RESTAURANT ORDER DATASET *And* SQL ANALYSIS

Presentation

ABOUT ME

Hi, my name is Dwi Winda Fitrika and I am a student from MSIB CAKAP from the Data Scientist class. Here I want to present the results of the SQL analysis project with Postgre SQL and visualization using Python for the Restaurant Order dataset from Maven Analytics.

We Are Open

OUTLINE

01. DATA PREPARATION

Downloading, Cleaning, and Merging Dataset using Postgre SQL

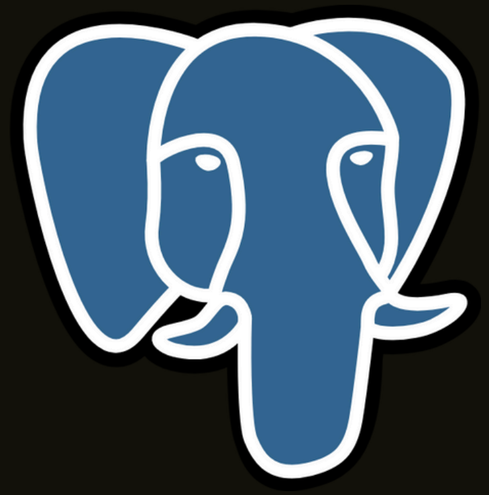
02. SQL QUERY

Answered 4 recommended analysis and 2 additional analysis questions with SQL

03. INTEGRATION WITH PYTHON AND VISUALIZATION

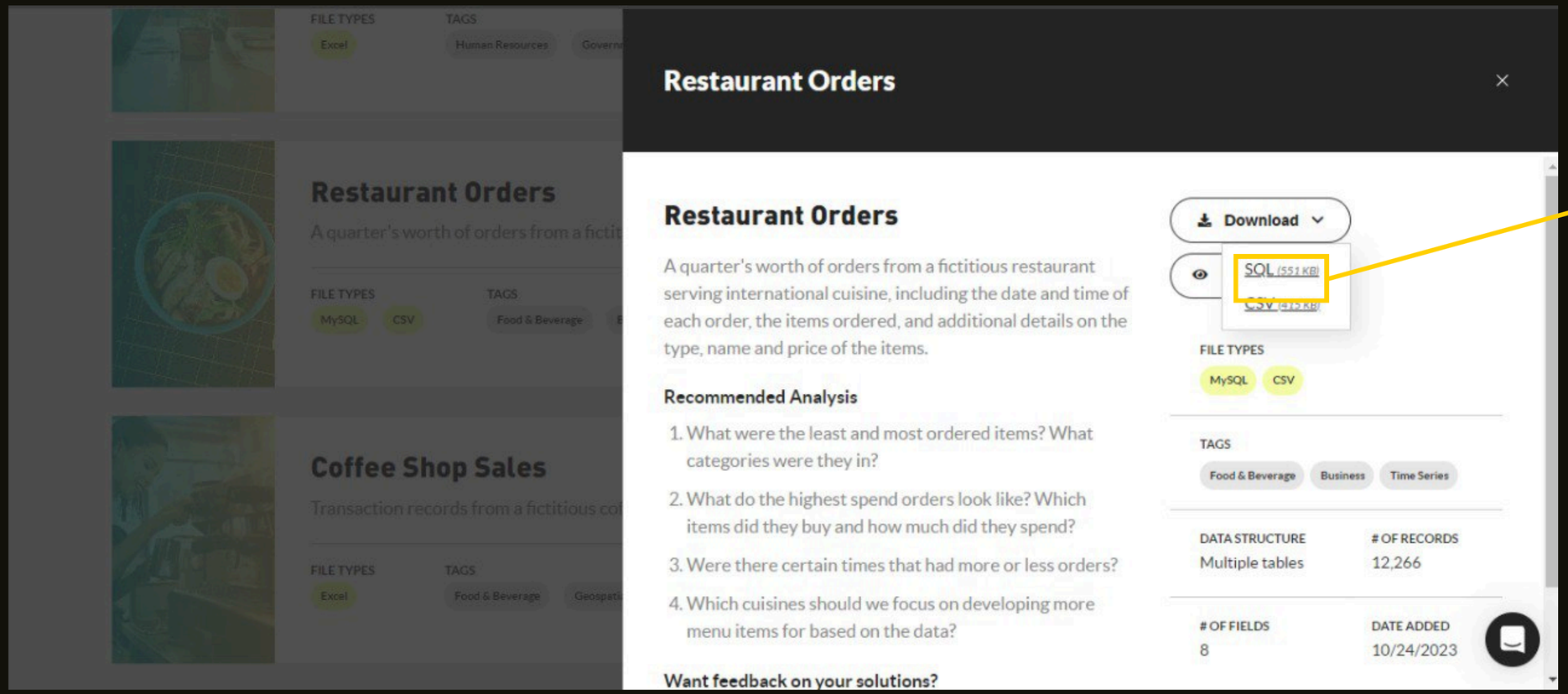
Connecting postgresql with python and visualizing with python libraries

TOOLS USED



01. DATA PREPARATION

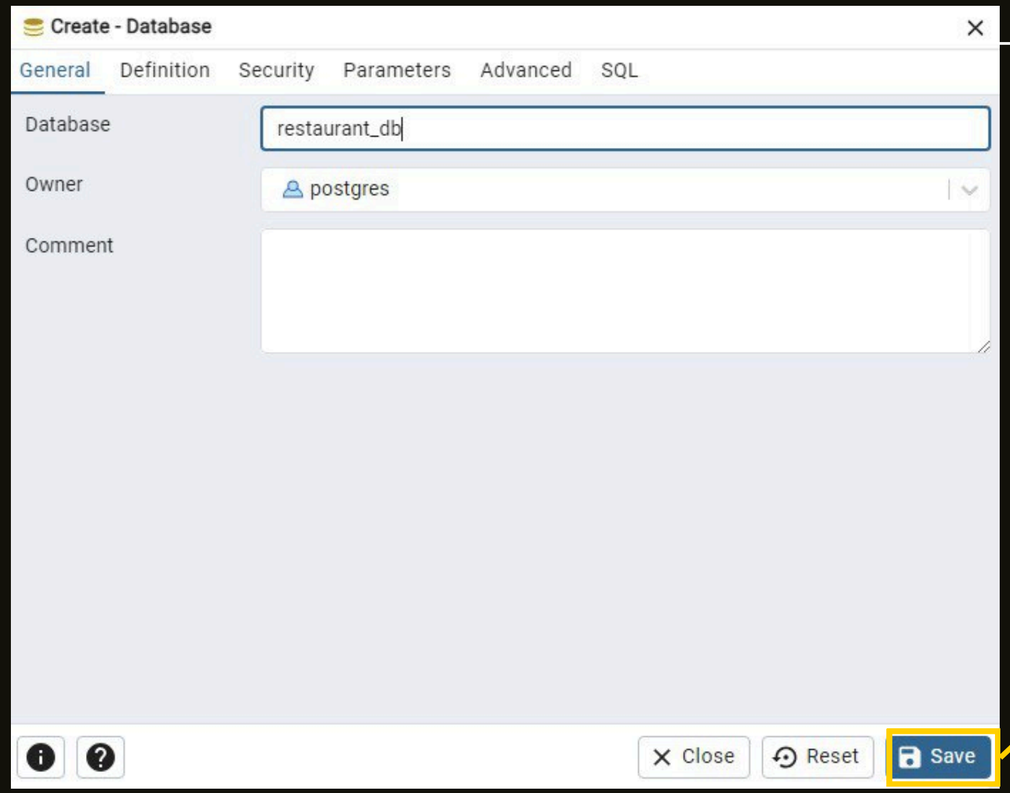
DOWNLOAD DATASET



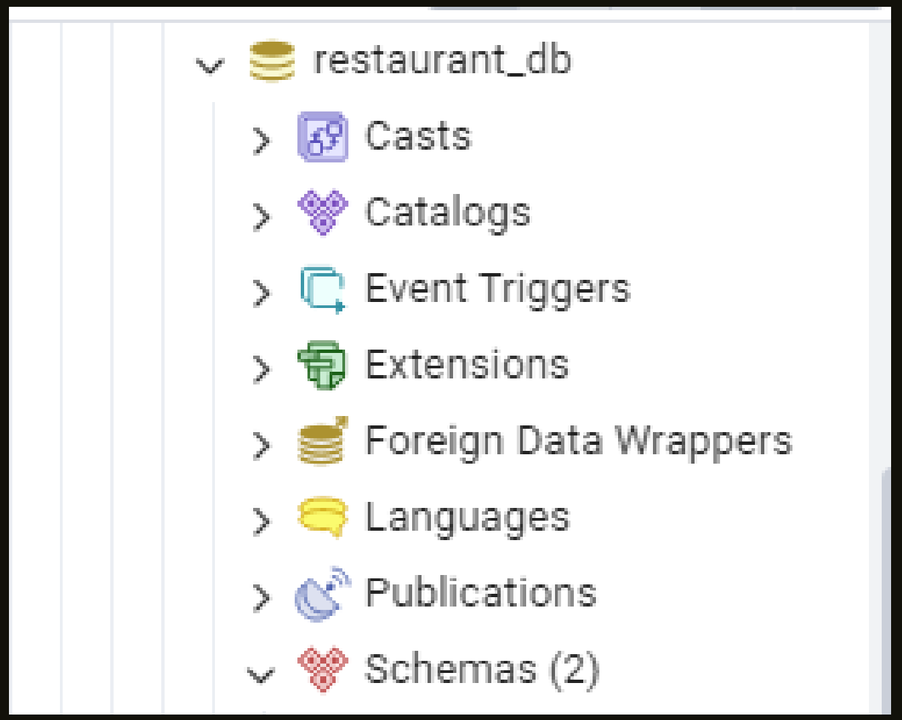
Download SQL Dataset for import Process in Postgre SQL Pgadmin

DATASET IMPORT (SQL)

1. Create Database

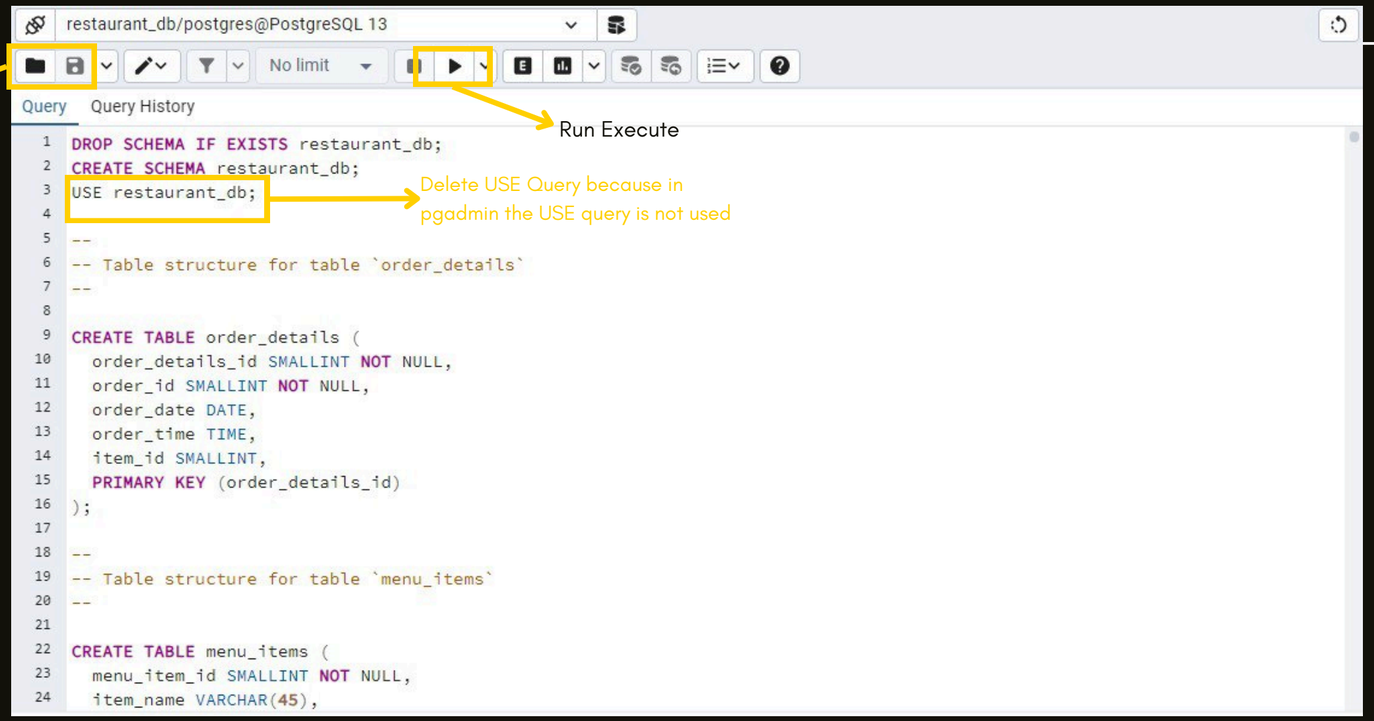


name and save the database

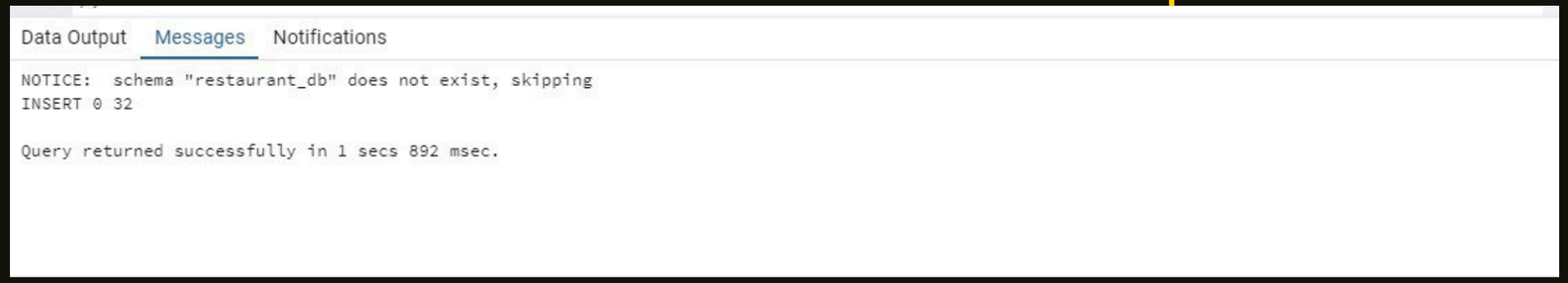


DATASET IMPORT (SQL)

2. Load Data to SQL by Open File in Pgadmin

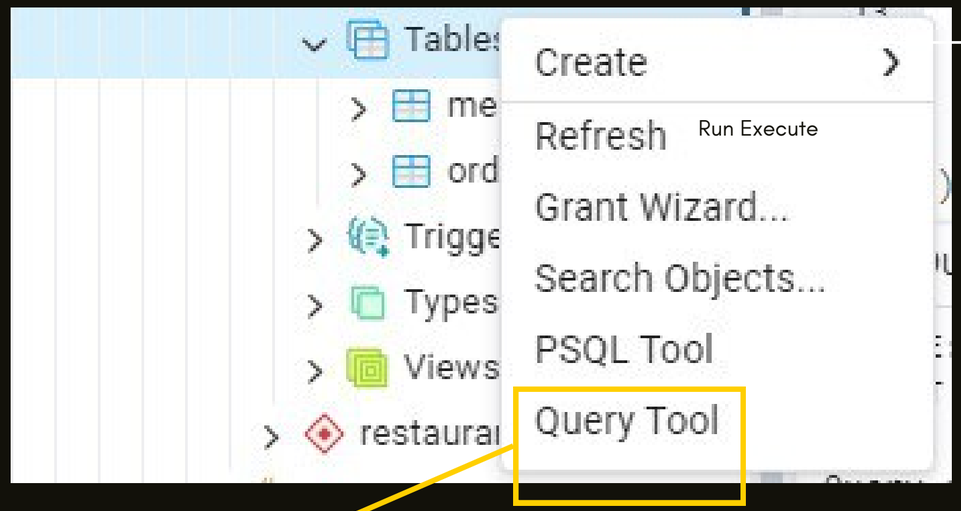


Run Query until Query Returned Successfully

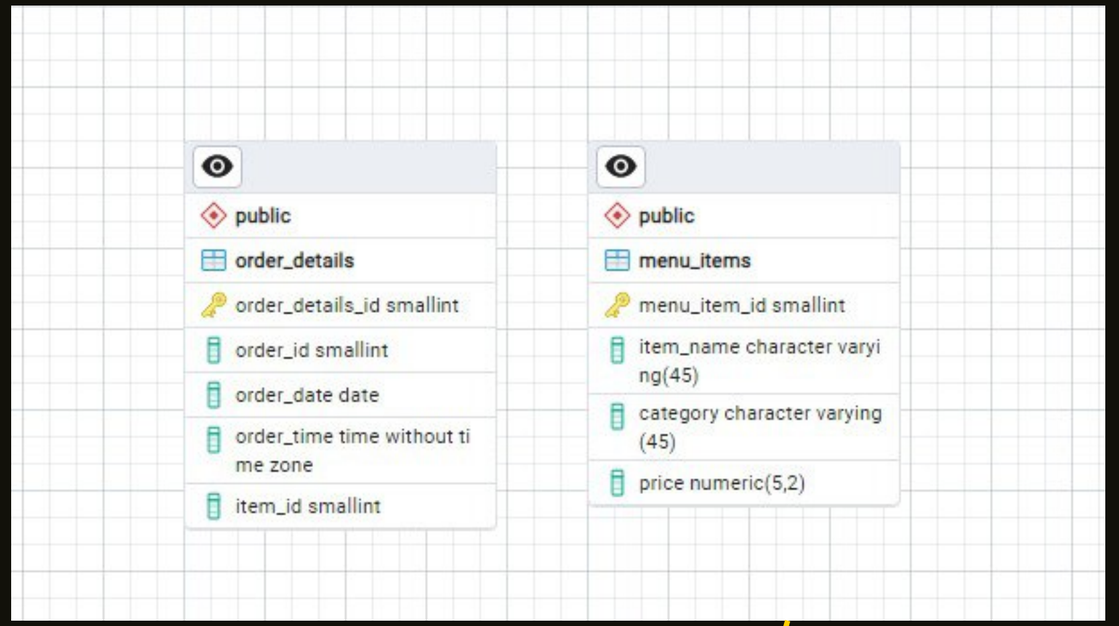


DATA UNDERSTANDING (SQL)

3. Start Query



This is Right click on Schema > Table > enter Query Tools to start querying



This is ERD for Database has two tables with the table names menu_items and order_details columns and their data types

DATA QUERY (SQL)

4. Check Table

```
-- CEK TABLE menu_items
SELECT * FROM menu_items;
```

Data Output | Messages | Notifications

	menu_item_id [PK] smallint	item_name character varying (45)	category character varying (45)	price numeric (5,2)
1	101	Hamburger	American	12.95
2	102	Cheeseburger	American	13.95
3	103	Hot Dog	American	9.00
4	104	Veggie Burger	American	10.50
5	105	Mac & Cheese	American	7.00
6	106	French Fries	American	7.00
7	107	Orange Chicken	Asian	16.50
8	108	Tofu Pad Thai	Asian	14.50
9	109	Korean Beef Bowl	Asian	17.95
10	110	Pork Ramen	Asian	17.95
11	111	California Roll	Asian	11.95
12	112	Salmon Roll	Asian	14.95
13	113	Edamame	Asian	5.00
14	114	Potstickers	Asian	9.00
15	115	Chicken Tacos	Mexican	11.95

Total rows: 32 of 32 | Query complete 00:00:00.266 | Ln 2, Col 26

check the menu_items table record using the query as shown and there are rows with a total of 32,

```
-- CEK TABLE order_details
SELECT * FROM order_details;
```

Data Output | Messages | Notifications

	order_details_id [PK] smallint	order_id smallint	order_date date	order_time time without time zone	item_id smallint
1	1	1	2023-01-01	11:38:36	109
2	2	2	2023-01-01	11:57:40	108
3	3	2	2023-01-01	11:57:40	124
4	4	2	2023-01-01	11:57:40	117
5	5	2	2023-01-01	11:57:40	129
6	6	2	2023-01-01	11:57:40	106
7	7	3	2023-01-01	12:12:28	117
8	8	3	2023-01-01	12:12:28	119
9	9	4	2023-01-01	12:16:31	117
10	10	5	2023-01-01	12:21:30	117
11	11	6	2023-01-01	12:29:36	101
12	12	6	2023-01-01	12:29:36	114
13	13	7	2023-01-01	12:50:37	123
14	14	8	2023-01-01	12:51:37	123

Total rows: 1000 of 12234 | Query complete 00:00:00.460 | Ln 5, Col 29

Check the oder_details table record using a query like the image and there are rows with a total of 12234.

DATA CLEANSING (SQL)

5. Check NULL Value

```sql
-- CEK Nilai NULL di table menu_items
SELECT *
FROM menu_items
WHERE item_name IS NULL
   OR category IS NULL
   OR price IS NULL;
```

Data Output | Messages | Notifications

menu_item_id [PK] smallint	item_name character varying (45)	category character varying (45)	price numeric (5,2)

Total rows: 0 of 0 | Query complete 00:00:00.316

check NULL VALUE in each table, for table menu_items like the query shown, and there are 0 NULL VALUE

```sql
SELECT COUNT(*) AS null_count
FROM order_details
WHERE item_id IS NULL;
```

Data Output | Messages | Notifications

	null_count bigint
1	137

Count the NULL VALUE in the item_id column and there are 137 NULL VALUE.

```sql
-- CEK Nilai NULL di table order_details
SELECT *
FROM order_details
WHERE order_id IS NULL
   OR order_date IS NULL
   OR order_time IS NULL
   OR item_id IS NULL;
```

Data Output | Messages | Notifications

	order_details_id [PK] smallint	order_id smallint	order_date date	order_time time without time zone	item_id smallint
1	122	50	2023-01-01	18:41:01	[null]
2	298	125	2023-01-02	20:31:06	[null]
3	358	147	2023-01-03	14:32:51	[null]
4	387	161	2023-01-03	16:43:46	[null]
5	470	200	2023-01-03	22:24:05	[null]
6	474	201	2023-01-03	22:29:59	[null]
7	779	338	2023-01-06	15:18:26	[null]
8	833	364	2023-01-06	19:27:24	[null]
9	854	376	2023-01-07	12:01:17	[null]
10	941	410	2023-01-07	17:33:49	[null]

Total rows: 137 of 137 | Query complete 00:00:00.252 | Ln 20, Col 23

Check NULL VALUE for the order_details table as shown in the query, and there are 137 NULL VALUE in the item_id column.

DATA CLEANSING (SQL)

6. Handling NULL VALUE

Because a NULL value was found in the order_details table, column item_id, let's handle the NULL value based on the data type in both tables. The missing null value is of the categorical type, so handling this NULL is by determining the value that appears most often (mode) in item_id, to fill in the value. -

```
--HANDLING NULL VALUE--

-- Karena ditemukan Nilai NULL pada tabel order_details, column item_id mari kita handling nilai NULL tersebut
-- -berdasarkan jenis data pada kedua table nilai null yang hilang merupakan jenis categorical, maka handling NULL ini
-- dengan menentukan nilai yang paling banyak muncul (modus) pada item_id, untuk mengisi nilai null tersebut-

-- MELIHAT NILAI MODUS YANG PALING BANYAK MUNCUL DI item_id
SELECT item_id, COUNT(*) AS jumlah_kemunculan
FROM order_details
GROUP BY item_id
ORDER BY jumlah_kemunculan DESC
LIMIT 1;
```

Data Output | Messages | Notifications

	item_id smallint	jumlah_kemunculan bigint
1	101	622

Total rows: 1 of 1 | Query complete 00:00:00.305 | Ln 38, Col 8

Look at the Mode value that appears the most in the item_id column. From the query as shown, it is known that the value that appears the most is 101, 622, so fill in the null value with item_id 101

Update the item_id column based on the value that appears the most. The query is as shown and the update process is successful.

```
--dari query ini diketahui, nilai paling banyak muncul adalah 101, maka untuk mengisi null value dengan item_id 101

--MELAKUKAN UPDATE UNTUK KOLOM item_id BERDASARKAN NILAI YANG PALING BANYAK MUNCUL
UPDATE order_details AS od
SET item_id = (
    SELECT subquery.item_id
    FROM (
        SELECT item_id, COUNT(*) AS count
        FROM order_details
        WHERE item_id IS NOT NULL
        GROUP BY item_id
        ORDER BY count DESC
        LIMIT 1
    ) AS subquery
)
WHERE item_id IS NULL;
```

Data Output | Messages | Notifications

```
UPDATE 137

Query returned successfully in 515 msec.
```

Total rows: 1 of 1 | Query complete 00:00:00.515 | Ln 51, Col 28

DATA CLEANSING (SQL)

7. Re-Check NULL VALUE

```sql
--CEK KEMBALI UNTUK MELIHAT NULL VALUE
SELECT *
FROM menu_items, order_details
WHERE item_name IS NULL
   OR category IS NULL
   OR price IS NULL
   OR order_id IS NULL
   OR order_date IS NULL
   OR order_time IS NULL
   OR item_id IS NULL;
```

Data Output | Messages | Notifications

menu_item_id smallint	item_name character varying (45)	category character varying (45)	price numeric (5,2)	order_details_id smallint	order_id smallint	order_date date	order_time time without time zone	item_id smallint

Total rows: 0 of 0 | Query complete 00:00:00.297 | Ln 63, Col 7

Check the value again to see the null value, and the process shows the NULL value no longer exists.

```sql
SELECT COUNT(*) AS null_count
FROM menu_items, order_details
WHERE item_name IS NULL
   OR category IS NULL
   OR price IS NULL
   OR order_id IS NULL
   OR order_date IS NULL
   OR order_time IS NULL
   OR item_id IS NULL;
```

Data Output | Messages | Notifications

	null_count bigint
1	0

Total rows: 1 of 1 | Query complete 00:00:00.320

Calculate the NULL value with the query as in the picture, with the result being that the Null value is 0.

HANDLING NULL VALUES HAS BEEN COMPLETED

DATA MERGER (SQL)

8. Join Table order_details and menu_items

```sql
---MELAKUKAN LEFT JOIN UNTUK MENGGABUNGKAN TABLE menu_items dan order_details---
SELECT od.order_details_id,
       od.order_id,
       od.order_date,
       od.order_time,
       od.item_id,
       mi.item_name,
       mi.category,
       mi.price
FROM order_details od
LEFT JOIN menu_items mi ON od.item_id = mi.menu_item_id;
--menu_item_id tidak digabungkan karena sama dengan item_id, untuk mempermudah table di analisis--
```

Data Output | Messages | Notifications

	order_details_id smallint	order_id smallint	order_date date	order_time time without time zone	item_id smallint	item_name character varying (45)	category character varying (45)	price numeric (5,2)
1	1	1	2023-01-01	11:38:36	109	Korean Beef Bowl	Asian	17.95
2	2	2	2023-01-01	11:57:40	108	Tofu Pad Thai	Asian	14.50
3	3	2	2023-01-01	11:57:40	124	Spaghetti	Italian	14.50
4	4	2	2023-01-01	11:57:40	117	Chicken Burrito	Mexican	12.95
5	5	2	2023-01-01	11:57:40	129	Mushroom Ravioli	Italian	15.50
6	6	2	2023-01-01	11:57:40	106	French Fries	American	7.00
7	7	3	2023-01-01	12:12:28	117	Chicken Burrito	Mexican	12.95

Total rows: 1000 of 12234 | Query complete 00:00:00.601 | Ln 91, Col 99

Left join to combine the menu_items and order details tables, the menu_item_id is not combined because it is the same as the item_id, to make the table easier to analyze

```sql
---COMBINE TABLE menu_items dan order_details jadi 1 table--
CREATE TABLE combined_table AS
SELECT od.order_details_id,
       od.order_id,
       od.order_date,
       od.order_time,
       od.item_id,
       mi.item_name,
       mi.category,
       mi.price
FROM order_details od
JOIN menu_items mi ON od.item_id = mi.menu_item_id;
```

Data Output | Messages | Notifications

```
SELECT 12234

Query returned successfully in 156 msec.
```

COMBINE TABLE menu_items and order_details into 1 table with the name combined_table with the query as shown and the query has been successful

DATA MERGER (SQL)

9. See Record from new Table combined_table

Query | Query History

```
106 --MELIHAT HASIL COMBINE TABLE
107 SELECT * FROM combined_table;
```

Data Output | Messages | Notifications

	order_details_id smallint	order_id smallint	order_date date	order_time time without time zone	item_id smallint	item_name character varying (45)	category character varying (45)	price numeric (5,2)
1	1	1	2023-01-01	11:38:36	109	Korean Beef Bowl	Asian	17.95
2	2	2	2023-01-01	11:57:40	108	Tofu Pad Thai	Asian	14.50
3	3	2	2023-01-01	11:57:40	124	Spaghetti	Italian	14.50
4	4	2	2023-01-01	11:57:40	117	Chicken Burrito	Mexican	12.95
5	5	2	2023-01-01	11:57:40	129	Mushroom Ravioli	Italian	15.50
6	6	2	2023-01-01	11:57:40	106	French Fries	American	7.00
7	7	3	2023-01-01	12:12:28	117	Chicken Burrito	Mexican	12.95
8	8	3	2023-01-01	12:12:28	119	Chicken Torta	Mexican	11.95
9	9	4	2023-01-01	12:16:31	117	Chicken Burrito	Mexican	12.95
10	10	5	2023-01-01	12:21:30	117	Chicken Burrito	Mexican	12.95
11	11	6	2023-01-01	12:29:36	101	Hamburger	American	12.95
12	12	6	2023-01-01	12:29:36	114	Potstickers	Asian	9.00
13	13	7	2023-01-01	12:50:37	123	Chips & Guacamole	Mexican	9.00
14	14	8	2023-01-01	12:51:37	123	Chips & Guacamole	Mexican	9.00
15	15	9	2023-01-01	12:52:01	108	Tofu Pad Thai	Asian	14.50

restaurant_db > Schemas > public > Tables > combined_table

Ln 107, Col 30

View all records from combined_table with a total of 12234 rows.

THE DATA IS NOW CLEAN AND READY TO BE ANALYZED

02. SQL QUERY ANALYSIS

SQL ANALYSIS

1. What were the least and most ordered items? What categories were they in?

```sql
--Recommended Analysis
-- 1. What were the least and most ordered items? What categories were they in?
-- Barang apa yang paling sedikit dan paling banyak dipesan? Di kategori apa mereka berada?

WITH CountsItem AS (
    SELECT
        item_id,
        item_name,
        category,
        COUNT(*) AS order_count,
        RANK() OVER (ORDER BY COUNT(*) ASC) AS min_rank,
        RANK() OVER (ORDER BY COUNT(*) DESC) AS max_rank
    FROM combined_table
    GROUP BY item_id, item_name, category
)
SELECT
    item_id,
    item_name,
    category,
    order_count
FROM CountsItem
WHERE min_rank = 1 OR max_rank = 1;
```

Query

Shows Query results with the result item_name Chicken Tacos and the Mexican category with a total of 123 orders is the menu that was ordered the least. While, item_name Hamburger and the American category with a total of 759 orders were the most ordered menu items

```
--Recommended Analysis
-- 1. What were the least and most ordered items? What categories were they in?
-- Barang apa yang paling sedikit dan paling banyak dipesan? Di kategori apa mereka berada?
```

Data Output | Messages | Notifications

	item_id smallint	item_name character varying (45)	category character varying (45)	order_count bigint
1	115	Chicken Tacos	Mexican	123
2	101	Hamburger	American	759

SQL ANALYSIS

2. What do the highest spend orders look like? Which items did they buy and how much did they spend?

```sql
-- 2. What do the highest spend orders look like? Which items did they buy and how much did they spend?
-- Seperti apa pesanan pembelanjaan tertinggi? Barang apa yang mereka beli dan berapa banyak yang mereka belanjakan?
SELECT
    order_id,
    item_name,
    COUNT(order_id) AS total_pembelian,
    SUM(price) AS total_pembelian_harga
FROM
    combined_table
GROUP BY
    order_id, item_name
ORDER BY
    total_pembelian_harga DESC;
```

Data Output | Messages | Notifications

	order_id smallint	item_name character varying (45)	total_pembelian bigint	total_pembelian_harga numeric
1	1639	Korean Beef Bowl	3	53.85
2	2364	Meat Lasagna	3	53.85
3	740	Chicken Parmesan	3	53.85
4	4314	Eggplant Parmesan	3	50.85
5	3940	Eggplant Parmesan	3	50.85

Total rows: 1000 of 11917 | Query complete 00:00:00.418 | Ln 146, Col 31

Query

Shows there are 11917 rows with total purchases from the highest and lowest prices. This image displays the top 5 data showing order_id, item_name, total_purchase_and total_purchase_price by customers with each order_id.

SQL ANALYSIS

2. What do the highest spend orders look like? Which items did they buy and how much did they spend?

```
147 LIMIT 1;
148
```

Data Output | Messages | Notifications

	order_id smallint	item_name character varying (45)	total_pembelian bigint	total_pembelian_harga numeric
1	1639	Korean Beef Bowl	3	53.85

Use Query LIMIT 1 to find the largest 1 data record.

```
147 LIMIT 3;
148
```

Data Output | Messages | Notifications

	order_id smallint	item_name character varying (45)	total_pembelian bigint	total_pembelian_harga numeric
1	1639	Korean Beef Bowl	3	53.85
2	740	Chicken Parmesan	3	53.85
3	2364	Meat Lasagna	3	53.85

Use Query LIMIT 3 to find the largest 3 data record.

```
147 LIMIT 5;
148
```

Data Output | Messages | Notifications

	order_id smallint	item_name character varying (45)	total_pembelian bigint	total_pembelian_harga numeric
1	2364	Meat Lasagna	3	53.85
2	1639	Korean Beef Bowl	3	53.85
3	740	Chicken Parmesan	3	53.85
4	4314	Eggplant Parmesan	3	50.85
5	3940	Eggplant Parmesan	3	50.85

Use Query LIMIT 5 to find the largest 5 data record.

SQL ANALYSIS

3. Were there certain times that had more or less orders?

```sql
-- 3. Were there certain times that had more or less orders?
-- Apakah ada waktu-waktu tertentu yang pesanannya lebih banyak atau lebih sedikit?

SELECT
    EXTRACT(HOUR FROM order_time) AS jam,
    COUNT(order_id) AS jumlah_pesanan
FROM
    combined_table
GROUP BY
    jam
ORDER BY
    jumlah_pesanan DESC;
```

Data Output | Messages | Notifications

	jam double precision	jumlah_pesanan bigint
1	12	1672
2	13	1575
3	17	1370
4	18	1307
5	19	1085
6	16	1054

Total rows: 14 of 14 | Query complete 00:00:00.133 | Ln 161, Col 1

Query

Shows that there are 14 data records with the highest number of orders at 12 o'clock and the number of orders is 1672 orders

```sql
jumlah_pesanan ASC;
```

Data Output | Messages | Notifications

	jam double precision	jumlah_pesanan bigint
1	10	5
2	23	11
3	22	309
4	21	608
5	11	630
6	15	751

Total rows: 14 of 14 | Query complete 00:00:00.167

Meanwhile, the minimum order is at 10 o'clock with a total of 5 orders using ASC Query

SQL ANALYSIS

4. Which cuisines should we focus on developing more menu items for based on the data?

```sql
-- 4. Which cuisines should we focus on developing more menu items for based on the data?
-- Masakan mana yang harus kami fokuskan untuk mengembangkan lebih banyak item menu berdasarkan data?
SELECT
    category,
    COUNT(order_id) AS jumlah_pesanan
FROM
    combined_table
GROUP BY
    category
ORDER BY
    jumlah_pesanan DESC;
```

Data Output | Messages | Notifications

	category character varying (45)	jumlah_pesanan bigint
1	Asian	3470
2	Italian	2948
3	Mexican	2945
4	American	2871

Query for category then calculates order_id as the number of orders and orders them from largest.

Shows that the Asia category received the largest number of orders with a total of 3470 orders. This category can be developed into more types of menus from the Asian category because most customers like Asian cuisine.

SQL ANALYSIS

5. View the details of the highest spend order. Which specific items were purchased?

```sql
-- TAMBAHAN 2 ANALISIS --
-- 5. View the details of the highest spend order. Which specific items were purchased?
-- Lihat detail pesanan pembelanjaan tertinggi. Barang spesifik apa yang dibeli?
SELECT
    od.order_id,
    mi.item_name,
    od.order_date,
    od.order_time,
    mi.category,
    mi.price,
    (
        SELECT
            SUM(price)
        FROM
            combined_table
        WHERE
            order_id = od.order_id
    ) AS total_cost
FROM
    combined_table AS od
JOIN
    menu_items AS mi ON od.item_id = mi.menu_item_id
WHERE
    od.order_id = (
        SELECT
    od.order_id = (
        SELECT
            order_id
        FROM
            combined_table
        GROUP BY
            order_id
        ORDER BY
            SUM(price) DESC
        LIMIT 1
    );
```

	order_id smallint	item_name character varying (45)	order_date date	order_time time without time zone	category character varying (45)	price numeric (5,2)	total_cost numeric
1	4482	Cheeseburger	2023-03-17	13:57:38	American	13.95	197.45
2	4482	Tofu Pad Thai	2023-03-17	13:57:38	Asian	14.50	197.45
3	4482	Spaghetti & Meatballs	2023-03-17	13:57:38	Italian	17.95	197.45
4	4482	Korean Beef Bowl	2023-03-17	13:57:38	Asian	17.95	197.45
5	4482	Chicken Burrito	2023-03-17	13:57:38	Mexican	12.95	197.45
6	4482	Chicken Burrito	2023-03-17	13:57:38	Mexican	12.95	197.45
7	4482	Mushroom Ravioli	2023-03-17	13:57:38	Italian	15.50	197.45
8	4482	California Roll	2023-03-17	13:57:38	Asian	11.95	197.45
9	4482	Steak Burrito	2023-03-17	13:57:38	Mexican	14.95	197.45
10	4482	Steak Torta	2023-03-17	13:57:38	Mexican	13.95	197.45
11	4482	Steak Torta	2023-03-17	13:57:38	Mexican	13.95	197.45
12	4482	Mac & Cheese	2023-03-17	13:57:38	American	7.00	197.45
13	4482	Eggplant Parmesan	2023-03-17	13:57:38	Italian	16.95	197.45
14	4482	Hamburger	2023-03-17	13:57:38	American	12.95	197.45

Query

The customer with order_id 4482 is the customer with the highest total purchase is 197.45 in one order, ordering 14 different menus from various categories. From these results it can be seen that there are customers who are loyal to the restaurant and to develop this, you can make these customers become members of the restaurant and get special discount

SQL ANALYSIS

6. How many orders were placed on each date?

Query

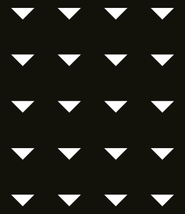
```sql
--6. How many orders were placed on each date?
--  Berapa jumlah pesanan yang dilakukan pada setiap tanggal?
SELECT
    DATE(order_date) AS tanggal,
    COUNT(DISTINCT order_id) AS jumlah_pesanan
FROM
    combined_table
GROUP BY
    tanggal
ORDER BY
    tanggal;
```

Data Output | Messages | Notifications

	tanggal date	jumlah_pesanan bigint
1	2023-01-01	69
2	2023-01-02	67
3	2023-01-03	66
4	2023-01-04	52
5	2023-01-05	54
6	2023-01-06	64
7	2023-01-07	58

Total rows: 90 of 90 | Query complete 00:00:00.182 | Ln 274, Col 1

There are 90 rows consisting of dates and order amounts sequentially by date.



03. INTEGRATION WITH PYTHON AND VISUALIZATION

PYTHON

1. Create a file in .ipynb format, for example (analysis_restaurant.ipynb), install the necessary packages such as: psycopg2-binary, matplotlib, seaborn, pandas, etc. Then do the import like then run cell

```
import pandas as pd
import numpy as np
import psycopg2
import matplotlib.pyplot as plt
import seaborn as sns
```

[1] Python

2. Create a connection to connect to the database, make sure the username and others are correct then run.

```
conn = psycopg2.connect(
        dbname="restaurant_db",
        user="postgres",
        password="          ",
        host="localhost",
        port="5432"
)

if conn:
    print("Connected to the database")
```

[2] Python

```
Connected to the database
```

3. Create a python function to run SQL queries.

```
##function for execute sql
def execute_sql_query(sql, conn):
        return pd.read_sql_query(sql, conn)
```

[3] Python

PYTHON

4. Read the table contained in the database with a query

```
##search table name from database

sql = ''' SELECT table_name
    FROM information_schema.tables
    WHERE table_schema = 'public';
    '''
data_table = execute_sql_query(sql,conn)
data_table
```

[5] Python

```
C:\Users\Dwi Winda Fitrika\AppData\Local\Temp\ipykernel_5980\1194220348.py:3: UserWarning: pandas only supports SQLAlchemy connectable (engi
  return pd.read_sql_query(sql, conn)
```

	table_name
0	order_details
1	menu_items
2	combined_table

There are 3 tables and the one that will be used is the combined_table table which was previously created in pgadmin.

5. View data records in the combined_table table. There are 12234 rows with 8 columns

```
## select table combined_table from join between table order_details and menu_items
sql = ''' SELECT * FROM combined_table;
      '''
data = execute_sql_query(sql,conn)
data
```

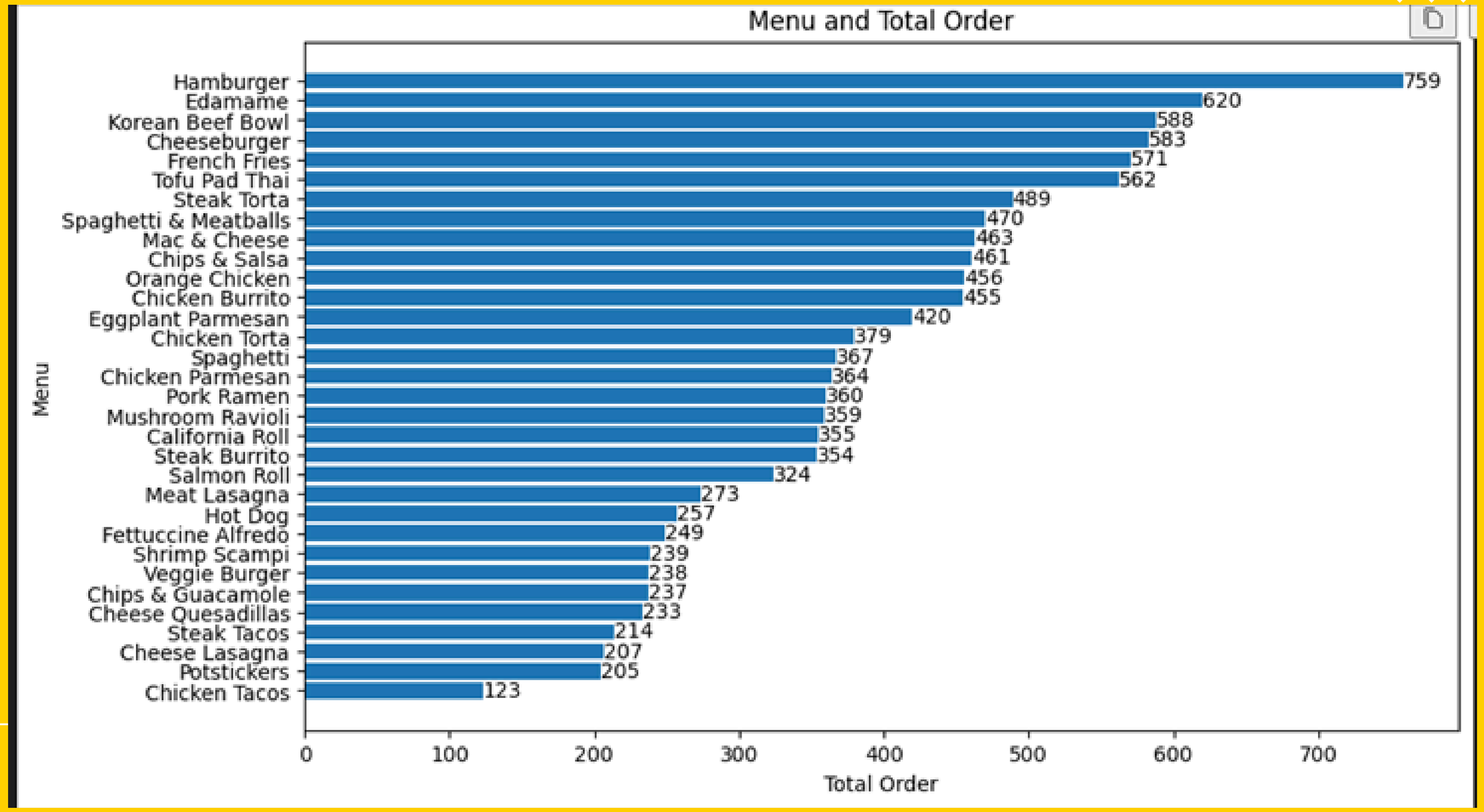
[6] Python

```
C:\Users\Dwi Winda Fitrika\AppData\Local\Temp\ipykernel_5980\1194220348.py:3: UserWarning: pandas only supports SQLAlchemy connectable (engi
  return pd.read_sql_query(sql, conn)
```

	order_details_id	order_id	order_date	order_time	item_id	item_name	category	price
0	1	1	2023-01-01	11:38:36	109	Korean Beef Bowl	Asian	17.95
1	2	2	2023-01-01	11:57:40	108	Tofu Pad Thai	Asian	14.50
2	3	2	2023-01-01	11:57:40	124	Spaghetti	Italian	14.50
3	4	2	2023-01-01	11:57:40	117	Chicken Burrito	Mexican	12.95
4	5	2	2023-01-01	11:57:40	129	Mushroom Ravioli	Italian	15.50
...	...	...	...	...	...	...	...	...
12229	11717	5149	2023-03-28	14:48:50	101	Hamburger	American	12.95
12230	11904	5225	2023-03-29	17:40:52	101	Hamburger	American	12.95
12231	11907	5226	2023-03-29	17:43:56	101	Hamburger	American	12.95
12232	12022	5281	2023-03-30	16:56:04	101	Hamburger	American	12.95
12233	12064	5303	2023-03-30	21:15:27	101	Hamburger	American	12.95

12234 rows × 8 columns

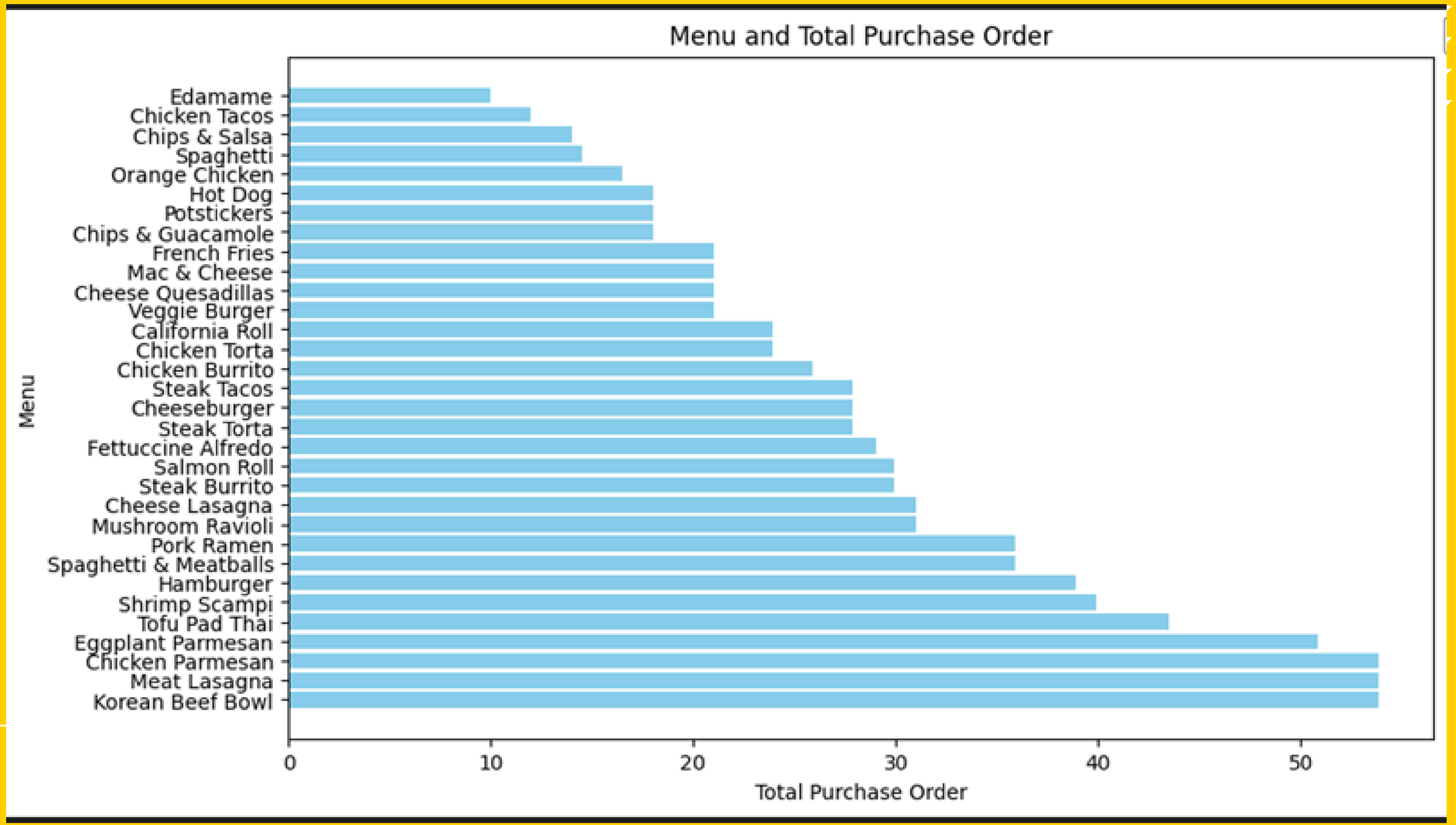
VISUALIZATION



CONCLUSION

ITEM_NAME CHICKEN TACOS AND THE MEXICAN CATEGORY WITH A TOTAL OF 123 ORDERS ARE THE MENU ITEMS ORDERED THE LEAST. MEANWHILE, ITEM_NAME HAMBURGER AND THE AMERICAN CATEGORY WITH A TOTAL OF 759 ORDERS WERE THE MOST ORDERED MENU ITEMS.

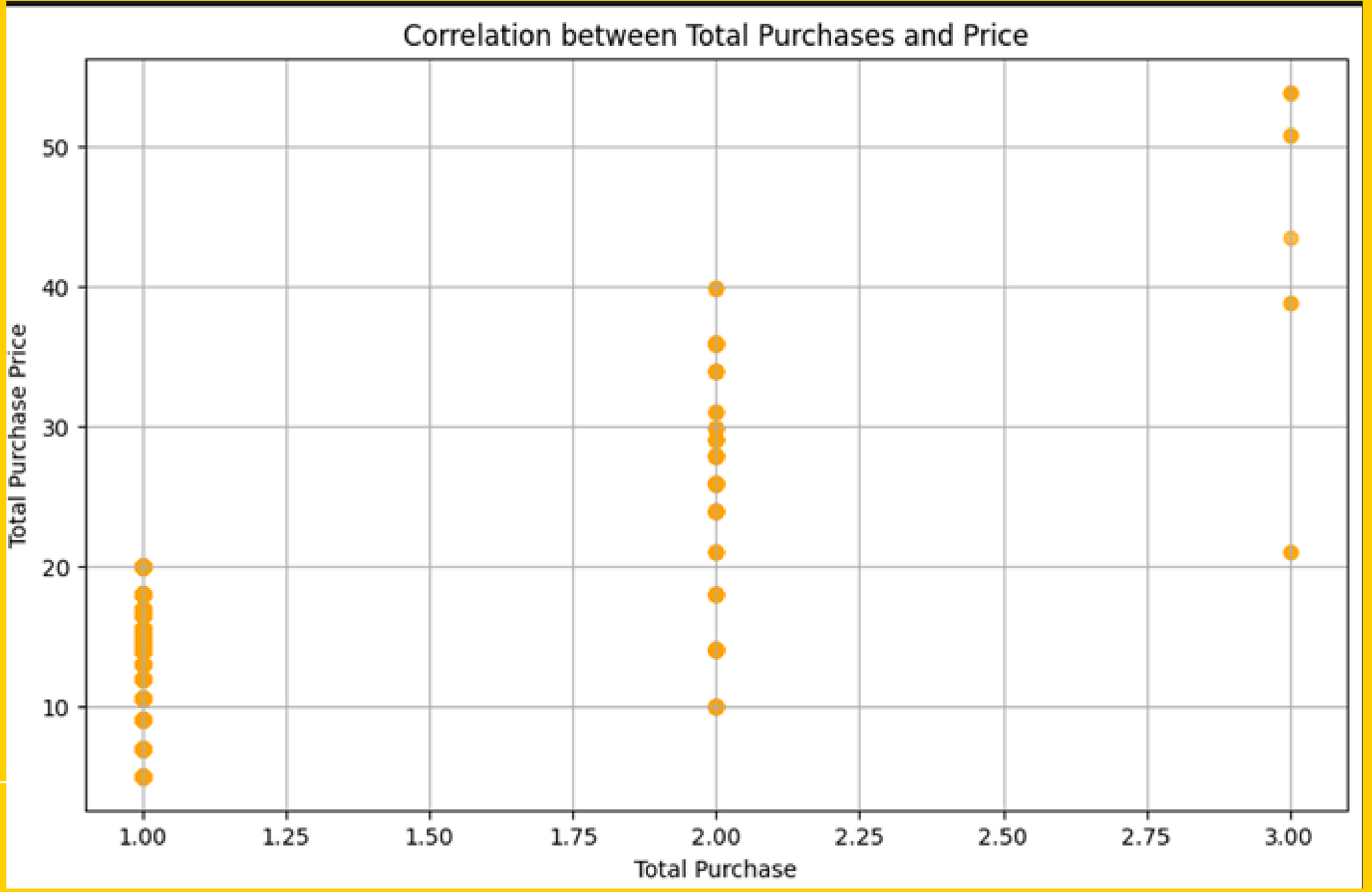
VISUALIZATION



CONCLUSION

THERE ARE 3 MENUS WITH THE SAME TOTAL PURCHASE PRICE BY DIFFERENT CUSTOMERS, NAMELY CHICKEN PARMESAN, MEAT LASAGNA, KOREAN BEEF BOWL WITH A TOTAL PRICE OF MORE THAN 50.

VISUALIZATION

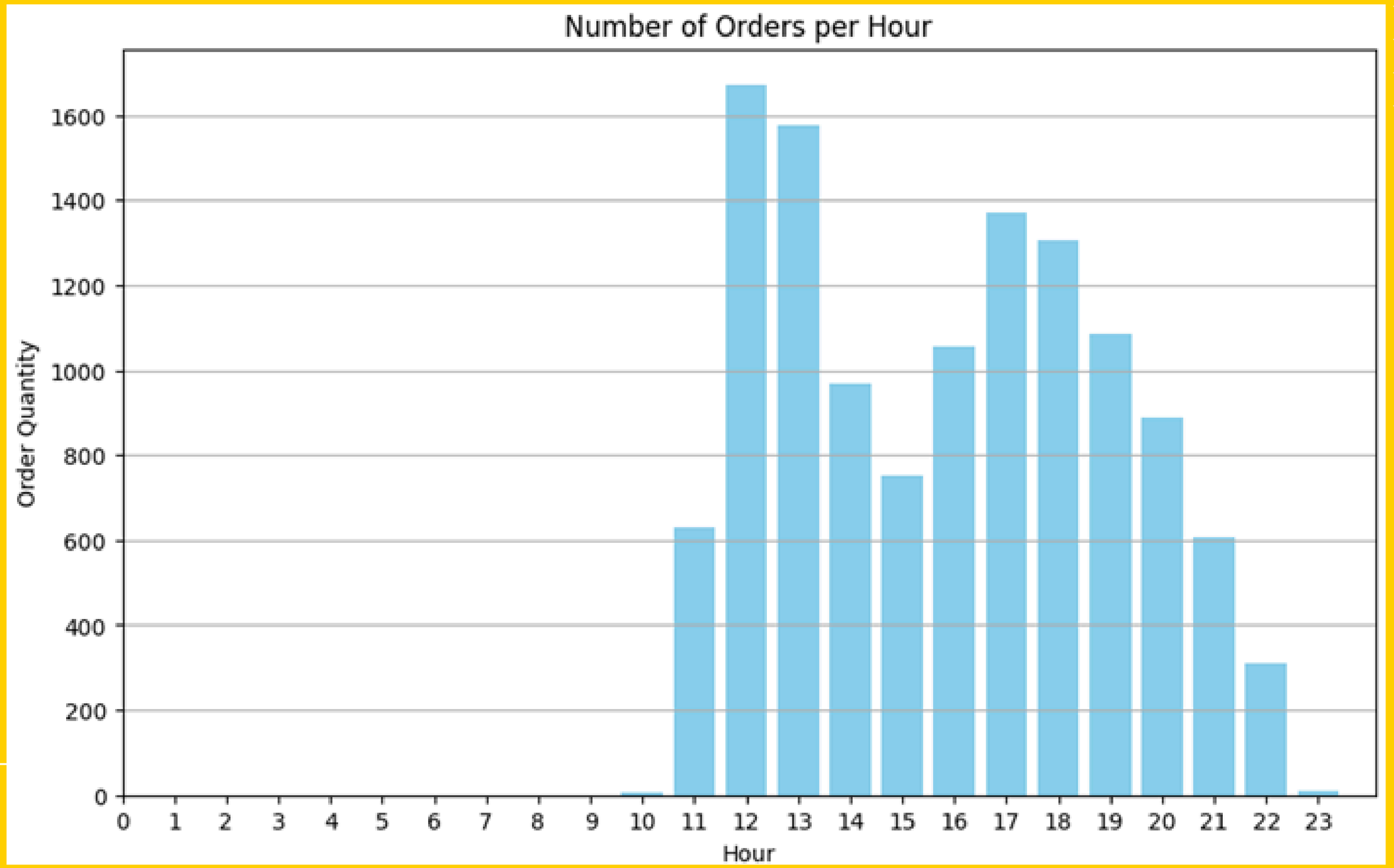


CONCLUSION

THIS VISUALIZATION ILLUSTRATES THE CORRELATION BETWEEN TOTAL PURCHASES OF A PRODUCT AND THE TOTAL PURCHASE PRICE. ON THE X-AXIS, WE HAVE TOTAL PURCHASES, WHICH IS THE NUMBER OF UNITS OF THE PRODUCT PURCHASED BY CUSTOMERS. MEANWHILE, THE Y-AXIS SHOWS THE TOTAL PURCHASE PRICE, WHICH REFLECTS THE AMOUNT OF MONEY CUSTOMERS SPEND TO BUY THESE PRODUCTS.

FROM THIS GRAPH, IT CAN BE SEEN THAT THERE IS A STRONG POSITIVE TREND BETWEEN TOTAL PURCHASES AND TOTAL PURCHASE PRICE. THIS MEANS THAT THE MORE PRODUCT UNITS PURCHASED, THE HIGHER THE TOTAL PURCHASE PRICE. THIS CAN BE EXPLAINED BY THE ASSUMPTION THAT THE MORE PRODUCTS PURCHASED, THE MORE LIKELY CUSTOMERS ARE TO SPEND MORE MONEY.

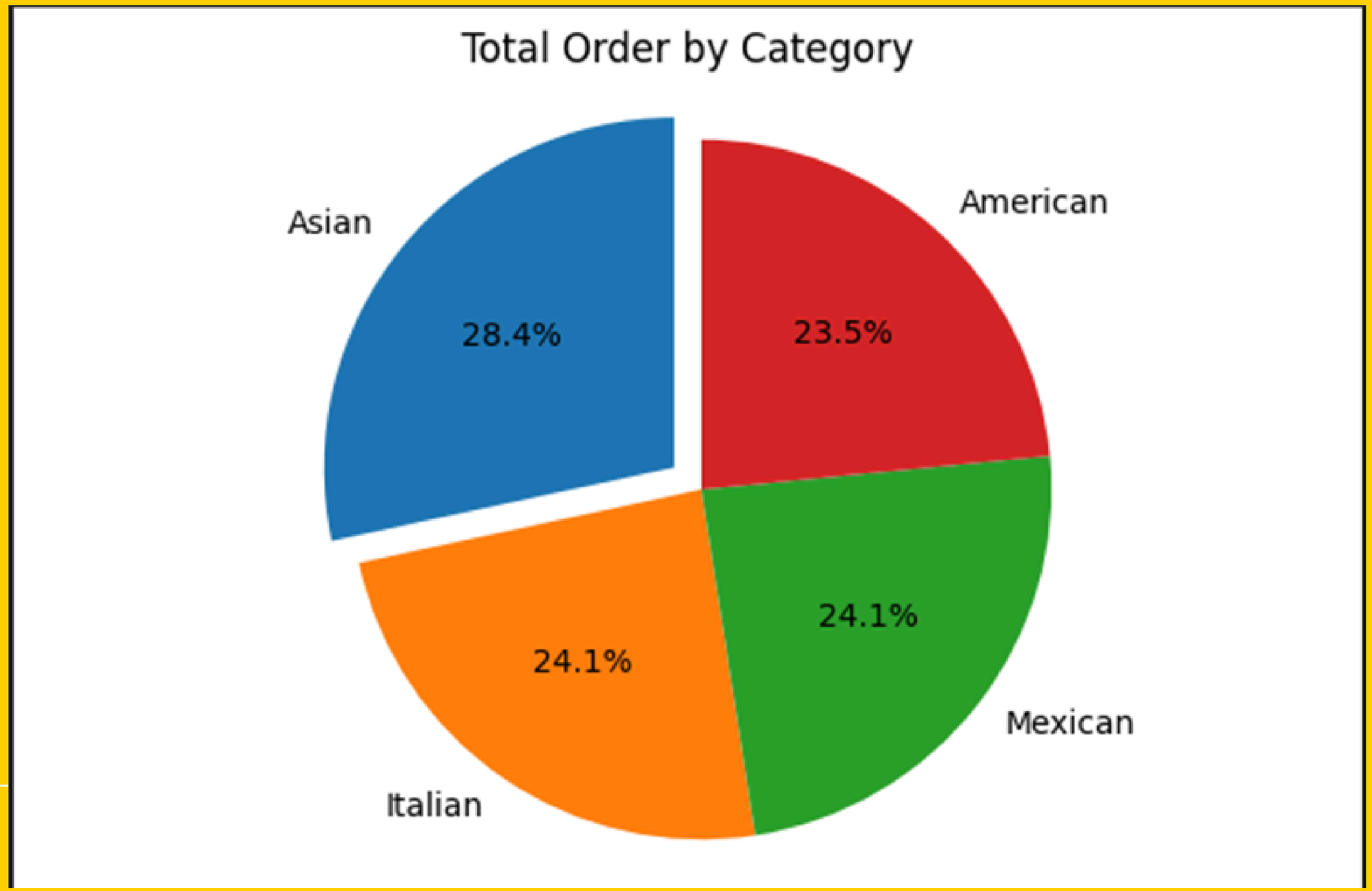
VISUALIZATION



CONCLUSION

THE TIME THAT GETS THE MOST ORDERS IS BETWEEN 12 AND 13 NOON, THIS IS PROBABLY LUNCH TIME SO THERE ARE MORE ORDERS AT THAT TIME.

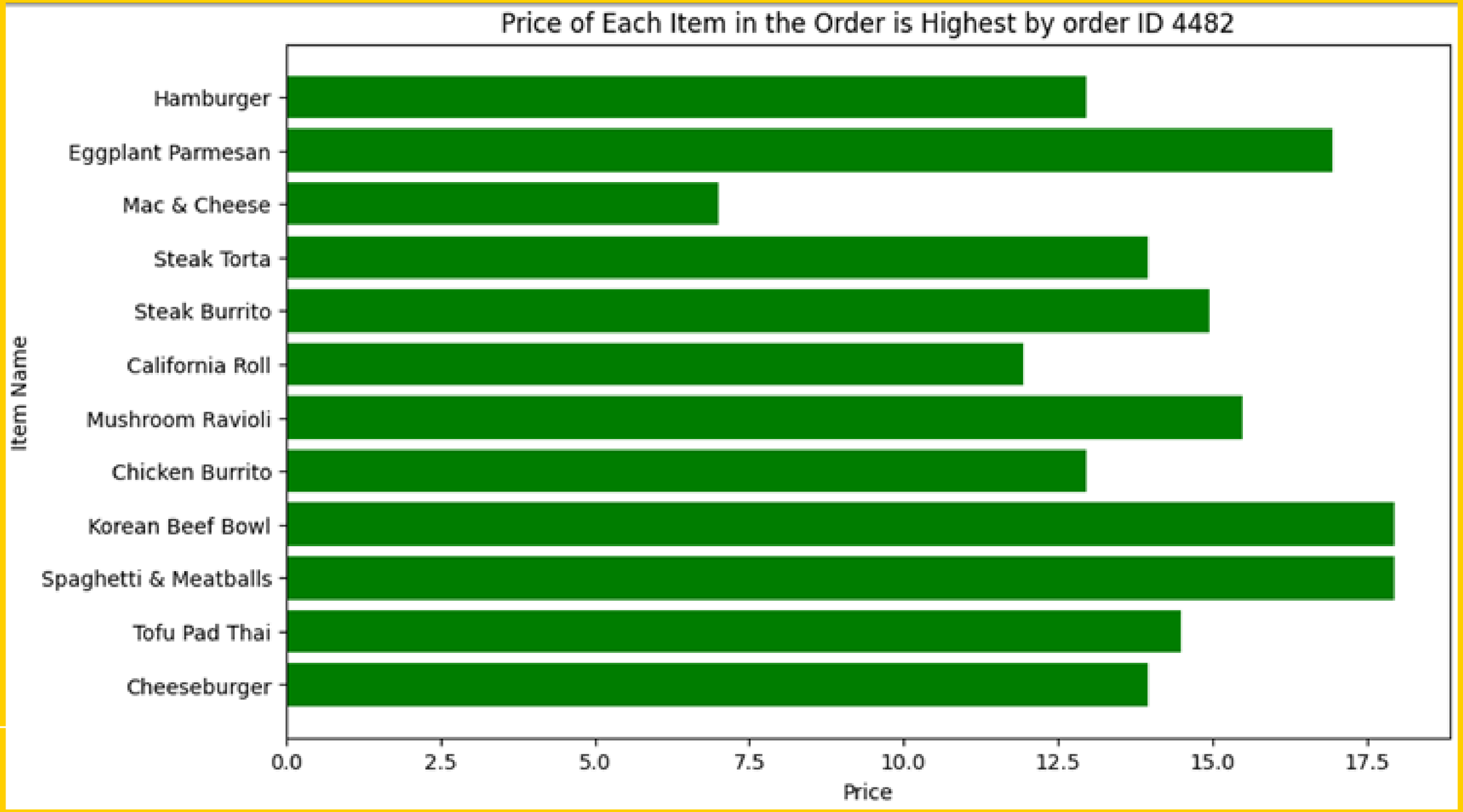
VISUALIZATION



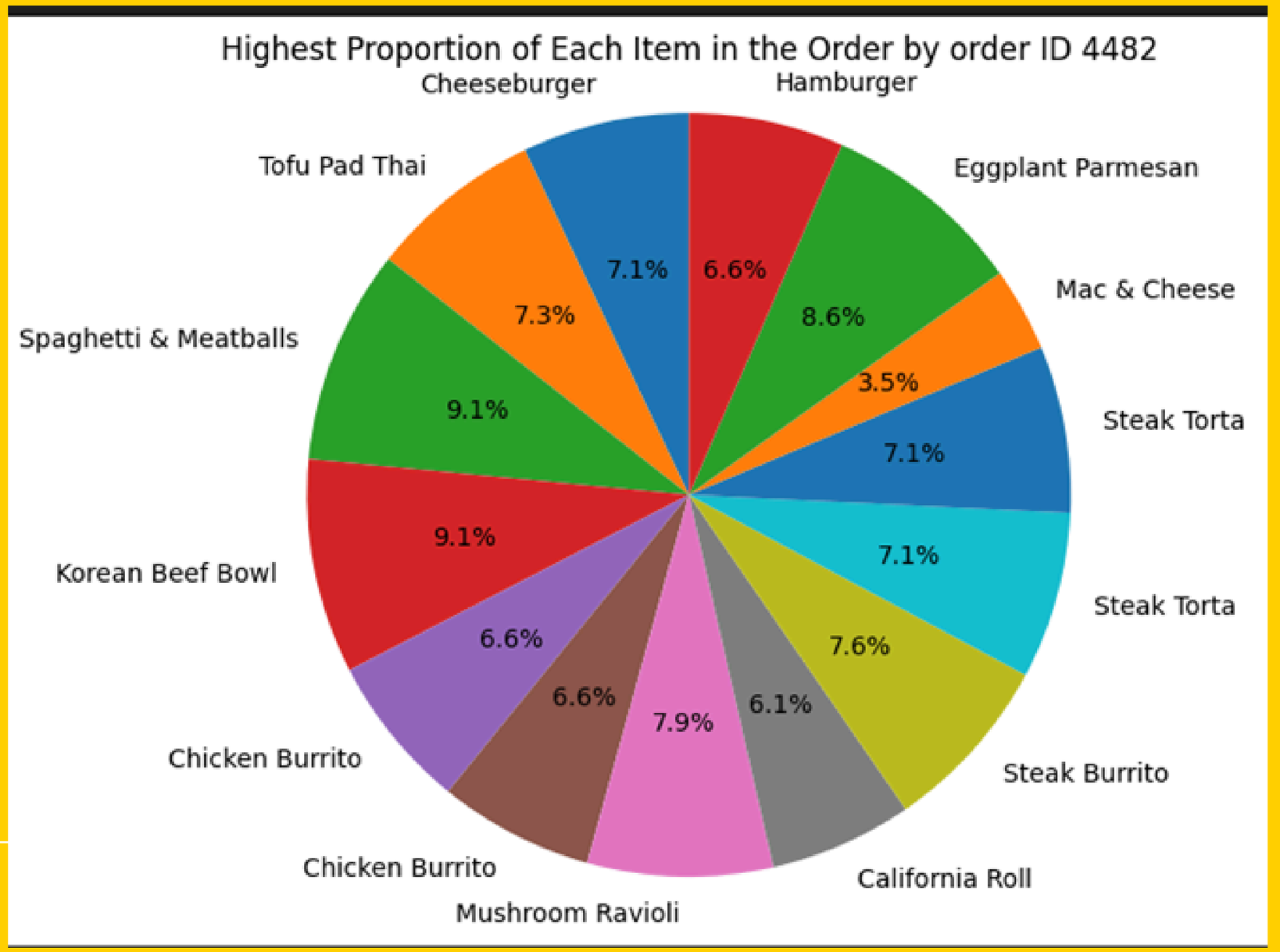
CONCLUSION

SHOWS THAT THE ASIA CATEGORY RECEIVED THE LARGEST NUMBER OF ORDERS WITH A TOTAL OF 3470 ORDERS. THIS CATEGORY CAN BE DEVELOPED INTO MORE TYPES OF MENUS FROM THE ASIAN CATEGORY BECAUSE MOST CUSTOMERS LIKE ASIAN CUISINE. VISUALIZATION USING PIE CHART.

VISUALIZATION



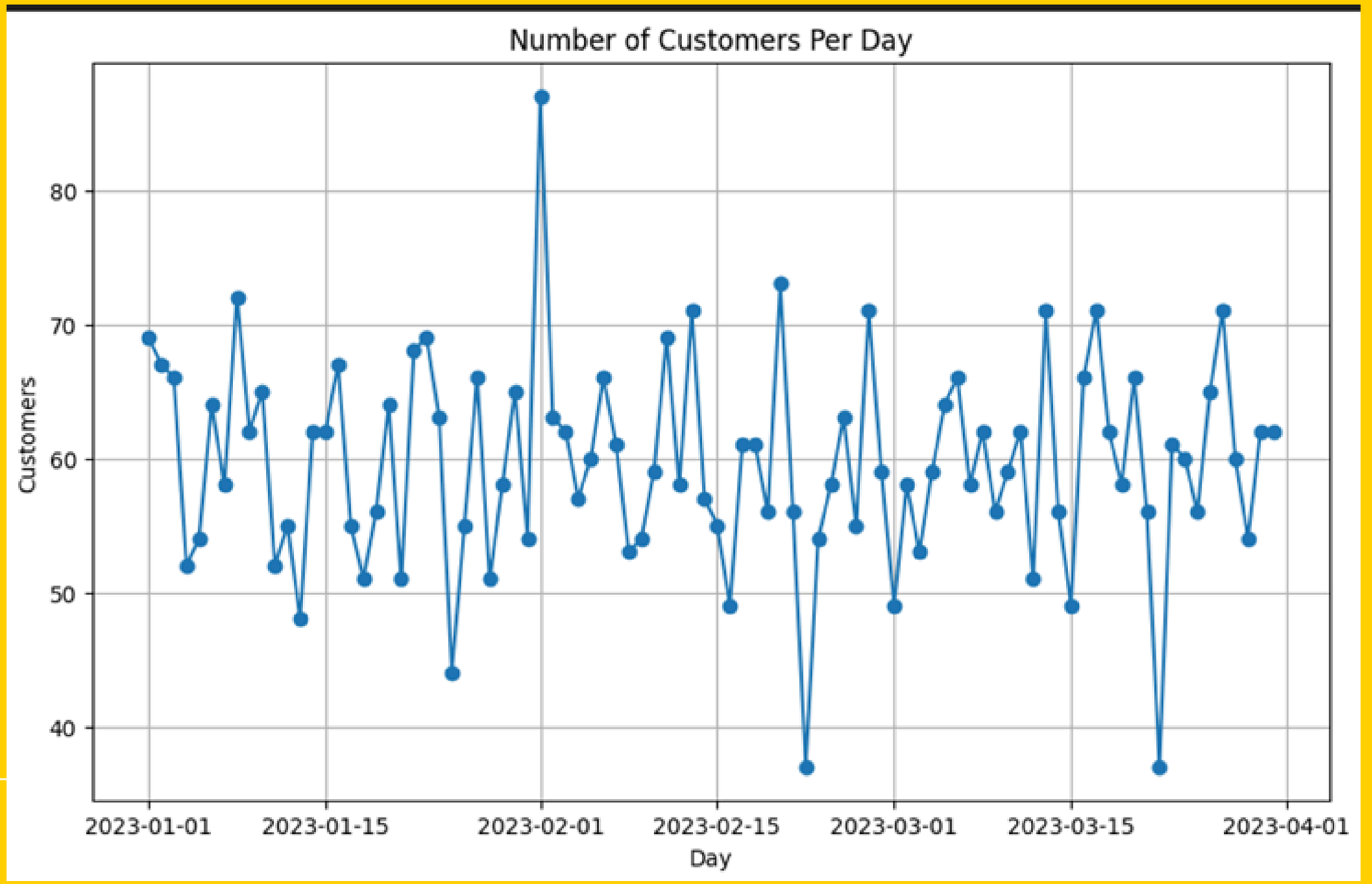
VISUALIZATION



CONCLUSION

SHOW THE PRICE OF EACH ITEM PURCHASED BY CUSTOMERS WITH THE MOST ORDER_ID 4482, THE HIGHEST PRICES ARE 2 ITEMS, NAMELY SPAGHETTI & MEATBALLS AND KOREAN BEEF BOWL, THE LOWEST PRICE IS ON THE STEAK TORTA MENU USING THE BAR CHART AND PIE CHART.

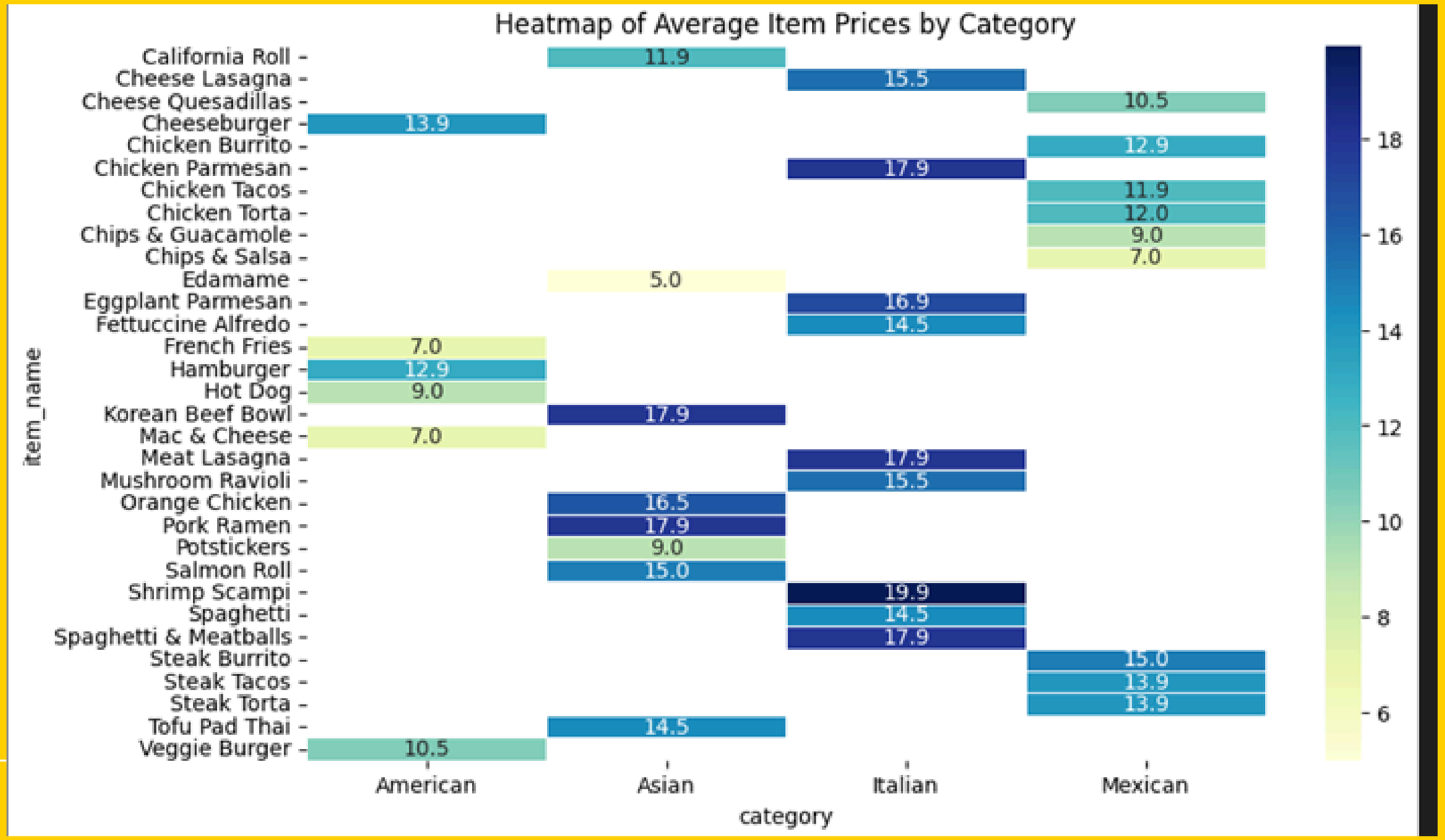
VISUALIZATION



CONCLUSION

THE HIGHEST ORDERS OCCUR ON THE 1ST OF FEBRUARY. THE LOWEST ORDERS OCCUR IN THE MIDDLE OF FEBRUARY AND MARCH

VISUALIZATION



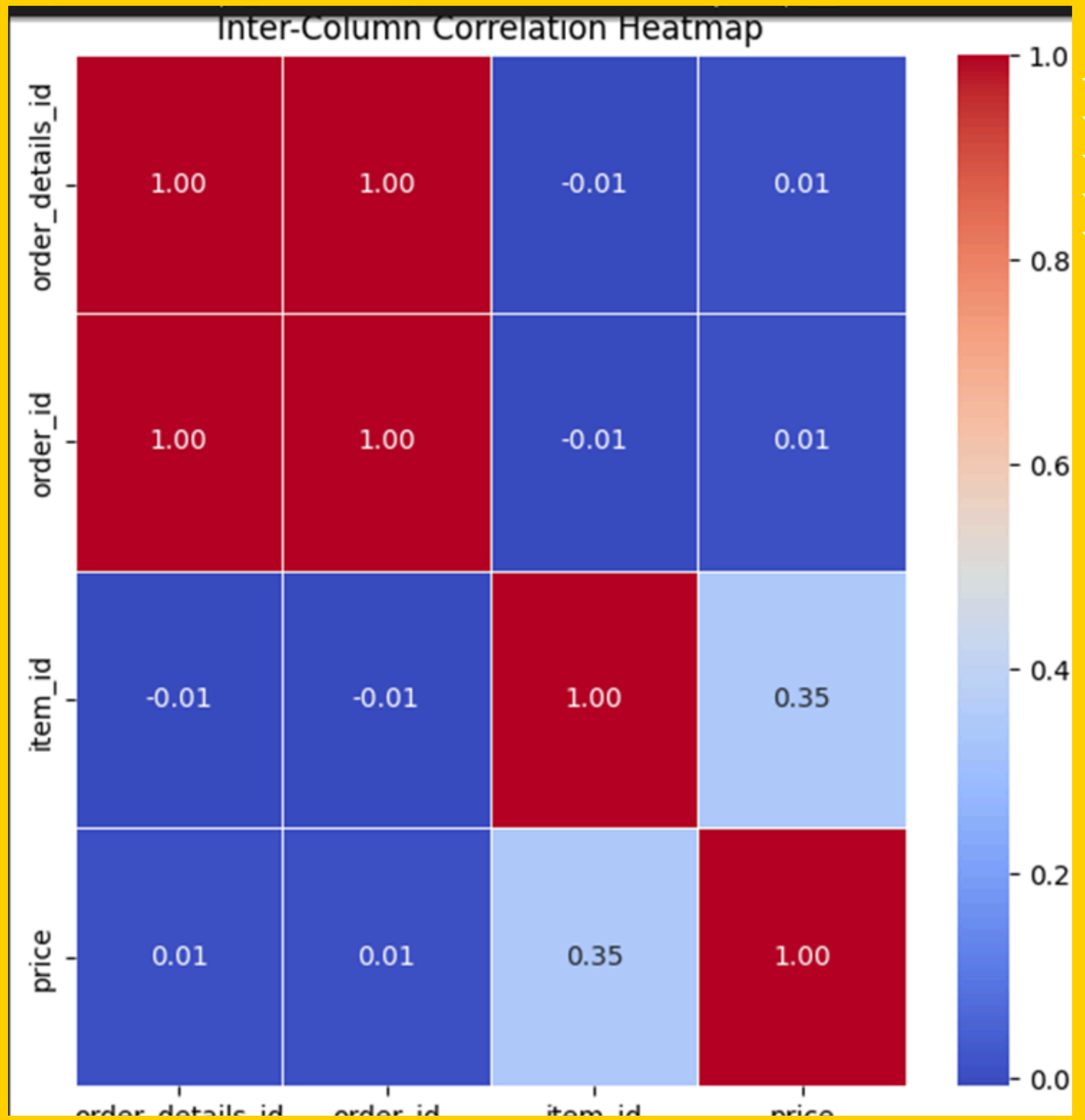
CONCLUSION

THIS VISUALIZATION IS A HEATMAP THAT DISPLAYS THE AVERAGE PRICE OF ITEMS BASED ON THEIR CATEGORY. EACH ROW ON THE HEATMAP REPRESENTS AN ITEM, WHILE EACH COLUMN REPRESENTS THE CATEGORY OF THAT ITEM. THE INTENSITY OF THE COLOR IN EACH CELL INDICATES THE AVERAGE PRICE OF ITEMS IN THAT CATEGORY, WITH LIGHTER COLORS INDICATING HIGHER PRICES.

WITH THIS VISUALIZATION, WE CAN QUICKLY IDENTIFY WHICH CATEGORIES HAVE HIGHER OR LOWER AVERAGE ITEM PRICES COMPARED TO OTHER CATEGORIES.

VISUALIZATION

This visualization is a heatmap that displays the correlation matrix between numerical columns in the dataset. Each cell in the heatmap depicts the degree of correlation between two columns, with the correlation value displayed as a number within each cell.



THANK YOU

Download Dataset :
https://maven-datasets.s3.amazonaws.com/Restaurant+Orders/Restaurant+Orders+MySQL.zip

Google Colaboratory :
https://colab.research.google.com/drive/10-ECPWWNPr1FtLVunVvY6FoJT4zaOxVn?usp=drive_link

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