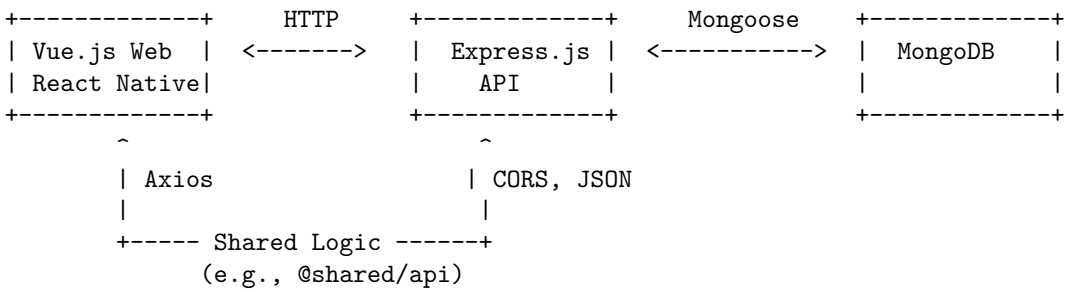
Inventory App Design Document

1. System Architecture Overview



2. Use Case Diagram

- **Actor**: User
- **Use Cases**:
  - Add Item
  - View Items
  - Edit Item
  - Delete Item

3. Class Diagram

Item Model

- `Item`
  - `String name`
  - `Number quantity`
  - `String location`
  - `String description`
  - `Date createdAt`
  - `Date updatedAt`

4. Sequence Diagram - Add Item

```
User -> Web/Mobile App: Click "Add Item"
Web/Mobile App -> Express API: POST /api/items
Express API -> MongoDB: Save Item
MongoDB -> Express API: Item Saved
Express API -> Web/Mobile App: 201 Created + Item
```

5. API Documentation

Base URL: `/api/items`

Method	Endpoint	Description	Request Body	Response
GET	`/api/items`	List all items	N/A	`[Item]`
POST	`/api/items`	Create new item	`{ name, quantity, location, description }`	`Item`
PUT	`/api/items/:id`	Update an item	`{ name?, quantity?, location?, description? }`	`Item`
DELETE	`/api/items/:id`	Delete an item	N/A	204 No Content

6. MongoDB Schema (Mongoose)

```
const itemSchema = new mongoose.Schema({
  name: String,
  quantity: Number,
  location: String,
  description: String,
}, { timestamps: true });
```

7. Component Tree

Vue.js Web

```
App.vue
  HomePage.vue
      ItemList.vue
      AddItemModal.vue
      EditItemModal.vue
```

React Native

```
App.js
  HomePage.js
  AddItem.js
  EditItem.js
```

8. Navigation Flow

Web (Vue Router)

- `/` → HomePage → List of Items
- `/edit/:id` → Edit Item

Mobile (React Navigation)

- `HomePage` (default screen)
- `AddItem` → Add Item screen
- `EditItem` → Edit Item screen with form pre-filled

Inventory App – Vue.js Web Frontend Design

1. Component Tree

```
App.vue
  HomePage.vue
      AddItemModal.vue
      EditItemModal.vue
      ViewItemModal.vue
```

2. Route Structure

```
routes.js
/
  /           → HomePage
  /add        → AddItemModal
  /edit/:id   → EditItemModal
```

3. Component Responsibilities

App.vue

- Root layout component
- Hosts router-view

HomePage.vue

- Fetches and displays list of items from API
- Navigates to Add or Edit views

AddItemModal.vue

- Modal form to create a new item
- Submits data via POST to Express API

EditItemModal.vue

- Modal form to edit or delete an item
- Submits data via PUT or DELETE to API

ViewItemModal.vue

- Shows item details in a read-only modal

4. Data Flow & API Integration

- All API calls are made using Axios via `@shared/api`
- Items are fetched on mount or navigation focus
- State is held locally in each component via `ref()` or `reactive()`

5. State Transitions (Mermaid Sequence)

```
sequenceDiagram
    participant User
    participant HomePage
    participant API

    User->>HomePage: Open Web App
    HomePage->>API: GET /api/items
    API-->>HomePage: JSON items
    User->>HomePage: Click "Add Item"
    HomePage->>AddItemModal: Open Modal
    AddItemModal->>API: POST /api/items
    API-->>AddItemModal: New Item
    AddItemModal->>HomePage: Refresh List
```

6. Styling & UX

- Uses TailwindCSS for consistent UI
- Mobile responsive layout
- Button feedback, error handling, and loading indicators included

Inventory App – React Native Mobile Frontend Design

1. Screen Component Tree

```
App.js
  HomePage.js
  AddItem.js
  EditItem.js
```

2. Navigation Flow

- Stack Navigator is used for screen transitions
- Flow:

- `HomePage` → default
- `AddItem` → for creating a new item
- `EditItem` → for editing or deleting an item

3. Component Responsibilities

App.js

- Registers screens with the stack navigator
- Hosts the main navigation container

HomePage.js

- Fetches and displays a list of items using Axios
- Navigates to `AddItem` and `EditItem`

AddItem.js

- Controlled input form for creating an item
- Submits data via POST to Express API

EditItem.js

- Editable form pre-filled with item data
- Updates or deletes the item via PUT or DELETE

4. Data Flow & API Integration

- Axios is used to fetch and post data to Express backend
- API helpers are imported from `@shared/api`
- Each screen manages its own local state using `useState` and `useEffect`

5. Sequence Diagram (Mermaid)

```
sequenceDiagram
    participant User
    participant HomePage
    participant API

    User->>HomePage: Launch app
    HomePage->>API: GET /api/items
    API-->>HomePage: List of items
    User->>HomePage: Tap "Add"
    HomePage->>AddItem: Navigate to AddItem screen
    AddItem->>API: POST /api/items
    API-->>AddItem: Created item
    AddItem->>HomePage: Navigate back & refresh
```

6. Styling & UX

- Styled with React Native `StyleSheet`
- Touch-friendly buttons
- Form validation and error messages included
- Designed for iOS and Android responsiveness

Inventory App – API & Backend Design

1. Stack Overview

- **Framework**: Express.js
- **Database**: MongoDB (via Mongoose)
- **Environment Config**: `.env` for MONGO_URI
- **CORS** enabled for cross-origin access
- **JSON** body parsing with `express.json()`

2. Folder Structure

```
api/
  index.js              # Entry point, sets up Express server
  routes/
     items.js          # CRUD routes for Item model
  models/
      Item.js           # Mongoose schema for Item
```

3. Item Schema

```
const itemSchema = new mongoose.Schema({
  name: { type: String, required: true },
  quantity: { type: Number, required: true },
  location: { type: String },
  description: { type: String }
}, { timestamps: true });
```

4. API Endpoints

Base Route: `/api/items`

Method	Endpoint	Description
GET	`/`	Fetch all items
GET	`/:id`	Fetch item by ID
POST	`/`	Create new item
DELETE	`/:id`	Delete an item

5. Sequence Diagram

```
sequenceDiagram
    participant Client
    participant ExpressServer
    participant Router
    participant MongoDB

    Client->>ExpressServer: HTTP Request (GET /api/items)
    ExpressServer->>Router: Route to handler
    Router->>MongoDB: Item.find()
    MongoDB-->>Router: Documents
    Router-->>ExpressServer: JSON Response
    ExpressServer-->>Client: 200 OK + JSON
```

6. Class Diagram

```
classDiagram
    class Item {
        +String name
        +Number quantity
        +String location
        +String description
        +Date createdAt
        +Date updatedAt
    }
```

7. Error Handling

- `404 Not Found`: When an item does not exist
- `400 Bad Request`: Validation errors
- `500 Internal Server Error`: DB connection or logic failure

8. Environment Configuration

```
MONGO_URI="your-mongodb-connection-string"
PORT=5055
```