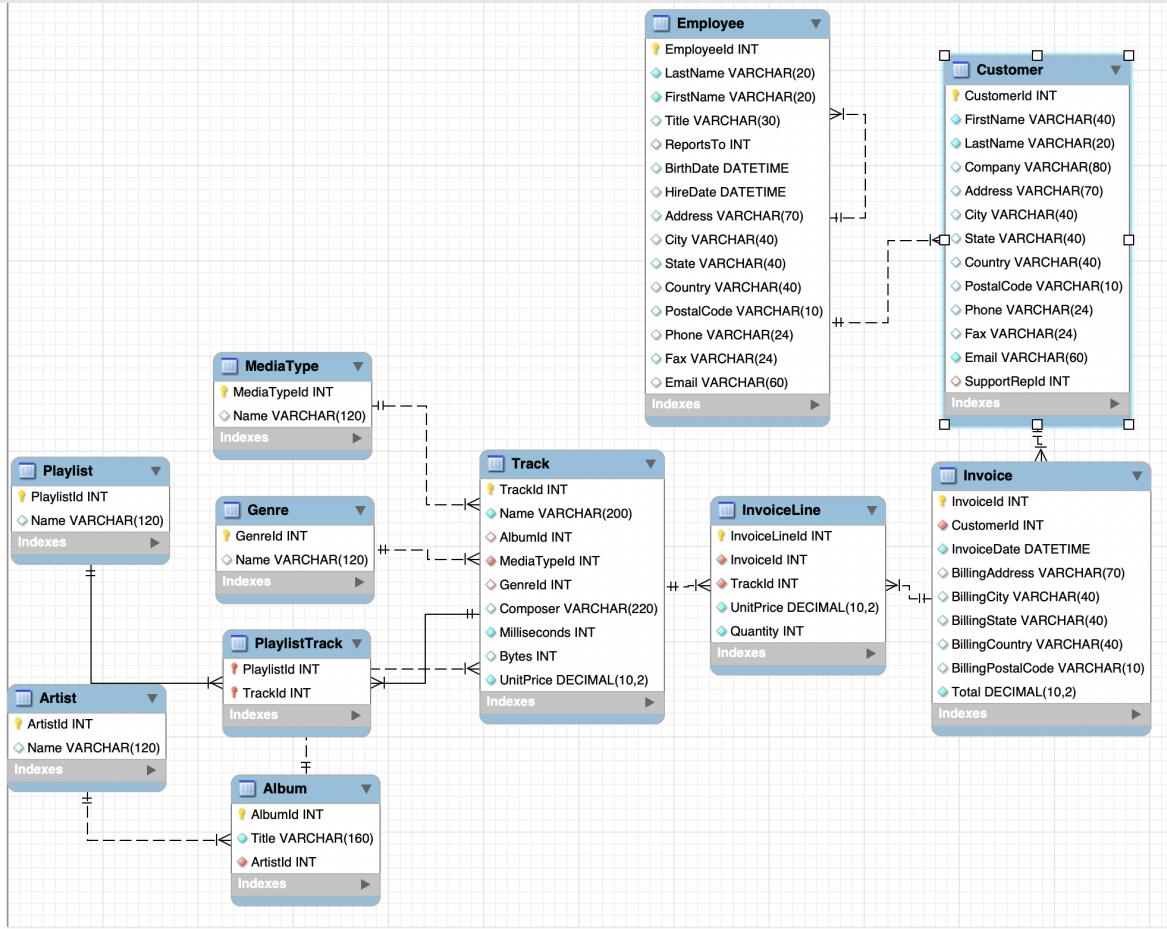


Final Project

Chinook Database

ERR Diagram



This DataModel is **SnowFlake Schema** because of one fact table that is connected to many dimension tables, that these dimension tables are connected to other dimension tables through a many-to-one relationship.

Fact Tables => InvoiceLine

Dimension Tables => Album – Artist - Customer – Employee – Genre – Invoice – Track – MediaType – Playlist - PlaylistTracks

۱۰-۱ آهنگ برتر که بیشترین درامد را داشتن به همراه درامد ایجاد شده

```
3   -- Q1: آهنگ برتر که بیشترین درامد را داشتن به همراه درامد ایجاد شده
4 • select t.TrackID, t.name as TrackName, il.unitprice,
5   sum(il.quantity) as TotalOrders,
6   sum(il.unitprice * il.quantity) as TotalRevenue
7   from track as t
8   join invoiceLine as il
9   on t.trackId = il.trackId
10  group by t.trackID, t.name, il.unitprice
11  order by TotalRevenue desc
12  limit 10;
13
```

100% 27:11

Result Grid Filter Rows: Search Export: Fetch rows:

TrackID	TrackName	unitprice	TotalOrders	TotalRevenue
3177	Hot Girl	1.99	2	3.98
2868	Walkabout	1.99	2	3.98
3200	Gay Witch Hunt	1.99	2	3.98
3223	How to Stop an Exploding Man	1.99	2	3.98
3250	Pilot	1.99	2	3.98
3214	Phyllis's Wedding	1.99	2	3.98
2850	The Fix	1.99	2	3.98
2832	The Woman King	1.99	2	3.98
2874	I Do	1.99	1	1.99
2862	The Glass Ballerina	1.99	1	1.99

۲- محبوب ترین ژانر، به ترتیب از نظر تعداد اهنگ‌های فروخته شده و کل درامد

```
14  -- Q2: محبوب ترین ژانر، به ترتیب از نظر تعداد اهنگ‌های فروخته شده و کل درامد
15 • select g.genreID, g.name as GenreName,
16   sum(il.quantity) as TotalOrders,
17   sum(il.unitprice * il.quantity) as TotalRevenue
18   from genre as g
19   join track as t on g.genreID = t.genreID
20   join invoiceLine as il on t.trackId = il.trackId
21   group by g.genreID, g.name
22   order by TotalOrders desc, TotalRevenue desc
23   limit 1;
```

100% 18:19

Result Grid Filter Rows: Search Export: Fetch rows:

genreID	GenreName	TotalOrders	TotalRevenue
1	Rock	835	826.65

۳- کاربرانی که تا حالا خرید نداشتند

با توجه به این کوئری و محاسبه تعداد کاربرهای یونیک در تیبل Invoice مشخص می‌شود که هیچ کاربری نیست که خرید نکرده باشد. طبیعتاً یک کاربرد در صورت خرید به مشتری تبدیل می‌شود و customerID دریافت می‌کند.

```
26 -- Q3: کاربرانی که تا حالا خرید نداشتند
27 -- Solution 1: Left Join
28 • select c.customerId, concat(c.firstname, " ", c.lastname) as FullName
29   from customer as c
30   left join invoice as i on c.customerID = i.customerID
31   where i.CustomerId is NULL
32   group by c.customerId, FullName;
33
34 -- Solution 2: Not Exists
35 • select c.customerId, concat(c.firstname, " ", c.lastname) as FullName
36   from customer as c
37   where not exists (
38     select customerId from Invoice as i
39     where i.customerId = c.customerId);
40
```

Result Grid Filter Rows: Search Export:

customerId	FullName

۴- میانگین زمان آهنگ‌ها در هر آلبوم

```
42 -- Q4: میانگین زمان آهنگ‌ها در هر آلبوم
43 • select AlbumID, round(avg(milliseconds)/60000, 2) as AverageMinute
44   from track
45   group by albumId;
46
47
```

Result Grid Filter Rows: Search Export:

AlbumID	AverageMinute
1	4.00
2	5.71
3	4.77
4	5.11
5	4.90
6	4.42
7	4.51
8	3.46
9	5.57
10	4.68
11	4.48
12	2.24
13	5.58
14	5.21
15	4.83
16	5.46
17	4.34
18	3.13
19	5.60
20	4.00
21	3.54
22	5.33
23	3.86
24	3.07

۵- کارمندی که بیشترین تعداد فروش را داشته

```
48  -- Q5: کارمندی که بیشترین تعداد فروش را داشته
49 •   select e.employeeID,
50       concat(e.firstname, " ", e.lastname) as EmployeeName,
51       e.title as JobTitle ,
52       sum(i.total) as TotalSale
53   from employee as e
54       join customer as c on e.employeeID = c.supportrepID
55           join invoice as i on c.customerID = i.customerID
56   group by e.employeeID, EmployeeName
57   order by TotalSale desc
58   limit 1;
59
60
```

100% 24:57 |

Result Grid Filter Rows: Search Export: Fetch rows:

employeeID	EmployeeName	JobTitle	TotalSale
3	Jane Peacock	Sales Support Agent	833.04

۶- کاربرانی که از بیش از یک ژانر خرید کردند

همهی کاربران حداقل بیش از یک ژانر را خریداری کرده‌اند

```
62  -- Q6: کاربرانی که از بیش از یک ژانر خرید کردند
63 •   with customer_genre as
64   (
65       select c.customerId,
66             concat(c.firstname, " ", c.lastname) as FullName,
67             g.genreID,
68             g.name as GenreName
69   from customer as c
70       join invoice as i on c.customerId = i.customerId
71           join InvoiceLine as il on i.InvoiceId = il.InvoiceId
72               join track as t on il.trackId = t.trackID
73                   join genre as g on t.genreID = g.genreID
74   group by c.customerId, FullName, g.genreID, GenreName
75   )
76   select cg.FullName, count(distinct cg.GenreName) as NoOfDifferentGenres
77   from customer_genre as cg
78   group by cg.FullName
79   having NoOfDifferentGenres > 1
80   order by NoOfDifferentGenres desc;
81
```

100% 54:74 |

Result Grid Filter Rows: Search Export:

FullName	NoOfDifferentGenre...
Luis Rojas	12
Ladislav Kovács	11
Mark Philips	10
João Fernandes	10
François Tremblay	10
Frank Ralston	10
Fynn Zimmermann	10

	Fullscreen	NoOfDifferentGenre
▶	Luis Rojas	12
◀	Ladislav Kovács	11
◀	Mark Philips	10
◀	João Fernandes	10
◀	François Tremblay	10
◀	Frank Ralston	10
◀	Fynn Zimmermann	10
◀	Jack Smith	10
◀	Tim Goyer	9
◀	Astrid Gruber	9
◀	Patrick Gray	9
◀	Marc Dubois	9
◀	Kathy Chase	9
◀	John Gordon	9
◀	Helena Holý	9
◀	Isabelle Mercier	9
◀	Victor Stevens	8
◀	Bjørn Hansen	8
◀	Steve Murray	8
◀	Manoj Pareek	8
◀	Luís Gonçalves	8
◀	Jennifer Peterson	8
◀	František Wichter...	8
◀	Heather Leacock	8
◀	Hugh O'Reilly	8
◀	Johannes Van de...	7
◀	Frank Harris	7
◀	Joakim Johansson	7
◀	Fernanda Ramos	7
◀	Wyatt Girard	7
◀	Enrique Muñoz	7
◀	Aaron Mitchell	7
◀	Terhi Hämäläinen	7
◀	Camille Bernard	7
◀	Richard Cunningham	7
◀	Leonie Köhler	7
◀	Puja Srivastava	7
◀	Niklas Schröder	7
◀	Eduardo Martins	7
◀	Dan Miller	7
◀	Dominique Lefebvre	7
◀	Diego Gutiérrez	7
◀	Madalena Sampaio	6

۷- سه اهنگ برتر از نظر درامد فروش برای هر ژانر

```

82  -- 07: سه اهنگ برتر از نظر درامد فروش برای هر ژانر
83 • select *
84   from
85   (select g.Name as GenreName, t.name as TrackName, sum(il.quantity) as TotalSale,
86    row_number() over (partition by g.name order by sum(il.quantity) desc) as sale_rank
87   from Genre as g
88     Join track as t on g.genreID = t.genreID
89     join invoiceLine as il on t.trackID = il.trackID
90   group by g.genreID, GenreName, t.trackID, TrackName
91   )
92   as ranked_tracks
93   where
94     sale_rank <= 3
95   order by GenreName, TotalSale desc ;
96

```

Result Grid | Filter Rows: Search Export:

GenreName	TrackName	TotalSale	sale_rank
Alternative	Say Hello 2 Heaven	1	1
Alternative	Call Me a Dog	1	2
Alternative	Four Walled World	1	3
Alternative & Punk	Bowels Of The Devil	2	1
Alternative & Punk	Voodoo	2	2
Alternative & Punk	Basket Case	2	3
Blues	When My Left Eye Jumps	2	1
Blues	Sunshine Of Your Love	2	2
Blues	Lay Down Sally	2	3
Bossa Nova	Onde Anda Vocé	2	1
Bossa Nova	Pot-Pourri N.º 4	1	2
Bossa Nova	Samba Da Volta	1	3

GenreName	TrackName	TotalSale	sale_rank
Classical	Scheherazade, Op. 35: I...	2	1
Classical	Symphonie Fantastique,...	2	2
Classical	Suite No. 3 in D, BWV 1...	2	3
Comedy	Phyllis's Wedding	2	1
Comedy	The Convict	1	2
Comedy	A Benihana Christmas,...	1	3
Drama	The Fix	2	1
Drama	How to Stop an Explodi...	2	2
Drama	One Giant Leap	1	3
Easy Listening	New York, New York	1	1
Easy Listening	I Get A Kick Out Of You	1	2
Easy Listening	What Now My Love	1	3
Electronica/Dance	Light Years	2	1
Electronica/Dance	Manifest Destiny	1	2
Electronica/Dance	Journey To Arnhemland	1	3
Heavy Metal	Wildest Dreams	1	1
Heavy Metal	Dance Of Death	1	2
Heavy Metal	Gates Of Tomorrow	1	3
Hip Hop/Rap	Rappers Reais	2	1
Hip Hop/Rap	Nega Do Cabelo Duro	2	2
Hip Hop/Rap	Hip Hop Rio	1	3
Jazz	Por Causa De Vocé	2	1
Jazz	Surrender	2	2
Jazz	J Squared	2	3
Latin	Meditação	2	1
Latin	Bem Devagar	2	2
Latin	Mel	2	3
Metal	Welcome Home (Sanitar...	2	1
Metal	Snowblind	2	2
Metal	Cornucopia	2	3
Pop	Give Peace a Chance	2	1
Pop	Beautiful Boy	2	2
Pop	Instant Karma	1	3
R&B/Soul	Hey America	2	1
R&B/Soul	Abraham, Martin And John	2	2
R&B/Soul	Save The Children	2	3
Reggae	C'est La Vie	2	1
Reggae	A Cor Do Sol	2	2
Reggae	Soldado Da Paz	1	3
Rock	Peace On Earth	2	1
Rock	When I Look At The World	2	2
Rock	Everlasting Love	2	3

Rock And Roll	Money	1	1
Rock And Roll	Long Tall Sally	1	2
Rock And Roll	C'Mon Everybody	1	3
Sci Fi & Fantasy	Crossroads, Pt. 1	1	1
Sci Fi & Fantasy	Crossroads, Pt. 2	1	2
Sci Fi & Fantasy	Battlestar Galactica, Pt. 1	1	3
Science Fiction	The Woman King	2	1
Science Fiction	Hero	1	2
Science Fiction	Unfinished Business	1	3
Soundtrack	Plot 180	2	1
Soundtrack	United Colours	1	2
Soundtrack	Slug	1	3
TV Shows	Walkabout	2	1
TV Shows	Hot Girl	2	2
TV Shows	Gay Witch Hunt	2	3
World	No Futuro	1	1
World	Voce Inteira	1	2
World	Equinocio	1	3

۸- تعداد آهنگ‌های فروخته شده به صورت تجمعی در هر سال به صورت جداگانه

```

101   -- Q8: تعداد آهنگ‌های فروخته شده به صورت تجمعی در هر سال به صورت جداگانه
102 •  with sales_each_year as
103   (
104     select
105       year(i.invoicedate) as Year,
106       sum(il.quantity) as TotalSale
107     from invoice as i
108       join invoiceline as il on i.invoiceID = il.invoiceID
109     group by Year
110   )
111   select Year, TotalSale,
112     Sum(TotalSale) over (order by year) AS CumulativeSales
113   from sales_each_year
114   group by Year, TotalSale;
115
116
100%  1:100

```

Result Grid Filter Rows: Search Export:

Year	TotalSale	CumulativeSales
2021	454	454
2022	455	909
2023	442	1351
2024	447	1798
2025	442	2240

۹- کاربرانی که مجموع خریدشان بالاتر از میانگین مجموع خرید تمام کاربران است

```
110 -- 9: کاربرانی که مجموع خریدشان بالاتر از میانگین مجموع خرید تمام کاربران است
111 • with TotalSale as
112 (
113     select c.CustomerId, concat(c.firstname, " ", c.lastname) as CustomerName,
114     sum(i.total) as TotalSale
115     from customer as c
116     join invoice as i on c.customerID = i.customerID
117     group by c.customerId, customername
118     order by totalsale desc
119 ),
120 AverageSale as
121 (
122     select avg(totalsale) as Averagesale
123     from TotalSale
124 )
125 select
126     ts.CustomerId, ts.CustomerName, ts.TotalSale, round(avgs.AverageSale, 2) as AverageSale
127     from TotalSale as ts
128     join AverageSale as avs on ts.TotalSale > Avs.Averagesale
129     order by ts.TotalSale desc;
130
```

Result Grid Filter Rows: Search Export:

CustomerId	CustomerName	TotalSale	AverageSale
6	Helena Holý	49.62	39.47
26	Richard Cunningham	47.62	39.47
57	Luis Rojas	46.62	39.47
46	Hugh O'Reilly	45.62	39.47
45	Ladislav Kovács	45.62	39.47
37	Fynn Zimmermann	43.62	39.47
24	Frank Ralston	43.62	39.47
28	Julia Barnett	43.62	39.47
7	Astrid Gruber	42.62	39.47
25	Victor Stevens	42.62	39.47
44	Terhi Hämäläinen	41.62	39.47
5	František Wichterlová	40.62	39.47
48	Johannes Van der...	40.62	39.47
43	Isabelle Mercier	40.62	39.47
1	Luís Gonçalves	39.62	39.47
3	François Tremblay	39.62	39.47
4	Bjørn Hansen	39.62	39.47
42	Wyatt Girard	39.62	39.47
17	Jack Smith	39.62	39.47
20	Dan Miller	39.62	39.47
22	Heather Leacock	39.62	39.47
34	João Fernandes	39.62	39.47

CustomerId	CustomerName	TotalSale	AverageSale
6	Helena Holý	49.62	39.47
26	Richard Cunningham	47.62	39.47
57	Luis Rojas	46.62	39.47
46	Hugh O'Reilly	45.62	39.47
45	Ladislav Kovács	45.62	39.47
37	Fynn Zimmermann	43.62	39.47
24	Frank Ralston	43.62	39.47
28	Julia Barnett	43.62	39.47
7	Astrid Gruber	42.62	39.47
25	Victor Stevens	42.62	39.47
44	Terhi Hämäläinen	41.62	39.47
5	František Wichterlová	40.62	39.47
48	Johannes Van der...	40.62	39.47
43	Isabelle Mercier	40.62	39.47
1	Luís Gonçalves	39.62	39.47
3	François Tremblay	39.62	39.47
4	Bjørn Hansen	39.62	39.47
42	Wyatt Girard	39.62	39.47
17	Jack Smith	39.62	39.47
20	Dan Miller	39.62	39.47
22	Heather Leacock	39.62	39.47
34	João Fernandes	39.62	39.47