1) Select the most profitable product category for Microsoft
(The category with the highest sales revenue)

```
select product_category, sum(price) as total_amount
from fact_contracts
join dim_products
using (product_id)
group by product_category
limit 1;
```

product_category	total_amount
Containers	2073000

- For each category, find the month-on-month growth rate of every month in 2022. The m-o-m growth rate is the growth of the revenue of sold products in the current month compared to the previous month.

```
with monthly_results as
(select product_category,
        extract(month from obtention_day) as current_month ,
        sum(price) as current_month_sum
from fact_contracts
join dim_products
using (product_id)

group by product_category, extract(month from obtention_day)),

successive_months_results as
(select product_category ,
        current_month,
        current_month_sum,
        lag(current_month_sum) over (partition by product_category
        order by current_month) as previous_month_sum
from monthly_results)

select *,
100 * (current_month_sum - previous_month_sum)/previous_month_sum as
M_o_M_growth
from successive_months_results;
```

product_category	current_mo...	current_month_s...	previous_month_s...	M_o_M_growth
Analytics	1	142000	NULL	NULL
Analytics	2	154000	142000	8.4507
Analytics	3	120000	154000	-22.0779
Analytics	4	173000	120000	44.1667
Analytics	5	183000	173000	5.7803
Analytics	6	191000	183000	4.3716
Analytics	7	166000	191000	-13.0890
Analytics	8	175000	166000	5.4217
Analytics	9	181000	175000	3.4286
Analytics	10	180000	181000	-0.5525
Analytics	11	160000	180000	-11.1111
Analytics	12	137000	160000	-14.3750
Compute	1	145500	NULL	NULL
Compute	2	161000	145500	10.6529
Compute	3	134500	161000	-16.4596
Compute	4	157000	134500	16.7286
Compute	5	155500	157000	-0.9554
Compute	6	156000	155500	0.3215
Compute	7	159000	156000	1.9231
Compute	8	130000	159000	-18.2390
Compute	9	143000	130000	10.0000
Compute	10	143000	143000	0.0000
Compute	11	189000	143000	32.1678
Compute	12	135000	189000	-28.5714
Containers	1	163000	NULL	NULL
Containers	2	144400	163000	-11.4110
Containers	3	162800	144400	12.7424
Containers	4	143800	162800	-11.6708
Containers	5	214900	143800	49.4437
Containers	6	175800	214900	-18.1945
Containers	7	182500	175800	3.8111
Containers	8	173600	182500	-4.8767
Containers	9	157100	173600	-9.5046
Containers	10	190000	157100	20.9421
Containers	11	186300	190000	-1.9474
Containers	12	178800	186300	-4.0258

2) A Microsoft Azure Supercloud customer is a customer who buys at least 1 product from each product category. Find the number of supercloud customers.

```sql
WITH supercloud AS (
SELECT
  customer_id,
  COUNT(DISTINCT product_category) as unique_count
FROM fact_contracts
JOIN dim_products
  using (product_id)
GROUP BY customer_id
)

SELECT COUNT(*) AS supercloud_customers
FROM supercloud
WHERE unique_count = (
  SELECT COUNT(DISTINCT product_category)
  FROM dim_products);
```

supercloud_customers
179

3) Select the ID of the customer who has made at least 4 purchases with strictly increasing prices.

```
with previous_contract as
  (select customer_id,
  obtention_day,
  price,
  lag(price,1,0) over(partition by customer_id order by obtention_day)
as previous_price
  FROM fact_contracts
JOIN dim_products
  using (product_id))

  select customer_id
  from previous_contract c1
  where (select count(*)
  from fact_contracts
  where customer_id = c1.customer_id) > 3

  except

  select customer_id
  from previous_contract
  where previous_price >= price;
```

customer_id
1396