MECE BREAKDOWN

MARCH 2025

1. Core Business Entities

1.1 Content Assets

- Film: Primary entertainment product
  - Contains details like title, description, release year, rental duration, rental rate, replacement cost, and rating
  - Connected to language and categories through relationships
  - Film details are also stored in film_text for search purposes

- Category: Film genre classification
  - Action, Animation, Children, Classics, Comedy, etc.
  - Connected to films through film_category junction table

- Language: Available audio languages for films
  - English, Italian, Japanese, Mandarin, French, German

1.2 Talent

- Actor: People who appear in films
  - First name, last name
  - Connected to films through film_actor junction table

1.3 Physical Asset Management

- Inventory: Physical DVD copies available for rental
  - Each record represents a specific physical copy of a film
  - Connected to films and stores
  - Each store can have multiple copies of the same film

2. Customer-Facing Business Operations

2.1 Locations

- Store: Physical retail locations
  - Each store has a manager (staff) and address
  - Only 2 stores in the database
- Staff: Employees who manage stores and handle transactions
  - Contains personal details like name, email, and login credentials
  - Each staff member is assigned to a specific

2.2 Customer Management

- Customer: Registered users who can rent films
  - Personal details like name, email, and activity status
  - Each customer has an associated address and is assigned to a primary store

3. Transaction Data

3.1 Rental Lifecycle

- Rentat: Records of films borrowed by customers
  - Tracks rental date, return date, inventory item, and staff who processed the transaction
  - Core business transaction data

- Payment: Financial transactions related to rentals
  - Records amount paid, payment date, and associated rental
  - Tracks which staff member processed the payment

4. Geographic Data Hierarchy

4.1 Location Reference

- Address: Detailed location information
  - Street address, district, postal code, phone number
  - Contains geographical coordinates (location field)
  - Connected to city

- City: Urban areas where addresses are located
  - Connected to country through country_id

- Country: Nations where cities are located
  - Provides the top level of the geographic hierarchy

5. Relationship Tables

- film_actor: Many-to-many relationship between films and actors
  - Shows which actors appeared in which films

- film_category: Many-to-many relationship between films and categories
  - Categorizes films by genre

6. Database Structure Analysis

6.1 Data Volume

- High-volume tables:
  - payment (16,044 records)
  - rental (16,044 records)
  - film_actor (5,462 records)
  - inventory (4,581 records)

- Medium-volume tables:
  - customer (599 records)
  - address (603 records)
  - city (600 records)
  - film_category (1,000 records)
  - film_text (1,000 records)

- Low-volume tables:
  - actor (200 records)
  - category (16 records)
  - language (6 records)
  - staff (2 records)
  - store (2 records)

6.2 Database Design Patterns

- Star Schema elements:
  - Fact tables: rental, payment
  - Dimension tables: film, customer, inventory, staff, store

- Normalization: Geographic data is properly normalized (country → city → address)

- Junction Tables: film_actor and film_category implement many-to-many relationships

7. Business Insights

7.1 Business Model

- Rental-based DVD business with physical store locations
- Films categorized by genre with different rental rates and durations
- Customer accounts tied to specific store locations
- Payment tracking for financial records

7.2 Operational Scale

- Consistent timestamp tracking with last_update field in all tables
- Geographic data includes precise location coordinates
- Staff credentials secured with password hashing
- Comprehensive film metadata including descriptions and special features

7.3 Data Management

- Small operation with only 2 physical stores and 2 staff members
- Medium-sized film library (~1,000 titles)
- Moderate customer base (~599 customers)
- Active rental business (16,044 rental and payment records)