

/\* Q1: Who is the senior most employee based on job title? \*/

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

/\* Q2: Which countries have the most Invoices? \*/

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

/\* Q3: What are top 3 values of total invoice? \*/

```
SELECT total
```

FROM invoice  
ORDER BY total DESC

/\* 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  
InvoiceTotal  
FROM invoice  
GROUP BY billing_city  
ORDER BY InvoiceTotal DESC  
LIMIT 1;
```

/\* Q5: 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, 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
ORDER BY total_spending DESC
LIMIT 1;
```

/\* Question Set 2 - Moderate \*/

/\* Q1: 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. \*/

/\*Method 1 \*/

```
SELECT DISTINCT email,first_name,  
last_name  
FROM customer  
JOIN invoice ON customer.customer_id =  
invoice.customer_id  
JOIN invoiceline ON invoice.invoice_id =  
invoiceline.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;
```

```
/* Method 2 */
```

```
SELECT DISTINCT email AS  
Email,first_name AS FirstName, last_name  
AS LastName, genre.name AS Name  
FROM customer
```

```
JOIN invoice ON invoice.customer_id =  
customer.customer_id  
JOIN invoiceline ON invoiceline.invoice_id  
= invoice.invoice_id  
JOIN track ON track.track_id =  
invoiceline.track_id  
JOIN genre ON genre.genre_id =  
track.genre_id  
WHERE genre.name LIKE 'Rock'  
ORDER BY email;
```

/\* Q2: 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 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;
```

/\* Q3: 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 name,milliseconds
FROM track
WHERE milliseconds > (
    SELECT AVG(milliseconds) AS
avg_track_length
```

```
FROM track )  
ORDER BY milliseconds DESC;
```

/\* Question Set 3 - Advance \*/

/\* Q1: Find how much amount spent by each customer on artists? Write a query to return customer name, artist name and total spent \*/

/\* Steps to Solve: First, find which artist has earned the most according to the InvoiceLines. Now use this artist to find which customer spent the most on this artist. For this query, you will need to use the Invoice, InvoiceLine, Track, Customer, Album, and Artist tables. Note, this one is tricky because the Total spent in the Invoice table might not be on a single product,

so you need to use the InvoiceLine table to find out how many of each product was purchased, and then multiply this by the price for each 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 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;
```

/\* Q2: 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. \*/

/\* Steps to Solve: There are two parts in question- first most popular music genre and second need data at country level. \*/

/\* Method 1: Using 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
```

/\* Method 2: : Using Recursive \*/

```
WITH RECURSIVE
sales_per_country AS(
SELECT COUNT(*) AS
purchases_per_genre, customer.country,
genre.name, genre.genre_id
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
),
max_genre_per_country AS (SELECT
MAX(purchases_per_genre) AS
max_genre_number, country
FROM sales_per_country
GROUP BY 2
ORDER BY 2)
```

```
SELECT sales_per_country.*
FROM sales_per_country
JOIN max_genre_per_country ON
sales_per_country.country =
max_genre_per_country.country
```

WHERE

```
sales_per_country.purchases_per_genre =  
max_genre_per_country.max_genre_number;  
r;
```

/\* Q3: 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. \*/

/\* Steps to Solve: Similar to the above question. There are two parts in question- first find the most spent on music for each country and second filter the data for respective customers. \*/

/\* Method 1: using CTE \*/

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

/\* Method 2: Using Recursive \*/

```
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;
```