

SQL DATA ANALYSIS PROJECT

CASE STUDY OF THE RESTAURANT ZAKIA'S DELIGHT

INTRODUCTION

- **Zakia, a lovely friend of mine, has always dreamed of running an own restaurant. At 01/01/2023 her dream came true and she could open her small, neat and cosy diner located in the city center of Frankfurt, Germany.**
- **Zakia's Delight offers 10 kind of dishes: Chicken Stew, Vegetable Stew, Fruit Salad, French Fries, Hungarian Chicken Soup, Cheeseburger with French Fries, Vegetable Soup, Greek Salad, Beef - Vegetable Soup and Cheesecake.**
- **My dear friend wants to keep her restaurant as a happy, successful place, so she requested me to help analyzing a collection of data about her customers.**



PROBLEM STATEMENT

Zakia wants to create a stronger and deeper connection with her customers. She wants to know more about their favorite dishes, visiting patterns and about how much money they have spent. So, she prepared a list of questions and asked my help to answer them.

The restaurant has a loyalty program which is planned to be expanded, we need insights from the data collected from customers, so we can improve their dining experience.

Due to privacy issues we are provided with a sample of the overall customer data.

ENTITY RELATIONSHIP DIAGRAM

SALES_DATA

Field	Type	Null	Key	Default	Extra
ID	int	YES		NULL	
FOOD_ID	int	YES		NULL	
ORDER_DATE	date	YES		NULL	

DISHES

Field	Type	Null	Key	Default	Extra
DISH_ID	int	YES		NULL	
NAME	varchar(255)	YES		NULL	
PRICE	float	YES		NULL	

CUSTOMERS

	Field	Type	Null	Key	Default	Extra
►	CUST_ID	int	YES		NULL	
	JOIN_DATE	date	YES		NULL	

ID	FOOD_ID	ORDER_DATE
1	2	2023-01-01
1	5	2023-01-15
1	8	2023-02-03
2	1	2023-01-05
2	5	2023-02-04
3	1	2023-01-12
3	6	2023-03-04
3	5	2023-04-26
3	9	2023-05-01
3	5	2023-05-08
4	10	2023-01-06
4	7	2023-02-07
4	5	2023-04-30
5	1	2023-01-25
5	5	2023-01-31
5	9	2023-02-14
5	4	2023-03-30
5	7	2023-04-02
5	5	2023-05-03
6	6	2023-01-10
6	9	2023-02-11
6	10	2023-05-09
7	5	2023-01-22
7	8	2023-01-25
7	5	2023-02-12
7	4	2023-02-27
7	1	2023-03-09
7	10	2023-03-31
7	2	2023-04-16
7	5	2023-05-02
8	7	2023-02-03
8	4	2023-03-07
8	5	2023-04-26
8	9	2023-05-02
9	2	2023-01-01
9	5	2023-01-19
9	3	2023-02-15
9	6	2023-03-02
9	5	2023-05-05
10	5	2023-02-22
10	8	2023-03-31
10	5	2023-05-04

SALES_DATA

SAMPLE DATA FOR ALL THE TABLES

DISHES

DISH_ID	NAME	PRICE
1	Chicken Stew	8.5
2	Vegetable Stew	7
3	Fruit Salad	4
4	French Fries	3.5
5	Hungarian Chicken Soup	8.5
6	Cheeseburger with French Fries	11
7	Vegetable Soup	6
8	Greek Salad	5
9	Beef - Vegetable Soup	11
10	Cheesecake	4.5

CUSTOMERS

CUST_ID	JOIN_DATE
1	2023-02-01
2	2023-02-01
3	2023-02-15
4	2023-02-01
5	2023-02-01
6	2023-03-01
7	2023-03-01
8	2023-03-15
9	2023-02-15
10	2023-02-01

1. WHAT IS THE TOTAL AMOUNT EACH CUSTOMER SPENT AT ZAKIA'S DELIGHT?

```
SELECT SALES_DATA.ID, SUM(PRICE) AS TOTAL_AMOUNT FROM SALES_DATA  
INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID  
GROUP BY SALES_DATA.ID;
```

ID	TOTAL_AMOUNT
1	20.5
2	17
3	47.5
4	19
5	46
6	26.5
7	54
8	29
9	39
10	22

2. HOW MANY DAYS HAS EACH CUSTOMER VISITED THE RESTAURANT?

```
SELECT ID, COUNT(ORDER_DATE) AS DAYS FROM SALES_DATA  
GROUP BY ID;
```

ID	DAYS
1	3
2	2
3	5
4	3
5	6
6	3
7	8
8	4
9	5
10	3

3. WHAT WAS THE FIRST ITEM FROM THE MENU PURCHASED BY EACH CUSTOMER?

```
SELECT ID, FOOD_ID, NAME
FROM (SELECT ID, FOOD_ID, NAME, DISH_ID,
ROW_NUMBER() OVER(PARTITION BY SALES_DATA.ID ORDER BY ORDER_DATE) AS RN
FROM SALES_DATA
INNER JOIN DISHES
ON SALES_DATA.FOOD_ID = DISHES.DISH_ID) AS DISH
WHERE RN = 1;
```

ID	FOOD_ID	NAME
1	2	Vegetable Stew
2	1	Chicken Stew
3	1	Chicken Stew
4	10	Cheesecake
5	1	Chicken Stew
6	6	Cheeseburger with French Fries
7	5	Hungarian Chicken Soup
8	7	Vegetable Soup
9	2	Vegetable Stew
10	5	Hungarian Chicken Soup

4. WHAT IS THE MOST PURCHASED ITEM ON THE MENU AND HOW MANY TIMES WAS IT PURCHASED BY ALL CUSTOMERS?

```
SELECT DISHES.NAME, COUNT(SALES_DATA.FOOD_ID) AS TOTAL_PURCHASES
FROM SALES_DATA
INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID
GROUP BY DISHES.NAME
ORDER BY TOTAL_PURCHASES DESC
LIMIT 1;
```

	NAME	TOTAL_PURCHASES
▶	Hungarian Chicken Soup	15

5. WHICH ITEM WAS THE MOST POPULAR FOR EACH CUSTOMER?

```
WITH DISH AS (  
  SELECT ID, NAME, COUNT(DISH_ID) AS PURCHASES,  
         DENSE_RANK() OVER(PARTITION BY ID ORDER BY COUNT(ID) DESC) AS NUM  
  FROM SALES_DATA  
  INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID  
  GROUP BY ID, NAME)  
  
  SELECT ID, NAME, PURCHASES  
  FROM DISH WHERE NUM = 1;
```

ID	NAME	PURCHASES
1	Vegetable Stew	1
1	Hungarian Chicken Soup	1
1	Greek Salad	1
2	Chicken Stew	1
2	Hungarian Chicken Soup	1
3	Hungarian Chicken Soup	2
4	Cheesecake	1
4	Vegetable Soup	1
4	Hungarian Chicken Soup	1
5	Hungarian Chicken Soup	2
6	Cheeseburger with Fre...	1
6	Beef - Vegetable Soup	1
6	Cheesecake	1
7	Hungarian Chicken Soup	3
8	Vegetable Soup	1
8	French Fries	1
8	Hungarian Chicken Soup	1
8	Beef - Vegetable Soup	1
9	Hungarian Chicken Soup	2
10	Hungarian Chicken Soup	2

6. WHICH ITEM WAS PURCHASED FIRST BY THE CUSTOMER AFTER THEY BECAME A MEMBER?

```
WITH FOOD AS (  
  SELECT ID, NAME, ORDER_DATE, JOIN_DATE,  
         ROW_NUMBER() OVER(PARTITION BY ID) AS RN  
  FROM SALES_DATA  
  INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID  
  INNER JOIN CUSTOMERS ON SALES_DATA.ID = CUSTOMERS.CUST_ID  
  WHERE ORDER_DATE > JOIN_DATE)  
  
  SELECT ID, NAME, ORDER_DATE, JOIN_DATE  
  FROM FOOD  
  WHERE RN = 1;
```

ID	NAME	ORDER_DATE	JOIN_DATE
1	Greek Salad	2023-02-03	2023-02-01
2	Hungarian Chicken Soup	2023-02-04	2023-02-01
3	Hungarian Chicken Soup	2023-05-08	2023-02-15
4	Hungarian Chicken Soup	2023-04-30	2023-02-01
5	Hungarian Chicken Soup	2023-05-03	2023-02-01
6	Cheesecake	2023-05-09	2023-03-01
7	Hungarian Chicken Soup	2023-05-02	2023-03-01
8	Beef - Vegetable Soup	2023-05-02	2023-03-15
9	Hungarian Chicken Soup	2023-05-05	2023-02-15
10	Hungarian Chicken Soup	2023-05-04	2023-02-01

7. WHICH ITEM WAS PURCHASED JUST BEFORE THE CUSTOMER BECAME A MEMBER?

```
WITH LAST_FOOD AS (SELECT ID, NAME, FOOD_ID, JOIN_DATE, ORDER_DATE,  
ROW_NUMBER() OVER(PARTITION BY ID ORDER BY ORDER_DATE DESC) AS RN FROM SALES_DATA  
INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID  
INNER JOIN CUSTOMERS ON SALES_DATA.ID = CUSTOMERS.CUST_ID  
WHERE ORDER_DATE < JOIN_DATE)  
  
SELECT ID, NAME  
FROM LAST_FOOD  
WHERE RN = 1;
```

ID	NAME
1	Hungarian Chicken Soup
2	Chicken Stew
3	Chicken Stew
4	Cheesecake
5	Hungarian Chicken Soup
6	Beef - Vegetable Soup
7	French Fries
8	French Fries
9	Hungarian Chicken Soup

8. WHAT ARE THE TOTAL ITEMS AND AMOUNT SPENT FOR EACH MEMBER BEFORE THEY BECAME A MEMBER?

```
SELECT ID, COUNT(FOOD_ID) AS NUMBER_OF_DISHES, SUM(PRICE) AS TOTAL_SPENT
FROM SALES_DATA
INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID
INNER JOIN CUSTOMERS ON SALES_DATA.ID = CUSTOMERS.CUST_ID
WHERE ORDER_DATE < JOIN_DATE
GROUP BY ID;
```

ID	NUMBER_OF_DISHES	TOTAL_SPENT
1	2	15.5
2	1	8.5
3	1	8.5
4	1	4.5
5	2	17
6	2	22
7	4	25.5
8	2	9.5
9	2	15.5

9. EACH €1 SPENT BRINGS 10 POINTS AND CHEESEBURGER WITH FRENCH FRIES BRINGS 20 POINTS, HOW MANY POINTS WOULD EACH CUSTOMER HAVE?

```
SELECT ID, SUM( CASE WHEN  
NAME = 'Cheeseburger with French Fries' THEN PRICE * 20  
ELSE PRICE * 10 END) AS COLLECTED_POINTS  
FROM SALES_DATA  
INNER JOIN DISHES ON SALES_DATA.FOOD_ID = DISHES.DISH_ID  
INNER JOIN CUSTOMERS ON SALES_DATA.ID = CUSTOMERS.CUST_ID  
WHERE ORDER_DATE > JOIN_DATE  
GROUP BY ID;
```

ID	COLLECTED_POINTS
1	50
2	85
3	500
4	145
5	290
6	45
7	285
8	195
9	305
10	220

10. IN THE FIRST WEEK AFTER A CUSTOMER JOINS THE PROGRAM THEY EARN 2X POINTS ON ALL ITEMS (NOT ONLY CHEESEBURGER WITH FRENCH FRIES . HOW MANY POINTS DO CUSTOMERS HAVE AT THE END OF JANUARY?

```
SELECT ID, SUM(CASE
    WHEN ORDER_DATE BETWEEN JOIN_DATE AND JOIN_DATE + '7 day'
    THEN PRICE * 20
    WHEN DISH_ID = 6 THEN PRICE * 20
    ELSE PRICE * 10 END) AS POINTS
FROM SALES_DATA
INNER JOIN CUSTOMERS ON CUSTOMERS.CUST_ID = SALES_DATA.ID
INNER JOIN DISHES ON DISHES.DISH_ID = SALES_DATA.FOOD_ID
WHERE ORDER_DATE <= '2023-01-31'
GROUP BY ID
ORDER BY ID;
```

ID	POINTS
1	155
2	85
3	85
4	45
5	170
6	220
7	135
9	155

RECOGNIZED PATTERNS ABOUT ZAKIA'S DELIGHT

- - TOP 3 CUSTOMERS WHO SPENT THE MOST AMOUNT OF MONEY: 7, 3, 5
- - TOP 4 CUSTOMERS WHO VISIT MOST FREQUENTLY: 7, 5, 9, 3
- - POPULAR DISHES AS A FIRST TIME CHOICE: CHICKEN STEW, VEGETABLE STEW, HUNGARIAN CHICKEN SOUP
- - THE MOST POPULAR DISH: HUNGARIAN CHICKEN SOUP
- - THE MOST POPULAR DISH AS A FIRST TIME CHOICE AFTER BECOMING A MEMBER: HUNGARIAN CHICKEN SOUP
- - MOST POPULAR DISHES AS A LAST CHOICE BEFORE BECOMING A MEMBER: HUNGARIAN CHICKEN SOUP, CHICKEN STEW, FRENCH FRIES
- - THE CUSTOMER WHO PURCHASED THE MOST AMOUNT OF DISHES BEFORE BECOMING A MEMBER: 7
- - TOP 3 CUSTOMERS WHO SPENT THE BIGGEST AMOUNT BEFORE BECOMING A MEMBER: 7, 6, 5
- - TOP 3 CUSTOMERS WITH THE MOST AMOUNT OF COLLECTED POINTS: 3, 9, 5
- - TOP 4 CUSTOMERS WITH THE MOST AMOUNT OF POINTS AT THE END OF JANUARY: 6, 5, 1, 9

INSIGHTS AND SUGGESTIONS ABOUT ZAKIA'S DELIGHT

- **- CUSTOMER 7 AND 5 HAVE SPENT THE MOST AMOUNT OF MONEY AND HAVE VISITED MOST FREQUENTLY. TO BUILT A STRONGER CONNECTION TO THEM, I SUGGEST TO GIVE THEM A SPECIAL OFFER OR DISCOUNT TO MAKE THEM FEEL APPRECIATED**
- **- THE MOST POPULAR DISH WHICH IS CHOSEN THE MOST TIMES AND BRINGS THE MOST AMOUNT OF MONEY IS THE HUNGARIAN CHICKEN SOUP. THE CHICKEN STEW WAS THE SECOND MOST POPULAR DISH. ZAKIA SHOULD CONSIDER TO INTRODUCE NEW CHICKEN DISHES AS THEY ARE SOLD VERY GOOD.**

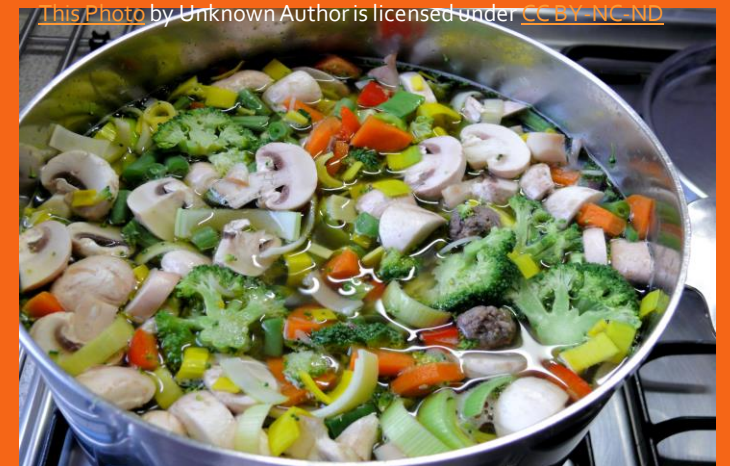
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