About Atliq Hardwares and Background

▶ Atliq Hardwares is one of the leading computer hardware producers in India and expanded in other countries too.

▶ Atliq Hardwares supplies electronic goods to the retailers (customers of Atliq Hardwares) like Croma,Best buy,Amazon,Flipkart, etc., who then sells the goods to the end consumers.

▶ However, the management noticed that they do not get enough insights to make quick and data-informed business decisions.

▶ There are 10 Ad-Hoc requests for which the company needs insights.

▶ The approach is to run SQL queries to answer these 10 requests.

▶ Convert the results into visualizations and present the insights to the top management.

Atliq's Product Line

PC

Desktop	Notebook

Desktop
1. Business desktop
2. Personal desktop

Notebook
1. Gaming laptop
2. Personal laptop
3. Business laptop

P&A

Peripherals	Accessories

Peripherals
1. Graphics card
2. Internal HDD
3. Mother board
4. Processors

Accessories
1. Battery
2. Keyboard
3. Mouse

N&S

Networking	Storage

Networking
1. WiFi extender

Storage
1. External SSD
2. USB Flash drive
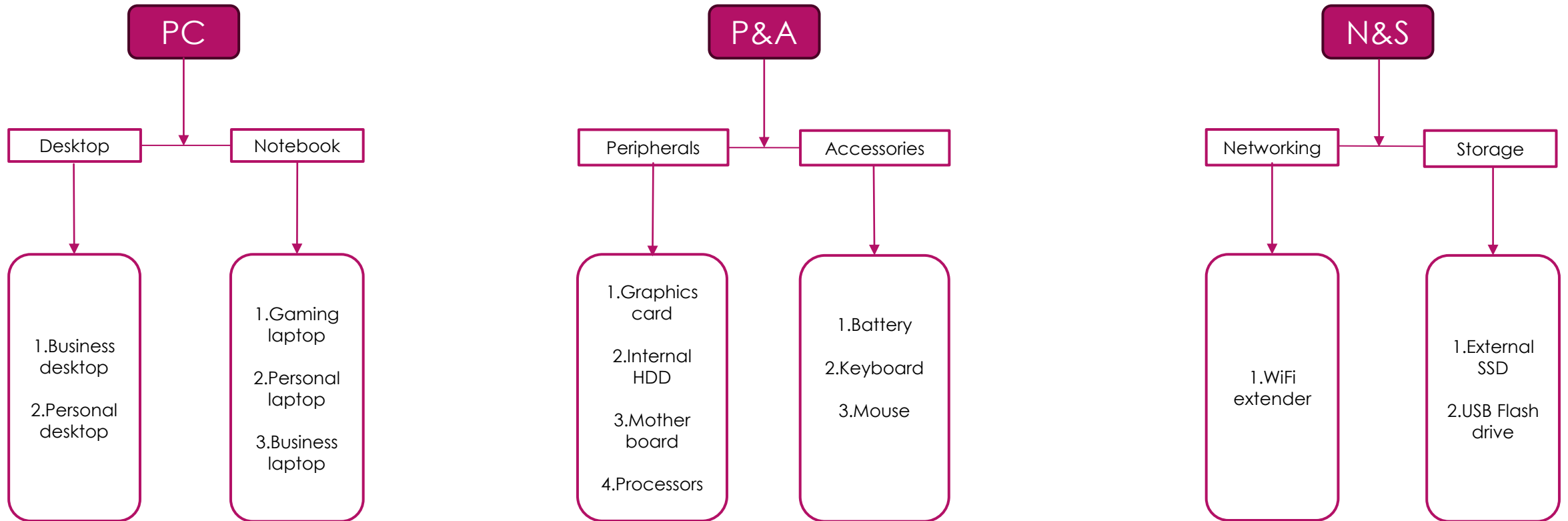
Ad-Hoc Requests

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_2020
   - unique_products_2021
   - percentage_chg

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

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

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

Request no.1:

Provide the list of markets in which customer Atliq Exclusive operates it's business in the APAC region.
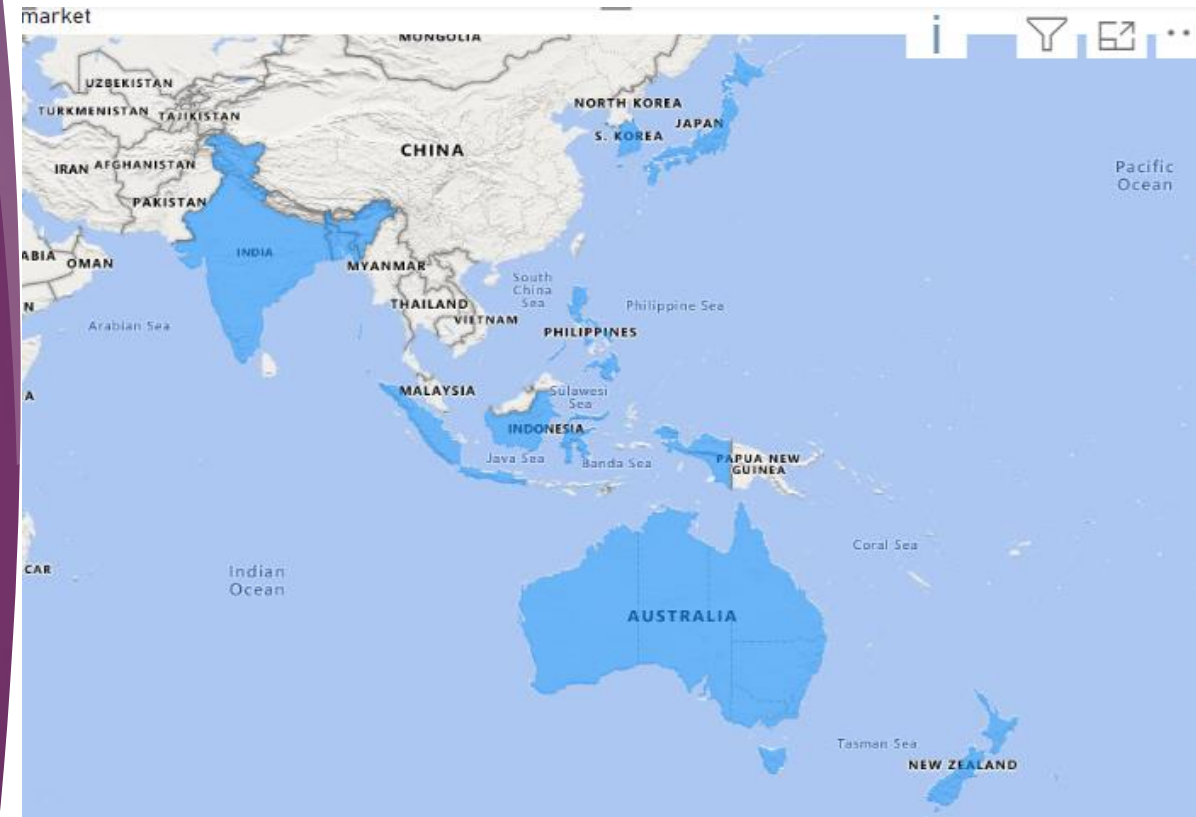
Query

```sql
SELECT DISTINCT market FROM dim_customer
WHERE customer = "Atliq Exclusive" AND region = "APAC"
```

Result

market
▶ India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh

Insights

- *Atliq Exclusive has the most stores-8 in APAC region followed by 6 in EU and 2 in NA.*

Request no.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

Query

```sql
WITH product_count_2020 AS (SELECT count(DISTINCT product_code) AS unique_products_2020
FROM dim_product p
JOIN fact_sales_monthly s
USING (product_code)
WHERE fiscal_year=2020),
product_count_2021 AS (SELECT count(DISTINCT product_code) AS unique_products_2021
FROM dim_product p
JOIN fact_sales_monthly s
USING (product_code)
WHERE fiscal_year=2021)


SELECT unique_products_2020,unique_products_2021,
round((unique_products_2021-unique_products_2020)/unique_products_2020*100,2)
AS percentage_chg FROM product_count_2020,product_count_2021
```

❖ Atliq's fiscal year starts from the September month of previous calender year
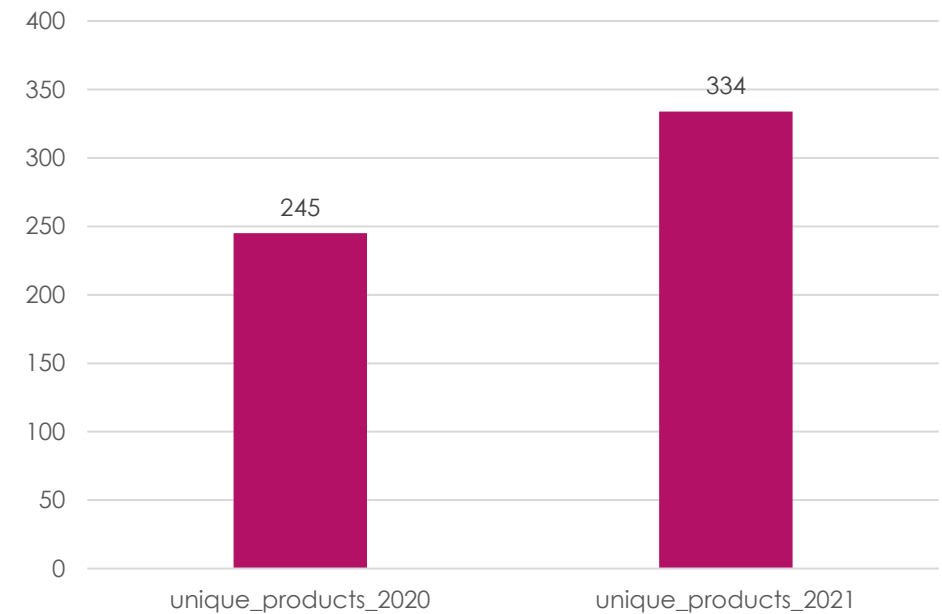
Result

unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

Insights

- *There is **36.33%** increase in unique products from 2020-**245** to 2021-**334** .*

- *Launching **89** new products in a year is a positive sign, signalling not only business growth but also pro active response to market demands and a commitment to innovation.*

Unique Products 2020 vs 2021

Request no.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 and product_count.

Query

```sql
SELECT segment,count(DISTINCT product_code) AS unique_products
FROM dim_product
GROUP BY segment
ORDER BY unique_products DESC
```

Result

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

Insights

- *Out of 6 segments, Notebook has the highest number of unique products (**129**) and networking has the lowest (**9**).*

- *The Notebook, Accessories and peripherals segments dominates the product range comprising **82.87**% of Atliq's total product offerings.*

- *Atliq ought to focus on expanding its product offerings in the Desktop, Storage and Networking segment to scale the business while also aligning with the current market trends and demands.*

Unique Products by Segment

Segment	Unique Products
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9
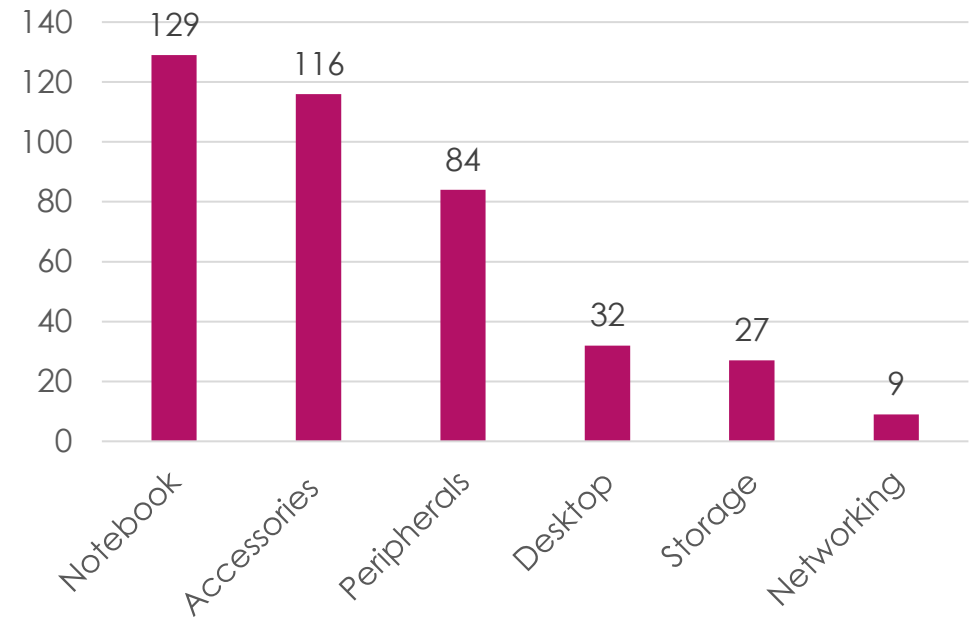
Request no.4:

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, and difference.
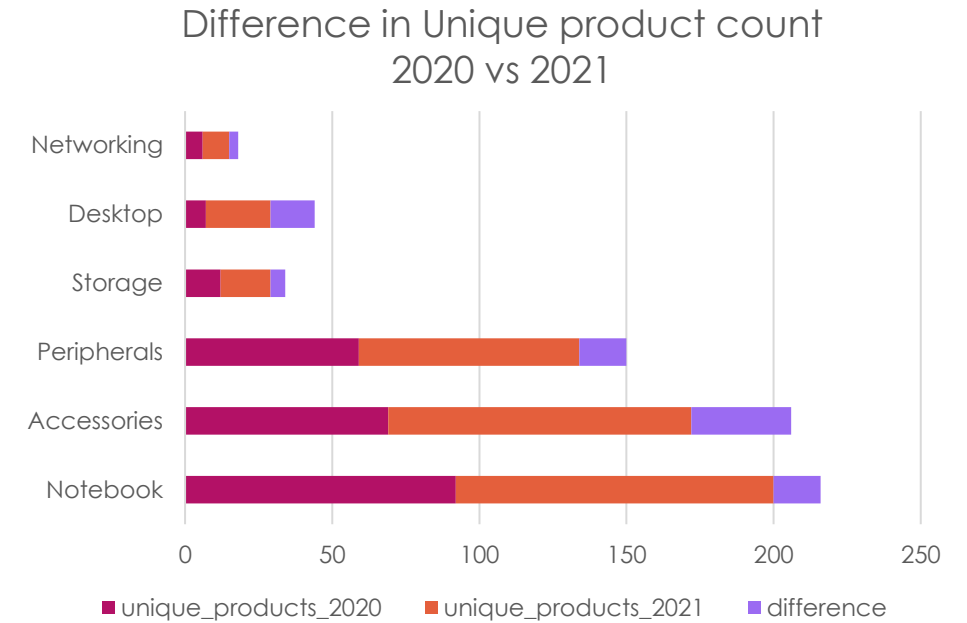
Query

```
WITH product_count_2020 AS (SELECT segment,count(DISTINCT product_code) AS unique_products_2020
FROM dim_product p
JOIN fact_sales_monthly s
USING (product_code)
WHERE fiscal_year=2020
GROUP BY segment
ORDER BY unique_products_2020 DESC),
product_count_2021 AS (SELECT segment,count(DISTINCT product_code) AS unique_products_2021
FROM dim_product p
JOIN fact_sales_monthly s
USING (product_code)
WHERE fiscal_year=2021
GROUP BY segment
ORDER BY unique_products_2021 DESC)
SELECT segment,unique_products_2020,unique_products_2021,
unique_products_2021-unique_products_2020 AS difference,
round((unique_products_2021-unique_products_2020)/unique_products_2020*100,2)
AS "% difference"
FROM product_count_2020 JOIN
product_count_2021
USING (segment)
```

Result

segment	unique_products_2020	unique_products_2021	difference	% difference
Notebook	92	108	16	17.39
Accessories	69	103	34	49.28
Peripherals	59	75	16	27.12
Storage	12	17	5	41.67
Desktop	7	22	15	214.29
Networking	6	9	3	50.00

Insights

- *Atliq had introduced **34** new products in accessories segment marking the largest product addition among other segments.*

- *The Desktop segment saw the highest percentage difference with the addition of 15 new products which makes **214**% increase compared to 7 products in 2020.*

- *Networking and Storage have experienced the lowest production growth.*

Difference in Unique product count 2020 vs 2021

Legend: ■ unique_products_2020 ■ unique_products_2021 ■ difference

Request no.5:

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

Query

```sql
SELECT product_code,product,manufacturing_cost FROM dim_product p
JOIN fact_manufacturing_cost m
USING (product_code)
WHERE manufacturing_cost IN(
  (select max(manufacturing_cost) from fact_manufacturing_cost),
  (select min(manufacturing_cost) from fact_manufacturing_cost))
```

Result

product_code	product	manufacturing_cost
A2118150101	AQ Master wired x1 Ms	0.8920
A6120110206	AQ HOME Allin1 Gen 2	240.5364

Insights

- *AQ Master wired x1 Ms has the lowest manufacturing cost of $ **0.89** where as AQ HOME Allin 1 Gen 2 has the highest manufacturing cost of $ **240.53**.*

Request no.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.

Query

```sql
SELECT DISTINCT c.customer_code,c.customer,round(AVG(p.pre_invoice_discount_pct)*100,2)
    AS average_discount_percentage
    FROM dim_customer c JOIN fact_sales_monthly s
    USING (customer_code)
    JOIN fact_pre_invoice_deductions p
    ON p.customer_code=c.customer_code AND
    p.fiscal_year=s.fiscal_year
    WHERE s.fiscal_year=2021 and c.market ="india"
    GROUP BY c.customer_code,c.customer
    ORDER BY average_discount_percentage DESC
    LIMIT 5
```

Result

	customer_code	customer	average_discount_percentage
▶	90002009	Flipkart	30.83
	90002006	Viveks	30.38
	90002003	Ezone	30.28
	90002002	Croma	30.25
	90002016	Amazon	29.33

Insights

- _Flipkart received the highest average discount of **30.83**% in fiscal year 2021 in India, marking it as the most discounted customer. Approximately equal average discount percentages were offered to each of our top 5 customers._

Top 5 Average Discount Percentage
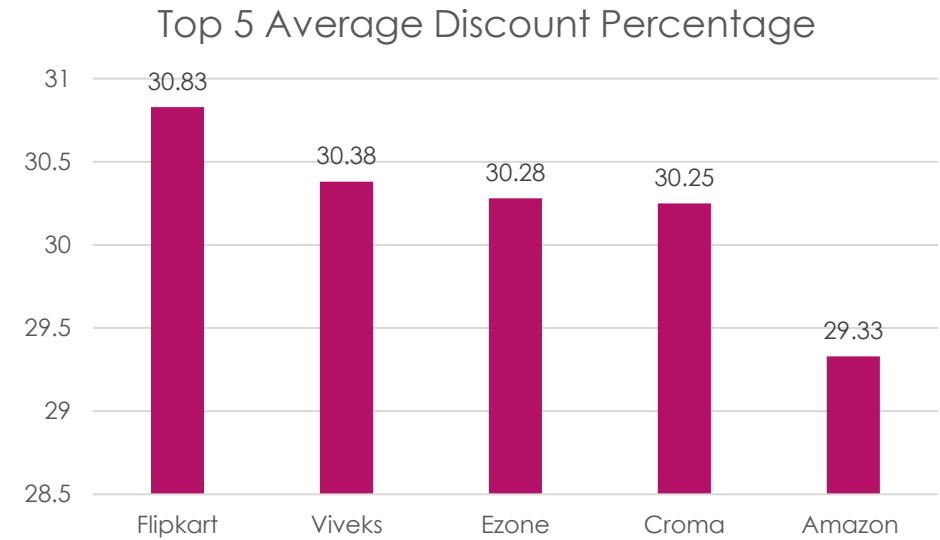
Request no.7:

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 and Gross sales amount.

Query

```sql
SELECT concat(monthname(s.date),'(',YEAR(s.date),')') AS month,s.fiscal_year AS year,
concat(round(sum((gross_price*sold_quantity))/1000000,2),"M")AS
Gross_sales_Amount
FROM gdb023.fact_gross_price  p
JOIN fact_sales_monthly s
USING (product_code,fiscal_year)
JOIN dim_customer c
USING (customer_code)
WHERE c.customer= "Atliq Exclusive"
GROUP BY month,fiscal_year
```

Result

month	year	Gross_sales_Amount
September(2019)	2020	4.50M
October(2019)	2020	5.14M
November(2019)	2020	7.52M
December(2019)	2020	4.83M
January(2020)	2020	4.74M
February(2020)	2020	4.00M
March(2020)	2020	0.38M
April(2020)	2020	0.40M
May(2020)	2020	0.78M
June(2020)	2020	1.70M
July(2020)	2020	2.55M
August(2020)	2020	2.79M
September(2020)	2021	12.35M
October(2020)	2021	13.22M
November(2020)	2021	20.46M
December(2020)	2021	12.94M
January(2021)	2021	12.40M
February(2021)	2021	10.13M
March(2021)	2021	12.14M
April(2021)	2021	7.31M
May(2021)	2021	12.15M
June(2021)	2021	9.82M
July(2021)	2021	12.09M

Insights

- *Atliq achieved its highest sales peak of $**20.46** M in November 2020, a period coincides with festive season demand.*

- *The lowest sales of $**0.38** M were recorded in March 2020. The sharp decline from March to August was attributed to the impact of the coronavirus pandemic.*

- *However, sales bounced back after the pandemic, showing resilience and surpassing the levels seen in 2020.*
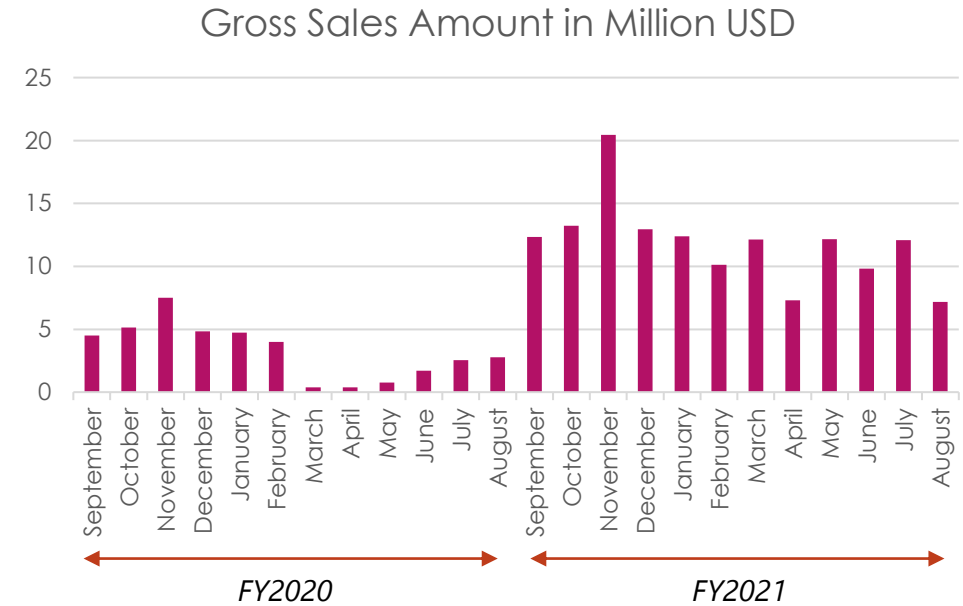
❖ Atliq's fiscal year starts from the September month of previous calender year

Gross Sales Amount in Million USD

FY2020   FY2021

Request no.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

Query

```sql
SELECT CASE
    WHEN month(date) IN (9,10,11) THEN "Q1"
    WHEN month(date) IN (12,1,2) THEN "Q2"
    WHEN month(date) IN (3,4,5) THEN "Q3"
    ELSE "Q4"
    END AS quarter
    ,sum(sold_quantity) AS total_sold_quantity
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY quarter
ORDER BY total_sold_quantity DESC
```

Result

quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087

Insights

- *FY2020 experienced its highest quantity sold during Q1 (September to December 2019), demonstrating strong performance driven by the festive season in India.*

- *Sales experienced a downturn in Q3 (March to May 2020), attributed to the effects of the pandemic.*

- *In Q4, there was a notable uptick in sales, signaling a promising trend of recovery.*

Total Sold Quantity in FY 2020 by Quarter

Quarter	Quantity
Q3	2.1M
Q4	5.0M
Q2	6.6M
Q1	7.0M

0.0M 2.0M 4.0M 6.0M 8.0M
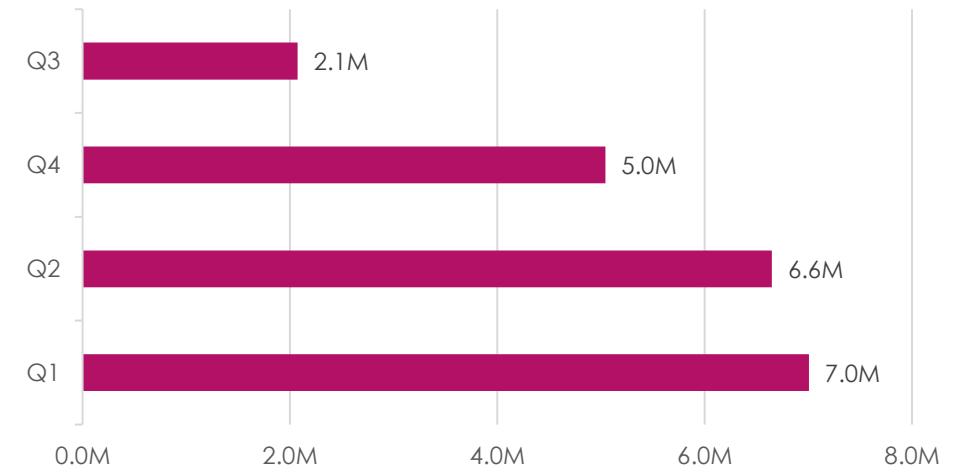
Request no.9:

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.

Query

```
WITH cte1 AS (SELECT c.channel,
round(sum(gross_price*sold_quantity)/1000000,2)
AS Gross_sales_Amount_mln,s.fiscal_year
FROM fact_sales_monthly s
JOIN fact_gross_price p
USING (product_code)
JOIN dim_customer c
USING(customer_code)
WHERE s.fiscal_year=2021
GROUP BY channel),
cte2 as (SELECT sum(Gross_sales_Amount_mln) AS total FROM
cte1)
SELECT channel,Gross_sales_Amount_mln,
round(Gross_sales_Amount_mln*100/total,2)
AS percentage_contribution
FROM cte1,cte2
GROUP BY channel,Gross_sales_Amount_mln,percentage_contribution
ORDER BY percentage_contribution DESC
```

Result

channel	Gross_sales_Amount_mln	percentage_contribution
Retailer	1924.17	73.22
Direct	406.69	15.48
Distributor	297.18	11.31

Insights

- *Retailers significantly contributed, bringing in $1924.17 million to the revenue, accounting for 73.22% of total sales in FY 2021.*

- *Sales through direct and distributor channels represent a smaller portion of the company's total revenue.*

Percentage Contribution by Channels

11%

16%

73%

■ Retailer   ■ Direct   ■ Distributor
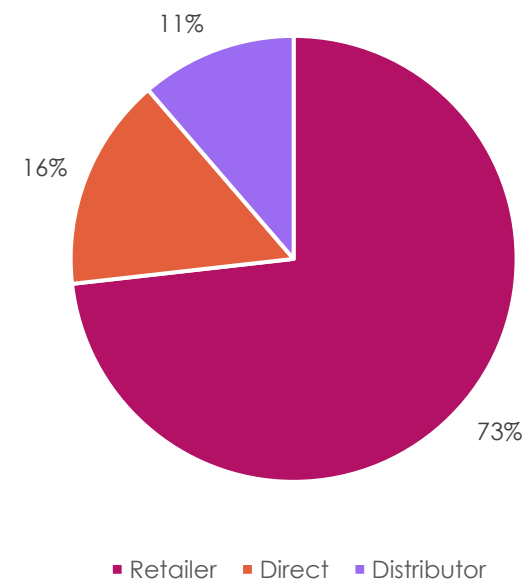
Request no.10:

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.

Query

```
WITH cte AS (SELECT division,product_code,product,
sum(sold_quantity) AS total_sold_quantity FROM dim_product p
JOIN fact_sales_monthly s
USING (product_code)
WHERE fiscal_year=2021
GROUP BY division,product_code,product),

cte2 AS (SELECT division,product_code,product,total_sold_quantity,
DENSE_RANK() OVER(PARTITION BY division ORDER BY total_sold_quantity DESC)
AS rank_order FROM cte)
SELECT * FROM cte2
WHERE rank_order <4
```
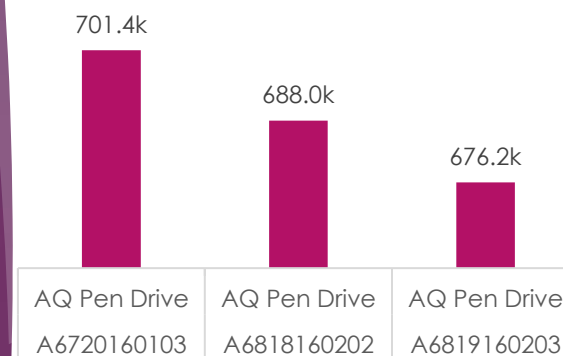
Result

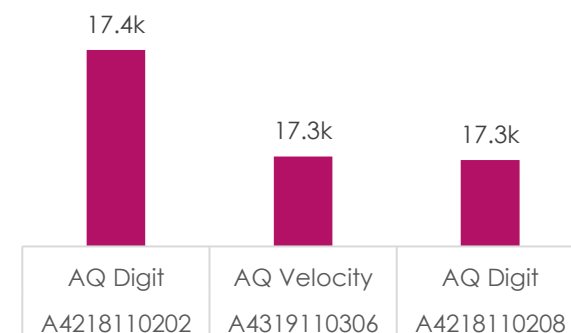| division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima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

Insights

- *AQ Pendrives are the top 3 most selling products from the N & S division.*

- *In P & A division, AQ Gamers Ms and AQ Maxima Ms (Pen Mices) were the leading products.*

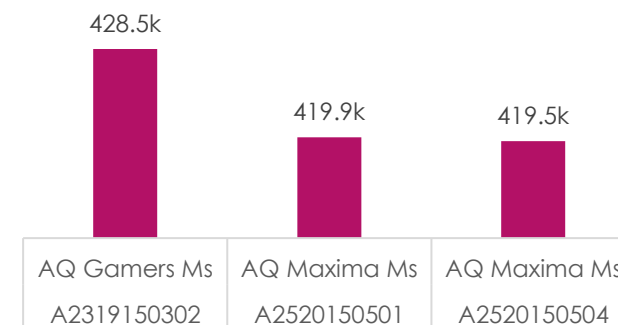- *Within the PC division, AQ Digit and AQ Velocity (Laptops) are the most selling products.*

Top 3 products in N&S division

701.4k	688.0k	676.2k
AQ Pen Drive	AQ Pen Drive	AQ Pen Drive
A6720160103	A6818160202	A6819160203

Top 3 products in PC division

17.4k	17.3k	17.3k
AQ Digit	AQ Velocity	AQ Digit
A4218110202	A4319110306	A4218110208

Top 3 products in P&A devision

428.5k	419.9k	419.5k
AQ Gamers Ms	AQ Maxima Ms	AQ Maxima Ms
A2319150302	A2520150501	A2520150504

Thank you