**PhoneBook Application Documentation**

**Overview**

The PhoneBook application is a command-line tool for managing contacts. Users can add, update, delete, search, and sort contacts, and load them from a CSV file. The app validates phone numbers and emails, and allows grouping contacts by first or last name.

**Classes and Methods**

**Utility Functions**

* **validate\_phone(phone)**: Validates the phone number format (###) ###-####.
* **validate\_email(email)**: Validates email format; optional email returns True.

**Contact Class**

**Initialization**

def \_\_init\_\_(self, first\_name, last\_name, phone\_number, email=None, address=None):

**Attributes**: first\_name, last\_name, phone\_number, email, address, created\_at, updated\_at.

**Methods**

* **display()**: Displays the contact's details.
* **update(first\_name, last\_name, phone\_number, email=None, address=None)**: Updates contact details and sets the updated\_at timestamp.

**PhoneBook Class**

**Initialization**

def \_\_init\_\_(self):

* Initializes an empty contacts list.

**Methods**

* **load\_contacts\_from\_csv(file\_path)**: Loads contacts from a CSV file.
* **add\_contact(first\_name, last\_name, phone\_number, email=None, address=None)**: Adds a new contact with phone/email validation.
* **display\_all\_contacts()**: Displays all contacts.
* **search\_contacts(query)**: Searches contacts by name.
* **group\_contacts\_by\_first\_name()**: Groups contacts by the first letter of the first name.
* **group\_contacts\_by\_last\_name()**: Groups contacts by the first letter of the last name.
* **sort\_contacts(by="first\_name")**: Sorts contacts by first\_name or last\_name.
* **delete\_contact(first\_name, last\_name)**: Deletes a contact.
* **update\_contact(first\_name, last\_name)**: Prompts the user to update contact details.

**PhoneBook CLI**

**Menu Options**

1. **Add Contact**: Adds a new contact.
2. **View All Contacts**: Displays all contacts.
3. **Search Contacts**: Searches for contacts.
4. **Update Contact**: Updates an existing contact.
5. **Delete Contact**: Deletes a contact.
6. **Load Contacts from CSV**: Loads contacts from a CSV file.
7. **Group Contacts by First Name**: Groups contacts by first name.
8. **Group Contacts by Last Name**: Groups contacts by last name.
9. **Sort Contacts**: Sorts contacts by first or last name.
10. **Exit**: Exits the application.

**CSV Integration**

* **load\_contacts\_from\_csv(file\_path)**: Loads contacts from a CSV with columns: First Name, Last Name, Phone Number, Email, and Address.