

MUSIC ANALYSIS

using sql

→ **SQL: Where Data Meets Decision-Making**

→ Transforming Numbers into Narratives



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Why SQL Matters

- **A striking visual or statistic about the impact of data on business decisions.**
- “Data is the new oil.” – Clive Humby



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Meet the Leader!

→ ***Who is the senior-most employee?***

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

	first_name	last_name
▶	Andrew	Adams



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Invoice Trends Worldwide

→ ***Which countries have the most invoices?***

```
SELECT COUNT(*) AS NO_of_invoices, billing_country FROM invoice GROUP BY  
billing_country ORDER BY NO_of_invoices DESC;
```

	NO_of_invoices	billing_country
▶	131	USA
	76	Canada
	61	Brazil
	50	France
	41	Germany
	30	Czech Republic
	29	Portugal
	28	United Kingdom



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Revenue Highlights

→ ***What are the top 3 values of total invoices?***

```
SELECT total FROM invoice ORDER BY total DESC LIMIT 3;
```

	total
▶	23.759999999999998
	19.8
	19.8



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The Festival City!

→ ***Which city should host our next music festival?***

```
SELECT billing_country, SUM(total) AS total FROM invoice GROUP BY  
billing_country ORDER BY total DESC LIMIT 1;
```

	<u>billing_country</u>	total
▶	USA	1040.489999999998



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The Best Customer

→ **Who's the best customer based on spending?**

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

	customer_id	first_name	last_name	total_spending
▶	5	František	Wichterlová	144.54000000000002



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Rock On! Who Listens to Rock?

→ **Who are our Rock music fans?**

```
SELECT DISTINCT customer.first_name, customer.last_name, customer.email  
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 genre ON track.genre_id = genre.genre_id  
WHERE genre.name = 'Rock' ORDER BY customer.email;
```

	first_name	last_name	email
▶	Aaron	Mitchell	aaronmitchell@yahoo.ca
	Alexandre	Rocha	alero@uol.com.br
	Astrid	Gruber	astrid.gruber@apple.at
	Björn	Hansen	bjorn.hansen@yahoo.no
	Camille	Bernard	camille.bernard@yahoo.fr
	Daan	Peeters	daan_peeters@apple.be
	Diego	Gutiérrez	diego.gutierrez@yahoo.ar
	Dan	Miller	dmiller@comcast.com
	Dominique	Lefebvre	dominiquelefrevre@gmail.com
	Edward	Francis	edfrancis@yahoo.ca
	Eduardo	Martins	eduardo@woodstock.com.br



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Top Rock Bands

→ **Which rock bands are topping the charts?**

```
SELECT artist.artist_id, artist.name, COUNT(track.track_id) AS 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 = 'Rock' GROUP BY artist.artist_id, artist.name  
ORDER BY songs DESC LIMIT 10;
```



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	artist_id	name	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

Tracks Longer than Average Length

→ ***Retrieve track names and lengths exceeding the average length.***

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

	track_id	name	milliseconds
▶	350	How Many More Times	711836
	357	Advance Romance	677694
	154	Sleeping Village	644571
	349	You Shook Me(2)	619467
	204	Talkin' 'Bout Women Obviously	589531
	127	Stratus	582086
	142	No More Tears	555075
	192	The Alchemist	509413
	156	Wheels Of Confusion / The Straightener	494524
	187	Book Of Thel	494393
	50	You Oughta Know (Alternate)	491885



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Amount Spent by Each Customer on Artists

→ **Find how much each customer spent on the best-selling artist.**

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 artist.artist_id, artist.name
 ORDER BY total_sales 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 c.customer_id, c.first_name, c.last_name, bsa.artist_name
 ORDER BY amount_spent DESC;
```

	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	Stanisław	Wąjcik	AC/DC	9.9
	1	Luís	Gonçalves	AC/DC	7.920000000000001
	24	Frank	Ralston	AC/DC	7.920000000000001
	31	Martha	Silk	AC/DC	3.96
	16	Frank	Harris	AC/DC	2.9699999999999998
	42	Wyatt	Girard	AC/DC	2.9699999999999998
	6	Helena	Holáš	AC/DC	2.9699999999999998
	38	Niklas	Schröder	AC/DC	2.9699999999999998
	35	Madalena	Sampaio	AC/DC	2.9699999999999998
	44	Terhi	Hämäläinen	AC/DC	2.9699999999999998
	9	Kara	Nielsen	AC/DC	1.98
	34	João	Fernandes	AC/DC	1.98
	57	Luis	Rojas	AC/DC	1.98
	27	Patrick	Gray	AC/DC	1.98



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Most Popular Genre for Each Country

→ **Determine the most popular genre based on purchases per country.**

```
WITH popular_genre AS (
    SELECT COUNT(invoice_line.quantity) AS purchase,
        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 customer.country, genre.name, genre.genre_id
)
SELECT * FROM popular_genre WHERE RowNO = 1;
```

	purchase	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



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Top Customer Spending for Each Country

→ **Identify the customer that spent the most on music for each country.**

```
WITH customer_with_country AS (
    SELECT c.customer_id,
        c.first_name,
        c.last_name,
        i.billing_country,
        SUM(i.total) AS total_spending,
        ROW_NUMBER() OVER (PARTITION BY i.billing_country ORDER BY
        SUM(i.total) DESC) AS rowno
    FROM invoice i
    JOIN customer c ON c.customer_id = i.customer_id
    GROUP BY c.customer_id, c.first_name, c.last_name, i.billing_country
)
SELECT * FROM customer_with_country WHERE rowno = 1;
```



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	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
	57	Luis	Rojas	Chile	97.02000000000001	1
	5	František	Wichterlová	Czech Republic	144.54000000000002	1
	9	Kara	Nielsen	Denmark	37.61999999999999	1
	44	Terhi	Härmäläinen	Finland	79.2	1
	42	Wyatt	Girard	France	99.99	1
	37	Fynn	Zimmermann	Germany	94.05000000000001	1
	45	Ladislav	Kovács	Hungary	78.21	1
	58	Manoj	Pareek	India	111.86999999999999	1
	46	Hugh	O'Reilly	Ireland	114.83999999999997	1
	47	Lucas	Mancini	Italy	50.49	1