Design Detailed Document

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1 Introduction

This document contains the design specifications of Practical Work 2 extended for Luka Rojas Rios. The goal of the project is to develop a graphical GUI application with basic user login and calculator functionalities. The document will detail the solution provided to the problem posed, explaining how the design followed has been chosen and the different decisions that have been taken along its development. A class diagram will be included that reflects the design of the program with its respective entities and attributes, and another diagram will be provided with the interactions and relationships that these entities have when interacting with the program as a user. It will also present the various problems that have arisen during the development of the program and the solutions adopted for its implementation, and it will be possible to observe the trajectory that has taken the practice to reach its final and definitive version. Finally, conclusions about the work are given that not only reflect what has been learned through the development of the practice but also demonstrate the effectiveness of the given solution and lessons for future contributions of future projects.

2 Overall Structure

The project consists of two main components: the command-line interface (CLI) solution and the graphical user interface (GUI) solution.

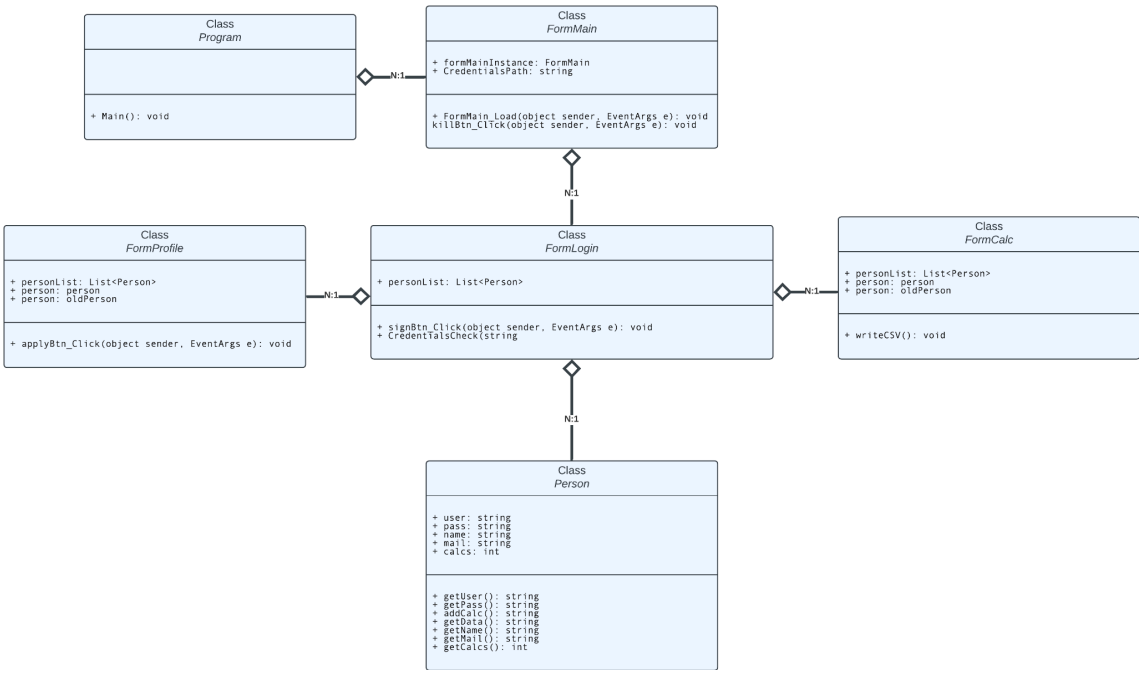
CLI Solution:

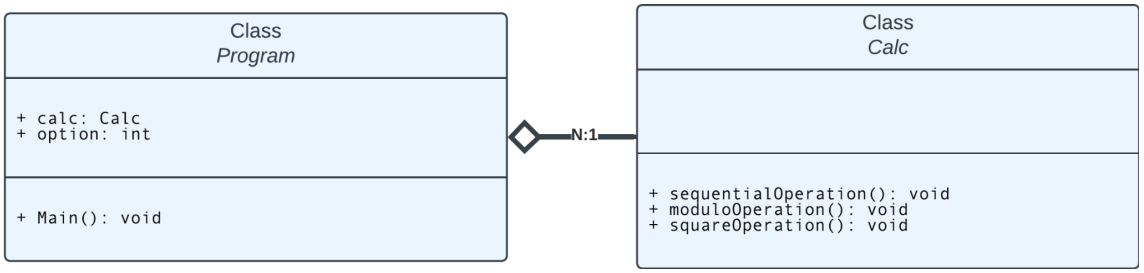
- Implemented using C#.
- Incorporates additional functionalities such as square root, modulo operations, and support for sequential combined operations.
- Provides a command-line interface for user interaction.

GUI Solution:

- Developed using Windows Forms in C#.
- Includes features such as user login, password recovery, user registration, calculator interface, user info display, and operation execution.
- Utilizes file storage (e.g., CSV, JSON) for user information persistence.
- Ensures compliance with password strength and protection policy requirements.
- The main login passkeys are going to be testUser,testPass and randUser,randPass

3 Class Diagram





4 Problems

Throughout the development process, several challenges were encountered, including:

- Implementation of the square root and modulo operations using loops for approximation.
- Integration of sequential combined operations in the calculator interface.
- Ensuring user input validation and adherence to password strength requirements.
- Designing a user-friendly and intuitive GUI interface with proper navigation flow.

5 Conclusions

In conclusion, the development of the extended practical work II provided valuable insights into software design, user interface development, and data management. The incorporation of additional functionalities and the creation of a graphical user interface have enhanced the usability and functionality of the calculator application. Lessons learned from this project include the importance of thorough testing, user feedback incorporation, and adherence to design principles for a cohesive and efficient solution.

6 Bibliography

- *MSDN Documentation for C# and .NET Framework*
- Introduction to C# Windows Forms Applications
- Tutorial: Working with Windows Forms
- Github Repo