**Implementation Process**

**1. Backend Development**

1. **Initial Setup**
   * Set up Node.js/Express server
   * Configured MySQL database connection
   * Created necessary environment variables
2. **Database Structure**
   * Created customers table for storing customer information
   * Set up purchases table with foreign key relationship
   * Implemented basic CRUD operations
3. **API Development**
   * Built RESTful endpoints for customers and purchases
   * Added data validation
   * Implemented error handling

**2. Frontend Development**

1. **Project Setup**
   * Initialized React project using Vite
   * Set up routing with React Router
   * Integrated Tailwind CSS for styling
2. **Core Features**
   * Created customer listing page with search
   * Built customer details view with purchase history
   * Implemented forms for adding/editing customers
   * Added responsive design elements

**3. Integration & Testing**

1. **API Integration**
   * Connected frontend with backend APIs using Axios
   * Implemented data fetching and state management
   * Added loading states and error handling
2. **Feature Enhancement**
   * Added Excel export functionality
   * Implemented search and filter capabilities
   * Added confirmation dialogs for delete operations

**Key Implementation Challenges:**

1. **MySQL Authentication Issue (SHA2)**

**Challenge**

* MySQL 8.0+ uses SHA2 password encryption by default
* Node.js MySQL connection was failing with authentication errors
* Default authentication method wasn't compatible

**Solution**

**MySQL User Configuration**

ALTER USER 'your\_username'@'localhost' IDENTIFIED WITH mysql\_native\_password BY 'your\_password';

FLUSH PRIVILEGES;

1. **Making the Application Responsive**

**Challenge**

* Complex tables and forms needed to work across all device sizes
* Customer details page had multiple sections that needed proper mobile layout
* Navigation and buttons needed different layouts for mobile/desktop

1. **Setting Up Latest Tailwind Version**

**Challenge**

* New Tailwind version had different configuration requirements
* Needed to set up with Vite and React
* Required proper PostCSS configuration