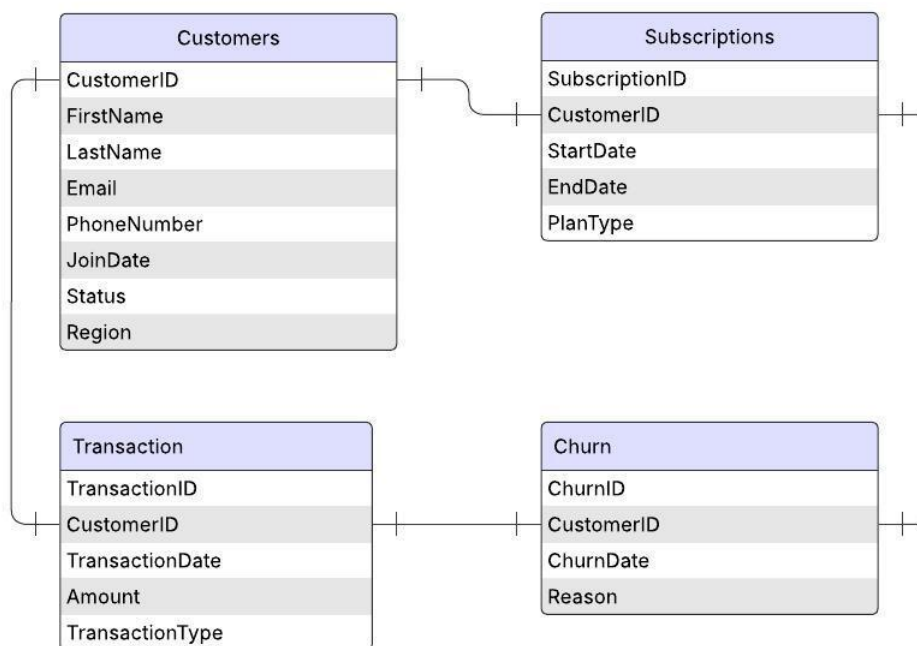# Customer Data Analysis

My SQL Project

Objective

- The project goal is to design and implement a relational database that can store customer data, subscription details, transaction history and churn status.
- I have written SQL queries to extract relevant data for analysis. This forms the foundation for the rest of the project.

Tables to create

Customers, Subscriptions, Transactions & Churn data.

Customers

CustomerID (Primary Key,INT)
FirstName (Varchar)
LastName (Varchar)
Email (Varchar)
PhoneNumber (Date)
JoinDate (Date)
Status (Varchar) – Active, Inactive
Region (Varchar)

Customer Data Analysis

Subscriptions

SubscriptionID (Primary Key, INT)
CustomerID (Foreign Key, INT)
StartDate (Date)
EndDate (Date)
PlanType (Varchar)

Transactions

TransactionID (Primary Key, INT)
CustomerID (Foreign Key, INT)
TransactionDate (Varchar)
Amount (Varchar)
TransactionType (Varchar)

Churn

ChurnID (Primary Key, INT)
CustomerID (Foreign Key, INT)
ChurnDate (Date)
Reason (Varchar)

Question Modes:

- Easy – Queries include: SELECT, GROUP BY, ORDER BY, LIMIT, DESC
- Medium – Queries include: JOIN, GROUP BY, ORDER BY, LIMIT
- Advanced – Queries include: CTE (Common Table Expression), RANK

Retrieving Table Insights

```
1 •    USE big_basket;
2
3 •    select * from customers;
4 •    select * from subscriptions;
5 •    select * from transactions;
6 •    select * from churn;
7
```

Customer Data Analysis

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

CustomerID	FirstName	LastName	Email	PhoneNumber	JoinDate	Status	Region
1	John	Doe	john.doe@example.com	123-456-7890	2022-01-10	Active	North America
2	Jane	Smith	jane.smith@example.com	098-765-4321	2021-12-15	Inactive	Europe
3	Alice	Johnson	alice.j@example.com	567-890-1234	2020-03-20	Active	Asia
4	Bob	Brown	bob.brown@example.com	234-567-8901	2019-06-25	Inactive	North America
5	Charlie	Davis	charlie.d@example.com	345-678-9012	2021-07-14	Active	Europe
6	Diana	Clark	diana.c@example.com	456-789-0123	2018-08-30	Active	Asia
7	Eva	Harris	eva.h@example.com	567-890-1234	2020-12-22	Inactive	North America
8	Frank	Garcia	frank.g@example.com	678-901-2345	2019-03-11	Active	Europe
9	Grace	Miller	grace.m@example.com	789-012-3456	2022-02-18	Inactive	Asia
10	Hank	Wilson	hank.w@example.com	890-123-4567	2020-05-27	Active	North America
11	Ivy	Martinez	ivy.m@example.com	901-234-5678	2019-09-10	Active	Europe
12	Jack	White	jack.w@example.com	012-345-6789	2021-11-20	Inactive	Asia
13	Kelly	Lewis	kelly.l@example.com	123-456-7890	2018-04-15	Active	North America
14	Liam	Walker	liam.w@example.com	234-567-8901	2020-07-08	Inactive	Europe
15	Mia	Hall	mia.h@example.com	345-678-9012	2022-03-02	Active	Asia

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

SubscriptionID	CustomerID	StartDate	EndDate	PlanType
1	1	10-01-2022	09-01-2023	Annual
2	2	15-12-2021	14-12-2022	Monthly
3	3	20-03-2020	19-03-2021	Annual
4	4	25-06-2019	24-06-2020	Annual
5	5	14-07-2021	13-07-2022	Monthly
6	6	30-08-2018	29-08-2019	Annual
7	7	22-12-2020	21-12-2021	Monthly
8	8	11-03-2019	10-03-2020	Annual
9	9	18-02-2022	17-02-2023	Monthly
10	10	27-05-2020	26-05-2021	Annual

subscriptions 43 ✕

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

TransactionID	CustomerID	TransactionDate	Amount	TransactionType
1	15	2024-01-01	32	Purchase
2	22	2024-01-02	52	Refund
3	43	2024-01-03	165	Purchase
4	87	2024-01-04	134	Purchase
5	34	2024-01-05	158	Purchase
6	56	2024-01-06	170	Refund
7	23	2024-01-07	196	Purchase
8	11	2024-01-08	195	Purchase
9	76	2024-01-09	143	Purchase
10	45	2024-01-10	69	Refund

transactions 44 ✕

Customer Data Analysis

	ChurnID	CustomerID	ChurnDate	Reason
▶	1	22	02-01-2024	Poor Customer Service
	2	56	06-06-2024	High Prices
	3	45	10-10-2024	Product Quality Issues
	4	54	12-12-2024	Lack of Product Features
	5	82	14-02-2024	Competitor Offerings
	6	67	15-01-2024	Inconvenience
	7	17	21-01-2024	Lack of Engagement
	8	33	18-01-2024	Unmet Expectations
	9	91	20-01-2024	Price Increases
	10	23	23-01-2024	Personal Circumstances

churn 45 ✕

Easy:

Input:

```
8       -- 1. How many total customers do we have?

9

10 •    select distinct count(*) as Total_Customers from customers;
```

Output:

Total_Customers
300

```
13

14      -- 2. Show the first name, last name and status of all the customers

15

16 •    select FirstName, LastName, Status from customers;

17
```

FirstName	LastName	Status
John	Doe	Active
Jane	Smith	Inactive
Alice	Johnson	Active
Bob	Brown	Inactive
Charlie	Davis	Active
Diana	Clark	Active
Eva	Harris	Inactive

customers 15 ✕

Customer Data Analysis

```sql
17
18      -- 3. Retrieve the count / details of all customers from North America region.
19
20 ●    select count(*) from customers
21      where Region='North America';
22
23 ●    select * from customers
24      where Region='North America';
25
```

Result Grid		Filter Rows:		Export:		Wrap Cell Content: IA

count(*)
▶ 103

Result 18 ✕   customers 19

Result Grid		Filter Rows:		Export:		Wrap Cell Content: IA

	CustomerID	FirstName	LastName	Email	PhoneNumber	JoinDate	Status	Region
▶	1	John	Doe	john.doe@example.com	123-456-7890	2022-01-10	Active	North America
	4	Bob	Brown	bob.brown@example.com	234-567-8901	2019-06-25	Inactive	North America
	7	Eva	Harris	eva.h@example.com	567-890-1234	2020-12-22	Inactive	North America
	10	Hank	Wilson	hank.w@example.com	890-123-4567	2020-05-27	Active	North America
	13	Kelly	Lewis	kelly.l@example.com	123-456-7890	2018-04-15	Active	North America
	16	Noah	Allen	noah.a@example.com	456-789-0123	2021-06-19	Inactive	North America
	19	Quinn	Scott	quinn.s@example.com	789-012-3456	2018-01-05	Active	North America

Result 18   customers 19 ✕

```sql
26      -- 4. Find out those customers with active status.
27
28 ●    select FirstName, LastName, Status from customers
29      where Status="Active";
30
```

Result Grid		Filter Rows:		Export:		Wrap Cell Content: IA

	FirstName	LastName	Status
▶	John	Doe	Active
	Alice	Johnson	Active
	Charlie	Davis	Active
	Diana	Clark	Active
	Frank	Garcia	Active
	Hank	Wilson	Active
	Ivy	Martinez	Active

customers 23 ✕

```sql
34      -- 5. How many customers are there who joined after Jan 1 2001.
35
36 ●    select count(*) FROM Customers where JoinDate > '2021-01-01';
37
```

Customer Data Analysis

	Result Grid	Filter Rows:	Export:	Wrap Cell Content:

count(*)
160

Result 25 ✕

```
38      -- 6. List down the no. of active customers from Europe.
39
40 •    SELECT count(*) from customers
41      where Region = "Europe" AND Status="Active";
42
```

	Result Grid	Filter Rows:	Export:	Wrap Cell Content:

count(*)
47

```
54
55      -- 7 . Find the number of customer joined in year 2021.
56
57 •    Select count(*) from customers
58      where YEAR(JoinDate)=2021;
59
```

	Result Grid	Filter Rows:	Export:	Wrap Cell Content:

count(*)
80

```
62      -- 8. COUNT OF customers having an EMAIL ID containing 'example'.
63
64 •    Select count(*) from customers
65      where Email like "%example%";
```

	Result Grid	Filter Rows:	Export:	Wrap Cell Content:

count(*)
298

Customer Data Analysis

```
67      -- 9. Retrieve the number of customer who are having the annual subscription plan.
68
69  •   Select count(*) from subscriptions
70      where PlanType = "Annual";
71
```

count(*)
200

```
72      -- 10. Retrieve all transaction where purchase amount > 100.
73
74  •   Select count(*) from transactions
75      where Amount>100;
76
```

count(*)
125

```
77      -- 11. Calculate the average amount of all transactions.
78
79  •   Select AVG(amount) from transactions;
80
```

count(*)
200

Intermediate:

Customer Data Analysis

```
83    -- 12. Select all trasactions along with the first name, last name, transsaction Id, Transaction amount.
84
85 •  Select c.FirstName, c.LastName, t.TransactionId, t.Amount
86    FROM customers as c
87    JOIN transactions as t
88    ON c.CustomerId =t.TransactionID;
89
```

FirstName	LastName	TransactionId	Amount
John	Doe	1	32
Jane	Smith	2	52
Alice	Johnson	3	165
Bob	Brown	4	134
Charlie	Davis	5	158
Diana	Clark	6	170
Eva	Harris	7	196
Frank	Garcia	8	195

Result 2 ✕

```
89    -- 13. Find out the 5 most recent transactions from the transaction table.
90
91 •  SELECT *
92    FROM transactions AS t
93    ORDER BY TransactionDate DESC
94    LIMIT 5;
95
```

TransactionID	CustomerID	TransactionDate	Amount	TransactionType
216	270	2024-09-08	29	Purchase
215	269	2024-09-07	142	Purchase
214	268	2024-09-06	176	Purchase
213	267	2024-09-05	136	Refund
212	266	2024-09-04	46	Purchase

```
102   -- 15. List down the churn reasons and customers left for each of those reasons.
103
104 • Select count(*) as count, Reason from churn
105   group by reason;
106
```

count	Reason
10	Poor Customer Service
10	High Prices
10	Product Quality Issues
10	Lack of Product Features
10	Competitor Offerings
10	Inconvenience
10	Lack of Engagement
10	Unmet Expectations
10	Price Increases

Result 4 ✕

Customer Data Analysis

```sql
107     -- 16. Retrieve customer Id, Full Name, email, plan type.
108
109 •   Select c.CustomerID, concat(c.FirstName, " ", c.LastName) as FullName, c.Email, s.PlanType
110     From customers as c inner join subscriptions as s
111     on c.CustomerId = s.subscriptionId;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ĪA

CustomerID	FullName	Email	PlanType
1	John Doe	john.doe@example.com	Annual
2	Jane Smith	jane.smith@example.com	Monthly
3	Alice Johnson	alice.j@example.com	Annual
4	Bob Brown	bob.brown@example.com	Annual
5	Charlie Davis	charlie.d@example.com	Monthly
6	Diana Clark	diana.c@example.com	Annual
7	Eva Harris	eva.h@example.com	Monthly
8	Frank Garcia	frank.g@example.com	Annual
9	Grace Miller	grace.m@example.com	Monthly

Result 5 ×

```sql
113     -- 17. Retrieve active customers who have an annual subscription.
114
115 •   Select count(*) as active_customer_annual
116     from customers as c join subscriptions as s
117     on c.CustomerID = s.subscriptionId
118     where c.Status = "Active" AND s.PlanType="Annual";
119
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ĪA

active_customer_annual
78

```sql
120     -- 18. List down the churn reason & how many North American customers has left for each reason.
121
122 •   select ch.reason, count(*)  AS ch_cust
123     FROM Customers AS c join Churn as ch
124     on c.CustomerId = ch.customerId
125     where c.Region = "North America"
126     Group By ch.Reason;
127
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ĪA

reason	ch_cust
Poor Customer Service	6
Lack of Product Features	5
High Prices	3
Product Quality Issues	4
Personal Circumstances	5
Lack of Engagement	6
Price Increases	3
Competitor Offerings	3

Result 8 ×

Customer Data Analysis

```
128        -- 19. How many customers have churned and have made transactions?
129
130 •   select count(*)
131     from churn as c join transactions as t
132     on c.CustomerID = t.CustomerID;
133
```

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

count(*)
85

```
134        -- 20. Retrieve all customers who have not made any transactions with us.
135
136 •   select count(*) from
137     customers as c left join transactions as t
138     on c.CustomerID = t.CustomerID
139     where t.TransactionID IS NULL;
```

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

count(*)
86

Advanced:

```
        -- Find out the customers who have more than one subscriptions.

• ⊖ with cte as(
      select c.CustomerID from
      Customers as c join subscriptions as s
      on c.customerId = s.customerID
      Group by c.CustomerID
      having count(s.PlanType)>1)

      select count(*) from cte;
```

Output:

count(*)
58

Customer Data Analysis

```sql
2       -- 28. Identify churn reasons by region and rank them by count.
3
4 •     select c.region, ch.reason, dense_rank() over (partition by c.Region order by count(*) desc) as ReasonRank
5       from churn as ch join customers as c
6       on ch.CustomerID = c.CustomerID
7       group by c.Region, ch.Reason
8       order by c.Region, ReasonRank;
```

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

| region	reason	ReasonRank
Asia	High Prices	1
Asia	Unmet Expectations	1
Asia	Lack of Product Features	2
Asia	Product Quality Issues	2
Asia	Poor Customer Service	3
Asia	Lack of Engagement	3
Asia	Price Increases	3
Asia	Competitor Offerings	4
Asia	Personal Circumstances	4
Asia	Inconvenience	4

Result 1 ×

```sql
20      -- 30. Identify the customers who made purchase after their subscription ended.
21
22 •    select count(Distinct t.customerId) as purchase_after_subs_end
23      from transactions as t join subscriptions as s
24      on t.CustomerID = s.CustomerId
25      where t.TransactionDate>s.EndDate
26      AND t.TransactionType="Purchase";
27
```

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

purchase_after_subs_end
91

```sql
43      -- 33. Find top 5 customers with the highest average monthly spend. (based on purchases)
44
45 •    select t.CustomerID, sum(t.Amount)/count(distinct Date_Format (t.TransactionDate, "%Y-%m"), 2) AS avgmonthlyspend
46      FROM Transactions as t
47      where t.TransactionType = "Purchase" group by t.CustomerId
48      ORDER BY AvgMonthlyspend DESC LIMIT 5;
49
```

| Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows: |

CustomerID	avgmonthlyspend
78	200.0000
29	200.0000
66	198.0000
23	196.0000
144	196.0000

Customer Data Analysis

```
50      -- 34. For each month of 2024, show the total revenue from purchase.
51
52  •   select Date_Format (t.TransactionDate, "%Y-%m") as Month, sum(amount) as totalrevenue
53      from Transactions t
54      where year(TransactionDate) ="2024" AND TransactionType = "Purchase"
55      Group by Date_Format (t.TransactionDate, "%Y-%m")
56      order by totalrevenue DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Month	totalrevenue
2024-05	2726
2024-04	2095
2024-01	2027
2024-08	1877
2024-02	1037
2024-07	964
2024-09	497

Result 7 ×