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Business Requirements

Problem Domain Language

Fashion brands frequently release limited edition clothing lines, which are available in restricted quantities and for a limited duration. These lines are sold across multiple channels, including online platforms, pop-up stores, and select retail partners. The primary challenges in managing these lines include:

1. Inventory Management: Ensuring accurate inventory levels across all sales channels to prevent overselling or stockouts.
2. Product Information Consistency: Keeping product details consistent across all channels, including descriptions, sizes, materials, and images.
3. Timely Updates: Quickly updating product information and inventory levels across all channels as changes occur.
4. Sales Performance Tracking: Monitoring sales across different channels to gauge the performance of limited edition lines.

Rules

1. Limited Edition Lines Rule: Each limited edition line must have a unique identifier, a name, a description, a launch date, and an end date.
2. Product Rule: Every product must belong to a specific limited edition line and can have multiple variants (e.g., size, color). Products must have details such as name, description, material, price, and category.
3. Product Variants Rule: Each variant of a product must have a unique identifier and specify attributes like size, color, and the current inventory count.
4. Sales Channels Rule: Products can be sold across multiple sales channels, including online platforms, exclusive pop-up stores, and select retail partners. Each channel must have its details like name, type, and location URL.
5. Channel Listings Rule: Products must be listed on sales channels with specifics such as listing URL, price (which can override the default product price), and the quantity of inventory allocated to that channel.
6. Sales Records Rule: Sales transactions for each product variant on each channel must be recorded, including the sale date and quantity sold.
7. Inventory Adjustments Rule: Adjustments to inventory (e.g., restocks, returns, defects) must be tracked for each product variant, including the date, quantity adjusted, and reason.
8. Categories Rule: Products must be categorized. Each category should have a unique identifier, a name, and a description.

Summary of Nouns/Verbs

Nouns

Limited Edition Line
Identifier
Name
Description
Launch date
End date
Product
Product Variants
Material
Price
Category
Sales Channels
Online Platforms
Exclusive Pop-Up Stores
Select Retail Partners
Type
Location URL
Channel Listings
Listing URL
Quantity of Inventory
Sales Records
Sale Date
Quantity Sold
Inventory Adjustments
Inventory
Quantity Adjusted
Reason
Categories

Verbs

Belong
Specify
Sold
Listed
Recorded
Adjustments
Tracked
Categorized

Aggregated Into Classes

LimitedEditionLines

Attributes: name, description, launch_date, end_date.

Relationships: 1 to many with Products.

Products

Attributes: name, description, price, material, date_added

Relationships: 1 to many with Product Variants.

ProductVariants

Attributes: size, color, inventory_count, popularity_score

Relationships: Many to many with Sales Channels through Channel Listings

SalesChannels

Attributes: name, type, location_url.

Relationships: Many to many with Product Variants through Channel Listings.

ChannelListings

Attributes: listing_url, price_override, quantity_listed, listing_date.

Relationships: One to many with SalesRecords

SalesRecords

Attributes: sale_date, quantity_sold

Relationships: Many to One relationship with ChannelListing

InventoryAdjustments

Attributes: adjustment_date, quantity_adjusted, reason

Relationships: Many to One relationship with ProductVariant

Categories

Attributes: name, description

Relationships: One to Many relationship where each category can be associated with multiple Products

Functionality to Implement with Redis:

The popularity_score attribute for ProductVariants will be represented as a score in a Redis sorted set. The sorted set will allow us to keep a leaderboard of products sorted by their popularity in real-time. This sorted set will be updated each time a product is viewed or sold.