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-- ТЕСТОВА СТРУКТУРА ДЛЯ ВАЛІДАЦІЇ ЗАПИТУ (DDL)
CREATE TABLE crypto_transactions(
transaction_id UUID,
user_id UUID,
token_symbol VARCHAR(10) NOT NULL,
amount NUMERIC,
usd_value NUMERIC,
created_at TIMESTAMP
)
--АНАЛІТИЧНИЙ КОНВЕЄР ДЛЯ ВИЯВЛЕННЯ HFT-БОТІВ ТА МАРКЕТ-МЕЙКЕРІВ
-- Оптимізовано під PostgreSQL 12+ (WindowAgg згортання ідентичних фреймів)
-- Забезпечує Single Table Scan без важких циклічних JOIN-ів
with grain_subquery AS(SELECT user_id,
                             token_symbol,
                             transaction_id,
                             date_trunc('second', created_at) AS tx_second,

                             SUM(usd_value) OVER(
                                     PARTITION BY user_id, token_symbol
                                     ORDER BY created_at
                                     RANGE BETWEEN INTERVAL '5 minutes' PRECEDING AND CURRENT ROW
                             ) AS current_moving_5min_volume,

                             CASE WHEN SUM(usd_value) OVER(
                                     PARTITION BY user_id, token_symbol
                                     ORDER BY created_at
                                     RANGE BETWEEN INTERVAL '5 minutes' PRECEDING AND CURRENT ROW

                                     ELSE 0
                             END AS is_whale_volume,

                             CASE WHEN created_at - LAG(created_at) OVER(PARTITION BY user_id, token_symbol
                                     ORDER BY created_at) < INTERVAL '2 seconds' THEN 1
                                     ELSE 0
                             END AS is_bot

FROM crypto_transactions
WHERE created_at >= NOW() - INTERVAL '1 day'
)

SELECT
    user_id,
    MAX(current_moving_5min_volume) AS history_maximal_per5min,
    COUNT(*) AS total_transactions_number
FROM grain_subquery
WHERE is_whale_volume = 1 OR is_bot = 1
GROUP BY user_id
ORDER BY MAX(current_moving_5min_volume) DESC, COUNT(*) DESC, user_id;

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