Planogram Application: Firebase Firestore Data Structure

This document outlines a NoSQL data structure using Firebase Firestore for the planogram application. It incorporates a company-centric model and handles data originating from the interest form.

Core Concepts:

- **Collections:** Top-level containers for documents (e.g., companies, users, appConfig).
- **Documents:** Individual records within collections, identified by a unique Document ID. They contain key-value pairs.
- **Subcollections:** Collections nested within a document, allowing for hierarchical data organization (e.g., a company's products stored in a subcollection under that company's document).
- **Relationships:** Often handled by storing Document IDs from related collections or by using subcollections.

1. appConfig Collection

- **Purpose:** Stores global application settings. Likely contains only one document.
- **Document ID:** e.g., settings
- **Document Structure (/appConfig/settings):**
  {
  "interestFormRecipientEmail": "your-company-sales-email@example.com", // Email address where interest form submissions are sent
  "lastUpdated": "Timestamp"
  // Add other global settings as needed
  }

2. leads Collection (Optional but Recommended)

- **Purpose:** To store the raw submissions from the "Sign Up / Interest Form Page". This provides a historical record of all inquiries.
- **Document ID:** Auto-generated ID for each submission.
- **Document Structure (Example Document in /leads):**
  {
  "submissionTimestamp": "Timestamp",
  "companyName": "Example Supermarket Co.",
  "companyWebsite": "https://examplemart.com",
  "businessRegistrationNumber": "ABN123456", // From user edit
  "contactPersonName": "Jane Doe",

"contactPersonEmail": "jane.doe@examplemart.com",
"contactPersonPhone": "+1234567890",
"numberOfStoresRange": "11-50",
"estimatedUsersRange": "6-20",
"currentPlanogramMethod": "Existing Software (Please specify below)",
"existingSoftwareName": "Old POG System",
"keyChallenges": "Difficulty updating planograms across stores, poor analysis.",
"howHeard": "Web Search",
"status": "New" // e.g., New, Contacted, Qualified, Archived
}

3. companies Collection

- **Purpose:** Stores information about client companies that are using the software. Data might be initially populated based on qualified leads from the leads collection.
- **Document ID:** Auto-generated or a custom ID (e.g., a unique company slug). Let's assume auto-generated: companyId.
- **Document Structure (Example Document /companies/{companyId}):**
  {
  "companyName": "Example Supermarket Co.",
  "companyWebsite": "https://examplemart.com",
  "businessRegistrationNumber": "ABN123456",
  "primaryContactName": "Jane Doe", // Can be updated from initial lead contact
  "primaryContactEmail": "jane.doe@examplemart.com",
  "primaryContactPhone": "+1234567890",
  "numberOfStores": 25, // More specific number once onboarded
  "address": "123 Main St, Anytown", // Billing/HQ address
  "subscriptionStatus": "Active", // e.g., Active, Trial, Suspended
  "createdAt": "Timestamp",
  "onboardedBy": "adminUserId", // Reference to the admin who onboarded them
  "originalLeadId": "leadDocumentId" // Optional: Link back to the raw lead submission
  }

- **Subcollections of /companies/{companyId}:**
  - stores
  - categories
  - brands

- suppliers
- products
- fixtures
- planograms

4. users Collection

- **Purpose:** Stores user profile information, linked to Firebase Authentication UIDs and a specific company.
- **Document ID:** Firebase Authentication User ID (uid).
- **Document Structure (Example Document /users/{uid}):**

```
{
  "email": "category.manager@examplemart.com", // From Firebase Auth
  "displayName": "John Smith",
  "role": "CategoryManager", // e.g., 'Admin', 'CategoryManager'
  "companyId": "companyId_of_ExampleSupermarketCo", // **REQUIRED: Links user to a company**
  "createdAt": "Timestamp",
  "lastLogin": "Timestamp",
  "isActive": true
}
```

5. /companies/{companyId}/stores Subcollection

- **Purpose:** Stores details of individual store locations belonging to a company.
- **Document ID:** Auto-generated or custom store code: storeId.
- **Document Structure (Example Document /companies/{companyId}/stores/{storeId}):**

```
{
  "storeName": "Downtown Branch",
  "address": "456 Market St, Anytown",
  "storeCode": "DT01", // Optional internal code
  "createdAt": "Timestamp"
}
```

6. /companies/{companyId}/categories Subcollection

- **Purpose:** Stores product categories defined by the company.
- **Document ID:** Auto-generated: categoryId.
- **Document Structure (Example Document /companies/{companyId}/categories/{categoryId}):**

```
{
  "categoryName": "Beverages",
  "description": "All drinks, sodas, juices, water.",
  "createdAt": "Timestamp"
}
```

7. /companies/{companyId}/brands Subcollection

- **Purpose:** Stores product brands relevant to the company.
- **Document ID:** Auto-generated: brandId.
- **Document Structure (Example Document /companies/{companyId}/brands/{brandId}):**

```
{
  "brandName": "Example Cola",
  "createdAt": "Timestamp"
}
```

8. /companies/{companyId}/suppliers Subcollection

- **Purpose:** Stores supplier information relevant to the company.
- **Document ID:** Auto-generated: supplierId.
- **Document Structure (Example Document /companies/{companyId}/suppliers/{supplierId}):**

```
{
  "supplierName": "Example Beverage Distributor",
  "contactInfo": "distributor@example.com",
  "createdAt": "Timestamp"
}
```

9. /companies/{companyId}/fixtures Subcollection

- **Purpose:** Stores fixture definitions available to the company.
- **Document ID:** Auto-generated: fixtureId.
- **Document Structure (Example Document /companies/{companyId}/fixtures/{fixtureId}):**

```
{
  "fixtureName": "Aisle 5 Standard Gondola",
  "fixtureType": "Gondola", // 'Gondola', 'Shelf', 'Cooler'
  "width": 120.0, // In cm or inches - be consistent
  "height": 180.0,
```

```
  "depth": 45.0,
  "numShelves": 5,
  "shelfDetails": [ // Example if shelves vary
   { "shelfNum": 1, "height": 40.0, "depth": 45.0 },
   { "shelfNum": 2, "height": 35.0, "depth": 45.0 },
   // ... up to numShelves
  ],
  "createdAt": "Timestamp"
}
```

10. /companies/{companyId}/products Subcollection

- **Purpose:** Stores product details managed by the company.
- **Document ID:** Auto-generated: productId.
- **Document Structure (Example Document /companies/{companyId}/products/{productId}):**

```
{
  "sku": "EC12345",
  "productName": "Example Cola 1.25L",
  "description": "Refreshing cola drink.",
  "imageUrl": "https://example.com/image.jpg",
  "dimensions": { // Nested object for dimensions
    "width": 8.0,
    "height": 30.0,
    "depth": 8.0
  },
  "mrp": 2.50,
  "costPrice": 1.10,
  // References to other documents within the SAME company's subcollections
  "categoryId": "categoryId_for_Beverages",
  "brandId": "brandId_for_ExampleCola",
  "supplierId": "supplierId_for_ExampleDistributor",
  "createdAt": "Timestamp",
  "updatedAt": "Timestamp"
}
```

11. /companies/{companyId}/planograms Subcollection

- **Purpose:** Stores planogram definitions created by the company's users.

- **Document ID:** Auto-generated: planogramId.
- **Document Structure (Example Document /companies/{companyId}/planograms/{planogramId}):**

```
{
  "planogramName": "Aisle 5 Cola POG - Q3 2025",
  "description": "Focus on promoting Example Cola variants.",
  "fixtureId": "fixtureId_for_Aisle5Gondola", // Reference to a fixture in the same company
  "categoryId": "categoryId_for_Beverages", // Primary category focus
  "storeId": "storeId_for_DowntownBranch", // Optional: Reference to a specific store
  "status": "Draft", // 'Draft', 'Active', 'Archived'
  "effectiveStartDate": "Date", // Firestore Timestamp or ISO String
  "effectiveEndDate": "Date",
  "createdByUserId": "userId_of_JohnSmith", // Reference to a user document ID
  "createdAt": "Timestamp",
  "updatedAt": "Timestamp",

  // Embedded Planogram Items Data
  "items": [ // Array of placed items
    {
      "planogramItemId": "auto_generated_or_simple_uuid_1", // Unique within this array
      "productId": "productId_for_ExampleCola1.25L", // Reference to product
      "shelfNumber": 3,
      "positionX": 10.5, // Position from left
      "facings": 5,
      "stackHeight": 1,
      "orientation": "Front"
    },
    {
      "planogramItemId": "auto_generated_or_simple_uuid_2",
      "productId": "productId_for_ExampleDietCola",
      "shelfNumber": 3,
      "positionX": 55.0, // Next to the first product
      "facings": 4,
      "stackHeight": 1,
      "orientation": "Front"
    }
```

```
    // ... more items
  ]
  // Alternatively, 'items' could be its own subcollection if planograms get very
large
  // e.g., /companies/{cId}/planograms/{pId}/items/{itemId}
}
```

Summary of Changes:

- **Database Type:** Shifted from Relational (PostgreSQL) to NoSQL Document (Firestore).
- **Company Centric:** Introduced a top-level companies collection. Most business data (products, fixtures, planograms, etc.) are now stored in subcollections under a specific company document, ensuring data isolation.
- **User Linking:** Users in the top-level users collection are explicitly linked to a company via companyId.
- **Interest Form:** Added an optional leads collection for raw submissions and integrated company details into the companies collection.
- **App Config:** Added an appConfig collection for global settings like the recipient email.
- **Planogram Items:** Embedded the PlanogramItems data as an array within the planogram document for simpler retrieval, assuming planograms won't have an excessive number of items. This could be changed to a subcollection if needed for scale or complex item querying.

This structure leverages Firestore's capabilities for hierarchical data and provides a scalable foundation for your multi-tenant planogram application. Remember to set up appropriate Firestore Security Rules to enforce data access based on user roles and company membership.