

Запрос №1 не стал добавлять, так как мы его сделали на лекции.

2. Компания хочет оптимизировать количество офисов, проанализировав относительные объемы продаж по офисам в течение периода с 2013-2014 гг. Выведите год, office_id, city_name, country, относительный объем продаж за текущий год
Офисы, которые демонстрируют наименьший относительной объем в течение двух лет скорее всего будут закрыты.

```
WITH step1 AS (SELECT TRUNC(sale_date, 'year') AS year_,
                      office_id,
                      office_name,
                      city_id,
                      city_name,
                      country,
                      SUM(sale_amount) OVER (
                        PARTITION BY office_id,
                                   office_name,
                                   city_id,
                                   city_name,
                                   TRUNC(sale_date, 'year')
                        ) AS office_sales_amount, SUM(sale_amount) OVER (
                        PARTITION BY TRUNC(sale_date, 'year')) AS year_sale_amount
FROM V_FACT_SALE
WHERE sale_date BETWEEN TO_DATE('2013-01-01', 'YYYY-MM-DD') AND TO_DATE('2014-12-31', 'YYYY-MM-DD'))
SELECT DISTINCT year_,
                office_id,
                city_name,
                country,
                (office_sales_amount / year_sale_amount) AS relative_sales_volume
FROM step1
ORDER BY relative_sales_volume
```

Query Result

Script Output

DBMS Output

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	year_	office_id	city_name	country	relative_sales_volum
1	12/31/13 08:00:...	537	Linxi	China	0.000007628601589
2	12/31/12 08:00:...	434	Weiting	China	0.000026130755779
3	12/31/13 08:00:...	555	Chyhyryn	Ukraine	0.000120035188006
4	12/31/12 08:00:...	428	Nariño	Colombia	0.000128087800393
5	12/31/12 08:00:...	369	Santa Rosa de Vi...	Brazil	0.000143485295459
6	12/31/12 08:00:...	364	Tadmur	Syria	0.000211618520888
7	12/31/13 08:00:...	345	Catalão	Brazil	0.000216573792828

3. Для планирования закупок, компанию оценивает динамику роста продаж по товарам. Динамика оценивается как отношение объема продаж в текущем месяце к предыдущему. Выведите товары, которые демонстрировали наиболее высокие темпы роста продаж в течение первого полугодия 2014 года.

```
with step1 as (SELECT TRUNC(sale_date, 'mm') AS sale_month,
                        product_id,
                        product_name,
                        sum(sale_qty)          qty
FROM V_FACT_SALE
WHERE sale_date BETWEEN TO_DATE('2013-12-01', 'YYYY-MM-DD') AND TO_DATE('2014-06-30', 'YYYY-MM-DD')
GROUP BY TRUNC(sale_date, 'mm'), product_id, product_name),
step2 as (SELECT sale_month,
                 product_id,
                 product_name,
                 qty,
                 SUM(QTY) OVER (PARTITION BY product_id, product_name
                                ORDER BY sale_month
                                RANGE BETWEEN INTERVAL '1' MONTH PRECEDING AND INTERVAL '1' MONTH PRECEDING
                                ) prev_month_qty
FROM step1)
SELECT sale_month,
       product_id,
       product_name,
       qty / prev_month_qty AS dynamic
FROM step2
WHERE sale_month >= TO_DATE('2014-01-01', 'YYYY-MM-DD')
AND qty / prev_month_qty IS NOT NULL
ORDER BY dynamic DESC
```

	sale_month	product_id	product_name	dynamic	
1	04/30/14 08:00:...	885	Levofloxacin	17	
2	04/30/14 08:00:...	628	METOPROLOL TA...	9	
3	12/31/13 08:00:...	986	Wingscale	3.137931034482758	
4	01/31/14 08:00:...	86	CHLOROXYLENOL	3	
5	01/31/14 08:00:...	913	Aluminum Zircon...	2.872340425531915	
6	04/30/14 08:00:...	913	Aluminum Zircon...	2.75	
7	04/30/14 08:00:...	86	CHLOROXYLENOL	2.709677419354838	

4. Напишите запрос, который выводит отчет о прибыли компании за 2014 год: ежемесячно и поквартально. Отчет включает сумму прибыли за период и накопительную сумму прибыли с начала года по текущий период.

```
WITH step1 AS (  
    SELECT TRUNC(sale_date, 'mm') AS mnth,  
           SUM(sale_amount) AS sale_amount_mnth  
    FROM V_FACT_SALE  
    WHERE sale_date BETWEEN TO_DATE('2014-01-01', 'YYYY-MM-DD') AND TO_DATE('2014-12-31', 'YYYY-MM-DD')  
    GROUP BY TRUNC(sale_date, 'mm')  
)  
SELECT mnth,  
       TRUNC(mnth, 'Q') AS quartet,  
       sale_amount_mnth,  
       SUM(sale_amount_mnth) OVER (ORDER BY mnth) AS sale_amount_mnth_cum,  
       SUM(sale_amount_mnth) OVER (PARTITION BY TRUNC(mnth, 'Q')) AS sales_amount_quarter,  
       SUM(sale_amount_mnth) OVER (ORDER BY TRUNC(mnth, 'Q') RANGE UNBOUNDED PRECEDING) AS sales_amount_quarter_cum  
FROM step1;
```

	mnth	quartet	sale_amount_mnth	sale_amount_mnth_cum	sales_amount_quarter	sales_amount_quarter_cum
1	02/01/14 12:00:...	01/01/14 12:00:...	3920216.37	7498489.38	11686029.56	11686029.56
2	01/01/14 12:00:...	01/01/14 12:00:...	3578273.01	3578273.01	11686029.56	11686029.56
3	03/01/14 12:00:...	01/01/14 12:00:...	4187540.18	11686029.56	11686029.56	11686029.56
4	05/01/14 12:00:...	04/01/14 12:00:...	4428701.85	19233128.72	11528379.7	23214409.26
5	04/01/14 12:00:...	04/01/14 12:00:...	3118397.31	14804426.87	11528379.7	23214409.26
6	06/01/14 12:00:...	04/01/14 12:00:...	3981280.54	23214409.26	11528379.7	23214409.26
7	07/01/14 12:00:...	07/01/14 12:00:...	3073504.86	26287914.12	10118861.06	33333270.32

5. Найдите вклад в общую прибыль за 2014 год 10% наиболее дорогих товаров и 10% наиболее дешевых товаров. Выведите product_id, product_name, total_sale_amount, percent

```
with step1 as (  
    SELECT  
        product_id,  
        product_name,  
        SUM(sale_amount) total_sales_amount  
    FROM  
        V_FACT_SALE  
    WHERE sale_date BETWEEN TO_DATE('2014-01-01', 'YYYY-MM-DD') AND TO_DATE('2014-12-31', 'YYYY-MM-DD')  
    GROUP BY product_id, product_name  
,  
    step2 AS (  
        SELECT  
            product_id,  
            product_name,  
            total_sales_amount,  
            CUME_DIST(total_sales_amount) OVER(ORDER BY total_sales_amount) percent  
        FROM  
            step1  
    )  
SELECT  
    product_id,  
    product_name,  
    total_sales_amount,  
    percent  
FROM  
    step2  
WHERE percent <= 0.10 OR percent >= 0.90;
```

	product_id	product_name	total_sales_amount	percent	
1	981	Japanese Black P...	26483.1	0.043478260869565	
2	755	STRYCHNOS NUX...	33074.2	0.086956521739130	
3	136	travoprost	4858892.05	0.913043478260869	
4	761	Octinoxate, Octis...	6053124.09	0.956521739130434	
5	942	Aurum Onopordon	12649783.75	1	

6. Компания хочет премировать трех наиболее продуктивных (по объему продаж, конечно) менеджеров в каждой стране в 2014 году. Выведите country, <список manager_last_name manager_first_name, разделенный запятыми> которым будет выплачена премия

```
with step1 as (  
    SELECT  
        country,  
        manager_id,  
        manager_first_name,  
        manager_last_name,  
        SUM(sale_amount) volume_of_sales  
    FROM  
        V_FACT_SALE  
    WHERE sale_date BETWEEN TO_DATE('2014-01-01', 'YYYY-MM-DD') AND TO_DATE('2014-12-31', 'YYYY-MM-DD')  
    GROUP BY country, manager_id, manager_first_name, manager_last_name  
) ,  
    step2 AS (  
        SELECT  
            country,  
            manager_id,  
            manager_first_name,  
            manager_last_name,  
            ROW_NUMBER() OVER (PARTITION BY country ORDER BY volume_of_sales DESC) index_in_partition  
        FROM  
            step1  
    )  
SELECT  
    country,  
    LISTAGG(manager_last_name || ' ' || manager_first_name, ', ') WITHIN GROUP (ORDER BY manager_id) top_3_manager_list  
FROM  
    step2  
WHERE index_in_partition <= 3  
GROUP BY COUNTRY;
```


Query Result

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SQL History

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	country	top_3_managers_list
1	Aland Islands	Reynolds Shirley...
2	Albania	Black Douglas, S...
3	Armenia	Hudson Carolyn, ...
4	Belarus	Perry Adam, Fox ...
5	Bosnia and Herz...	Alvarez Donna
6	Brazil	Gardner Rebecc...
7	Bulgaria	Carroll Sandra, G...
8	Cambodia	Simpson Catheri...
9	Cameroon	Wright Patrick, C...

7. Выведите самый дешевый и самый дорогой товар, проданный за каждый месяц в течение 2014 года.

cheapest_product_id, cheapest_product_name, expensive_product_id, expensive_product_name, month, cheapest_price, expensive_price

```
WITH step1 AS (SELECT TRUNC(sale_date, 'mm') AS mnth,
                      product_id,
                      product_name,
                      sale_price,
                      MAX(sale_price) OVER (PARTITION BY TRUNC(sale_date, 'mm')) AS max_price,
                      MIN(sale_price) OVER (PARTITION BY TRUNC(sale_date, 'mm')) AS min_price
FROM V_FACT_SALE
WHERE TRUNC(sale_date, 'mm') BETWEEN TO_DATE('2014-01-01', 'YYYY-MM-DD')
AND TO_DATE('2014-12-31', 'YYYY-MM-DD')),
step2 AS (SELECT mnth,
                  product_id    cheapest_product_id,
                  product_name   cheapest_product_name,
                  sale_price     cheapest_price
FROM step1
WHERE sale_price = min_price),
step3 AS (SELECT mnth,
                  product_id    expensive_product_id,
                  product_name   expensive_product_name,
                  sale_price     expensive_price
FROM step1
WHERE sale_price = max_price)
SELECT cheapest_product_id,
       cheapest_product_name,
       expensive_product_id,
       expensive_product_name,
       step2.mnth,
       cheapest_price,
       expensive_price
FROM step2
INNER JOIN step3 ON step2.mnth = step3.mnth;
```

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	cheapest_product_id	cheapest_product_name	expensive_product_id	expensive_product_name	mnth	cheapest_price	expensive_price
1	450	Avobenzon, H...	942	Aurum Onopordon	12/31/13 08:00:...	9.37	965.03
2	450	Avobenzon, H...	942	Aurum Onopordon	01/31/14 08:00:...	1.03	977.12
3	450	Avobenzon, H...	942	Aurum Onopordon	02/28/14 08:00:...	1.21	974.18
4	450	Avobenzon, H...	942	Aurum Onopordon	03/31/14 08:00:...	4.82	978.1
5	450	Avobenzon, H...	942	Aurum Onopordon	04/30/14 08:00:...	8.75	980.44
6	450	Avobenzon, H...	942	Aurum Onopordon	05/31/14 08:00:...	1.44	970.86
7	450	Avobenzon, H...	942	Aurum Onopordon	06/30/14 08:00:...	2.09	971.57
8	450	Avobenzon, H...	942	Aurum Onopordon	07/31/14 08:00:...	0.65	968.87
9	450	Avobenzon, H...	942	Aurum Onopordon	08/31/14 08:00:...	3.29	981.02

8. Менеджер получает оклад в 30 000 + 5% от суммы своих продаж в месяц. Средняя наценка стоимости товара - 10%
Посчитайте прибыль предприятия за 2014 год по месяцам (сумма продаж - (исходная стоимость товаров + зарплата))
month, sales_amount, salary_amount, profit_amount

```
WITH step1 AS (SELECT TRUNC(sale_date, 'mm')          AS mnth,
                     SUM(sale_amount)                AS manager_month_sale,
                     SUM(sale_amount) * 0.05 + 30000 AS manager_month_salary
FROM v_fact_sale
WHERE sale_date BETWEEN TO_DATE('2014-01-01', 'YYYY-MM-DD') AND TO_DATE('2014-12-31', 'YYYY-MM-DD')
GROUP BY TRUNC(sale_date, 'mm'),
         manager_id),
step2 AS (SELECT mnth,
                 SUM(manager_month_sale) OVER (PARTITION BY mnth) AS month_sale,
                 SUM(manager_month_salary) OVER (PARTITION BY mnth) AS month_salary,
                 ROW_NUMBER() OVER (PARTITION BY mnth ORDER BY mnth) AS ind
FROM step1)
SELECT mnth,
       month_sale - (month_sale * 0.9 + month_salary) AS month_income
FROM step2
WHERE ind = 1;
```

	mnth	month_income
6	06/01/14 12:00:...	-1390935.973
7	07/01/14 12:00:...	-1166324.757
8	08/01/14 12:00:...	-1360570.208
9	09/01/14 12:00:...	-1377161.982
10	10/01/14 12:00:...	-1321147.222
11	11/01/14 12:00:...	-1325395.799
12	12/01/14 12:00:...	-1028125.2975