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START YOUR SQL ENGINES
PIZZA
RUNNER
CASE STUDY #2
8 WEEK SQL
CHALLENGE
8WEEKSQLCHALLENGE.COM

```
CREATE SCHEMA pizza_runner;
SET search_path = pizza_runner;

DROP TABLE IF EXISTS runners;
CREATE TABLE runners (
  "runner_id" INTEGER,
  "registration_date" DATE
);
INSERT INTO runners
  ("runner_id", "registration_date")
VALUES
  (1, '2021-01-01'),
  (2, '2021-01-03'),
  (3, '2021-01-08'),
  (4, '2021-01-15');


DROP TABLE IF EXISTS customer_orders;
CREATE TABLE customer_orders (
  "order_id" INTEGER,
  "customer_id" INTEGER,
  "pizza_id" INTEGER,
  "exclusions" VARCHAR(4),
  "extras" VARCHAR(4),
  "order_time" TIMESTAMP
);

INSERT INTO customer_orders
```

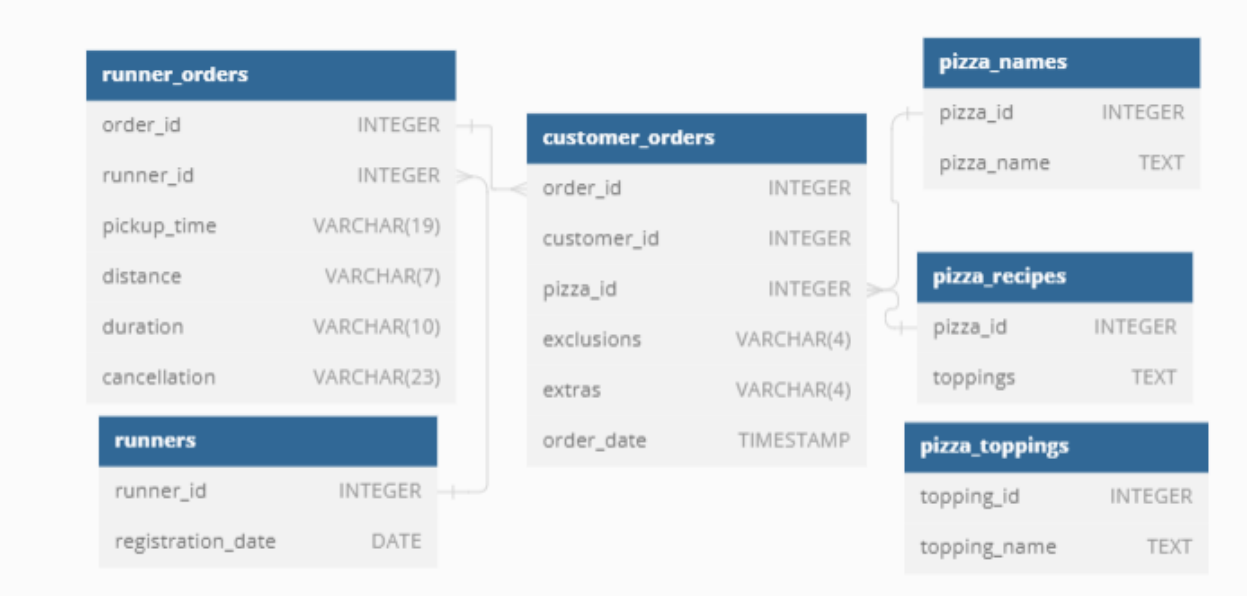
```
  ("order_id", "customer_id", "pizza_id", "exclusions", "extras", "order_time")
VALUES
  ('1', '101', '1', '', '', '2020-01-01 18:05:02'),
  ('2', '101', '1', '', '', '2020-01-01 19:00:52'),
  ('3', '102', '1', '', '', '2020-01-02 23:51:23'),
  ('3', '102', '2', '', NULL, '2020-01-02 23:51:23'),
  ('4', '103', '1', '4', '', '2020-01-04 13:23:46'),
  ('4', '103', '1', '4', '', '2020-01-04 13:23:46'),
  ('4', '103', '2', '4', '', '2020-01-04 13:23:46'),
  ('5', '104', '1', 'null', '1', '2020-01-08 21:00:29'),
  ('6', '101', '2', 'null', 'null', '2020-01-08 21:03:13'),
  ('7', '105', '2', 'null', '1', '2020-01-08 21:20:29'),
  ('8', '102', '1', 'null', 'null', '2020-01-09 23:54:33'),
  ('9', '103', '1', '4', '1, 5', '2020-01-10 11:22:59'),
  ('10', '104', '1', 'null', 'null', '2020-01-11 18:34:49'),
  ('10', '104', '1', '2, 6', '1, 4', '2020-01-11 18:34:49');



DROP TABLE IF EXISTS runner_orders;
CREATE TABLE runner_orders (
  "order_id" INTEGER,
  "runner_id" INTEGER,
  "pickup_time" VARCHAR(19),
  "distance" VARCHAR(7),
  "duration" VARCHAR(10),
  "cancellation" VARCHAR(23)
);


INSERT INTO runner_orders
```

```
  ("order_id", "runner_id", "pickup_time", "distance", "duration", "cancellation")
VALUES
  ('1', '1', '2020-01-01 18:15:34', '20km', '32 minutes', ''),
  ('2', '1', '2020-01-01 19:10:54', '20km', '27 minutes', ''),
  ('3', '1', '2020-01-03 00:12:37', '13.4km', '20 mins', NULL),
  ('4', '2', '2020-01-04 13:53:03', '23.4', '40', NULL),
  ('5', '3', '2020-01-08 21:10:57', '10', '15', NULL),
  ('6', '3', 'null', 'null', 'null', 'Restaurant Cancellation'),
  ('7', '2', '2020-01-08 21:30:45', '25km', '25mins', 'null'),
  ('8', '2', '2020-01-10 00:15:02', '23.4 km', '15 minute', 'null'),
  ('9', '2', 'null', 'null', 'null', 'Customer Cancellation'),
  ('10', '1', '2020-01-11 18:50:20', '10km', '10minutes', 'null');


DROP TABLE IF EXISTS pizza_names;
CREATE TABLE pizza_names (
  "pizza_id" INTEGER,
  "pizza_name" TEXT
);
INSERT INTO pizza_names
  ("pizza_id", "pizza_name")
VALUES
  (1, 'Meatlovers'),
  (2, 'Vegetarian');


DROP TABLE IF EXISTS pizza_recipes;
CREATE TABLE pizza_recipes (
  "pizza_id" INTEGER,
```

```
  "toppings" TEXT
);
INSERT INTO pizza_recipes
  ("pizza_id", "toppings")
VALUES
  (1, '1, 2, 3, 4, 5, 6, 8, 10'),
  (2, '4, 6, 7, 9, 11, 12');



DROP TABLE IF EXISTS pizza_toppings;
CREATE TABLE pizza_toppings (
  "topping_id" INTEGER,
  "topping_name" TEXT
);
INSERT INTO pizza_toppings
  ("topping_id", "topping_name")
VALUES
  (1, 'Bacon'),
  (2, 'BBQ Sauce'),
  (3, 'Beef'),
  (4, 'Cheese'),
  (5, 'Chicken'),
  (6, 'Mushrooms'),
  (7, 'Onions'),
  (8, 'Pepperoni'),
  (9, 'Peppers'),
  (10, 'Salami'),
  (11, 'Tomatoes'),
  (12, 'Tomato Sauce');
```

```
-- select * from runner_orders

-- select * from runner

-- select * from pizza_names

-- select * from pizza_recipes

-- select * from pizza_toppings

-- select * from customer_orders
```

Entity Relationship Diagram



QUESTIONS

A. Pizza Metrics

How many pizzas were ordered?

```
select count(order_id) as total_orders
from customer_orders
```

How many unique customer orders were made?

```
select distinct(customer_id) as unique_customers
from customer_orders
order by customer_id asc
```

How many successful orders were delivered by each runner?

```
select runner_id,count(cancellation)
from runner_orders
where cancellation not in ('RestaurantCancellation','CustomerCancellation')
group by runner_id
order by runner_id
```

How many of each type of pizza was delivered?

```
select pizza_name, count(c.pizza_id) as count_of_pizza
from pizza_names as p
join customer_orders as c
on p.pizza_id = c.pizza_id
group by pizza_name
```

How many Vegetarian and Meatlovers were ordered by each customer?

```
select customer_id,pizza_name, count(c.pizza_id) as count_of_pizza
from pizza_names as p
join customer_orders as c
on p.pizza_id = c.pizza_id
group by customer_id,pizza_name
order by customer_id
```

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

```
select cs.order_id ,count(cs.order_id) as max_orders
from runner_orders as rs
join customer_orders as cs
on rs.order_id = cs.order_id
where rs.cancellation = '0'
group by cs.order_id
order by max_orders  desc
limit 1
```

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

a)how many delivered pizzas had at least 1 change

```
select co.customer_id,count(co.exclusions)
from runner_orders as ro
join customer_orders as co
on ro.order_id = co.order_id
where cancellation = '0' and co.exclusions = '0'
group by co.customer_id
```

b)how many delivered pizzas had no change?

```
select co.customer_id,count(co.exclusions)
from runner_orders as ro
join customer_orders as co
on ro.order_id = co.order_id
where cancellation = '0' and co.exclusions <>'0'
group by co.customer_id
```

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

```
select count(ro.order_id) as count_of_orders
from runner_orders as ro
join customer_orders as co
on ro.order_id = co.order_id
where ro.cancellation = '0'
```

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

```
select extract(hour from order_time),count(order_id)
from customer_orders
group by extract(hour from order_time)
```

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

```
select to_char(order_time,'day'),count(order_id)
from customer_orders
group by to_char(order_time,'day')
```

B. Runner and Customer Experience

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

```
select count(runner_id)
from runners
group by extract(week from registration_date)
```

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

```
with mycte as
(select co.order_id,extract(minute from (ro.pickup_time - co.order_time)) as minutes
from runner_orders as ro
join customer_orders as co
on ro.order_id = co.order_id
where ro.pickup_time is not null)
select order_id,count(order_id) count_of_pizaa_order,sum(minutes) as required_time
from mycte
group by order_id
order by count_of_pizaa_order desc
```

What was the average distance travelled for each customer?

```
select co.customer_id,round(avg(duration),0)
from runner_orders as ro
join customer_orders as co
on ro.order_id = co.order_id
group by co.customer_id
order by co.customer_id
```

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

```
select (max(ro.duration)- min(ro.duration)) diff_min_max_duration
from runner_orders as ro
join customer_orders as co
on ro.order_id = co.order_id
```

where ro.duration <> 0

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

```
select ro.runner_id,round(avg(ro.distance),0) as avg_distance
from runner_orders as ro
join runners as r
on ro.runner_id = r.runner_id
where cancellation = '0'
group by ro.runner_id
```

What is the successful delivery percentage for each runner?

```
select ro.runner_id,
(sum(case when ro.cancellation = '0' then 1 else 0 end) * 100/count(*))
from runner_orders as ro
join runners as r
on ro.runner_id = r.runner_id
group by ro.runner_id
```

C. Ingredient Optimisation

What are the standard ingredients for each pizza?

What was the most commonly added extra?

```
select pt.topping_name, count(pt.topping_name) as number_of_time_occure
from customer_orders as co
join pizza_toppings as pt on cast(pt.topping_id as text)= any(string_to_array(co.extras,', '))
```

```
group by pt.topping_name
order by number_of_time_occure desc
limit 1
```

What was the most common exclusion?

```
select  pt.topping_name,count(*) as number_of_time_occur
from customer_orders as co
join pizza_toppings as pt on cast(pt.topping_id as text) = any(string_to_array(co.exclusions,', '))
group by pt.topping_name
order by number_of_time_occur desc
limit 1
```

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

```
select pt.topping_name,count(*) as count_of_time_occures
from customer_orders as co
join runner_orders as ro on co.order_id = ro.order_id
join pizza_recipes pr ON co.pizza_id = pr.pizza_id
join pizza_toppings as pt on cast(pt.topping_id as text) = any(string_to_array(pr.toppings,', '))
where ro.cancellation = '0'
group by pt.topping_name
order by count_of_time_occures desc
```

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 pn.pizza_name,
sum(case when pn.pizza_name = 'Meatlovers' then 12 else 10 end)
from pizza_names as pn
join customer_orders as co on co.pizza_id = pn.pizza_id
join runner_orders as ro on co.order_id = ro.order_id
where ro.cancellation = '0'
group by pn.pizza_name
```