

MUSIC STORE ANALYSIS SQL PROJECT



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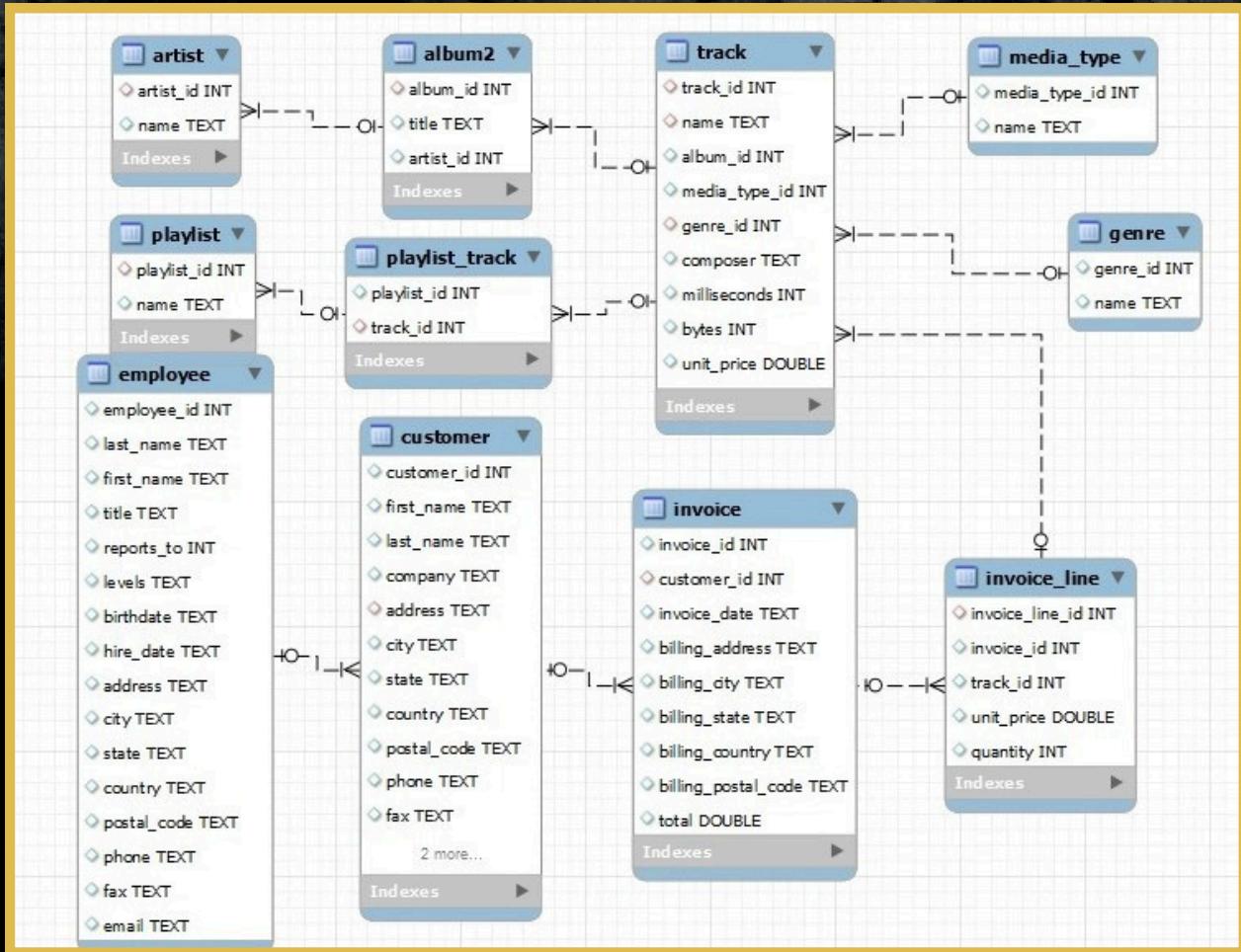


OBJECTIVE

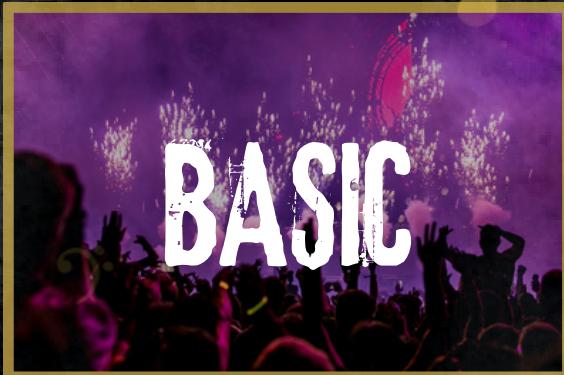


The main objective of this project is to extract and analyze key business insights from a music store's database. This involves querying the database to gather information about employees, invoices, customers, music genres, and sales. The project aims to answer specific questions related to the store's operations, such as identifying the senior most employee, determining the countries and cities with the highest invoices, and recognizing the best customers and artists. Additionally, the project seeks to identify popular music genres in different countries and analyze customer spending patterns to support business decisions, promotional events, and targeted marketing strategies.

DATABASE SCHEMA



LEVEL OF QUERIES



Includes:

Select, Group By, Order
By, Limit, Desc

Includes:

Joins, Group By, Order
By, Limit



Includes:

CTE (Common Table
Expression)



BUSINESS PROBLEMS

BASIC

Who is the senior most employee based on the job title?

Input

```
SELECT title, first_name, last_name  
FROM employee  
ORDER BY levels DESC  
LIMIT 1;
```

Output

title	first_name	last_name
Senior General Manager	Mohan	Madan

The senior most employee is Mohan Madan. He is a Senior General Manager.

Which countries have the most Invoices?

Input

```
SELECT COUNT(*) AS 'Total Invoices', billing_country as 'Country'  
FROM invoice  
GROUP BY billing_country  
ORDER BY 'Total Invoices' DESC  
LIMIT 1;
```

Output

Total Invoices	Country
131	USA
76	Canada
61	Brazil
50	France
41	Germany

USA and Canada have the most invoices with total number of invoices are 131 and 76 respectively.

What are the top 3 values of total invoices?

Input

```
SELECT round(total, 2) AS 'Total Amount'  
FROM invoice  
ORDER BY total DESC  
LIMIT 3;
```

Output

Total Amount
23.76
19.8
19.8

The top 3 values of total invoices are 23.76, 19.8 and 19.8.

Which city has the best customers? We would like to throw a promotional Music Festival in the city we made the most money. Write a query that returns one city that has the highest sum of invoice totals. Return both the city name & sum of all invoice totals.

Input

```
SELECT billing_city as City, ROUND(SUM(total), 2) AS 'Invoice Total'  
FROM invoice  
GROUP BY City  
ORDER BY 'Invoice Total' DESC  
LIMIT 1;
```

Output

City	Invoice Total
Prague	273.24

Prague is the city that has the highest sum of invoice totals i.e. 273.24.

Who is the best customer? The customer who has spent the most money will be declared the best customer. Write a query that returns the person who has spent the most money.

Input

```
SELECT customer.customer_id, first_name, last_name, ROUND(SUM(total), 2)
AS total_spending
FROM customer
JOIN invoice ON customer.customer_id = invoice.customer_id
GROUP BY customer.customer_id
ORDER BY total_spending DESC
LIMIT 1;
```

Output

customer_id	first_name	last_name	total_spending
5	František	Wichterlová	144.54

The customer who has spent the most money is František Wichterlová. He spent total of 144.54.

Moderate

Write query to return the email, first name, last name, & Genre of all Rock Music listeners. Return your list ordered alphabetically by email starting with A.

Input

```
SELECT DISTINCT email,first_name, last_name
FROM customer
JOIN invoice ON customer.customer_id = invoice.customer_id
JOIN invoice_line ON invoice.invoice_id = invoice_line.invoice_id
WHERE track_id IN(
    SELECT track_id FROM track
    JOIN genre ON track.genre_id = genre.genre_id
    WHERE genre.name LIKE 'Rock'
)
ORDER BY email;
```

Output

email	first_name	last_name
aaronmitchell@yahoo.ca	Aaron	Mitchell
aler0@uol.com.br	Alexandre	Rocha
astrid.gruber@apple.at	Astrid	Gruber
bjorn.hansen@yahoo.no	BjÃ¸rn	Hansen
camille.bernard@yahoo.fr	Camille	Bernard
daan_peeters@apple.be	Daan	Peeters

There are total 58 Rock music listeners. Few Names are shown according to the alphabetical order by email starting with A.

Let's invite the artists who have written the most rock music. Write a query that returns the Artist name and total track count of the top 10 rock bands.

Input

```
SELECT artist.artist_id, artist.name, COUNT(artist.artist_id) AS 'Number of songs'  
FROM track  
JOIN album2 ON album2.album_id = track.album_id  
JOIN artist ON artist.artist_id = album2.artist_id  
JOIN genre ON genre.genre_id = track.genre_id  
WHERE genre.name LIKE 'Rock'  
GROUP BY artist.artist_id  
ORDER BY 'Number of songs' DESC  
LIMIT 10;
```

Output

artist_id	name	Number of songs
1	AC/DC	18
3	Aerosmith	15
8	Audioslave	14
22	Led Zeppelin	14
4	Alanis Morissette	13
5	Alice In Chains	12
23	Frank Zappa & Captain Beefheart	9
2	Accept	4

The Artist name and total track count of the top 10 rock bands are given with top brand is AC/DC and total number of songs of this brand are 18.

Return all the track names that have a song length longer than the average song length. Return the Name and Milliseconds for each track. Order by the song length with the longest songs listed first.

Input

```
SELECT name,milliseconds  
FROM track  
WHERE milliseconds > (  
    SELECT AVG(milliseconds) AS avg_track_length  
    FROM track )  
ORDER BY milliseconds DESC;
```

Output

name	milliseconds
How Many More Times	711836
Advance Romance	677694
Sleeping Village	644571
You Shook Me(2)	619467
Talkin' 'Bout Women Obviously	589531

From the output it is clear that the longest song is "How Many More Times" having song length of 711836 milliseconds.

ADVANCED

Find how much amount spent by each customer on artists? Write a query to return customer name, artist name and total spent.

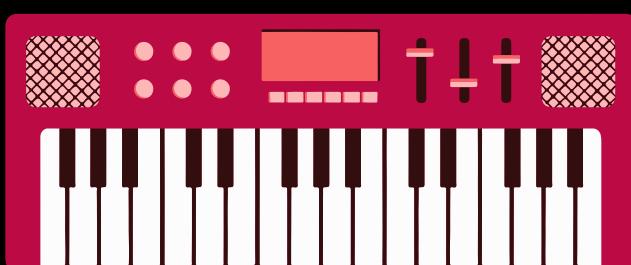
Input

```
WITH best_selling_artist AS (
    SELECT artist.artist_id AS artist_id, artist.name AS artist_name,
    SUM(invoice_line.unit_price*invoice_line.quantity) AS total_sales
    FROM invoice_line
    JOIN track ON track.track_id = invoice_line.track_id
    JOIN album2 ON album2.album_id = track.album_id
    JOIN artist ON artist.artist_id = album2.artist_id
    GROUP BY 1
    ORDER BY 3 DESC
    LIMIT 1
)
SELECT c.customer_id, c.first_name, c.last_name, bsa.artist_name,
SUM(il.unit_price*il.quantity) AS 'Amount Spent'
FROM invoice i
JOIN customer c ON c.customer_id = i.customer_id
JOIN invoice_line il ON il.invoice_id = i.invoice_id
JOIN track t ON t.track_id = il.track_id
JOIN album2 alb ON alb.album_id = t.album_id
JOIN best_selling_artist bsa ON bsa.artist_id = alb.artist_id
GROUP BY 1,2,3,4
ORDER BY 5 DESC;
```

Output

customer_id	first_name	last_name	artist_name	Amount Spent
54	Steve	Murray	AC/DC	17.82
53	Phil	Hughes	AC/DC	10.89
21	Kathy	Chase	AC/DC	10.89
49	StanisÅaw	WÅ³jcik	AC/DC	9.9
1	LuÅ-s	GonÃ§alves	AC/DC	7.9200000000000001
24	Frank	Ralston	AC/DC	7.9200000000000001
31	Martha	Silk	AC/DC	3.96
16	Frank	Harris	AC/DC	2.9699999999999998
42	Wyatt	Girard	AC/DC	2.9699999999999998
6	Helena	HolÃ½	AC/DC	2.9699999999999998
38	Niklas	SchrÃ¶der	AC/DC	2.9699999999999998
35	Madalena	Sampaio	AC/DC	2.9699999999999998

The highest amount spent is 17.82 by the customer Steve Murray having customer id 54.



We want to find out the most popular music Genre for each country. We determine the most popular genre as the genre with the highest amount of purchases. Write a query that returns each country along with the top Genre. For countries where the maximum number of purchases is shared return all Genres.

Input

```
WITH popular_genre AS
(
    SELECT COUNT(invoice_line.quantity) AS purchases, customer.country, genre.name, genre.genre_id,
    ROW_NUMBER() OVER(PARTITION BY customer.country ORDER BY COUNT(invoice_line.quantity) DESC) AS RowNo
    FROM invoice_line
    JOIN invoice ON invoice.invoice_id = invoice_line.invoice_id
    JOIN customer ON customer.customer_id = invoice.customer_id
    JOIN track ON track.track_id = invoice_line.track_id
    JOIN genre ON genre.genre_id = track.genre_id
    GROUP BY 2,3,4
    ORDER BY 2 ASC, 1 DESC
)
SELECT * FROM popular_genre WHERE RowNo <= 1
```



Output

purchases	country	name	genre_id	RowNo
1	Argentina	Rock	1	1
18	Australia	Rock	1	1
6	Austria	Rock	1	1
5	Belgium	Rock	1	1
26	Brazil	Rock	1	1
57	Canada	Rock	1	1
7	Chile	Rock	1	1
14	Czech Republic	Rock	1	1
6	Denmark	Rock	1	1
6	Finland	Rock	1	1
26	France	Rock	1	1
28	Germany	Rock	1	1

The most popular music Genre for Argentina is Rock music. Similarly, for Australia is also Rock music. The songs of this genre are purchased 18 times in Australia.

Write a query that determines the customer that has spent the most on music for each country. Write a query that returns the country along with the top customer and how much they spent. For countries where the top amount spent is shared, provide all customers who spent this amount.

Input

```
WITH Customer_with_country AS (
    SELECT customer.customer_id, first_name, last_name, billing_country, SUM(total) AS total_spending,
    ROW_NUMBER() OVER(PARTITION BY billing_country ORDER BY SUM(total) DESC) AS RowNo
    FROM invoice
    JOIN customer ON customer.customer_id = invoice.customer_id
    GROUP BY 1,2,3,4
    ORDER BY 4 ASC,5 DESC)
SELECT * FROM Customer_with_country WHERE RowNo <= 1
```

Output

customer_id	first_name	last_name	billing_country	total_spending	RowNo
56	Diego	Gutiérrez	Argentina	39.6	1
55	Mark	Taylor	Australia	81.18	1
7	Astrid	Gruber	Austria	69.3	1
8	Daan	Peeters	Belgium	60.38999999999999	1
1	Luís	Gonçalves	Brazil	108.8999999999998	1
3	François	Tremblay	Canada	99.99	1

The customer that has spent the most on music for Argentina is Diego Gutiérrez. He spent 39.6. Similarly, for Australia it is Mark Taylor. He spent 81.18.

KEY INSIGHTS

- Mohan Madan, holding the position of Senior General Manager, is the senior-most employee in the company.
- The USA and Canada lead in the number of invoices, with 131 and 76 invoices respectively, indicating major markets.
- The highest invoice amounts are 23.76, 19.8, and 19.8, highlighting the largest sales transactions in the dataset.
- Prague stands out as the city with the highest sum of invoice totals, amounting to 273.24, making it a prime candidate for hosting a promotional Music Festival.
- František Wichterlová is the top customer, having spent a total of 144.54, signifying a valuable customer for personalized rewards and loyalty programs.
- There are 58 identified Rock music listeners, providing a focused target audience for marketing campaigns. Their details include email, first name, last name, and genre.

- AC/DC is the leading rock band with 18 tracks, followed by other top bands. This insight is useful for collaborations and promotions with popular artists.
- The track "How Many More Times" is the longest song at 711836 milliseconds, offering insight into customer preferences for longer music tracks.
- Steve Murray spent the highest amount, 17.82, on a single artist, which can inform decisions on exclusive artist promotions.
- Rock music is the most popular genre in Argentina and Australia, purchased 18 times in Australia, showing regional music preferences.
- In Argentina, Diego Gutiérrez spent the most, totaling 39.6. In Australia, Mark Taylor is the top spender with 81.18. These insights help in identifying high-value customers in different regions for targeted marketing efforts.

RECOMMENDATIONS

- Focus promotional efforts and marketing campaigns in the USA and Canada, as these countries have the highest number of invoices. Tailor these promotions to the preferences and behaviors of customers in these regions.
- Organize a promotional Music Festival or other high-profile events in Prague, as it has the highest sum of invoice totals. This could enhance customer engagement and boost sales in the city.
- Develop personalized loyalty programs and rewards for top spenders like František Wichterlová. This will help retain high-value customers and encourage repeat purchases.
- Leverage the list of 58 Rock music listeners for targeted marketing campaigns. Personalized emails and promotions can drive engagement and sales among this specific customer segment.
- Consider collaborations or special promotions with top Rock music artists like AC/DC. Featuring popular artists in campaigns can attract their fans and increase sales.

- Given that Rock music is the most popular genre in multiple countries, increase the availability and variety of Rock music tracks in the store. This can cater to the existing demand and attract more customers.
- Consider offering more tracks similar in length to "How Many More Times," the longest track in the dataset. Analyzing preferences for song length can help optimize the music catalog.
- Segment customers based on their spending patterns on different artists. This can help in designing artist-specific promotions and personalized recommendations, enhancing customer satisfaction and sales.
- Develop regional marketing strategies based on the most popular genres in each country. For instance, promote Rock music heavily in Argentina and Australia where it is most popular.

*Thank
You*