



AtlioQ[®]
technologies

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ABOUT

AtliQ Hardwares (imaginary company) is one of the leading computer hardware producers in India and well expanded in other countries too.



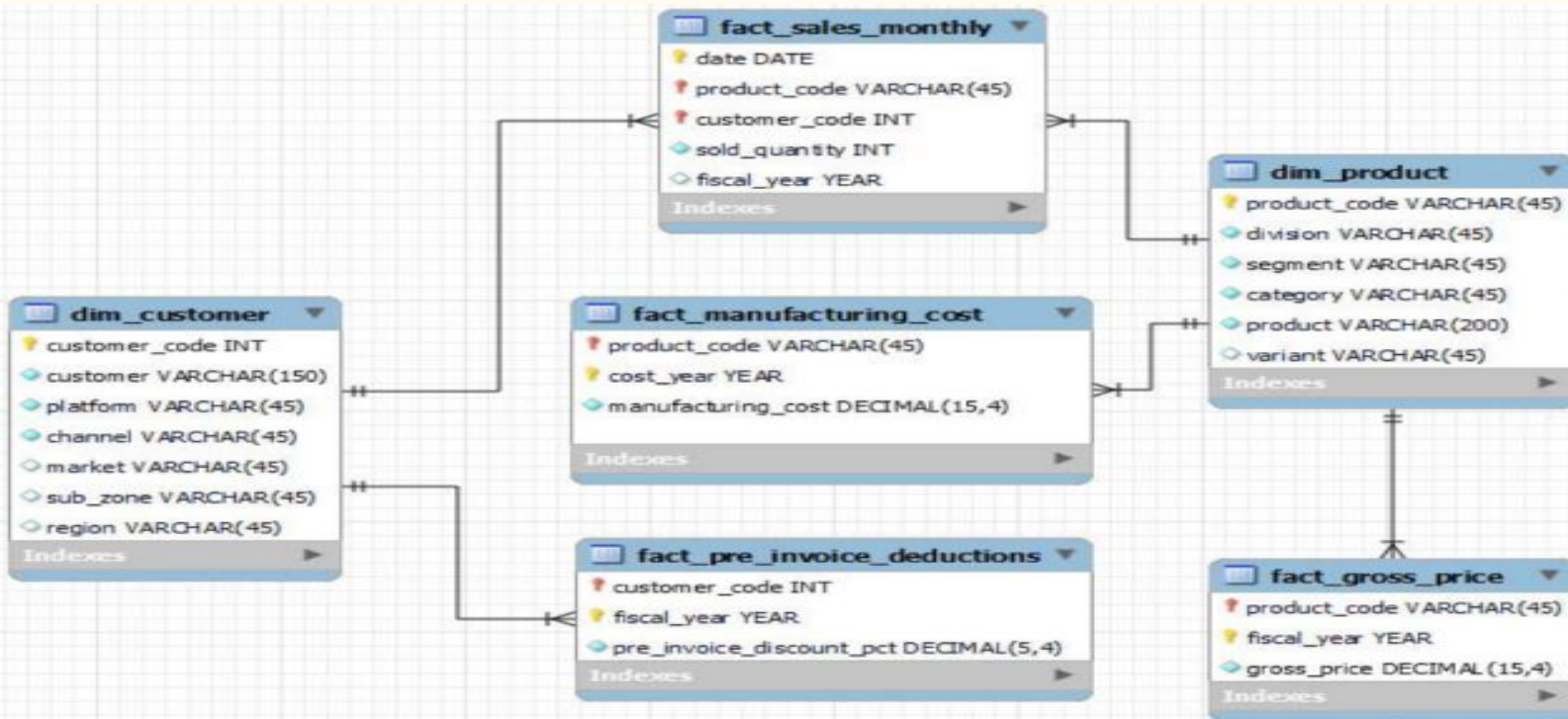


PROBLEM STATEMENT

The management has observed a need for quicker and more insightful data-driven decision-making. To address this, they plan to expand the data analytics team by hiring junior analysts. Tony Sharma, the Director of Data Analytics, is specifically looking for individuals skilled in both technical and soft aspects. In pursuit of this, he has introduced a SQL challenge to assess candidates comprehensively in SQL proficiency and soft skills. This approach aims to identify candidates with not only technical expertise but also effective communication and collaboration abilities, essential for the team's success.



DATA MODEL





PROBLEM 01

Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

```
SELECT MARKET FROM DIM_CUSTOMER  
WHERE CUSTOMER LIKE 'ATLIQ EXCLUSIVE'  
AND REGION = 'APAC'
```



PROBLEM 02

What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields, (unique_products_2020 unique_products_2021 ,percentage_chg)



ANSWER

```
WITH CTE AS (  
  SELECT  
    (SELECT COUNT(DISTINCT (PRODUCT_CODE)) FROM  
FACT_SALES_MONTHLY  
    WHERE FISCAL_YEAR = '2020')  
    AS UNIQUE_PRODUCTS_2020,  
    (SELECT COUNT(DISTINCT (PRODUCT_CODE)) FROM  
FACT_SALES_MONTHLY  
    WHERE FISCAL_YEAR = '2021')  
    AS UNIQUE_PRODUCTS_2021 )  
SELECT UNIQUE_PRODUCTS_2020, UNIQUE_PRODUCTS_2021,  
ROUND((UNIQUE_PRODUCTS_2021 - UNIQUE_PRODUCTS_2020) *  
100/UNIQUE_PRODUCTS_2020,2 ) AS PERCENTAGE_CHG  
FROM CTE
```



PROBLEM 03

Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields, (segment product_count)

```
SELECT SEGMENT,COUNT(PRODUCT) AS PRODUC_COUNT  
FROM DIM_PRODUCT  
GROUP BY 1  
ORDER BY 2 DESC
```




PROBLEM 04

Which segment had the most increase in unique products in 2021 vs 2020? The final output contains these fields,(segment , product count 2020 ,product count 2021,difference)



ANSWER

```
WITH UNIQUE_PRODUCTS_YEAR2020 AS (  
    SELECT SEGMENT, COUNT(DISTINCT(DIM.PRODUCT_CODE)) AS  
UNIQUE_PRODUCTS_2020  
    FROM DIM_PRODUCT DIM  
JOIN FACT_SALES_MONTHLY FSM ON DIM.PRODUCT_CODE = FSM.PRODUCT_CODE  
    WHERE FISCAL_YEAR = '2020'  
    GROUP BY 1),  
    UNIQUE_PRODUCTS_YEAR2021 AS (  
    SELECT SEGMENT, COUNT(DISTINCT(DIM.PRODUCT_CODE)) AS  
UNIQUE_PRODUCTS_2021 FROM DIM_PRODUCT DIM  
JOIN FACT_SALES_MONTHLY FSM ON DIM.PRODUCT_CODE = FSM.PRODUCT_CODE  
    WHERE FISCAL_YEAR = '2021'  
    GROUP BY 1)  
SELECT Y21.SEGMENT,UNIQUE_PRODUCTS_2020,UNIQUE_PRODUCTS_2021,  
    (UNIQUE_PRODUCTS_2021-UNIQUE_PRODUCTS_2020) AS DIFFERENCEB  
FROM UNIQUE_PRODUCTS_YEAR2020 Y20  
JOIN UNIQUE_PRODUCTS_YEAR2021 Y21 ON Y20.SEGMENT = Y21.SEGMENT
```



PROBLEM 05

Get the products that have the highest and lowest manufacturing costs. The final output should contain these fields, product_code, product, manufacturing_cost

```
SELECT PRODUCT_CODE ,PRODUCT, MANUFACTURING_COST FROM DIM_PRODUCT DP
JOIN FACT_MANUFACTURING_COST FMC USING (PRODUCT_CODE)
WHERE MANUFACTURING_COST IN ((SELECT MAX(MANUFACTURING_COST) FROM
FACT_MANUFACTURING_COST),
                             (SELECT MIN(MANUFACTURING_COST) FROM
FACT_MANUFACTURING_COST)
)
```



PROBLEM 06

Generate a report which contains the top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021 and in the Indian market. The final output contains these fields(customer_code,customer,average_discount_percentage)

```
SELECT DC.CUSTOMER_CODE,DC.CUSTOMER,  
FID.PRE_INVOICE_DISCOUNT_PCT AS AVERAGE_DISCOUNT_PERCENTAGE  
FROM DIM_CUSTOMER DC  
JOIN FACT_PRE_INVOICE_DEDUCTIONS FID ON DC.CUSTOMER_CODE =  
FID.CUSTOMER_CODE  
WHERE DC.MARKET LIKE 'INDIA' AND FID.FISCAL_YEAR = '2021'  
AND FID.PRE_INVOICE_DISCOUNT_PCT > (SELECT  
AVG(PRE_INVOICE_DISCOUNT_PCT) FROM FACT_PRE_INVOICE_DEDUCTIONS)  
ORDER BY FID.PRE_INVOICE_DISCOUNT_PCT DESC  
LIMIT 5
```



PROBLEM 07

Get the complete report of the Gross sales amount for the customer “Atliq Exclusive” for each month. This analysis helps to get an idea of low and high-performing months and take strategic decisions. The final report contains these columns: (Month, Year, Gross sales Amount)

```
SELECT EXTRACT(MONTH FROM DATE)
DATE, FSM.FISCAL_YEAR, SUM(FSM.SOLD_QUANTITY * FSP.GROSS_PRICE) AS
GROSS_SALES_AMOUNT
FROM DIM_CUSTOMER DC
JOIN FACT_SALES_MONTHLY FSM ON DC.CUSTOMER_CODE =
FSM.CUSTOMER_CODE
JOIN FACT_GROSS_PRICE FSP ON FSP.PRODUCT_CODE = FSM.PRODUCT_CODE
WHERE DC.CUSTOMER = 'ATLIQ EXCLUSIVE'
GROUP BY 1,2
ORDER BY 2,1
```



PROBLEM 08

In which quarter of 2020, got the maximum total sold quantity? The final output contains these fields sorted by the total sold quantity, Quarter, total sold quantity)

```
SELECT EXTRACT(QUARTER FROM DATE) AS QUARTER, SUM(SOLD_QUANTITY) AS  
TOTAL_SOLD_QUANTITY FROM FACT_SALES_MONTHLY  
WHERE FISCAL_YEAR = '2020'  
GROUP BY 1  
ORDER BY 2  
LIMIT 1
```



PROBLEM 09

Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields, (channel, gross sales mln, percentage)

```
WITH CTE AS(  
    SELECT DC.CHANNEL, SUM(FSM.SOLD_QUANTITY * FSP.GROSS_PRICE) AS  
    GROSS_SALES_AMOUNT  
    FROM DIM_CUSTOMER DC  
    JOIN FACT_SALES_MONTHLY FSM ON DC.CUSTOMER_CODE = FSM.CUSTOMER_CODE  
    JOIN FACT_GROSS_PRICE FSP ON FSP.PRODUCT_CODE = FSM.PRODUCT_CODE  
    WHERE FSP.FISCAL_YEAR = '2021'  
    GROUP BY 1)  
  
SELECT *, ROUND(GROSS_SALES_AMOUNT*100/SUM(GROSS_SALES_AMOUNT) OVER(),2) AS  
PERCENTAGE FROM CTE
```



PROBLEM 10

Get the Top 3 products in each division that have a high total sold quantity in the fiscal year 2021? The final output contains these fields,(division,product ,code,product,total sold quantity,rank order).

```
WITH CTE AS(  
    SELECT DP.DIVISION, DP.PRODUCT_CODE,DP.PRODUCT, SUM(FSM.SOLD_QUANTITY) AS  
    TOTAL_SOLD_QUANTITY FROM DIM_PRODUCT DP  
    JOIN FACT_SALES_MONTHLY FSM ON FSM.PRODUCT_CODE = DP.PRODUCT_CODE  
    WHERE FSM.FISCAL_YEAR = '2021'  
    GROUP BY 1,2,3),  
  
    ALL_RANK AS (  
    SELECT  
        *,DENSE_RANK() OVER(PARTITION BY DIVISION ORDER BY TOTAL_SOLD_QUANTITY DESC)  
    AS RANK_ORDER  
    FROM CTE)  
SELECT * FROM ALL_RANK  
WHERE RANK_ORDER < 4
```