**Café Employee Manager — Detail Design Documentation**

**Overview**

This is a full-stack web application for managing cafés and employees. It allows administrators to:

* View, add, edit, and delete café and employee records.
* Assign employees to cafés.
* Enforce business rules (e.g., one employee per café, unique name constraints).
* Provide real-time updates with validations and confirmations.

**Tech Stack**

* **Frontend**: React.js (Vite), Ag-Grid, Material-UI
* **Backend**: .NET 8 Web API with CQRS, MediatR, EF Core
* **Database**: MS SQL Server
* **Testing**: xUnit for backend unit testing

**Features**

**Café Management**

* **List Cafés**: Displays all cafés in an Ag-Grid table.
* **Add Café**: Opens a modal form to input name, location.
* **Edit Café**: Edit name/location of an existing café.
* **Delete Café**: Delete a café after confirmation. Shows a popup.
* **Validation**: Ensures café name is unique and required.

**Employee Management**

* **List Employees**: Displays all employees in a grid with columns for name, email, phone number, and assigned café.
* **Add Employee**: Modal form collects name, email, phone, and café selection.
* **Edit Employee**: Updates employee details including café assignment.
* **Delete Employee**: Removes an employee with confirmation.
* **Validation**:
  + Name is required.
  + Valid email format.
  + One employee per café.
  + Cannot delete an employee with an active café assignment (requires reassignment first).

**User Flow Summary**

**Cafés**

1. **Open Café Page**  
   Grid lists all cafés.
2. **Add Café**  
   ➜ Click Add → Fill form → Save  
   ✅ New café appears.
3. **Edit Café**  
   ➜ Click Edit on a row → Update form → Save  
   ✅ Café details updated.
4. **Delete Café**  
   ➜ Click Delete → Confirm  
   ✅ Café is removed if not assigned to an employee.

**Employees**

1. **Open Employee Page**  
   Grid lists all employees.
2. **Add Employee**  
   ➜ Click Add → Fill form → Save  
   ✅ Employee added and assigned café.
3. **Edit Employee**  
   ➜ Click Edit → Update form → Save  
   ✅ Changes reflected.
4. **Delete Employee**  
   ➜ Click Delete → Confirm  
   ✅ Employee removed.

**Backend Rules & Logic**

**Café**

* Name must be unique (case-insensitive).
* Cannot delete a café if an employee is assigned.

**Employee**

* Email must be valid and unique.
* One employee per café constraint.
* Cannot assign multiple employees to the same café.

**API Endpoints**

**Café API**

| **Method** | **Endpoint** | **Description** |
| --- | --- | --- |
| GET | /api/cafes | Get all cafés |
| POST | /api/cafes | Add new café |
| PUT | /api/cafes/{id} | Update existing café |
| DELETE | /api/cafes/{id} | Delete café |

**Employee API**

| **Method** | **Endpoint** | **Description** |
| --- | --- | --- |
| GET | /api/employees | Get all employees |
| POST | /api/employees | Add new employee |
| PUT | /api/employees/{id} | Update existing employee |
| DELETE | /api/employees/{id} | Delete employee |

**Error Handling**

* Custom exceptions for:
  + Duplicate café name
  + Invalid email
  + Constraint violations (e.g., multiple employees per café)
* Global error handler middleware returns consistent JSON error format.

**Future Improvements**

* Add search/filter options on both grids.
* Pagination for large datasets.
* Audit logs for add/edit/delete actions.
* Role-based authentication (Admin vs Viewer).