**TasteCircle – Gourmet Delivered**

**Overview**

**TasteCircle: Gourmet Delivered** is an e-commerce platform focused on premium gourmet food, beverages, and subscription boxes. The platform supports **dietary tags** (e.g., vegan, gluten-free), **subscription models** for recurring deliveries, and **expiry date tracking** for perishable items. Customers can filter products based on dietary preferences, flavors, and weight, while businesses can manage inventory with expiration tracking.

**Core Functionalities**

1. **Category Management**
   * Organize products into categories like **Packaged Foods**, **Beverages**, and **Subscription Boxes**.
   * Provide subcategories such as **Coffee**, **Snacks**, and **Tea** for better organization.
2. **Product Type Management**
   * Define reusable **Product Types** with attributes such as dietary tags, flavor, and weight.
   * Include optional attributes like **expiry dates** for perishable goods.
3. **Product Management**
   * Create and manage products with dietary tags (e.g., vegan, gluten-free), flavors, and weights.
   * Track **expiry dates** for perishable items.
4. **Product Variant Management**
   * Handle variants for different weights or flavors of the same product.
   * Assign **unique SKUs** to each variant for inventory tracking.
5. **Subscription Management**
   * Offer subscription plans for recurring product deliveries (e.g., coffee boxes, snack bundles).
   * Allow customization of delivery frequency (e.g., weekly, bi-weekly, monthly).
6. **Advanced Filtering and Search**
   * Enable filtering by dietary tags (e.g., "Vegan"), flavor, weight, and expiry status.
   * Provide sorting by popularity, ratings, price, or nearest expiry date.
7. **Expiry Date Tracking**
   * Include expiry date attributes for perishable items.
   * Notify admin users when products are nearing expiration.

**Entity Relationships**

| **Entity** | **Relationships** |
| --- | --- |
| **Category** | One-to-Many: A category can have multiple subcategories, and products belong to one category. |
| **ProductType** | One-to-Many: A product type defines attributes for multiple products. |
| **Product** | One-to-Many: A product can have multiple variants, and belongs to one category and one product type. |
| **ProductVariant** | Many-to-One: A product variant belongs to one product. |
| **Subscription** | Many-to-Many: Subscriptions can include multiple products, and products can belong to multiple subscriptions. |

**Entity Descriptions**

**1. Category**

* Represents a hierarchical structure for browsing food and beverages.
* **Attributes**:
  + id: Unique identifier.
  + name: Category name (e.g., Coffee, Snacks).
  + parentCategory: Reference to the parent category for hierarchy.
  + description: Description of the category.

**2. ProductType**

* Defines a template for products with reusable attributes.
* **Attributes**:
  + id: Unique identifier.
  + name: Name of the product type (e.g., Coffee, Snack).
  + attributes: List of attributes (e.g., Flavor, Weight, Expiry Date).

**3. Product**

* Represents a specific product linked to a category and product type.
* **Attributes**:
  + id: Unique identifier.
  + name: Product name (e.g., Ethiopian Coffee).
  + price: Base price of the product.
  + dietaryTags: List of dietary tags (e.g., Vegan, Gluten-Free).
  + description: Product description.
  + categoryId: Reference to the category.
  + productTypeId: Reference to the product type.
  + expiryDate: Expiry date for perishable items.

**4. ProductVariant**

* Represents specific variations of a product (e.g., different weights or flavors).
* **Attributes**:
  + id: Unique identifier.
  + sku: Unique SKU for the variant.
  + variantAttributes: Attributes specific to the variant (e.g., Weight: 500g, Flavor: Vanilla).
  + stock: Stock quantity for the variant.
  + additionalPrice: Price adjustment for this variant.

**5. Subscription**

* Represents subscription plans for recurring deliveries.
* **Attributes**:
  + id: Unique identifier.
  + name: Subscription name (e.g., Monthly Coffee Box).
  + products: List of products included in the subscription.
  + frequency: Delivery frequency (e.g., weekly, bi-weekly, monthly).
  + price: Subscription price.

**API Requirements**

**1. Category Management**

**1.1 Create Category**

* **Endpoint**: POST /categories
* **Request Body**:

json

Copy code

{

"name": "Packaged Foods",

"parentCategoryId": null,

"description": "Premium packaged snacks and foods."

}

* **Response**:

json

Copy code

{

"id": 1,

"name": "Packaged Foods",

"parentCategoryId": null,

"description": "Premium packaged snacks and foods."

}

**2. Product Type Management**

**2.1 Create Product Type**

* **Endpoint**: POST /product-types
* **Request Body**:

json

Copy code

{

"name": "Coffee",

"attributes": [

{ "name": "Flavor", "type": "Text" },

{ "name": "Weight", "type": "Number" },

{ "name": "Dietary Tags", "type": "Array", "allowedValues": ["Vegan", "Gluten-Free", "Organic"] },

{ "name": "Expiry Date", "type": "Date" }

]

}

* **Response**:

json

Copy code

{

"id": 1,

"name": "Coffee",

"attributes": [

{ "name": "Flavor", "type": "Text" },

{ "name": "Weight", "type": "Number" },

{ "name": "Dietary Tags", "type": "Array", "allowedValues": ["Vegan", "Gluten-Free", "Organic"] },

{ "name": "Expiry Date", "type": "Date" }

]

}

**3. Product Management**

**3.1 Create Product**

* **Endpoint**: POST /products
* **Request Body**:

json

Copy code

{

"name": "Ethiopian Coffee",

"categoryId": 1,

"productTypeId": 1,

"price": 25.00,

"dietaryTags": ["Vegan", "Organic"],

"description": "Premium Ethiopian coffee beans.",

"expiryDate": "2024-12-31",

"variants": [

{

"variantAttributes": { "Flavor": "Vanilla", "Weight": 500 },

"stock": 20,

"additionalPrice": 5,

"sku": "COFFEE-VANILLA-500G"

},

{

"variantAttributes": { "Flavor": "Hazelnut", "Weight": 1000 },

"stock": 10,

"additionalPrice": 10,

"sku": "COFFEE-HAZELNUT-1KG"

}

]

}

* **Response**:

json

Copy code

{

"id": 101,

"name": "Ethiopian Coffee",

"category": "Packaged Foods",

"price": 25.00,

"dietaryTags": ["Vegan", "Organic"],

"description": "Premium Ethiopian coffee beans.",

"expiryDate": "2024-12-31",

"variants": [

{

"id": 201,

"variantAttributes": { "Flavor": "Vanilla", "Weight": 500 },

"stock": 20,

"additionalPrice": 5,

"sku": "COFFEE-VANILLA-500G"

},

{

"id": 202,

"variantAttributes": { "Flavor": "Hazelnut", "Weight": 1000 },

"stock": 10,

"additionalPrice": 10,

"sku": "COFFEE-HAZELNUT-1KG"

}

]

}

**4. Subscription Management**

**4.1 Create Subscription**

* **Endpoint**: POST /subscriptions
* **Request Body**:

json

Copy code

{

"name": "Monthly Coffee Box",

"products": [101],

"frequency": "Monthly",

"price": 50.00

}

* **Response**:

json

Copy code

{

"id": 301,

"name": "Monthly Coffee Box",

"products": [

{ "id": 101, "name": "Ethiopian Coffee" }

],

"frequency": "Monthly",

"price": 50.00

}