**Technical Documentation – Customer Management Module**

**Overview:** This module is part of a full-fledged IT system built for a water purifier sales and service business. The customer management module allows users to add, edit, delete, search, paginate, and export customer records with validations and filters. The backend is powered by Node.js + Express with a PostgreSQL database, and the frontend is built using React and Tailwind CSS.

**Technology Stack:**

* Frontend: React.js, Tailwind CSS
* Backend: Node.js, Express.js
* Database: PostgreSQL
* Libraries:
  + react-hot-toast for toast notifications
  + xlsx for exporting filtered customer records to Excel

**Features Implemented:**

1. **Add Customer**
   * Validates: name, primary mobile (must be exactly 10 digits), and address (all required)
   * Sends POST request to backend
2. **Edit Customer**
   * Reuses form for editing with PUT request
3. **Delete Customer**
   * Confirm dialog before deletion
   * Sends DELETE request to backend
4. **Search Functionality**
   * Filter customers by name, primary mobile, or address
5. **Pagination**
   * 25 items per page with previous and next controls
6. **Export Filtered Results**
   * Uses xlsx to export current filtered list to Excel
7. **UI Feedback**
   * Success and error notifications via react-hot-toast

**Known Issues Faced & Fixes:**

| Issue | Fix/Instruction |
| --- | --- |
| uuid-ossp extension could not be created | Ensure the database user has CREATE privilege, or run the extension creation as postgres superuser |
| CORS Error | Added CORS middleware to backend using app.use(cors()) |
| Duplicate port conflict (3000) | Changed backend port to 5000 and updated all API base URLs |
| tailwindcss not found | Installed using npx tailwindcss init -p after npm install and ensuring node\_modules/.bin exists |
| xlsx module not found | Resolved by running npm install xlsx in the frontend directory |
| React build error on reportWebVitals | Removed unused import from index.js |
| JSON parse error on POST | Confirmed backend was not running and fixed port reference |
| DELETE did not commit | Ensured delete endpoint uses await + database commit properly in backend |

**Folder Structure for Frontend:**

waterbiz-frontend/  
├── public/  
├── src/  
│ ├── components/  
│ │ └── Customers.jsx  
│ ├── App.js  
│ ├── index.js  
│ └── ...  
├── tailwind.config.js  
├── package.json  
└── postcss.config.js

**Backend Notes:**

* Endpoint: /api/customers
* Ensure uuid\_generate\_v4() is available in PostgreSQL
* Backend should expose proper headers for CORS and JSON content

**Next Steps:**

* Start Service Module (Phase 1)
* Consider adding role-based login & customer history in future phases

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