



Music Company Data Analysis

SQL Fundamentals

BY - PRATHMESH S. POPHALE

Introduction: Overview of the project and its goals

“Music Company Data Analysis” aims to help music companies make data-driven decisions by analyzing key metrics such as sales, streaming numbers, and customer demographics using MySQL. By leveraging advanced data analysis techniques, we can provide insights into which artists, albums, and genres are performing well, as well as identify potential areas for growth and improvement. Our goal is to empower music companies to make informed decisions that will help them stay competitive in an ever-changing industry, using the power and flexibility of MySQL to manage and analyze their data.”

Data sources: Description of the data sources used in the project

The dataset used in the "Music Company Data Analysis" project was obtained from Kaggle, a popular platform for finding and sharing datasets.

The dataset includes information such as the song title, artist name, album name, release date, customers details, and various features.

| customer_id | first_name | last_name | company | address | city | state | country | postal_code | phone | fax | email | support_rep_id |
|-------------|------------|------------|-----------------------|------------------------------|------|-------|-----------|-------------|---------------------|-----|------------------|----------------|
| 1 | Luis | Gonzalez | Embarcadero | Av. Brigada São Paulo SP | | | Brazil | 12227-000 | +55 (11) 31 1111 | | luis@brasil.com | 3 |
| 2 | Louise | Walter | | Therese St. Stuttgart | | | Germany | 70374 | +49 0711 384222 | | louise@de.com | 5 |
| 3 | Frank | Jones | Tremblay | 1408 rue B. Montréal QC | | | Canada | H2G 1A7 | +1 (514) 721-4711 | | frank@ca.com | 3 |
| 4 | Björn | Hansen | Ullensaker | | | | Norway | 171 | +47 22 44 22 22 | | bjorn@no.com | 4 |
| 5 | František | Wichterle | jetbrains | Klanova W. Prague | | | Czech Rep | 14700 | +420 2 412 420 2 41 | | frantisek@cz.com | 4 |
| 6 | Helena | Hodžová | | Růžka 31 Prague | | | Czech Rep | 14300 | +420 2 4177 0449 | | heleny@cz.com | 5 |
| 7 | Astrid | Gruber | | Rotenturm Vienna | | | Austria | 1010 | +43 01 5134505 | | astrid@at.com | 5 |
| 8 | Daan | Peters | | GROENINGEN | | | Belgium | 1000 | +32 02 219 03 03 | | daan@be.com | 4 |
| 9 | Kara | Nelson | | SÅnder by Copenhagen | | | Denmark | 1720 | +453 3333 9991 | | kara@dk.com | 4 |
| 10 | Eduardo | Martins | Woodstock | Rua Dr. Fa. São Paulo SP | | | Brazil | 01007-010 | +55 (11) 31 1111 | | eduardo@br.com | 4 |
| 11 | Almeida | Rocha | Banco do Av. Paulista | São Paulo SP | | | Brazil | 01310-200 | +55 (11) 31 1111 | | almeida@br.com | 5 |
| 12 | Roberto | Almeida | Ristor | Prado Pío Rio de Jan RJ | | | Brazil | 20040-020 | +55 (21) 21 1111 | | roberto@br.com | 3 |
| 13 | Fernando | Ramos | Qe 7 Block | Brasília DF | | | Brazil | 71020-077 | +55 (61) 31 1111 | | fernando@br.com | 4 |
| 14 | Mark | Philips | Telus | 8210 111 Edmonton AB | | | Canada | 166 2C7 | +1 (780) 41 1111 | | mark@ca.com | 5 |
| 15 | Jennifer | Peterson | Rogers | Case 700 W. Per Vancouver BC | | | Canada | V6C 1G8 | +1 (604) 61 1111 | | jennifer@ca.com | 3 |
| 16 | Frank | Harris | Google Inc | 1500 Amphitheatre | | | USA | 94043-135 | +1 (650) 251 1500 | | frank@us.com | 4 |
| 17 | Jack | Smith | Microsoft | 1 Microsoft | | | USA | 98052-830 | +1 (425) 81 1111 | | jack@us.com | 5 |
| 18 | Michelle | Brooks | 627 Broad | New York NY | | | USA | 10012-201 | +1 (212) 81 1111 | | michelle@us.com | 3 |
| 19 | Tim | Goyer | Apple Inc | 1 Infinite | | | USA | 95014 | +1 (408) 91 1111 | | tim@us.com | 3 |
| 20 | Dan | Miller | 341 Oak | Mountain CA | | | USA | 94040-111 | +1 (950) 944 3558 | | dan@us.com | 4 |
| 21 | Kathy | Chase | 801 W 4th | Reno NV | | | USA | 89503 | +1 (775) 223-7665 | | kath@us.com | 5 |
| 22 | Heather | Leacock | 120 S Oran | Orlando FL | | | USA | 32801 | +1 (407) 999-7788 | | heather@us.com | 4 |
| 23 | John | Gordon | 69 Salem | Boston MA | | | USA | 02113 | +1 (617) 522-1333 | | john@us.com | 4 |
| 24 | Frank | Ralston | 102 E Super | Chicago IL | | | USA | 60611 | +1 (312) 332-3232 | | frank@us.com | 3 |
| 25 | Victor | Stevens | 333 N. Fra | Madison WI | | | USA | 53703 | +1 (608) 257-0997 | | victor@us.com | 5 |
| 26 | Richard | Cunningham | 2211 W Bk | Ft Worth TX | | | USA | 76110 | +1 (817) 924-7272 | | rich@us.com | 4 |

| artist_id | first_name | last_name | company | address | city | state | country | postal_code | phone | fax | email | support_rep_id |
|-----------|------------|-----------|---------|---------|------|-------|-----------|-------------|-------|-----|---------------|----------------|
| 1 | AC/DC | | | | | | Australia | | | | acdc@au.com | 3 |
| 2 | Accept | | | | | | Germany | | | | accept@de.com | 5 |
| 3 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 4 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 5 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 6 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 7 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 8 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 9 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
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| 13 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 14 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 15 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 16 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 17 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
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| 25 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 26 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 27 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |

| album_id | first_name | last_name | company | address | city | state | country | postal_code | phone | fax | email | support_rep_id |
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| 25 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
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| track_id | first_name | last_name | company | address | city | state | country | postal_code | phone | fax | email | support_rep_id |
|----------|------------|-----------|---------|---------|------|-------|-----------|-------------|-------|-----|---------------|----------------|
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| 5 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
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| 7 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 8 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 9 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 10 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 11 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
| 12 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |
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| 27 | 2 Deep | | | | | | USA | | | | 2deep@us.com | 3 |

Data analysis:

To analyze the data to identify patterns, trends, and insights. This involved using MySQL to query the data and generate visualizations of the results.

One of the primary tools used in the project was MySQL Workbench, a popular database management tool that provides a range of features for creating, managing, and querying databases.

In the "Music Company Data Analysis " project, several key query questions were developed to guide the data analysis process. These questions were designed to help us identify trends and patterns in the data, and to gain insights into the music industry.

Questions & Solving Approach:

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

```
# Q.1. Who is the senior most employee based on job title?
```

```
select * from employee
order by levels Desc
limit 1;
```

Result -

| | employee_id | last_name | first_name | title | reports_to | levels | birthdate | hire_date | address | city | state | country | postal_code | phone |
|---|-------------|-----------|------------|-----------------|------------|--------|------------------|------------------|---------------------|----------|-------|---------|-------------|-------------------|
| ▶ | 1 | Adams | Andrew | General Manager | 9 | L6 | 18-02-1962 00:00 | 14-08-2016 00:00 | 11120 Jasper Ave NW | Edmonton | AB | Canada | T5K 2N1 | +1 (780) 428-9482 |

2. Which countries have the most Invoices?

Q.2. Which countries have the most Invoices?

```
select count(*) As Total_Invoices , billing_country from invoice
group by billing_country
order by total_invoices desc;
```

| | Total_Invoices | billing_country |
|---|----------------|-----------------|
| ▶ | 131 | USA |
| | 76 | Canada |
| | 61 | Brazil |
| | 50 | France |
| | 41 | Germany |
| | 30 | Czech Republic |
| | 29 | Portugal |
| | 28 | United Kingdom |
| | 21 | India |
| | 13 | Ireland |
| | 13 | Chile |
| | 11 | Finland |
| | 11 | Spain |
| | 10 | Poland |
| | 10 | Denmark |
| | 10 | Australia |
| | 10 | Hungary |
| | 10 | Sweden |
| | 10 | Netherlands |

3. What are top 3 values of total invoice?

Q.3. What are top 3 values of total invoice?

```
select total from invoice
order by total desc
limit 3;
```

| | total |
|---|--------------------|
| ▶ | 23.759999999999998 |
| | 19.8 |
| | 19.8 |

4. # Q.4. 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

```
select billing_city As City , sum(total) As Total_Invoicess from invoice
group by billing_city
order by Total_Invoicess desc
limit 1;
```

| | City | Total_Invoicess |
|---|--------|--------------------|
| ▶ | Prague | 273.24000000000007 |

5. 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

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

| | customer_id | first_name | last_name | total_spending |
|---|-------------|------------|---------------|--------------------|
| ▶ | 5 | František | Wichterlovský | 144.54000000000002 |

6. 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

```
select distinct c.email, c.first_name , c.last_name, g.name as Genre from customer c
join invoice i on c.customer_id = i.customer_id
join invoice_line il on i.invoice_id = il.invoice_id
join track t on il.track_id = t.track_id
join genre g on t.genre_id = g.genre_id
where g.name = "Rock"
order by email;
```

| | email | first_name | last_name | Genre |
|---|-----------------------------|------------|-----------|-------|
| ▶ | aaronmitchell@yahoo.ca | Aaron | Mitchell | Rock |
| | alero@uol.com.br | Alexandre | Rocha | Rock |
| | astrid.gruber@apple.at | Astrid | Gruber | Rock |
| | bjorn.hansen@yahoo.no | Bjørn | Hansen | Rock |
| | camille.bernard@yahoo.fr | Camille | Bernard | Rock |
| | daan_peeters@apple.be | Daan | Peeters | Rock |
| | diego.gutierrez@yahoo.ar | Diego | Gutiérrez | Rock |
| | dmiller@comcast.com | Dan | Miller | Rock |
| | dominiquelefebvre@gmail.com | Dominique | Lefebvre | Rock |
| | edfrancis@yahoo.ca | Edward | Francis | Rock |
| | eduardo@woodstock.com.br | Eduardo | Martins | Rock |
| | ellie.sullivan@shaw.ca | Ellie | Sullivan | Rock |
| | emma_jones@hotmail.com | Emma | Jones | Rock |
| | enrique_munoz@yahoo.es | Enrique | Muñoz | Rock |
| | fernadaramos4@uol.com.br | Fernanda | Ramos | Rock |

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

```
SELECT ar.name AS Artist, COUNT(*) AS TrackCount FROM artist ar
JOIN album2 al ON ar.artist_id = al.artist_id
JOIN track t ON al.album_id = t.album_id
JOIN genre g ON t.genre_id = g.genre_id
WHERE g.name = 'Rock'
GROUP BY ar.name
ORDER BY TrackCount DESC
LIMIT 10;
```

| | Artist | TrackCount |
|---|---------------------------------|------------|
| ▶ | AC/DC | 18 |
| | Aerosmith | 15 |
| | Audioslave | 14 |
| | Led Zeppelin | 14 |
| | Alanis Morissette | 13 |
| | Alice In Chains | 12 |
| | Frank Zappa & Captain Beefheart | 9 |
| | Accept | 4 |

8. 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

```
select track.name As Name , milliseconds As Length from track
where milliseconds > (SELECT AVG(milliseconds) FROM track)
order by milliseconds Desc;
```

| | Name | Length |
|---|--|--------|
| ▶ | How Many More Times | 711836 |
| | Advance Romance | 677694 |
| | Sleeping Village | 644571 |
| | You Shook Me(2) | 619467 |
| | Talkin' 'Bout Women Obviously | 589531 |
| | Stratus | 582086 |
| | No More Tears | 555075 |
| | The Alchemist | 509413 |
| | Wheels Of Confusion / The Straightener | 494524 |
| | Book Of Thel | 494393 |
| | You Oughta Know (Alternate) | 491885 |
| | Terra | 482429 |
| | Snoopy's search-Red baron | 456071 |
| | Sozinho (Hitmakers Classic Mix) | 436636 |
| | Master Of Puppets | 436453 |
| | Stone Crazy | 433397 |

track 82 ×

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

```
SELECT customer.first_name AS Customer_FName, customer.last_name AS Customer_Name, artist.name AS Artist_Name, SUM(invoice.total) AS Total_Spent
FROM customer
JOIN invoice ON customer.customer_id = invoice.customer_id
JOIN invoice_line ON invoice.invoice_id = invoice_line.invoice_id
JOIN track ON invoice_line.track_id = track.track_id
JOIN album2 ON track.album_id = album2.album_id
JOIN artist ON album2.artist_id = artist.artist_id
GROUP BY Customer_FName, Customer_Name, Artist_Name
ORDER BY Total_Spent DESC;
```

| | Customer_FName | Customer_Name | Artist_Name | Total_Spent |
|---|----------------|---------------|----------------------|--------------------|
| ▶ | Jennifer | Peterson | Aerosmith | 222.74999999999994 |
| | Mark | Taylor | Aerosmith | 222.74999999999994 |
| | Fernanda | Ramos | Antônio Carlos Jobim | 194.04000000000002 |
| | Leonie | Köhler | Audioslave | 194.04000000000002 |
| | Edward | Francis | Alanis Morissette | 167.31000000000003 |
| | Emma | Jones | Alanis Morissette | 167.31000000000003 |
| | Steve | Murray | AC/DC | 162.36 |
| | João | Fernandes | Alanis Morissette | 144.53999999999996 |
| | Victor | Stevens | Alice In Chains | 142.55999999999997 |
| | Stanisław | Wójcik | Buddy Guy | 119.79 |
| | Phil | Hughes | AC/DC | 108.90000000000002 |
| | Kathy | Chase | AC/DC | 93.06000000000002 |
| | Stanisław | Wójcik | AC/DC | 89.09999999999998 |
| | François | Tremblay | Apocalyptica | 63.36000000000001 |

10. 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

```
# Using Common Table Expression (CTE)
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;
```

| | 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 |
| | 4 | Hungary | Rock | 1 | 1 |
| | 13 | India | Rock | 1 | 1 |
| | 2 | Ireland | Rock | 1 | 1 |
| | 3 | Italy | Rock | 1 | 1 |
| | 6 | Netherlands | Rock | 1 | 1 |
| | 2 | Norway | Metal | 3 | 1 |

Result 85 ×

11. 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

```
WITH Customer_with_country AS (  
    SELECT billing_country AS Country, customer.customer_id, first_name, last_name, 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
```

| | Country | customer_id | first_name | last_name | total_spending | RowNo |
|---|----------------|-------------|------------|------------|--------------------|-------|
| ▶ | Portugal | 34 | João | Fernandes | 102.96000000000001 | 1 |
| | France | 42 | Wyatt | Girard | 99.99 | 1 |
| | Brazil | 1 | Luís | Gonçalves | 108.89999999999998 | 1 |
| | Austria | 7 | Astrid | Gruber | 69.3 | 1 |
| | Argentina | 56 | Diego | Gutiérrez | 39.6 | 1 |
| | Finland | 44 | Terhi | Hämäläinen | 79.2 | 1 |
| | Norway | 4 | Bjørn | Hansen | 72.27000000000001 | 1 |
| | United Kingdom | 53 | Phil | Hughes | 98.01 | 1 |
| | Sweden | 51 | Joakim | Johansson | 75.24 | 1 |
| | Hungary | 45 | Ladislav | Kovács | 78.21 | 1 |
| | Italy | 47 | Lucas | Mancini | 50.49 | 1 |
| | Spain | 50 | Enrique | Muñoz | 98.01 | 1 |
| | Denmark | 9 | Kara | Nielsen | 37.61999999999999 | 1 |
| | Ireland | 46 | Hugh | O'Reilly | 114.83999999999997 | 1 |
| | India | 58 | Manoj | Pareek | 111.86999999999999 | 1 |

Result 86 x

Some of the key insights that we gained from our analysis included:

1. The music industry is highly competitive, with a small number of artists and labels dominating the market.
2. Album sales are an important indicator of success in the music industry, but other factors such as genre popularity and streaming data are also important.
3. The popularity of different genres of music can vary significantly over time, and understanding these trends is important for predicting future success.
4. Successful artists and labels tend to have a consistent track record of success over time, suggesting that long-term planning and strategy are important in the music industry.

Conclusion

The "Music Company Data Analysis " project provided a valuable opportunity to explore the music industry and gain insights into the factors that contribute to success in the industry. Through a structured approach to developing research questions and analyzing the data, we were able to identify key trends and patterns in the data, and to gain a deep understanding of the complex dynamics of the music industry.