Ad_hoc Insights
Consumer Goods

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OBJECTIVES

- Tony Sharma Atliq Hardware is one of the major computer hardware manufacturers in India, with a strong presence in other nations.
- Nevertheless, the management did note that they do not have sufficient insights to make prompt, wise, and data-informed judgments.
- Plan to expand the data analytics team by adding junior data analysts.
- To assess candidates, Data analytics director, Tony Sharma plans to conduct a SQL challenge to evaluate both tech and soft skills.
- The company seeks insights for 10 ad hoc requests

Data, Requests, and Tools

◆ **Database Schema Summary**

Dimension Tables:

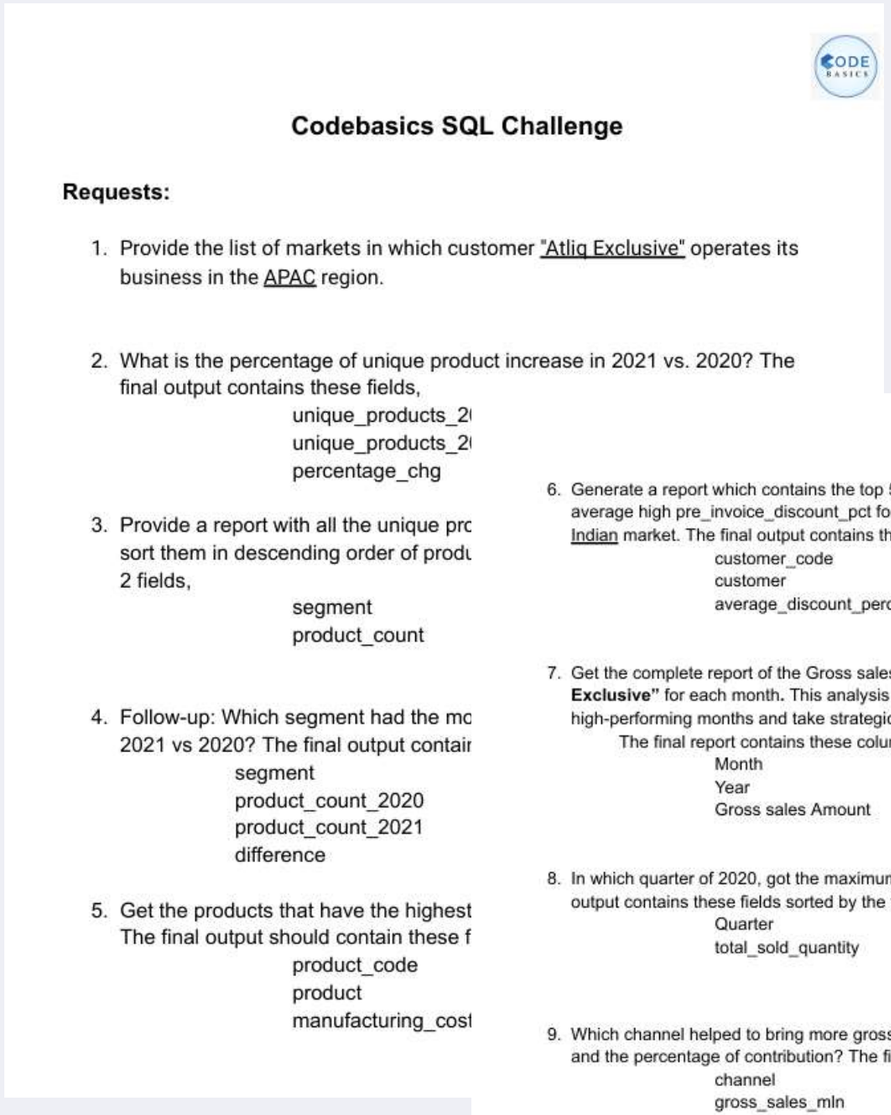
- dim_customer: Customer info (code, name, market, channel)
- dim_product: Product info (code, name, category, segment)
- dim_date: Time details (date, month, quarter, year)

Fact Tables:

- fact_sales_monthly: Sales quantity & revenue
- fact_manufacturing_cost: Product cost per year
- fact_gross_price: Gross price by fiscal year
- fact_pre_invoice_deductions: Discounts before invoice
- fact_post_invoice_deductions: Discounts after invoice
- fact_freight_cost: Shipping cost per product/customer
- fact_forecast_monthly: Forecasted quantity & revenue

🔗 **Keys:** Linked using product_code, customer_code, and date for analysis.

Tool : MySQL



Codebasics SQL Challenge

Requests:

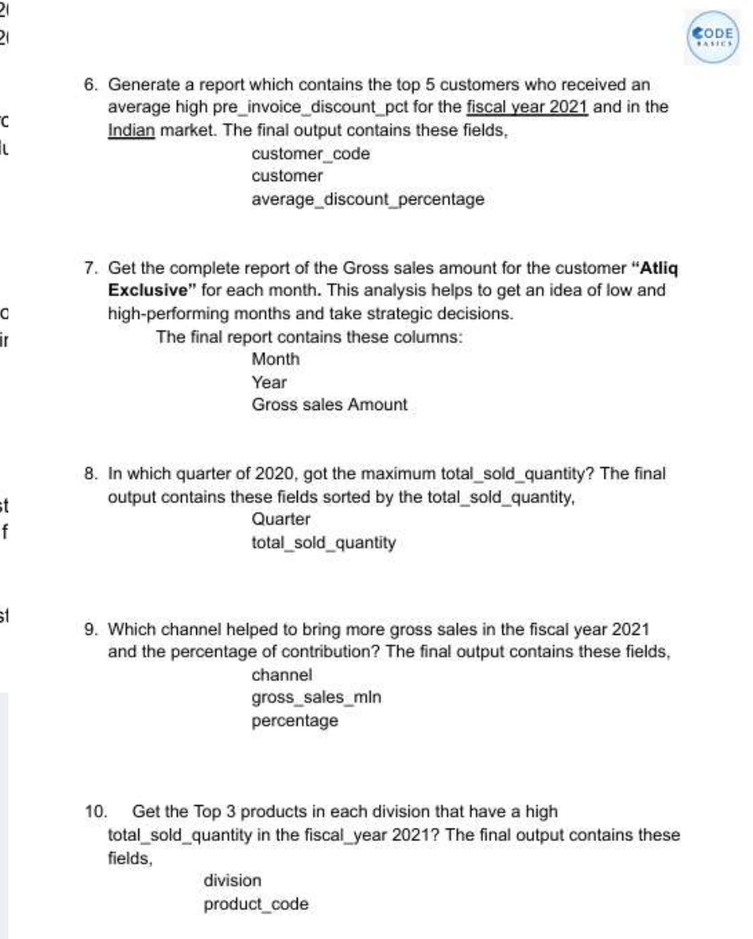
1. Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

2. What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields,
   unique_products_2
   unique_products_2
   percentage_chg

3. Provide a report with all the unique prc
   sort them in descending order of produ
   2 fields,
   segment
   product_count

4. Follow-up: Which segment had the mc
   2021 vs 2020? The final output contair
   segment
   product_count_2020
   product_count_2021
   difference

5. Get the products that have the highest
   The final output should contain these f
   product_code
   product
   manufacturing_cost



6. 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

7. 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

8. 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

9. 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

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

1. PROVIDE THE LIST OF MARKETS IN WHICH CUSTOMER "ATLIQ EXCLUSIVE" OPERATES ITS BUSINESS IN THE APAC REGION

```
SELECT market FROM dim_customer
WHERE customer = 'Atliq Exclusive' AND region = 'APAC’
GROUP BY market
ORDER BY market ;
```

Result Grid

market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

2. 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

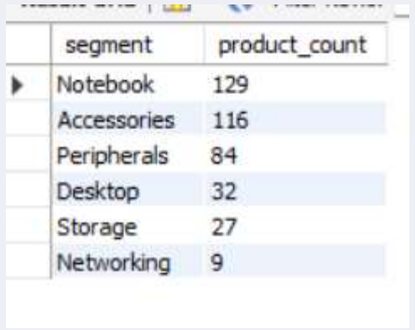
```
SELECT X.A AS unique_product_2020,
        Y.B AS unique_products_2021,
        ROUND((B-A)*100/A, 2) AS percentage_chg
FROM  (
        (SELECT COUNT(DISTINCT(product_code)) AS A FROM fact_sales_monthly
        WHERE fiscal_year = 2020) X,
        (SELECT COUNT(DISTINCT(product_code)) AS B FROM fact_sales_monthly
          WHERE fiscal_year = 2021) Y
)
```

unique_product_2020	unique_products_2021	percentage_chg
245	334	36.33

Insight: Demand and production both Increased.

3. 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(DISTINCT(product_code)) AS product_count
FROM dim_product
GROUP BY segment
ORDER BY product_count DESC ;
```



segment	product_count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9

Insights: Segments: notebooks, accessories, and peripherals are showing significant manufacturing growth as compared to desktops, storage, and networking. Notebooks, accessories, and peripherals constitute 83% of the total manufactured product

4. Follow-up: 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

```
WITH
    CTE1 AS (SELECT P.segment AS A ,
    COUNT(DISTINCT(FS.product_code)) AS B
FROM dim_product P,
     fact_sales_monthly FS
WHERE P.product_code = FS.product_code
GROUP BY FS.fiscal_year, P.segment
HAVING FS.fiscal_year = "2020"),
    CTE2 AS (SELECT P.segment AS C ,
    COUNT(DISTINCT(FS.product_code)) AS D
FROM dim_product P,
     fact_sales_monthly FS
WHERE P.product_code = FS.product_code
GROUP BY FS.fiscal_year, P.segment
HAVING FS.fiscal_year = "2021"
)
SELECT CTE1.A AS segment,
       CTE1.B AS product_count_2020,
       CTE2.D AS product_count_2021,
      (CTE2.D-CTE1.B) AS difference FROM CTE1,
       CTE2
WHERE CTE1.A = CTE2.C ;
```

segment	product_count_2020	product_count_2021	difference
Accessories	69	103	34
Desktop	7	22	15
Networking	6	9	3
Notebook	92	108	16
Peripherals	59	75	16
Storage	12	17	5

Insights: Accessories had the largest increase in production.

Storage and networking are experiencing slower production growth than other segments.

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

```
SELECT    F.product_code,P.product,F.manufacturing_cost FROM
fact_manufacturing_cost F
JOIN
dim_product P
ON
F.product_code=P.product_code
WHERE
manufacturing_costIN (
SELECT MAX(manufacturing_cost)
FROM fact_manufacturing_cost
UNION
SELECT MIN(manufacturing_cost)
FROM fact_manufacturing_cost)
ORDER BY manufacturing_cost DESC ;
```

Insights: Mouse: AQ Master wired x1 Ms (Variant: Standard 1) has the lowest manufacturing cost. Personal Desktop: AQ Home Allin1 Gen2 (Variant: Plus 3) has the highest manufacturing cost

6. 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

```
WITH
    TBL1 AS(SELECT customer_code AS A,
    AVG(pre_invoice_discount_pct) AS B
FROM fact_pre_invoice_deductions
WHERE fiscal_year = '2021’
GROUP BY customer_code),
   TBL2 AS(SELECT customer_code AS C,
   customer AS D
FROM dim_customer
WHERE market = 'India’)
SELECT
    TBL2.C AS customer_code,
    TBL2.D AS customer,
    ROUND (TBL1.B, 4) AS average_discount_percentage
FROM TBL1
JOIN
TBL2
ON TBL1.A = TBL2.C
ORDER BY average_discount_percentage DESCLIMIT 5
```

customer_code	customer	average_discount_percentage
90002009	Flipkart	0.3083
90002006	Viveks	0.3038
90002003	Ezone	0.3028
90002002	Croma	0.3025
90002016	Amazon	0.2933

Insights: The largest average pre-invoice discount was given to Flipkart. The least average pre-invoice discount was given to Amazon

7. 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
      CONCAT(MONTHNAME(FS.date), ' (', YEAR(FS.date), ')') AS 'Month’,
      FS.fiscal_year,
      ROUND(SUM(G.gross_price*FS.sold_quantity), 2) AS Gross_sales_Amount
FROM fact_sales_monthly FS
JOIN dim_customer C
ON
       FS.customer_code = C.customer_code
JOIN fact_gross_price G
ON
       FS.product_code = G.product_code
WHERE C.customer = 'Atliq Exclusive’
GROUP BY  Month, FS.fiscal_year
ORDER BY FS.fiscal_year ;
```

Month	fiscal_year	Gross_sales_Amount
April (2018)	2018	1392024.51
May (2018)	2018	2310946.52
February (2018)	2018	1985466.36
July (2018)	2018	2224693.76
August (2018)	2018	1498728.56
January (2018)	2018	2285937.67
September (2017)	2018	2347703.88
March (2018)	2018	2219880.14
December (2017)	2018	2390015.56
June (2018)	2018	1976109.61
October (2017)	2018	2462780.55
November (2017)	2018	3766114.43
April (2019)	2019	4677628.10
September (2018)	2019	7860039.25
August (2019)	2019	4630439.42
July (2019)	2019	7296958.98
December (2018)	2019	8364101.02
February (2019)	2019	6218859.57
January (2019)	2019	7607522.36
June (2019)	2019	6580393.98
March (2019)	2019	7307169.15
May (2019)	2019	7796837.30
November (2018)	2019	12362495.37
October (2018)	2019	8496754.23
April (2020)	2020	1492369.18

Insights: The lowest Gross sales total for both fiscal years is in March (2020). The highest Gross sales total for both fiscal years is in November (2020). 73.8% of the total Gross sales figure is in FY 2021

8. 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
CASE
   WHEN date BETWEEN '2019-09-01' AND '2019-11-01' then 1
   WHEN date BETWEEN '2019-12-01' AND '2020-02-01' then 2
   WHEN date BETWEEN '2020-03-01' AND '2020-05-01' then 3
   WHEN date BETWEEN '2020-06-01' AND '2020-08-01' then 4
   END AS Quarters,
   SUM(sold_quantity) AS total_sold_quantity
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY Quarters
ORDER BY total_sold_quantity
```

Quarters	total_sold_quantity
3	2075087
4	5042541
2	6649642
1	7005619

Insights: Quarter 1 of FY2020 saw the most units sold overall, while Quarter 3 had the fewest. The highest and lowest overall sold quantity is in December and March. Quarter 1 accounts for approximately 34% of the total sold quantity for FY2020.

```
SELECT
CASE
    WHEN date BETWEEN '2019-09-01' AND '2019-11-01' then CONCAT('[',1,'] ',MONTHNAME(date))
    WHEN date BETWEEN '2019-12-01' AND '2020-02-01' then CONCAT('[',2,'] ',MONTHNAME(date))
    WHEN date BETWEEN '2020-03-01' AND '2020-05-01' then CONCAT('[',3,'] ',MONTHNAME(date))
    WHEN date BETWEEN '2020-06-01' AND '2020-08-01' then CONCAT('[',4,'] ',MONTHNAME(date))
    END AS Quarters,
    SUM(sold_quantity) AS total_sold_quantity
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY Quarters
```

Quarters	total_sold_quantity
[1] November	3050825
[1] October	2190792
[1] September	1764002
[2] December	3184205
[2] February	1702785
[2] January	1762652
[3] April	819956
[3] March	238961
[3] May	1016170
[4] August	1790193
[4] July	1692575
[4] June	1559773

9. 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

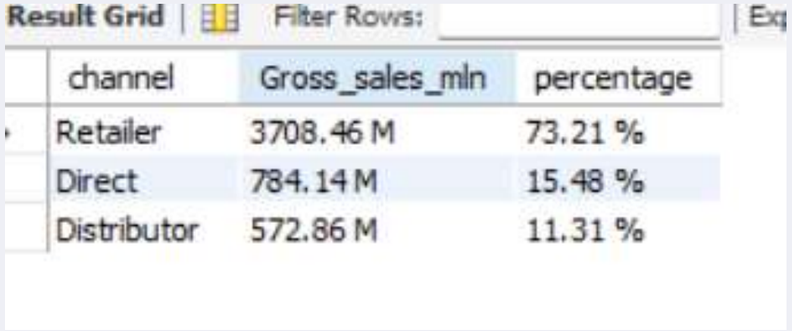
```
WITH Output1 AS
(
SELECT P.division, FS.product_code, P.product,
          SUM(FS.sold_quantity) AS Total_sold_quantity
FROM dim_product P JOIN fact_sales_monthly FS
ON P.product_code = FS.product_code
WHERE FS.fiscal_year = 2021
GROUP BY  FS.product_code, division, P.product
),
Output2 AS
(
SELECT division, product_code, product, Total_sold_quantity,
           RANK() OVER(PARTITION BY division ORDER BY Total_sold_quantity DESC) AS 'Rank_Order'
FROM Output1
)
SELECT Output1.division, Output1.product_code, Output1.product, Output2.Total_sold_quantity, Output2.Rank_Order
FROM Output1 JOIN Output2
ON Output1.product_code = Output2.product_code
WHERE Output2.Rank_Order IN (1,2,3)
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

division	product_code	product	Total_sold_quantity	Rank_Order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima Ms	419471	3
PC	A4218110202	AQ Digit	17434	1
PC	A4319110306	AQ Velocity	17280	2
PC	A4218110208	AQ Digit	17275	3

10. 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 Output AS
(
SELECT C.channel,
        ROUND(SUM(G.gross_price*FS.sold_quantity/1000000), 2) AS Gross_sales_mln
FROM fact_sales_monthly FS JOIN dim_customer C ON FS.customer_code = C.customer_code
                           JOIN fact_gross_price G ON FS.product_code = G.product_code
WHERE FS.fiscal_year = 2021
GROUP BY channel
)
SELECT channel,
        CONCAT(Gross_sales_mln,' M') AS Gross_sales_mln ,
        CONCAT(ROUND(Gross_sales_mln*100/total , 2), ' %') AS percentage
FROM
(
(SELECT SUM(Gross_sales_mln) AS total FROM Output) A,
(SELECT * FROM Output) B
)
ORDER BY percentage DESC
```



channel	Gross_sales_mln	percentage
Retailer	3708.46 M	73.21 %
Direct	784.14 M	15.48 %
Distributor	572.86 M	11.31 %

Insights: Channel: "Retailer" helped bring maximum sales to the company with 73.22% as the contribution percentage. Channel: "Distributor" makes the least contribution at a percentage of 11.31%