OOP (Object Oriented Programming) Lab

Project Proposal

Semester: 2nd Semester

Section: C

Submitted To:

Mr. Muhammad Husnain

Submitted By:

Name: Abdul Ahad

Roll No: 22-CS-071

Name: Muhammad Afzal

Roll No: 22-CS-035

Name: Faisal Khan

Roll No: 22-CS-039

Name: Muhammad Zain Ali

Roll No: 22-CS-015

Project Report: Phonebook

1. Introduction:

The purpose of this project report is to provide a detailed overview of our semester project submission. Our project involved the development of a phonebook application using the Qt framework and SQLite database. The phonebook application allows users to add, search, update, and delete contact entries. This report outlines the project's objectives, methodology, implementation details, and outcomes.

2. Objectives:

- Develop a phonebook application with a user-friendly graphical user interface (GUI).
- Implement functionalities for adding, searching, updating, and deleting contact entries.
- Integrate a SQLite database for storing and managing contact information.
- Ensure proper validation of user inputs and handle potential errors gracefully.
- Create a robust and efficient code structure that follows best practices.

3. Methodology:

- Technology Stack: The project utilized the Qt framework, C++ programming language, and SQLite database.
- Project Planning: We conducted initial research, defined project requirements, and planned the development process.
- Design: We designed the GUI layout using Qt's UI components and implemented the necessary UI elements.
- Database Integration: We established a connection to the SQLite database, created the required tables, and implemented the database functionality.
- Core Features Implementation: We developed the core features, including adding, searching, updating, and deleting contact entries.
- Testing and Debugging: We performed extensive testing, identified and fixed bugs, and ensured the proper functioning of all features.
- Documentation: We prepared comprehensive documentation, including code explanations, usage instructions, and additional project details.

4. Implementation:

The project involved several source code files:

- **mainwindow.h** and **mainwindow.cpp**: These files defined the main window class and implemented the GUI layout using Qt's widgets.

- **phonebook.h** and **phonebook.cpp**: These files contained the phonebook class, which managed the contact entries and database operations.

- **main.cpp**: This file served as the main entry point of the application, creating an instance of the main window and launching the program.

5. Output:

The output of the project was a fully functional phonebook application with the following features:

- Graphical User Interface: The application provided a user-friendly interface for managing contact entries.

- Add Entry: Users could enter a name and number, and the application validated the inputs before adding the entry to the database.

- Search Entry: Users could search for a contact by name, and the application retrieved and displayed the corresponding number.

- Update Entry: Users could update the number of an existing contact entry, with the application reflecting the changes in the database.

- Delete Entry: Users could delete a contact entry, and the application removed it from the database.

- Display All Entries: Users could view all contact entries in the phonebook, sorted by name or number.

6. Explanation:

The project utilized the Qt framework for developing the GUI and handling user interactions. Qt's UI components facilitated the design of the application's layout, and event handling mechanisms enabled the implementation of various functionalities. The SQLite database was integrated using Qt's database module, allowing the storage and retrieval of contact information. The code followed a modular structure, with classes responsible for managing the phonebook, handling user input, and interacting with the database.

7. Conclusion:

In conclusion, our semester project involved the development of a phonebook application using the Qt framework and SQLite database. We successfully achieved the project's objectives by implementing functionalities for adding, searching, updating, and deleting contact entries. The application featured a user-friendly GUI, proper input validation, and seamless integration with the SQLite database. Through comprehensive testing and debugging, we ensured the application's functionality and robustness. The project was accompanied by detailed documentation, providing explanations of the code, usage instructions, and additional project insights. Overall, the project showcased our skills in software development, GUI design, and database management, while also demonstrating our ability to plan and execute a semester-long project.