- Задание №1

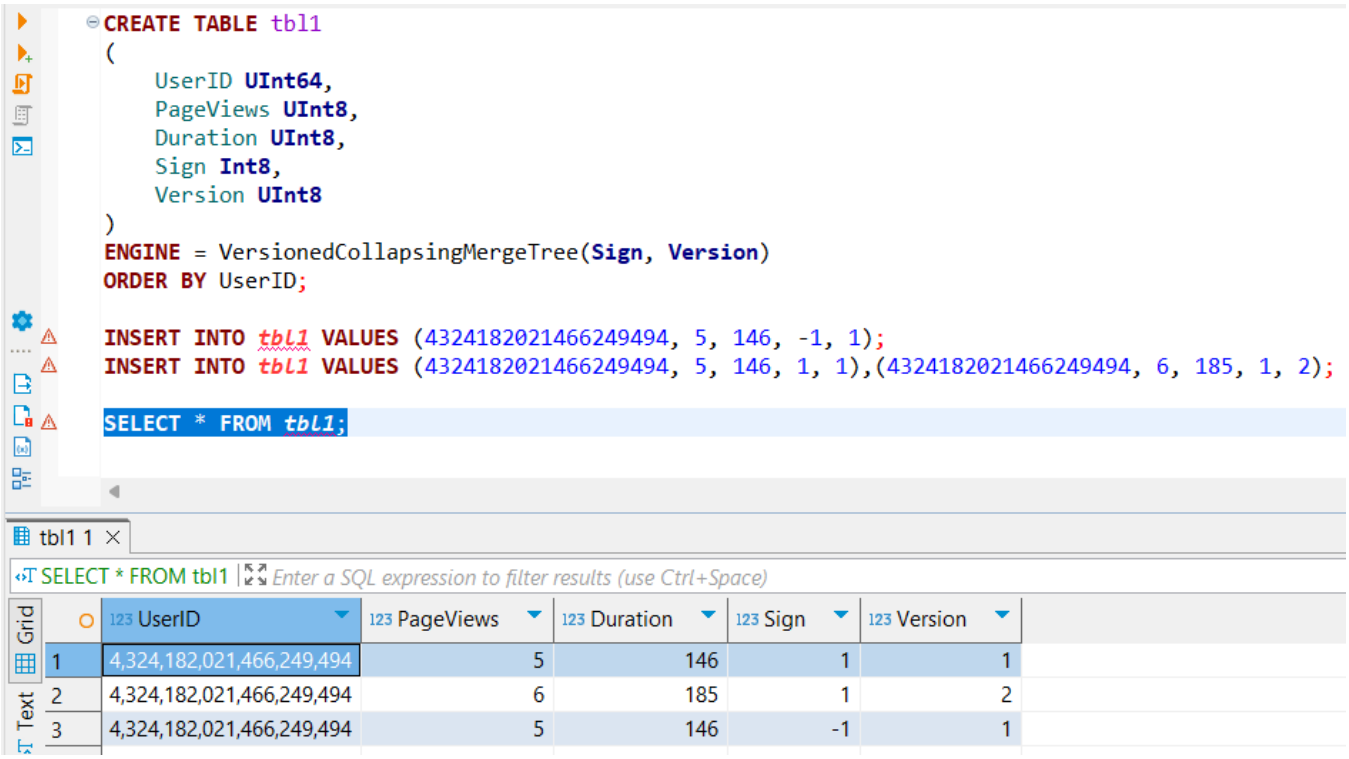
```
CREATE TABLE tbl1
(
    UserID UInt64,
    PageViews UInt8,
    Duration UInt8,
    Sign Int8,
    Version UInt8
)
ENGINE = <ENGINE>
ORDER BY UserID;

INSERT INTO tbl1 VALUES (4324182021466249494, 5, 146, -1, 1);
INSERT INTO tbl1 VALUES (4324182021466249494, 5, 146, 1, 1), (4324182021466249494, 6, 185, 1, 2);


SELECT * FROM tbl1;
```

UserID	PageViews	Duration	Sign	Version
4324182021466249494	5	146	1	1
4324182021466249494	6	185	1	2

UserID	PageViews	Duration	Sign	Version
4324182021466249494	5	146	-1	1

```
SELECT * FROM tbl1 final;
```

UserID	PageViews	Duration	Sign	Version
4324182021466249494	6	185	1	2



```
CREATE TABLE tbl1
(
    UserID UInt64,
    PageViews UInt8,
    Duration UInt8,
    Sign Int8,
    Version UInt8
)
ENGINE = VersionedCollapsingMergeTree(Sign, Version)
ORDER BY UserID;

INSERT INTO tbl1 VALUES (4324182021466249494, 5, 146, -1, 1);
INSERT INTO tbl1 VALUES (4324182021466249494, 5, 146, 1, 1),(4324182021466249494, 6, 185, 1, 2);

SELECT * FROM tbl1 final;
```

tbl1 1

SELECT * FROM tbl1 final — Enter a SQL expression to filter results (use Ctrl+Space)

Grid

	UserID	PageViews	Duration	Sign	Version
1	4,324,182,021,466,249,494	6	185	1	2

Выбрана версия движка «VersionedCollapsingMergeTree», поскольку в таблице и в загружаемых данных используются поля «Sign» и «Version»

- Задание №2

```
CREATE TABLE tbl2
(
    key UInt32,
    value UInt32
)
ENGINE = <ENGINE>
ORDER BY key;

INSERT INTO tbl2 Values(1,1),(1,2),(2,1);

select * from tbl2;
```

key	value
1	3
2	1

```
CREATE TABLE tbl2
(
    key UInt32,
    value UInt32
)
ENGINE = SummingMergeTree(value)
ORDER BY key;

INSERT INTO tbl2 Values(1,1),(1,2),(2,1);

select * from tbl2;
```

tbl2 1

select * from tbl2 — Enter a SQL expression to filter results (use Ct

Grid

	key	value
1	1	3
2	2	1

Выбрана версия движка «SummingMergeTree», поскольку структура таблицы, представленный результат и загружаемые данные подходят только для данного типа движка

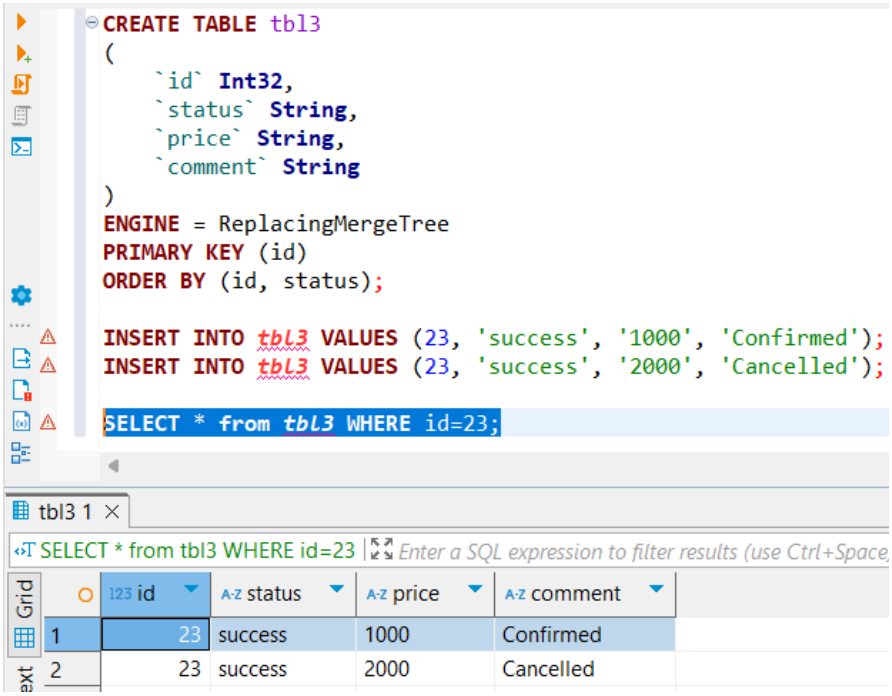
- Задание №3

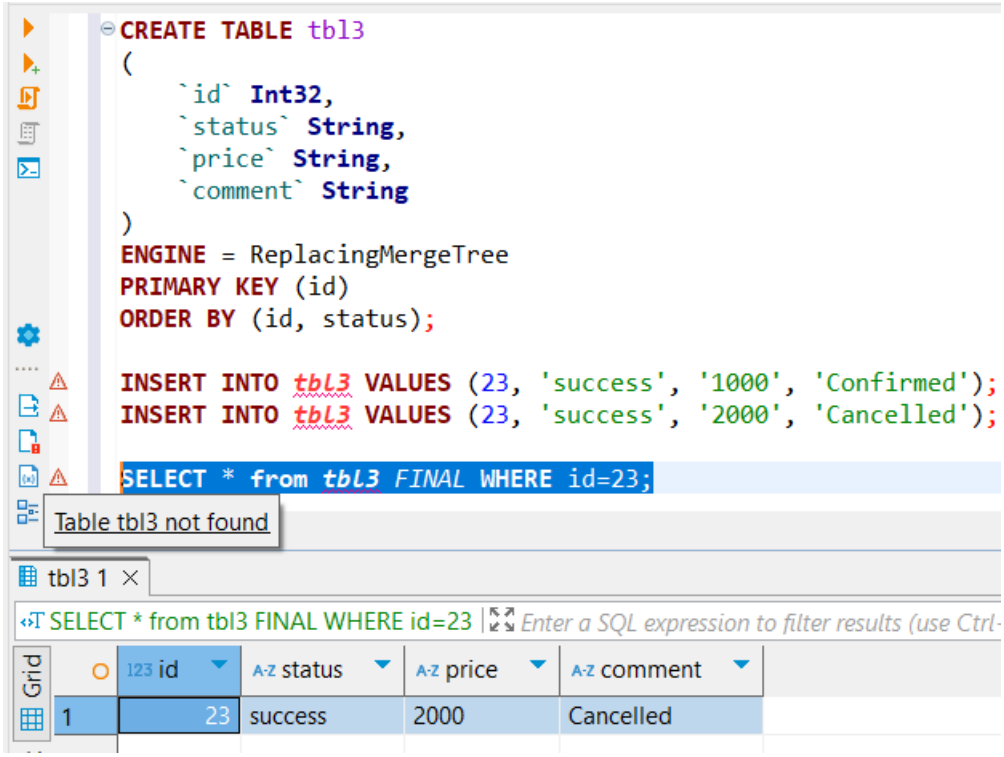
```
CREATE TABLE tbl3
(
    `id` Int32,
    `status` String,
    `price` String,
    `comment` String
)
ENGINE = <ENGINE>
PRIMARY KEY (id)
ORDER BY (id, status);

INSERT INTO tbl3 VALUES (23, 'success', '1000', 'Confirmed');
INSERT INTO tbl3 VALUES (23, 'success', '2000', 'Cancelled');

SELECT * from tbl3 WHERE id=23;
```

```
┌─id─┬─status──┬─price─┬─comment─┐
│ 23 │ success │ 2000  │ Cancelled │
└────┴─────────┴───────┴─────────┘
┌─id─┬─status──┬─price─┬─comment─┐
│ 23 │ success │ 1000  │ Confirmed │
└────┴─────────┴───────┴─────────┘
```

```
SELECT * from tbl3 FINAL WHERE id=23;
```

```
┌─id─┬─status──┬─price─┬─comment─┐
│ 23 │ success │ 2000  │ Cancelled │
└────┴─────────┴───────┴─────────┘
```





Выбрана версия движка «ReplacingMergeTree», поскольку структура таблицы, представленный результат и загружаемые данные подходят только для данного типа движка

- Задание №4

```
CREATE TABLE tbl4
(    CounterID UInt8,
    StartDate Date,
    UserID UInt64
) ENGINE = <ENGINE>
PARTITION BY toYYYYMM(StartDate)
ORDER BY (CounterID, StartDate);

INSERT INTO tbl4 VALUES(0, '2019-11-11', 1);
INSERT INTO tbl4 VALUES(1, '2019-11-12', 1);


CREATE TABLE tbl5
(    CounterID UInt8,
    StartDate Date,
    UserID AggregateFunction(uniq, UInt64)
) ENGINE = <ENGINE>
PARTITION BY toYYYYMM(StartDate)
ORDER BY (CounterID, StartDate);

INSERT INTO tbl5
select CounterID, StartDate, uniqState(UserID)
from tbl4
group by CounterID, StartDate;

INSERT INTO tbl5 VALUES (1,'2019-11-12',1);
```

```
Exception on client:
Code: 53. DB::Exception: Cannot convert UInt64 to AggregateFunction(uniq, UInt64): While executing ValuesBlockInpu
tFormat: data for INSERT was parsed from query. (TYPE_MISMATCH)
```

```
SELECT uniqMerge(UserID) AS state
FROM tbl5
GROUP BY CounterID, StartDate;
```

```
┌─state─┐
│     1 │
│     1 │
└───────┘
```

```
CREATE TABLE tbl4
(   CounterID UInt8,
    StartDate Date,
    UserID UInt64
) ENGINE = MergeTree
PARTITION BY toYYYYMM(StartDate)
ORDER BY (CounterID, StartDate);

INSERT INTO tbl4 VALUES(0, '2019-11-11', 1);
INSERT INTO tbl4 VALUES(1, '2019-11-12', 1);


CREATE TABLE tbl5
(   CounterID UInt8,
    StartDate Date,
    UserID AggregateFunction(uniq, UInt64)
) ENGINE = AggregatingMergeTree
PARTITION BY toYYYYMM(StartDate)
ORDER BY (CounterID, StartDate);

INSERT INTO tbl5
select CounterID, StartDate, uniqState(UserID)
from tbl4
group by CounterID, StartDate;

INSERT INTO tbl5 VALUES (1,'2019-11-12',1);

SELECT uniqMerge(UserID) AS state
FROM tbl5
GROUP BY CounterID, StartDate;
```

tbl5 1

SELECT uniqMerge(UserID) AS state FROM tbl5 GROUP BY CounterID, S

Grid

	123 state
1	1
2	1

Для таблицы «tbl4» выбрана версия движка «MergeTree» чтобы данные просто добавлялись. Для таблицы «tbl5» выбрана версия «AggregatingMergeTree» чтобы можно было применить агрегатную функцию «uniqState»

- Задание №5

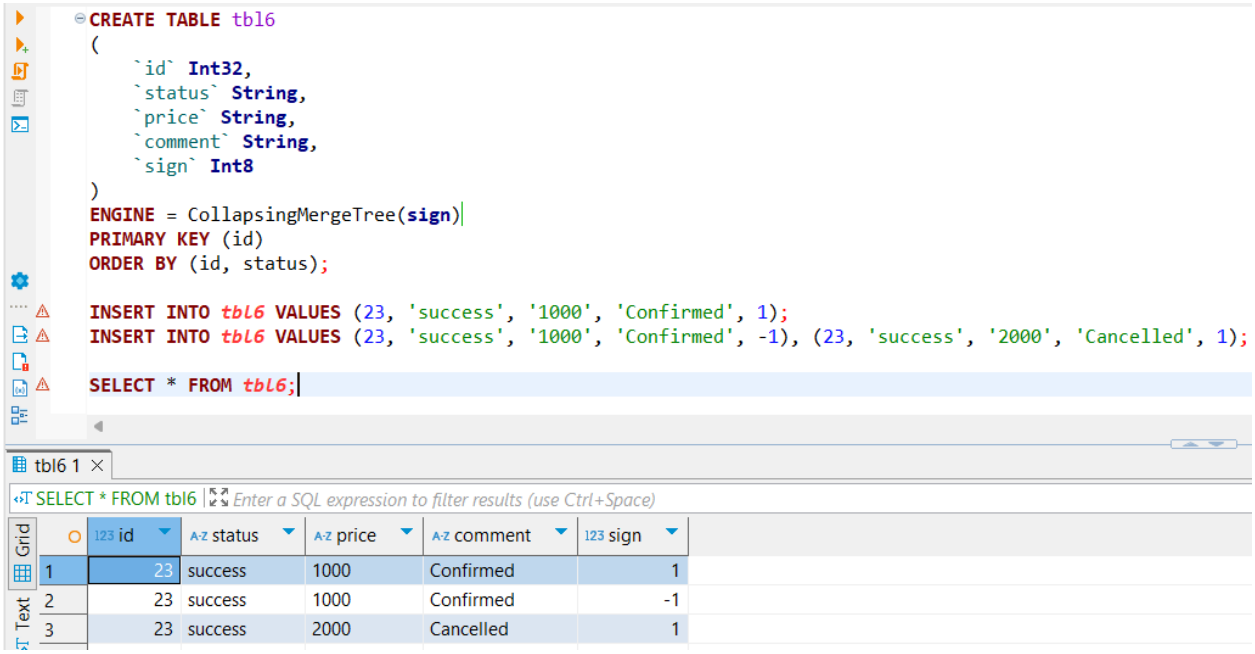
```
CREATE TABLE tbl6
(
    `id` Int32,
    `status` String,
    `price` String,
    `comment` String,
    `sign` Int8
)
ENGINE = <ENGINE>
PRIMARY KEY (id)
ORDER BY (id, status);

INSERT INTO tbl6 VALUES (23, 'success', '1000', 'Confirmed', 1);
INSERT INTO tbl6 VALUES (23, 'success', '1000', 'Confirmed', -1), (23, 'success', '2000', 'Cancelled',
1);

SELECT * FROM tbl6;
```

id	status	price	comment	sign
23	success	1000	Confirmed	-1
23	success	2000	Cancelled	1

id	status	price	comment	sign
23	success	1000	Confirmed	1

```
SELECT * FROM tbl6 FINAL;
```

id	status	price	comment	sign
23	success	2000	Cancelled	1



Выбрана версия движка «CollapsingMergeTree», поскольку структура таблицы, представленный результат и загружаемые данные подходят только для данного типа движка