**Challenges Faced and Resolutions**

1. **Duplicate Validation**
   * **Challenge:** Ensuring no duplicate contacts (based on email or first name + last name) were added to the database.
   * **Resolution:** Added server-side validation in the backend to check for existing records before creating or updating a contact. Also implemented error handling in the frontend to display meaningful alerts to the user.
2. **Pagination and Sorting**
   * **Challenge:** Displaying a large number of contacts in a manageable way with sorting and pagination.
   * **Resolution:** Utilized Material-UI's TablePagination and TableSortLabel components for a seamless user experience.
3. **Frontend-Backend Synchronization**
   * **Challenge:** Keeping the frontend in sync with backend operations (add, edit, delete) without needing a full page refresh.
   * **Resolution:** Used axios for API requests and updated the local state (useState) dynamically to reflect backend changes.
4. **Error Handling for User Feedback**
   * **Challenge:** Providing clear and actionable feedback to users when errors occurred, such as duplicate entries or server issues.
   * **Resolution:** Integrated error handling in the frontend to catch backend validation errors and display alerts with the specific issue.