Chimes music (Songs buying/ renting business)

Team Members:

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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 but can be requested by the customers. The following key information points are captured.

1. Song id: Unique id for identifying every song.
2. Song information: Song name. Genre, artist id, album, song duration (in seconds), Like count, Region (assuming there are only 3 regions(further information mentioned below)), Release date.
3. Lyrics.
4. Composer name.
5. Producer name.
6. Song available to rent/ buy (yes/no) (derived from Chimes song purchase history).
7. Purchase price
8. Rent price (this price will change every month)

Here the “song available to rent/ buy” field can be easily derived from the “song prices” table as it contains the information about only those songs whose distribution rights are purchased by the company. If the corresponding song is not available in the “song prices” table then it is not available.

Customer: Customer is an entity and customer buys/rents the songs.Following information needs to be captured about the customer.

1. Personal information such as Name (composite attribute where the first name, middle name and last name are stored separately), date of birth, age(derived

from DOB), phone number (can store more than one number), email id (more than one allowed).
2. Age group (derived from DOB). There are three age groups i.e. (age < 20), (20 <= age < 50) and (age >= 50).
3. Customer id, username, password
4. Lists for each customer (multi valued attributes): Genre preference, artist preference, region, artist followed.

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. Song id of the song that is bought or rented
3. Date and time
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. Song id of the song that is requested by the customer
3. Region of the requesting customer

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 has produced at least one song. Every producer manages an artist for a particular song. The following information must be captured for the producer entity.

1. Personal information such as Name (composite attribute where the first name, middle name and last name are stored separately), date of birth, age(derived from DOB), phone number (can store more than one number), email id (more than one allowed).
2. 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. Song id to indicate the song that was produced by the producer
2. Production date.

Artist: Artist is an entity and every artist can be a singer, composer or both. Every artist should sing at least one song or should compose at least one song. Following artist information needs to be captured.

1. Personal information such as Name (composite attribute where the first name, middle name and last name are stored separately), date of birth, age(derived from DOB), phone number (can store more than one number), email id (more than one allowed).
2. Artist id, region
3. Follower count (derived from customer). Customers follow an artist. There is no upper or lower limit on the number of artists that can be followed by a customer.

Singing/ composing information: As mentioned above, an artist either sings or composes a song. This information needs to be captured.

1. Type indicating whether the artist has composed or sang the song.
2. Song id and date when the song was sang or composed
3. Album name/ id

Artist management information: Every artist, whether a singer or composer, is managed by the producer. This information also needs to be captured. Here we are assuming that an artist can be managed by only one producer and on the other hand, a single producer can manage multiple artists.

1. Song id, artist id, producer id.

This can be a ternary relation as it involves interaction between three entities but it can be converted to binary relation by including some more information during the Phase 2.

Album: When an artist sings/ composes a song, he/she also creates an album. Every song belongs to one album only. The existence of an album depends on the existence of the artist and song. If a song is removed or an artist is removed then the album will also be removed. The album information that needs to be captured is as follows.

1. Album name, album id, album genre (only one and not multiple values genres).
2. Created by and list of songs contained

Chimes purchases the song distribution rights from the producers only and earns profit by renting or selling them to the customers. So along with capturing the data of customer transactions with Chimes, the transactions of Chimes purchasing the song distribution rights from the artist/ producer should also be captured.

Chimes purchase history: When Chimes purchases song rights for distribution, the information must be recorded for making different business decisions. The information can be as follows:

1. Song name/id of song whose rights are purchased by Chimes
2. Date and time of purchase
3. Producer name/id from whom the rights are purchased
4. Purchase price

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 different offers if they use those banks for purchase.
6. Generate a report with the purchase count of every song 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.