Let's build a **full Express.js + Mongoose REST API** using **local MongoDB** with a collection of **contacts** that have `name`, `city`, and `phone`. I'll make it modular with **models, controllers, and routes** so you can see the structure clearly.

Step 1: Set Up Your Project

1. Make sure you have **Node.js** installed. Check with:

```
node -v
npm -v
```

2. Create a new project folder and initialize npm:

```
mkdir my-api
cd my-api
npm init -y
```

3. Install **Express.js**:

```
npm install express
```

(Optional: install **nodemon** for auto-restarting the server during development)

```
npm install --save-dev nodemon
```

In `package.json`, add a start script:

```
"scripts": {
  "start": "node index.js",
  "dev": "nodemon index.js"
}
```

package.json file :-

{

"name": "my-api",

"version": "1.0.0",

"description": "",

```
  "main": "index.js",
  "scripts": {
    "start": "node index.js",
    "dev": "nodemon index.js"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "type": "commonjs",
  "dependencies": {
    "express": "^5.2.1"
  },
  "devDependencies": {
    "nodemon": "^3.1.14"
  }
}
```

Run the server:

```
npm run dev
```

Folder Structure

```
my-api/
├── controllers/
│   └── contactController.js
├── models/
│   └── contactModel.js
├── routes/
│   └── contactRoutes.js
├── index.js
├── package.json
```

Step 1: Model (`models/contactModel.js`)

```
const mongoose = require('mongoose');

const contactSchema = new mongoose.Schema({
    name: { type: String, required: true },
    city: { type: String, required: true },
    phone: { type: String, required: true }
}, { timestamps: true });

module.exports = mongoose.model('Contact', contactSchema);
```

- `timestamps: true` adds `createdAt` and `updatedAt` automatically.

Step 2: Controller (`controllers/contactController.js`)

```
const Contact = require('../models/contactModel');

// Get all contacts
const getAllContacts = async (req, res) => {
    try {
        const contacts = await Contact.find();
        res.json(contacts);
    } catch (err) {
        res.status(500).json({ message: err.message });
    }
};

// Get contact by ID
const getContactById = async (req, res) => {
    try {
        const contact = await Contact.findById(req.params.id);
        if (!contact) return res.status(404).json({ message: 'Contact not
found' });
        res.json(contact);
    } catch (err) {
        res.status(500).json({ message: err.message });
```

```
    }
};




// Create new contact
const createContact = async (req, res) => {
    const contact = new Contact({
        name: req.body.name,
        city: req.body.city,
        phone: req.body.phone
    });

    try {
        const newContact = await contact.save();
        res.status(201).json(newContact);
    } catch (err) {
        res.status(400).json({ message: err.message });
    }
};

// Update contact
const updateContact = async (req, res) => {
    try {
        const contact = await Contact.findById(req.params.id);
        if (!contact) return res.status(404).json({ message: 'Contact not
found' });

        contact.name = req.body.name || contact.name;
        contact.city = req.body.city || contact.city;
        contact.phone = req.body.phone || contact.phone;

        const updatedContact = await contact.save();
        res.json(updatedContact);
    } catch (err) {
        res.status(400).json({ message: err.message });
    }
};

// Delete contact
const deleteContact = async (req, res) => {
    try {
        const contact = await Contact.findByIdAndDelete(req.params.id);
        if (!contact) return res.status(404).json({ message: 'Contact not
found' });
        res.json({ message: 'Contact deleted' });
    } catch (err) {
        res.status(500).json({ message: err.message });
    }
};

module.exports = {
    getAllContacts,
    getContactById,
    createContact,
```

```
    updateContact,
    deleteContact
};
```

Step 3: Routes (`routes/contactRoutes.js`)

```
const express = require('express');
const router = express.Router();
const contactController = require('../controllers/contactController');

router.get('/', contactController.getAllContacts);
router.get('/:id', contactController.getContactById);
router.post('/', contactController.createContact);
router.put('/:id', contactController.updateContact);
router.delete('/:id', contactController.deleteContact);

module.exports = router;
```

Step 4: Main Server (`index.js`)

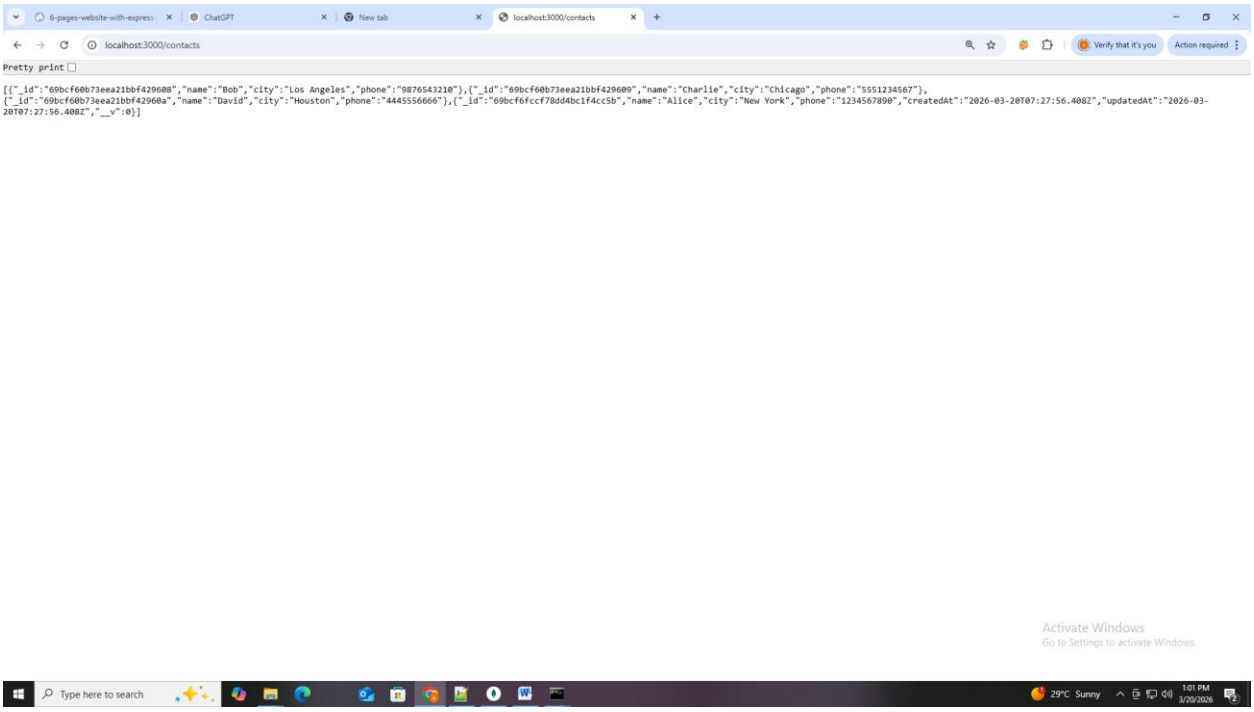
```
const express = require('express');
const mongoose = require('mongoose');
const app = express();
const PORT = 3000;

// Middleware
app.use(express.json());

// Routes
const contactRoutes = require('./routes/contactRoutes');
app.use('/contacts', contactRoutes);

// Connect to local MongoDB
mongoose.connect('mongodb://127.0.0.1:27017/mydb')
    .then(() => console.log('Connected to local MongoDB'))
    .catch(err => console.error('MongoDB connection error:', err));

// Root endpoint
app.get('/', (req, res) => {
    res.send('Welcome to Contact REST API!');
});

// Start server
app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
```

```
});
```

Step 5: Test the API

1. **GET all contacts**

```
curl http://localhost:3000/contacts
```



2. **POST a new contact**

```
curl -X POST -H "Content-Type: application/json" -d
'{"name":"Alice","city":"New York","phone":"1234567890"}'
http://localhost:3000/contacts
```

3. **GET contact by ID**

```
curl http://localhost:3000/contacts/<contact_id>
```

4. **PUT (update)**

```
curl -X PUT -H "Content-Type: application/json" -d '{"city":"Los Angeles"}'
http://localhost:3000/contacts/<contact_id>
```

5. **DELETE**

```
curl -X DELETE http://localhost:3000/contacts/<contact_id>
```

Let's write the **`curl` commands** for Windows CMD to **update, delete, and add** the record for Alice with `_id: 69bcf5e773eea21bbf429607`.

---

1 Update Alice's city to "Boston"

```
curl -X PUT -H "Content-Type: application/json" -d "{\"city\":\"Boston\"}"
http://localhost:3000/contacts/69bcf5e773eea21bbf429607
```

After running, her city will be updated.

---

2 Update multiple fields (name, city, phone)

```
curl -X PUT -H "Content-Type: application/json" -d "{\"name\":\"Alice
Smith\",\"city\":\"Boston\",\"phone\":\"1112223333\"}"
http://localhost:3000/contacts/69bcf5e773eea21bbf429607
```

- This updates all 3 fields at once.

---

3 Delete Alice

```
curl -X DELETE http://localhost:3000/contacts/69bcf5e773eea21bbf429607
```

- After this, the record is removed from your database.

---

4 Add a new Alice record

```
curl -X POST -H "Content-Type: application/json" -d
"{\"name\":\"Alice\",\"city\":\"New York\",\"phone\":\"1234567890\"}"
http://localhost:3000/contacts
```

 This creates a new record with a new `_id`.

---

5 Verify Alice

```
curl http://localhost:3000/contacts
```

You should see all records, including the updated or newly added Alice.

Tips for Windows CMD

- Always **escape double quotes** inside JSON with `\"`
- For **PowerShell**, you can use single quotes around JSON:

```
curl -X POST -H "Content-Type: application/json" -d
'{"name":"Alice","city":"New York","phone":"
```

Let's go **line by line** and explain everything in detail, so you understand exactly what each part does in your **Express + Mongoose REST API**. I'll break it down **step by step**.

Step 1: Model (`models/contactModel.js`)

```
const mongoose = require('mongoose');
```

- This imports the **Mongoose library**, which is used to interact with MongoDB in an object-oriented way.
- Mongoose allows us to define **schemas** (structure for documents) and models (classes to work with collections).

```
const contactSchema = new mongoose.Schema({
    name: { type: String, required: true },
    city: { type: String, required: true },
    phone: { type: String, required: true }
}, { timestamps: true });
```

- **`mongoose.Schema({...})`** → defines the **structure** of documents in the `contacts` collection.
- Each field (`name`, `city`, `phone`) has:
  - `type: String` → ensures the value must be a string
  - `required: true` → MongoDB will **reject documents** without this field
- `{ timestamps: true }` → automatically adds:
  - `createdAt` → when the document was created
  - `updatedAt` → when the document was last updated

Example MongoDB document after insertion:

```
{
    "_id": "641234abcd1234",
    "name": "Alice",
    "city": "New York",
    "phone": "1234567890",
    "createdAt": "2026-03-20T12:00:00.000Z",
    "updatedAt": "2026-03-20T12:00:00.000Z"
}
```

```
module.exports = mongoose.model('Contact', contactSchema);
```

- `mongoose.model('Contact', contactSchema)` → creates a **Mongoose model**:
  - Name: `Contact`
  - Schema: `contactSchema`
  - This model represents the **`contacts` collection** in MongoDB (Mongoose automatically pluralizes the name).
- `module.exports` → allows other files (like controllers) to **import this model**.

Step 2: Controller (`controllers/contactController.js`)

```
const Contact = require('../models/contactModel');
```

- Imports the `Contact` model so we can **query and manipulate the `contacts` collection**.

Get all contacts

```
const getAllContacts = async (req, res) => {
    try {
        const contacts = await Contact.find();
        res.json(contacts);
    } catch (err) {
        res.status(500).json({ message: err.message });
    }
};
```

- `async (req, res)` → asynchronous function because MongoDB operations return **Promises**
- `Contact.find()` → fetches **all documents** from `contacts` collection
- `res.json(contacts)` → sends JSON response to the client
- `catch` → handles errors and sends **HTTP 500** (server error)

Get a contact by ID

```
const getContactById = async (req, res) => {
    try {
        const contact = await Contact.findById(req.params.id);
        if (!contact) return res.status(404).json({ message: 'Contact not
found' });
        res.json(contact);
    } catch (err) {
        res.status(500).json({ message: err.message });
    }
};
```

- `req.params.id` → reads the `:id` from the URL (e.g., `/contacts/641234abcd1234`)
- `Contact.findById(id)` → finds a single contact by `_id`
- If not found → sends **HTTP 404 Not Found**

Create a new contact

```
const createContact = async (req, res) => {
    const contact = new Contact({
        name: req.body.name,
        city: req.body.city,
        phone: req.body.phone
    });

    try {
        const newContact = await contact.save();
        res.status(201).json(newContact);
    } catch (err) {
        res.status(400).json({ message: err.message });
    }
};
```

- `req.body` → contains **data sent from client** (POST request body)
- `new Contact({...})` → creates a new Mongoose document
- `contact.save()` → saves the document to MongoDB
- `res.status(201)` → **HTTP 201 Created** for successful insertion
- `catch` → sends **HTTP 400 Bad Request** if data is invalid

Update a contact

```
const updateContact = async (req, res) => {
    try {
        const contact = await Contact.findById(req.params.id);
        if (!contact) return res.status(404).json({ message: 'Contact not
found' });

        contact.name = req.body.name || contact.name;
        contact.city = req.body.city || contact.city;
        contact.phone = req.body.phone || contact.phone;

        const updatedContact = await contact.save();
        res.json(updatedContact);
    } catch (err) {
        res.status(400).json({ message: err.message });
    }
};
```

- Finds the contact first by ID
- Updates fields **only if they are provided**, otherwise keeps old value
- `contact.save()` → commits changes to MongoDB
- Sends updated document as JSON

Delete a contact

```
const deleteContact = async (req, res) => {
    try {
        const contact = await Contact.findByIdAndDelete(req.params.id);
        if (!contact) return res.status(404).json({ message: 'Contact not
found' });
        res.json({ message: 'Contact deleted' });
    } catch (err) {
        res.status(500).json({ message: err.message });
    }
};
```

- `findByIdAndDelete` → removes document by ID
- If contact not found → HTTP 404
- Otherwise → returns a simple confirmation JSON

```
module.exports = {
    getAllContacts,
    getContactById,
    createContact,
    updateContact,
    deleteContact
};
```

- Exports all controller functions so they can be used in **routes**

Step 3: Routes (`routes/contactRoutes.js`)

```
const express = require('express');
const router = express.Router();
const contactController = require('../controllers/contactController');
```

- Imports **Express router** → allows modular routes
- Imports the controller functions

Define RESTful routes

```
router.get('/', contactController.getAllContacts);
router.get('/:id', contactController.getContactById);
router.post('/', contactController.createContact);
router.put('/:id', contactController.updateContact);
router.delete('/:id', contactController.deleteContact);
```

- `GET /contacts/` → fetch all contacts
- `GET /contacts/:id` → fetch single contact by ID
- `POST /contacts/` → create new contact
- `PUT /contacts/:id` → update existing contact by ID
- `DELETE /contacts/:id` → delete contact by ID

```
module.exports = router;
```

- Exports router so it can be mounted in **`index.js`**:

```
app.use('/contacts', contactRoutes);
```

- This attaches all routes under `/contacts` URL path

□ Summary

- **Model** → defines the **structure** of documents
- **Controller** → defines **CRUD logic**
- **Routes** → maps **HTTP endpoints** to controller functions

With this structure, your Express API is **clean, modular, and fully RESTful**.

Let's go **line by line** and explain everything in your `index.js` file for your Express + MongoDB API. I'll break it down carefully so you understand what each line does.

1️⃣ Import Express

```
const express = require('express');
```

- Imports the **Express library**, which is a framework for building **Node.js web servers and APIs**.
- `express` will be used to create the server, define routes, and handle requests/responses.

2️⃣ Import Mongoose

```
const mongoose = require('mongoose');
```

- Imports **Mongoose**, which is a **MongoDB object modeling tool**.
- Mongoose allows you to define **schemas**, **models**, and provides easy **CRUD operations** on MongoDB.

3️⃣ Create Express app

```
const app = express();
```

- Calls `express()` to **create an Express application instance**.
- This `app` object is used to **define routes, middleware, and start the server**.

4️⃣ Define port

```
const PORT = 3000;
```

- Sets the port number for your server.

- Here, the API will listen on **port 3000**, so your endpoints will be like `http://localhost:3000`.

5️⃣ Middleware to parse JSON

```
app.use(express.json());
```

- Middleware tells Express to **automatically parse JSON in request bodies**.
- Needed for `POST` and `PUT` requests where clients send JSON data.
- Example: `req.body` will contain the JSON sent by the client.

6️⃣ Import routes

```
const contactRoutes = require('./routes/contactRoutes');
```

- Imports your **routes module** for contacts (CRUD endpoints).
- This connects your **controller logic** to the server.

7️⃣ Mount routes

```
app.use('/contacts', contactRoutes);
```

- Mounts all routes from `contactRoutes` under `/contacts`.
- Example:
  - `GET /contacts/` → get all contacts
  - `POST /contacts/` → create a contact
- Express combines the **base path** `/contacts` with the **routes defined in the router**.

8️⃣ Connect to local MongoDB

```
mongoose.connect('mongodb://127.0.0.1:27017/mydb')
    .then(() => console.log('Connected to local MongoDB'))
    .catch(err => console.error('MongoDB connection error:', err));
```

- `mongoose.connect()` → connects your Node.js app to MongoDB.
- `'mongodb://127.0.0.1:27017/mydb'`:

    - `127.0.0.1` → local host (IPv4)
    - `27017` → default MongoDB port
    - `mydb` → database name
- `.then()` → runs if connection is successful
- `.catch()` → catches errors if connection fails

 This ensures your API**cannot run CRUD operations unless MongoDB is connected**.

---

9 Root endpoint

```
app.get('/', (req, res) => {
    res.send('Welcome to Contact REST API!');
});
```

- Defines a **GET endpoint at `/`** (root URL).
- `req` → the client request object
- `res` → the response object
- `res.send()` → sends a plain text response to the client
- Example: visiting `http://localhost:3000/` shows `Welcome to Contact REST API!`.

Start the server

```
app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
});
```

- Tells Express to **start listening for incoming HTTP requests** on the specified port.
- `() => console.log(...)` → callback runs when the server starts successfully.
- After this, your API is **live and ready to accept requests**.

Summary of flow

1. Import libraries (Express, Mongoose)
2. Create an Express app
3. Setup middleware to parse JSON
4. Import and mount routes
5. Connect to MongoDB
6. Define a root endpoint
7. Start server on a specified port

So after running `node index.js` or `npm run dev`:

- MongoDB connects
- Server listens at `http://localhost:3000`
- Routes under `/contacts` handle CRUD requests

Vite is faster and simpler than Create React App. Let's set up a **React frontend with Vite** for your Express + MongoDB backend. I'll give you **ready-to-use code** for your contacts API.

Step 1: Create Vite React App

Open a terminal **outside your backend folder**:

```
npm create vite@latest contacts-frontend
```

- It will ask for a project name → enter `contacts-frontend`
- Select **React** → then **JavaScript** (or TypeScript if you prefer)

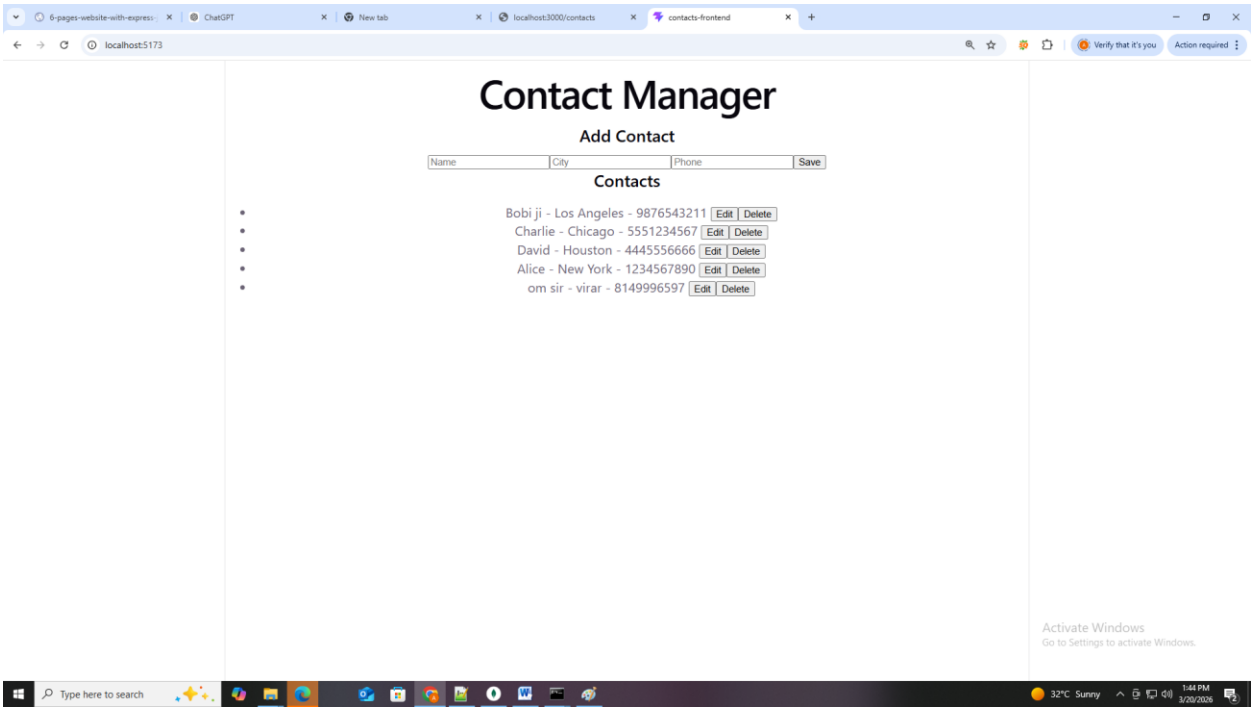
Navigate into the folder and install dependencies:

```
cd contacts-frontend
npm install axios
npm install
npm run dev
```

- `npm run dev` → starts Vite dev server, usually at `http://localhost:5173`

npm install

```
D:\>cd reactjs-warm-up
The system cannot find the path specified.

D:\>cd nodejs-warmup

D:\nodejs-warmup>npm create vite@latest contacts-frontend
Need to install the following packages:
create-vite@9.0.3
Ok to proceed? (y) y

> npx
> create-vite contacts-frontend

|
o  Select a framework:
|  React
|
o  Select a variant:
|  JavaScript
|
o  Install with npm and start now?
|  Yes
|
o  Scaffolding project in D:\nodejs-warmup\contacts-frontend...
|
o  Installing dependencies with npm
```



Step 2: Set up Axios

Create `src/api.js`:

```
import axios from 'axios';

const api = axios.create({
  baseURL: 'http://localhost:3000/contacts', // your backend URL
});

export default api;
```

Step 3: Create Components

3.1 ContactList.jsx

```
import React, { useEffect, useState } from 'react';
import api from './api';

function ContactList({ onEdit, onDelete, refresh }) {
  const [contacts, setContacts] = useState([]);

  useEffect(() => {
    fetchContacts();
  }, [refresh]);

  const fetchContacts = async () => {
    try {
      const res = await api.get('/');
      setContacts(res.data);
    } catch (err) {
      console.error(err);
    }
  };

  return (
    <div>
      <h2>Contacts</h2>
      <ul>
        {contacts.map(c => (
          <li key={c._id}>
            {c.name} - {c.city} - {c.phone}{' '}
            <button onClick={() => onEdit(c)}>Edit</button>
            <button onClick={() => onDelete(c._id)}>Delete</button>
          </li>
        ))}
      </ul>
    </div>
  );
}

export default ContactList;
```

3.2 ContactForm.jsx:-

```
import React, { useState, useEffect } from 'react';
import api from './api';

function ContactForm({ selectedContact, onSaved }) {
  const [contact, setContact] = useState({ name: '', city: '', phone: '' });

  useEffect(() => {
    if (selectedContact) setContact(selectedContact);
    else setContact({ name: '', city: '', phone: '' });
  }, [selectedContact]);

  const handleChange = e => {
    setContact({ ...contact, [e.target.name]: e.target.value });
  };

  const handleSubmit = async e => {
    e.preventDefault();
    try {
      if (contact._id) await api.put(`/${contact._id}`, contact);
      else await api.post('/', contact);
      setContact({ name: '', city: '', phone: '' });
      onSaved();
    } catch (err) {
      console.error(err);
    }
  };

  return (
    <div>
      <h2>{contact._id ? 'Edit Contact' : 'Add Contact'}</h2>
      <form onSubmit={handleSubmit}>
        <input
          name="name"
          placeholder="Name"
          value={contact.name}
          onChange={handleChange}
          required
        />
        <input
          name="city"
          placeholder="City"
          value={contact.city}
          onChange={handleChange}
          required
        />
        <input
          name="phone"
          placeholder="Phone"
          value={contact.phone}
          onChange={handleChange}
          required
        />
        <button type="submit">Save</button>
```

```
      </form>
    </div>
  );
}

export default ContactForm;
```

3.3 App.jsx

```
import React, { useState } from 'react';
import ContactList from './ContactList';
import ContactForm from './ContactForm';
import api from './api';

function App() {
  const [selectedContact, setSelectedContact] = useState(null);
  const [refresh, setRefresh] = useState(false);

  const handleEdit = contact => setSelectedContact(contact);

  const handleDelete = async id => {
    try {
      await api.delete(`/${id}`);
      setRefresh(!refresh);
    } catch (err) {
      console.error(err);
    }
  };

  const handleSaved = () => {
    setSelectedContact(null);
    setRefresh(!refresh);
  };

  return (
    <div>
      <h1>Contact Manager</h1>
      <ContactForm selectedContact={selectedContact} onSaved={handleSaved} />
      <ContactList onEdit={handleEdit} onDelete={handleDelete}
refresh={refresh} />
    </div>
  );
}

export default App;
```

Step 4: Run the Vite frontend

```
npm run dev
```

- Open the browser → React frontend will appear, likely at `http://localhost:5173`
- Backend must be running at `http://localhost:3000`
- You can **Add, Edit, Delete, and View contacts**

Note:-

You need to **enable CORS on your Express backend**.

Step 1: Install CORS package

In your backend folder:

```
npm install cors
```

Step 2: Enable CORS in `index.js`

At the top, import it:

```
const cors = require('cors');
```

Then add it as middleware **before your routes**:

```
app.use(cors({
    origin: 'http://localhost:5173' // your Vite frontend URL
}));
```

- This allows requests **only from your frontend**.
- If you want to allow any origin (for testing), you can use:

```
app.use(cors()); // allow all origins (not recommended for production)
```

your code of index.js will like this now:-

```
const express = require('express');
const mongoose = require('mongoose');
const app = express();
const PORT = 3000;
const cors = require('cors');
app.use(cors({
    origin: 'http://localhost:5173' // your Vite frontend URL
}));

// Middleware
app.use(express.json());

// Routes
const contactRoutes = require('./routes/contactRoutes');
app.use('/contacts', contactRoutes);

// Connect to local MongoDB
```

```
mongoose.connect('mongodb://127.0.0.1:27017/mydb')
    .then(() => console.log('Connected to local MongoDB'))
    .catch(err => console.error('MongoDB connection error:', err));

// Root endpoint
app.get('/', (req, res) => {
    res.send('Welcome to Contact REST API!');
});

// Start server
app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
});
```

Step 3: Restart the backend

```
node index.js
```

or if using nodemon:

```
nodemon index.js
```

Let's go **line by line** and explain the meaning of every piece of your **React frontend code**. I'll cover **Axios setup, ContactList, ContactForm, and App**.

Step 2: Set up Axios (`src/api.js`)

```
import axios from 'axios';
```

- Imports the **Axios library** for making HTTP requests.
- Axios is easier to use than `fetch()` and supports promises.

```
const api = axios.create({
  baseURL: 'http://localhost:3000/contacts', // your backend URL
});
```

- `axios.create()` → creates an **Axios instance** with default configuration.
- `baseURL` → prefix for all requests. Now, `api.get('/')` → requests `http://localhost:3000/contacts/`.
- Makes the code cleaner because you don't need to type the full URL every time.

```
export default api;
```

- Exports the Axios instance so other components (`ContactList`, `ContactForm`, `App`) can import it.

Step 3.1: ContactList.jsx

```
import React, { useEffect, useState } from 'react';
import api from './api';
```

- Imports React hooks:
  - `useState` → for managing component state (e.g., list of contacts)
  - `useEffect` → for running side effects (e.g., fetching data on mount)
- Imports the Axios instance to make requests to the backend.

```
function ContactList({ onEdit, onDelete, refresh }) {
```

- Defines the `ContactList` component.
- Receives **props**:
  - `onEdit` → function to handle editing a contact
  - `onDelete` → function to handle deleting a contact

- `refresh` → state used to trigger re-fetching data when something changes

```
const [contacts, setContacts] = useState([]);
```

- Initializes `contacts` as an empty array.
- Will store the **list of contacts fetched from the backend**.

```
useEffect(() => {
  fetchContacts();
}, [refresh]);
```

- `useEffect` runs **after the component renders**.
- `[refresh]` → dependency array; effect re-runs whenever `refresh` changes.
- Calls `fetchContacts()` to get all contacts from the backend.

```
const fetchContacts = async () => {
  try {
    const res = await api.get('/');
    setContacts(res.data);
  } catch (err) {
    console.error(err);
  }
};
```

- `api.get('/')` → GET request to backend to fetch all contacts
- `res.data` → response data (array of contacts)
- `setContacts` → updates state to re-render the list
- `catch` → logs error if the request fails

```
return (
  <div>
    <h2>Contacts</h2>
    <ul>
      {contacts.map(c => (
        <li key={c._id}>
          {c.name} - {c.city} - {c.phone}{' '}
          <button onClick={() => onEdit(c)}>Edit</button>
          <button onClick={() => onDelete(c._id)}>Delete</button>
        </li>
      ))}
    </ul>
  </div>
);
```

- Renders a list of contacts:
  - `contacts.map(c => ...)` → loops through the array
  - `key={c._id}` → unique key for React rendering
  - Buttons call `onEdit` or `onDelete` with the relevant contact or ID

```
export default ContactList;
```

- Exports the component to be used in `App.jsx`.

Step 3.2: ContactForm.jsx

```
import React, { useState, useEffect } from 'react';
import api from './api';
```

- Imports React hooks and Axios instance.

```
function ContactForm({ selectedContact, onSaved }) {
```

- Component receives:
  - `selectedContact` → the contact currently being edited
  - `onSaved` → callback function to refresh the list after add/edit

```
const [contact, setContact] = useState({ name: '', city: '', phone: '' });
```

- State for the form fields
- Initially empty

```
useEffect(() => {
  if (selectedContact) setContact(selectedContact);
  else setContact({ name: '', city: '', phone: '' });
}, [selectedContact]);
```

- Runs whenever `selectedContact` changes
- Pre-fills form fields if editing, clears them if adding new contact

```
const handleChange = e => {
  setContact({ ...contact, [e.target.name]: e.target.value });
};
```

- Handles input changes
- Updates the corresponding property dynamically (`name`, `city`, `phone`) using `e.target.name`

```
const handleSubmit = async e => {
  e.preventDefault();
  try {
    if (contact._id) await api.put(`/${contact._id}`, contact);
    else await api.post('/', contact);
    setContact({ name: '', city: '', phone: '' });
    onSaved();
  } catch (err) {
    console.error(err);
  }
};
```

- `e.preventDefault()` → prevents page reload on form submit
- If `contact._id` exists → update contact (`PUT`)
- Else → create new contact (`POST`)
- Resets form and calls `onSaved()` to refresh the list

```
return (
  <div>
    <h2>{contact._id ? 'Edit Contact' : 'Add Contact'}</h2>
    <form onSubmit={handleSubmit}>
      <input name="name" placeholder="Name" value={contact.name}
onChange={handleChange} required />
      <input name="city" placeholder="City" value={contact.city}
onChange={handleChange} required />
      <input name="phone" placeholder="Phone" value={contact.phone}
onChange={handleChange} required />
      <button type="submit">Save</button>
    </form>
  </div>
);
```

- Renders the form fields with values bound to state
- The submit button triggers `handleSubmit`

```
export default ContactForm;
```

- Exports the form component

Step 3.3: App.jsx

```
import React, { useState } from 'react';
import ContactList from './ContactList';
import ContactForm from './ContactForm';
import api from './api';
```

- Imports **React**, components, and Axios instance

```
function App() {
  const [selectedContact, setSelectedContact] = useState(null);
  const [refresh, setRefresh] = useState(false);
```

- `selectedContact` → the contact being edited
- `refresh` → toggled to force re-rendering and data fetch in `ContactList`

```
const handleEdit = contact => setSelectedContact(contact);
```

- Passes the selected contact to the form for editing

```
const handleDelete = async id => {
  try {
    await api.delete(`/${id}`);
    setRefresh(!refresh);
  } catch (err) {
    console.error(err);
  }
};
```

- Deletes a contact via backend
- Toggles `refresh` to update the list

```
const handleSaved = () => {
  setSelectedContact(null);
  setRefresh(!refresh);
};
```

- Called after add/edit
- Resets form and triggers list refresh

```
return (
  <div>
    <h1>Contact Manager</h1>
    <ContactForm selectedContact={selectedContact} onSaved={handleSaved} />
    <ContactList onEdit={handleEdit} onDelete={handleDelete}
refresh={refresh} />
  </div>
);
```

- Combines **form** and **list**
- Passes handlers as props

```
export default App;
```

- Exports the root component for `main.jsx` / `index.jsx`

Step 4: Run the Vite frontend

```
npm run dev
```

- Starts the Vite development server
- Opens the browser at `http://localhost:5173`
- Backend must be running at `http://localhost:3000`

 Now you can **Add, Edit, Delete, and View contacts** through React UI.