Contact Management System [ContactHub]

I.   Project Overview

The Contact Management System is a simple yet poIrful tool to manage customer and client contact information. The app enables users to:

- **Add a Contact**: Create a new contact with essential details such as First Name, Last Name, Email, Phone Number, Company, and Job Title.

- **View Contacts:** List all contacts alphabetically in a table format with sorting and pagination.

- **Edit Contacts**: Modify existing contact information.

- **Delete Contacts:** Remove outdated or irrelevant contact details.

II.   Technology Stack

Frontend: HTML, CSS

    a.   LightIight and easy to deploy and less overhead than react.

    b.   Provides flexibility for custom and static design.

    c.   Suitable for small-scale projects without the need for complex frameworks like React.

Backend: Node.js, Express.js

    Node.js

    a.   Efficient and scalable for handling API requests.

    b.   LightIight and event-driven, making it ideal for handling multiple CRUD operations.

    Express.js

    a.   Simplifies server creation and routing.

    a.   Allows rapid development of RESTful APIs.

Database: MongoDB, Mongoose

    MongoDB

    a.   A NoSQL database that handles JSON-like data, aligning with the application's schema-less requirements.

    b.   Aggregation and indexing

    c.   Flexible and highly scalable.

    Mongoose

    a.   Provides a simple, schema-based solution for modeling data in MongoDB.

    b.   Eases database interaction with built-in validation and query-building methods.

Erino

Hosting: Netlify
    a.   Easy and fast deployment of static Ibsites.
    b.   Built-in features like HTTPS, continuous deployment, and serverless functions.

III.   Project Features

1. Add Contact
❖   Opens a form to enter contact details.
❖   Validates input fields before submission.

2. View Contacts
❖   Displays contacts in a table sorted alphabetically.
❖   Includes "Edit" and "Delete" actions for each contact.

3. Edit Contact
❖   Updates existing contact information through a modal or separate form.

4. Delete Contact
❖   Permanently removes a contact from the database.

IV.   Challenges Faced

1. Adding Contacts and Validation Setup
Challenge:
While developing the "Add Contact" functionality, I encountered issues with duplicate entries. The challenge was to ensure no duplicate contacts are added while maintaining efficient database performance.

Solution:
I implemented the following validations:
    I.   Ensured the `email` field is unique using Mongoose's `unique: true` schema property.
    II.   Used custom middleware to handle duplicate key errors gracefully, returning a meaningful error message to the frontend.
    III.   Added basic client-side validation to reduce invalid submissions to the server.

Advantages:
- Preventing duplication improves data integrity.
- Enhances user experience by avoiding redundant entries.

2. Editing Contacts with Validation
Challenge:

When editing a contact, I needed to ensure that the existing contact's email could remain unchanged while validating new data against other records to prevent duplicates.

Solution:
- I. Conditional Validation: During the update operation, I checked if the provided email was the same as the original. If unchanged, I skipped duplicate checks.
- II. Custom Query: Used MongoDB queries to exclude the current contact's ID when checking for duplicates.

Advantages:
- I. Ensures only valid updates while avoiding unnecessary validation errors.
- II. Allows seamless editing without forcing redundant changes.

V. How to Run the Project Locally

Clone the Repository
1. Clone the project repository from GitHub:

    git clone <https://github.com/tanish0510/ContactHub>

    cd contact-management

2. Navigate to the backend directory:

    cd backend

3. Install dependencies:

    npm install

4. Start the server:

    npm start

    node server.js

Deploy Frontend
1. The `frontend` folder contains `**index.html**` and static assets.
2. Deploy it to Netlify or any static hosting platform:

VI. GitHub and Netlify Links

- GitHub Repository: [**Contact Management System**]
- Netlify Live Demo: [**Live Project Link**]