SQL Ad-hoc Queries:

Project Description:

> This project involves creating SQL queries to address 10 specific business requests from a manager at ‘Atliq Hardware’, focusing on sales insights, customer performance, and product profitability for 2020 and 2021. By analyzing the dataset, key metrics like total sales, gross profit, and top-performing customers and products were derived. The project demonstrates the ability to extract actionable insights using advanced SQL techniques tailored to business needs.

Requirement:

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

SQL Query:

```
SELECT *
FROM gdb023.dim_customer
WHERE customer = 'Atliq Exclusive' AND region = 'APAC';
```

Required Output:

customer	platform	channel	market	sub_zone	region
Atliq Exclusive	Brick & Mortar	Direct	Australia	ANZ	APAC
Atliq Exclusive	Brick & Mortar	Direct	Newzealand	ANZ	APAC
Atliq Exclusive	Brick & Mortar	Direct	India	India	APAC
Atliq Exclusive	Brick & Mortar	Retailer	India	India	APAC
Atliq Exclusive	Brick & Mortar	Direct	Indonesia	ROA	APAC
Atliq Exclusive	Brick & Mortar	Direct	Japan	ROA	APAC
Atliq Exclusive	Brick & Mortar	Direct	Philiphines	ROA	APAC
Atliq Exclusive	Brick & Mortar	Direct	South Korea	ROA	APAC
Atliq Exclusive	Brick & Mortar	Direct	Bangladesh	ROA	APAC

Insights:

After analyzing the table, we can conclude that all markets operate on the Brick and Mortar platform. The majority of the customer base is concentrated in the sub-zone of Rest of Asia, followed by Australia and New Zealand, and then India.

Requirement:

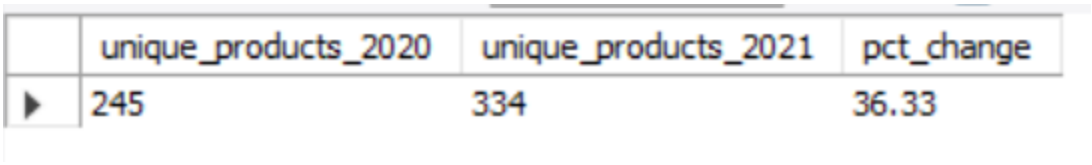
What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields,
unique_products_2020
unique_products_2021
percentage_chg

SQL Query:

```
WITH pd_2020 AS (
    SELECT COUNT(DISTINCT(product_code)) AS pdct_2020
    FROM gdb023.fact_sales_monthly
    WHERE fiscal_year = '2020'
),
pd_2021 AS (
    SELECT COUNT(DISTINCT(product_code)) AS pdct_2021
```

```
    FROM gdb023.fact_sales_monthly
    WHERE fiscal_year = '2021'
)
SELECT
    pd20.pdct_2020 AS unique_products_2020,
    pd21.pdct_2021 AS unique_products_2021,
    ROUND(((pd21.pdct_2021 - pd20.pdct_2020) / pd20.pdct_2020)
FROM pd_2020 pd20
CROSS JOIN pd_2021 pd21;
```

Required Output:



	unique_products_2020	unique_products_2021	pct_change
▶	245	334	36.33

Insights:

There are more unique products in 2021 compared to 2020, with a percentage increase of 36.33%.

Requirement:

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

SQL Query:

```
SELECT segment, COUNT(DISTINCT(product_code)) AS product_count
FROM dim_product
```

```
GROUP BY segment
ORDER BY COUNT(DISTINCT(product_code)) DESC;
```

Required Output:

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

Insights:

Notebook sales have the highest product count, followed by accessories and peripherals.

Requirement:

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

SQL Query:

```
WITH pd_2020 AS (
    SELECT COUNT(DISTINCT(p.product_code)) AS product_count_202(
    FROM fact_sales_monthly f
    JOIN dim_product p
```

```
    ON p.product_code = f.product_code
    WHERE f.fiscal_year = '2020'
    GROUP BY p.segment
),
pd_2021 AS (
    SELECT COUNT(DISTINCT(p.product_code)) AS product_count_202
    FROM fact_sales_monthly f
    JOIN dim_product p
    ON p.product_code = f.product_code
    WHERE f.fiscal_year = '2021'
    GROUP BY p.segment
)
SELECT
    p20.segment,
    p20.product_count_2020 AS product_count_2020,
    p21.product_count_2021 AS product_count_2021,
    (p21.product_count_2021 - p20.product_count_2020) AS differe
FROM pd_2020 p20
INNER JOIN pd_2021 p21
ON p20.segment = p21.segment;
```

Required Output:

	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:

Sales of Accessories increased the most

Requirement:

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

SQL Query:

```
SELECT
    m.product_code,
    p.product,
    m.manufacturing_cost
FROM
    fact_manufacturing_cost m
JOIN
    dim_product p
ON
    p.product_code = m.product_code
WHERE
    m.manufacturing_cost = (SELECT MIN(manufacturing_cost) FROM
UNION ALL
SELECT
    m.product_code,
    p.product,
    m.manufacturing_cost
FROM
    fact_manufacturing_cost m
JOIN
    dim_product p
ON
    p.product_code = m.product_code
```

```
WHERE
    m.manufacturing_cost = (SELECT MAX(manufacturing_cost) FROM
```

```
WITH min_cost AS (
    SELECT
        m.product_code,
        p.product,
        m.manufacturing_cost
    FROM
        fact_manufacturing_cost m
    JOIN
        dim_product p
    ON
        p.product_code = m.product_code
    ORDER BY
        m.manufacturing_cost ASC
    LIMIT 1
),
max_cost AS (
    SELECT
        m.product_code,
        p.product,
        m.manufacturing_cost
    FROM
        fact_manufacturing_cost m
    JOIN
        dim_product p
    ON
        p.product_code = m.product_code
    ORDER BY
        m.manufacturing_cost DESC
    LIMIT 1
)
SELECT * FROM min_cost
```

```
UNION ALL
SELECT * FROM max_cost;
```

Required Output:

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

Insights:

The lowest manufacturing cost is ‘0.8920’ while the highest is ‘240.5364’.

Requirement:

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

SQL Query:

```
SELECT pre.customer_code, f.customer, SUM(pre.pre_invoice_discou
FROM fact_pre_invoice_deductions pre
JOIN dim_customer f
ON pre.customer_code = f.customer_code
WHERE pre.fiscal_year = '2021' AND f.market = 'India'
GROUP BY pre.customer_code, f.customer
ORDER BY SUM(pre.pre_invoice_discount_pct) DESC
LIMIT 5;
```

Required Output:

	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:

'Flipkart', 'Viveks', 'Ezone', 'Croma', 'Amazon' are the top 5 customer in India of the fiscal_year 2021

Requirement:

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

SQL Query:

```
SELECT MONTH(f.date) AS Month, f.fiscal_year AS Year, ROUND(SUM(
FROM fact_gross_price g
JOIN fact_sales_monthly f
ON f.producT_code = g.product_code AND f.fiscal_year = g.fiscal_
GROUP BY f.fiscal_year, MONTH(f.date)
ORDER BY f.fiscal_year;
```

Required Output:

	Month	Year	Gross_Sales_Amount
▶	1	2020	45415789.27
	2	2020	43971472.84
	3	2020	5577084.51
	4	2020	20610700.47
	5	2020	26235106.59
	6	2020	40089770.28
	7	2020	44100528.66
	8	2020	45908045.61
	9	2020	45145284.69
	10	2020	56725493.59
	11	2020	78672039.26
	12	2020	83494456.15
	1	2021	120950476.59
	2	2021	117169419.82
	3	2021	122178892.44
	4	2021	122379611.85
	5	2021	120336816.45

Insights:

The 2021 outperformed 2020. 2020's highest performing month is 'December' while lowest is 'March' while in 2021 the highest performing month is 'April' while lowest is 'February'.

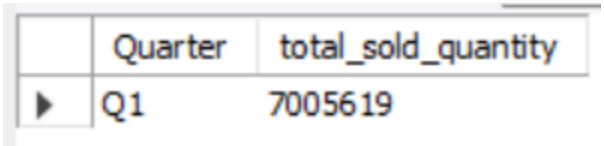
Requirement:

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

SQL Query:

```
WITH quater AS(
    SELECT
        MONTH(f.date) AS Month,
        f.fiscal_year AS Year,
        ROUND(SUM(f.sold_quantity), 2) AS total_sold_quantity,
        CASE
            WHEN MONTH(f.date) IN (9, 10, 11) THEN 'Q1'
            WHEN MONTH(f.date) IN (12, 1, 2) THEN 'Q2'
            WHEN MONTH(f.date) IN (3, 4, 5) THEN 'Q3'
            WHEN MONTH(f.date) IN (6, 7, 8) THEN 'Q4'
        END AS Quarter
    FROM fact_gross_price g
    JOIN fact_sales_monthly f
        ON f.product_code = g.product_code AND f.fiscal_year = g
    WHERE f.fiscal_year = 2020
    GROUP BY f.fiscal_year, MONTH(f.date),
        CASE
            WHEN MONTH(f.date) IN (9, 10, 11) THEN 'Q1'
            WHEN MONTH(f.date) IN (12, 1, 2) THEN 'Q2'
            WHEN MONTH(f.date) IN (3, 4, 5) THEN 'Q3'
            WHEN MONTH(f.date) IN (6, 7, 8) THEN 'Q4'
        END
    ORDER BY f.fiscal_year, MONTH(f.date)
)
SELECT Quarter, SUM(total_sold_quantity) AS total_sold_quantity
FROM quater
GROUP BY Quarter
ORDER BY SUM(total_sold_quantity) DESC
LIMIT 1;
```

Required Output:



	Quarter	total_sold_quantity
▶	Q1	7005619

Insights:

Quater 1 includes October, November and December had the maximum sales.

Requirement:

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

SQL Query:

```
WITH cte AS (
    SELECT
        c.channel,
        ROUND(SUM(f.sold_quantity * g.gross_price), 2) AS gross_
    FROM
        fact_sales_monthly f
    JOIN
        dim_customer c ON f.customer_code = c.customer_code
    JOIN
        fact_gross_price g ON f.product_code = g.product_code
    WHERE f.fiscal_year = 2021
    GROUP BY
        c.channel
),
total_gross_sales AS (
    SELECT SUM(gross_sales_mln) AS total_sales FROM cte
)
SELECT
    cte.channel,
    cte.gross_sales_mln,
    ROUND((cte.gross_sales_mln / t.total_sales) * 100, 2) AS per
FROM
    cte
```

```
JOIN
    total_gross_sales t
ORDER BY
    percentage
LIMIT 1;
```

Required Output:

	channel	gross_sales_mln	percentage
▶	Distributor	297175879.72	11.31

Insights:

Approximately 30 millions Sales generated through the distributor channel

Requirement:

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

SQL Query:

```
WITH rank_calc AS(
SELECT p.division, f.product_code, p.product, SUM(f.sold_quantit
ROW_NUMBER() OVER (
            PARTITION BY division
```

```
            ORDER BY SUM(f.sold_quantity) DESC
        ) AS rank_order
FROM fact_sales_monthly f
JOIN dim_product p
ON f.product_code = p.product_code
WHERE f.fiscal_year = 2021
GROUP BY division, f.product_code, p.product)
SELECT *
FROM rank_calc
WHERE rank_order <= 3;
```

Required Query:

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 Pen Drive 2 IN 1
AQ Pen Drive DRC
AQ Pen Drive DRC

are top 3 products of N&S

while for P&A the 3 products are

AQ Ganers Ms
AQ Maxirna Ms
AQ Maxirna Ms

and for PC

AQ Digit

AQ Veloaty
AQ Digit