**Phonebook Application**

This is a simple **Java-based phonebook application** with a graphical user interface (GUI) built using **Swing**. The application allows users to manage contacts by adding, viewing, searching, updating, and deleting entries. It ensures that duplicate contacts are not allowed and sorts the contact list alphabetically.

**Features Overview**

* **Add Contact:**  
  Allows users to add new contacts with a name and phone number.  
  Validates input to ensure both fields are filled and checks for duplicates.
* **View Contacts:**  
  Displays the list of all saved contacts or shows a message if the list is empty.
* **Search Contacts:**  
  Lets users search for contacts by name or phone number, with case-insensitive matching.  
  Displays matching results or notifies the user if no matches are found.
* **Delete Contact:**  
  Users can select a contact to delete and are prompted to confirm the deletion.
* **Update Contact:**  
  Allows users to edit a selected contact’s name or phone number. Checks for duplicates during the update.
* **Sort Contacts:**  
  Contacts are automatically sorted alphabetically after adding or updating entries.
* **Duplicate Check:**  
  Ensures that no two contacts have the same name or phone number.

**Technologies Used**

* **Java:** Core language used to implement the application logic.
* **Swing:** GUI toolkit used to create the user interface.
* **JList and DefaultListModel:** Used to display and manage the list of contacts.

**System Requirements**

* **Java Development Kit (JDK) 8 or higher**
* **A Java-compatible IDE** (e.g., IntelliJ IDEA, Eclipse, or NetBeans) or any text editor with Java support.

**How to Install and Run**

1. **Download or Clone the Repository**  
   Use the following command to clone the project:

bash

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git clone <repository-url>

1. **Open the Project in Your IDE**  
   Import the downloaded project into your preferred Java IDE.
2. **Compile and Run the Program**
   * Compile the program using your IDE’s build tools.
   * Alternatively, use the terminal:

bash

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javac Phonebook.java

java phonebook.Phonebook

**Application Usage**

* **Adding a Contact:**  
  Enter the name and phone number, then click the "Add" button.
* **Viewing Contacts:**  
  Click the "View" button to display all saved contacts.
* **Searching for a Contact:**  
  Enter a search term (name or phone number) in the search field and click the "Search" button.
* **Deleting a Contact:**  
  Select a contact from the list, then click "Delete". Confirm the deletion when prompted.
* **Updating a Contact:**  
  Select a contact and click "Update". Edit the name or phone number in the prompt, and confirm.

**Input Validation**

* **Name Field:** Only letters and spaces are allowed.
* **Phone Field:** Only numeric input is accepted.
* **Duplicate Detection:** Users cannot add or update a contact with a name or phone number that already exists in the list.

**Error Handling**

* **Empty Fields:** If either the name or phone field is empty during contact creation, an error message is displayed.
* **Duplicate Contacts:** If a contact with the same name or phone already exists, the user is notified.
* **Search Failures:** If no contacts match the search term, a message will notify the user.
* **Missing Selection:** If no contact is selected for deletion or update, the user is prompted to select one.

**Possible Improvements**

* **Persistence:** Save contacts to a file or database to retain data between sessions.
* **Advanced Search:** Add support for partial matching or filtering options.
* **UI Enhancements:** Improve layout and design for a better user experience.
* **Error Handling:** Add more detailed validation and feedback for incorrect inputs.

**Contributors**

* **Alexsandra Uiras**
* **Student Number:** 223055298
* **Izane Barman**
* **Student Number :**224027514
* **Linda Mutileni**
* **Student Number: 223138266**
* **Hafeni Frans**
* **Student Number:224017616**
* **Judd-ash John**
* **Student Number224080547**
* **Raphael Hatzkin**
* **Student Number:224091581**

**License**

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Thank you for using the Phonebook Application! Let us know if you encounter any issues or have suggestions for improvement.