Sir Syed University of Engineering & Technology
Department of Computer Science & Information Technology.

SIR SYED UNIVERSITY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY
FALL 2023

***Subject:** Subject: DATA STRUCTURES & ALGORITHMS LAB (CS212L)*
FACULTY: Mehwish Mehmood

(Section B)
Submitted to:
Engr. Mehwish Mehmood

Project Report: Revolutionizing Banking: Horizon Union Bank System

Submitted by:

Maaz Siddiqui
2022F-BCS-188

Zain Naveed
2022F-BCS-160

Bilal Huzaifa
2022F-BCS-274

22-January-2024

Sir Syed University of Engineering & Technology
Department of Computer Science & Information Technology.

Abstract:

The Project 2023 Bank Management System, developed in C++, offers a versatile program for financial services, including debit card creation, ATM functions, and account registration. It aims to improve database efficiency and provide a reliable system for consumers, overcoming barriers and meeting goals. The system also includes administrative tools for monitoring accounts and bill payments.

Introduction:

The Bank Management System is a feature-rich application catering to various banking needs. It incorporates specialized modules for ATM functionalities, administrative tools, and comprehensive bank operations. Each module is meticulously designed to provide users with a seamless and secure banking experience.

Methodology:

The system uses fundamental data structures such as linked lists for efficient account management and queues for streamlined bill payment processes. These structures contribute to the overall responsiveness and reliability of the system.

1) **ATM Functionality:**
   Users can perform balance inquiries through the ATM module, ensuring they have real-time access to their financial information. This feature enhances user convenience and promotes secure banking transactions.
2) **Administrative Tools:**
   Administrators have access to powerful tools allowing them to view all accounts and bill payments. This functionality ensures effective oversight and management of the bank's operations.
3) **Bank Functions:**
   The Bank module encapsulates a spectrum of functions, ranging from the creation of accounts to the issuance and management of debit cards and cheque books. Users can also start account deletions and conduct bill payments seamlessly.

Data Structure Integration:

The Bank Management System's usefulness and efficiency were greatly enhanced using key data structures. The ensuing data structures were deliberately included:

1) **Linked Lists:**
   Linked lists were employed for efficient account management. This dynamic data structure helps the seamless creation, viewing, and deletion of accounts, ensuring best system responsiveness.
2) **Queues:**
   Queues were harnessed to streamline bill payment processes. This robust data structure enhances the efficiency of handling and processing bill payments, contributing to a reliable and organized workflow.
3) **Modular Design:**
   The project embraced a modular approach to code organization, easing ease of maintenance and future expansions. Each module was carefully designed to encapsulate specific functionalities, ensuring a cohesive and scalable architecture.
4) **Exception Handling Mechanisms:**
   Robust exception handling mechanisms were integrated into the code to prevent errors and ensure the stability of the application. This initiative-taking approach contributes to a resilient system capable of delivering a seamless user experience.
5) **User-Friendly Interface:**
   A paramount consideration in the project's method was the creation of an intuitive and user-friendly interface. Clear prompts, concise messaging, and an engaging layout were prioritized to enhance the overall user experience.
6) **Collaborative Problem-Solving:**
   The method embraced collaborative problem-solving approaches to address technical challenges. Regular communication through platforms like WhatsApp fostered effective teamwork and knowledge exchange, ensuring a collective effort in overcoming obstacles.
7) **Agile Development Approach:**
   Adopting an agile development approach supplied flexibility in responding to evolving requirements. This iterative method allowed for continuous improvement, adaptation to changes, and prompt delivery of key project milestones.
8) **Cursor Control Implementation:**
   Precise cursor control was implemented in the input/output handling mechanism. This meticulous approach enhances the visual presentation of the application, contributing to a polished and professional user interface.
9) **Code Modularity:**
   Code modularity was emphasized throughout the development process. Organizing code into modular components eases ease of maintenance and future expansions, contributing to a scalable and sustainable software architecture.

10) **Interrupt-Driven Input:**

The system used interrupt-driven input mechanisms, ensuring responsive and interactive user interaction. This feature enhances the real-time responsiveness of the application, contributing to an engaging user experience.

Challenges and Milestones:

The project faced challenges during its development, including database creation and bill payment implementation. However, it successfully navigated these hurdles, achieving milestones marked by positive user feedback and a reliable, user-friendly system.

Future Improvements:

Future enhancements are slated to refine the system further. Key areas include database optimization, the introduction of added transaction features, and the implementation of advanced security measures. These improvements aim to elevate the banking experience for users.

Conclusion:

In conclusion, the Project 2023 Bank Management System stands as a comprehensive solution, addressing diverse user needs through its ATM, administrative, and bank modules. The project's success lies in its ability to overcome challenges and continuously evolve to meet user expectations. With a robust foundation, positive feedback, and a roadmap for future improvements, the system is poised for sustained growth and excellence in banking services.