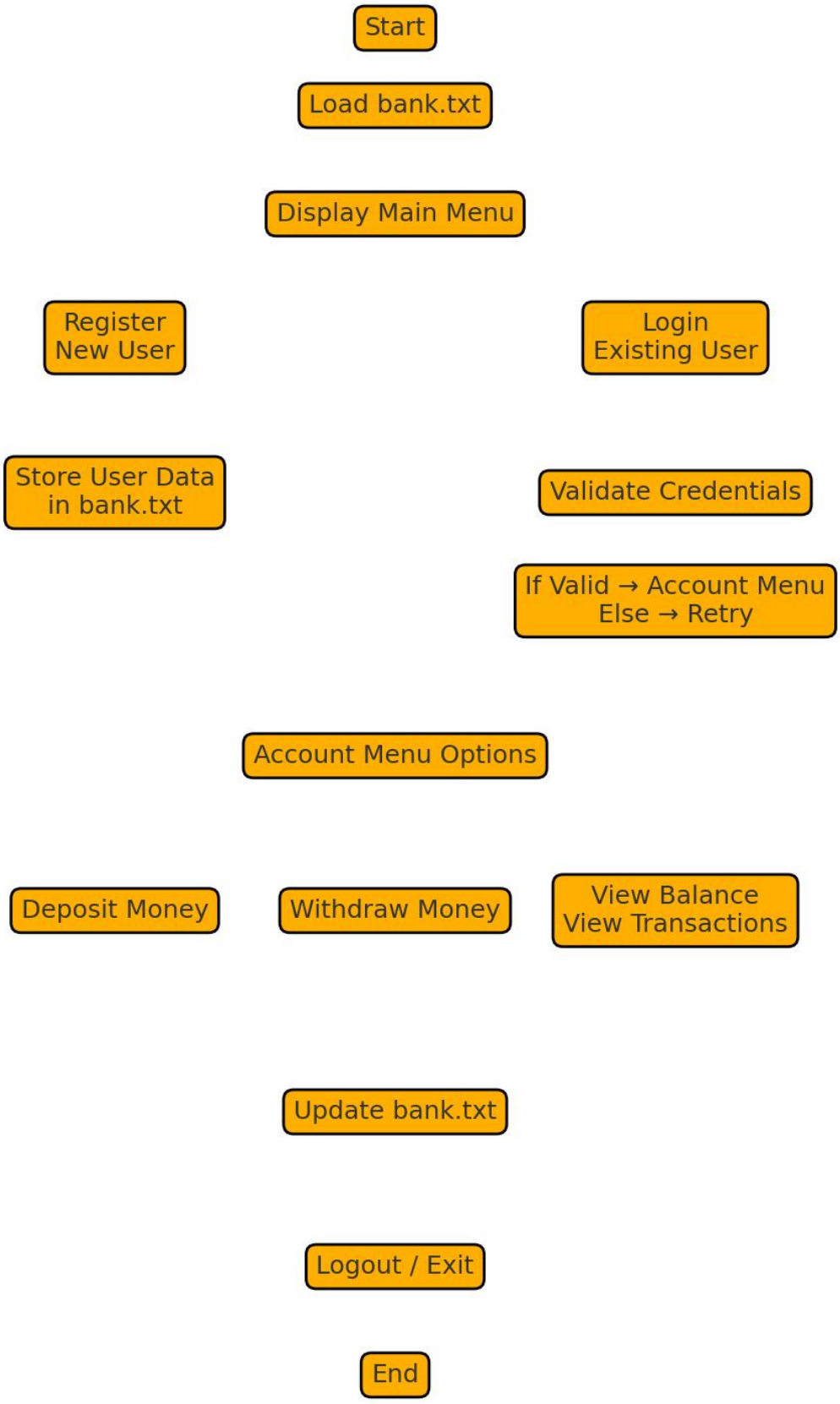
This project presents a comprehensive Bank Account Management System implemented in the C programming language. The system is designed to allow users to register securely, authenticate through password-based login, and perform essential operations like depositing funds, withdrawing funds, checking account balance, and accessing complete transaction history. All user information is securely stored in a structured plain-text file for ease of readability. The project demonstrates fundamental concepts of modular programming, file handling, data structures, and menu-driven program design.

PROBLEM DEFINITION

The primary objective is to create a secure and reliable banking system simulation in C that supports multiple user accounts and provides authenticated access. The system must ensure data privacy, integrity, and correct transaction handling. Additionally, it should demonstrate practical implementation of structures, functions, and file handling in C programming.

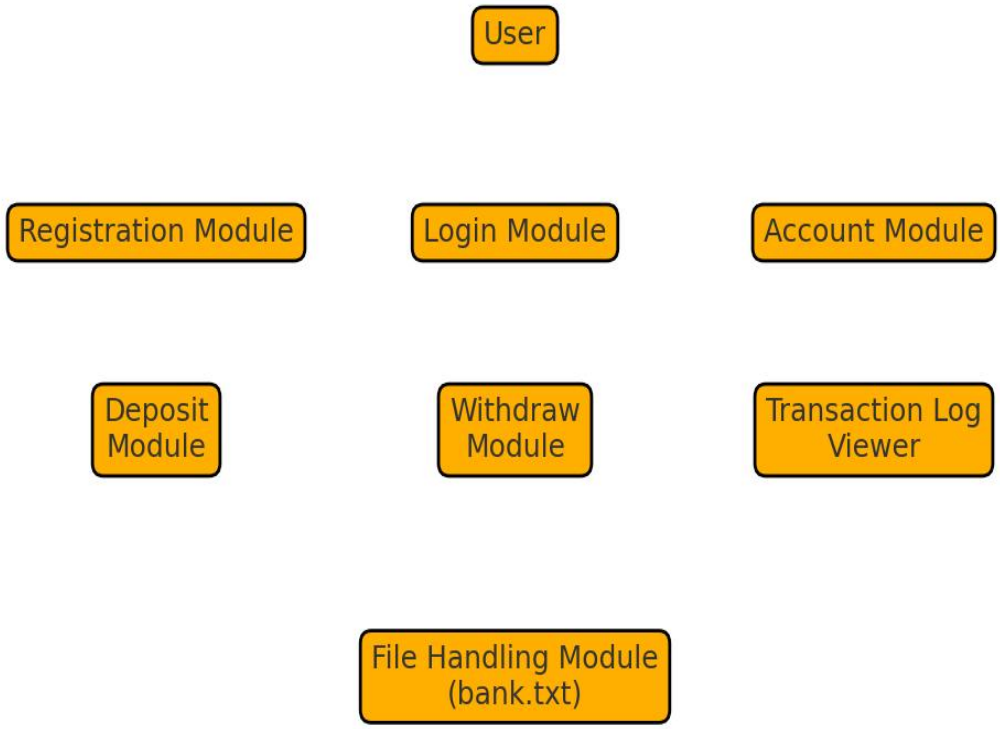
FLOWCHART

A detailed flowchart representing the entire workflow of the banking system is shown below:


Start
Load bank.txt
Display Main Menu
Register New User
Login Existing User
Store User Data in bank.txt
Validate Credentials
If Valid → Account Menu Else → Retry
Account Menu Options
Deposit Money
Withdraw Money
View Balance View Transactions
Update bank.txt
Logout / Exit
End

SYSTEM ARCHITECTURE DIAGRAM

The system architecture provides a clear overview of how modules interact with each other:



DATA FLOW DIAGRAM (LEVEL 0)

This DFD Level 0 diagram provides a high-level flow of information between the system and the data store:

ALGORITHMS

The following are the key algorithms used in this project:

1. **User Registration Algorithm**
   - Input user details.
   - Validate email uniqueness.
   - Save user data to file.

2. **Login Algorithm**
   - Ask user for email and password.
   - Validate credentials with stored data.
   - Grant or deny access.

3. **Deposit Algorithm**
   - Input deposit amount.
   - Add to user's balance.
   - Save updated balance to file.

4. **Withdraw Algorithm**
   - Input withdrawal amount.
   - Check if sufficient balance exists.
   - Deduct and update file.

5. **Transaction Log Algorithm**
   - Timestamp each transaction.
   - Save details in structured format.

IMPLEMENTATION DETAILS

The system is implemented using C programming concepts such as structures, functions, loops, conditional statements, arrays, and file handling using text files. Below are the main modules developed in the implementation:

• **User Module** — Handles registration, login, and profile verification.
• **Transaction Module** — Manages deposits, withdrawals, and log creation.
• **File Handling Module** — Reads and writes all data to bank.txt.
• **Menu Controller Module** — Provides user interface for operations.

TESTING AND RESULTS

Multiple test cases were executed to ensure smooth functionality. The key results include:

• Successful creation of multiple user accounts.

• Proper verification of login credentials.
• Accurate balance updates after deposit and withdrawal.
• Correct chronological transaction log storage.
• Stability during repeated operations.

CONCLUSION AND FUTURE WORK

The Bank Account Management System developed in C demonstrates structured programming, secure authentication, and persistent data storage. The project successfully achieves reliability, modularity, and readability. In future versions, enhancements such as encrypted password storage, GUI interface, cloud storage, database integration, and multi-user online access can be added.

REFERENCES

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2. Yashavant Kanetkar – Let Us C
3. ISO/IEC 9899 C Standard Documentation
4. Online C File Handling Documentation