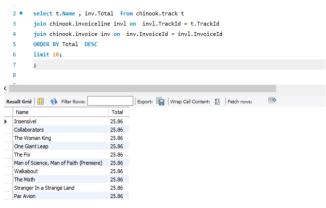با توجه با اینکه نمودار ما نشون میده که ۵ جدول : مشخصات مشتری و مشخصات کارمندان و نوع مدیا و ژانر و آلبوم همگی جداول dim ما هستند و جدول های invoice , track , invoice line جداول فکت ما هستند که در اینصورت چون چندین جدول فکت داریم که با هم در ارتباط هستند و هرکدام دایم های مختص خودرا دارند . پس نوع اسکیم ما به صورت galaxy هستش .

۱- ۱۰ اهنگ برتر از لحاظ درامد به همراه درامد انها

```sql
2   select t.Name , inv.Total  from chinook.track t
3   join chinook.invoiceline invl on  invl.TrackId = t.TrackId
4   join chinook.invoice inv on  inv.InvoiceId = invl.InvoiceId
5   ORDER BY Total  DESC
6   limit 10;
7   ;
8
```

Name	Total
Insensível	25.86
Collaborators	25.86
The Woman King	25.86
One Giant Leap	25.86
The Fix	25.86
Man of Science, Man of Faith (Premiere)	25.86
Walkabout	25.86
The Moth	25.86
Stranger In a Strange Land	25.86
Par Avion	25.86

۲- محبوب ترین ژانر از نظر تعداد اهنگ های فروخته شده به همراه مجموع کل درامد ان

```sql
11     -- 2
12
13   select g.GenreId , g.Name , sum(inv.Total) Total$ , count(invl.InvoiceLineId) MusicCounts from chinook.track t
14   join chinook.genre g on t.GenreId = g.GenreId
15   join chinook.invoiceline invl on t.TrackId = invl.TrackId
16   join chinook.invoice inv on invl.InvoiceId = inv.InvoiceId
17   group by g.GenreId
18   ORDER BY Total$  DESC
19   limit 1
20     ;
```

GenreId	Name	Total$	MusicCounts
1	Rock	7720.02	835

۳- کاربرانی که تا به حال خرید نداشتند :

اینطور که مشخص است گویا مشتری نداریم که در لیست مشتریان بوده باشه و خریدی ثبت نکرده باشه

```sql
21     -- 3
22
23   select c.CustomerId ,c.FirstName , c.LastName from chinook.customer c
24   where c.CustomerId not in (select chinook.invoice.CustomerId from chinook.invoice)
25     ;
26
27
28
29
```

CustomerId	FirstName	LastName
NULL	NULL	NULL

۴- میانگین زمان اهنگ ها در هر البوم

```
27    -- 4
28
29  • select al.AlbumId , count(t.TrackId) , sum(t.Milliseconds) , sum(t.Milliseconds)/(count(t.TrackId)*60000) mean_Minute from chinook.track t
30    join chinook.albums al on al.AlbumId = t.AlbumId
31    group by al.AlbumId
32    ;
33
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: $\overline{I}A$

AlbumId	count(t.TrackId)	sum(t.Milliseconds)	mean_Minute
1	10	2400415	4.0007
2	1	342562	5.7094
3	3	858088	4.7672
4	8	2453259	5.1110
5	15	4411709	4.9019
6	13	3450925	4.4243
7	12	3249365	4.5130
8	14	2906926	3.4606
9	8	2671407	5.5654
10	14	3927713	4.6758
11	12	3224237	4.4781
12	12	1615722	2.2441
13	8	2680524	5.5844
14	13	4059919	5.2050
15	5	1447755	4.8259
16	7	2294801	5.4638
17	10	2601921	4.3365
18	17	3192389	3.1298
19	11	3694022	5.5970

۵- کارمندی که بیشترین تعداد فروش را داشته

به صورت نزولی مرتب کردم نفر اول فعال ترین کارمند هست

یک limit 1 باید میذاشتم دیگ اینو بگذرید (öé)

```
34    -- 5
35
36  • select e.EmployeeId , e.FirstName , e.LastName , count(inv.InvoiceId) NumOfOrders  from chinook.employee e
37    join chinook.customer c on c.SupportRepId = e.EmployeeId
38    join chinook.invoice inv on c.CustomerId = inv.CustomerId
39    group by e.EmployeeId
40    ORDER BY NumOfOrders  DESC
41    ;
42
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: $\overline{I}A$

EmployeeId	FirstName	LastName	NumOfOrders
3	Jane	Peacock	146
4	Margaret	Park	140
5	Steve	Johnson	126

۶- کاربرانی که بیش از یک ژانر خرید کردند

```sql
-- 6
select c.CustomerId , c.FirstName , c.LastName , count( distinct t.GenreId) NumOfGeners from chinook.customer c
join chinook.invoice inv on c.CustomerId = inv.CustomerId
join chinook.invoiceline invl on inv.InvoiceId = invl.InvoiceId
join chinook.track t on invl.TrackId = t.TrackId
group by c.CustomerId
order by NumOfGeners desc
```

CustomerId	FirstName	LastName	NumOfGeners
57	Luís	Rojas	12
45	Ladislav	Kovács	11
17	Jack	Smith	10
3	François	Tremblay	10
37	Fynn	Zimmermann	10
24	Frank	Ralston	10
34	João	Fernandes	10
14	Mark	Philips	10
19	Tim	Goyer	9
6	Helena	Holý	9
7	Astrid	Gruber	9
23	John	Gordon	9
21	Kathy	Chase	9
41	Marc	Dubois	9
43	Isabelle	Mercier	9
27	Patrick	Gray	9
1	Luís	Gonçalves	8
54	Steve	Murray	8
4	Bjørn	Hansen	8
5	František	Wichterlová	8
58	Manoj	Pareek	8
22	Heather	Leacock	8

Result 10 ×

۷- ۳ اهنگ برتر هر ژانر از نظر درامد

```sql
-- 7

WITH GenreSongTotals AS (
    SELECT g.GenreId, g.Name AS GenreName, t.Name AS TrackName, SUM(inv.Total) AS TotalInvoiceSum,
    ROW_NUMBER() OVER (PARTITION BY g.GenreId ORDER BY SUM(inv.Total) DESC) AS RowNum
    FROM chinook.genre g
    JOIN chinook.track t ON g.GenreId = t.GenreId
    JOIN chinook.invoiceline invl ON invl.TrackId = t.TrackId
    JOIN chinook.invoice inv ON invl.InvoiceId = inv.InvoiceId
    GROUP BY g.GenreId, g.Name, t.Name
)
SELECT GenreId, GenreName, TrackName, TotalInvoiceSum FROM GenreSongTotals
WHERE RowNum <= 3
ORDER BY GenreId, TotalInvoiceSum DESC;
```

GenreId	GenreName	TrackName	TotalInvoiceSum
1	Rock	Dazed and Confused	51.48
1	Rock	Eruption	45.54
1	Rock	Sure Know Something	32.67
2	Jazz	Por Causa De Você	22.77
2	Jazz	The Duke	22.77
2	Jazz	Lemon Drop	17.82
3	Metal	The Trooper	33.66
3	Metal	Where Eagles Dare	31.68
3	Metal	The Unforgiven	27.72
4	Alternative & Punk	Insensível	25.86
4	Alternative & Punk	Ando Meio Desligado	22.77
4	Alternative & Punk	Times Like These	22.77
5	Rock And Roll	Money	13.86
5	Rock And Roll	Long Tall Sally	13.86
5	Rock And Roll	C'Mon Everybody	13.86
6	Blues	Leave My Girl Alone	19.80
6	Blues	When My Left Eye 1	17.82

Result 13 ×

٨- در هر سال چه
تعداد اهنگ
فروخته شده

```sql
-- 8
-- makin a new column for the year
-- for separating the year out of the invoicedate
ALTER TABLE chinook.invoice ADD COLUMN invoiceYear INT;
SET SQL_SAFE_UPDATES = 0;
UPDATE chinook.invoice SET invoiceYear = SUBSTR(InvoiceDate, 1, 4);
SET SQL_SAFE_UPDATES = 1;
-- now this part
with salesbyyear as (
    select inv.invoiceyear as year, count(invl.invoicelineid) as countofsalestracks from chinook.invoice inv
    join chinook.invoiceline invl on inv.invoiceid = invl.invoiceid
    group by inv.invoiceyear
)
select year, countofsalestracks, sum(countofsalestracks) over (order by year) as cumulativesalestracks from salesbyyear
order by year;
```

year	countofsalestracks	cumulativesalestracks
2021	454	454
2022	455	909
2023	442	1351
2024	447	1798
2025	442	2240

٩- کاربرانی که بیشتر از
میانگین فروش .
خرید کردند

```sql
-- 9
WITH TotalSales AS (
    SELECT SUM(inv.Total) AS total_sales
    FROM chinook.invoice inv
),
MeanSales AS (
    SELECT total_sales / (SELECT COUNT(DISTINCT CustomerId) FROM chinook.invoice) AS mean_sales
    FROM TotalSales
)
SELECT c.CustomerId, c.LastName, SUM(inv.Total) AS customer_total
FROM chinook.customer c
JOIN chinook.invoice inv ON inv.CustomerId = c.CustomerId
GROUP BY c.CustomerId, c.LastName
HAVING SUM(inv.Total) > (SELECT mean_sales FROM MeanSales)
order by customer_total desc
;
```

CustomerId	LastName	customer_total
6	Holý	49.62
26	Cunningham	47.62
57	Rojas	46.62
45	Kovács	45.62
46	O'Reilly	45.62
24	Ralston	43.62
28	Barnett	43.62
37	Zimmermann	43.62
7	Gruber	42.62
25	Stevens	42.62
44	Hämäläinen	41.62
5	Wichterlová	40.62
43	Mercier	40.62
48	Van der Berg	40.62