SQL_ASSIGNMENT_1

Problem Statements :

1. **Design the complete database + schema + tables for the diagram shown above using appropriate data type for every column along with any contraints (checks + PK) mentioned in the task description and load the below data into the requisite tables.**

```
-- NEW DATABASE CREATED
CREATE DATABASE BIKESTORES;
USE DATABASE BIKESTORES;

-- NEW SCHEMA CREATED

CREATE OR REPLACE SCHEMA PRODUCTION;
CREATE OR REPLACE SCHEMA SALES;

-- TABLE CREATION IN SALES SCHEMA

CREATE OR REPLACE TABLE SALES.STORES
(
 STORE_ID INT  IDENTITY(1,1) ,
 STORE_NAME VARCHAR(25),
 PHONE VARCHAR(25),
 EMAIL VARCHAR(30),
 STREET VARCHAR(30),
 CITY VARCHAR(15),
 STATE VARCHAR(5),
 ZIP_CODE INT ,
 PRIMARY KEY (STORE_ID)
 );

 CREATE OR REPLACE TABLE SALES.STAFFS
 (
  STAFF_ID INT,
  FIRST_NAME VARCHAR(15),
  LAST_NAME VARCHAR(15),
  EMAIL VARCHAR(50) ,
  PHONE VARCHAR(20) ,
  ACTIVE TINYINT,
  STORE_ID INT ,
  MANAGER_ID INT,
  PRIMARY KEY (STAFF_ID)
 );
```

```
CREATE OR REPLACE TABLE SALES.CUSTOMERS
(
 CUSTOMER_ID INT IDENTITY(1,1),
 FIRST_NAME VARCHAR(15),
 LAST_NAME VARCHAR(15),
 PHONE VARCHAR(20),
 EMAIL VARCHAR(50),
 STREET VARCHAR(50),
 CITY VARCHAR(50),
 STATE CHAR(10),
 ZIP_CODE INT,
 PRIMARY KEY(CUSTOMER_ID)
);

CREATE OR REPLACE TABLE SALES.ORDERS
(
 ORDER_ID INT,
 CUSTOMER_ID INT,
 ORDER_STATUS INT,
 ORDER_DATE VARCHAR(10),
 REQUIRED_DATE VARCHAR(10),
 SHIPPED_DATE VARCHAR(10),
 STORE_ID INT,
 STAFF_ID INT,
 PRIMARY KEY(ORDER_ID)
);

CREATE OR REPLACE TABLE SALES.ORDER_ITEMS
(
 ORDER_ID INT,
 ITEM_ID INT,
 PRODUCT_ID INT,
 QUANTITY INT,
 LIST_PRICE DECIMAL(10,2),
 DISCOUNT DECIMAL(4,2),
 PRIMARY KEY(ORDER_ID,ITEM_ID)
);
```

-- TABLE CREATION IN PRODUCTION SCHEMA

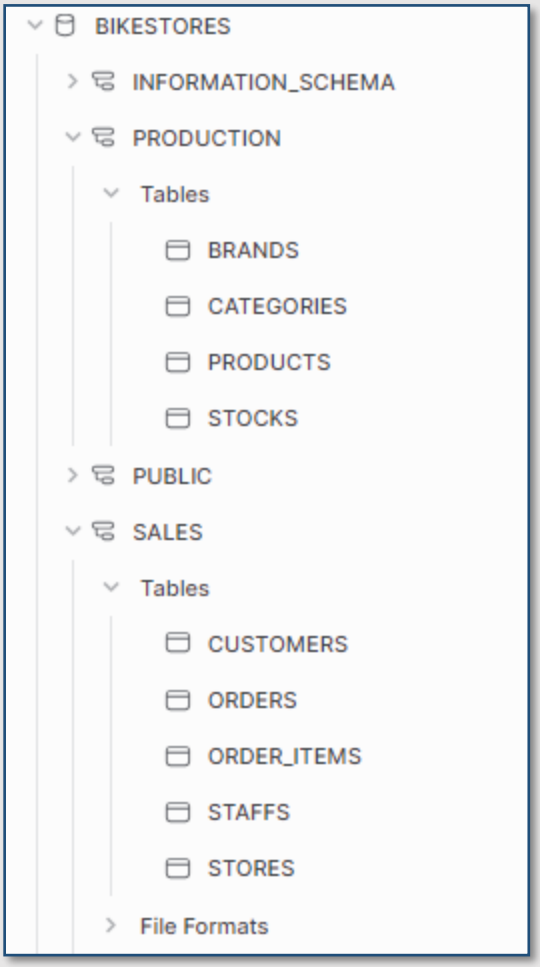
```
CREATE OR REPLACE TABLE PRODUCTION.CATEGORIES
(
 CATEGORY_ID INT,
 CATEGORY_NAME VARCHAR(50),
 PRIMARY KEY(CATEGORY_ID)
);

CREATE OR REPLACE TABLE PRODUCTION.BRANDS
(
 BRAND_ID INT,
 BRAND_NAME VARCHAR(50),
 PRIMARY KEY(BRAND_ID)
);

CREATE OR REPLACE TABLE PRODUCTION.PRODUCTS
(
 PRODUCT_ID INT,
 PRODUCT_NAME VARCHAR(100),
 BRAND_ID INT,
 CATEGORY_ID INT,
 MODEL_YEAR INT,
 LIST_PRICE DECIMAL(10,2),
 PRIMARY KEY(PRODUCT_ID)BIKESTORESBIKESTORES.PRODUCTIONBIKESTORES.SALES
);

CREATE OR REPLACE TABLE PRODUCTION.STOCKS
(
 STORE_ID INT,
 PRODUCT_ID INT,
 QUANTITY INT,
 PRIMARY KEY(STORE_ID, PRODUCT_ID)
);
```

FINAL OUTPUT IS:



2. **Once the table has got created , there is a requirement of FOREIGN KEY implementation coming into picture where one needs to add(ALTER TABLE COMMAND) below foreign key on the table mentioned pointing to another table (READ ABOUT FOREIGN KEY) as :**

```
-- SALES.STAFFS (STORE_ID) -> SALES.STORES(STORIED)

ALTER TABLE SALES.STAFFS
ADD FOREIGN KEY(STORE_ID) REFERENCES SALES.STORES(STORE_ID);

-- SALES.STAFFS (MANAGER_ID) -> SALES.STAFFS (STAFF_ID)

ALTER TABLE SALES.STAFFS
ADD FOREIGN KEY(MANAGER_ID) REFERENCES SALES.STAFFS(STAFF_ID);

-- PRODUCTION.PRODUCTS (CATEGORY_ID) -> PRODUCTION.CATEGORIES (CATEGORY_ID)

ALTER TABLE PRODUCTION.PRODUCTS
ADD FOREIGN KEY(CATEGORY_ID) REFERENCES PRODUCTION.CATEGORIES(CATEGORY_ID);

-- PRODUCTION.PRODUCTS(BRAND_ID) -> PRODUCTION.BRANDS (BRAND_ID)

ALTER TABLE PRODUCTION.PRODUCTS
ADD FOREIGN KEY(BRAND_ID) REFERENCES PRODUCTION.BRANDS(BRAND_ID);

-- SALES.ORDERS (CUSTOMER_ID) -> SALES.CUSTOMERS (CUSTOMER_ID)

ALTER TABLE SALES.ORDERS
ADD FOREIGN KEY(CUSTOMER_ID) REFERENCES SALES.CUSTOMERS(CUSTOMER_ID);

-- SALES.ORDERS(STORE_ID) -> SALES.STORES (STORE_ID)

ALTER TABLE SALES.ORDERS
ADD FOREIGN KEY(STORE_ID) REFERENCES SALES.STORES(STORE_ID);

-- SALES.ORDERS (STAFF_ID) -> SALES.STAFFS (STAFF_ID)

ALTER TABLE SALES.ORDERS
ADD FOREIGN KEY(STAFF_ID) REFERENCES SALES.STAFFS(STAFF_ID);

-- SALES.ORDER_ITEMS(ORDER_ID) -> SALES.ORDERS (ORDER_ID)

ALTER TABLE SALES.ORDER_ITEMS
ADD FOREIGN KEY(ORDER_ID) REFERENCES SALES.ORDERS(ORDER_ID);
```

-- SALES.ORDER_ITEMS (PRODUCT_ID) -> PRODUCTION.PRODUCTS (PRODUCT_ID)

```
ALTER TABLE SALES.ORDER_ITEMS
ADD FOREIGN KEY(PRODUCT_ID) REFERENCES PRODUCTION.PRODUCTS(PRODUCT_ID);
```

-- PRODUCTION.STOCKS (STORE_ID) -> SALES.STORES (STORE_ID)

```
ALTER TABLE PRODUCTION.STOCKS
ADD FOREIGN KEY(STORE_ID) REFERENCES SALES.STORES(STORE_ID);
```

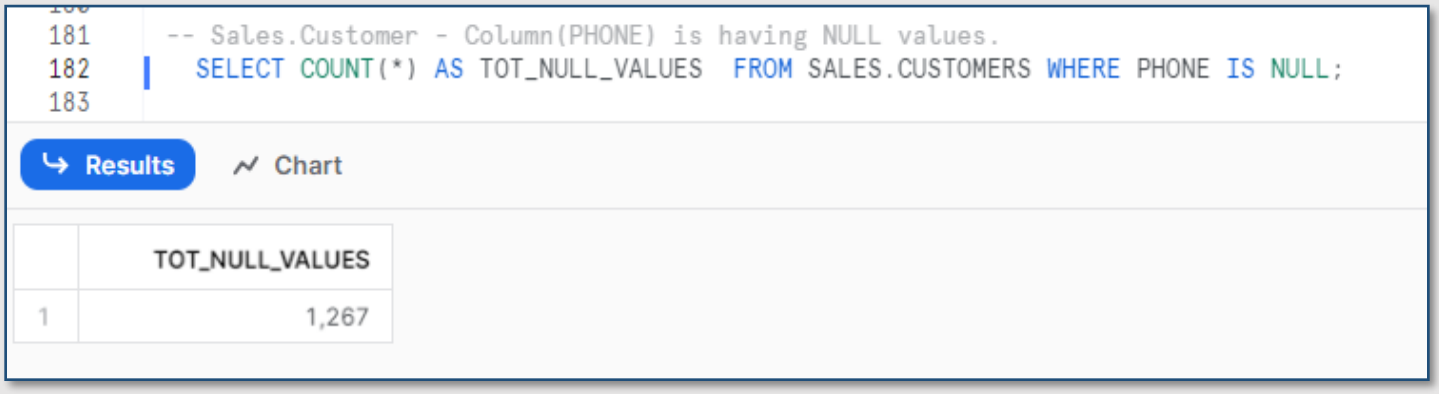
-- PRODUCTION.STOCKS (PRODUCT_ID) -> PRODUCTION.PRODUCTS (PRODUCT_ID)

```
ALTER TABLE PRODUCTION.STOCKS
ADD FOREIGN KEY(PRODUCT_ID) REFERENCES PRODUCTION.PRODUCTS(PRODUCT_ID);
```

3. **Does any of the table has missing or NULL value ? If yes which are those and what are their counts ?**

Sales.Customer - Column(PHONE) is having NULL values.

SELECT COUNT(*) AS TOT_NULL_VALUES FROM SALES.CUSTOMERS WHERE PHONE IS NULL;



Sales.Orders - Column(SHIPPED_DATE) is having NULL values.

SELECT COUNT(*) AS TOT_NULL_VALUES from SALES.ORDERS WHERE SHIPPED_DATE is NULL;

```
184   --  Sales.Orders - Column(SHIPPED_DATE) is having NULL values.
185     SELECT COUNT(*) AS TOT_NULL_VALUES from SALES.ORDERS WHERE SHIPPED_DATE is NULL;
186
187
```

Results | Chart

	TOT_NULL_VALUES
1	170

4. **Does the datasets has any DUPLICATE(identical rows) ? If yes – can you just keep the first record and remove all rest if its possible without using any JOINS or WINDOW function.**

```
SELECT COUNT(*) AS TOT_ROWS FROM SALES.CUSTOMERS; -- 1445
   SELECT COUNT(DISTINCT FIRST_NAME, LAST_NAME, PHONE, EMAIL, STREET, CITY, STATE, ZIP_CODE) AS
TOT_DISTINCT_ROWS
   FROM SALES.CUSTOMERS; --1445

   SELECT COUNT(*) AS TOT_ROWS FROM SALES.ORDERS; -- 1615
   SELECT COUNT(DISTINCT ORDER_ID, CUSTOMER_ID, ORDER_STATUS, ORDER_DATE, REQUIRED_DATE, SHIPPED_DATE,
STORE_ID,STAFF_ID) AS TOT_DISTINCT_ROWS
   FROM SALES.ORDERS;  -- 1615

   SELECT COUNT(*) AS TOT_ROWS FROM SALES.ORDER_ITEMS; -- 4722
   SELECT COUNT(DISTINCT ORDER_ID, ITEM_ID, PRODUCT_ID, QUANTITY, LIST_PRICE,DISCOUNT) AS TOT_DISTINCT_ROWS
   FROM SALES.ORDER_ITEMS; -- 4722

   SELECT COUNT(*) AS TOT_ROWS FROM SALES.STAFFS;  -- 10
   SELECT COUNT(DISTINCT STAFF_ID, FIRST_NAME, LAST_NAME, EMAIL, PHONE, ACTIVE, STORE_ID, MANAGER_ID) AS
TOT_DISTINCT_ROWS
   FROM SALES.STAFFS;  -- 10

   SELECT COUNT(*) AS TOT_ROWS FROM SALES.STORES; -- 3
   SELECT COUNT(DISTINCT STORE_NAME, PHONE, EMAIL, STREET, CITY, STATE, ZIP_CODE) AS TOT_DISTINCT_ROWS
   FROM SALES.STORES; -- 3

   SELECT COUNT(*) AS TOT_ROWS FROM PRODUCTION.BRANDS; -- 9
   SELECT COUNT(DISTINCT BRAND_ID,BRAND_NAME) AS TOT_DISTINCT_ROWS
   FROM PRODUCTION.BRANDS; -- 9

   SELECT COUNT(*) AS TOT_ROWS FROM PRODUCTION.CATEGORIES; -- 7
   SELECT COUNT(DISTINCT CATEGORY_ID,CATEGORY_NAME) AS TOT_DISTINCT_ROWS
   FROM PRODUCTION.CATEGORIES; -- 7
```

```
SELECT COUNT(*) AS TOT_ROWS FROM PRODUCTION.PRODUCTS; -- 321
SELECT COUNT(DISTINCT PRODUCT_ID, PRODUCT_NAME, BRAND_ID, CATEGORY_ID, MODEL_YEAR, LIST_PRICE) AS
TOT_DISTINCT_ROWS
FROM PRODUCTION.PRODUCTS; -- 321

SELECT COUNT(*) AS TOT_ROWS FROM PRODUCTION.STOCKS; -- 939
SELECT COUNT(DISTINCT STORE_ID, PRODUCT_ID, QUANTITY) AS TOT_DISTINCT_ROWS
FROM PRODUCTION.STOCKS; -- 939
```

Therefore, this dataset has no Duplicate (Identical Rows).

5. **How many unique tables are present in each schema and under each table how many records are having ? (Write SQL Script for the same – I don't need answer like 3/5/4 etc)**

```
SELECT TABLE_SCHEMA, TABLE_NAME, ROW_COUNT
FROM INFORMATION_SCHEMA.TABLES
ORDER BY 1 DESC;
```

```
230     SELECT TABLE_SCHEMA, TABLE_NAME, ROW_COUNT
231     FROM INFORMATION_SCHEMA.TABLES
232     ORDER BY 1 DESC;
233
```

Results | Chart

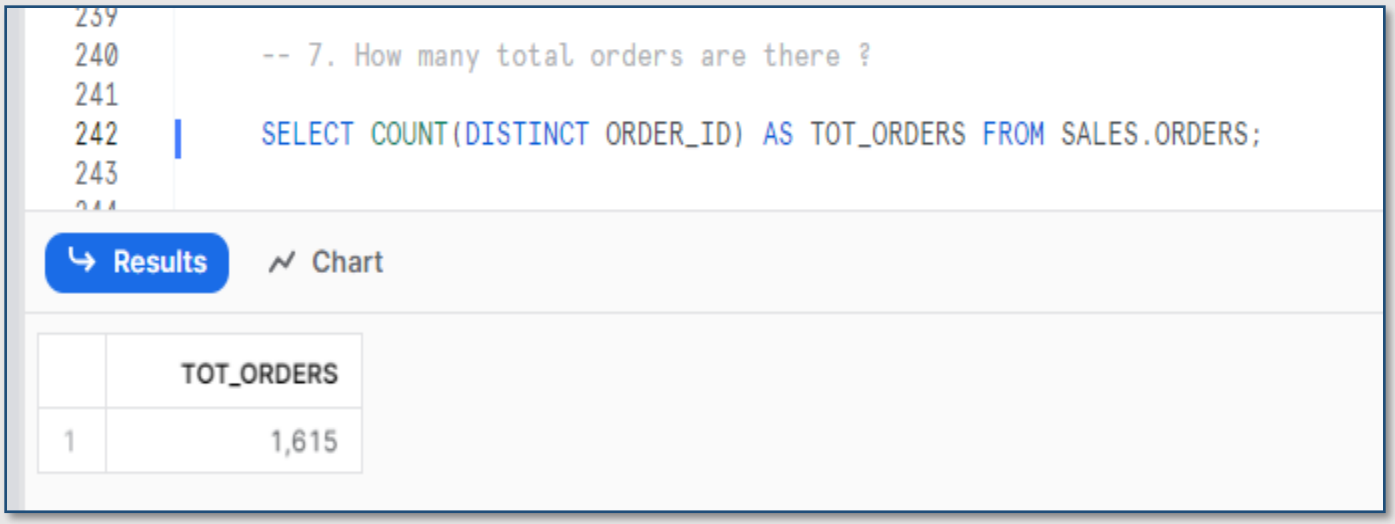
	TABLE_SCHEMA	TABLE_NAME	ROW_COUNT
1	SALES	ORDERS	1,615
2	SALES	STAFFS	10
3	SALES	STORES	3
4	SALES	CUSTOMERS	1,445
5	SALES	ORDER_ITEMS	4,722
6	PRODUCTION	BRANDS	9
7	PRODUCTION	STOCKS	939
8	PRODUCTION	PRODUCTS	321
9	PRODUCTION	CATEGORIES	7
10	INFORMATION_SCHEMA	TABLES	null
11	INFORMATION_SCHEMA	USAGE_PRIVILEGES	null
12	INFORMATION_SCHEMA	REPLICATION_GROUPS	null
13	INFORMATION_SCHEMA	PROCEDURES	null
14	INFORMATION_SCHEMA	CLASS_INSTANCES	null
15	INFORMATION_SCHEMA	CLASSES	null
16	INFORMATION_SCHEMA	CLASS_INSTANCE_FUNCTIONS	null
17	INFORMATION_SCHEMA	PACKAGES	null
18	INFORMATION_SCHEMA	REPLICATION_DATABASES	null
19	INFORMATION_SCHEMA	FILE_FORMATS	null
20	INFORMATION_SCHEMA	APPLICABLE_ROLES	null

6. **How many total serving customer BikeStore has ?**

SELECT COUNT(DISTINCT CUSTOMER_ID) AS TOT_SERVING_CUST FROM SALES.ORDERS ;

7. **How many total orders are there ?**

SELECT COUNT(DISTINCT ORDER_ID) AS TOT_ORDERS FROM SALES.ORDERS;



8. Which store has the highest number of sales ?

```
SELECT STORE_ID,   COUNT(ORDER_ID) AS Highest_Sales
   FROM SALES.ORDERS
   GROUP BY 1
   ORDER BY 2 DESC
   LIMIT 1;
```

9. Which month the sales was highest and for which store ?

```
SELECT SUBSTR(ORDER_DATE,6,2) AS Month_No,
   ORDERS.STORE_ID,
   ROUND(SUM(QUANTITY*LIST_PRICE*(1-DISCOUNT)),2) AS TOT_SALES
   FROM BIKESTORES.SALES.ORDER_ITEMS, BIKESTORES.SALES.ORDERS
   GROUP BY 1,2
   ORDER BY 3 DESC
   LIMIT 1;
```

```
254
255     -- 9. Which month the sales was highest and for which store ?
256
257     SELECT SUBSTR(ORDER_DATE,6,2) AS Month_No,
258     ORDERS.STORE_ID,
259     ROUND(SUM(QUANTITY*LIST_PRICE*(1-DISCOUNT)),2) AS TOT_SALES
260     FROM BIKESTORES.SALES.ORDER_ITEMS, BIKESTORES.SALES.ORDERS
261     GROUP BY 1,2
262     ORDER BY 3 DESC
263     LIMIT 1;
264
```

Results | Chart

	MONTH_NO	STORE_ID	TOT_SALES
1	03	2	1,022,652,502.16

10. How many orders each customer has placed (give me top 10 customers)

```
SELECT CUSTOMER_ID,
  COUNT(DISTINCT ORDER_ID) AS TOT_ORDERS
  FROM BIKESTORES.SALES.ORDERS
  GROUP BY 1
  ORDER BY 2 DESC
  LIMIT 10;
```

```
266    -- 10. How many orders each customer has placed (give me top 10 customers)
267
268    SELECT CUSTOMER_ID,
269    COUNT(DISTINCT ORDER_ID) AS TOT_ORDERS
270    FROM BIKESTORES.SALES.ORDERS
271    GROUP BY 1
272    ORDER BY 2 DESC
273    LIMIT 10;
```

Results | Chart

	CUSTOMER_ID	TOT_ORDERS
1	32	3
2	8	3
3	7	3
4	31	3
5	66	3
6	9	3
7	50	3
8	5	3
9	43	3
10	24	3

11. Which are the TOP 3 selling product ?

```
SELECT PRODUCT_ID,
  ROUND(SUM(QUANTITY*LIST_PRICE*(1-DISCOUNT)),2) AS TOT_SALES
  FROM BIKESTORES.SALES.ORDER_ITEMS
  GROUP BY 1
  ORDER BY 2 DESC
  LIMIT 3;
```

```
275
276     -- 11. Which are the TOP 3 selling product ?
277
278     SELECT PRODUCT_ID,
279     ROUND(SUM(QUANTITY*LIST_PRICE*(1-DISCOUNT)),2) AS TOT_SALES
280     FROM BIKESTORES.SALES.ORDER_ITEMS
281     GROUP BY 1
282     ORDER BY 2 DESC
283     LIMIT 3;
284
285
```

Results | Chart

	PRODUCT_ID	TOT_SALES
1	7	555,558.61
2	9	389248.70
3	4	368,472.73

12. Which was the first and last order placed by the customer who has placed maximum number of orders ?

```
SELECT CUSTOMER_ID,
    MIN(ORDER_ID) AS First_Order,
    MAX(ORDER_ID) as Last_Order
    FROM BIKESTORES.SALES.ORDERS
    GROUP BY 1
    ORDER BY COUNT(ORDER_ID) DESC
    LIMIT 1;
```

```
285
286     -- 12. Which was the first and last order placed by the customer who has placed maximum number of orders ?
287
288     SELECT CUSTOMER_ID,
289     MIN(ORDER_ID) AS First_Order,
290     MAX(ORDER_ID) as Last_Order
291     FROM BIKESTORES.SALES.ORDERS
292     GROUP BY 1
293     ORDER BY COUNT(ORDER_ID) DESC
294     LIMIT 1;
```

Results | Chart

	CUSTOMER_ID	FIRST_ORDER	LAST_ORDER
1	7	104	1,604

13. For every customer , which is the cheapest product and the costliest product which the customer has bought.

```
SELECT Cheap.CUSTOMER_ID, Cheapest_Product, Costliest_Product
        FROM
           (
            SELECT CUSTOMER_ID, PRODUCT_NAME AS Cheapest_Product
            FROM
               (
                SELECT CUSTOMER_ID, PRODUCT_NAME,
                DENSE_RANK() OVER (PARTITION BY CUSTOMER_ID ORDER BY OT.LIST_PRICE
ASC) AS PRICE_RANK
                FROM BIKESTORES.SALES.ORDERS O
                INNER JOIN BIKESTORES.SALES.ORDER_ITEMS OT
                ON O.ORDER_ID = OT.ORDER_ID
                INNER JOIN BIKESTORES.PRODUCTION.PRODUCTS P
                ON OT.PRODUCT_ID = P.PRODUCT_ID
                ORDER BY 1,3
                )
            WHERE PRICE_RANK = 1
            ) Cheap

            INNER JOIN
```

```
        (
          SELECT CUSTOMER_ID, PRODUCT_NAME AS Costliest_Product
          FROM
            (
              SELECT CUSTOMER_ID, PRODUCT_NAME,
              DENSE_RANK() OVER (PARTITION BY CUSTOMER_ID ORDER BY OT.LIST_PRICE
DESC) AS PRICE_RANK
              FROM BIKESTORES.SALES.ORDERS O
              INNER JOIN BIKESTORES.SALES.ORDER_ITEMS OT
              ON O.ORDER_ID = OT.ORDER_ID
              INNER JOIN BIKESTORES.PRODUCTION.PRODUCTS P
              ON OT.PRODUCT_ID = P.PRODUCT_ID
              ORDER BY 1,3
              )
          WHERE PRICE_RANK = 1
          ) Costly
      ON Cheap.CUSTOMER_ID = Costly.CUSTOMER_ID;
```

BIKESTORES.SALES ▾ Settings ▾

```
297
298     -- 13. For every customer , which is the cheapest product and the costliest product which the customer has bought.
299
300         SELECT Cheap.CUSTOMER_ID, Cheapest_Product, Costliest_Product
301         FROM
302             (
303              SELECT CUSTOMER_ID, PRODUCT_NAME AS Cheapest_Product
304              FROM
305                 (
306                  SELECT CUSTOMER_ID, PRODUCT_NAME,
307                  DENSE_RANK() OVER (PARTITION BY CUSTOMER_ID ORDER BY OT.LIST_PRICE ASC) AS PRICE_RANK
308                  FROM BIKESTORES.SALES.ORDERS O
309                  INNER JOIN BIKESTORES.SALES.ORDER_ITEMS OT
310                  ON O.ORDER_ID = OT.ORDER_ID
311                  INNER JOIN BIKESTORES.PRODUCTION.PRODUCTS P
312                  ON OT.PRODUCT_ID = P.PRODUCT_ID
313                  ORDER BY 1,3
314                  )
315              WHERE PRICE_RANK = 1
316              ) Cheap
317
318              INNER JOIN
319
320             (
321              SELECT CUSTOMER_ID, PRODUCT_NAME AS Costliest_Product
322              FROM
323                 (
324                  SELECT CUSTOMER_ID, PRODUCT_NAME,
325                  DENSE_RANK() OVER (PARTITION BY CUSTOMER_ID ORDER BY OT.LIST_PRICE DESC) AS PRICE_RANK
326                  FROM BIKESTORES.SALES.ORDERS O
327                  INNER JOIN BIKESTORES.SALES.ORDER_ITEMS OT
328                  ON O.ORDER_ID = OT.ORDER_ID
329                  INNER JOIN BIKESTORES.PRODUCTION.PRODUCTS P
330                  ON OT.PRODUCT_ID = P.PRODUCT_ID
331                  ORDER BY 1,3
332                  )
333              WHERE PRICE_RANK = 1
334              ) Costly
335         ON Cheap.CUSTOMER_ID = Costly.CUSTOMER_ID;        ;
336
```

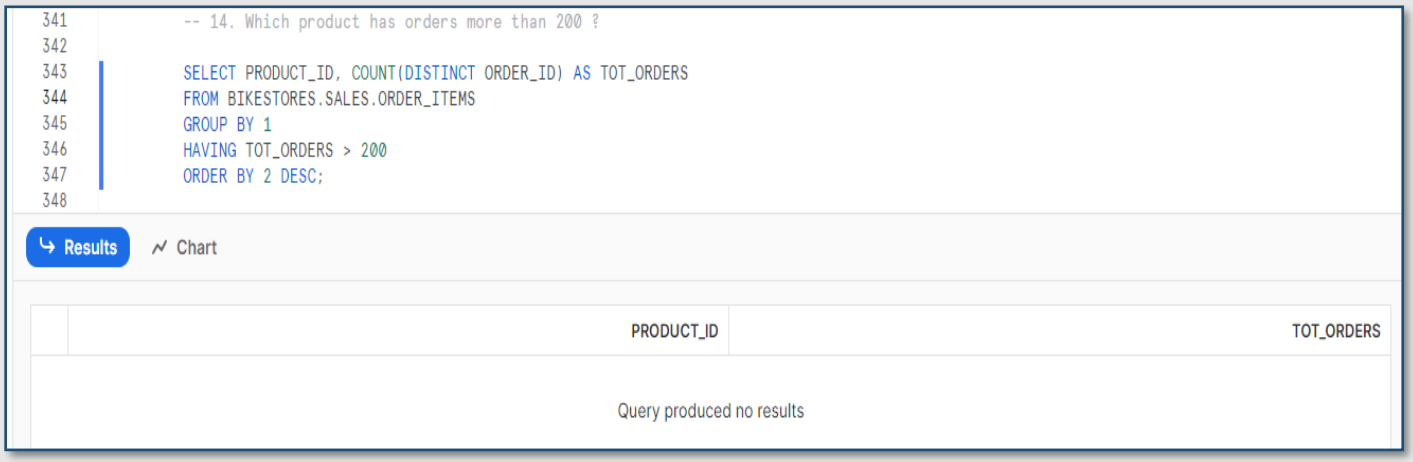
Results Chart

	CUSTOMER_ID	CHEAPEST_PRODUCT	COSTLIEST_PRODUCT
1	1	"Electra Girl's Hawaii 1 (16-inch) - 2015/2016"	"Trek Domane SL Frameset - 2018"
2	2	"Sun Bicycles Lil Bolt Type-R - 2017"	"Trek Domane SLR 6 Disc - 2017"
3	3	"Trek Precaliber 12 Boy's - 2018"	"Trek Silque SLR 7 Women's - 2017"
4	4	"Strider Strider 20 Sport - 2018"	"Trek Slash 8 27.5 - 2016"

14. Which product has orders more than 200 ?

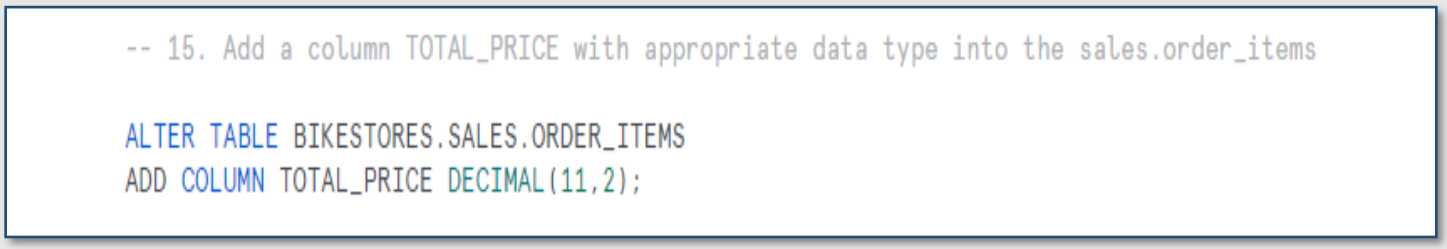
```
SELECT PRODUCT_ID, COUNT(DISTINCT ORDER_ID) AS TOT_ORDERS
    FROM BIKESTORES.SALES.ORDER_ITEMS
    GROUP BY 1
    HAVING TOT_ORDERS > 200
    ORDER BY 2 DESC;
```

There is no product who has more than 200 orders



15. Add a column TOTAL_PRICE with appropriate data type into the sales.order_items.

```
ALTER TABLE BIKESTORES.SALES.ORDER_ITEMS
    ADD COLUMN TOTAL_PRICE DECIMAL(11,2);
```



16. Calculate TOTAL_PRICE = quantity * list price and Update the value for all rows in the sales.order_items table.

```
UPDATE BIKESTORES.SALES.ORDER_ITEMS
    SET TOTAL_PRICE = ROUND(QUANTITY * LIST_PRICE,2);
```

```
-- 16. Calculate TOTAL_PRICE = quantity * list price and Update the value for all rows in the sales.order_items table.

UPDATE BIKESTORES.SALES.ORDER_ITEMS
SET TOTAL_PRICE = ROUND(QUANTITY * LIST_PRICE,2);
```

17. What is the value of the TOTAL_PRICE paid for all the sales.order_items ?

```
SELECT SUM(TOTAL_PRICE) AS TOT_PRICE_PAID FROM BIKESTORES.SALES.ORDER_ITEMS;
```

```
362     -- 17. What is the value of the TOTAL_PRICE paid for all the sales.order_items ?
363
364     SELECT SUM(TOTAL_PRICE) AS TOT_PRICE_PAID FROM BIKESTORES.SALES.ORDER_ITEMS;
365
```

Results | Chart

	TOT_PRICE_PAID
1	8578988.88

********** **THANK YOU** **********