**1. Каждый месяц компания выдает премию в размере 5% от суммы продаж менеджеру, который за предыдущие 3 месяца продал товаров на самую большую сумму**

**Выведите месяц, manager\_id, manager\_first\_name, manager\_last\_name, премию за период с января по декабрь 2014 года**

WITH monthly\_sales AS (

SELECT

date\_trunc('month', sale\_date) AS sale\_month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

SUM(sale\_amount) AS total\_sales

FROM

public.v\_fact\_sale

WHERE

sale\_date BETWEEN to\_date('2013-10-01', 'YYYY-MM-DD') AND to\_date('2014-12-31', 'YYYY-MM-DD')

GROUP BY

sale\_month, manager\_id, manager\_first\_name, manager\_last\_name

),

three\_month\_sales AS (

SELECT

sale\_month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

SUM(total\_sales) OVER (

PARTITION BY manager\_id

ORDER BY sale\_month

ROWS BETWEEN 2 PRECEDING AND CURRENT ROW

) AS three\_month\_sales

FROM

monthly\_sales

)

SELECT

to\_char(sale\_month, 'YYYY-MM') AS month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

ROUND(three\_month\_sales \* 0.05, 2) AS bonus

FROM (

SELECT

sale\_month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

three\_month\_sales,

RANK() OVER (PARTITION BY sale\_month ORDER BY three\_month\_sales DESC) AS rank

FROM

three\_month\_sales

) AS ranked\_sales

WHERE

rank = 1

AND sale\_month BETWEEN to\_date('2014-01-01', 'YYYY-MM-DD') AND to\_date('2014-12-31', 'YYYY-MM-DD')

ORDER BY

month; WITH monthly\_sales AS (

SELECT

date\_trunc('month', sale\_date) AS sale\_month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

SUM(sale\_amount) AS total\_sales

FROM

public.v\_fact\_sale

WHERE

sale\_date BETWEEN to\_date('2013-10-01', 'YYYY-MM-DD') AND to\_date('2014-12-31', 'YYYY-MM-DD')

GROUP BY

sale\_month, manager\_id, manager\_first\_name, manager\_last\_name

),

three\_month\_sales AS (

SELECT

sale\_month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

SUM(total\_sales) OVER (

PARTITION BY manager\_id

ORDER BY sale\_month

ROWS BETWEEN 2 PRECEDING AND CURRENT ROW

) AS three\_month\_sales

FROM

monthly\_sales

)

SELECT

to\_char(sale\_month, 'YYYY-MM') AS month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

ROUND(three\_month\_sales \* 0.05, 2) AS bonus

FROM (

SELECT

sale\_month,

manager\_id,

manager\_first\_name,

manager\_last\_name,

three\_month\_sales,

RANK() OVER (PARTITION BY sale\_month ORDER BY three\_month\_sales DESC) AS rank

FROM

three\_month\_sales

) AS ranked\_sales

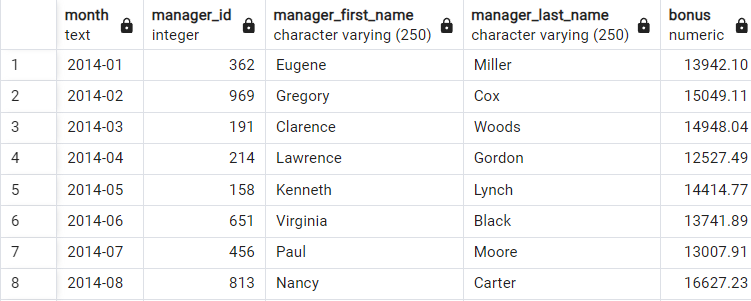
WHERE

rank = 1

AND sale\_month BETWEEN to\_date('2014-01-01', 'YYYY-MM-DD') AND to\_date('2014-12-31', 'YYYY-MM-DD')

ORDER BY

month;



**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.**

SELECT

EXTRACT(YEAR FROM sale\_date) AS year,

office\_id,

city\_name,

country,

SUM(sale\_amount) / SUM(SUM(sale\_amount)) OVER (PARTITION BY EXTRACT(YEAR FROM sale\_date)) AS relative\_sales\_share

FROM

public.v\_fact\_sale

WHERE

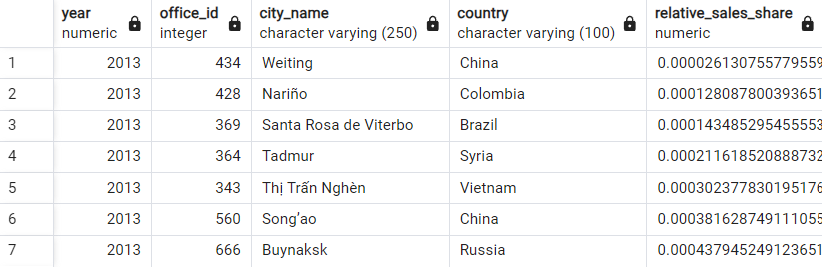
sale\_date BETWEEN TO\_DATE('2013-01-01', 'YYYY-MM-DD') AND TO\_DATE('2014-12-31', 'YYYY-MM-DD')

GROUP BY

year, office\_id, city\_name, country

ORDER BY

year, relative\_sales\_share;



**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 monthly\_sales AS (

SELECT

product\_id,

product\_name,

DATE\_TRUNC('month', sale\_date) AS sale\_month,

SUM(sale\_qty) AS total\_sales\_qty

FROM

public.v\_fact\_sale

WHERE

sale\_date BETWEEN TO\_DATE('2014-01-01', 'YYYY-MM-DD') AND TO\_DATE('2014-06-30', 'YYYY-MM-DD')

GROUP BY

product\_id, product\_name, sale\_month

),

growth\_rate AS (

SELECT

ms1.product\_id,

ms1.product\_name,

ms1.sale\_month,

ms1.total\_sales\_qty,

COALESCE(

ROUND(CAST(ms1.total\_sales\_qty AS NUMERIC) / NULLIF(ms2.total\_sales\_qty, 0), 2),

0

) AS growth\_rate

FROM

monthly\_sales ms1

LEFT JOIN

monthly\_sales ms2

ON ms1.product\_id = ms2.product\_id

AND ms1.sale\_month = ms2.sale\_month + INTERVAL '1 month'

)

SELECT

product\_id,

product\_name,

sale\_month,

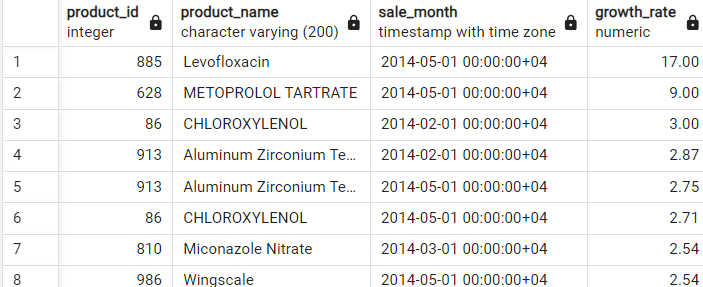
growth\_rate

FROM

growth\_rate

ORDER BY

growth\_rate DESC, product\_id, sale\_month;



**4. Напишите запрос, который выводит отчет о прибыли компании за 2014 год: помесячно и поквартально.**

**Отчет включает сумму прибыли за период и накопительную сумму прибыли с начала года по текущий период.**

WITH monthly\_sales AS (

SELECT

DATE\_TRUNC('month', sale\_date) AS month,

SUM(sale\_amount) AS sales\_amount,

SUM(sale\_amount \* 0.90) AS cost\_amount -- 90% от суммы продаж для расчета исходной стоимости (10% наценка)

FROM

public.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

DATE\_TRUNC('month', sale\_date)

),

monthly\_profit AS (

SELECT

month,

(sales\_amount - cost\_amount) AS profit\_amount

FROM

monthly\_sales

),

quarterly\_profit AS (

SELECT

DATE\_TRUNC('quarter', month) AS quarter,

SUM(profit\_amount) AS quarterly\_profit\_amount

FROM

monthly\_profit

GROUP BY

DATE\_TRUNC('quarter', month)

),

cumulative\_profit AS (

SELECT

month,

profit\_amount,

SUM(profit\_amount) OVER (ORDER BY month) AS cumulative\_profit\_amount

FROM

monthly\_profit

UNION ALL

SELECT

quarter AS month,

quarterly\_profit\_amount AS profit\_amount,

SUM(quarterly\_profit\_amount) OVER (ORDER BY quarter) AS cumulative\_profit\_amount

FROM

quarterly\_profit

)

SELECT

month,

profit\_amount,

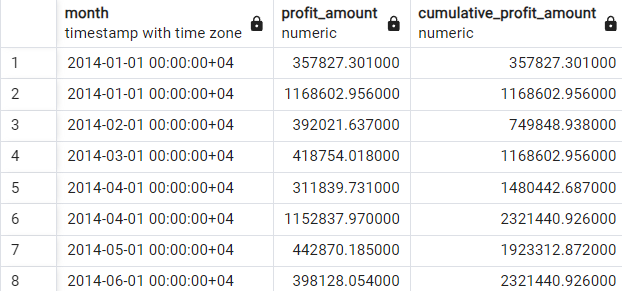
cumulative\_profit\_amount

FROM

cumulative\_profit

ORDER BY

month;



**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 product\_prices AS (

SELECT

product\_id,

product\_name,

AVG(sale\_price) AS avg\_price

FROM

public.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

),

ranked\_products AS (

SELECT

product\_id,

product\_name,

avg\_price,

NTILE(10) OVER (ORDER BY avg\_price DESC) AS price\_decile

FROM

product\_prices

),

top\_10\_percent AS (

SELECT

rp.product\_id,

rp.product\_name,

SUM(vfs.sale\_amount) AS total\_sale\_amount

FROM

ranked\_products rp

JOIN

public.v\_fact\_sale vfs ON rp.product\_id = vfs.product\_id

WHERE

rp.price\_decile = 1

AND vfs.sale\_date BETWEEN TO\_DATE('2014-01-01', 'YYYY-MM-DD') AND TO\_DATE('2014-12-31', 'YYYY-MM-DD')

GROUP BY

rp.product\_id, rp.product\_name

),

bottom\_10\_percent AS (

SELECT

rp.product\_id,

rp.product\_name,

SUM(vfs.sale\_amount) AS total\_sale\_amount

FROM

ranked\_products rp

JOIN

public.v\_fact\_sale vfs ON rp.product\_id = vfs.product\_id

WHERE

rp.price\_decile = 10

AND vfs.sale\_date BETWEEN TO\_DATE('2014-01-01', 'YYYY-MM-DD') AND TO\_DATE('2014-12-31', 'YYYY-MM-DD')

GROUP BY

rp.product\_id, rp.product\_name

),

total\_profit\_2014 AS (

SELECT

SUM(sale\_amount) AS total\_sale\_amount

FROM

public.v\_fact\_sale

WHERE

sale\_date BETWEEN TO\_DATE('2014-01-01', 'YYYY-MM-DD') AND TO\_DATE('2014-12-31', 'YYYY-MM-DD')

)

SELECT

pd.product\_id,

pd.product\_name,

pd.total\_sale\_amount,

ROUND((pd.total\_sale\_amount / tp.total\_sale\_amount) \* 100, 2) AS percent

FROM (

SELECT \* FROM top\_10\_percent

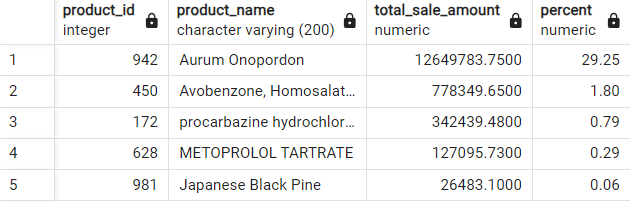
UNION ALL

SELECT \* FROM bottom\_10\_percent

) AS pd, total\_profit\_2014 tp

ORDER BY

percent DESC;



**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 manager\_sales AS (

SELECT

country,

manager\_id,

manager\_last\_name,

manager\_first\_name,

SUM(sale\_qty) AS total\_sales\_qty

FROM

public.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\_last\_name, manager\_first\_name

),

top\_managers AS (

SELECT

country,

manager\_id,

manager\_last\_name,

manager\_first\_name,

total\_sales\_qty,

ROW\_NUMBER() OVER (PARTITION BY country ORDER BY total\_sales\_qty DESC) AS sales\_rank

FROM

manager\_sales

)

SELECT

country,

STRING\_AGG(manager\_last\_name || ' ' || manager\_first\_name, ', ') AS top\_managers

FROM

top\_managers

WHERE

sales\_rank <= 3

GROUP BY

country

ORDER BY

country;



**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 monthly\_product\_sales AS (

SELECT

DATE\_TRUNC('month', sale\_date) AS sale\_month,

product\_id,

product\_name,

MIN(sale\_price) AS min\_price,

MAX(sale\_price) AS max\_price

FROM

public.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

sale\_month, product\_id, product\_name

),

cheapest\_products AS (

SELECT DISTINCT ON (sale\_month)

sale\_month AS month,

product\_id AS cheapest\_product\_id,

product\_name AS cheapest\_product\_name,

min\_price AS cheapest\_price

FROM

monthly\_product\_sales

ORDER BY

sale\_month, min\_price ASC

),

expensive\_products AS (

SELECT DISTINCT ON (sale\_month)

sale\_month AS month,

product\_id AS expensive\_product\_id,

product\_name AS expensive\_product\_name,

max\_price AS expensive\_price

FROM

monthly\_product\_sales

ORDER BY

sale\_month, max\_price DESC

)

SELECT

cp.month,

cp.cheapest\_product\_id,

cp.cheapest\_product\_name,

cp.cheapest\_price,

ep.expensive\_product\_id,

ep.expensive\_product\_name,

ep.expensive\_price

FROM

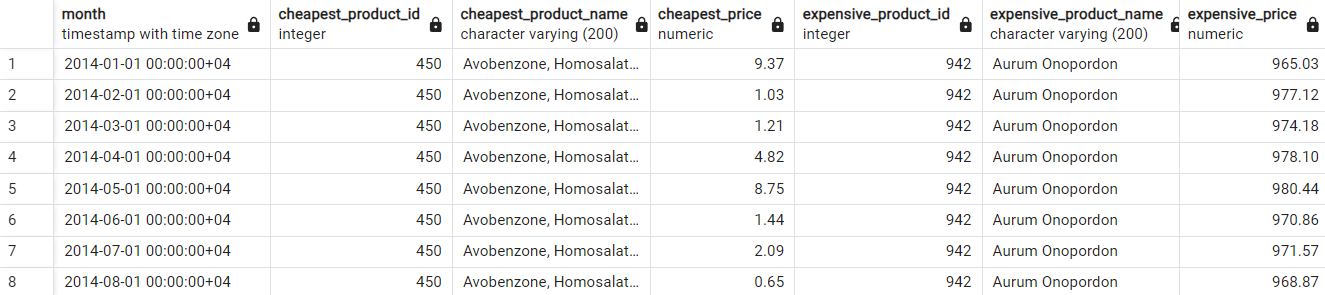
cheapest\_products cp

JOIN

expensive\_products ep ON cp.month = ep.month

ORDER BY

cp.month;



**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 monthly\_sales AS (

SELECT

DATE\_TRUNC('month', sale\_date) AS month,

SUM(sale\_amount) AS sales\_amount,

SUM(sale\_amount \* 0.90) AS cost\_amount -- 90% от суммы продаж для расчета исходной стоимости (10% наценка)

FROM

public.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

DATE\_TRUNC('month', sale\_date)

),

monthly\_salary AS (

SELECT

month,

sales\_amount,

cost\_amount,

30000 + (sales\_amount \* 0.05) AS salary\_amount -- Оклад + 5% от продаж

FROM

monthly\_sales

)

SELECT

ms.month,

ms.sales\_amount,

ms.salary\_amount,

ms.sales\_amount - (ms.cost\_amount + ms.salary\_amount) AS profit\_amount -- Прибыль = продажа - (стоимость + зарплата)

FROM

monthly\_salary ms

ORDER BY

ms.month;

