Chimes music (Songs buying/ renting business)

Project description and data requirements

Chimes music is a business application wherein the customers can buy or rent the songs from the application platform. The database should capture the following information about the songs, customers and the customer transactions.

Songs: The song is an entity and it should capture the data/ information about the songs that are available on the platform as well as the songs that are not yet available. There are basically two types of songs i.e. the songs that are available and the songs that are not available but can be requested by the customers. Both these sets are disjoint i.e. they do not overlap. The following key information should be captured about songs.

Songs:
1. Song name and song id (to uniquely identify the song)
2. Genre (we considering only 4 genres i.e. Rap, HipHop, Jazz, R&B)
3. Region (assuming there are only 3 regions(further information mentioned below))
4. Release date.

Songs that are available:
1. Available song id: Unique id for identifying every available song
2. Song duration (in seconds)
3. Purchase price
4. Rent price (this price will change every month)

Songs that are not available:
1. Unavailable song id: Unique id for identifying every unavailable song

Each song also has a unique song id whether it is available or not available.

Person: The entities such as Customer, Producers and Artists have some common personal attributes. These are stored as attributes of Person and the entities i.e. customer, producer and artist are subtypes of Person. The following information needs to be captured about every person.
1. PID (Person ID)
2. Name (composite attribute where the first name, middle name and last name are stored separately).

3. Date of birth.
4. Age(derived from DOB).
5. Gender
6. Phone number (can store more than one number).
7. Email id (more than one allowed).
8. Age group (derived from DOB). There are three age groups i.e. (age < 20), (20 <= age < 50) and (age >= 50).

Customer: Customer is an entity and buys/rents the songs. Customers can also like the songs that are available and request the songs that are not available. There is no upper or lower limit on the number of songs that can be liked by the customer. Following information needs to be captured about the customer.
1. Customer id, username, password, region.
2. Genre preference (multi valued attributes)

Customer transactions: A single customer can buy/rent multiple songs on the platform. There is no lower limit on the number of songs that a customer can buy/rent. For every transaction the following information must be captured.
1. Transaction type: Indicates the type of transaction i.e whether the customer is renting or buying the song.
2. Transaction id: Transaction id is required to indicate every transaction and to provide a receipt to the customer of the transaction if required.
3. Date and time of transaction.
4. Duration for which the song is rented by the customer (if it is rented else NA).
5. Payment mode used for transaction i.e. credit card, debit card or bank transfer.
6. Name of the bank/ credit card company used for the transaction.

Initially we are assuming that the price at which the songs were available to the customers in the previous data is the same for all songs. Depending on the report information of the previous month, we will be adjusting the price rates for the next month.

Request information: Other than just renting or buying the songs that are available on the platform, the customer can even request the songs that are not available on the platform. There is no upper or lower limit on the number of songs that a customer requests. When a customer requests a song, the following information is recorded.
1. Date and time of request
2. Request id

This data (along with some other as well) from the previous month will be used to decide the new songs to be added to the platform.

Along with songs and customer entities, there are a few more entities whose information needs to be captured such as producer and artist. There are two types of artist i.e. singer and composer. A singer can be a composer as well and a composer can be a singer as well. Basically these two sets of singer and composer are not disjoint but overlapping.

Producers: Producer is an entity and a producer should have produced at least one song. The following information must be captured for the producer entity.
1. Producer id to identify every producer uniquely.

Production information: As mentioned above, the producer produces at least one song. This information needs to be captured as well i.e. which producer produced which song and when. Thus, the following information also needs to be captured.
1. Production date.

Artist: Artist is an entity and every artist can be a singer, composer or both. Every artist should have sung at least one song or should have composed at least one song. Following artist information needs to be captured.
1. Artist id, region

Every customer can follow an artist (singer or composer). There is no upper or lower limit on the number of artists that a customer can follow.

Singing/ composing information: There are two types of artists that we are considering i.e. singer and composer. The singer sings the song and the composer composes the song. Every song should have at least one singer, one composer and one producer.

Business goals

Our basic business goal is to analyze the data from the previous quarter and make the business decisions of which song distribution rights should be purchased from the producers/ artists for customers in the next quarter.

1. Find the top 2 regions in which customers have bought/rented more songs in the last 4 months in order to make the top 20 requested songs available from those regions in the next month. (Here top means the highest count).

2. Generate a report to find the top 10 artists whose songs have the highest number of likes from the last quarter data in order to make their songs available from the requested songs list in the next month.

3. Find 20 songs with the maximum number of requests made by customers in order to make those songs available from the next quarter.

4. Generate a report of top 10 highest rented songs for every month of the last year in order to decide their monthly rent prices. If a song is rented the most during a specific month (for example, Christmas songs are rented only during the month of December and are not purchased often by the customers) then its price will be increased or decided accordingly.

5. Generate a report showing the number of purchases made from each bank or credit card companies so that we can have tie ups with them and provide customers with different offers if they use those banks for purchase.

6. Generate a report with the purchase count of every song in the last four months in order to increase the purchase price of top 25% of songs by 10%, decrease the price of bottom 25% of songs by 10% and middle 50% remain unchanged.

7. Generate a report to find the top 10 producers whose songs have the highest number of likes from the last quarter data in order to make their songs available from the requested songs list in the next month.

8. Find the age group of customers who have made less number of purchases compared to other two age groups in order to provide offers to that age group on purchasing their first 5 songs.

9. Find top 2 regions in which the max number of customers have purchased / rented songs till date to increase the number of servers and make more songs available in that region.

10. Find the top 10 singer names with highest no. of likes for their songs to arrange concerts/shows and collaborate with them.

11. Find top 5 songs with maximum number of requests to make those 5 songs available in the next quarter.

12. Find the age group of customers who have made less number of purchases compared to other age groups so that the age group buying/renting less songs can be given offers.(Note: There are are 2 age groups 1.Age<=35 2.Age> 35)
13. Write a query to find the customer name and the number of songs who have purchased at-least 2 songs so that offers can be given out to those customers.
14. List the number of songs that each producers have produced with singers from region 1
15. ROLLUP query to find the payment mode that has max count for buy i.e. purchase transaction 'B' and for rent transaction 'R'
    (To find the bank and the payment mode preferred by the customers for purchasing/renting the songs.)

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