Title: Phone Book Application

Testing strategy

Scope and objective

The testing strategy for the Phone Book application aims to ensure its functionality and usability. The strategy covers various aspects of the application, including user interactions, data handling, error handling, and compatibility.

Testing Approach

The testing approach for the Phone Book application include the following steps:

1. Test plan: Review the requirements and develop a test plan that outlines the testing scope and objectives to the Phone Book functionality (Please refer to Section 3 of Part 1).

2. Test design: Develop test cases and test scenarios based on the requirements.

3. Test execution: The test cases will be executed using manual testing techniques, and the outcome of the testing will be recorded.

4. Test report: Prepare the table of testing outcomes that summarizes the testing progress and the overall quality of the Phone Book application.

Testing Types

1. Functional Testing:

- Test the core functionality of the application, including adding, deleting, searching, sorting and displaying contacts.

- Verify that contacts are saved correctly, and changes are reflected in the contact list.

- Validate that sorting contacts displays them in alphabetical order based on the contact names.

- Test the search functionality to ensure it finds contacts accurately.

2. Error Handling Testing:

- Test the application's response to invalid inputs, such as alphabetic characters instead of numbers or non-existent contact names.

- Verify that appropriate error messages are displayed when errors occur.

3. Compatibility Testing:

- Test the application on different Integrated development environments (IDEs) to ensure compatibility.

4. Interactive Testing:

- Test if the displayed prompts are clear and in the correct order.

<u>Testing Tools</u>

The test is conducted using the following IDEs:

- Jupyter Notebook

- Codio

<u>Testing Report</u>

To ensure the functionality and correctness of the Phone Book application, the following tests are executed as per the test plan outline in section 3 of Part 1:

Test ID	Test execution	Outcome	Stauts
Function tested : OPT01 – Display existing contacts.			
TC001	Input "1" when the Phone Book is empty to verify if the application displays appropriate error messages and return to the main menu.	The application returns the message "Phone Book is empty. Return to Main Menu.", and then navigates back to the main menu.	Pass
TC002	Input "1" when existing contacts are available, to verify if the current contacts are correctly displayed in uppercase and return to the main menu after completed.	All existing contacts are displayed in uppercase and in the order of insertion. The application navigates back to the main menu afterward.	Pass
Function tested : OPT02 – Adding a new contact.			
TC003	Input "2" to add a new contact. This is to verify if the correct prompt is displayed in the right order.	1. The application returns the message "Enter contact name:" and wait for user input. 2. Once the user inputs the name and press enter, the application returns the	Pass

		message "Enter phone number:" and wait for the user input.	
TC004	Input "2" to add new contact names and phone numbers. Repeat the process ten times to record ten contacts. The inputs included both upper- and lower-case cases, as well as numbers to maintain flexibility.	For each of the ten tests, after adding a new contact, the application returns the message "Contact successfully added" and then navigate back to the main menu.	Pass
TC005	Input "1" to view the updated list of contacts and verify that the contact is successfully saved.	All new added contacts are displayed in uppercase and in the order of insertion. The application navigates back to the main menu afterward.	Pass
TC006	Input "2" to add duplicated name and number to verify if the application displays appropriate error messages, regardless of whether the name is in	Once all the required input is acquired, the application returns the message "Contact already exists " and then navigate back to the main menu.	Pass

	upper- or lower-case, and returns to the main menu.		
Function tested : OPT03 – Deleting a contact.			
TC007	Input "3" and input an existing name and confirm to delete a contact. This is to verify if the correct prompt is displayed in the right order and if the application returns to the main menu once all actions are completed.	1. The application returns the message "Enter the name of the contact to delete:" and wait for user input. 2. Once the user inputs the existing name and press enter, the application returns the message "Please confirm to delete [NAME], yes or no:" and wait for the user input. The [NAME] is the user's input displayed in uppercase. 3. Once the user inputs "yes" and press enter, the application returns the message "Contact successfully deleted." and then navigate back to the main menu.	Pass

| TC008 | Input "3" and input an existing name in lowercase, then confirm not to delete the contact by inputting uppercase "NO". This is to verify if the correct prompt is displayed and returns to the main menu, regardless of whether the input is in upper- or lower-case. | 1. The application returns the message "Enter the name of the contact to delete:" and wait for user input.
2. Once the user inputs the existing name in lowercase and presses enter, the application returns the message "Please confirm to delete [NAME], yes or no:" and waits for the user input. The [NAME] is the user's input displayed in uppercase.
3. Once the user inputs "NO" and press enter, the application returns the message "Return to Main Menu." and then navigate back to the main menu. | Pass |
| TC009 | Input "3" and input a non-exist contact name to verify if the application displays appropriate error | The application returns the message "Contact not found." and then navigate back to the main menu. | Pass |

	messages and return to the main menu.		
TC010	Input "1" to view the updated list of contacts and check if the contact input for TC009 has been removed.	An updated list of contacts, without the contact deleted in TC007, is displayed in uppercase and in the order of insertion. The application navigates back to the main menu afterwards.	Pass
Function tested : OPT04 – Sorting contacts.			
TC011	Input "4" when the Phone Book is empty to verify if the application displays appropriate error messages and return to the main menu.	The application returns the message "Phone Book is empty. Return to Main Menu.", and then navigates back to the main menu.	Pass
TC012	Input "4" when existing contacts are available, to verify that the contacts are displayed in alphabetical order based on the contact names.	All existing contacts are displayed in uppercase and in the alphabetical order. The application navigates back to the main menu afterward.	Pass
Function tested : OPT05 – Searching for a contact.			

TC013	Input "5" and input an existing name in lowercase to search for the contact. This is to verify if the correct prompt is displayed in the right order and if the application returns to the main menu once the contact is found.	1. The application returns the message "Enter the name to search:" and wait for user input. 2. Once the user inputs the existing name and presses enter, the application returns the found contact including [NAME] and the corresponding number. The [NAME] is the user's input displayed in uppercase. 3. The application navigates back to the main menu afterward.	Pass
TC014	Input "5" and input a non-exist contact name to verify if the application displays appropriate error messages and return to the main menu.	The application returns the message "Contact not found." and then navigate back to the main menu.	Pass
Function tested : OPT06 – Exit the application.			

TC015	Input "6" to verify if the correct prompt is displayed on the screen and the application successfully exits	The application returns the message "Exiting the application." and then successfully exits.	Pass
Function tested : Invalid input handling.			
TC016	Enter invalid input "A" to verify if the application displays appropriate error messages and return to the main menu.	The application returns the message "Invalid input, please try again.", and then navigates back to the main menu.	Pass
TC017	Enter invalid inputs "9" to verify if the application displays appropriate error messages and return to the main menu.	The application returns the message "Invalid input, please try again.", and then navigates back to the main menu.	Pass

The above tests cover all functions in different scenarios, with expected outcomes and positive results, and no bugs were found. The overall quality of the Phone Book application is satisfactory.