

Title: Phone Book Application

README file

Description

The Phone Book application aims to offer users a user-friendly interface that allows them to efficiently store and manage their contacts. Through the utilization of a command-line interface, users can effortlessly input commands, interact with the Phone Book, and carry out desired actions on their contacts.

The following functions (function ID) are supported:

1. Display (OPT01): The application includes an operation to display the existing contact list. If the Phone Book is empty, it returns an error message.
2. Insertion (OPT02): When adding a new contact, the application checks if the contact already exists. If not, the contact name and phone number are added as a key-value pair to the Phone Book. If the contact exists, it returns an error message.
3. Deletion (OPT03): When deleting a contact, the application first checks if the contact exists. If found, it is removed from the Phone Book using the key. If not found, it returns an error message.
4. Sorting (OPT04): The contacts in the Phone Book are initially stored in the order of insertion. When the user requests to sort the contacts by contact name as the key, the application utilizes the bubble sort algorithm to rearrange the contacts in alphabetical order based on the contact names.

5. Searching (OPT05): To search for a specific contact, the application checks if the contact exists in the Phone Book using the contact name as the key. If found, the corresponding contact name and phone number are displayed. If not found, it returns an error message.
6. Exit (OPT06): All operations above return to the main menu after completion until the user chooses to exit.

Implementation

The Phone Book Application is implemented using the Python programming language. It utilizes a dictionary, also known as an associative array, to store the contacts. In this implementation, the contact name serves as the key, and the phone number is the corresponding value.

The implementation process of the Phone Book application involves the following steps:

1. Design Phone Book Function: Collect user feedback and design the necessary functions of the Phone Book. Create a flowchart illustrating the function of the Phone Book application and the operation flow.
2. Create Data Structures and Algorithms: Design and implement the necessary data structures and algorithms based on the required functions and operation flow. These structures and algorithms handle data storage, retrieval, manipulation, and other computational tasks required by the application.

3. Translate Design into Pseudocode: Take the flowchart and write pseudocode to demonstrate the algorithms used in the application. The pseudocode should be detailed yet readable, making it easy to review and adjust during the design process.
4. Translate Pseudocode into Python Code: Based on the algorithms of the pseudocode, write the Python code with correct syntax and format.
5. Implement User Interfaces: As the Phone Book application utilizes a command-line interface, create the necessary code to output the main menu and handle user input, display information, and provide an interactive experience. No special frameworks or external components need to be integrated.
6. Test and Debug: Perform testing and debugging to identify and fix any issues or bugs in the code. This ensures that the application functions as intended and meets the specified requirements.
7. Documentation: Throughout the implementation process, document the code, including comments, explanations, and usage instructions.

The implementation process is crucial in transforming the conceptual design into a working application. It requires expertise in programming languages, software development practices, and problem-solving skills to ensure a robust and functional application is created.

Execution Instructions

The Phone Book application utilizes a command-line interface, allowing users to easily input commands and interact with the Phone Book to perform desired actions on their contacts.

To execute the Phone Book Application, follow the steps below:

1. Open a command-line interface and run the application.
2. The Phone Book application will launch, displaying a menu with different options for managing contacts.
3. Follow the on-screen instructions and perform the desired operations by selecting the corresponding options from the menu. The input must be an integer.
4. Users can view, add, delete, sort contacts, and search as needed. For example:
 - Input "1" to display existing contacts (OPT01) in the order of insertion.
 - Input "2" to add a new contact (OPT02), follow the displayed prompts to enter the contact name and phone number.
 - Input "3" to delete a contact (OPT03), follow the displayed prompts to enter the contact name and confirm to delete.
 - Input "4" to sort contacts (OPT04) in alphabetical order based on the contact names.
 - Input "5" to search for a contact (OPT05), follow the displayed prompts to enter the contact name to search.
 - All operations above return to the main menu after completion until the user inputs "6" to exit the application (OPT06).