Script SQL untuk data mart dan view DuckDB

A. **Data Mart Analisis: (**Fokus pada analisis historis dan tren)

Analisis:

- Mengetahui **pola** harga saham per-sektor dengan mengecek rata-rata harga penutupan per sektor tiap bulan/tahun
- Mengetahui dampak peristiwa ekonomi terhadap harga saham (**pola** harga saham ketika terjadi peristiwa ekonomi)
- Mengetahui performa saham dengan melihat saham yang memiliki return tertinggi (selisih harian harga saham pembukaan ke penutupan)

Data yang dibutuhkan (keperluan pembuatan Data Mart):

- dateTime
- monthTime
- yearTime
- sectorCompany
- openValueStock
- closeValueStock
- quantityStock
- stockCodeCompany
- nameCompany
- stockCodeCompany

Query SQL Create Data Mart:

```
CREATE TABLE dm_analitik AS
SELECT
  dt.dateTime,
  dt.monthTime,
  dt.yearTime,
  dc.sectorCompany,
  dc.stockCodeCompany,
  dc.nameCompany,
  AVG(fs.openValueStock) AS avgOpenValueStock,
  AVG(fs.closeValueStock) AS avgCloseValueStock,
  AVG(fs.quantityStock) AS avgQuantityStock
FROM factStocks fs
```

```
JOIN dimTime dt ON fs.keyTime = dt.keyTime
JOIN dimCompany dc ON fs.keyCompany = dc.keyCompany
GROUP BY dt.dateTime, dt.monthTime, dt.yearTime, dc.nameCompany,
dc.sectorCompany, dc.stockCodeCompany;
```

Query View:

Informasi	Query
Rata-rata harga penutupan per sektor tiap bulan/tahun	CREATE VIEW vw_close_value_per_sector_per_month AS SELECT da.yearTime, da.monthTime, da.sectorCompany, AVG(da.avgCloseValueStock) AS avg_close_price FROM dm_analitik da GROUP BY da.yearTime, da.monthTime, da.sectorCompany ORDER BY da.yearTime, da.monthTime, da.sectorCompany;
Korelasi volume perdagangan terhadap harga saham (harga penutupan)	CREATE VIEW vw_price_qty_corr AS SELECT sectorCompany, CORR(avgQuantityStock, avgCloseValueStock) AS volume_price_corr FROM dm_analitik da GROUP BY sectorCompany;
Pola harga saham ketika terjadi peristiwa ekonomi	CREATE VIEW vw_price_by_date AS SELECT CASE WHEN dt.datetime < '2020-03-01' THEN 'Before COVID' ELSE 'After COVID' END AS period, AVG(fs.closeValueStock) AS avg_close_price FROM factStocks fs JOIN dimTime dt ON fs.keyTime = dt.keyTime GROUP BY period;
Selisih harian harga saham pembukaan ke penutupan	CREATE VIEW vw_return_by_stock_company AS SELECT stockCodeCompany, nameCompany, AVG((avgCloseValueStock - avgOpenValueStock) /

```
NULLIF(avgOpenValueStock, 0)) * 100 AS
avg_daily_return_percent
FROM dm_analitik
GROUP BY stockCodeCompany, nameCompany
ORDER BY avg_daily_return_percent DESC;
```

B. **Data Mart Operasional:** Fokus pada metrik operasional dan KPI

Analisis:

- Mengetahui **pola** harga saham per-sektor dengan mengecek rata-rata harga penutupan per sektor tiap bulan/tahun
- Mengetahui Anomali Perdagangan dengan mencari data yang bervolume lebih tinggi dibanding biasanya (misalnya di atas 95th percentile)

Data yang dibutuhkan (keperluan pembuatan Data Mart Operasional Anomali Volume):

- dateTime
- openValueStock
- closeValueStock
- quantityStock
- stockCodeCompany
- nameCompany
- stockCodeCompany

Data Mart Operasional Anomali Volume

```
CREATE TABLE dm_operasional_volume_anomali AS
WITH ranked_volume AS (
 SELECT
   fs.keyCompany,
   fs.quantityStock,
   ROW_NUMBER() OVER (
     PARTITION BY fs.keyCompany
     ORDER BY fs.quantityStock DESC
   ) AS rn,
   COUNT(*) OVER (PARTITION BY fs.keyCompany) AS total_rows
 FROM stagingFactStocks fs
),
volume_95 AS (
 SELECT keyCompany, quantityStock AS vol_95
 FROM ranked_volume
```

```
 WHERE rn = CAST(total_rows * 0.05 AS INT)  -- ambil top 5%
)
SELECT
 dc.stockCodeCompany,
 dc.nameCompany,
 dt.dateTime,
 fs.quantityStock,
 fs.closeValueStock,
 fs.openValueStock,
 fs.quantityStock > v95.vol_95 AS isMoreThan95
FROM stagingFactStocks fs
JOIN stagingTime dt ON fs.keyTime = dt.keyTime
JOIN stagingCompany dc ON fs.keyCompany = dc.keyCompany
JOIN volume_95 v95 ON fs.keyCompany = v95.keyCompany;
```

C. View Tambahan untuk Visualisasi

1. View: Total anomali per perusahaan

```
CREATE VIEW vw_anomali_per_company AS

SELECT
 stockCodeCompany,
 nameCompany,
 COUNT(*) AS anomaly_count
FROM dm_operasional_volume_anomali
WHERE isMoreThan95 = true
GROUP BY stockCodeCompany, nameCompany
ORDER BY anomaly_count DESC;
```

2. View: Lonjakan Harga saat volume anomali

```
CREATE VIEW vw_price_spike_anomaly AS
SELECT
  *,
  closeValueStock - openValueStock AS price_diff
FROM dm_operasional_volume_anomali
WHERE ABS(closeValueStock - openValueStock) > 10;
```