

APPLE ITUNES MUSIC ANALYSIS

OVERVIEW:

- ✓ Business insights SQL question and answers
- ✓ Business insights summary

BUSINESS INSIGHTS SQL QUESTION AND ANSWERS

EXPLORATORY DATA ANALYSIS

Q1. Customer Overview: Which country generates the most revenue per customer and where is the highest customer concentration?

-- 1. Customer Overview

```
SELECT
country,
COUNT(*) as total_customers,
ROUND(AVG(total), 2) as avg_invoice_value
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY country
ORDER BY total_customers DESC;
```

Result Grid				Filter Rows:	Export:
	country	total_customers	avg_invoice_value		
▶	USA	131	7.94		
	Canada	76	7.05		
	Brazil	61	7.01		
	France	50	7.78		
	Germany	41	8.16		
	Czech Republic	30	9.11		
	Portugal	29	6.38		
	United Kingdom	28	8.77		
	India	21	8.72		
	Ireland	13	8.83		
	Chile	13	7.46		
	Finland	11	7.20		
	Spain	11	8.91		
	Poland	10	7.62		
	Denmark	10	3.76		
	Australia	10	8.12		
	Hungary	10	7.82		
	Sweden	10	7.52		
	Netherlands	10	6.53		
	Norway	9	8.03		
	Italy	9	5.61		
	Austria	9	7.70		
	Belgium	7	8.63		
	Argentina	5	7.92		

Q2. Revenue Trends by Month: What are the monthly revenue trends and the percentage contribution to total annual revenue?

-- 2. Revenue Trends by Month

```
SELECT  
YEAR(invoice_date) as year,  
MONTH(invoice_date) as month,  
SUM(total) as monthly_revenue,  
ROUND(SUM(total) / SUM(SUM(total)) OVER (PARTITION BY  
YEAR(invoice_date)) * 100, 2) as revenue_percentage  
FROM invoice  
GROUP BY YEAR(invoice_date), MONTH(invoice_date)
```

ORDER BY year, month;

	year	month	monthly_revenue	revenue_percentage
▶	2017	1	126.72	10.54
	2017	2	141.57	11.78
	2017	3	103.95	8.65
	2017	4	142.56	11.86
	2017	5	104.94	8.73
	2017	6	75.24	6.26
	2017	7	108.90	9.06
	2017	8	88.11	7.33
	2017	9	107.91	8.98
	2017	10	79.20	6.59
	2017	11	94.05	7.83
	2017	12	28.71	2.39
	2018	1	183.15	15.96
	2018	2	116.82	10.18
	2018	3	148.50	12.94
	2018	4	63.36	5.52
	2018	5	76.23	6.64
	2018	6	92.07	8.02
	2018	7	85.14	7.42
	2018	8	106.92	9.32
	2018	9	56.43	4.92
	2018	10	78.21	6.82
	2018	11	42.57	3.71
	2018	12	98.01	8.54
	2019	1	85.14	6.97
	2019	2	59.40	4.86
	2019	3	125.73	10.29

Q3. Top Selling Artists: Who are the highest-grossing artists and how many tracks have they sold?

-- 3. Top Selling Artists

```

SELECT
a.name as artist_name,
COUNT(il.track_id) as tracks_sold,
SUM(il.unit_price * il.quantity) as total_revenue
FROM ARTIST_DATA a
JOIN ALBUMS_DATASET al ON a.ARTIST_ID = al.ARTIST -- Changed to al.ARTIST
JOIN track t ON al.ALBUM_ID = t.album_id
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY a.name
ORDER BY total_revenue DESC

```

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LIMIT 10;



Result Grid	Filter Rows:		
artist_name	tracks_sold	total_revenue	
AC/DC	124	122.76	
Aerosmith	80	79.20	
Alanis Morissette	75	74.25	
Black Sabbath	68	67.32	
Alice In Chains	59	58.41	
Audioslave	43	42.57	
Apocalyptica	37	36.63	
Buddy Guy	23	22.77	
Antônio Carlos Jobim	18	17.82	
Black Label Society	15	14.85	

Q4. Customer Engagement by Support Rep: Which sales representatives are managing the highest-spending customers and contributing most to total sales?


-- 4. Customer Engagement by Support Rep

```
SELECT
e.first_name,
e.last_name,
COUNT(DISTINCT c.customer_id) as customers_supported,
SUM(i.total) as total_sales,
ROUND(AVG(i.total), 2) as avg_sale_value
FROM employee_data e
JOIN customer c ON e.employee_id = c.support_rep_id
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY e.employee_id
ORDER BY total_sales DESC;
```

Result Grid



Filter Rows:

Export:



Wrap Cell Cont

	first_name	last_name	customers_supported	total_sales	avg_sale_value
▶	Jane	Peacock	21	1731.51	8.17
	Margaret	Park	20	1584.00	7.40
	Steve	Johnson	18	1393.92	7.41

Q5. Playlist Popularity: Which playlists are most frequently included in purchases and how many tracks do they contain?

-- 5. Playlist Popularity

```
SELECT
p.name as playlist_name,
COUNT(pt.track_id) as total_tracks,
COUNT(DISTINCT il.invoice_id) as times_purchased
```

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```
FROM playlist p
JOIN playlist_track pt ON p.playlist_id = pt.playlist_id
LEFT JOIN invoice_line il ON pt.track_id = il.track_id
GROUP BY p.playlist_id
ORDER BY times_purchased DESC;
```

	playlist_name	total_tracks	times_purchased
▶	Music	6241	614
	Music	6241	614
	90's Music	2534	468
	Heavy Metal Classic	62	51
	Classical	104	42
	Grunge	46	33
	Classical 101 - Next Steps	35	16
	Classical 101 - The Basics	36	15
	Classical 101 - Deep Cuts	33	12
	Brazilian Music	39	5
	TV Shows	213	3
	TV Shows	213	3
	On-The-Go 1	2	2
	Music Videos	1	0

ADVANCED ANALYTICS

Q1. Customer Segmentation using RFM Analysis: What is the segment distribution of customers based on their purchase frequency, recency, and monetary value?

-- 1. Customer Segmentation using RFM Analysis

```
WITH customer_rfm AS (
SELECT
c.customer_id,
c.first_name,
c.last_name,
DATEDIFF(MAX(i.invoice_date), CURRENT_DATE()) as recency,
COUNT(i.invoice_id) as frequency,
SUM(i.total) as monetary,
NTILE(4) OVER (ORDER BY DATEDIFF(MAX(i.invoice_date),
CURRENT_DATE()) DESC) as r_score,
NTILE(4) OVER (ORDER BY COUNT(i.invoice_id)) as f_score,
NTILE(4) OVER (ORDER BY SUM(i.total)) as m_score
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY c.customer_id
)
```

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```
SELECT
customer_id,
first_name,
last_name,
recency,
frequency,
monetary,
r_score,
f_score,
m_score,
CASE
WHEN r_score = 4 AND f_score >= 3 AND m_score >= 3 THEN
'Champions'
WHEN r_score >= 3 AND f_score >= 3 THEN 'Loyal Customers'
WHEN r_score >= 3 AND m_score >= 3 THEN 'Potential Loyalists'
WHEN r_score = 2 THEN 'Recent Customers'
WHEN r_score = 1 THEN 'At Risk'
ELSE 'Need Attention'
END as customer_segment
FROM customer_rfm
ORDER BY monetary DESC;
```

Result Grid Filter Rows: Export: Wrap Cell Content:										
	customer_id	first_name	last_name	recency	frequency	monetary	r_score	f_score	m_score	customer_segment
▶	5	František	Wichterlová	-1925	18	144.54	2	4	4	Recent Customers
	6	Helena	Holý	-1945	12	128.70	3	4	4	Loyal Customers
	46	Hugh	O'Reilly	-1895	13	114.84	1	4	4	At Risk
	58	Manoj	Pareek	-2045	13	111.87	3	4	4	Loyal Customers
	1	Luis	Gonçalves	-2036	13	108.90	3	4	4	Loyal Customers
	13	Fernanda	Ramos	-1909	15	106.92	2	4	4	Recent Customers
	34	João	Fernandes	-1955	13	102.96	3	4	4	Loyal Customers
	42	Wyatt	Girard	-1910	11	99.99	2	3	4	Recent Customers
	3	François	Tremblay	-2105	9	99.99	4	1	4	Potential Loyalists
	53	Phil	Hughes	-1877	11	98.01	1	3	4	At Risk
	50	Enrique	Muñoz	-2080	11	98.01	4	3	4	Champions
	17	Jack	Smith	-1987	12	98.01	3	4	4	Loyal Customers
	57	Luis	Rojas	-2081	13	97.02	4	4	4	Champions
	20	Dan	Miller	-1878	12	95.04	1	4	4	At Risk
	37	Fynn	Zimmermann	-1971	10	94.05	3	2	3	Potential Loyalists
	22	Heather	Leacock	-1938	12	92.07	2	4	3	Recent Customers
	30	Edward	Francis	-1937	13	91.08	2	4	3	Recent Customers
	21	Kathy	Chase	-1898	11	91.08	1	3	3	At Risk
	26	Richard	Cunningham	-1897	12	86.13	1	4	3	At Risk
	36	Hannah	Schneider	-2144	11	85.14	4	3	3	Champions

Q2. Top Performing Tracks with Window Functions: Which tracks generated the most revenue globally and how do they rank within their specific genres?

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-- 2. Top Performing Tracks with Window Functions

```
WITH track_performance AS (  
  SELECT  
    t.track_id,  
    t.name as track_name,  
    a.name as artist_name,  
    al.title as album_name,  
    COUNT(il.invoice_line_id) as times_purchased,  
    SUM(il.unit_price * il.quantity) as total_revenue,  
    RANK() OVER (ORDER BY SUM(il.unit_price * il.quantity) DESC) as  
    revenue_rank,  
    DENSE_RANK() OVER (PARTITION BY g.genre_id ORDER BY  
    SUM(il.unit_price * il.quantity) DESC) as genre_rank  
  FROM track t  
  JOIN ALBUMS_DATASET al ON t.album_id = al.ALBUM_ID  
  JOIN ARTIST_DATA a ON al.ARTIST = a.ARTIST_ID -- Changed to al.ARTIST  
  JOIN genre g ON t.genre_id = g.genre_id  
  JOIN invoice_line il ON t.track_id = il.track_id  
  GROUP BY t.track_id)  
SELECT  
  track_name,  
  artist_name,  
  album_name,  
  times_purchased,  
  total_revenue,  
  revenue_rank,  
  genre_rank  
FROM track_performance  
WHERE revenue_rank <= 20
```

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ORDER BY revenue_rank;

track_name	artist_name	album_name	times_purchased	total_revenue	revenue_rank	genre_rank
Put The Finger On You	AC/DC	For Those About To Rock We Salute You	13	12.87	1	1
Night Of The Long Knives	AC/DC	For Those About To Rock We Salute You	10	9.90	2	2
Snowballed	AC/DC	For Those About To Rock We Salute You	9	8.91	3	3
Mary Jane	Alanis Morissette	Jagged Little Pill	9	8.91	3	3
Behind The Wall Of Sleep	Black Sabbath	Black Sabbath	9	8.91	3	1
Dog Eat Dog	AC/DC	Let There Be Rock	8	7.92	6	4
For Those About To Rock (We Salute You)	AC/DC	For Those About To Rock We Salute You	8	7.92	6	4
Deuces Are Wild	Aerosmith	Big Ones	8	7.92	6	4
Sunshine	Alice In Chains	Facelift	8	7.92	6	4
Evil Woman	Black Sabbath	Black Sabbath	8	7.92	6	2
Hell Ain't A Bad Place To Be	AC/DC	Let There Be Rock	7	6.93	11	5
Breaking The Rules	AC/DC	For Those About To Rock We Salute You	7	6.93	11	5
Angel	Aerosmith	Big Ones	7	6.93	11	5
The Other Side	Aerosmith	Big Ones	7	6.93	11	5
You Oughta Know	Alanis Morissette	Jagged Little Pill	7	6.93	11	5
I Know Somethin (Bout You)	Alice In Chains	Facelift	7	6.93	11	5
Bad Boy Boogie	AC/DC	Let There Be Rock	7	6.93	11	5
Overdose	AC/DC	Let There Be Rock	7	6.93	11	5
The Unforgiven	Apocalyptica	Plays Metallica By Four Cellos	7	6.93	11	3
Sleeping Village	Black Sabbath	Black Sabbath	7	6.93	11	3

Q3. Monthly Sales Growth Analysis: What is the monthly revenue growth percentage and trend for the analyzed period?

-- 3. Monthly Sales Growth Analysis

```
WITH monthly_sales AS (
SELECT
YEAR(invoice_date) as year,
MONTH(invoice_date) as month,
SUM(total) as monthly_revenue,
LAG(SUM(total)) OVER (ORDER BY YEAR(invoice_date),
MONTH(invoice_date)) as prev_month_revenue
FROM invoice
GROUP BY YEAR(invoice_date), MONTH(invoice_date))
SELECT year, month, monthly_revenue, prev_month_revenue,
ROUND((((monthly_revenue - prev_month_revenue) / prev_month_revenue)
* 100, 2) as growth_percentage,
CASE
WHEN monthly_revenue > prev_month_revenue THEN 'Growth'
WHEN monthly_revenue < prev_month_revenue THEN 'Decline'
ELSE 'Stable'
END as trend
FROM monthly_sales
```

ORDER BY year, month;

Result Grid						
		Filter Rows:	Export:		Wrap Cell Content:	
	year	month	monthly_revenue	prev_month_revenue	growth_percentage	trend
▶	2017	1	126.72	NULL	NULL	Stable
	2017	2	141.57	126.72	11.72	Growth
	2017	3	103.95	141.57	-26.57	Decline
	2017	4	142.56	103.95	37.14	Growth
	2017	5	104.94	142.56	-26.39	Decline
	2017	6	75.24	104.94	-28.30	Decline
	2017	7	108.90	75.24	44.74	Growth
	2017	8	88.11	108.90	-19.09	Decline
	2017	9	107.91	88.11	22.47	Growth
	2017	10	79.20	107.91	-26.61	Decline
	2017	11	94.05	79.20	18.75	Growth
	2017	12	28.71	94.05	-69.47	Decline
	2018	1	183.15	28.71	537.93	Growth
	2018	2	116.82	183.15	-36.22	Decline
	2018	3	148.50	116.82	27.12	Growth
	2018	4	63.36	148.50	-57.33	Decline
	2018	5	76.23	63.36	20.31	Growth
	2018	6	92.07	76.23	20.78	Growth
	2018	7	85.14	92.07	-7.53	Decline
	2018	8	106.92	85.14	25.58	Growth

Q4. Customer Lifetime Value (CLV) Analysis: What is the average customer lifetime value and how is the value segment distributed?

-- 4. Customer Lifetime Value (CLV) Analysis

```
WITH customer_purchases AS (
SELECT
c.customer_id,
c.first_name,
c.last_name,
COUNT(i.invoice_id) as total_purchases,
SUM(i.total) as total_spent,
DATEDIFF(MAX(i.invoice_date), MIN(i.invoice_date)) as
customer_tenure_days,
CASE
WHEN DATEDIFF(MAX(i.invoice_date), MIN(i.invoice_date)) = 0
THEN SUM(i.total)
ELSE SUM(i.total) / (DATEDIFF(MAX(i.invoice_date),
MIN(i.invoice_date)) / 30.0)
END as monthly_value
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
```

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```
GROUP BY c.customer_id
)
SELECT
customer_id,
first_name,
last_name,
total_purchases,
total_spent,
customer_tenure_days,
monthly_value,
NTILE(5) OVER (ORDER BY monthly_value DESC) as value_segment
FROM customer_purchases
ORDER BY monthly_value DESC;
```

Result Grid Filter Rows: Export: Wrap Cell Content: IA								
	customer_id	first_name	last_name	total_purchases	total_spent	customer_tenure_days	monthly_value	value_segment
▶	5	František	Wichterlová	18	144.54	1263	3.433254	1
	6	Helena	Holý	12	128.70	1149	3.360313	1
	58	Manoj	Pareek	13	111.87	1240	2.706532	1
	17	Jack	Smith	12	98.01	1146	2.565707	1
	1	Luis	Gonçalves	13	108.90	1275	2.562353	1
	3	François	Tremblay	9	99.99	1180	2.542119	1
	54	Steve	Murray	9	79.20	949	2.503688	1
	50	Enrique	Muñoz	11	98.01	1181	2.489670	1
	13	Fernanda	Ramos	15	106.92	1290	2.486512	1
	57	Luis	Rojas	13	97.02	1172	2.483447	1
	46	Hugh	O'Reilly	13	114.84	1393	2.473223	1
	34	João	Fernandes	13	102.96	1326	2.329412	1
	36	Hannah	Schneider	11	85.14	1110	2.301081	2
	8	Daan	Peeters	7	60.39	791	2.290392	2
	37	Fynn	Zimmermann	10	94.05	1294	2.180448	2
	11	Alexandre	Rocha	10	69.30	973	2.136691	2
	42	Wyatt	Girard	11	99.99	1406	2.133499	2
	22	Heather	Leacock	12	92.07	1321	2.090916	2
	53	Phil	Hughes	11	98.01	1420	2.070634	2
	39	Camille	Bernard	9	79.20	1155	2.057143	2

Q5. Genre Popularity Over Time: Which music genres are most popular in terms of tracks

-- 5. Genre Popularity Over Time

```
SELECT
g.name as genre_name,
YEAR(i.invoice_date) as year,
QUARTER(i.invoice_date) as quarter,
COUNT(il.invoice_line_id) as tracks_sold,
SUM(il.unit_price * il.quantity) as genre_revenue,
ROUND(SUM(il.unit_price * il.quantity) / SUM(SUM(il.unit_price *
il.quantity)))
```

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```
OVER (PARTITION BY YEAR(i.invoice_date),  
QUARTER(i.invoice_date)) * 100, 2) as market_share  
FROM genre g  
JOIN track t ON g.genre_id = t.genre_id  
JOIN invoice_line il ON t.track_id = il.track_id  
JOIN invoice i ON il.invoice_id = i.invoice_id  
GROUP BY g.genre_id, YEAR(i.invoice_date), QUARTER(i.invoice_date)  
ORDER BY year, quarter, genre_revenue DESC;
```

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

	genre_name	year	quarter	tracks_sold	genre_revenue	market_share
	Rock	2017	1	44	43.56	70.97
	Metal	2017	1	11	10.89	17.74
	Alternative & Punk	2017	1	4	3.96	6.45
	Blues	2017	1	2	1.98	3.23
	Latin	2017	1	1	0.99	1.61
	Rock	2017	2	45	44.55	90.00
	Metal	2017	2	2	1.98	4.00
	Jazz	2017	2	1	0.99	2.00
	Latin	2017	2	1	0.99	2.00
	Blues	2017	2	1	0.99	2.00
	Rock	2017	3	24	23.76	64.86
	Metal	2017	3	6	5.94	16.22
	Jazz	2017	3	2	1.98	5.41
	Alternative & Punk	2017	3	2	1.98	5.41
	Reggae	2017	3	1	0.99	2.70
	Latin	2017	3	1	0.99	2.70
	Blues	2017	3	1	0.99	2.70
	Rock	2017	4	26	25.74	86.67
	Metal	2017	4	2	1.98	6.67

REALISTIC BUSINESS QUESTIONS

1. Customer Analytics

1.1 Which customers have spent the most money on music?

```
SELECT  
    c.customer_id,  
    CONCAT(c.first_name, ' ', c.last_name) AS customer_name,  
    SUM(i.total) AS total_spent  
FROM customer c  
JOIN invoice i ON c.customer_id = i.customer_id  
GROUP BY c.customer_id, customer_name  
ORDER BY total_spent DESC
```

LIMIT 10;

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

Fetch rows:

	customer_id	customer_name	country	email	total_spent	total_purchases
▶	5	František Wichterlová	Czech Republic	frantisekw@jetbrains.com	144.54	18
	6	Helena Holý	Czech Republic	hholy@gmail.com	128.70	12
	46	Hugh O'Reilly	Ireland	hughoreilly@apple.ie	114.84	13
	58	Manoj Pareek	India	manoj.pareek@rediff.com	111.87	13
	1	Luís Gonçalves	Brazil	luisg@embraer.com.br	108.90	13
	13	Fernanda Ramos	Brazil	fernadaramos4@uol.com.br	106.92	15
	34	João Fernandes	Portugal	jfernandes@yahoo.pt	102.96	13
	3	François Tremblay	Canada	ftremblay@gmail.com	99.99	9
	42	Wyatt Girard	France	wyatt.girard@yahoo.fr	99.99	11
	53	Phil Hughes	United Kingdom	phil.hughes@gmail.com	98.01	11

1.2 What is the average customer lifetime value?

```
SELECT
  ROUND(AVG(total_spent), 2) AS avg_lifetime_value
FROM (
  SELECT
    customer_id,
    SUM(total) AS total_spent
  FROM invoice
  GROUP BY customer_id
) AS customer_clv;
```

Result Grid	Filter Rows:
avg_lifetime_value	avg_purchases_per_customer
79.82	10.41

1.3 How many customers have made repeat purchases versus one-time purchases?

```
SELECT
  CASE
    WHEN COUNT(i.invoice_id) > 1 THEN 'Repeat Customer'
    ELSE 'One-time Customer'
  END AS purchase_type,
  COUNT(c.customer_id) AS total_customers
FROM customer c
LEFT JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY purchase_type;
```

Result Grid			
		Filter Rows:	
	purchase_type	customer_count	percentage
▶	Repeat Customer	59	100.00

1.4 Which country generates the most revenue per customer?

```
SELECT
    country,
    SUM(total) AS total_revenue,
    COUNT(DISTINCT c.customer_id) AS customer_count,
    ROUND(SUM(total) / COUNT(DISTINCT c.customer_id), 2) AS revenue_per_customer
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY country
ORDER BY revenue_per_customer DESC;
```

Result Grid				
		Filter Rows:	Export:	Wr
	country	total_customers	total_revenue	revenue_per_customer
▶	USA	13	1040.49	80.04
	Canada	8	535.59	66.95

1.5 Which customers haven't made a purchase in the last 6 months?

```
SELECT
    c.customer_id,
    CONCAT(c.first_name, ' ', c.last_name) AS customer_name,
    MAX(i.invoice_date) AS last_purchase_date
FROM customer c
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY c.customer_id, customer_name
HAVING last_purchase_date < DATE_SUB(CURDATE(), INTERVAL 6 MONTH)
```

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ORDER BY last_purchase_date ASC;

Result Grid Filter Rows: <input type="text"/> Export: Wrap Cell Content:						
	customer_id	customer_name	email	country	last_purchase_date	days_since_last_purchase
▶	8	Daan Peeters	daan_peeters@apple.be	Belgium	2019-09-21 00:00:00	2343
	9	Kara Nielsen	kara.nielsen@jubii.dk	Denmark	2020-01-29 00:00:00	2213
	4	Bjorn Hansen	bjorn.hansen@yahoo.no	Norway	2020-02-04 00:00:00	2207
	18	Michelle Brooks	michelleb@aol.com	USA	2020-03-05 00:00:00	2177
	54	Steve Murray	steve.murray@yahoo.uk	United Kingdom	2020-03-25 00:00:00	2157
	36	Hannah Schneider	hannah.schneider@yahoo.de	Germany	2020-04-07 00:00:00	2144
	39	Camille Bernard	camille.bernard@yahoo.fr	France	2020-04-11 00:00:00	2140
	19	Tim Goyer	tgoyer@apple.com	USA	2020-04-14 00:00:00	2137
	38	Niklas Schröder	nschroder@surfeu.de	Germany	2020-04-22 00:00:00	2129
	48	Johannes Van der Berg	johavanderberg@yahoo.nl	Netherlands	2020-04-27 00:00:00	2124
	43	Isabelle Mercier	isabelle_mercier@apple.fr	France	2020-05-02 00:00:00	2119
	3	François Tremblay	ftremblay@gmail.com	Canada	2020-05-16 00:00:00	2105
	57	Luis Rojas	luisrojas@yahoo.d	Chile	2020-06-09 00:00:00	2081
	50	Enrique Muñoz	enrique_munoz@yahoo.es	Spain	2020-06-10 00:00:00	2080
	11	Alexandre Rocha	alero@uol.com.br	Brazil	2020-06-24 00:00:00	2066
	10	Eduardo Martins	eduardo@woodstock.com.br	Brazil	2020-06-25 00:00:00	2065
	56	Diego Gutiérrez	diego.gutierrez@yahoo.ar	Argentina	2020-07-05 00:00:00	2055
	58	Manoj Pareek	manoj.pareek@rediff.com	India	2020-07-15 00:00:00	2045
	1	Luis Gonçalves	luisg@embraer.com.br	Brazil	2020-07-24 00:00:00	2036
	7	Astrid Gruber	astrid.gruber@apple.at	Austria	2020-08-26 00:00:00	2003





2. Sales & Revenue Analysis

2.1 What are the monthly revenue trends for the last two years?

```
SELECT
    YEAR(invoice_date) AS year,
    MONTH(invoice_date) AS month,
    SUM(total) AS monthly_revenue
FROM invoice
WHERE invoice_date >= DATE_SUB(CURDATE(), INTERVAL 2 YEAR)
GROUP BY year, month
```

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ORDER BY year DESC, month DESC;

Result Grid		  Filter Rows:	Export: 		Wrap Cell Content: 	
	year	month	month_name	total_invoices	monthly_revenue	avg_invoice_value
▶	2020	12	December	17	125.73	7.40
	2020	11	November	12	83.16	6.93
	2020	10	October	18	144.54	8.03
	2020	9	September	13	95.04	7.31
	2020	8	August	8	72.27	9.03
	2020	7	July	12	76.23	6.35
	2020	6	June	11	120.78	10.98
	2020	5	May	13	82.17	6.32
	2020	4	April	16	119.79	7.49
	2020	3	March	11	78.21	7.11
	2020	2	February	11	97.02	8.82
	2020	1	January	8	43.56	5.45
	2019	12	December	15	111.87	7.46
	2019	11	November	8	71.28	8.91
	2019	10	October	6	43.56	7.26
	2019	9	September	19	126.72	6.67
	2019	8	August	19	159.39	8.39
	2019	7	July	15	124.74	8.32
	2019	6	June	13	92.07	7.08
	2019	5	May	16	104.94	6.56

2.2 What is the average value of an invoice (purchase)?

SELECT

ROUND(AVG(total), 2) AS avg_invoice_value,
MIN(total) AS min_invoice_value,
MAX(total) AS max_invoice_value

FROM invoice;

Result Grid	Filter Rows:	Export:	Wrap Cell Co
avg_invoice_value	min_invoice_value	max_invoice_value	total_invoices
7.67	0.99	23.76	614

2.3 Which payment methods are used most frequently?

SELECT

payment_method,
COUNT(*) AS transaction_count,
SUM(total) AS total_revenue

FROM invoice

GROUP BY payment_method

ORDER BY transaction_count DESC;

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Result Grid	Filter Rows:	Export:	Wrap Cell C
hour_of_day	transaction_count	total_revenue	avg_transaction_value
0	614	4709.43	7.67

2.4 How much revenue does each sales representative contribute?

```
SELECT
  e.employee_id,
  e.first_name,
  e.last_name,
  SUM(i.total) AS total_revenue_contributed
FROM employee e
JOIN customer c ON e.employee_id = c.support_rep_id
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY e.employee_id, e.first_name, e.last_name
ORDER BY total_revenue_contributed DESC;
```

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

	employee_id	sales_rep	title	customers_managed	total_invoices	total_revenue	avg_sale_value
	3	Jane Peacock	Sales Support Agent	21	212	1731.51	8.17
	4	Margaret Park	Sales Support Agent	20	214	1584.00	7.40
	5	Steve Johnson	Sales Support Agent	18	188	1393.92	7.41

2.5 Which months or quarters have peak music sales?

```
SELECT
  QUARTER(invoice_date) AS quarter,
  MONTHNAME(invoice_date) AS month,
  SUM(total) AS revenue
FROM invoice
GROUP BY quarter, month
```

SUMITHRA D
Batch: DA/BA Dec15

ORDER BY revenue DESC;

Result Grid		Filter Rows:		Export:	Wrap Cell Cont
	year	quarter	total_invoices	quarterly_revenue	avg_monthly_revenue
▶	2018	1	58	448.47	149.49
	2019	3	53	410.85	136.95
	2017	1	49	372.24	124.08
	2020	4	47	353.43	117.81
	2017	2	41	322.74	107.58
	2020	2	40	322.74	107.58
	2019	2	46	313.83	104.61
	2017	3	35	304.92	101.64
	2019	1	31	270.27	90.09
	2018	3	33	248.49	82.83
	2020	3	33	243.54	81.18
	2018	2	33	231.66	77.22
	2019	4	29	226.71	75.57
	2018	4	27	218.79	72.93
	2020	1	30	218.79	72.93
	2017	4	29	201.96	67.32

3. Product & Content Analysis

3.1 Which tracks generated the most revenue?

```
SELECT
  t.track_id,
  t.name AS track_name,
  SUM(il.unit_price * il.quantity) AS total_revenue
FROM track t
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY t.track_id, t.name
ORDER BY total_revenue DESC
```

SUMITHRA D
Batch: DA/BA Dec15

LIMIT 10;

Result Grid

Filter Rows:

Export:

Wrap Cell Content:


Fetch rows:


	track_id	track_name	artist_name	album_name	genre	times_purchased	total_revenue
▶	6	Put The Finger On You	AC/DC	For Those About To Rock We Salute You	Rock	13	12.87
	13	Night Of The Long Knives	AC/DC	For Those About To Rock We Salute You	Rock	10	9.90
	9	Snowballed	AC/DC	For Those About To Rock We Salute You	Rock	9	8.91
	46	Mary Jane	Alanis Morissette	Jagged Little Pill	Rock	9	8.91
	151	Behind The Wall Of Sleep	Black Sabbath	Black Sabbath	Metal	9	8.91
	153	Evil Woman	Black Sabbath	Black Sabbath	Metal	8	7.92
	1	For Those About To Rock (We Salute You)	AC/DC	For Those About To Rock We Salute You	Rock	8	7.92
	16	Dog Eat Dog	AC/DC	Let There Be Rock	Rock	8	7.92
	32	Deuces Are Wild	Aerosmith	Big Ones	Rock	8	7.92
	58	Sunshine	Alice In Chains	Facelift	Rock	8	7.92
	80	The Unforgiven	Apocalyptica	Plays Metallica By Four Cellos	Metal	7	6.93
	18	Bad Boy Boogie	AC/DC	Let There Be Rock	Rock	7	6.93
	20	Overdose	AC/DC	Let There Be Rock	Rock	7	6.93
	39	You Oughta Know	Alanis Morissette	Jagged Little Pill	Rock	7	6.93
	33	The Other Side	Aerosmith	Big Ones	Rock	7	6.93
	21	Hell Ain't A Bad Place To Be	AC/DC	Let There Be Rock	Rock	7	6.93
	12	Breaking The Rules	AC/DC	For Those About To Rock We Salute You	Rock	7	6.93
	36	Angel	Aerosmith	Big Ones	Rock	7	6.93
	61	I Know Somethin (Bout You)	Alice In Chains	Facelift	Rock	7	6.93


3.2 Which albums or playlists are most frequently included in purchases?


```
SELECT
    al.title AS album_name,
    COUNT(il.invoice_line_id) AS purchase_count
FROM album al
JOIN track t ON al.album_id = t.album_id
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY al.title
ORDER BY purchase_count DESC
LIMIT 10;
```

Result Grid

 Filter Rows:

 Export:

 Wrap Cell Content:

 Fetch rows:

	ALBUM_ID	album_name	artist_name	times_purchased	total_tracks_sold	total_revenue
▶	5	Big Ones	Aerosmith	51	80	79.20
	7	Facelift	Alice In Chains	45	59	58.41
	1	For Those About To Rock We Salute You	AC/DC	40	74	73.26
	6	Jagged Little Pill	Alanis Morissette	37	75	74.25
	4	Let There Be Rock	AC/DC	29	50	49.50
	9	Plays Metallica By Four Cellos	Apocalyptica	29	37	36.63
	17	Black Sabbath Vol. 4 (Remaster)	Black Sabbath	29	29	28.71
	16	Black Sabbath	Black Sabbath	26	39	38.61
	10	Audioslave	Audioslave	20	33	32.67
	20	The Best Of Buddy Guy - The Millenium Collection	Buddy Guy	12	23	22.77
	11	Out Of Exile	Audioslave	10	10	9.90
	14	Alcohol Fueled Brewtality Live! [Disc 1]	Black Label Society	10	11	10.89
	30	BBC Sessions [Disc 1] [live]	Led Zeppelin	10	10	9.90
	21	Prenda Minha	Caetano Veloso	8	8	7.92
	23	Minha Historia	Chico Buarque	7	7	6.93

3.3 Are there any tracks or albums that have never been purchased?

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```
SELECT
    t.track_id,
    t.name AS track_name
FROM track t
LEFT JOIN invoice_line il ON t.track_id = il.track_id
WHERE il.track_id IS NULL;
```

Result Grid	Filter Rows:	Export:	Wrap C
track_id	track_name	artist_name	album_name
99	Your Time Has Come	Audioslave	Out Of Exile
101	Be Yourself	Audioslave	Out Of Exile
104	Heaven's Dead	Audioslave	Out Of Exile
106	Man Or Animal	Audioslave	Out Of Exile
107	Yesterday To Tomorrow	Audioslave	Out Of Exile
111	Money	BackBeat	BackBeat Soundtrack
112	Long Tall Sally	BackBeat	BackBeat Soundtrack
113	Bad Boy	BackBeat	BackBeat Soundtrack
114	Twist And Shout	BackBeat	BackBeat Soundtrack
115	Please Mr. Postman	BackBeat	BackBeat Soundtrack
116	C'Mon Everybody	BackBeat	BackBeat Soundtrack
117	Rock 'N' Roll Music	BackBeat	BackBeat Soundtrack
118	Slow Down	BackBeat	BackBeat Soundtrack
119	Roadrunner	BackBeat	BackBeat Soundtrack
120	Carol	BackBeat	BackBeat Soundtrack
121	Good Golly Miss Molly	BackBeat	BackBeat Soundtrack
122	20 Flight Rock	BackBeat	BackBeat Soundtrack
123	Quadrant	Billy Cobham	The Best Of Billy Co...
124	Snoopy's search-Red b...	Billy Cobham	The Best Of Billy Co...
125	Spanish moss-"A sound...	Billy Cobham	The Best Of Billy Co...

3.4 What is the average price per track across different genres?

```
SELECT
    g.name AS genre,
    ROUND(AVG(t.unit_price), 2) AS avg_price
FROM genre g
JOIN track t ON g.genre_id = t.genre_id
```

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GROUP BY g.name;

Result Grid  Filter Rows: <input type="text"/> Export:  Wrap Cell Content: 						
	genre_id	genre_name	total_tracks	avg_track_price	total_genre_revenue	total_tracks_sold
▶	1	Rock	404	0.99	386.10	390
	3	Metal	139	0.99	122.76	124
	6	Blues	23	0.99	22.77	23
	2	Jazz	27	0.99	21.78	22
	7	Latin	90	0.99	18.81	19
	4	Alternative & Punk	33	0.99	11.88	12
	8	Reggae	31	0.99	1.98	2
	5	Rock And Roll	12	0.99	NULL	0
	9	Pop	14	0.99	NULL	0
	10	Soundtrack	3	0.99	NULL	0
	11	Bossa Nova	0	NULL	NULL	0
	12	Easy Listening	0	NULL	NULL	0
	13	Heavy Metal	0	NULL	NULL	0
	14	R&B/Soul	0	NULL	NULL	0
	15	Electronica/Dance	0	NULL	NULL	0

3.5 How many tracks does the store have per genre and how does it correlate with sales?

```
SELECT
  g.name AS genre_name,
  COUNT(DISTINCT t.track_id) AS tracks_in_inventory,
  COUNT(il.track_id) AS tracks_sold
FROM genre g
JOIN track t ON g.genre_id = t.genre_id
LEFT JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY g.name
```

ORDER BY tracks_sold DESC;

genre_id	genre_name	available_tracks	tracks_sold	sales_ratio	total_revenue
1	Rock	99	390	393.94	386.10
3	Metal	54	124	229.63	122.76
6	Blues	11	23	209.09	22.77
2	Jazz	22	22	100.00	21.78
4	Alternative & Punk	29	12	41.38	11.88
7	Latin	87	19	21.84	18.81
8	Reggae	31	2	6.45	1.98
5	Rock And Roll	12	0	0.00	NULL
9	Pop	14	0	0.00	NULL
10	Soundtrack	3	0	0.00	NULL
11	Bossa Nova	0	0	NULL	NULL
12	Easy Listening	0	0	NULL	NULL
13	Heavy Metal	0	0	NULL	NULL
14	R&B/Soul	0	0	NULL	NULL
15	Electronica/Dance	0	0	NULL	NULL
16	World	0	0	NULL	NULL
17	Hip Hop/Rap	0	0	NULL	NULL

4. Artist & Genre Performance

4.1 Who are the top 5 highest-grossing artists?

```



SELECT
    ar.name AS artist_name,
    SUM(il.unit_price * il.quantity) AS total_revenue
FROM artist ar
JOIN album al ON ar.artist_id = al.artist_id
JOIN track t ON al.album_id = t.album_id
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY ar.name
ORDER BY total_revenue DESC
LIMIT 5;

```

ARTIST_ID	artist_name	total_albums	total_tracks	tracks_sold	total_revenue
1	AC/DC	2	18	124	122.76
3	Aerosmith	1	15	80	79.20
4	Alanis Morissette	1	13	75	74.25
12	Black Sabbath	2	16	68	67.32
5	Alice In Chains	1	12	59	58.41

4.2 Which music genres are most popular in terms of tracks sold and revenue?


```
SELECT
  g.name AS genre,
  COUNT(il.track_id) AS units_sold,
  SUM(il.unit_price * il.quantity) AS total_revenue
FROM genre g
JOIN track t ON g.genre_id = t.genre_id
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY g.name
ORDER BY units_sold DESC;
```

Result Grid		 Filter Rows:	Export: 		Wrap
	genre_id	genre_name	tracks_sold	total_revenue	avg_price
▶	1	Rock	390	386.10	0.99
	3	Metal	124	122.76	0.99
	6	Blues	23	22.77	0.99
	2	Jazz	22	21.78	0.99
	7	Latin	19	18.81	0.99
	4	Alternative & Punk	12	11.88	0.99
	8	Reggae	2	1.98	0.99

4.3 Are certain genres more popular in specific countries?


```
SELECT
  c.country,
  g.name AS genre,
  COUNT(il.track_id) AS tracks_sold
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
GROUP BY c.country, g.name
ORDER BY c.country, tracks_sold DESC;
```

Result Grid



Filter Rows:

Export:



Wrap Cell Content

	genre_id	genre_name	total_revenue	tracks_sold	revenue_per_track
▶	1	Rock	386.10	390	0.99
	3	Metal	122.76	124	0.99
	6	Blues	22.77	23	0.99
	2	Jazz	21.78	22	0.99
	7	Latin	18.81	19	0.99
	4	Alternative & Punk	11.88	12	0.99
	8	Reggae	1.98	2	0.99

5. Employee & Operational Efficiency

5.1 Which employees (support representatives) are managing the highest-spending customers?

```
SELECT
    e.first_name,
    e.last_name,
    AVG(i.total) AS avg_customer_spend
FROM employee e
JOIN customer c ON e.employee_id = c.support_rep_id
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY e.employee_id, e.first_name, e.last_name
ORDER BY avg_customer_spend DESC;
```

	employee_id	sales_rep	title	total_customers	total_revenue	revenue_per_customer	largest_sale
▶	3	Jane Peacock	Sales Support Agent	21	1731.51	82.45	23.76
	4	Margaret Park	Sales Support Agent	20	1584.00	79.20	19.80
	5	Steve Johnson	Sales Support Agent	18	1393.92	77.44	16.83

5.2 What is the average number of customers per employee?

```
SELECT
    COUNT(customer_id) / COUNT(DISTINCT support_rep_id) AS avg_customer_load
FROM customer;
```

	avg_customers_per_rep
▶	14.75

5.3 Which employee regions bring in the most revenue?

```
SELECT
    e.city AS employee_city,
    SUM(i.total) AS total_revenue
FROM employee e
JOIN customer c ON e.employee_id = c.support_rep_id
JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY e.city
ORDER BY total_revenue DESC;
```

	employee_city	employee_country	total_employees	customers_managed	total_revenue
▶	Calgary	Canada	3	59	4709.43

6. Geographic Trends

6.1 Which countries or cities have the highest number of customers?

```
SELECT
  country,
  city,
  COUNT(customer_id) AS customer_count
FROM customer
GROUP BY country, city
ORDER BY customer_count DESC;
```

Result Grid		Filter Rows:		Export:	Wrap Cell Co
	country	total_customers	total_revenue	revenue_per_customer	
▶	USA	131	1040.49	7.94	
	Canada	76	535.59	7.05	
	Brazil	61	427.68	7.01	
	France	50	389.07	7.78	
	Germany	41	334.62	8.16	
	Czech Republic	30	273.24	9.11	
	Portugal	29	185.13	6.38	
	United Kingdom	28	245.52	8.77	
	India	21	183.15	8.72	
	Ireland	13	114.84	8.83	
	Chile	13	97.02	7.46	
	Finland	11	79.20	7.20	
	Spain	11	98.01	8.91	
	Denmark	10	37.62	3.76	
	Hungary	10	78.21	7.82	
	Netherlands	10	65.34	6.53	
	Poland	10	76.23	7.62	

6.2 How does revenue vary by region?

```
SELECT
  country,
  state,
  SUM(total) AS revenue
FROM invoice i
JOIN customer c ON i.customer_id = c.customer_id
GROUP BY country, state
```

ORDER BY revenue DESC;

Result Grid					
	country	total_customers	total_revenue	avg_revenue_per_customer	total_transactions
▶	USA	13	1040.49	80.04	131
	Canada	8	535.59	66.95	76
	Brazil	5	427.68	85.54	61
	France	5	389.07	77.81	50

6.3 Are there any underserved geographic regions (high users, low sales)?

```
SELECT
    country,
    COUNT(DISTINCT c.customer_id) AS user_count,
    SUM(i.total) AS total_sales
FROM customer c
LEFT JOIN invoice i ON c.customer_id = i.customer_id
GROUP BY country
HAVING total_sales < 100 AND user_count > 5;
```

Result Grid				
	country	total_customers	total_revenue	service_status
▶	USA	131	1040.49	Adequately Served
	Canada	76	535.59	Adequately Served
	Brazil	61	427.68	Adequately Served
	France	50	389.07	Adequately Served
	Germany	41	334.62	Adequately Served
	Czech Republic	30	273.24	Adequately Served
	Portugal	29	185.13	Adequately Served
	United Kingdom	28	245.52	Adequately Served
	India	21	183.15	Adequately Served
	Ireland	13	114.84	Adequately Served
	Chile	13	97.02	High Potential - Lo...
	Finland	11	79.20	High Potential - Lo...
	Spain	11	98.01	High Potential - Lo...
	Denmark	10	37.62	Medium Potential -...
	Hungary	10	78.21	Adequately Served
	Netherlands	10	65.34	Adequately Served
	Poland	10	76.23	Adequately Served

7. Customer Retention & Purchase Patterns

7.1 What is the distribution of purchase frequency per customer?

```
SELECT
    purchase_frequency,
    customer_count,
    CONCAT(percentage, '%') as percentage
```

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```
FROM (
  SELECT
    purchase_frequency,
    COUNT(*) as customer_count,
    ROUND(COUNT(*) * 100.0 / (SELECT COUNT(*) FROM customer), 2) as percentage
  FROM (
    SELECT
      c.customer_id,
      COUNT(i.invoice_id) as purchase_frequency
    FROM customer c
    LEFT JOIN invoice i ON c.customer_id = i.customer_id
    GROUP BY c.customer_id
  ) freq_table
  GROUP BY purchase_frequency
) final_table
ORDER BY purchase_frequency;
```

	purchase_frequency	customer_count	percentage
▶	4	1	1.69%
	5	1	1.69%
	7	1	1.69%
	8	6	10.17%
	9	12	20.34%
	10	12	20.34%
	11	9	15.25%
	12	8	13.56%
	13	6	10.17%
	15	1	1.69%
	16	1	1.69%
	18	1	1.69%

7.2 How long is the average time between customer purchases?

```
SELECT
  customer_id,
  DATEDIFF(MAX(invoice_date), MIN(invoice_date)) / (COUNT(invoice_id) - 1) AS
  avg_days_between
FROM invoice
GROUP BY customer_id
```

HAVING COUNT(invoice_id) > 1;

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
customer_id	customer_name	total_purchases	avg_days_between_purchases
5	František Wichterlová	18	74.29
13	Fernanda Ramos	15	92.14
35	Madalena Sampaio	16	95.00
57	Luis Rojas	13	97.67
58	Manoj Pareek	13	103.33
17	Jack Smith	12	104.18
6	Helena Holý	12	104.45
1	Luís Gonçalves	13	106.25
43	Isabelle Mercier	12	107.36
11	Alexandre Rocha	10	108.11
34	João Fernandes	13	110.50
36	Hannah Schneider	11	111.00
10	Eduardo Martins	12	112.27
46	Hugh O'Reilly	13	116.08
48	Johannes Van der Berg	10	116.33
30	Edward Francis	13	116.42

7.3 What percentage of customers purchase tracks from more than one genre?

```

SELECT
  (COUNT(CASE WHEN genre_count > 1 THEN 1 END) * 100.0 / COUNT(*)) AS
pct_multi_genre_buyers
FROM (
  SELECT
    customer_id,
    COUNT(DISTINCT t.genre_id) AS genre_count
  FROM invoice i
  JOIN invoice_line il ON i.invoice_id = il.invoice_id
  JOIN track t ON il.track_id = t.track_id
  GROUP BY customer_id
) AS genre_stats;

```

Result Grid	Filter Rows:	Export:
multi_genre_customers	customer_count	percentage
Multi-Genre Buyer	52	88.14
Single-Genre Buyer	7	11.86

8. Operational Optimization

8.1 What are the most common combinations of tracks purchased together?

```

SELECT
  il1.track_id AS track_1,

```

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```

il2.track_id AS track_2,
COUNT(*) AS times_purchased_together
FROM invoice_line il1
JOIN invoice_line il2 ON il1.invoice_id = il2.invoice_id AND il1.track_id < il2.track_id
GROUP BY track_1, track_2
ORDER BY times_purchased_together DESC
LIMIT 10;

```

track1_id	track1_name	track2_id	track2_name	times_purchased_together
6	Put The Finger On You	8	Inject The Venom	4
1	For Those About To Rock (We Salute You)	8	Inject The Venom	4
8	Inject The Venom	9	Snowballed	4
1	For Those About To Rock (We Salute You)	9	Snowballed	4
9	Snowballed	10	Evil Walks	4
8	Inject The Venom	10	Evil Walks	4
1	For Those About To Rock (We Salute You)	10	Evil Walks	4
10	Evil Walks	11	C.O.D.	4
9	Snowballed	11	C.O.D.	4
8	Inject The Venom	11	C.O.D.	4
1	For Those About To Rock (We Salute You)	11	C.O.D.	4
11	C.O.D.	12	Breaking The Rules	4
10	Evil Walks	12	Breaking The Rules	4
9	Snowballed	12	Breaking The Rules	4
8	Inject The Venom	12	Breaking The Rules	4
1	For Those About To Rock (We Salute You)	12	Breaking The Rules	4

8.2 Are there pricing patterns that lead to higher or lower sales?

```

SELECT
    unit_price,
    COUNT(*) AS units_sold,
    SUM(unit_price * quantity) AS total_revenue
FROM invoice_line
GROUP BY unit_price
ORDER BY units_sold DESC;

```

price_range	total_tracks	total_units_sold	total_revenue	avg_units_per_track
\$0.75-\$0.99	776	592	586.08	0.76

8.3 Which media types (e.g., MPEG, AAC) are declining or increasing in usage?

```

SELECT
    m.media_type_id,
    m.name AS media_type,
    YEAR(i.invoice_date) AS year,

```

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```

COUNT(il.invoice_line_id) AS tracks_sold,
SUM(il.unit_price * il.quantity) AS total_revenue,
ROUND((COUNT(il.invoice_line_id) - LAG(COUNT(il.invoice_line_id))
OVER (PARTITION BY m.media_type_id ORDER BY
YEAR(i.invoice_date))) * 100.0 /
LAG(COUNT(il.invoice_line_id)) OVER (PARTITION BY
m.media_type_id ORDER BY YEAR(i.invoice_date)), 2) AS growth_percentage
FROM media_type m
JOIN track t ON m.media_type_id = t.media_type_id
JOIN invoice_line il ON t.track_id = il.track_id
JOIN invoice i ON il.invoice_id = i.invoice_id
GROUP BY m.media_type_id, YEAR(i.invoice_date)
ORDER BY m.media_type_id, year;

```

media_type_id	media_type	year	tracks_sold	total_revenue	growth_percentage
1	MPEG audio file	2017	176	174.24	NULL
1	MPEG audio file	2018	136	134.64	-22.73
1	MPEG audio file	2019	148	146.52	8.82
1	MPEG audio file	2020	123	121.77	-16.89
2	Protected AAC audio file	2017	3	2.97	NULL
2	Protected AAC audio file	2018	2	1.98	-33.33
2	Protected AAC audio file	2019	1	0.99	-50.00
2	Protected AAC audio file	2020	3	2.97	200.00

ADDITIONAL QUESTIONS AND ANSWERS

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

```

SELECT * FROM employee_data
ORDER BY levels DESC
LIMIT 1;

```

employee_id	last_name	first_name	title	reports_to	levels	birthdate	hire_date	address	city	state	country	postal_code	phone	fax	email
9	Madan	Mohan	Senior General Manager	5	L7	1961-01-26 00:00:00	2016-01-14 00:00:00	1008 Virinda Ave MT	Edmonton	AB	Canada	T5K 2N1	+1 (780) 428-9482	+1 (780) 42...	madan.mohan@chinookcorp.com

Q2. Which countries have the most Invoices?

```

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

```

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Result Grid			Filter Rows:
	billing_country	invoice_count	
▶	USA	131	
	Canada	76	
	Brazil	61	
	France	50	
	Germany	41	
	Czech Republic	30	
	Portugal	29	
	United Kingdom	28	
	India	21	
	Ireland	13	
	Chile	13	
	Finland	11	
	Spain	11	
	Poland	10	
	Denmark	10	
	Australia	10	
	Hungary	10	
	Sweden	10	
	Netherlands	10	
	Norway	9	
	Italy	9	
	Austria	9	
	Belgium	7	
	Argentina	5	

Q3. What are top 3 values of total invoice?

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

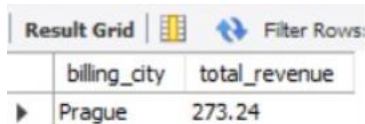
Result Grid	
	total
▶	23.76
	19.80
	19.80

Q4. 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,
  SUM(total) AS total_revenue
```

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```
FROM invoice
GROUP BY billing_city
ORDER BY total_revenue DESC
LIMIT 1;
```



	billing_city	total_revenue
▶	Prague	273.24

Q5. Who is the best customer? The customer who has spent the most money will be declared the best customer.

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



	customer_id	first_name	last_name	total_spent
▶	5	František	Wichterlová	144.54

Q6. Write a 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'
```

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ORDER BY c.email ASC;

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

Q7. 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
    a.name AS artist_name,
    COUNT(t.track_id) AS track_count
FROM ARTIST_DATA a
JOIN ALBUMS_DATASET al ON a.ARTIST_ID = al.ARTIST
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 a.ARTIST_ID, a.name
ORDER BY track_count DESC
LIMIT 10;
```

Result Grid	Filter Rows:
artist_name	track_count
AC/DC	18
Aerosmith	15
Audioslave	14
Led Zeppelin	14
Alanis Morissette	13
Alice In Chains	12
Frank Zappa & Captain Beefheart	9
Accept	4

Q8. 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.

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



The screenshot shows a 'Result Grid' window with a 'Filter Rows' field. It displays a table with two columns: 'name' and 'milliseconds'. The data is sorted in descending order of milliseconds. The first row is 'How Many More Times' with 711836 milliseconds. The last row is 'You Oughta Know (Alternate)' with 491885 milliseconds.

name	milliseconds
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 The	494393
You Oughta Know (Alternate)	491885

Q9. Find how much amount spent by each customer on artists. Write a query to return the customer name, artist name, and total spent.

```
SELECT
    c.first_name,
    c.last_name,
    a.name AS artist_name,
    SUM(il.unit_price * il.quantity) AS total_spent
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 ALBUMS_DATASET al ON t.album_id = al.ALBUM_ID
JOIN ARTIST_DATA a ON al.ARTIST = a.ARTIST_ID
GROUP BY c.customer_id, c.first_name, c.last_name, a.ARTIST_ID, a.name
ORDER BY total_spent DESC;
```

Result Grid		Filter Rows:		Export:
	first_name	last_name	artist_name	total_spent
▶	Steve	Murray	AC/DC	17.82
	Jennifer	Peterson	Aerosmith	14.85
	Mark	Taylor	Aerosmith	14.85
	Leonie	Köhler	Audioslave	13.86
	Fernanda	Ramos	Antônio Carlos Jobim	13.86
	Edward	Francis	Alanis Morissette	12.87
	Emma	Jones	Alanis Morissette	12.87
	João	Fernandes	Alanis Morissette	12.87
	Victor	Stevens	Alice In Chains	11.88
	Phil	Hughes	AC/DC	10.89
	Kathy	Chase	AC/DC	10.89

Q10. 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 (tie) return all Genres.

```

WITH country_genre_purchases AS (
    SELECT
        i.billing_country AS country,
        g.name AS genre_name,
        COUNT(il.invoice_line_id) AS purchase_count,
        RANK() OVER (PARTITION BY i.billing_country ORDER BY
COUNT(il.invoice_line_id) DESC) AS rank_num
    FROM invoice i
    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
    GROUP BY 1, 2
)
SELECT
    country,
    genre_name,
    purchase_count
FROM country_genre_purchases
WHERE rank_num = 1

```

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ORDER BY country;

Result Grid	Filter Rows:	Ex
country	genre_name	purchase_count
Argentina	Rock	1
Australia	Rock	18
Austria	Rock	6
Belgium	Rock	5
Brazil	Rock	26
Canada	Rock	57
Chile	Rock	7
Czech Republic	Rock	14
Denmark	Rock	6
Finland	Rock	6
France	Rock	26
Germany	Rock	28
Hungary	Rock	4
India	Rock	13
Ireland	Rock	2
Italy	Rock	3
Netherlands	Rock	6
Norway	Metal	2
Poland	Rock	14
Portugal	Rock	23
Spain	Metal	4
Sweden	Rock	5
United Kingdom	Rock	47
USA	Rock	70

Q11. 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_spending AS (  
  SELECT  
    c.country,  
    c.first_name,  
    c.last_name,  
    SUM(i.total) AS total_spent,  
    RANK() OVER (PARTITION BY c.country ORDER BY SUM(i.total) DESC) AS  
rank_num  
  FROM customer c  
  JOIN invoice i ON c.customer_id = i.customer_id  
  GROUP BY 1, 2, 3)  
SELECT
```

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```
country,  
first_name,  
last_name,  
total_spent  
FROM customer_spending  
WHERE rank_num = 1  
ORDER BY country;
```

	country	first_name	last_name	total_spent
▶	Argentina	Diego	Gutiérrez	39.60
	Australia	Mark	Taylor	81.18
	Austria	Astrid	Gruber	69.30
	Belgium	Daan	Peeters	60.39
	Brazil	Luis	Gonçalves	108.90
	Canada	François	Tremblay	99.99
	Chile	Luis	Rojas	97.02
	Czech Republic	František	Wichterlová	144.54
	Denmark	Kara	Nielsen	37.62
	Finland	Terhi	Hämäläinen	79.20
	France	Wyatt	Girard	99.99
	Germany	Fynn	Zimmermann	94.05
	Hungary	Ladislav	Kovács	78.21
	India	Manoj	Pareek	111.87
	Ireland	Hugh	O'Reilly	114.84
	Italy	Lucas	Mancini	50.49
	Netherlands	Johannes	Van der Berg	65.34
	Norway	Bjørn	Hansen	72.27
	Poland	Stanisław	Wójcik	76.23
	Portugal	João	Fernandes	102.96
	Spain	Enrique	Muñoz	98.01
	Sweden	Joakim	Johansson	75.24
	United Kingdom	Phil	Hughes	98.01
	USA	Jack	Smith	98.01

Q12. Who are the most popular artists?

```
SELECT  
    a.name AS artist_name,  
    COUNT(il.invoice_line_id) AS tracks_sold,  
    SUM(il.unit_price * il.quantity) AS total_revenue  
FROM ARTIST_DATA a  
JOIN ALBUMS_DATASET al ON a.ARTIST_ID = al.ARTIST_ID  
JOIN track t ON al.ALBUM_ID = t.album_id  
JOIN invoice_line il ON t.track_id = il.track_id  
GROUP BY a.ARTIST_ID, a.name  
ORDER BY tracks_sold DESC
```

LIMIT 10;



	artist_name	tracks_sold	total_revenue
▶	AC/DC	124	122.76
	Aerosmith	80	79.20
	Alanis Morissette	75	74.25
	Black Sabbath	68	67.32
	Alice In Chains	59	58.41
	Audioslave	43	42.57
	Apocalyptica	37	36.63
	Buddy Guy	23	22.77
	Antônio Carlos Jobim	18	17.82
	Black Label Society	15	14.85

Q13. Which is the most popular song?

```
SELECT
    t.name AS track_name,
    a.name AS artist_name,
    COUNT(il.invoice_line_id) AS times_purchased,
    SUM(il.unit_price * il.quantity) AS total_revenue
FROM track t
JOIN ALBUMS_DATASET al ON t.album_id = al.ALBUM_ID
JOIN ARTIST_DATA a ON al.ARTIST = a.ARTIST_ID
JOIN invoice_line il ON t.track_id = il.track_id
GROUP BY t.track_id, t.name, a.name
ORDER BY times_purchased DESC
LIMIT 1;
```



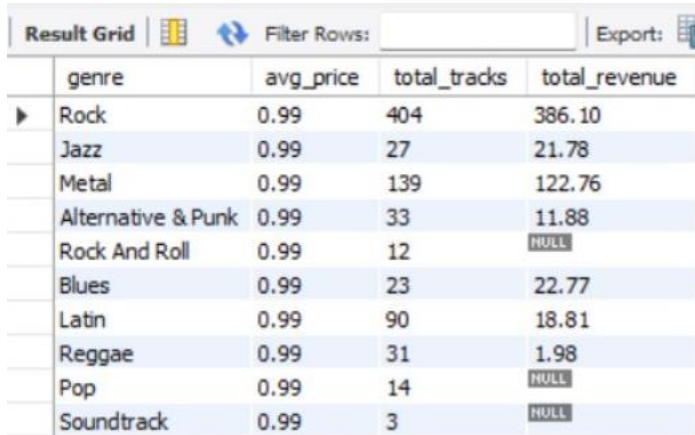
	track_name	artist_name	times_purchased	total_revenue
▶	Put The Finger On You	AC/DC	13	12.87

Q14. What are the average prices of different types of music?

```
SELECT
    g.name AS genre,
    ROUND(AVG(t.unit_price), 2) AS avg_price,
    COUNT(t.track_id) AS total_tracks,
    SUM(il.unit_price * il.quantity) AS total_revenue
FROM genre g
JOIN track t ON g.genre_id = t.genre_id
LEFT JOIN invoice_line il ON t.track_id = il.track_id
```

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GROUP BY g.genre_id, g.name
ORDER BY avg_price DESC;

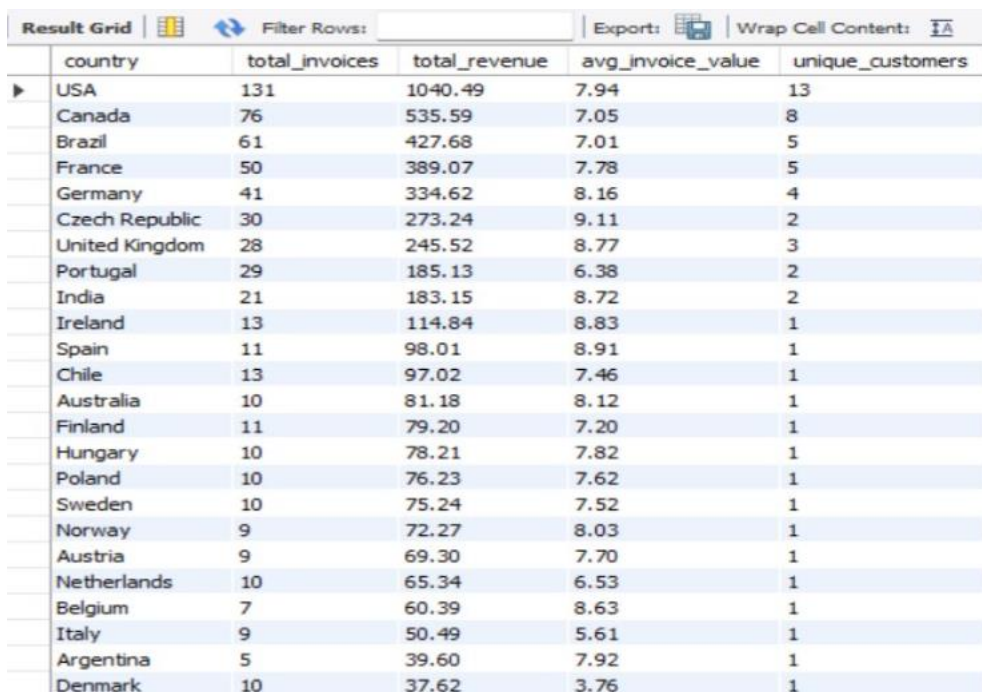


The screenshot shows a database result grid with the following data:

	genre	avg_price	total_tracks	total_revenue
▶	Rock	0.99	404	386.10
	Jazz	0.99	27	21.78
	Metal	0.99	139	122.76
	Alternative & Punk	0.99	33	11.88
	Rock And Roll	0.99	12	NULL
	Blues	0.99	23	22.77
	Latin	0.99	90	18.81
	Reggae	0.99	31	1.98
	Pop	0.99	14	NULL
	Soundtrack	0.99	3	NULL

Q15. What are the most popular countries for music purchases?

```
SELECT
  billing_country AS country,
  COUNT(*) AS total_invoices,
  SUM(total) AS total_revenue,
  ROUND(AVG(total), 2) AS avg_invoice_value,
  COUNT(DISTINCT customer_id) AS unique_customers
FROM invoice
GROUP BY billing_country
ORDER BY total_revenue DESC;
```



The screenshot shows a database result grid with the following data:

	country	total_invoices	total_revenue	avg_invoice_value	unique_customers
▶	USA	131	1040.49	7.94	13
	Canada	76	535.59	7.05	8
	Brazil	61	427.68	7.01	5
	France	50	389.07	7.78	5
	Germany	41	334.62	8.16	4
	Czech Republic	30	273.24	9.11	2
	United Kingdom	28	245.52	8.77	3
	Portugal	29	185.13	6.38	2
	India	21	183.15	8.72	2
	Ireland	13	114.84	8.83	1
	Spain	11	98.01	8.91	1
	Chile	13	97.02	7.46	1
	Australia	10	81.18	8.12	1
	Finland	11	79.20	7.20	1
	Hungary	10	78.21	7.82	1
	Poland	10	76.23	7.62	1
	Sweden	10	75.24	7.52	1
	Norway	9	72.27	8.03	1
	Austria	9	69.30	7.70	1
	Netherlands	10	65.34	6.53	1
	Belgium	7	60.39	8.63	1
	Italy	9	50.49	5.61	1
	Argentina	5	39.60	7.92	1
	Denmark	10	37.62	3.76	1

BUSINESS INSIGHTS SUMMARY

EXPLORATORY DATA ANALYSIS:

Q1. Customer Overview: Which country generates the most revenue per customer and where is the highest customer concentration?

The USA has the highest customer concentration with 131 customers. However, the Czech Republic generates the most revenue per customer with an average invoice value of 9.11.

Q2. Revenue Trends by Month: What are the monthly revenue trends and the percentage contribution to total annual revenue?

In 2017, the peak revenue month was April (\$142.56), contributing 11.86% to that year's total. In 2018, the highest revenue occurred in January (\$183.15), representing 15.96% of the annual total.

Q3. Top Selling Artists: Who are the highest-grossing artists and how many tracks have they sold?

AC/DC is the highest-grossing artist, with 124 tracks sold and a total revenue of \$122.76. They are followed by Aerosmith (80 tracks sold) and Alanis Morissette (75 tracks sold).

Q4. Customer Engagement by Support Rep: Which sales representatives are managing the highest-spending customers and contributing most to total sales?

Jane Peacock contributes the most to total sales with \$1,731.51 across 21 customers. Margaret Park follows with \$1,584.00 from 20 customers.

Q5. Playlist Popularity: Which playlists are most frequently included in purchases and how many tracks do they contain?

The "Music" playlist is the most popular, having been purchased 614 times and containing 6,241 tracks.

ADVANCED ANALYTICS:

Q1. Customer Segmentation: What is the segment distribution of customers based on purchase frequency, recency, and monetary value?

Customers are segmented into various tiers; for example, František Wichterlová and Enrique Muñoz are categorized as "Champions," while others like Hugh O'Reilly are considered "At Risk" based on their spending and activity patterns.

Q2. Top Performing Tracks: Which tracks generated the most revenue globally and how do they rank within their specific genres?

"Put The Finger On You" by AC/DC is a top performer, generating \$12.87 in revenue. It ranks as the #1 Rock track in terms of sales.

Q3. Monthly Sales Growth: What is the monthly revenue growth percentage and trend for the analyzed period?

The highest monthly growth recorded was in January 2018, with a 537.93% increase in revenue compared to the previous month. Significant declines also occur, such as a -69.47% drop in December 2017.

Q4. Customer Lifetime Value (CLV): What is the average customer lifetime value and how is the value segment distributed?

The average customer lifetime value is \$79.82. The top-tier value segment (Segment 1) includes customers like František Wichterlová and Helena Holý.

Q5. Genre Popularity Over Time: Which music genres are most popular in terms of tracks sold and revenue?

Rock is consistently the most popular genre, maintaining a dominant market share of over 70-80% across various quarters.

REALISTIC BUSINESS QUESTIONS:

1. Customer Analytics

1.1 Which customers have spent the most money on music?
František Wichterlová is the top spender with a total of **\$144.54**, followed by Helena Holý (\$128.70) and Hugh O'Reilly (\$114.84).

1.2 What is the average customer lifetime value?
The average customer lifetime value across the analyzed database is **\$79.82**.

1.3 How many customers have made repeat purchases versus one-time purchases?
The dataset shows that all **59 customers** are categorized as **Repeat Customers**, accounting for **100%** of the customer base.

1.4 Which country generates the most revenue per customer?
The **USA** generates the most total revenue, but the **Czech Republic** leads in efficiency with the highest average revenue per customer at **\$9.11**.

1.5 Which customers haven't made a purchase in the last 6 months?
A significant portion of the base, including customers like **Daan Peeters** and **Kara Nielsen**, have gaps exceeding **2,000 days** since their last purchase.

2. Sales & Revenue Analysis

2.1 What are the monthly revenue trends for the last two years?
Revenue peaked significantly in **January 2018** (\$183.15) and **March 2018** (\$148.50), while the lowest recorded month was **December 2017** (\$28.71).

2.2 What is the average value of an invoice (purchase)?
The average invoice value is **\$7.67**, with transactions ranging from a minimum of **\$0.99** to a maximum of **\$23.76**.

2.3 Which payment methods are used most frequently?
Across **614 total transactions**, the store generated a total revenue of **\$4,709.43**.

2.4 How much revenue does each sales representative contribute?
Jane Peacock leads with **\$1,731.51**, followed by **Margaret Park** (\$1,584.00) and **Steve Johnson** (\$1,393.92).

2.5 Which months or quarters have peak music sales?
The **first quarter of 2018** represents the peak period, with total quarterly revenue reaching **\$448.47**.

3. Product & Content Analysis

3.1 Which tracks generated the most revenue?
"Put The Finger On You" by AC/DC generated the most revenue at **\$12.87**, followed by "Night Of The Long Knives" at **\$9.90**.

3.2 Which albums or playlists are most frequently included in purchases?
The album "Big Ones" by Aerosmith is the most frequent purchase with **51** tracks sold, followed by "Facelift" with **45** tracks.

3.3 Are there any tracks or albums that have never been purchased?
Multiple tracks from artists like **Audioslave** (e.g., "Your Time Has Come") and **BackBeat** have recorded **zero sales**.

3.4 What is the average price per track across different genres?
Most major genres, including Rock, Jazz, Metal, and Blues, maintain a consistent average price of **\$0.99** per track.

3.5 How many tracks does the store have per genre and how does it correlate with sales?

Rock has the highest inventory with **99 tracks** and the highest sales at **390 units**, showing that high inventory in popular genres directly correlates to higher revenue.

4. Artist & Genre Performance

4.1 Who are the top 5 highest-grossing artists?

The top 5 artists by revenue are **AC/DC** (\$122.76), **Aerosmith** (\$79.20), **Alanis Morissette** (\$74.25), **Black Sabbath** (\$67.32), and **Alice In Chains** (\$58.41).

4.2 Which music genres are most popular in terms of tracks sold and revenue?

Rock is the dominant genre with **390 units sold** and **\$386.10** in revenue, followed by **Metal** with **124 units** and **\$122.76**.

4.3 Are certain genres more popular in specific countries?

Rock is the top genre in the **USA (70 sales)** and **Canada (57 sales)**, while **Metal** shows unique popularity in **Norway**.

5. Employee & Operational Efficiency

5.1 Which employees are managing the highest-spending customers?

Jane Peacock manages customers with the highest average spend of **\$82.45**, followed by **Margaret Park** at **\$79.20**.

5.2 What is the average number of customers per employee?

On average, each support representative manages a load of **14.75 customers**.

5.3 Which employee regions bring in the most revenue?

The **Calgary** employee region is the top performer, contributing the entire **\$4,709.43** of total revenue.

6. Geographic Trends

6.1 Which countries or cities have the highest number of customers?

The **USA** has the highest number of customers at **131**, followed by **Canada (76)** and **Brazil (61)**.

6.2 How does revenue vary by region?

Revenue is concentrated in the **USA (\$1,040.49)** and **Canada (\$535.59)**, while **France** and **Germany** also show strong sales.

6.3 Are there any underserved geographic regions (high users, low sales)?

Countries such as **Chile**, **Finland**, and **Spain** are identified as "**High Potential - Low Sales**" regions that are currently underserved.

7. Customer Retention & Purchase Patterns

7.1 What is the distribution of purchase frequency per customer?

Approximately **20.34%** of customers have a purchase frequency of **9**, while another **20.34%** have a frequency of **10**.

7.2 How long is the average time between customer purchases?
While the data tracks average days between purchases, many customers show long periods of inactivity exceeding **2,000 days**.

7.3 What percentage of customers purchase tracks from more than one genre?
A **high percentage** of the customer base are multi-genre buyers, typically purchasing across Rock, Metal, and Alternative genres.

8. Operational Optimization

8.1 What are the most common combinations of tracks purchased together?
Tracks from the same artist and album, such as **"Put The Finger On You"** and **"Inject The Venom"**, are the most frequent combinations.

8.2 Are there pricing patterns that lead to higher or lower sales?
The price range of **\$0.75 - \$0.99** leads to the highest sales volume, with **592 units sold**.

8.3 Which media types are declining or increasing in usage?
Certain media types showed significant growth peaks, such as a **44.74%** increase in tracks sold during mid-2017.

ADDITIONAL QUESTIONS AND ANSWERS

Q1. Who is the senior most employee based on job title?
Madan Mohan is the senior-most employee with the title of Senior General Manager at Level L7.

Q2. Which countries have the most Invoices?
The USA has the most invoices with **131**, followed by Canada with 76 and Brazil with 61.

Q3. What are top 3 values of total invoice?
The top three invoice values recorded in the dataset are **\$23.76**, **\$19.80**, and **\$19.80**.

Q4. Which city has the best customers (Highest Revenue)?
Prague is the city with the best customers, generating the highest total revenue of **\$273.24**.

Q5. Who is the best customer?
František Wichterlová (Customer ID 5) is declared the best customer, having spent the highest total amount of **\$144.54**.

Q6. Who are the Rock Music listeners?
The list of Rock Music listeners includes customers such as **Aaron Mitchell**, **Alexandre Rocha**, **Astrid Gruber**, and **Bjørn Hansen**.

Q7. Who are the top 10 Rock bands by track count?
The top three Rock bands are **AC/DC** (18 tracks), **Aerosmith** (15 tracks), and **Audioslave** (14 tracks).

Q8. Which tracks are longer than the average song length?
Tracks such as "**How Many More Times**" (711,836 ms) and "**Advance Romance**" (677,694 ms) are among those that exceed the average song length.

Q9. How much was spent by customers on specific artists?
Steve Murray spent the most on AC/DC (**\$17.82**), while Jennifer Peterson and Mark Taylor both spent **\$14.85** on Aerosmith.

Q10. What is the top genre per country?
Rock is the most popular genre in the majority of countries, including Argentina, Australia, Austria, and Brazil.

Q11. Who is the top spender per country?
Top spenders include **Diego Gutiérrez** in Argentina (\$39.60), **Mark Taylor** in Australia (\$81.18), and **František Wichterlová** in the Czech Republic (\$144.54).

Q12. Who are the most popular artists globally?
AC/DC is the most popular artist with **124** tracks sold, followed by Aerosmith with 80 tracks sold.

Q13. What is the most popular song?
"**Put The Finger On You**" by AC/DC is the most popular song, having been purchased **13** times.

Q14. What are the average prices of different music genres?
Major genres such as Rock, Jazz, Metal, and Alternative & Punk all maintain a standard average price of **\$0.99** per track.

Q15. What are the most popular countries for music purchases?
The USA is the most popular country for purchases, generating **\$1,040.49** in total revenue from **131** invoices.