Efficient Contact Management: Developing a User-Friendly Phonebook Application with Qt and SQLite

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## Introduction

Welcome to our presentation on the Semester Project Submission for our Phonebook Application. Our team consists of [Your Names] and we are excited to showcase our project today.

For this project, we utilized the Qt framework, C++, and a SQLite database to create a phonebook application that efficiently manages contact information. With the increasing amount of digital communication, it has become crucial to have a reliable and user-friendly phonebook application that can store and retrieve important contact information at any time.

## Objectives

Our project objectives were to develop a user-friendly phonebook application that implements functionalities for adding, searching, updating, and deleting contact entries. We also integrated a SQLite database for data storage and retrieval, ensuring input validation and error handling, and creating a robust and well-structured codebase.

By achieving these objectives, we aimed to provide an efficient solution for managing contact information, saving time and effort for users who need to access and update their contacts frequently.

## Methodology

To accomplish our project goals, we followed a structured methodology that involved project planning and requirements analysis, GUI design using Qt's UI components, database integration and table creation, core features implementation such as add, search, update, and delete entries, testing and debugging phase, and documentation preparation.

By following this methodology, we were able to ensure a seamless development process and deliver a high-quality phonebook application that meets the needs of our users.

## Implementation Details

The phonebook application is implemented using C++ and the Qt framework. The main source code files include mainwindow.h, mainwindow.cpp, phonebook.h, phonebook.cpp, and main.cpp. Each file has a specific role in the project. The mainwindow.h and mainwindow.cpp files contain the implementation of the graphical user interface (GUI) using Qt widgets. The phonebook.h and phonebook.cpp files handle the database operations such as adding, searching, updating, and deleting contact entries. Finally, the main.cpp file contains the entry point for the application.

Qt widgets are used extensively throughout the application to create a user-friendly interface. Event handling is also an important aspect of the implementation. Events such as button clicks and text input are handled using Qt's signal and slot mechanism. Database operations are performed using SQLite, which is a lightweight and efficient relational database management system.

## Features and Output

The phonebook application boasts several key features that make it a useful tool for managing contacts. The GUI has an intuitive layout that allows users to easily add, search, update, and delete contact entries. The Add Entry feature prompts the user to input a name and number, validates the inputs, and adds the entry to the database. The Search Entry feature allows users to search for a contact by name and displays the corresponding number. The Update Entry feature allows users to modify the number of an existing contact entry. The Delete Entry feature removes a contact entry from the phonebook. Finally, the Display All Entries feature allows users to view all contact entries, sorted by name or number.

The output of the phonebook application is displayed within the GUI. When a user performs an action such as adding or searching for a contact, the corresponding output is displayed in a clear and easy-to-read format. The Display All Entries feature presents all contact entries in a table format, with columns for name and number. Overall, the phonebook application provides a streamlined and efficient way to manage contacts.

## Code and Explanation

The code for the phonebook application is organized into several classes, each with a specific responsibility. The MainWindow class handles the GUI implementation using Qt widgets. The Phonebook class handles the database operations such as adding, searching, updating, and deleting contact entries. The main function in the main.cpp file creates an instance of the MainWindow class and displays it to the user.

One key code snippet is the implementation of the Add Entry feature in the Phonebook class. This function prompts the user to input a name and number, validates the inputs, and adds the entry to the database. Another important function is the Search Entry feature, which searches the database for a contact by name and returns the corresponding number. One challenge faced during implementation was ensuring that the GUI remained responsive while performing database operations. This was addressed by implementing the database operations on a separate thread.

## Live Demonstration

Good day, ladies and gentlemen. Today, I am excited to showcase our latest project – the phonebook application. This app is designed to help you organize your contacts and make communication easier than ever before.

As you can see on the screen, the user interface is simple and intuitive. You can easily add, edit, or delete contacts with just a few clicks. The app seamlessly integrates with the database, ensuring that your data is always up-to-date. Let me demonstrate how easy it is to use.

## Conclusion

In conclusion, our team has achieved great success in developing the phonebook application. We have implemented best practices, rigorous testing, and thorough documentation to ensure that the app meets the highest standards of quality.

The seamless integration with the database and the ease of use of the user interface are the highlights of this project. We are proud of what we have accomplished and satisfied with the results. Thank you for your attention and support throughout this journey.

## Thank You

Thank you for attending this presentation and showing interest in our phonebook application. We hope that you found the live demonstration informative and engaging.

We welcome any questions or feedback that you may have. Please feel free to contact us for further inquiries or collaboration opportunities. Once again, thank you for your time and attention.