Unit:
Analysis, Design and Implementation

Assignment title:
Banking Software for Retail Bank

20 credit version

Spring – Winter 2022

Important notes

- Please refer to the *Assignment Presentation Requirements* for advice on how to set out your assignment. These can be found on the NCC Education website. Hover over 'About Us' on the main menu and then navigate to 'Policies and Procedures' then scroll to the 'Student Support' area.
- You **must** read the NCC Education document *Academic Misconduct Policy* and ensure that you acknowledge all the sources that you use in your work. These documents are available on the NCC Education website. Hover over 'About Us' on the main menu and then navigate to 'Policies and Procedures' then scroll to the 'Student Support' area.
- You **must** complete the *Statement and Confirmation of Own Work*. The form is available on the NCC Education website. Hover over 'About Us' on the main menu and then navigate to 'Policies and Procedures' then scroll to the 'Student Support' area.
- Please make a note of the recommended word count. You could lose marks if you write 10% more or less than this.
- You must submit a paper copy and digital copy (on disk or similarly acceptable medium). Media containing viruses, or media that cannot be run directly, will result in a fail grade being awarded for this assessment.
- All electronic media will be checked for plagiarism.

Scenario

You work for a software development company and you have been assigned to a project developing banking software for a new retail bank set to launch next year. A retail bank, also known as personal banking, offers banking services to individual consumers rather than businesses or large corporations. For this assignment, it is necessary for you to carry out some research on the main banks in your own country that offer personal banking with a focus on different services such as transferring money, paying someone, interest rates, and overdrafts. This will help set the relevant context for your assignment.

The company would want to incorporate TWO (2) main account types in the banking software. These are a ***current account*** which will handle daily deposits and withdrawals with no interest and a ***savings account*** allowing limited transactions and including interest. The software should have TWO (2) types of users, these are individual consumers and a bank administrator. The individual consumers can choose to open ONE (1) type account or TWO (2) types of accounts (one of each **not** two types of the same account).

The software should allow the following operations.

The **individual consumers** can perform the following tasks on either type of account:

- View their balance.
- View their transactions by date.
- Transfer money between their own different account types.
- Add a new payee.
- Make a payment to an existing payee.
- Make a payment to someone new who is not in their list of payees. In this case, they must be added to the payee list before being paid.

The information needed for money transfer and to pay someone should come from the findings of your research.

The consumer can only receive interest on their savings account if:

- at least THREE (3) payments have been made within ONE (1) calendar year,
- and each payment exceeds a certain threshold.

The interest is calculated based on the balance on the first day of the eligible period (the third payment) and it will be paid into the savings account as a one-off payment on the last day of the eligible period (one year from opening the account). For example, a saving account opened on 1st December 2020 with £10,000 initially has received three payments £500, £600, and £900 within one year of opening the account. The threshold is £300. The interest will be calculated based on £12,000 and paid into the account on 1st December 2021. Your research findings can help set reasonable threshold and interest rates.

The **administrators** can:

- Open a new account for a new consumer with personal information (no need to collect proof of identity/address).
- Open a new account on behalf of an existing individual consumer if they have only ONE (1) account.
- Close an existing account.
- Process deposits and withdrawals.

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For testing purpose, your software should add a few individual consumer accounts to verify your software fulfils the functionalities required above.

Task 1 – 20 Marks
Candidate class list and diagrams

Identify a list of Candidate classes. You should provide a justification why each class was selected for inclusion, and how its relationship to other classes was derived.

Draw a Class Diagram to represent the system structure.

The Class Diagram should be drawn with a suitable CASE tool and show attributes, operations, scope and relationship of classes to each other with multiplicity. The use of abstract classes and sub-classes (where appropriate) will attract additional marks.

Task 2 – 20 Marks
Activity diagram

Draw an activity diagram to show the classes involved when an individual consumer wants to make a payment.

Your diagram should clearly show which function each class is associated with.

Task 3 – 10 Marks
Use case diagrams

Draw a Use-Case Diagram to capture the requirements listed in the scenario.

Task 4 – 15 Marks
Code architecture

The code architecture should show an appropriate level of coupling and cohesion between the classes and any inheritances and encapsulations that represent the system.

Task 5 – 25 Marks
Software implementation

Write and deploy code to implement your system design for the requirements listed in the scenario. The code should appropriately handle input and output. Your software should implement GUI that allows users to perform all the operations required above.

All code should be written in C# for this assignment.

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Task 6 – 10 Marks

Using the Rolfe, G., Freshwater, D. and Jasper, M. (2001) model, critically review the learning that you have undertaken in order to complete this assignment.

Based upon your learning, your reflection should include a description; an analysis; and an action plan in order to bring about improvements in the future.

Submission requirements

- Your program must be submitted as a zip file of the full project.
    - **All code provided should be written in C# for this assignment. No marks will be awarded for code written in another language.**
    - Whatever IDE you use, it should be possible to open and run the project directly from the extracted archive.
- Diagrams and materials associated with the tasks above should be presented in a word-processed document.
- A 200-word report answering questions in Task 6 should be included.
- All references and citations must use the Harvard Style.

Candidate checklist

Please use the following checklist to ensure that your work is ready for submission.

Have you read the NCC Education document *Academic Misconduct Policy* and ensured that you have acknowledged all the sources that you have used in your work?	❑
Have you completed the *Statement and Confirmation of Own Work* form and attached it to your assignment? **You must do this.**	❑
Have you ensured that your work has not gone over or under the recommended word count by more than 10%?	❑
Have you ensured that your work does not contain viruses and can be run directly?	❑

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