Steps to Start Writing the Code from Scratch

Here’s how you can systematically approach building your Contacts Management System with the JavaScript functionality you’ve outlined.

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1. Understand the Core Requirements

- **Fetch and Render Contacts**: Retrieve contacts dynamically from a server and display them.
- **Contact Operations**: Add, edit, delete, and search for contacts.
- **Search Functionality**: Filter contacts using regular expressions.
- **Bulk Updates**: Use Web Workers to perform bulk updates on contact data.

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2. Plan the Code Structure

Divide your functionality into these core modules:

- **API Integration**: Fetch contact data from an external API.
- **User Operations**: Add, edit, delete, and search contacts.
- **Rendering**: Dynamically display contacts and update the UI as changes occur.
- **Web Worker Setup**: Handle bulk updates in a separate thread for performance.

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3. Fetch and Display Contacts

- Write an `async` function to fetch contact data from an API.
- Transform the data into a structured format and store it in a `contacts` array.
- Use a `renderContacts` function to dynamically display the contacts in the UI.

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4. Implement Add Contact Functionality

- Attach an event listener to the "Add Contact" button.
- Validate user inputs (name and email).
- Create a new contact object with:
    - A unique ID.
    - User-provided name and email.
- Add the new contact to the `contacts` array and re-render the contact list.

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5. Implement Edit and Delete Operations

- **Edit Contacts**:
    - Find the contact by ID and prompt the user for updated details.
    - Update the contact object and re-render the UI.
- **Delete Contacts**:
    - Filter out the contact by ID from the `contacts` array.
    - Re-render the contact list.

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6. Search Contacts

- Attach an event listener to the search input field.
- Use regular expressions to filter contacts by name or email.
- Render the filtered contact list dynamically.

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7. Implement Bulk Updates Using Web Workers

- Create a Web Worker to handle bulk updates, such as modifying email domains.
- Use `postMessage` to send contact data to the worker.
- Update the `contacts` array with the modified data received from the worker.
- Re-render the contact list after the bulk update.

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8. Test and Debug

- Test the following scenarios:
    - Fetching and displaying contacts.
    - Adding, editing, and deleting contacts.
    - Searching contacts with partial matches.
    - Performing bulk updates.
- Debug issues using `console.log` and browser dev tools.

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9. Optimize the Code

- Modularize functionality into reusable functions.

- Add meaningful comments for better readability.
- Ensure proper error handling for API calls and user inputs.

Suggested Order to Write the Code

1. **Initialize and Fetch Contacts**
2. **Implement Render Functionality**
3. **Add Contact Operations (Add, Edit, Delete)**
4. **Set Up Search with Regular Expressions**
5. **Implement Bulk Updates with Web Workers**
6. **Test and Debug**

Tools to Assist

- **Console Logs**: Debug fetching, rendering, and operations.
- **Browser DevTools**: Monitor network requests, inspect DOM elements, and handle Web Worker debugging.

By following this structured approach, you'll create an efficient and scalable Contacts Management System. Let me know if you need further assistance!