Data Description

The data you have is related to a subscription-based delivery service that tracks customer subscriptions, plans, and revenue. The data may include information such as:

1. Subscription status: which customers are currently subscribed to which plans, how long they have been subscribed, and whether they have renewed or cancelled their subscriptions.
2. Upgrades and downgrades: which customers have upgraded or downgraded their subscription plans, and when these changes occurred.
3. Revenue data: how much revenue the company is generating from each customer, including subscription fees, add-ons or upgrades, and any other revenue sources.

This data can be used to analyse customer behaviour and identify trends in subscription sign-ups, upgrades, and cancellations. It can also be used to optimize pricing and marketing strategies, as well as to develop targeted retention and upselling campaigns.

Plans table

plan_id	plan_name	price
0	trial	0
1	basic monthly	9.90
2	pro monthly	19.90
3	pro annual	199
4	churn	null

Table 1 plans

Subscriptions table

customer_id	plan_id	start_date
1	0	2020-08-01
1	1	2020-08-08
2	0	2020-09-20
2	3	2020-09-27
11	0	2020-11-19

Data set in SQL

```sql
CREATE SCHEMA dbo;
SET search_path = dbo;

CREATE TABLE plans (
  plan_id INTEGER,
  plan_name VARCHAR(13),
  price DECIMAL(5,2)
);

INSERT INTO plans
  (plan_id, plan_name, price)
VALUES
  ('0', 'trial', '0'),
  ('1', 'basic monthly', '9.90'),
  ('2', 'pro monthly', '19.90'),
  ('3', 'pro annual', '199'),
  ('4', 'churn', null);



CREATE TABLE subscriptions (
  customer_id INTEGER,
  plan_id INTEGER,
  start_date DATE
);

INSERT INTO subscriptions
  (customer_id, plan_id, start_date)
VALUES
  ('1', '0', '2020-08-01'),
  ('1', '1', '2020-08-08'),
  ('2', '0', '2020-09-20'),
  ('2', '3', '2020-09-27'),
  ('3', '0', '2020-01-13'),
  ('3', '1', '2020-01-20'),
  ('4', '0', '2020-01-17'),
  ('4', '1', '2020-01-24'),
```

Problem Statement

1. How many customers has foodie-fi ever had?

Query SQL

```
1 select count(distinct customer_id) from dbo.subscriptions
```

Output

Results

Query #1 **Execution time: 2ms**

count
1000

2. What is the monthly distribution of trial plan?

Query

```
1 select
2 Date_Part('month',start_date) as munth,
3 to_char(start_date,'month') as munth_name,
4 count(plan_id) as plan_id_count
5 from dbo.subscriptions
6 group by 1,2
7 order by 1
```

Output

munth	munth_name	plan_id_count
1	january	236
2	february	195
3	march	245
4	april	217

3. Show the breakdown by count of events for each plan_name after the year 2020

Query

```
select
b.plan_id,b.plan_name,count(distinct a.customer_id)
from
dbo.subscriptions a
join
dbo.plans b
on a.plan_id=b.plan_id
where EXTRACT(YEAR FROM a.start_date) > 2020
group by 1,2
```

Output

4. What is the customer count and percentage of customers who have churned rounded to 1 decimal place

Query

```
select t.a as total_churned_customer,concat(round((t.a*100/t.b),1),'%') as
Percentage_of_churned_customer
from
(
select count(distinct customer_id) a,
  (select count(distinct customer_id)  from dbo.subscriptions) b
  from
  dbo.subscriptions
  where plan_id=4
)t
```

Output

5. How many customers have churned straight after their initial free trial? what percentage is this rounded to the nearest whole number?

Query

```
select count(*)
from
dbo.subscriptions a
join
dbo.subscriptions b
on a.customer_id=b.customer_id
and a.start_date=b.start_date + interval ' 1 week'
where b.plan_id=0 and a.plan_id=4
```

Output

count
92

6. What is the number and percentage of customer plans after their initial free trial?

Query 1

```
select count(*)
from
dbo.subscriptions a
join
dbo.subscriptions b
on a.customer_id=b.customer_id
and a.start_date=b.start_date + interval ' 1 week'
where b.plan_id=0 and (a.plan_id=1 or a.plan_id=2 or a.plan_id=3)
```

Output

count
908

Query 2

```
select 'Basic monthly' as path,count(*)
from (select customer_id,plan_id,row_number() over(partition by customer_id order by plan_id)
      as row_nofrom dbo.subscriptions) a
where plan_id=1 and a.row_no=2
union
select 'pro monthly' as path,count(*)
from (select customer_id,plan_id,row_number() over(partition by customer_id order by plan_id)
      as row_no from dbo.subscriptions) a
where plan_id=2 and a.row_no=2
union
select 'pro annual' as path,count(*)
from (select customer_id,plan_id, row_number() over(partition by customer_id order by plan_id)
      as row_no from dbo.subscriptions) a
where plan_id=3 and a.row_no=2
union
select 'churn' as path,count(*)
from (select customer_id,plan_id, row_number() over(partition by customer_id order by plan_id)
      as row_no from dbo.subscriptions) a
where plan_id=4 and a.row_no=2

```

Output

path	count
pro monthly	325
Basic monthly	546
churn	92
pro annual	37

7. What is the customer count and percentage breakdown of all 5 plan_name values at 2020–12–31?

Quary

```sql
with cte as(
select customer_id,plan_id,row_number() over(partition by customer_id order by start_date desc) as rr,
count(*) over(partition by customer_id) as cnt
from dbo.subscriptions
where start_date<'2020-12-31'
group by start_date,customer_id,plan_id
order by customer_id)

SELECT 'trial' as plan,count(*),
concat(round((100*count(*)/(select count(distinct customer_id) from dbo.subscriptions)),2),'%') Percentage_customer_in_this_plan
FROM cte
where rr=1 and plan_id=0
union
SELECT 'basic monthly' as plan,count(*),
concat(round((100*count(*)/(select count(distinct customer_id) from dbo.subscriptions)),2),'%') Percentage_customer_in_this_plan
FROM cte
where rr=1 and plan_id=1
union
SELECT 'pro monthly' as plan,count(*),
concat(round((100*count(*)/(select count(distinct customer_id) from dbo.subscriptions)),2),'%') Percentage_customer_in_this_plan
FROM cte
where rr=1 and plan_id=2
union
SELECT 'pro annual' as plan,count(*),
concat(round((100*count(*)/(select count(distinct customer_id) from dbo.subscriptions)),2),'%') Percentage_customer_in_this_plan
FROM cte
where rr=1 and plan_id=3
union
SELECT 'churn' as plan,count(*),
concat(round((100*count(*)/(select count(distinct customer_id) from dbo.subscriptions)),2),'%') Percentage_customer_in_this_plan
FROM cte
where rr=1 and plan_id=4
```

Output

plan	count	percentage_customer_in_this_plan
basic monthly	224	22.00%
pro monthly	327	32.00%
pro annual	195	19.00%
churn	235	23.00%
trial	19	1.00%

8. How many days on average does it take a customer to an annual plan from the day they join Foodie-Fi?

Query

```
WITH cte AS (
  SELECT start_date, customer_id, plan_id, ROW_NUMBER() OVER(PARTITION BY customer_id
ORDER BY start_date DESC) AS rr,
         COUNT(*) OVER(PARTITION BY customer_id) AS cnt
  FROM dbo.subscriptions
  GROUP BY start_date, customer_id, plan_id
)
SELECT round(avg(b.start_date-a.start_date),2)
FROM cte a
JOIN cte b
  ON a.customer_id = b.customer_id AND a.start_date < b.start_date
WHERE a.plan_id = 0 AND b.plan_id = 3
```

Output

round
104.62

9.
10. How many customers downgraded from a pro-monthly to a basic monthly plan ?

Query

```
1 select count(*)
2 from (
3   select customer_id,plan_id,
4     LEAD(plan_id,1) over(partition by customer_id order by start_date) as kk
5     from dbo.subscriptions) a
6 where a.plan_id=2 and a.kk=1 ;
7
```

Output

count
0