Problem Statement: AtliQ Hardwares SQL Challenge

AtliQ Hardwares (imaginary company) is a leading computer hardware manufacturer headquartered in India, with a growing international presence. Despite strong market performance, the management has identified a key bottleneck in their decision-making process: the lack of timely and actionable data insights.

The company requested 10 ad hoc reports for the business insights.

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

Solution:

```
1 •   SELECT market
2     FROM dim_customer
3     where customer='Atliq Exclusive' and region='APAC'
```

Result Grid | Filter Rows:

market
India
Indonesia
Japan
Philiphines
South Korea
Australia
Newzealand
Bangladesh
India

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

   unique_products_2020
   unique_products_2021
   percentage_chg

Solution:

```
with cte1 as (
select
    distinct
        (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
from fact_sales_monthly
)
select
    *,
    Round(unique_products_2021*100/unique_products_2020,2) as precentage_chng
from cte1
```

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

unique_products_2020	unique_products_2021	precentage_chng
245	334	136.33

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

Solution:

```
Select segment, count(distinct product_code) as product_count from dim_product
group by segment
order by product_count desc
```

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

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

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

Solution:

```sql
with cte1 as (
    select
        p.segment,
        p.product_code,
        s.fiscal_year
from fact_sales_monthly s
join dim_product p on p.product_code=s.product_code
),
cte2 as (Select
    segment,
    count(distinct case when fiscal_year='2020' then product_code end) as product_count_2020,
    count(distinct case when fiscal_year='2021' then product_code end) as product_count_2021
from cte1
group by segment)
    select
        *,
        product_count_2021-product_count_2020 as difference
    from cte2
```

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

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

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

Solution:

```
1  with cte1 as (
2  select
3      m.*,
4      p.product
5  from fact_manufacturing_cost m
6  join dim_product p on p.product_code=m.product_code)
7  select
8      product_code,
9      product,
10     manufacturing_cost
11 from cte1
12 where manufacturing_cost=(select min(manufacturing_cost) from cte1)
13     or manufacturing_cost=(select max(manufacturing_cost) from cte1)
14
```

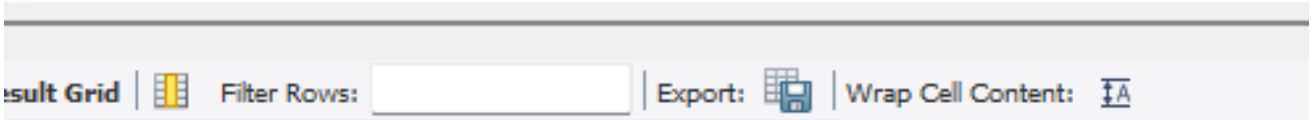
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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

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

Solution:

```
with cte1 as (
select
    i.*,
    c.customer,
    c.market
from fact_pre_invoice_deductions i
join dim_customer c on c.customer_code=i.customer_code)
select
    customer_code,
    customer,
    avg(pre_invoice_discount_pct) as average_discount_percentage
from cte1
where fiscal_year='2021' and market='India'
group by customer_code
order by average_discount_percentage desc
limit 5
```



customer_code	customer	average_discount_percentage
90002009	Flipkart	0.30830000
90002006	Viveks	0.30380000
90002003	Ezone	0.30280000
90002002	Croma	0.30250000
90002016	Amazon	0.29330000

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

Solution:

```
1  with cte1 as (select
2      s.date,
3      s.fiscal_year,
4      g.gross_price*s.sold_quantity as Gross_Sales_Amount
5  from fact_gross_price g
6  join fact_sales_monthly s using(product_code)
7  join dim_customer c on s.customer_code=c.customer_code
8  where customer='Atliq Exclusive')
9  select
10     date,
11     fiscal_year,
12     Round(sum(Gross_Sales_Amount)/1000000,2) as Gross_Sales_Amount_Mln
13 From cte1
14 group by date, fiscal_year
15 order by date asc
```

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

date	fiscal_year	Gross_Sales_Amount_Mln
2019-09-01	2020	9.09
2019-10-01	2020	10.38
2019-11-01	2020	15.23
2019-12-01	2020	9.76
2020-01-01	2020	9.58

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

Solution:

```
1  select
2       get_fiscal_quarter(date) as Quarter,
3      sum(sold_quantity) as total_sold_quantity
4  from fact_sales_monthly
5  where fiscal_year='2020'
6  group by Quarter
```

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

Quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q3	2075087
Q4	5042541

For this task i created custom function inside MySQL:

```
CREATE DEFINER=`root`@`localhost` FUNCTION `get_fiscal_quarter`(
calendar_date DATE
) RETURNS char(2) CHARSET utf8mb4
    DETERMINISTIC
BEGIN
    declare m tinyint;
    declare qtr char(2);
    set m = month(calendar_date);
case
    When m in (9,10,11) then set qtr="Q1";
    When m in (12,1,2) then set qtr="Q2";
    when m in (3,4,5) then set qtr="Q3";
    when m in (6,7,8) then set qtr="Q4";
 end  case;
 return qtr;
 end
```

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

Solution:

```
1  with cte1 as (
2  select
3      c.channel,
4      Round(sum((s.sold_quantity*g.gross_price)/1000000),2) as gross_sales_mln
5  from fact_gross_price g
6  join fact_sales_monthly s using(product_code)
7  join dim_customer c on s.customer_code=c.customer_code
8  where s.fiscal_year='2021'
9  group by channel)
10 select
11     *,
12     Round(100*gross_sales_mln/sum(gross_sales_mln) over (),2) as percentage
13 from cte1
14 order by gross_sales_mln desc
```

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

channel	gross_sales_mln	percentage
Retailer	1924.17	73.22
Direct	406.69	15.48
Distributor	297.18	11.31

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

Solution:

```sql
WITH ranked_sales AS (
    SELECT
        p.division,
        p.product_code,
        p.product,
        SUM(s.sold_quantity) AS total_sold_quantity,
        ROW_NUMBER() OVER (PARTITION BY p.division ORDER BY SUM(s.sold_quantity) DESC) AS rank_order
    FROM dim_product p
    JOIN fact_sales_monthly s ON p.product_code = s.product_code
    where fiscal_year='2021'
    GROUP BY p.division, p.product_code, p.product
)
SELECT
    division,
    product_code,
    product,
    total_sold_quantity,
    rank_order
FROM ranked_sales
WHERE rank_order <= 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