Phone Directory System

Description:

The phone directory system allows the user to add new contacts, display all the contacts in the directory and search for the contact at any time using the name of the contact.

Introduction:

➢ The phone directory system is an effective way to store and organize contacts. It also enables the user to search for a particular contact from the long list of contacts by just its name.

➢ The data structure used in the phone directory system is "TRIE" data structure which is an effective data structure for several reasons which are:

- Prefix search Efficiency
- Space efficiency
- Fast lookup
- Insertion and Deletion Efficiency

Data Structure Functions:

1. **ContactNode Constructor**: Initializes a ContactNode object with default values.

2. **Directory Constructor**: Initializes a Directory object with a root ContactNode.

3. **addContact**: Adds a new contact to the directory with associated details (phone number, email, birth date, and home address).

4. **findContact**: Searches for a contact by name and returns their phone number if found, otherwise an empty string.

5. **displayContactsInfo**: Recursively displays information for each contact starting from a given node (used internally for displaying all contacts).

6. **displayContacts**: Displays all contacts in the directory.

7. **main**: Implements a menu-driven interface to interact with the contact directory system, allowing users to add, display, find contacts, or quit the program.

Test Cases

Main Menu:-

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^------------------------------^
    Select an Operation!
        1. Add a new contact
        2. Edit a contact
        3. Delete a contact
        4. Display contacts
        5. Find a contact
        6. Quit
^------------------------------^
□
```

Adding New Contact:

```
Enter full name: usman
Enter phone number: 030300002020
Enter email (or '-' to skip): usman123@gmail.com
Enter date of birth (or '-' to skip): 23-may-2000
Enter address (or '-' to skip): Bahawalpur
```

Edit existing contact:-

```
Enter full name of contact to edit: usman
Enter new phone number: 03031244200

Enter new email (or '-' to skip): -
Enter new date of birth (or '-' to skip): 02-june-2001
Enter new address (or '-' to skip): Lahore
Contact updated!
```

Display All Contacts:-

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Contacts:

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    Name: ahmad
    Phone No: 03000202022
    Email:
    Date of Birth: 12-May-2001
    Address: Karachi


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    Name: ali
    Phone No: 02340029318
    Email:
    Date of Birth: 23-june-1999
    Address: bahawalpur


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    Name: usman
    Phone No: 03031244200
    Email:
    Date of Birth: 02-june-2001
    Address: Lahore
```

Finding Contact:-

```
Enter name to find: ali
Found contacts:
Name: ali
    Phone No: hamza
    Email: ali1234@gmail.com
    Date of Birth: 23-may-1998
    Address: Bahawalpur
```

Deleting a Contact:-

```
Enter full name of contact to delete: usman
Contact deleted!
```

GitHub link: https://github.com/na33mkh4an/DSA-projects