Project Report

Only for course Teacher						
		Needs Improvement	Developing	Sufficient	Above Average	Total Mark
Allocate mark & Percentage		25%	50%	75%	100%	25
Understanding	3					
Analysis	4					
Implementation	8					
Report Writing	10					
Total obtained mark						
Comments						

Semester: …….Fall…….2024…….

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Course Code: SE133
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Submission Date: 11/12/24

Project Documentation

Project Title: DIU BANK MANAGEMENT

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DECLARATION OF PROJECT

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Title of Project : Online Banking System(bKash)
Academic Session : Fall 2024

As the authors, we formally transfer ownership of this project to Daffodil International University, to be housed within the Software Engineering Department. Additionally, we grant DIU the authorization to replicate this project, either wholly or partially, exclusively for research or academic exchange purposes.

Author

Signature

Imranul Islam Shihab, Meherab Hasan Fahim,

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ACKNOWLEDGEMENT

Firstly, **we are** deeply grateful to Almighty Allah for granting us the strength to start and successfully complete this project.

Secondly, **we extend** our heartfelt thanks to **Daffodil International University** for providing us with this remarkable opportunity and for supporting the development of this project. We would also like to express our appreciation to the **Department of Software Engineering**, particularly our esteemed Department Head, **Dr. Imran Mahmud**, and our dedicated teachers for their exceptional instruction and unwavering commitment to excellence.

This project, *"Online Banking System (bKash),"* is designed to compile, integrate, and efficiently manage a user's finances. **We are** immensely proud and overjoyed to have worked on this project and to have realized a shared dream.

Furthermore, **we acknowledge** the unwavering encouragement and support of our beloved parents and friends, who have significantly contributed to the success of this project.

Lastly, **we express** our deepest gratitude to our esteemed teacher, **Md. Sefatullah**, for his brilliant teaching and invaluable guidance throughout our studies and during the development of this project.

In Gratitude,
Imranul Islam Shihab, Meherab Hasan Fahim, Liakat Hossain

Abstract

- **Project Overview**: This project implements an online banking system in C, designed to facilitate various banking operations for users.
- **Core Functionalities**:
    - **User Registration**: Allows new users to create accounts with secure authentication.
    - **User Login**: Enables users to access their accounts securely.
    - **Send Money**: Facilitates sending money to other users within the system.
    - **Mobile Recharge**: Provides functionality for users to recharge mobile accounts.
    - **Cash Out**: Allows users to withdraw cash from their accounts.
    - **Merchant Payments**: Enables users to make payments to merchants.
    - **Bill Payments**: Users can pay utility bills directly through the system.
    - **My Bkash**: Users can check their account balance and other information.
- **Data Management**: The system maintains transaction logs and user account details, ensuring data integrity and security.
- **User Interface**: A simple text-based interface guides users through various banking operations, enhancing usability.
- **Error Handling**: Basic error handling mechanisms are implemented to manage invalid inputs and ensure smooth operation.
- **Future Enhancements**: The system lays the groundwork for potential improvements, such as:
    - Integration of a database for persistent data storage.
    - Enhanced security features, including encryption.
    - A graphical user interface (GUI) for improved user experience.
- **Conclusion**: This online banking system project demonstrates the application of fundamental programming concepts while providing a practical solution for everyday banking needs, showcasing the potential for further development and enhancement in the financial technology domain.

These abstracts captures the essence of the banking system code, highlighting its functionalities, user roles, and potential for future improvements.

VARIABLES & MAIN FUNCTIONS

Variables

- **User Variables**:
    - **phoneNumber [50]**: User's phone number.
    - **pin [50]**: User's password.
    - **balance**: User's account balance.
    - **name**: User’s name.
- **Transaction Variables**:
    - **amount**: Transaction amount.
- **Miscellaneous**:
    - **choice**: User menu selection.
    - **userCount**: Number of users.

Main Functions

1. **Main Function**: Initializes the program and directs user/admin login.
2. **User Registration**: Collects and validates user details; initializes account.
3. **User Login**: Validates credentials and grants access.
4. **User Dashboard**: Displays options (all functions like send money, bill pay etc).
5. **Cash Out**: Checks balance, processes withdrawal.
6. **Send Money**: Validates recipient and amount, processes transfer.
7. **Mobile Recharge**: Handles mobile recharge.
8. **Bill Pay**: Pay electricity bill.
9. **My Bkash**: Displays balance and user information.

OBSTACLES

Obstacles in Banking System Code

1. **User Authentication:**
    - **Weak passwords and lack of recovery options.**
2. **Input Validation:**
    - **Invalid or non-numeric inputs cause errors.**
    - **Insufficient checks for transaction limits.**
3. **Concurrency Issues:**
    - **Race conditions from simultaneous transactions.**
4. **Data Integrity:**
    - **Incomplete transactions lead to inconsistent states.**
    - **Risk of data loss without backups.**
5. **Security Vulnerabilities:**
    - **Susceptibility to SQL injection and data exposure.**
6. **User Experience:**
    - **Confusing navigation and lack of feedback on transactions.**
7. **Error Handling:**
    - **Uncaught exceptions causing crashes.**
    - **Vague error messages leading to user confusion.**
8. **Scalability:**
    - **Performance issues as the user base grows.**

TECHNOLOGY REQUIREMENTS

Software and Application Platform:

- **Vs Code; use C program**

Hardware: Unfortunately, there is no hardware used in our project.

SUPPORT

As the author of the Project, we are passionate about providing comprehensive user support. We are here to assist users with any technical questions, troubleshoot any issues they may encounter, and guide them through every aspect of the system. Our goal is to ensure that every user has seamless experience by quickly resolving any problems they may have with data, system navigation, or any other challenges they encounter while using the system. I am committed to providing personalized and reliable support that empowers users to fully utilize the system and maximize its benefits.

REQUIREMENT ELICITATION

Based on the technological requirements, the following functional and non-functional requirements can be elicited:

Functional Requirements:

1. **User Authentication**: The system should allow users to log in with their credentials.
2. **Account Management**: The system should enable users to create, update, and delete their accounts.
3. **Transaction Processing**: The system should facilitate transactions such as deposits, withdrawals, and transfers.
4. **Data Storage**: The system should store user information and transaction records securely.
5. **Security**: The system should ensure secure data transmission and encryption.

Non-Functional Requirements:

1. **Performance**: The system should respond quickly to user requests.
2. **Scalability**: The system should be able to handle a large number of users and transactions.
3. **Reliability**: The system should be available 24/7 and recover quickly from failures.

4. **Usability**: The system should be easy to use and navigate.
5. **Security**: The system should protect user data from unauthorized access.

Use Cases:

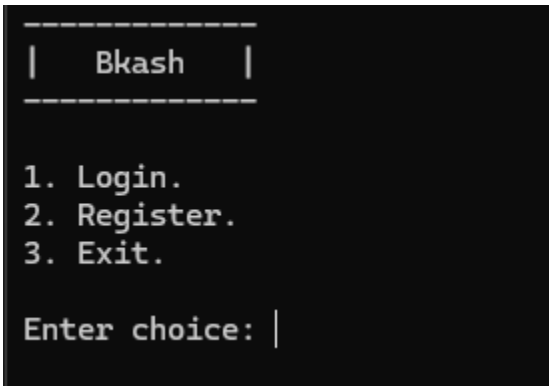
1. **User Login**: The user logs in with their credentials.
2. **Account Creation**: The user creates a new account.
3. **Transaction Initiation**: The user initiates a transaction.
4. **Transaction Processing**: The system processes the transaction.
5. **Account Update**: The user updates their account information.

Stakeholders:

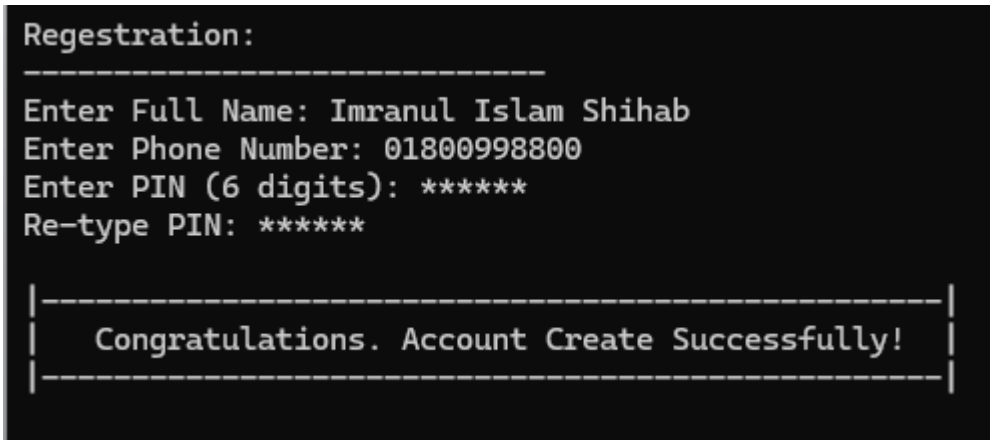
1. **Bank Customers**: Use the system to manage their accounts and perform transactions.
2. **Developers**: Responsible for developing and maintaining the system.

USER MANUAL

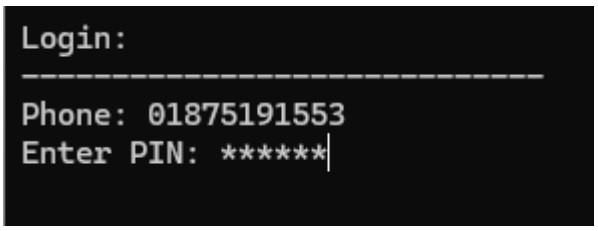
Start Page & Role Selection Step 01:



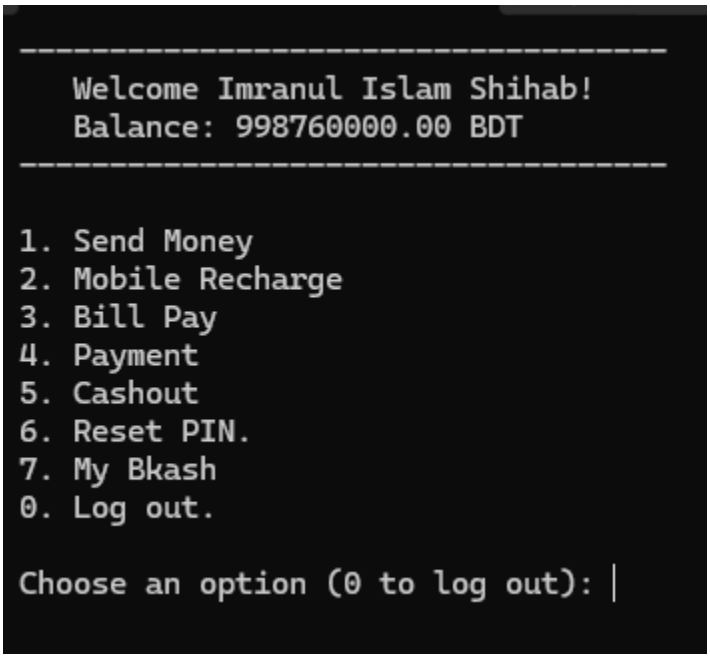
User Registration 02:



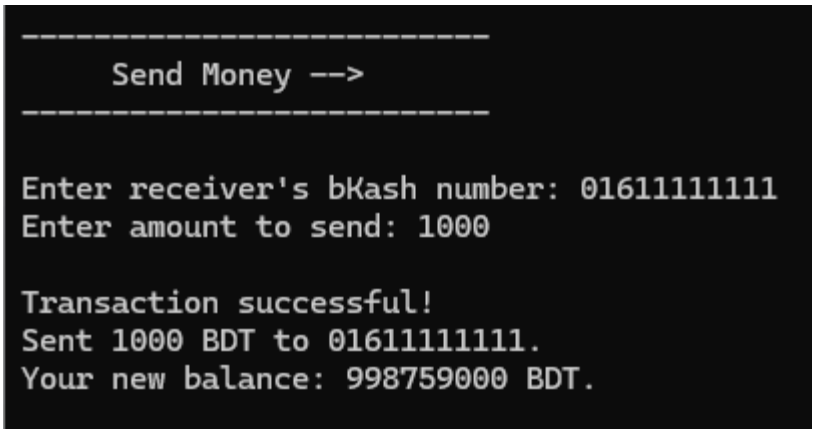
User Login Step 03:



Main Menu Interface Step 04:



Send Money Functionality Step 05:

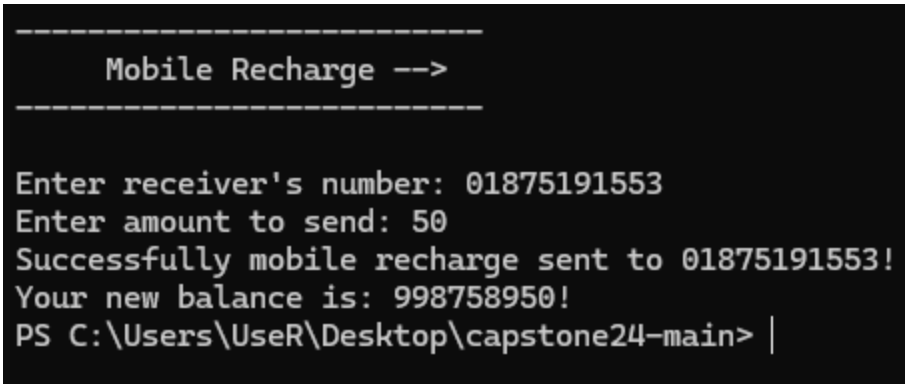



```
-------------------------
     Send Money -->
-------------------------

Enter receiver's bKash number: 01611111111
Enter amount to send: 1000

Transaction successful!
Sent 1000 BDT to 01611111111.
Your new balance: 998759000 BDT.
```

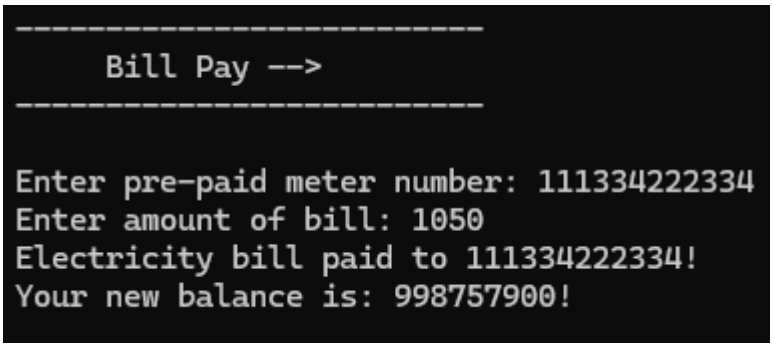
Mobile Recharge Functionality Step 06:



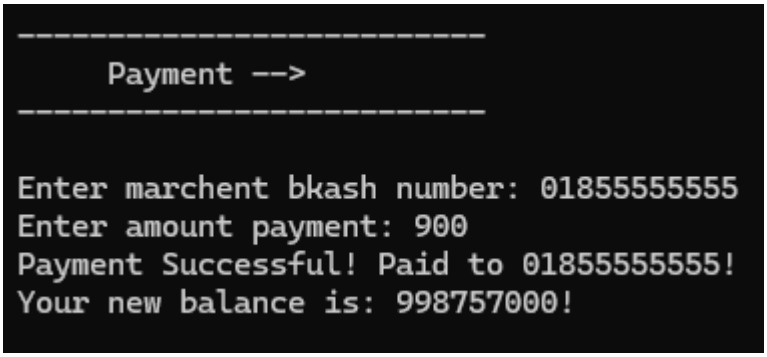

```
-------------------------
     Mobile Recharge -->
-------------------------

Enter receiver's number: 01875191553
Enter amount to send: 50
Successfully mobile recharge sent to 01875191553!
Your new balance is: 998758950!
PS C:\Users\UseR\Desktop\capstone24-main>
```

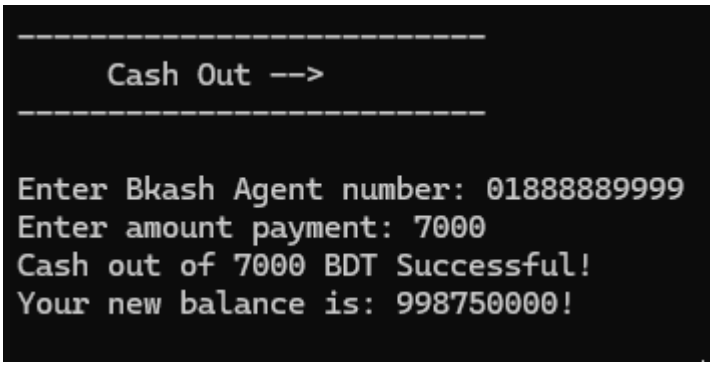
Bill Pay Functionality Step 07:



Merchant Payment Functionality Step 08:

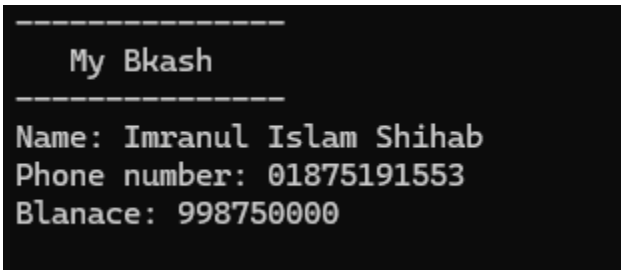


Cash Out Functionality Step 09:



Reset PIN Functionality Step 10:

My Bkash Functionality Step 11:



DESIGN & IMPLEMENTATION

The Online Banking System(bKash) is developed using the C language on the VS Code platform. This project is meticulously designed to offer a robust and efficient solution for managing banking operations.

REQUIREMENT SPECIFICATION

The system requirements for running the Online Banking System(bKash) are tailored to ensure optimal performance. The application is compatible with Windows operating systems, including Windows 11 pro, Windows 10, and Windows 11. To guarantee stable and efficient user

experience, the minimum hardware specifications include a processor speed of at least 2.5 GHz, a hard disk capacity of no less than 40 GB, and a RAM size of 512 MB. These requirements are set to ensure that the software operates smoothly and efficiently within the designated operating environments.

FILE MANAGEMENT

An extensive file management system has been implemented in the Online Banking System(bKash) to meticulously organize and store data. Each functionality within the project has been allocated a dedicated individual file. This structured approach ensures that every distinct function, such as user registration, authentication, transaction handling, and account management, is housed within its own specific file. This methodology enhances the readability of the code, ease of maintenance, and streamlined access to and management of various project functionalities, ensuring a robust and efficient system architecture.

USE CASES

FR01	User Registration
Describe	Allow a new user to create an account by providing personal details and credentials. User is on the sign-up page. User accounts are created and stored.
Stakeholder	Customer

FR02	User Login
Describe	Allow a registered user to log in using their username and password. User has an existing account. Users are logged in and redirected to the home page.
Stakeholder	Customer

FR03	Send Money
Describe	Enables the user to send money to another user or a random user if the recipient is not found. User is logged in and has sufficient balance. Transaction is recorded, and balances are updated
Stakeholder	Customer.

FR04	Mobile Recharge
Describe	Allows the user to recharge a mobile number with a specified amount. User is logged in and has sufficient balance. Transaction is recorded, and balance is updated.
Stakeholder	Customer.

FR05	Cash Out
Describe	Enables the user to withdraw cash from an agent or ATM. User is logged in and has sufficient balance. Transaction is recorded, and balance is updated
Stakeholder	Customer.

FR06	Merchant Payment
Describe	Allows the user to make payments to a merchant account. User is logged in and has sufficient balance. Transaction is recorded, and balance is updated.
Stakeholder	Customer.

FR08	Bill Payment
Describe	Allows the user to pay bills for services like electricity, water, etc. User is logged in and has sufficient balance. Transaction is recorded, and balance is updated.
Stakeholder	Customer.

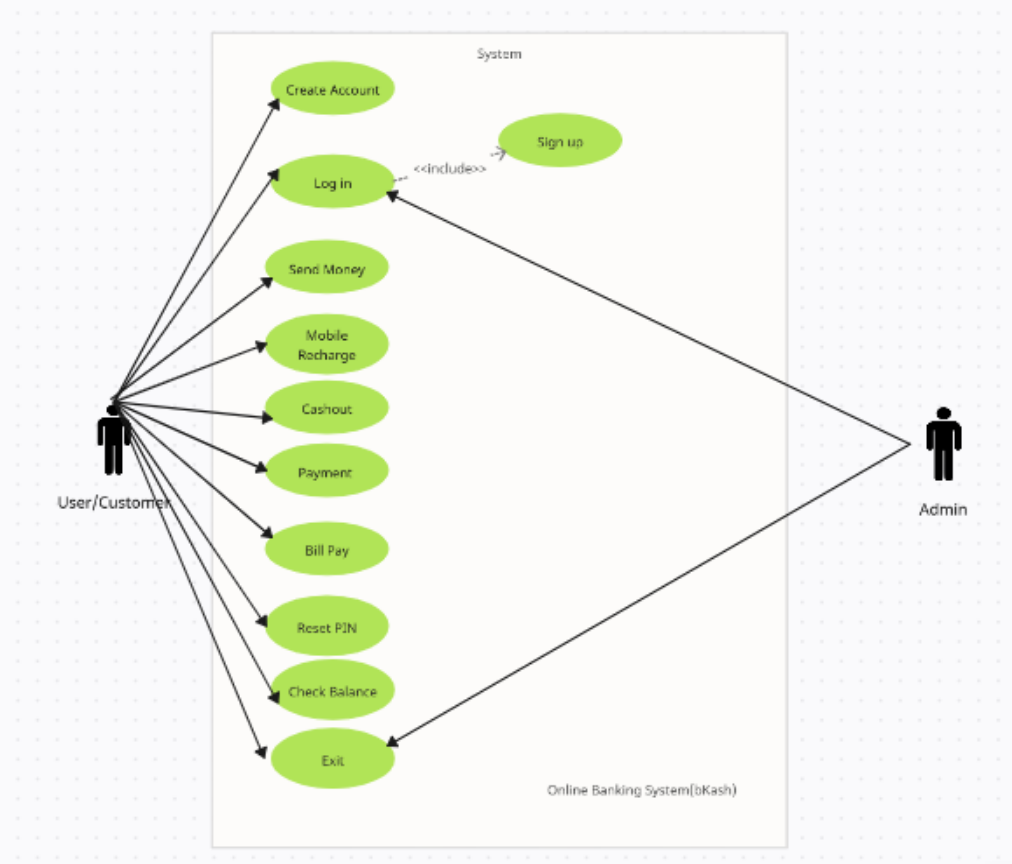
FR10	Change Password
Describe	Allows the user to change their account password. | User is logged in. | Password is updated successfully

Stakeholder	Customer.

FR11	My Bkash
Describe	Enables the user to view their current account balance and their information. | User is logged in. | Balance is displayed.
Stakeholder	Customer.

FR16	Exit
Describe	Allow a user to safely terminate their current session and log out of the system.
Stakeholder	Customer

USE CASE DIAGRAM



CONCLUSION

The DIU Bank Management System is a robust application designed to facilitate efficient financial management for both users and administrators. Key features of the system include:

1. **User Management**: The system allows users to register, log in, and manage their accounts securely with unique usernames and passwords.
2. **Transaction Processing**: Users can perform a variety of transactions, including sending money, mobile recharges, cash withdrawals, and merchant payments, all of which are logged for easy tracking.
3. **Administrative Oversight**: Administrators can view user details, add funds to accounts, and access transaction histories, ensuring effective management and security.
4. **User -Friendly Interface**: The console-based interface is designed to be intuitive, providing clear prompts and feedback to enhance user experience.

Areas for Improvement

While the system is functional, there are several areas for potential enhancement:

- **Data Persistence**: Implementing a database for persistent storage of user data and transaction history would improve reliability.
- **Enhanced Security**: Incorporating additional security measures, such as encryption and two-factor authentication, would further protect user information.
- **Graphical User Interface (GUI)**: Transitioning to a GUI could make the application more visually appealing and easier to navigate.
- **Mobile Application Development**: Creating a mobile version of the system would increase accessibility for users on the go.

In summary, the DIU Bank Management System provides a solid foundation for managing financial transactions and user accounts, with opportunities for further enhancements to improve functionality and user experience.