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Digital Music Store Analysis

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Introduction

Project Overview:

This project analyzes music store data to answer a series of questions using PostgreSQL. The analysis covers various aspects of the store's operations, including employee hierarchy, sales distribution, customer behavior, and music preferences.

Objectives:

Employee Analysis:

- Identify the senior-most employee based on job title.

Sales Distribution:

- Determine which countries have the most invoices.
- Identify the top three invoice values.
- Find the city with the highest sum of invoice totals to plan a promotional event.

Customer Insights:

- Recognize the best customer by the total money spent.

Music Preferences:

- List Rock music listeners with their email, first name, last name, and genre.
- Invite the top 10 rock bands by track count.
- List all tracks longer than the average song length, ordered by length.

Advanced Analysis:

- Calculate the amount spent by each customer on different artists.
- Determine the most popular music genre in each country based on purchases.
- Identify the top spending customer in each country.

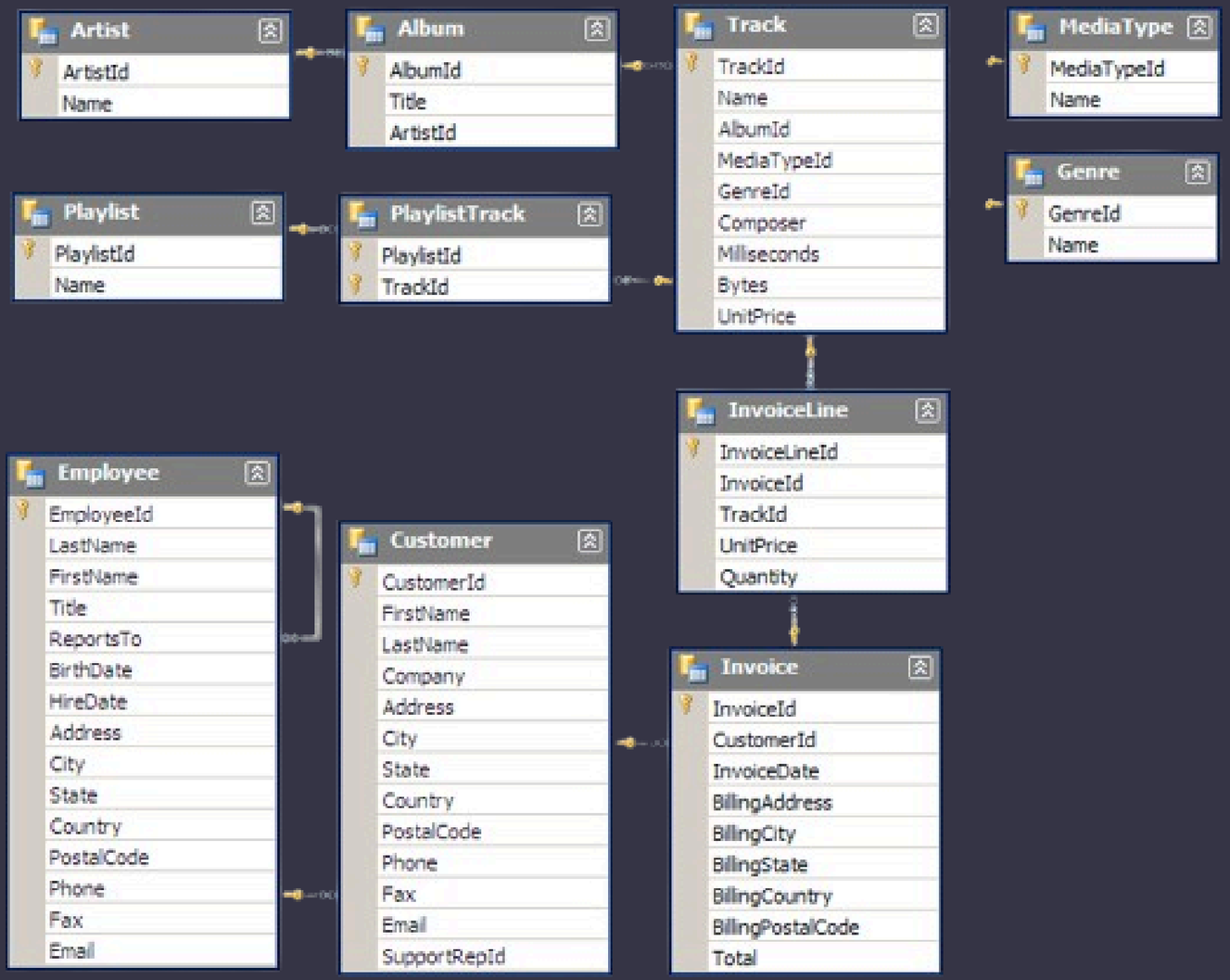
Key Outcomes

This project provides insights into:

1. Employee Hierarchy:
- Understand the organizational structure and identify key personnel.
2. Sales Trends:
- Recognize high-performing countries and cities to focus marketing efforts.
- Identify the highest value invoices to understand significant sales.
3. Customer Behavior:
- Determine the best customers to tailor loyalty programs.
- Understand customer preferences in music genres and artists.
4. Music Analysis:
- Identify popular music tracks and genres for targeted promotions.
- Recognize top rock bands for potential collaborations.
5. Data-Driven Decisions:
- Enable better planning for promotional events based on sales data.
- Inform strategies for customer retention and engagement through detailed spending analysis.

Schema

- Album
- Artist
- Customer
- Employee
- Genre
- Invoice
- Invoice_Line
- Media_Type
- Playlist
- Playlist_Track



MOST SENIOR EMPLOYEE

```
Q1: Who is the senior most employee based on job title?

select * from employee
ORDER BY levels desc
limit 1
```

01

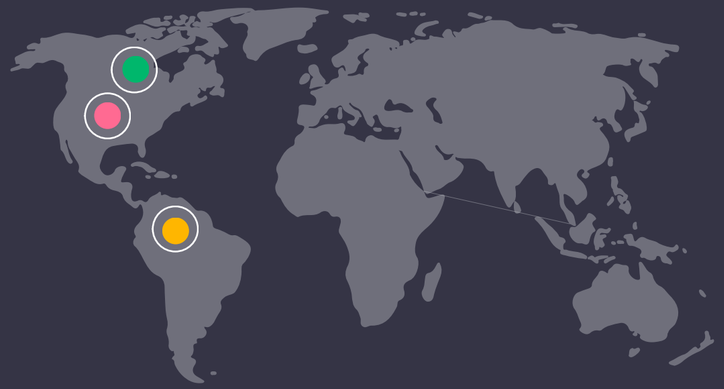
employee_id [PK] character varying (50)	last_name character (50)	first_name character (50)	title character varying (50)	reports_to character varying (30)	levels character varying
9	Madan	Mohan	Senior General Manag...	[null]	L7

Madan Mohan

COUNTRY WITH MOST INVOICE

```
Q2: Which countries have the most Invoices?

select COUNT(*) as c, billing_country
from invoice
group by billing_country
order by c desc
```



02

USA

	c bigint	billing_country character varying (30)
1	131	USA
2	76	Canada
3	61	Brazil
4	50	France
5	41	Germany
6	30	Czech Republic

TOP 3 VALUES OF TOTAL INVOICE

```
Q3: What are top 3 values of total invoice

SELECT total FROM invoice
order by total desc
limit 3
```

03

23.7, 19.8, 19.8

	total double precision
1	23.759999999999998
2	19.8
3	19.8

CITY THAT HAVE THE BEST CUSTOMERS

```
select SUM(total) as invoice_total, billing_city
from invoice
group by billing_city
order by invoice_total desc
```

04

Prague

invoice_total double precision	billing_city character varying (3
273.240000000000	Prague
169.29	Mountain View
166.32	London
158.4	Berlin

WHO IS THE BEST CUSTOMER

```sql
select customer.customer_id, customer.first_name, customer.last_name, SUM(invoice.total) as total
from customer
JOIN invoice ON customer.customer_id = invoice.customer_id
GROUP BY customer.customer_id
ORDER BY total DESC
limit 1
```

customer_id [PK] integer	first_name character (50)	last_name character (50)	total double precision
5	R	Madhav	144.540000000000

05

R Madhav

EMAIL, FIRST NAME, LAST NAME OF ALL ROCK GENRE MUSIC LISTNER

```sql
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;
```

06

aaron**@ya** Aaron Mitchell

(format)

email character varying (50)	first_name character (50)	last_name character (50)
aaronmitchell@yahoo...	Aaron	Mitchell
alero@uol.com.br	Alexandre	Rocha
astrid.gruber@apple.at	Astrid	Gruber
bjorn.hansen@yahoo....	Bjørn	Hansen
camille.bernard@yah...	Camille	Bernard

(top 5 results are shown)

ARTISTS WHO HAVE WRITTEN THE MOST ROCK MUSIC IN OUR DATASET

```sql
SELECT artist.artist_id, artist.name,COUNT(artist.artist_id) AS number_of_songs
FROM track
JOIN album ON album.album_id = track.album_id
JOIN artist ON artist.artist_id = album.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;
```

(returns top 10)

07

Led Zeppelin

	artist_id [PK] character varying (50)	name character varying (120)
1	22	Led Zeppelin
2	150	U2
3	58	Deep Purple
4	90	Iron Maiden
5	118	Pearl Jam

(top 5 results are shown)

ALL THE TRACK NAME THAT HAVE A SONG LENGTH LONGER THAN THE AVERAGE SONG LENGTH

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

08

Led Zeppelin

	name character varying (150)	milliseconds integer
1	Occupation / Precipice	5286953
2	Through a Looking Glass	5088838
3	Greetings from Earth, Pt. 1	2960293
4	The Man With Nine Lives	2956998
5	Battlestar Galactica, Pt. 2	2956081

(top 5 results are shown)

AMOUNT SPENT BY EACH CUSTOMER ON BEST SELLING ARTIST

```sql
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 album ON album.album_id = track.album_id
	JOIN artist ON artist.artist_id = album.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 album 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;
```

09

	customer_id integer	first_name character (50)	last_name character (50)	artist_name character varying (120)	amount_spent double precision
1	46	Hugh	O'Reilly	Queen	27.7199999999999
2	38	Niklas	Schröder	Queen	18.81
3	3	François	Tremblay	Queen	17.82

Top-selling Artist: Queen

Top-spending Customer: Hugh O'Reilly

(top 3 results are shown)

MOST POPULAR MUSIC GENRE IN EACH COUNTRY BASED ON PURCHASES

```sql
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
```

10

	purchases bigint	country character varying (50)	name character varying (120)	genre_id character varying (50)	rowno bigint
1	17	Argentina	Alternative & Punk	4	1
2	34	Australia	Rock	1	1
3	40	Austria	Rock	1	1

(top 3 alphabetically)

Argentina: Alternative & Punk

MOST POPULAR MUSIC GENRE IN EACH COUNTRY BASED ON PURCHASES

```
WITH RECURSIVE
        customter_with_country AS (
                SELECT customer.customer_id,first_name,last_name,billing_country,SUM(total) AS total_spending
                FROM invoice
                JOIN customer ON customer.customer_id = invoice.customer_id
                GROUP BY 1,2,3,4
                ORDER BY 2,3 DESC),

        country_max_spending AS(
                SELECT billing_country,MAX(total_spending) AS max_spending
                FROM customter_with_country
                GROUP BY billing_country)

SELECT cc.billing_country, cc.total_spending, cc.first_name, cc.last_name, cc.customer_id
FROM customter_with_country cc
JOIN country_max_spending ms
ON cc.billing_country = ms.billing_country
WHERE cc.total_spending = ms.max_spending
ORDER BY 1;
```

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	billing_country character varying (30)	total_spending double precision	first_name character (50)	last_name character (50)	customer_id integer
1	Argentina	39.6	Diego	Gutiérrez	56
2	Australia	81.18	Mark	Taylor	55
3	Austria	69.3	Astrid	Gruber	7
4	Belgium	60.38999999999999	Daan	Peeters	8
5	Brazil	108.89999999999998	Luís	Gonçalves	1

Country: Argentina

Top-spending Customer: Diego Gutierrez

(top 5 results are shown)

Key Findings

📋 Most Senior Employee: Madan Mohan

🎸 Best Selling Artist: Queen

🎵 Most Favorite Genre: ROCK

💵 Best Customer: R Madhav

🏆 Top Spending Customer for Best Selling Artist: Hugh O’Reilly

🏴 Top Country by Invoices: USA

🌆 Top City by Total Amount: PRAQUE, 273.24

Thank you

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