

## Домашнее задание

1. Создайте представление, в которое попадут автомобили стоимостью до 25 000 долларов
2. Изменить в существующем представлении порог для стоимости: пусть цена будет до 30 000 долларов (используя оператор ALTER VIEW)
3. Создайте представление, в котором будут только автомобили марки "Шкода" и "Ауди"

```
mysql> SELECT * FROM Cars;
```

Id	Name	Cost
1	Audi	52642
2	Mercedes	57127
3	Skoda	9000
4	Volvo	29000
5	Bentley	350000
6	Citroen	21000
7	Hummer	41400
8	Volkswagen	21600



## Домашнее задание

**Вывести название и цену для всех анализов, которые продавались 5 февраля 2020 и всю следующую неделю.**

**Есть таблица анализов Analysis:**

an\_id — ID анализа;

an\_name — название анализа;

an\_cost — себестоимость анализа;

an\_price — розничная цена анализа;

an\_group — группа анализов.

**Есть таблица групп анализов Groups:**

gr\_id — ID группы;

gr\_name — название группы;

gr\_temp — температурный режим хранения.

**Есть таблица заказов Orders:**

ord\_id — ID заказа;

ord\_datetime — дата и время заказа;

ord\_an — ID анализа.



## Домашнее задание

Добавьте новый столбец под названием «время до следующей станции». Чтобы получить это значение, мы вычитаем время станций для пар смежных станций. Мы можем вычислить это значение без использования оконной функции SQL, но это может быть очень сложно. Проще это сделать с помощью оконной функции LEAD. Эта функция сравнивает значения из одной строки со следующей строкой, чтобы получить результат. В этом случае функция сравнивает значения в столбце «время» для станции со станцией сразу после нее.

train_id	station	station_time	time_to_next_station
integer	character varying(20)	time without time zone	interval
110	San Francisco	10:00:00	00:54:00
110	Redwood City	10:54:00	00:08:00
110	Palo Alto	11:02:00	01:33:00
110	San Jose	12:35:00	
120	San Francisco	11:00:00	01:49:00
120	Palo Alto	12:49:00	00:41:00
120	San Jose	13:30:00	



MySQL 8.0 Command Line Client

```
mysql> USE seminar5;
Database changed
mysql> CREATE TABLE cars (
  -> id INT PRIMARY KEY AUTO INCREMENT,
  -> name VARCHAR (30) NOT NULL,
  -> cost INT NOT NULL
  -> );
Query OK, 0 rows affected (0.21 sec)

mysql> INSERT INTO cars (name, cost)
  -> VALUES
  -> ('Audi', 52642),
  -> ('Mercedes', 57127),
  -> ('Skoda', 9000),
  -> ('Volvo', 29000),
  -> ('Bentley', 350000),
  -> ('Citroen', 21000),
  -> ('Hummer', 41400),
  -> ('Volkswagen', 21600);
Query OK, 8 rows affected (0.17 sec)
Records: 8 Duplicates: 0 Warnings: 0

mysql> CREATE VIEW cars_under_25000 AS
  -> SELECT*
  -> FROM cars
  -> WHERE cost < 25000;
Query OK, 0 rows affected (0.10 sec)

mysql> ALTER VIEW cars_under_25000 AS
  -> SELECT*
  -> FROM cars
  -> WHERE cost < 30000;
Query OK, 0 rows affected (0.07 sec)

mysql> CREATE VIEW skoda_audi_cars AS
  -> SELECT*
  -> FROM cars
  -> WHERE name IN ('Skoda', 'Audi');
Query OK, 0 rows affected (0.09 sec)

mysql> CREATE TABLE Analysis (
  -> an_id INT PRIMARY KEY AUTO INCREMENT,
  -> an_name VARCHAR (45) NO NULL,
  -> an_cost FLOAT NO NULL,
  -> an_price INT NO NULL,
  -> an_group INT NO NULL
  -> );
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'NO NULL,
an_cost FLOAT NO NULL,
an_price INT NO NULL,
```

Выбрать MySQL 8.0 Command Line Client

```
an_group INT NOT NULL
)' at line 3
mysql> CREATE TABLE Analysis (
-> an_id INT PRIMARY KEY AUTO_INCREMENT,
-> an_name VARCHAR (45) NOT NULL,
-> an_cost FLOAT NOT NULL,
-> an_price INT NOT NULL,
-> an_group INT NOT NULL
-> );
Query OK, 0 rows affected (0.31 sec)

mysql> CREATE TABLE Groups (
-> gr_id INT PRIMARY KEY AUTO_INCREMENT,
-> gr_name VARCHAR (45) NOT NULL,
-> gr_temp INT NOT NULL
-> );
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'Groups (
gr_id INT PRIMARY KEY AUTO_INCREMENT,
gr_name VARCHAR (45) NOT NULL,
gr' at line 1
mysql> CREATE TABLE AnalysisGroups (
-> gr_id INT PRIMARY KEY AUTO_INCREMENT,
-> gr_name VARCHAR (45) NOT NULL,
-> gr_temp INT NOT NULL
-> );
Query OK, 0 rows affected (0.55 sec)

mysql> CREATE TABLE Orders (
-> ord_id INT PRIMARY KEY AUTO_INCREMENT,
-> ord_datetime DATETIME NOT NULL,
-> ord_an INT PRIMARY KEY AUTO_INCREMENT
-> );
ERROR 1075 (42000): Incorrect table definition; there can be only one auto column and it must be defined as a key
mysql> CREATE TABLE Orders (
-> gr_id INT PRIMARY KEY AUTO_INCREMENT,
-> ord_datetime DATETIME NOT NULL,
-> ord_an INT
-> );
Query OK, 0 rows affected (0.68 sec)

mysql> INSERT INTO Analisis (an_name, an_cost, an_price, an_group)
-> VALUES
-> ('urine', 13.4, 134, 1),
-> ('alanine_transaminases', 15.1, 151, 1),
-> ('alpha_fetoprotein', 36.2, 362, 1),
-> ('aspartate_transaminases', 15.1, 151, 2),
-> ('glucose', 15.1, 151, 2),
-> ('creatinine', 15.2, 152, 2),
-> ('lactate_dehydrogenase', 15.2, 152, 3),
-> ('urea', 15.1, 151, 3),
```

Выбрать MySQL 8.0 Command Line Client

```
-> ('protein', 15.0, 150, 3),
-> ('bilirubin', 15.1, 151, 4),
-> ('blood', 62.4, 624, 4),
-> ('chorionic_gonadotropin', 36.2, 362, 4);
ERROR 1146 (42502): Table 'seminar5.analysis' doesn't exist
mysql> INSERT INTO Analisis (an_name, an_cost, an_price, an_group)
-> ('urine', 13.4, 134, 1),
-> ('alanine_transaminases', 15.1, 151, 1),
-> ('alpha_fetoprotein', 36.2, 362, 1),
-> ('aspartate_transaminases', 15.1, 151, 2),
-> ('glucose', 15.1, 151, 2),
-> ('creatinine', 15.2, 152, 2),
-> ('lactate_dehydrogenase', 15.2, 152, 3),
-> ('urea', 15.1, 151, 3),
-> ('protein', 15.0, 150, 3),
-> ('bilirubin', 15.1, 151, 4),
-> ('blood', 62.4, 624, 4),
-> ('chorionic_gonadotropin', 36.2, 362, 4);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ''urine', 13.4, 134, 1),
('alanine_transaminases', 15.1, 151, 1),
('alpha_fetopro' at line 2
mysql> INSERT INTO Analisis (an_name, an_cost, an_price, an_group)
-> VALUES
-> ('urine', 13.4, 134, 1),
-> ('alanine_transaminases', 15.1, 151, 1),
-> ('alpha_fetoprotein', 36.2, 362, 1),
-> ('aspartate_transaminases', 15.1, 151, 2),
-> ('glucose', 15.1, 151, 2),
-> ('creatinine', 15.2, 152, 2),
-> ('lactate_dehydrogenase', 15.2, 152, 3),
-> ('urea', 15.1, 151, 3),
-> ('protein', 15.0, 150, 3),
-> ('bilirubin', 15.1, 151, 4),
-> ('blood', 62.4, 624, 4),
-> ('chorionic_gonadotropin', 36.2, 362, 4);
Query OK, 12 rows affected (0.08 sec)
Records: 12 Duplicates: 0 Warnings: 0

mysql> INSERT INTO AnalysisGroups (gr_name, gr_temp)
-> VALUES
-> ('clinical', 14),
-> ('biochemical', 16),
-> ('bacteriological', 18),
-> ('general', 20);
Query OK, 4 rows affected (0.10 sec)
Records: 4 Duplicates: 0 Warnings: 0

mysql> INSERT INTO Orders (ord_datetime, ord_an)
-> VALUES
-> ('2020-02-03 10:00:00', 1),
```

```

-> ('2020-02-04 10:00:00', 2),
-> ('2020-02-05 10:00:00', 3),
-> ('2020-02-06 10:00:00', 4),
-> ('2020-02-07 10:00:00', 5),
-> ('2020-02-08 10:00:00', 6),
-> ('2020-02-09 10:00:00', 7),
-> ('2020-02-10 10:00:00', 8),
-> ('2020-02-11 10:00:00', 9),
-> ('2020-02-12 10:00:00', 10),
-> ('2020-02-13 10:00:00', 11),
-> ('2020-02-14 10:00:00', 12);
Query OK, 12 rows affected (0.08 sec)
Records: 12  Duplicates: 0  Warnings: 0

mysql> SELECT Analysis.an_name, Analysis.an_price
-> FROM Analysis
-> JOIN Orders ON Analysis.an_id = Orders.ord_an
-> WHERE Orders.org_datetime >= '2020-02-05 10:00:00' AND
-> Orders.ord_datetime <= '2020-02-12 10:00:00'
-> ;
ERROR 1054 (42S22): Unknown column 'Orders.org_datetime' in 'where clause'
mysql> SELECT Analysis.an_name, Analysis.an_price
-> FROM Analysis
-> JOIN Orders ON Analysis.an_id = Orders.ord_an
-> WHERE Orders.ord_datetime >= '2020-02-05 10:00:00' AND
-> Orders.ord_datetime <= '2020-02-12 10:00:00'
-> ;
+-----+-----+
| an_name          | an_price |
+-----+-----+
| alpha_fetoprotein |      362 |
| aspartate_transaminases |      151 |
| glucose          |      151 |
| creatinine       |      152 |
| lactate_dehydrogenase |      152 |
| urea            |      151 |
| protein         |      150 |
| bilirubin       |      151 |
+-----+-----+
8 rows in set (0.01 sec)

mysql> CREATE TABLE Railway (
-> id INT NOT NULL,
-> station VARCHAR (45) NOT NULL,
-> time TIME NOT NULL
-> );
Query OK, 0 rows affected (0.17 sec)

mysql> INSERT INTO Railway (id, station, time)
-> VALUES

```

```

Bu6pan MySQL 8.0 Command Line Client
-> (110, 'San Francisco', '10:00:00'),
-> (110, 'Redwood City', '10:54:00'),
-> (110, 'Palo Alto', '11:02:00'),
-> (110, 'San Jose', '12:35:00'),
-> (120, 'San Francisco', '11:00:00'),
-> (120, 'Palo Alto', '12:49:00'),
-> (120, 'San Jose', '13:30:00');
Query OK, 7 rows affected (0.07 sec)
Records: 7 Duplicates: 0 Warnings: 0

mysql> SELECT*
-> LEAD(time) OVER(ORDER BY station) - time AS
-> time_to_next_station
-> FROM Railway;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'LEAD(time) OVER(ORDER BY station) - time AS
time_to_next_station
FROM Railway' at line 2
mysql> SELECT r1.station, r1.time, r2.station, r2.time,
-> TIMEDIFF(r2.time, r1.time) AS time_to_next_station
-> FROM Railway r1
-> JOIN Railway r2 ON r1.id = r2.id AND r1.time < r2.time
-> ORDER BY r1.station, r1.time;
+-----+
| station | time | station | time | time_to_next_station |
+-----+
| Palo Alto | 11:02:00 | San Jose | 12:35:00 | 01:33:00 |
| Palo Alto | 12:49:00 | San Jose | 13:30:00 | 00:41:00 |
| Redwood City | 10:54:00 | Palo Alto | 11:02:00 | 00:08:00 |
| Redwood City | 10:54:00 | San Jose | 12:35:00 | 01:41:00 |
| San Francisco | 10:00:00 | Redwood City | 10:54:00 | 00:54:00 |
| San Francisco | 10:00:00 | Palo Alto | 11:02:00 | 01:02:00 |
| San Francisco | 10:00:00 | San Jose | 12:35:00 | 02:35:00 |
| San Francisco | 11:00:00 | Palo Alto | 12:49:00 | 01:49:00 |
| San Francisco | 11:00:00 | San Jose | 13:30:00 | 02:30:00 |
+-----+
9 rows in set (0.06 sec)

mysql> SELECT*,
-> LEAD(time) OVER(ORDER BY id) - time AS time_to_next_station
-> FROM Railway;
+-----+
| id | station | time | time_to_next_station |
+-----+
| 110 | San Francisco | 10:00:00 | 5400 |
| 110 | Redwood City | 10:54:00 | 4800 |
| 110 | Palo Alto | 11:02:00 | 13300 |
| 110 | San Jose | 12:35:00 | -13500 |
| 120 | San Francisco | 11:00:00 | 14900 |
| 120 | Palo Alto | 12:49:00 | 8100 |
| 120 | San Jose | 13:30:00 | NULL |
+-----+

```



```
mysql> SELECT*,
  -> LEAD(time) OVER(ORDER BY id) - time AS time_to_next_station
  -> FROM Railway;
```

id	station	time	time_to_next_station
110	San Francisco	10:00:00	5400
110	Redwood City	10:54:00	4800
110	Palo Alto	11:02:00	13300
110	San Jose	12:35:00	-13500
120	San Francisco	11:00:00	14900
120	Palo Alto	12:49:00	8100
120	San Jose	13:30:00	NULL

```
7 rows in set (0.00 sec)
```

```
mysql> SELECT*,
  -> SUBTIME(LEAD(time) OVER(PARTITION BY id ORDER BY id), station_time)
  -> AS time_to_next_station^D^Z^C
mysql> SELECT*,
  -> SUBTIME(LEAD(time) OVER(PARTITION BY id ORDER BY id), time)
  -> AS time_to_next_station
  -> FROM Railway;
```

id	station	time	time_to_next_station
110	San Francisco	10:00:00	00:54:00
110	Redwood City	10:54:00	00:08:00
110	Palo Alto	11:02:00	01:33:00
110	San Jose	12:35:00	NULL
120	San Francisco	11:00:00	01:49:00
120	Palo Alto	12:49:00	00:41:00
120	San Jose	13:30:00	NULL

```
7 rows in set (0.00 sec)
```

```
mysql>
```