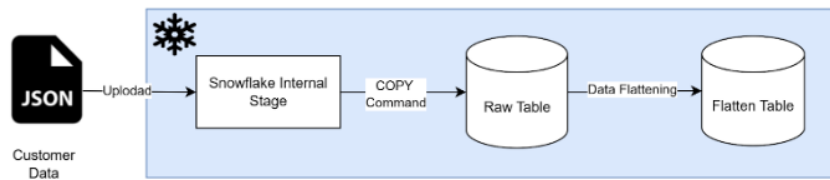# SNOWFLAKE - Mini Project 2

1. Create a Database & Schema
     1. Database : CUSTOMER_DATA
          1. Schema : RAW_DATA
          2. Schema : FLATTEN_DATA

2. Create Raw Table in the RAW_DATA schema
     1. Table :
          1. Database: CUSTOMER_DATA
          2. Schema: RAW_DATA
          3. Name: CUSTOMER_RAW
     2. Table structure
               JSON_DATA VARIANT

3. Create flatten table in the FLATTEN_DATA schema
     1. Table Name :
          1. Database: CUSTOMER_DATA
          2. Schema: FLATTEN_DATA
          3. Name: CUSTOMER_FLATTEN
     2. Table structure
               CUSTOMERID INT
               NAME STRING
               EMAIL STRING
               REGION STRING
               COUNTRY STRING
               PRODUCTNAME STRING
               PRODUCTBRAND STRING
               CATEGORY STRING
               QUANTITY INT
               PRICEPERUNIT FLOAT
               TOTALSALES FLOAT
               PURCHASEMODE STRING
               MODEOFPAYMENT STRING
               PURCHASEDATE DATE

4. Upload the JSON File to an Internal Stage
     1. Create an Internal Stage in the RAW_DATA schema
          1. Database: CUSTOMER_DATA
          2. Schema: RAW_DATA
          3. Name: CUSTOMER_STAGE
     2. Upload the customer json data file in the internal stage
     3. List the file in the internal stage

5. Load Data from the Stage into the Raw Table
    1. To load the raw customer data into the CUSTOMER_RAW table, use the COPY INTO command

6. Perform JSON flattening and insert data into the flatten Table
    1. Extract the required columns from the raw table and load into the flatten table by flattening the JSON data. Here we need to use the LATERAL FLATTEN functionality of snowflake

7. Data Analysis on the flatten data
    1. Calculate the total sales for each region.
    2. Identify the region with the highest total sales.
    3. Determine the total quantity sold for each product brand.
    4. Find the product with the least quantity sold.
    5. Identify the customer who made the highest purchase.
    6. Locate the product name and brand with the lowest unit price.
    7. List the top 5 best-selling products.
    8. Identify the 5 countries with the lowest sales.

Solution:

```
-- ############################################################
-- ####### (1) Create a Database & Schema
-- ############################################################

-- SET ROLE AND WAREHOUSE:
USE ROLE ACCOUNTADMIN;
USE WAREHOUSE COMPUTE_WH;

-- CREATE A NEW DATABASE:
CREATE OR REPLACE DATABASE CUSTOMER_DATA;
USE DATABASE CUSTOMER_DATA;

-- CREATE TWO NEW SCHEMAS:
CREATE OR REPLACE SCHEMA RAW_DATA;
CREATE OR REPLACE SCHEMA FLATTEN_DATA;


-- ############################################################
-- ####### (2) Create Raw Table in the RAW_DATA schema
-- ############################################################

-- Create Raw Table in the RAW_DATA schema:
USE SCHEMA CUSTOMER_DATA.RAW_DATA;

CREATE OR REPLACE TABLE CUSTOMER_RAW
    (JSON_DATA VARIANT);

SELECT * FROM CUSTOMER_RAW;
```

```
-- ###############################################################
-- ####### (3) Create flattened table in the FLATTEN_DATA schema
-- ###############################################################

-- Create flattened table in the FLATTEN_DATA schema:
USE SCHEMA CUSTOMER_DATA.FLATTEN_DATA;

CREATE OR REPLACE TABLE CUSTOMER_FLATTEN (
    CUSTOMERID INT,
    NAME STRING,
    EMAIL STRING,
    REGION STRING,
    COUNTRY STRING,
    PRODUCTNAME STRING,
    PRODUCTBRAND STRING,
    CATEGORY STRING,
    QUANTITY INT,
    PRICEPERUNIT FLOAT,
    TOTALSALES FLOAT,
    PURCHASEMODE STRING,
    MODEOFPAYMENT STRING,
    PURCHASEDATE DATE);

SELECT * FROM CUSTOMER_FLATTEN;


-- ###############################################################
-- ####### (4) Upload the JSON File to an Internal Stage
-- ###############################################################

-- Create an Internal Stage in the RAW_DATA schema
USE SCHEMA CUSTOMER_DATA.RAW_DATA;

CREATE OR REPLACE STAGE CUSTOMER_STAGE;

-- List the file in the internal stage before uploading the file
LIST @CUSTOMER_STAGE;


----------------------------------------------------------------------------------
----- UPLOAD MANUALLY THE CUSTOMER JSON DATA INTO THE INTERNAL CUSTOMER_STAGE ------
----------------------------------------------------------------------------------

-- List the file in the internal stage after uploading the file
LIST @CUSTOMER_STAGE;
```

```sql
-- ###########################################################################
-- ####### (5) Load Data from the Stage into the Raw Table using COPY INTO command
-- ###########################################################################

-- create the JSON file format:
USE SCHEMA CUSTOMER_DATA.RAW_DATA;

CREATE OR REPLACE FILE FORMAT JSON_FORMAT
TYPE = 'JSON';

-- load uploaded JSON file from the internal CUSTOMER_STAGE into table CUSTOMER_RAW:
SELECT * FROM CUSTOMER_RAW;

COPY INTO CUSTOMER_RAW
FROM @CUSTOMER_STAGE
FILE_FORMAT = (FORMAT_NAME = JSON_FORMAT);

SELECT * FROM CUSTOMER_RAW;




-- ###########################################################################
-- ####### (6) Perform JSON flattening and insert data into the flatten Table
-- ###########################################################################

INSERT INTO CUSTOMER_DATA.FLATTEN_DATA.CUSTOMER_FLATTEN
SELECT
    CUSTOMERS.VALUE:customerid::INT AS CUSTOMERID,
    CUSTOMERS.VALUE:name::STRING AS NAME,
    CUSTOMERS.VALUE:email::STRING AS EMAIL,
    CUSTOMERS.VALUE:region::STRING AS REGION,
    CUSTOMERS.VALUE:country::STRING AS COUNTRY,
    CUSTOMERS.VALUE:productname::STRING AS PRODUCTNAME,
    CUSTOMERS.VALUE:productbrand::STRING AS PRODUCTBRAND,
    CUSTOMERS.VALUE:category::STRING AS CATEGORY,
    CUSTOMERS.VALUE:quantity::INT AS QUANTITY,
    CUSTOMERS.VALUE:priceperunit::FLOAT AS PRICEPERUNIT,
    CUSTOMERS.VALUE:totalsales::FLOAT AS TOTALSALES,
    CUSTOMERS.VALUE:purchasemode::STRING AS PURCHASEMODE,
    CUSTOMERS.VALUE:modeofpayment::STRING AS MODEOFPAYMENT,
    CUSTOMERS.VALUE:purchasedate::DATE AS PURCHASEDATE
FROM CUSTOMER_DATA.RAW_DATA.CUSTOMER_RAW,
    LATERAL FLATTEN (INPUT => JSON_DATA) AS CUSTOMERS;

SELECT * FROM CUSTOMER_DATA.FLATTEN_DATA.CUSTOMER_FLATTEN;
```

```
-- ############################################################################
-- ####### (7) Data Analysis on the flattened data
-- ############################################################################

USE SCHEMA CUSTOMER_DATA.FLATTEN_DATA;

----------------------------------------------------------------------
-- 1. Calculate the total sales for each region.
----------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_1 AS
SELECT
    REGION,
    SUM(TOTALSALES) AS REGION_TOTAL_SALES
FROM CUSTOMER_FLATTEN
GROUP BY REGION;

SELECT * FROM VIEW_1;

----------------------------------------------------------------------
-- 2. Identify the region with the highest total sales.
----------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_2 AS
SELECT
    REGION,
    REGION_TOTAL_SALES AS HIGHEST_TOTAL_SALES
FROM VIEW_1
WHERE HIGHEST_TOTAL_SALES = (SELECT MAX(REGION_TOTAL_SALES) FROM VIEW_1);

SELECT * FROM VIEW_2;

----------------------------------------------------------------------
-- 3. Determine the total quantity sold for each product brand.
----------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_3 AS
SELECT
    PRODUCTBRAND,
    SUM(QUANTITY) AS TOTAL_QUANTITY
FROM CUSTOMER_FLATTEN
GROUP BY PRODUCTBRAND;

SELECT * FROM VIEW_3;

----------------------------------------------------------------------
-- 4. Find the product with the least quantity sold.
----------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_4 AS
SELECT
    PRODUCTBRAND,
    TOTAL_QUANTITY AS LEAST_TOTAL_QUANTITY
FROM VIEW_3
WHERE TOTAL_QUANTITY = (SELECT MIN(TOTAL_QUANTITY) FROM VIEW_3);

SELECT * FROM VIEW_4;
```

```sql
-------------------------------------------------------------------
-- 5. Identify the customer who made the highest purchase.
-------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_5 AS
SELECT
    CUSTOMERID,
    NAME,
    PRODUCTBRAND,
    TOTALSALES
FROM CUSTOMER_FLATTEN
ORDER BY TOTALSALES DESC LIMIT 1;

SELECT * FROM VIEW_5;


-------------------------------------------------------------------
-- 6. Locate the product name and brand with the lowest unit price.
-------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_6 AS
SELECT
    PRODUCTNAME,
    PRODUCTBRAND,
    PRICEPERUNIT
FROM CUSTOMER_FLATTEN
WHERE PRICEPERUNIT = (SELECT MIN(PRICEPERUNIT) FROM CUSTOMER_FLATTEN);

SELECT * FROM VIEW_6;


-------------------------------------------------------------------
-- 7. List the top 5 best-selling products.
-------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_7 AS
SELECT
    PRODUCTNAME,
    PRODUCTBRAND,
    SUM(TOTALSALES) AS PRODUCT_SALE
FROM CUSTOMER_FLATTEN
GROUP BY PRODUCTNAME, PRODUCTBRAND
ORDER BY PRODUCT_SALE DESC LIMIT 5;

SELECT * FROM VIEW_7;


-------------------------------------------------------------------
-- 8. Identify the 5 countries with the lowest sales.
-------------------------------------------------------------------
CREATE OR REPLACE VIEW VIEW_8 AS
SELECT
    COUNTRY,
    SUM(TOTALSALES) AS COUNTRY_SALE
FROM CUSTOMER_FLATTEN
GROUP BY COUNTRY
ORDER BY COUNTRY_SALE ASC LIMIT 5;

SELECT * FROM VIEW_8;
```

	# CUSTOMERID	A NAME	A EMAIL	A REGION	A COUNTRY	A PRODUCTNAME	A PRODUCTBRAND	A CATEGORY	# QUANTITY	# PRICEPERUNIT	# TOTALSALES	A PURCHASEMODE	A MODEOFPAYMENT	⏱ PURCHASEDATE
1	1	Aaron Kennedy	daniellewilson@hotmail.com	North America	Ukraine	4K TV	LG	electronics	4	597.98	2391.92	Online	Debit Card	2024-02-18
2	2	Loretta Hansen	fwaters@alexander.com	South America	Saint Vincent and	Smartphone	Samsung	electronics	1	1407.21	1407.21	Online	Cash	2024-10-24
3	3	Lauren Cross	crawfordalexander@hotmail.com	North America	Gibraltar	Drone	DJI	electronics	3	1349.16	4047.48	Online	Bank Transfer	2024-03-14
4	4	Christopher Garza	josephdavenport@hotmail.com	Europe	Niue	4K TV	LG	electronics	2	1119.77	2239.54	In-store	Cash	2024-02-23
5	5	Albert Wright	alexanderjones@holland-weiss.	Africa	Barbados	Drone	DJI	electronics	5	260.8	1304	In-store	Credit Card	2024-09-15
6	6	Jennifer Thompson	sydney18@greene.net	Africa	Saint Vincent and	Drone	DJI	electronics	5	1643.39	8216.95	In-store	Cash	2024-06-14
7	7	George Vazquez	sharvey@gmail.com	Asia	Qatar	Smartwatch	Garmin	electronics	1	1248.63	1248.63	In-store	Bank Transfer	2024-02-10
8	8	David Reyes	nmorales@cervantes.com	Asia	Russian Federati	4K TV	LG	electronics	2	773.54	1547.08	In-store	Credit Card	2024-09-21
9	9	Katelyn Torres	deborahdonaldson@martinez.c	North America	Canada	Drone	DJI	electronics	3	427.33	1281.99	Online	Debit Card	2024-11-12
10	10	Justin Watts	fitzpatricksherry@hardin-whitak	Africa	Syrian Arab Repu	Smartwatch	Garmin	electronics	1	1869.79	1869.79	In-store	PayPal	2024-04-29
11	11	Kristine Morales	heatherpeters@bennett-james.	Australia	Gibraltar	Bluetooth Speaker	JBL	electronics	3	1359.8	4079.4	In-store	Cash	2024-11-20
12	12	John Owen MD	nicole12@reyes.com	Australia	Peru	Tablet	Microsoft	electronics	2	1424.88	2849.76	Online	Cash	2024-12-14
13	13	Stanley Montes	michael09@hotmail.com	North America	Norway	Tablet	Microsoft	electronics	3	438.34	1315.02	Online	Credit Card	2024-07-01
14	14	Michael Matthews	lopezstephanie@hotmail.com	Europe	Netherlands Anti	Camera	Canon	electronics	3	1508.8	4526.4	Online	Bank Transfer	2024-09-16
15	15	Joanna Wilson	mmclaughlin@yahoo.com	Australia	Poland	Wireless Earbuds	Apple	electronics	4	653.27	2613.08	Online	Bank Transfer	2024-04-05
16	16	Brent Gardner	mmoore@mckinney.net	South America	Bolivia	Drone	DJI	electronics	3	391.28	1173.84	In-store	PayPal	2024-03-16
17	17	Tina Coleman	brittney35@yahoo.com	Europe	Saint Pierre and	Smartwatch	Garmin	electronics	5	1531.93	7659.65	In-store	Credit Card	2024-05-28
18	18	Michelle Jones	allisonregina@zamora.com	North America	Tonga	Wireless Earbuds	Apple	electronics	1	1150.76	1150.76	In-store	Bank Transfer	2024-09-05
19	19	Wayne Ayers	alicemartinez@jones.net	Africa	Benin	Camera	Canon	electronics	4	1741.96	6967.84	In-store	Credit Card	2024-04-01
20	20	Marissa Lewis	caseykevin@brady-perez.com	Asia	Fiji	Laptop	Dell	electronics	2	978.3	1956.6	In-store	PayPal	2024-06-18
21	21	Justin Johnson	briggsheather@watson.com	North America	Swaziland	Smartphone	Samsung	electronics	2	1561.72	3123.44	Online	Debit Card	2025-01-04
22	22	Christopher Monroe	etate@gmail.com	Africa	Azerbaijan	Camera	Canon	electronics	4	1959.3	7837.2	Online	PayPal	2024-03-14
23	23	Jacob Clarke	cowens@yahoo.com	Europe	Swaziland	Bluetooth Speaker	JBL	electronics	2	700.77	1401.54	In-store	Credit Card	2024-09-10

	# CUSTOMERID	A NAME	A EMAIL	A REGION	A COUNTRY	A PRODUCTNAME	A PRODUCTBRAND	A CATEGORY	# QUANTITY	# PRICEPERUNIT	# TOTALSALES	A PURCHASEMODE	A MODEOFPAYMENT	⏱ PURCHASEDATE
76	76	Carlos Cook	matthew74@rowland-rivers.biz	Africa	Iran	Wireless Earbuds	Apple	electronics	5	725.03	3625.15	In-store	Credit Card	2024-03-29
77	77	Amber Dixon	sarah22@hotmail.com	Europe	Saudi Arabia	4K TV	LG	electronics	2	241.27	482.54	In-store	Debit Card	2024-01-12
78	78	Timothy Long	elizabethhill@hawkins.biz	Europe	Somalia	Gaming Console	Sony	electronics	1	755.23	755.23	Online	Cash	2024-12-31
79	79	Vanessa Copeland	churchlisa@hotmail.com	Australia	Brazil	Bluetooth Speaker	JBL	electronics	4	1270.42	5081.68	In-store	Cash	2024-12-27
80	80	Joseph Murray	alyssa95@allison.com	Asia	Brazil	Bluetooth Speaker	JBL	electronics	3	1625.66	4876.98	Online	PayPal	2024-02-07
81	81	Mike Elliott	davisjulie@gmail.com	Europe	Saint Helena	Bluetooth Speaker	JBL	electronics	4	1386.9	5547.6	Online	PayPal	2024-07-25
82	82	Jonathan Jackson	jamie43@gmail.com	North America	Ethiopia	Smartphone	Samsung	electronics	4	188.4	753.6	Online	Cash	2025-01-06
83	83	George Adams	kjacobs@singleton-griffin.com	Australia	El Salvador	Tablet	Microsoft	electronics	2	1332.1	2664.2	In-store	Debit Card	2024-07-26
84	84	Gary Mejia	bgeorge@hotmail.com	North America	United Arab Emir	Laptop	Dell	electronics	4	536.91	2147.64	Online	Bank Transfer	2024-07-25
85	85	Stacey Lee	eileensingh@garcia-avila.info	Europe	Honduras	4K TV	LG	electronics	2	1393.95	2787.9	In-store	PayPal	2024-05-29
86	86	Frank Santana	laurenreed@adkins.com	Australia	Egypt	Tablet	Microsoft	electronics	5	788.51	3942.55	Online	Cash	2024-04-22
87	87	David Golden	thompsonalexandra@williams-r	Europe	Albania	4K TV	LG	electronics	3	1685.37	5056.11	In-store	Bank Transfer	2024-08-22
88	88	Darin Farley	qrichardson@chaney.org	Europe	Guadeloupe	Bluetooth Speaker	JBL	electronics	2	149.3	298.6	In-store	PayPal	2024-05-21
89	89	Lindsay Hughes	pamela30@gmail.com	Europe	Cambodia	Smartwatch	Garmin	electronics	3	1088.01	3264.03	In-store	Credit Card	2024-12-19
90	90	Daniel Moore	erica00@bailey.biz	Europe	El Salvador	Drone	DJI	electronics	2	226.46	452.92	Online	PayPal	2024-06-02
91	91	Susan Berry	yatesandrew@jones.com	North America	Spain	4K TV	LG	electronics	3	700.44	2101.32	In-store	Bank Transfer	2024-10-30
92	92	Jessica Gonzalez	stevenoconnor@english.com	Asia	Cape Verde	Smartphone	Samsung	electronics	3	1343.33	4029.99	In-store	Bank Transfer	2024-11-04
93	93	Tiffany Gilbert	wmiranda@gill-ford.com	Asia	New Caledonia	Smartphone	Samsung	electronics	3	1456.16	4368.48	Online	PayPal	2024-11-01
94	94	Veronica Schmidt	paulwilliams@yahoo.com	Australia	Ecuador	4K TV	LG	electronics	4	1526.08	6104.32	Online	PayPal	2024-10-14
95	95	Jennifer Jones	rebeccagreene@yahoo.com	Australia	Portugal	Bluetooth Speaker	JBL	electronics	1	959.54	959.54	Online	PayPal	2024-08-08
96	96	Diana Taylor	andrewjohnson@jones.com	Africa	Nigeria	Laptop	Dell	electronics	2	1762.85	3525.7	In-store	Debit Card	2024-04-24
97	97	Heidi Gordon	anna57@gmail.com	North America	Czech Republic	Wireless Earbuds	Apple	electronics	4	986.7	3946.8	In-store	PayPal	2024-01-16
98	98	Ms. Mary Gallagher	hodgekaren@campbell.com	North America	Swaziland	Smartphone	Samsung	electronics	3	708.64	2125.92	In-store	Debit Card	2024-12-15
99	99	Joseph Clark	obonilla@martin.com	North America	Armenia	Camera	Canon	electronics	1	283.04	283.04	In-store	Debit Card	2024-05-09
100	100	Lisa Erickson	sconway@simpson.biz	Asia	Bouvet Island (B	Tablet	Microsoft	electronics	4	913	3652	In-store	Credit Card	2024-09-09