Case Study - 2

Friday, January 28, 2022 9:53 AM

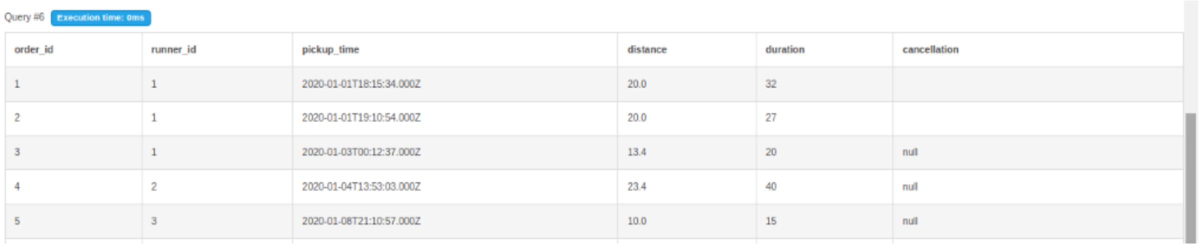
NOTE :- To clean the customer_orders table: I created a new table called customer_orders1 and cleaned it to avoid any data loss of the original table.

First Cleaned The Data

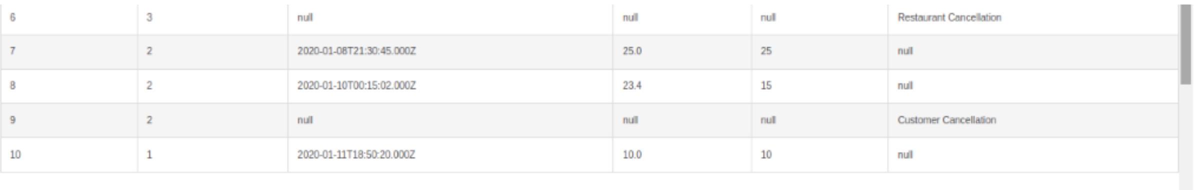
```
create table customer_orders1 as (select order_id, customer_id, pizza_id, exclusions, extras,
order_time
from pizza_runner.customer_orders);

update customer_orders1
set
exclusions = case exclusions when 'null' then null else exclusions end,
extras = case extras when 'null' then null else extras end;

create table runner_orders1 as
(select order_id, runner_id, pickup_time,
case
when distance like '%km' then trim('km' from distance)
else distance
end as distance,
case
when duration like '%minutes' then trim('minutes' from duration)
when duration like '%mins' then trim('mins' from duration)
when duration like '%minute' then trim('minute' from duration)
else duration
end as duration, cancellation
from pizza_runner.runner_orders);

update runner_orders1
set
pickup_time = case pickup_time when 'null' then null else pickup_time end,
distance = case distance when 'null' then null else distance end,
duration = case duration when 'null' then null else duration end,
cancellation = case cancellation when 'null' then null else cancellation end;

alter table runner_orders1
alter column pickup_time TYPE TIMESTAMP WITH TIME ZONE
    USING to_timestamp(pickup_time, 'YYYY-MM-DD HH24:MI:SS'),
alter column distance TYPE NUMERIC(5,1) USING(distance::NUMERIC),
alter column duration TYPE INT USING(duration::INT);
```

After The cleaning The data

```
select * from runner_orders1;
```

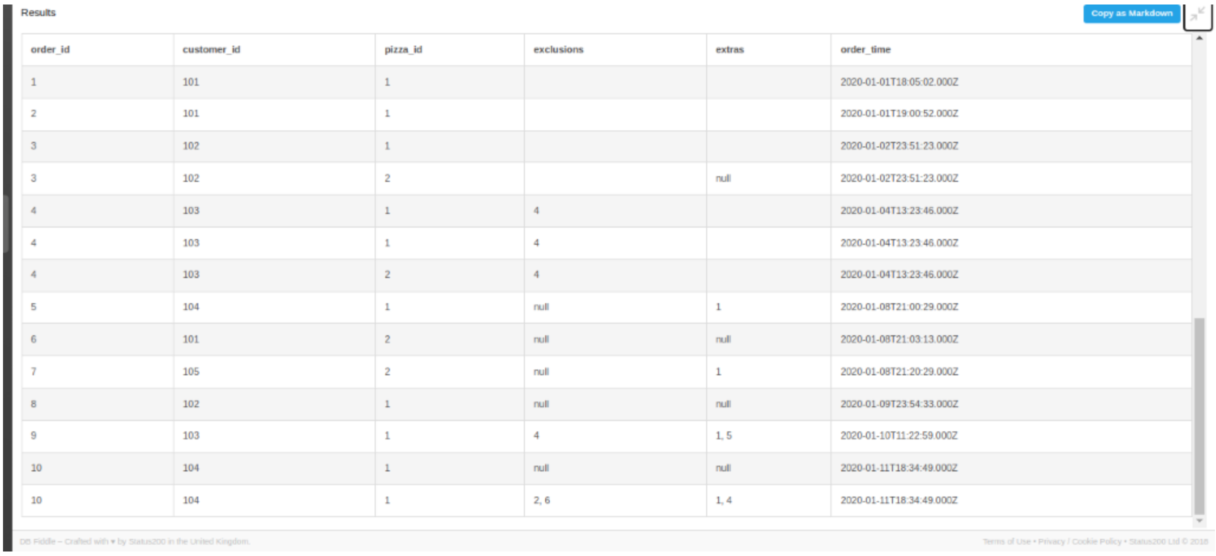


order_id	runner_id	pickup_time	distance	duration	cancellation
1	1	2020-01-01T18:15:34.000Z	20.0	32	
2	1	2020-01-01T19:10:54.000Z	20.0	27	
3	1	2020-01-03T00:12:37.000Z	13.4	20	null
4	2	2020-01-04T13:53:03.000Z	23.4	40	null
5	3	2020-01-08T21:10:57.000Z	10.0	15	null



6	3	null	null	null	Restaurant Cancellation
7	2	2020-01-08T21:30:45.000Z	25.0	25	null
8	2	2020-01-10T00:15:02.000Z	23.4	15	null
9	2	null	null	null	Customer Cancellation
10	1	2020-01-11T18:50:20.000Z	10.0	10	null

```
select * from pizza_runner.customer_orders;
```


Results
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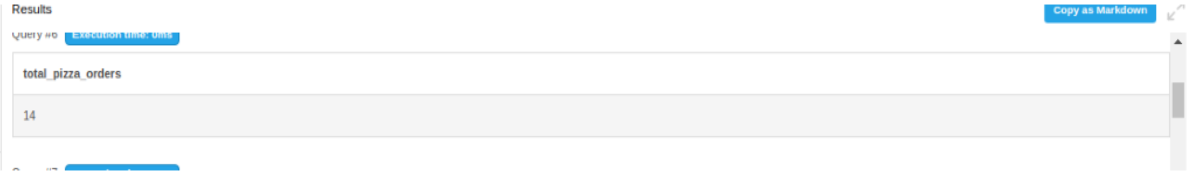
order_id	customer_id	pizza_id	exclusions	extras	order_time
1	101	1			2020-01-01T18:05:02.000Z
2	101	1			2020-01-01T19:00:52.000Z
3	102	1			2020-01-02T23:51:23.000Z
3	102	2		null	2020-01-02T23:51:23.000Z
4	103	1	4		2020-01-04T13:23:46.000Z
4	103	1	4		2020-01-04T13:23:46.000Z
4	103	2	4		2020-01-04T13:23:46.000Z
5	104	1	null	1	2020-01-08T21:00:29.000Z
6	101	2	null	null	2020-01-08T21:03:13.000Z
7	105	2	null	1	2020-01-08T21:20:29.000Z
8	102	1	null	null	2020-01-09T23:54:33.000Z
9	103	1	4	1, 5	2020-01-10T11:22:59.000Z
10	104	1	null	null	2020-01-11T18:34:49.000Z
10	104	1	2, 6	1, 4	2020-01-11T18:34:49.000Z

Section - 1

1. How many pizzas were ordered?

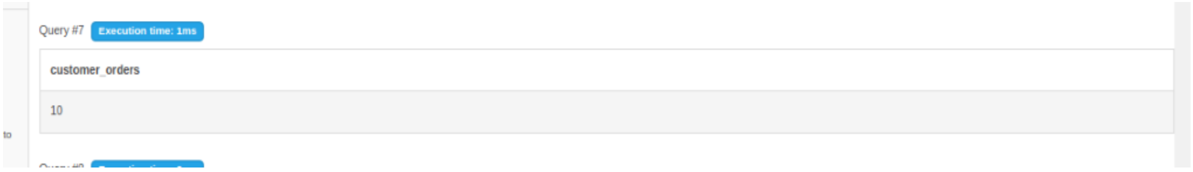
```
select count(pizza_id) As Total_Pizza_Orders
        from pizza_runner.customer_orders;
```



total_pizza_orders
14

2. How many unique customer orders were made?

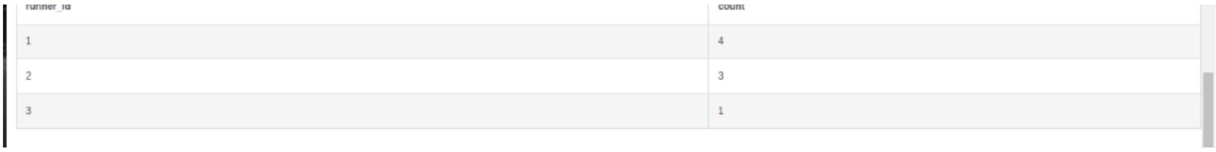
```
select count(distinct(order_id)) As Customer_Orders
        from pizza_runner.customer_orders;
```



customer_orders
10

3. How many successful orders were delivered by each runner?

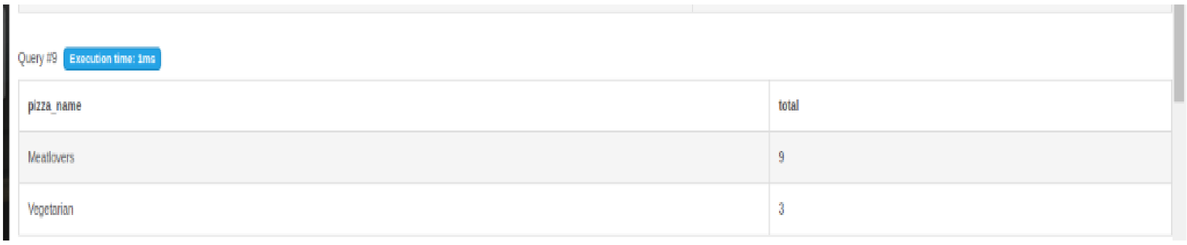
```
select runner_id,
        count(order_id) from runner_orders1
        where distance is not null
        group by runner_id
        ORDER BY runner_id;
```



runner_id	count
1	4
2	3
3	1

4. How many of each type of pizza was delivered?

```
select p.pizza_name,
        count(c.pizza_id) As Total
        from customer_orders1 as c inner join runner_orders1 r
        on c.order_id=r.order_id inner join pizza_runner.pizza_names p
        on c.pizza_id=p.pizza_id
        where r.distance is not null
        group by p.pizza_id,p.pizza_name;
```

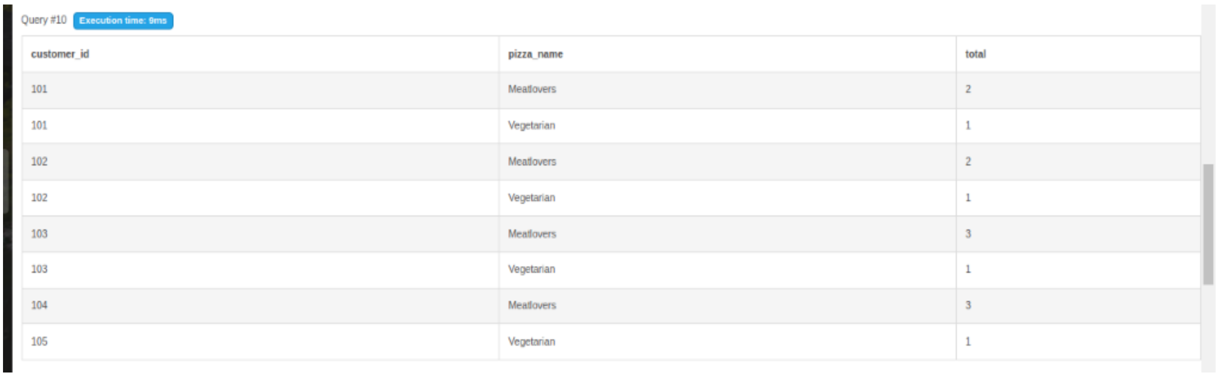


Query #9 Execution time: 1ms

pizza_name	total
Meatlovers	9
Vegetarian	3

5. How many Vegetarian and Meatlovers were ordered by each customer?

```
select c.customer_id,
        p.pizza_name,
        count(c.pizza_id) As Total
        from customer_orders1 as c inner join pizza_runner.pizza_names p
        on c.pizza_id=p.pizza_id
        group by c.customer_id,p.pizza_id,p.pizza_name
        order by c.customer_id;
```



Query #10 Execution time: 9ms

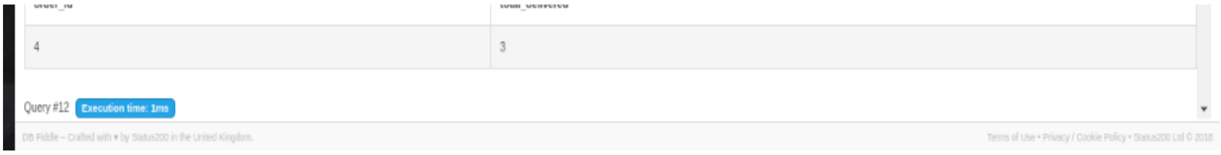
customer_id	pizza_name	total
101	Meatlovers	2
101	Vegetarian	1
102	Meatlovers	2
102	Vegetarian	1
103	Meatlovers	3
103	Vegetarian	1
104	Meatlovers	3
105	Vegetarian	1

6. What was the maximum number of pizzas delivered in a single order?

```
select r.order_id,
        count(c.pizza_id) As Total_Delivered
        from runner_orders1 r inner join customer_orders1 c
        on c.order_id=r.order_id
        where r.distance is not null
        group by r.order_id
        order by Total_Delivered Desc LIMIT 1;
```

Query #11 Execution time: 0ms

order_id	total_delivered



order_id	total_delivered
4	3

Query #12 Execution time: 1ms

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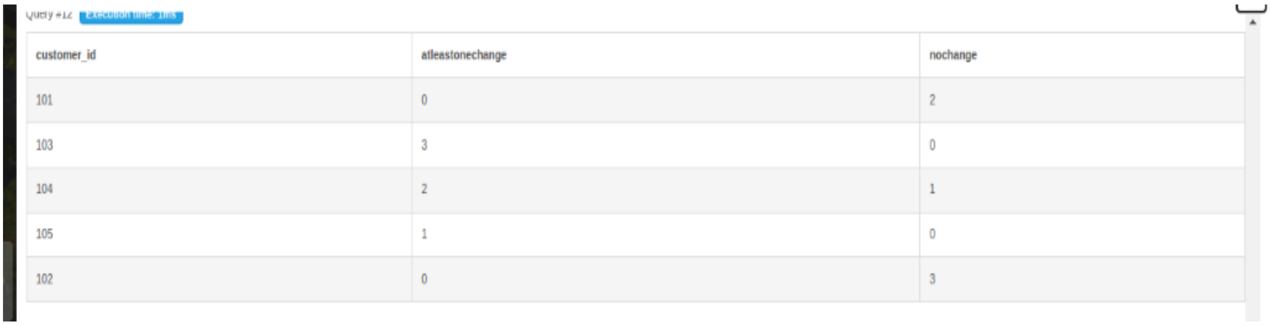
7. For each customer, how many delivered pizzas had at least 1 change and how many had no changes?

```
select customer_orders1.customer_id,
        sum(case
                when (exclusions is not null and exclusions != '') or (extras is not null and
extras                            != '') then 1
              else 0
                end )as AtleastOneChange,
          sum(case
                when (exclusions is null  or exclusions = '') and (extras is null or extras = '') then 1
              else 0
                 end ) as NoChange
                 from customer_orders1
                 inner join runner_orders1
                 on runner_orders1.order_id = customer_orders1.order_id
                 where runner_orders1.distance != 0
                 group by customer_orders1.customer_id;
```

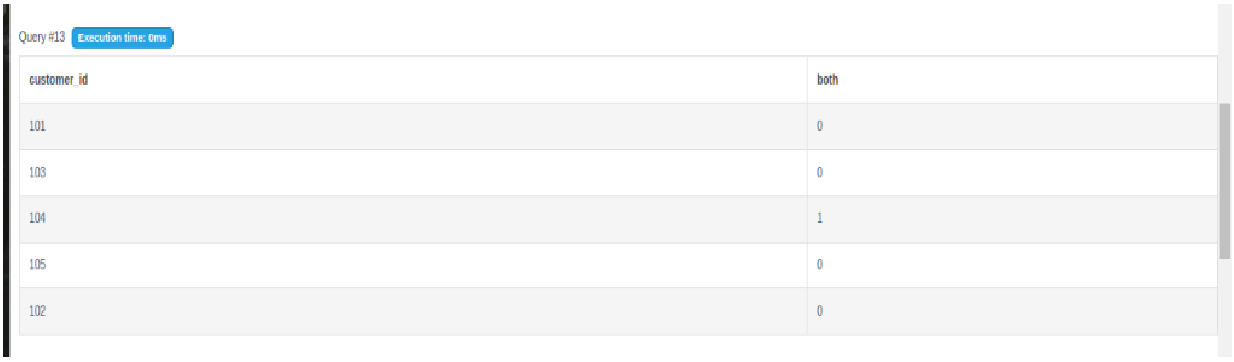


Query #12 Execution time: 1ms

customer_id	atleastonechange	nochange
101	0	2
103	3	0
104	2	1
105	1	0
102	0	3

8. How many pizzas were delivered that had both exclusions and extras?

```
select customer_orders1.customer_id,
        sum(case  when (exclusions is not null and exclusions != '') and (extras is not null and extras
!= '') then 1 else 0 end )as Both
        from customer_orders1 inner join runner_orders1
        on runner_orders1.order_id = customer_orders1.order_id
        where runner_orders1.distance != 0  group by customer_orders1.customer_id;
```

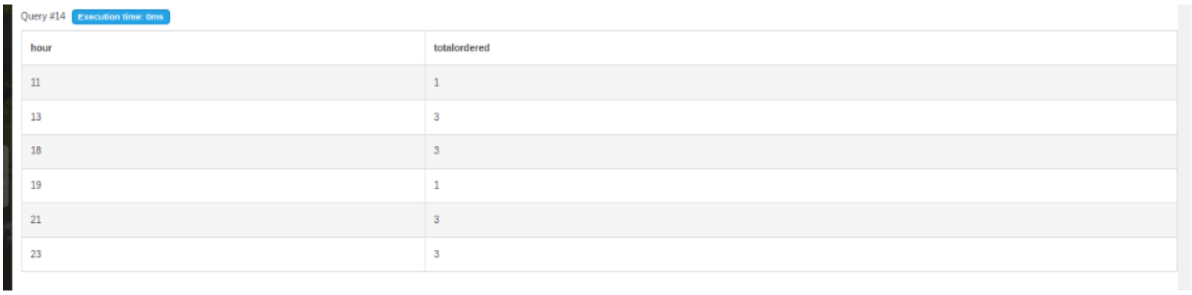


Query #13 Execution time: 0ms

customer_id	both
101	0
103	0
104	1
105	0
102	0

9. What was the total volume of pizzas ordered for each hour of the day?

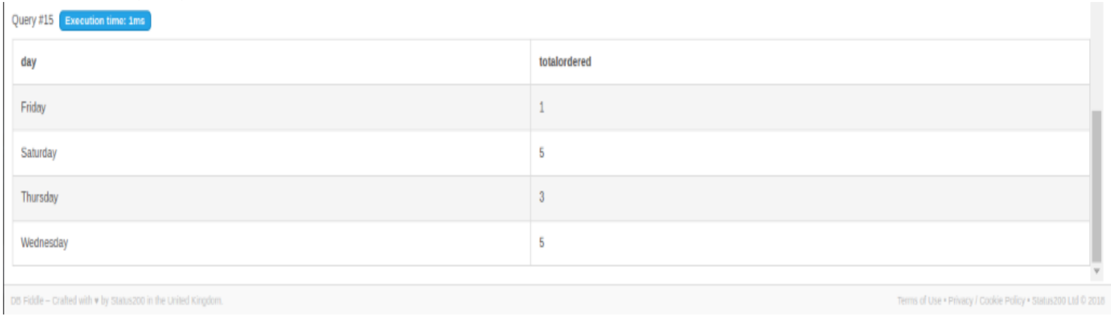
```
select extract(hour from order_time) as Hour,
        count(order_id) as TotalOrdered
        from customer_orders1
        group by Hour
        order by Hour;
```


Query #14 Execution time: 0ms

hour	totalordered
11	1
13	3
18	3
19	1
21	3
23	3

10. What was the volume of orders for each day of the week?

```
select to_char(order_time, 'Day') as Day,
        count(order_id) as TotalOrdered
        from customer_orders1
        group by Day
        order by Day;
```


Query #15 Execution time: 1ms

day	totalordered
Friday	1
Saturday	5
Thursday	3
Wednesday	5

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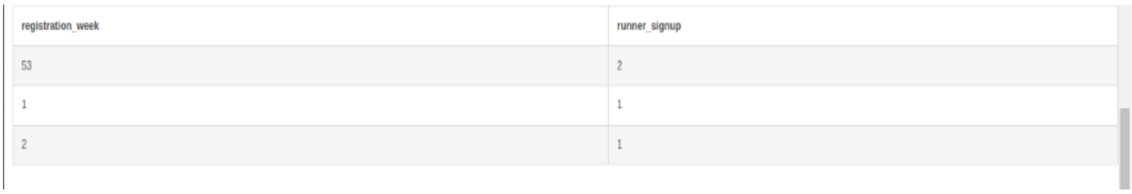
Section – 2

1. How many runners signed up for each 1 week period? (i.e. week starts 2021-01-01)

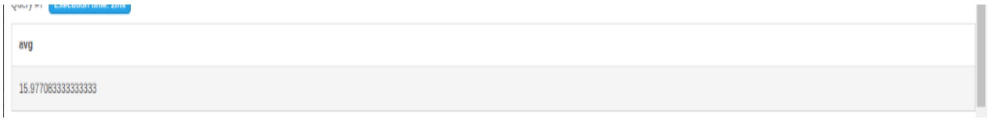
```
select EXTRACT(week FROM registration_date) AS registration_week,
        COUNT(runner_id) AS runner_signup
        from pizza_runner.runners
        GROUP BY registration_week;
```



registration_week	runner_signup
53	2
1	1
2	1

2. What was the average time in minutes it took for each runner to arrive at the Pizza Runner HQ to pickup the order?

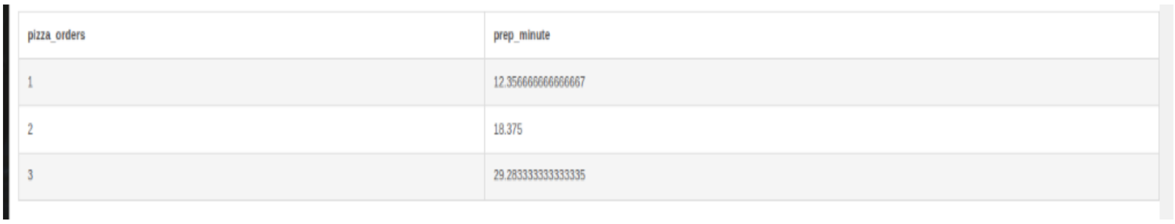
```
select avg(MInutes) from
        (select c.order_id,
                c.order_time,
                r.pickup_time,
                extract(epoch from r.pickup_time-c.order_time)/60 AS MInutes from
                customer_orders1 as c inner join runner_orders1 as r
                on c.order_id=r.order_id where r.distance is not null
                GROUP BY c.order_id,c.order_time,r.pickup_time
                order by order_id) As Minute;
```



avg
15.9770833333333

3. Is there any relationship between the number of pizzas and how long the order takes to prepare?

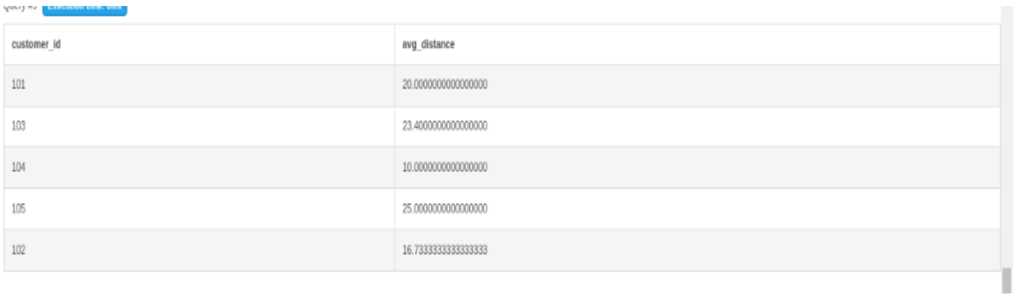
```
with CTE As(
        select count(c.order_id) As Pizza_orders,
                c.order_time,
                r.pickup_time,
                extract(epoch from r.pickup_time-c.order_time)/60 AS Prep_MInutes from
                customer_orders1 as c inner join runner_orders1 as r
                on c.order_id=r.order_id where r.distance is not null
                GROUP BY c.order_id,c.order_time,r.pickup_time)
        select Pizza_orders,avg(Prep_MInutes) As Prep_minute from CTE group by Pizza_orders order by
Pizza_orders;
```



pizza_orders	prep_minute
1	12.356666666666667
2	18.375
3	29.283333333333335

4. What was the average distance travelled for each customer?

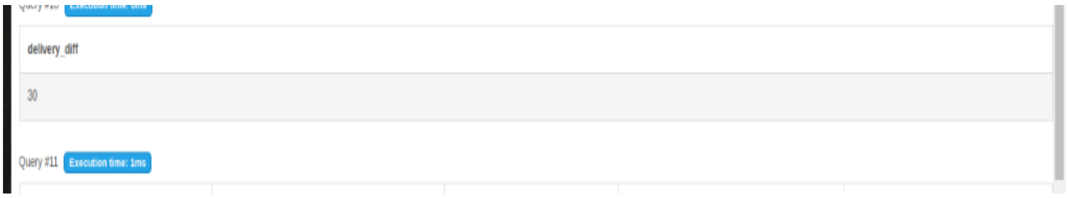
```
select c.customer_id,
        avg(r.distance) As Avg_distance from
        customer_orders1 c inner join runner_orders1 r
        on c.order_id=r.order_id
        where r.distance is not null group by c.customer_id;
```



customer_id	avg_distance
101	20.0000000000000000
103	23.4000000000000000
104	10.0000000000000000
105	25.0000000000000000
102	16.7333333333333333

5. What was the difference between the longest and shortest delivery times for all orders?

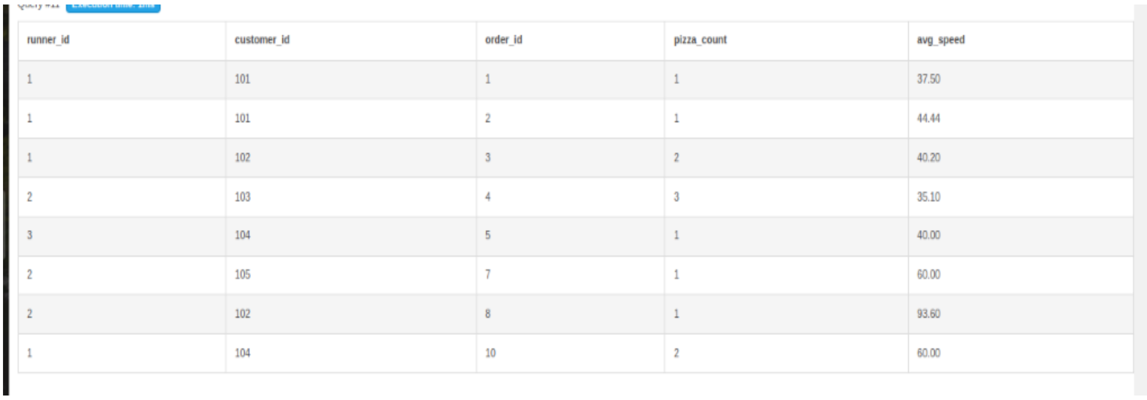
```
select
        max(duration::NUMERIC)-min(duration::NUMERIC) As Delivery_diff
        from runner_orders1;
```


Query #11
Execution time: 1ms

delivery_diff
30

6. What was the average speed for each runner for each delivery and do you notice any trend for these values?

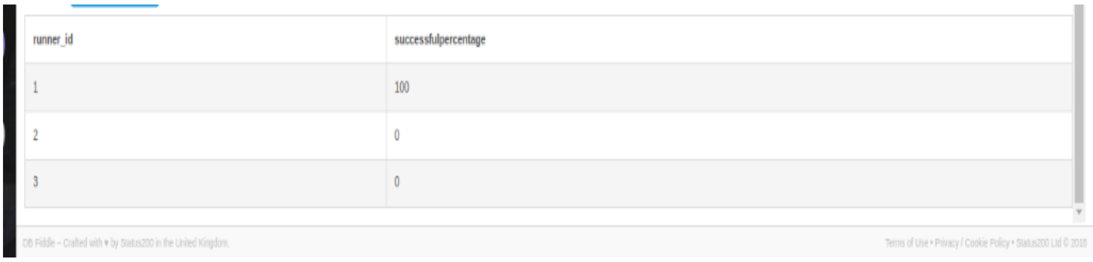
```
SELECT r.runner_id,
        c.customer_id,
        c.order_id,
        COUNT(c.order_id) AS pizza_count,
        ROUND((r.distance/r.duration * 60), 2) AS avg_speed
        FROM runner_orders1 AS r
        JOIN customer_orders1 AS c
        ON r.order_id = c.order_id
        WHERE distance != 0
        GROUP BY r.runner_id, c.customer_id, c.order_id, r.distance, r.duration
        ORDER BY c.order_id;
```



runner_id	customer_id	order_id	pizza_count	avg_speed
1	101	1	1	37.50
1	101	2	1	44.44
1	102	3	2	40.20
2	103	4	3	35.10
3	104	5	1	40.00
2	105	7	1	60.00
2	102	8	1	93.60
1	104	10	2	60.00

7. What is the successful delivery percentage for each runner?

```
with cte as(
            select runner_id,
            sum(case
                when distance != 0 then 1
                else 0
                end) as percsucc, count(order_id) as TotalOrders
            from runner_orders1
            group by runner_id)
select runner_id,
        round((percsucc/TotalOrders)*100) as Successfulpercentage
        from cte
        order by runner_id;
```



runner_id	successfulpercentage
1	100
2	0
3	0

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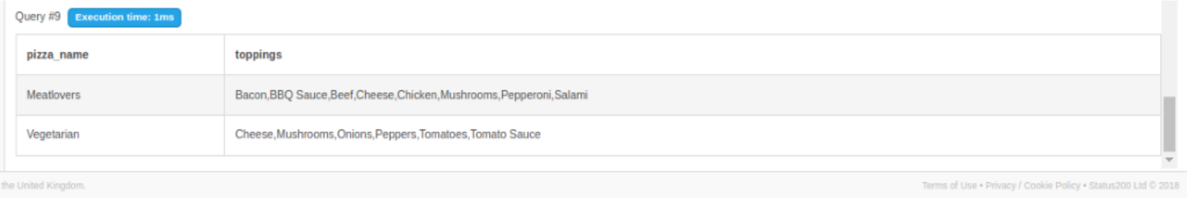
Section – 3

1. What are the standard ingredients for each pizza?

```
create table Pizza_toppings(
         pizza_id int,toppings int);
        insert into Pizza_toppings values
        (1,1),
        (1,2),
        (1,3),
        (1,4),
        (1,5),
        (1,6),
        (1,8),
        (1,10),
        (2,4),
        (2,6),
        (2,7),
        (2,9),
        (2,11),
        (2,12);

        select * from pizza_toppings;

        select P.pizza_name,
                string_agg(pt.topping_name, ',')As Toppings
                from pizza_runner.pizza_names p inner join Pizza_toppings t
                on p.pizza_id=t.pizza_id inner join pizza_runner.pizza_toppings pt
                on pt.topping_id=t.toppings group by pizza_name;
```



Query #9 Execution time: 1ms

pizza_name	toppings
Meatlovers	Bacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
Vegetarian	Cheese,Mushrooms,Onions,Peppers,Tomatoes,Tomato Sauce

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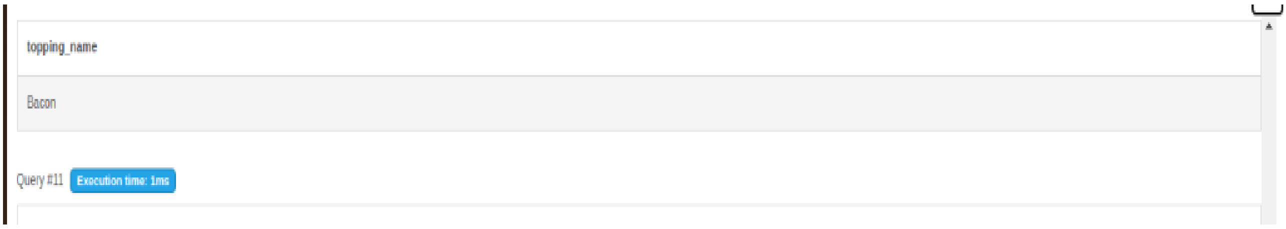
2. What was the most commonly added extra?

```
select p.topping_name
        from pizza_runner.pizza_toppings p
        where topping_id=
        (select regexp_split_to_table(extras,',')::int as string
        from customer_orders1
        where  extras != '' and extras is not null
        group by  regexp_split_to_table(extras,',')::int
         order by count(*) DESC LIMIT 1);
```

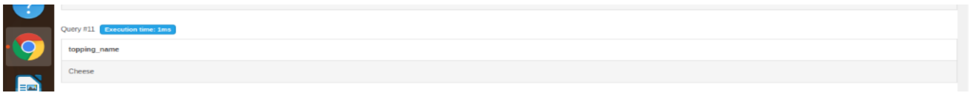


topping_name
Bacon

Query #11 Execution time: 1ms

3. What was the most common exclusion?

```
select p.topping_name
        from pizza_runner.pizza_toppings p
        where topping_id=
                (select regexp_split_to_table(exclusions,',')::int as string
                        from customer_orders1
                        where  exclusions != '' and exclusions is not null
                        group by  regexp_split_to_table(exclusions,',')::int
                        order by count(*) DESC LIMIT 1);
```



Query #11 Execution time: 1ms

topping_name
Cheese

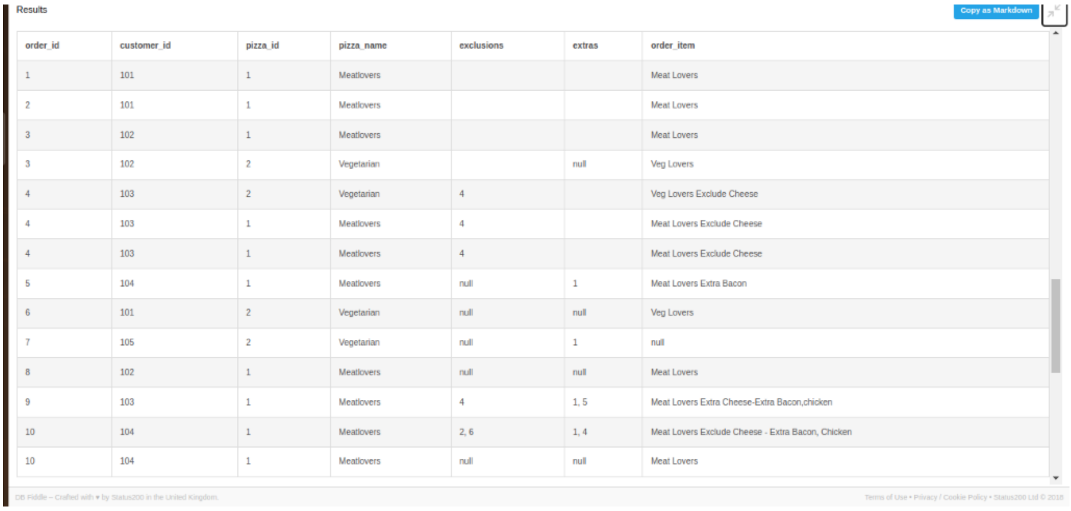
IMPORTANT TO BE NOTED........Special for string how to Aggregate a string then split by comma..

(e.g

```
select unnest(string_to_array(string,',')) from (select string_agg(extras,',') as string from
customer_orders1 where  extras != '' and extras is not null) as t; )
```

4. Generate an order item for each record in the customers_orders table in the format of one of the following:
   - Meat Lovers
   - Meat Lovers - Exclude Beef
   - Meat Lovers - Extra Bacon
   - Meat Lovers - Exclude Cheese, Bacon - Extra Mushroom, Peppers

```
select c.order_id,
        c.customer_id,
        c.pizza_id,
        p.pizza_name,
        c.exclusions,
        c.extras,
        case
                when c.pizza_id=1 and (exclusions = '' or exclusions is null) and (extras = '' or extras is
                null)  then 'Meat Lovers'
                when c.pizza_id=2 and (exclusions = '' or exclusions is null) and (extras = '' or extras is
                null)  then 'Veg Lovers'
                when c.pizza_id=1 and (exclusions Like '%3%' or exclusions='3') and (extras = '' or
                extras is null)  then 'Meat Lovers Exclude Beeef'
                when c.pizza_id=2 and (exclusions = '4' ) and (extras = '' or extras is null)  then 'Veg
                Lovers Exclude Cheese'
                when c.pizza_id=1 and (exclusions = '4' ) and (extras = '' or extras is null)  then 'Meat
                Lovers Exclude Cheese'
                when c.pizza_id=1 and (exclusions is null or exclusions='') and (extras = '1')  then 'Meat
                Lovers Extra Bacon'
                when c.pizza_id=1 and (exclusions='4') and (extras like '1, 5')  then 'Meat Lovers Extra
                Cheese-Extra Bacon,chicken'
                when c.pizza_id=1 and (exclusions like '1, 4' ) and (extras like '6, 9') then 'Meat Lovers
                - Exclude Cheese, Bacon - Extra Mushroom, Peppers'
                when c.pizza_id=1 and (exclusions like '2, 6') and (extras like '1, 4')  then 'Meat Lovers
                Exclude Cheese - Extra Bacon, Chicken'
        end as Order_Item
        from customer_orders1 c inner join pizza_runner.pizza_names p
        on c.pizza_id=p.pizza_id
        order by order_id;
```



Results

order_id	customer_id	pizza_id	pizza_name	exclusions	extras	order_item
1	101	1	Meatlovers			Meat Lovers
2	101	1	Meatlovers			Meat Lovers
3	102	1	Meatlovers			Meat Lovers
3	102	2	Vegetarian		null	Veg Lovers
4	103	2	Vegetarian	4		Veg Lovers Exclude Cheese
4	103	1	Meatlovers	4		Meat Lovers Exclude Cheese
4	103	1	Meatlovers	4		Meat Lovers Exclude Cheese
5	104	1	Meatlovers	null	1	Meat Lovers Extra Bacon
6	101	2	Vegetarian	null	null	Veg Lovers
7	105	2	Vegetarian	null	1	null
8	102	1	Meatlovers	null	null	Meat Lovers
9	103	1	Meatlovers	4	1, 5	Meat Lovers Extra Cheese-Extra Bacon,chicken
10	104	1	Meatlovers	2, 6	1, 4	Meat Lovers Exclude Cheese - Extra Bacon, Chicken
10	104	1	Meatlovers	null	null	Meat Lovers

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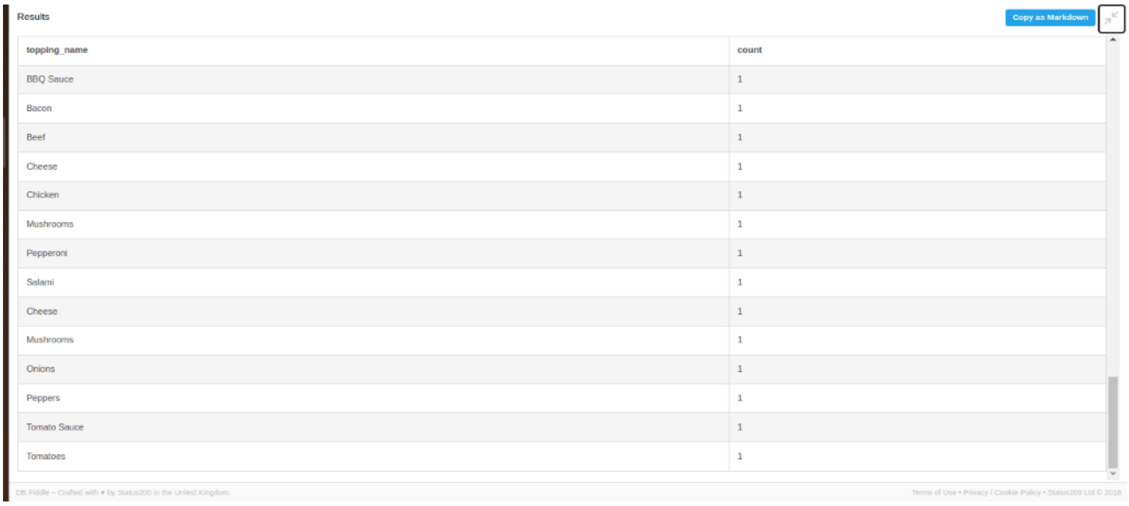
5. What is the total quantity of each ingredient used in all delivered pizzas sorted by most frequent first?

```
select pz.topping_
        name,count(topping_id)
```

```
from Pizza_toppings p inner join pizza_runner.pizza_toppings pz
on p.toppings=pz.topping_id group by pizza_id,topping_name order by pizza_id;
```



Results

topping_name	count
BBQ Sauce	1
Bacon	1
Beef	1
Cheese	1
Chicken	1
Mushrooms	1
Pepperoni	1
Salami	1
Cheese	1
Mushrooms	1
Onions	1
Peppers	1
Tomato Sauce	1
Tomatoes	1

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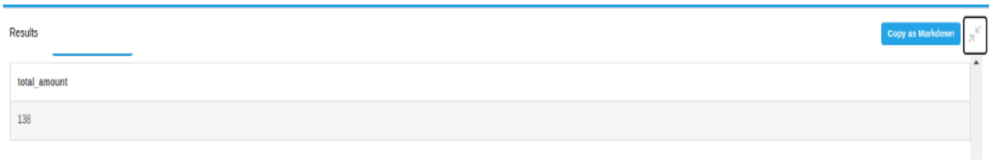
Section – 4

1. If a Meat Lovers pizza costs $12 and Vegetarian costs $10 and there were no charges for changes - how much money has Pizza Runner made so far if there are no delivery fees?

```
select sum(case when c.pizza_id=1 then 12 else 10 end) as Total_Amount
     from runner_orders1 as r inner join customer_orders1 c
     on c.order_id=r.order_id
     where r.distance is not null;
```



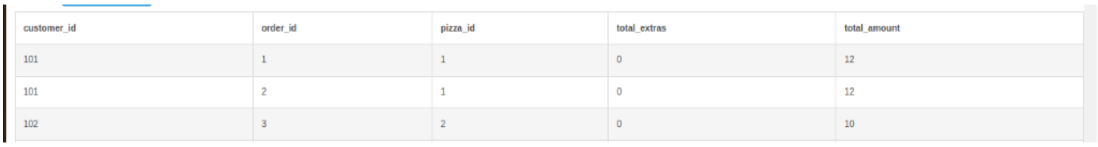
Results

total_amount
138

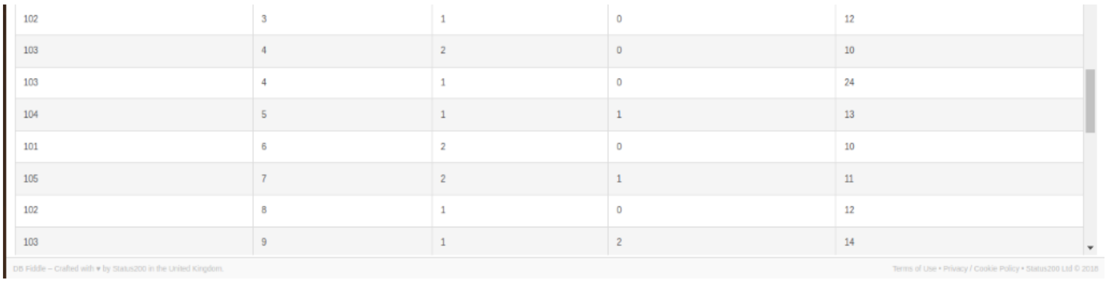
2. What if there was an additional $1 charge for any pizza extras?
   a. Add cheese is $1 extra

```
with CTE AS(select *,
  CASE
    WHEN EXTRAS IS NOT NULL AND EXTRAS != '' AND lower(EXTRAS) != 'null'
      THEN (LENGTH(EXTRAS) - LENGTH(REPLACE(EXTRAS,',',''))) + 1)
    ELSE 0
  END total_extras from customer_orders1)
 SELECT customer_id,order_id,pizza_id,total_extras,
 SUM(CASE
    WHEN pizza_id=1 AND total_extras > 0 then 12+total_extras
       WHEN pizza_id=2 AND total_extras > 0  then 10+total_extras
       WHEN pizza_id=1 then 12 ELSE 10
  END)Total_Amount

FROM CTE group by customer_id,order_id,pizza_id,total_extras order by order_id;
```



customer_id	order_id	pizza_id	total_extras	total_amount
101	1	1	0	12
101	2	1	0	12
102	3	2	0	10



102	3	1	0	12
103	4	2	0	10
103	4	1	0	24
104	5	1	1	13
101	6	2	0	10
105	7	2	1	11
102	8	1	0	12
103	9	1	2	14

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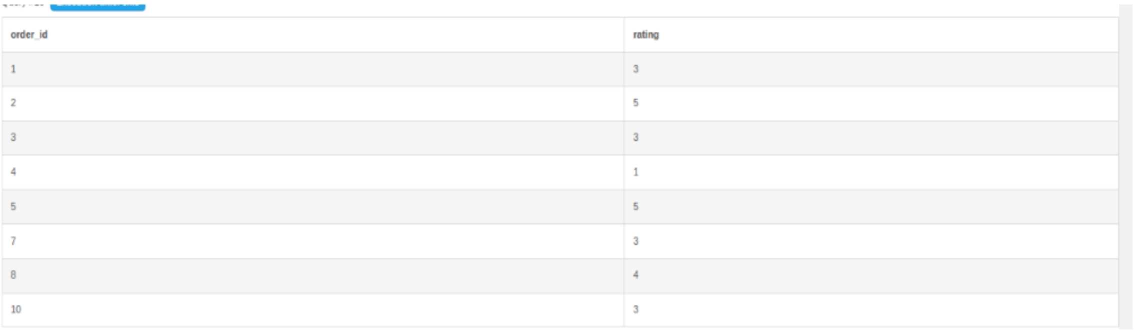
3. The Pizza Runner team now wants to add an additional ratings system that allows customers to rate their runner, how would you design an additional table for this new dataset - generate a schema for this new table and insert your own data for ratings for each successful customer order between 1 to 5.

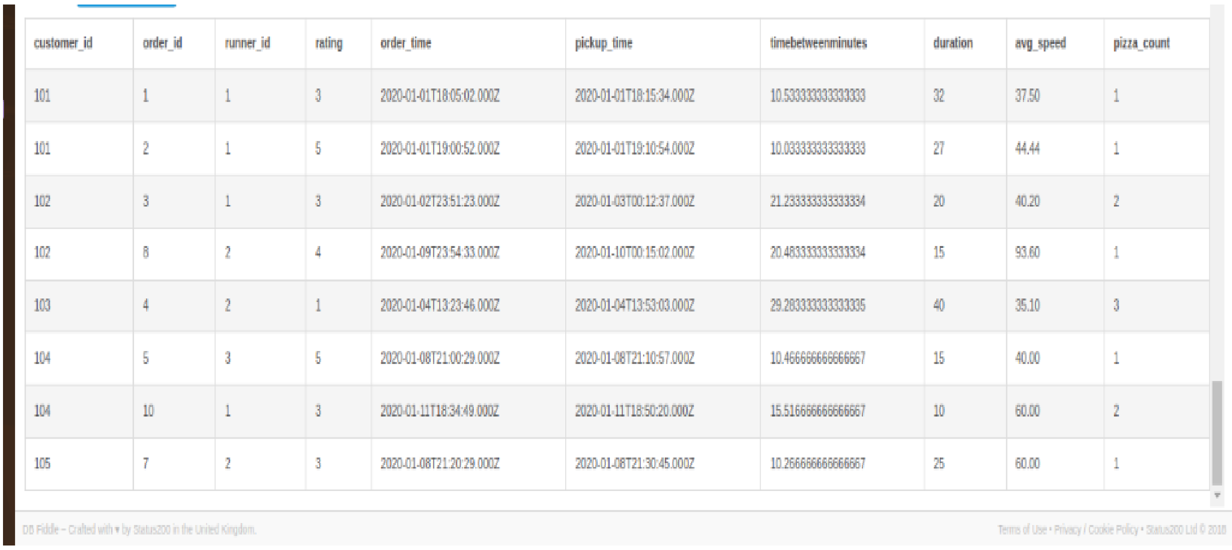
```
create table ratings (
        order_id integer,
        rating integer);
        insert into ratings
        (order_id, rating)
                values
                (1,3),
                (2,5),
                (3,3),
                (4,1),
                (5,5),
                (7,3),
                (8,4),
                (10,3);
        select * from ratings;
```



order_id	rating
1	3
2	5
3	3
4	1
5	5
7	3
8	4
10	3

4. Using your newly generated table - can you join all of the information together to form a table which has the following information for successful deliveries?
   - customer_id
   - order_id
   - runner_id
   - rating
   - order_time
   - pickup_time
   - Time between order and pickup
   - Delivery duration
   - Average speed
   - Total number of pizzas

```
select c.customer_id,
        c.order_id,
        r.runner_id,
        ra.rating,
        c.order_time,
        r.pickup_time,
        extract(epoch from r.pickup_time-c.order_time)/60 AS TimeBetweenMInutes, r.duration,
        ROUND((r.distance/r.duration * 60), 2) AS avg_speed,
        COUNT(c.order_id) AS pizza_count
        from customer_orders1 c inner join runner_orders1 r
        on c.order_id=r.order_id
        inner join ratings ra
        on ra.order_id=c.order_id
        group by
        c.customer_id,c.order_id,r.runner_id,ra.rating,c.order_time,r.pickup_time,TimeBetweenMI
        nutes,r.duration,r.distance;
```



customer_id	order_id	runner_id	rating	order_time	pickup_time	timebetweenminutes	duration	avg_speed	pizza_count
101	1	1	3	2020-01-01T18:05:02.000Z	2020-01-01T18:15:34.000Z	10.533333333333333	32	37.50	1
101	2	1	5	2020-01-01T19:00:52.000Z	2020-01-01T19:10:54.000Z	10.033333333333333	27	44.44	1
102	3	1	3	2020-01-02T23:51:23.000Z	2020-01-03T00:12:37.000Z	21.233333333333334	20	40.20	2
102	8	2	4	2020-01-09T23:54:33.000Z	2020-01-10T00:15:02.000Z	20.483333333333334	15	93.60	1
103	4	2	1	2020-01-04T13:23:46.000Z	2020-01-04T13:53:03.000Z	29.283333333333335	40	35.10	3
104	5	3	5	2020-01-08T21:00:29.000Z	2020-01-08T21:10:57.000Z	10.466666666666667	15	40.00	1
104	10	1	3	2020-01-11T18:34:49.000Z	2020-01-11T18:50:20.000Z	15.516666666666667	10	60.00	2
105	7	2	3	2020-01-08T21:20:29.000Z	2020-01-08T21:30:45.000Z	10.266666666666667	25	60.00	1

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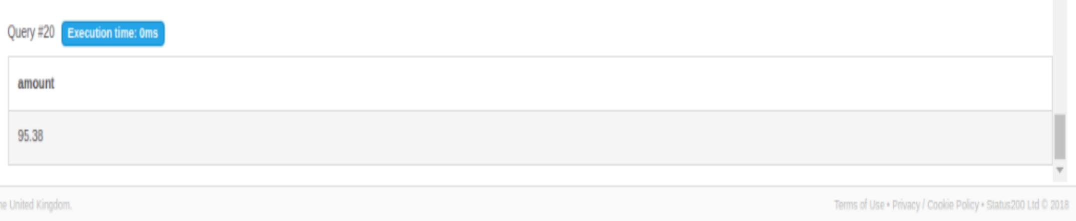
5. If a Meat Lovers pizza was $12 and Vegetarian $10 fixed prices with no cost for extras and each runner is paid $0.30 per kilometre traveled - how much money does Pizza Runner have left over after these deliveries?

```
select (Total_Amount-distance) As Amount
        from
                (select sum(case when c.pizza_id=1 then 12 else 10 end) as Total_Amount,
                (sum(r.distance))*0.3 as distance from runner_orders1 r inner join customer_orders1
                c on c.order_id=r.order_id) As Delivery;
```



Query #20 Execution time: 0ms

amount
95.38

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