

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

```
select * from employee
order by levels desc      // search based on the levels column in decreasing order
limit 1                  //show just 1 output
```

	employee_id [PK] character varying (50)	last_name character	first_name character	title character varying (50)	reports_to character varying (30)	levels character varying (10)
1	9	Madan	Mohan	Senior General Manager	[null]	L7

-----

## Q2. Which countries have the most Invoices?

→ The query should be ----

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

→ Output should be shown like this ----

	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
7	29	Portugal
8	28	United Kingdom
9	21	India
10	13	Chile
11	13	Ireland
12	11	Spain
13	11	Finland
14	10	Australia
15	10	Netherlands
16	10	Sweden
17	10	Poland
18	10	Hungary

19	10	Denmark
20	9	Austria
21	9	Norway
22	9	Italy
23	7	Belgium
24	5	Argentina

### Q3: What are top 3 values of total invoice?

→ The query should be----

```
select * from invoice
order by total desc
```

→ Output should be shown like this ----

	total double precision
1	23.759999999999998
2	19.8
3	19.8

-----

### 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

→ The query should be----

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

→ Output should be shown like this ----

	billing_city character varying (30)	invoicetotal double precision
1	Prague	273.24000000000007

**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.

→ The query should be----

```
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;
```

→ Output should be shown like this ----

	customer_id [PK] integer	first_name character	last_name character	total_spending double precision
1	5	R	Madhav	144.54000000000002

**Q6: 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 -----

→ The query should be----

```
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;
```

→ Output should be shown like this ----

	email character varying (50)	first_name character	last_name character
1	aaronmitchell@yahoo.ca	Aaron	Mitchell
2	alero@uol.com.br	Alexandre	Rocha
3	astrid.gruber@apple.at	Astrid	Gruber
4	bjorn.hansen@yahoo.no	Bjørn	Hansen
5	camille.bernard@yahoo.fr	Camille	Bernard
6	daan_peeters@apple.be	Daan	Peeters
7	diego.gutierrez@yahoo.ar	Diego	Gutiérrez
8	dmiller@comcast.com	Dan	Miller
9	dominiquelefebvre@gmail.c...	Dominique	Lefebvre
10	edfrancis@yahoo.ca	Edward	Francis
11	eduardo@woodstock.com.br	Eduardo	Martins
12	ellie.sullivan@shaw.ca	Ellie	Sullivan
13	emma_jones@hotmail.com	Emma	Jones
14	enrique_munoz@yahoo.es	Enrique	Muñoz
15	fernadaramos4@uol.com.br	Fernanda	Ramos
16	fharris@google.com	Frank	Harris
17	fralston@gmail.com	Frank	Ralston
18	ftremblay@gmail.com	Francois	Tremblay

	email character varying (50)	first_name character	last_name character
19	fzimmermann@yahoo.de	Fynn	Zimmermann
20	hannah.schneider@yahoo.de	Hannah	Schneider
21	hholy@gmail.com	Helena	Holý
22	hleacock@gmail.com	Heather	Leacock
23	hughoreilly@apple.ie	Hugh	O'Reilly
24	isabelle_mercier@apple.fr	Isabelle	Mercier
25	jacksmith@microsoft.com	Jack	Smith
26	jenniferp@rogers.ca	Jennifer	Peterson
27	jfernandes@yahoo.pt	João	Fernandes
28	joakim.johansson@yahoo.se	Joakim	Johansson
29	johavanderberg@yahoo.nl	Johannes	Van der Berg
30	johngordon22@yahoo.com	John	Gordon
31	jubarnett@gmail.com	Julia	Barnett
32	kachase@hotmail.com	Kathy	Chase
33	kara.nielsen@jubii.dk	Kara	Nielsen
34	ladislav_kovacs@apple.hu	Ladislav	Kovács
35	leonekohler@surfeu.de	Leonie	Köhler
36	lucas.mancini@yahoo.it	Lucas	Mancini

	email character varying (50)	first_name character	last_name character
36	lucas.mancini@yahoo.it	Lucas	Mancini
37	luisg@embraer.com.br	Luís	Gonçalves
38	luisrojas@yahoo.cl	Luis	Rojas
39	manoj.pareek@rediff.com	Manoj	Pareek
40	marc.dubois@hotmail.com	Marc	Dubois
41	mark.taylor@yahoo.au	Mark	Taylor
42	marthasilk@gmail.com	Martha	Silk
43	masampaio@sapo.pt	Madalena	Sampaio
44	michelleb@aol.com	Michelle	Brooks
45	mphilips12@shaw.ca	Mark	Philips
46	nschroder@surfeu.de	Niklas	Schröder
47	patrick.gray@aol.com	Patrick	Gray
48	phil.hughes@gmail.com	Phil	Hughes
49	puja_srivastava@yahoo.in	Puja	Srivastava
50	r.madhav@jetbrains.com	R	Madhav
51	ricunningham@hotmail.com	Richard	Cunningham
52	robbrown@shaw.ca	Robert	Brown

	email character varying (50) 🔒	first_name character 🔒	last_name character 🔒
53	roberto.almeida@riotur.gov.br	Roberto	Almeida
54	stanisław.wójcik@wp.pl	Stanisław	Wójcik
55	steve.murray@yahoo.uk	Steve	Murray
56	terhi.hamalainen@apple.fi	Terhi	Hämäläinen
57	tgoyer@apple.com	Tim	Goyer
58	vstevens@yahoo.com	Victor	Stevens
59	wyatt.girard@yahoo.fr	Wyatt	Girard

## ----- 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 invoice_line ON invoice_line.invoice_id = invoice.invoice_id
JOIN track ON track.track_id = invoice_line.track_id
JOIN genre ON genre.genre_id = track.genre_id
WHERE genre.name LIKE 'Rock'
ORDER BY email;
```

➔ Output should be shown like this ----

	email character varying (50) 🔒	firstname character 🔒	lastname character 🔒	name character varying (120) 🔒
1	aaronmitchell@yahoo.ca	Aaron	Mitchell	Rock
2	alero@uol.com.br	Alexandre	Rocha	Rock
3	astrid.gruber@apple.at	Astrid	Gruber	Rock
4	bjorn.hansen@yahoo.no	Bjørn	Hansen	Rock
5	camille.bernard@yahoo.fr	Camille	Bernard	Rock
6	daan.peeters@apple.be	Daan	Peeters	Rock
7	diego.gutierrez@yahoo.ar	Diego	Gutiérrez	Rock
8	dmiller@comcast.com	Dan	Miller	Rock
9	dominiquelefebvre@gmail.com	Dominique	Lefebvre	Rock
10	edfrancis@yahoo.ca	Edward	Francis	Rock

**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.**

- 

→ The query should be----

```
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;
```

→ Output should be shown like this ----

	artist_id [PK] character varying (50) 	name character varying (120) 	number_of_songs bigint 
1	22	Led Zeppelin	114
2	150	U2	112
3	58	Deep Purple	92
4	90	Iron Maiden	81
5	118	Pearl Jam	54
6	152	Van Halen	52
7	51	Queen	45
8	142	The Rolling Stones	41
9	76	Creedence Clearwater Revival	40
10	52	Kiss	35



**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.**

→ The query should be----

```
SELECT name,milliseconds
FROM track
WHERE milliseconds > (
    SELECT AVG(milliseconds) AS avg_track_length
    FROM track )
ORDER BY milliseconds DESC
LIMIT 15
```

→ Output should be shown like this ----

	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
6	Battlestar Galactica, Pt. 1	2952702
7	Murder On the Rising Star	2935894
8	Battlestar Galactica, Pt. 3	2927802
9	Take the Celestra	2927677
10	Fire In Space	2926593
11	The Long Patrol	2925008
12	The Magnificent Warriors	2924716
13	The Living Legend, Pt. 1	2924507
14	The Gun On Ice Planet Zero, Pt. 2	2924341
15	The Hand of God	2924007



**Q9: 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 invoice\_lines. Now use this artist to find

which customer spent the most on this artist. For this query, you will need to use the Invoice, invoice\_line, 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 invoice\_line table to find out how many of each product was purchased, and then multiply this by the price

**for each artist.**

➔ The query should be----

```
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)
    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
LIMIT 10
```

➔ Output should be shown like this ----

	customer_id integer	first_name character	last_name character	artist_name character varying (120)	amount_spent double precision
1	46	Hugh	O'Reilly	Queen	27.719999999999985
2	38	Niklas	Schröder	Queen	18.81
3	3	François	Tremblay	Queen	17.82
4	34	João	Fernandes	Queen	16.830000000000002
5	41	Marc	Dubois	Queen	11.88
6	53	Phil	Hughes	Queen	11.88
7	33	Ellie	Sullivan	Queen	10.89
8	47	Lucas	Mancini	Queen	10.89
9	20	Dan	Miller	Queen	3.96
10	5	R	Madhav	Queen	3.96

**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 return all Genres.**

### Steps to Solve:

There are two parts in question- first most popular music genre and second need data at country level.

→ The query should be----

```
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
LIMIT 10
```

→ Output should be shown like this ----

	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
4	26	Belgium	Rock	1	1
5	205	Brazil	Rock	1	1
6	333	Canada	Rock	1	1
7	61	Chile	Rock	1	1
8	143	Czech Republic	Rock	1	1
9	24	Denmark	Rock	1	1
10	46	Finland	Rock	1	1

**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.

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.

→ The query should be----

```
WITH Customer_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 Customer_with_country WHERE RowNo <= 1  
LIMIT 10
```

→ Output should be shown like this ----

	customer_id integer	first_name character	last_name character	billing_country character varying (30)	total_spending double precision	rowno bigint
1	56	Diego	Gutiérrez	Argentina	39.6	1
2	55	Mark	Taylor	Australia	81.18	1
3	7	Astrid	Gruber	Austria	69.3	1
4	8	Daan	Peeters	Belgium	60.38999999999999	1
5	1	Luís	Gonçalves	Brazil	108.89999999999998	1
6	3	François	Tremblay	Canada	99.99	1
7	57	Luis	Rojas	Chile	97.02000000000001	1
8	5	R	Madhav	Czech Republic	144.54000000000002	1
9	9	Kara	Nielsen	Denmark	37.61999999999999	1
10	44	Terhi	Hämäläinen	Finland	79.2	1