# **VOD Business Rules**

## **Constraints & Integrity (conceptual)**

**Uniqueness**: Actor.email, Director.email, Customer.email must be unique.

**Validation domains**:

* Movie.rating ∈ {G, PG, 14A, 18A, R}
* Customer.postalCode matches L9L9L9 (CA format)
* Customer.phone matches 999.999.9999
* Card numbers are digits-only; card type ∈ {AX, MC, VS}
* Rental.customerRating ∈ {1,2,3,4,5}

**Temporal**:

* Rental.startedAt >= Rental.rentedAt (once viewing starts)
* Rental.expiresAt = Rental.startedAt + 24h and therefore > startedAt

**Card captures on Rental**: charged card values are stored on the **Rental** (even if different from the customer’s default).

**Category hierarchy**: a Category may have **zero or one** parent; a parent may have many children.

## **Assumptions**

**Identifiers**: Each entity has a single, surrogate identifier (e.g., movieId) at the conceptual level for clarity.

**Title Mandatory**: **Movie.title** is required; titles are **not** globally unique (remakes allowed).

**Prices & Currency**: priceSD and priceHD are stored in a single currency for the catalog (assumed CAD) and are non-negative; tax handling is out-of-scope.

**Boolean Flags**: newRelease, mostPopular, comingSoon are independent booleans (not a single enumerated state), as per “binary attributes”.

**Advisory Reuse**: Advisories are reusable descriptors (e.g., “Violence,” “Coarse Language”), hence a separate **Advisory** entity with M:N to **Movie**.

**Casting Attributes**: Only **roleName** is stored on the Actor–Movie association.

**Customer Address**: “Full address” is decomposed into standard lines/city/province/country/postalCode at logical design; conceptually it’s a single Address composite.

**Default Payment**: Customer has a “default” card on profile; **Rental** stores the actual card charged, which may differ from default.

**Wishlist Semantics**: A customer can add the same movie to the wishlist **once** at a time (we treat Customer–Movie as unique in Wishlist; *wishlistId* supports auditing).

## **Report Descriptions**

**Report 1**  
This report lists all customer rentals, showing which customer rented a movie, the specific movie rented, and the price paid. The query joins the **Rental**, **Customer**, and **Movie** tables to combine customer details, rental information, and movie titles. The results display rental ID, customer ID, customer name, movie ID, movie title, rental start and expiry dates, and the amount paid. The output is sorted by rental start date in descending order, ensuring that the most recent rentals appear first. This report provides a clear overview of customer activity and revenue generated from rentals.

**Report 2**   
This report summarizes rental activity by month and year. It uses the **EXTRACT** function to separate the rental date into year and month, then groups the data to calculate the total number of rentals and the total revenue collected for each month. The query outputs the year, month, rental count, and total revenue. Results are ordered chronologically by year and month, providing a clear view of rental trends and revenue performance over time. **Report 3**  
This report identifies movies that are both **new releases** and marked as **most popular**, giving insight into high-demand titles. The query filters the **Movie** table to only include movies that are flagged as new releases and popular, and ensures that they have a valid HD price. The output includes the movie ID, title, rating, HD price, and popularity indicators. Results are sorted first by **HD price in descending order** (to highlight the most premium titles) and then by **title in ascending order** for easier readability. This report helps analyze top-performing new release content and its pricing.

**Report 4**

This report identifies the **highest-spending customer within each movie category**. It combines the **Category**, **Movie\_Category**, **Rental**, and **Customer** tables to calculate total rental spending per customer per category. Using aggregate functions (**SUM**) and a subquery with **MAX**, the query isolates the customer who spent the most in each category. The output displays the category ID and name, the top customer’s ID and name (in uppercase), and their total spending (formatted as numeric with two decimals). Results are sorted by category, making it easy to compare spending leaders across different movie categories.

**Report 5**

This report calculates rental revenue across movie categories while also providing a grand total for all categories combined. It uses GROUPING SETS to generate both category-level and overall totals in a single query. The output includes the category ID, category name (with “Grand Total” shown when no category is specified), the number of rentals, and the total revenue formatted to two decimal places. Results are sorted by category ID, giving a structured breakdown of revenue contributions by category along with an overall summary for business insights.

**Report 6:**  
This report highlights customers whose total number of rentals exceeds the **overall average rental activity**. It first aggregates rental counts per customer, then compares each customer’s total against the average calculated across all customers. The output includes the customer ID, full name, and their total rental count. Results are sorted by rental count in descending order (to emphasize the most active customers) and then alphabetically by name. This report is useful for identifying **high-value or highly engaged customers**.