

## Проекции и материализованные представления

- Создал таблицу и наполнил данными:

```
CREATE TABLE sales
(
    `id` UInt32,
    `product_id` UInt32,
    `quantity` UInt32,
    `price` Float32,
    `sale_date` DateTime
)
ENGINE = MergeTree
ORDER BY id

insert into sales values
(1, 1, 15, 15.4, '2024-10-05'),
(2, 1, 17, 15.4, '2024-10-05'),
(3, 2, 13, 6.6, '2024-10-05'),
(4, 2, 12, 6.6, '2024-10-05'),
(5, 3, 1, 7.4, '2024-10-05');
```

	id	product_id	quantity	price	sale_date
1.	1	1	15	15.4	2024-10-05 00:00:00
2.	2	1	17	15.4	2024-10-05 00:00:00
3.	3	2	13	6.6	2024-10-05 00:00:00
4.	4	2	12	6.6	2024-10-05 00:00:00
5.	5	3	1	7.4	2024-10-05 00:00:00

- Создание проекции:

```
ALTER TABLE sales
(ADD PROJECTION sales_product_aggregation
(
    SELECT
        product_id,
        sum(quantity),
        sum(price)
    GROUP BY product_id
```

```
))
```

```
ALTER TABLE sales  
  (MATERIALIZE PROJECTION sales_product_aggregation)
```

- Создание представления:

```
CREATE TABLE sales_agg  
(  
  `product_id` UInt32,  
  `total_quantity` AggregateFunction(sum, UInt32),  
  `total_sales` AggregateFunction(sum, UInt32)  
)  
ENGINE = AggregatingMergeTree  
ORDER BY product_id
```

```
CREATE MATERIALIZED VIEW sales_mv TO sales_agg  
AS SELECT  
  product_id,  
  sum(quantity),  
  sum(price)  
FROM sales  
GROUP BY product_id
```

- Сравнение запросов:

```
SELECT  
  product_id,  
  sum(quantity),  
  sum(price)  
FROM sales  
GROUP BY product_id
```

```
998. |      390 |      5074123 | 558939.413061142 |  
999. |      308 |      5014755 | 553916.4239811897 |  
    |-----|-----|-----|  
    |product_id|sum(quantity)|sum(price)|  
999 rows in set. Elapsed: 0.006 sec. Processed 4.00 thousand rows, 143.86 KB (696.18 thousand rows/s., 25.06 MB/s.)  
Peak memory usage: 116.23 KiB.
```

```
SELECT  
  product_id,
```

```

sumMerge(total_quantity),
sumMerge(total_sales)
FROM sales_agg
GROUP BY product_id

```

```

997.      226      5069856      557409.0935745239
998.      390      5074123      558939.413061142
999.      308      5014755      553916.4239811897
      product_id  sumMerge(total_quantity)  sumMerge(total_sales)

999 rows in set. Elapsed: 0.004 sec.

```

```

SELECT memory_usage
FROM system.query_log
WHERE query_id = '863fc9f8-9986-4ab3-bca3-3d7b343ae708'

```

Query id: afd1a120-3727-4f62-8bac-36e8a1679b47

	memory_usage
1.	0
2.	69768

При 101 миллионе записей в таблице sales запрос из материализованного представления оказался быстрее и потребовал в 2 раза меньше памяти чем проекция.