Programming Fundamentals Group Assignment

Instructions:

1. Form groups of 4 students.
2. Complete all parts of the assignment collaboratively based on the given scenario.
3. Submit one solution per group.
4. Ensure equal participation from all group members.

Submission:

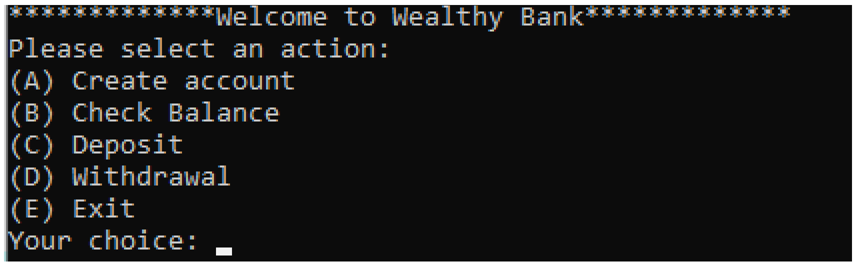
1. Submit all parts of the assignment as a single **PDF** document.
2. Include the C++ source code as a separate file.
3. Clearly label each section and question.
4. Include the names and student IDs of all group members.

To develop a simple Banking System that demonstrates understanding of problem-solving techniques and C++ programming concepts as outlined in the course syllabus.

Scenario: Simple Banking System (40 marks)

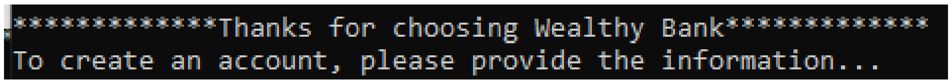
Implement a C++ program for the Banking System with the following features that allows users to perform basic account operations (create accounts, make deposits, and perform withdrawals.

1. Menu (10 marks)
    a. Create a menu for users to choose the operations they want to perform.

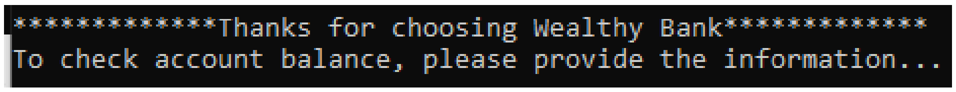


```
**************Welcome to Wealthy Bank**************
Please select an action:
(A) Create account
(B) Check Balance
(C) Deposit
(D) Withdrawal
(E) Exit
Your choice:
```

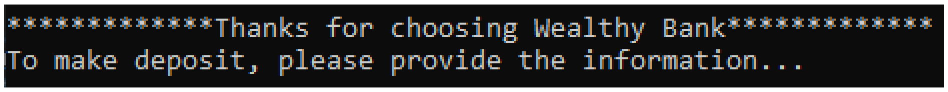
    b. Implement character and string manipulations for handling user inputs and displaying information.
    c. The menu will be displayed as long as the user does not choose to exit.
2. Greeting Function (2 marks)
    a. Create a function that displays greeting messages.
    b. It accepts a parameter, action, and displays the action in greeting messages.



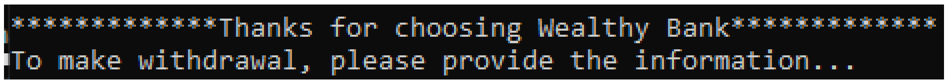
```
**************Thanks for choosing Wealthy Bank**************
To create an account, please provide the information...
```



```
**************Thanks for choosing Wealthy Bank**************
To check account balance, please provide the information...
```



```
**************Thanks for choosing Wealthy Bank**************
To make deposit, please provide the information...
```



```
**************Thanks for choosing Wealthy Bank**************
To make withdrawal, please provide the information...
```

3. Create Account Function (7 marks)
    a. Create a function that asks the user to provide account registration information. Use appropriate variables and data types to store account information. (Use pass by reference)
        i. Account holder's full name (string)
        ii. Initial deposit amount (double)
        iii. Account type (string: "Savings" or "Checking").
        iv. Contact number (string)
        v. Account safety pin (string)

        vi. Account number (string). System should generate a unique 5-digit account number (using random number generation)

   b. System should handle all potential errors for inputs including the data type, type casting and spelling (case-sensitive)

4. Account Validation Function (4 marks)
   a. System asks user to insert account number and safety pin
   b. System should check the account number and safety pin.
   c. System return boolean true value indicating account is validated.
5. Check Balance Function (2 marks)
   a. System validates the user account.
   b. System displays the balance of the account.
6. Deposit Function (5 marks)
   a. System validates the user account.
   b. User input deposit amount.
   c. System update the deposit amount.
   d. System displays the balance of the account.
7. Withdrawal Function (10 marks)
   a. System validates the user account.
   b. User input withdrawal amount.
   c. Check if the account has sufficient funds
   d. If sufficient, subtract the withdrawal amount from the account balance
   e. If insufficient, display an error message
   f. Display updated balance (if withdrawal was successful)
   g. Handles potential errors (e.g., insufficient funds for withdrawal) using appropriate control structures.

Reflection and Collaboration (10 marks)

Each group member should write a brief paragraph (3-5 sentences) reflecting on:

- Their specific contribution to the Banking System project
- Which programming concept they found most challenging and why
- How they collaborated with their team members to overcome difficulties