



МИНОБРНАУКИ РОССИИ

Федеральное государственное бюджетное образовательное  
учреждение  
высшего образования  
**«МИРЭА – Российский технологический университет»**

**РТУ МИРЭА**

Институт информационных технологий (ИТ)  
Кафедра прикладной математики

**ОТЧЁТ ПО ПРАКТИЧЕСКОЙ РАБОТЕ № 2  
по дисциплине «Большие данные»**

Выполнил студент группы ТКБО-02-21

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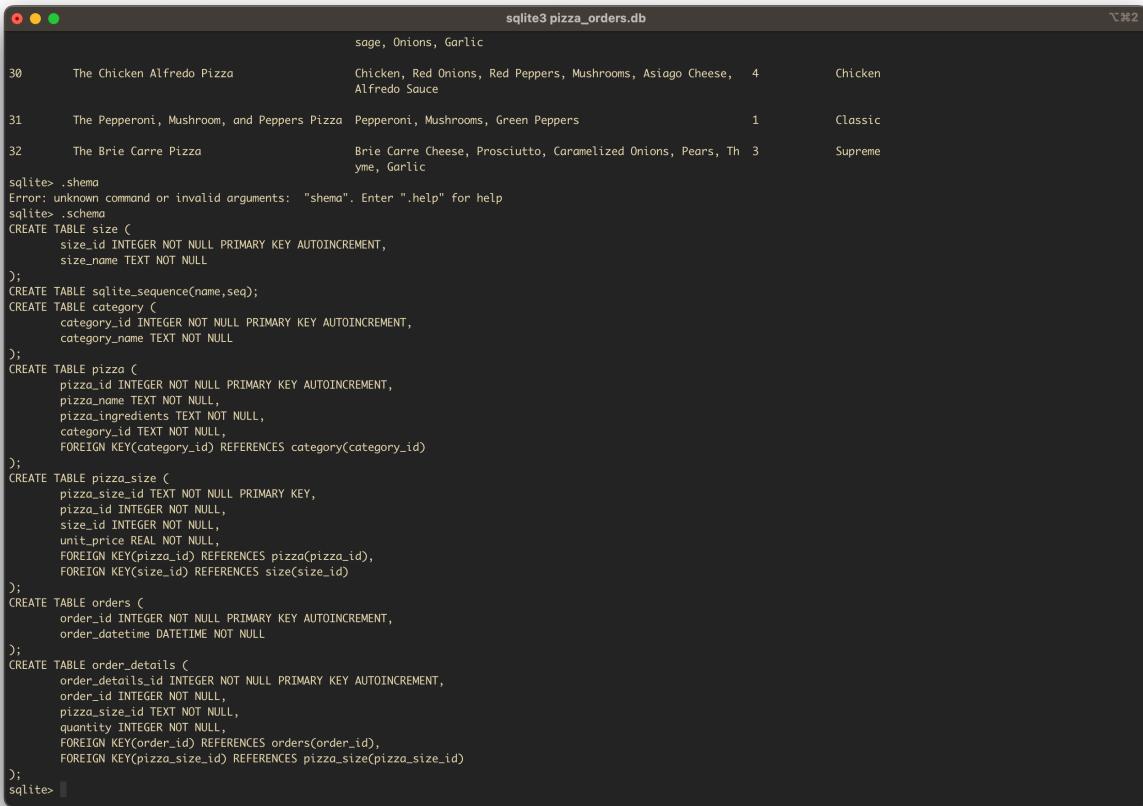
## Задание 1

Найдите информацию по поводу ключевого слова HAVING запроса SELECT. Объясните, для чего оно нужно, приведите пример запроса с HAVING.

```
sqlite3 pizza_orders.db
category_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
category_name TEXT NOT NULL
);
CREATE TABLE pizza (
    pizza_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    pizza_name TEXT NOT NULL,
    pizza_ingredients TEXT NOT NULL,
    category_id TEXT NOT NULL,
    FOREIGN KEY(category_id) REFERENCES category(category_id)
);
CREATE TABLE pizza_size (
    pizza_size_id TEXT NOT NULL PRIMARY KEY,
    pizza_id INTEGER NOT NULL,
    size_id INTEGER NOT NULL,
    unit_price REAL NOT NULL,
    FOREIGN KEY(pizza_id) REFERENCES pizza(pizza_id),
    FOREIGN KEY(size_id) REFERENCES size(size_id)
);
CREATE TABLE orders (
    order_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    order_datetime DATETIME NOT NULL
);
CREATE TABLE order_details (
    order_details_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    order_id INTEGER NOT NULL,
    pizza_size_id TEXT NOT NULL,
    quantity INTEGER NOT NULL,
    FOREIGN KEY(order_id) REFERENCES orders(order_id),
    FOREIGN KEY(pizza_size_id) REFERENCES pizza_size(pizza_size_id)
);
sqlite> SELECT (category_id), COUNT(*) AS (category_count) FROM pizza GROUP BY (category_id)
...>
Parse error: near "(" syntax error
    SELECT (category_id), COUNT(*) AS (category_count) FROM pizza GROUP BY (category_id)
          error here ---^
sqlite> SELECT (category_id), COUNT(*) AS category_count FROM pizza GROUP BY (category_id);
category_id  category_count
-----  -----
1           8
2           9
3           9
4           6
sqlite> SELECT (category_id), COUNT(*) AS category_count FROM pizza GROUP BY (category_id) HAVING COUNT(*) > 6;
category_id  category_count
-----  -----
1           8
2           9
3           9
sqlite>
```

## Задание 2

Получите список всех имен таблиц и их запросов из таблицы sqlite\_schema.



```
sqlite3 pizza_orders.db
sage, Onions, Garlic
30    The Chicken Alfredo Pizza      Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese,  4      Chicken
Alfredo Sauce
31    The Pepperoni, Mushroom, and Peppers Pizza  Pepperoni, Mushrooms, Green Peppers           1      Classic
32    The Brie Carre Pizza          Brie Carre Cheese, Prosciutto, Caramelized Onions, Pears, Th  3      Supreme
yame, Garlic
sqlite> .shema
Error: unknown command or invalid arguments: "shema". Enter ".help" for help
sqlite> .schema
CREATE TABLE size (
    size_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    size_name TEXT NOT NULL
);
CREATE TABLE sqlite_sequence(name,seq);
CREATE TABLE category (
    category_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    category_name TEXT NOT NULL
);
CREATE TABLE pizza (
    pizza_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    pizza_name TEXT NOT NULL,
    pizza_ingredients TEXT NOT NULL,
    category_id TEXT NOT NULL,
    FOREIGN KEY(category_id) REFERENCES category(category_id)
);
CREATE TABLE pizza_size (
    pizza_size_id TEXT NOT NULL PRIMARY KEY,
    pizza_id INTEGER NOT NULL,
    size_id INTEGER NOT NULL,
    unit_price REAL NOT NULL,
    FOREIGN KEY(pizza_id) REFERENCES pizza(pizza_id),
    FOREIGN KEY(size_id) REFERENCES size(size_id)
);
CREATE TABLE orders (
    order_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    order_datetime DATETIME NOT NULL
);
CREATE TABLE order_details (
    order_details_id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    order_id INTEGER NOT NULL,
    pizza_size_id TEXT NOT NULL,
    quantity INTEGER NOT NULL,
    FOREIGN KEY(order_id) REFERENCES orders(order_id),
    FOREIGN KEY(pizza_size_id) REFERENCES pizza_size(pizza_size_id)
);
sqlite>
```

### Задание 3

Получите перечень названий пицц и их ингредиентов.

```
sqlite3 pizza_orders.db
2      9
3      9
sqlite> SELECT (pizza_name), (pizza_ingredients) FROM pizza;
pizza_name
-----
The Hawaiian Pizza           Sliced Ham, Pineapple, Mozzarella Cheese
The Classic Deluxe Pizza     Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon
The Five Cheese Pizza        Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Romano Cheese, Blue Cheese, Garlic
The Italian Supreme Pizza    Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives, Garlic
The Mexicana Pizza          Tomatoes, Red Peppers, Jalapeno Peppers, Red Onions, Cilantro, Corn, Chipotle Sauce, Garlic
The Thai Chicken Pizza       Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce
The Prosciutto and Arugula Pizza Prosciutto di San Daniele, Arugula, Mozzarella Cheese
The Barbecue Chicken Pizza   Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce
The Greek Pizza              Kalamata Olives, Feta Cheese, Tomatoes, Garlic, Beef Chuck Roast, Red Onions
The Spinach Supreme Pizza   Spinach, Red Onions, Pepperoni, Tomatoes, Artichokes, Kalamata Olives, Garlic, Asiago Cheese
The Green Garden Pizza       Spinach, Mushrooms, Tomatoes, Green Olives, Feta Cheese
The Italian Capocollo Pizza Capocollo, Red Peppers, Tomatoes, Goat Cheese, Garlic, Oregano
The Spicy Italian Pizza     Capocollo, Tomatoes, Goat Cheese, Artichokes, Peperoncini verde, Garlic
The Spinach Pesto Pizza     Spinach, Artichokes, Tomatoes, Sun-dried Tomatoes, Garlic, Pesto Sauce
The Vegetables + Vegetables Pizza
Mushrooms, Tomatoes, Red Peppers, Green Peppers, Red Onions, Zucchini, Spinach, Garlic
The Southwest Chicken Pizza  Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers, Corn, Cilantro, Chipotle Sauce
```

## Задание 4

Покажите какие пиццы являются или вегетарианскими (“Veggie”) или куриными (“Chicken”). Также укажите перечень ингредиентов.

```
sqlite> SELECT c.category_name, p.pizza_ingredients FROM pizza p WHERE c.category_name == 'Veggie' OR c.category_name == 'Chicken' LEFT JOIN category c USING (category_id);
Parse error: near "LEFT": syntax error or syntax error c USING (category_id);
      _name == 'Veggie' OR c.category_name == 'Chicken' LEFT JOIN category c USING (
          error here ----^
sqlite> SELECT c.category_name, p.pizza_ingredients FROM pizza p LEFT JOIN category c USING (category_id) WHERE (c.category_name == 'Veggie' OR c.category_name == 'Chicken');
category_name pizza_ingredients
-----
Veggie    Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Ro
mono Cheese, Blue Cheese, Garlic
Veggie    Tomatoes, Red Peppers, Jalapeno Peppers, Red Onions, Cilantr
o, Corn, Chipotle Sauce, Garlic
Chicken   Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli
Sauce
Chicken   Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red
Onions, Barbecue Sauce
Veggie    Spinach, Mushrooms, Tomatoes, Green Olives, Feta Cheese
Veggie    Spinach, Artichokes, Tomatoes, Sun-dried Tomatoes, Garlic, P
esto Sauce
Veggie    Mushrooms, Tomatoes, Red Peppers, Green Peppers, Red Onions,
Zucchini, Spinach, Garlic
Chicken   Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers
,Corn, Cilantro, Chipotle Sauce
Chicken   Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fonti
na Cheese, Gouda Cheese
Chicken   Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce
Veggie    Ricotta Cheese, Gorgonzola Picante Cheese, Mozzarella Chees
e, Parmigiano Reggiano Cheese, Garlic
Veggie    Eggplant, Artichokes, Tomatoes, Zucchini, Red Peppers, Garli
c, Pesto Sauce
Veggie    Spinach, Artichokes, Kalamata Olives, Sun-dried Tomatoes, Fe
ta Cheese, Plum Tomatoes, Red Onions
Veggie    Spinach, Mushrooms, Red Onions, Feta Cheese, Garlic
Chicken   Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese,
Alfredo Sauce
sqlite>
```

## Задание 5

Какие пиццы содержат в себе моцареллу (“Mozzarella Cheese”). Также среди атрибутов укажите ингредиенты и названия категорий.

```
sqlite3 pizza_orders.db
    ppers, Garlic
Veggie    Eggplant, Artichokes, Tomatoes, Zucchini, Red Peppers, Garlic, Pesto Sauce
Veggie    Spinach, Artichokes, Kalamata Olives, Sun-dried Tomatoes, Feta Cheese, Plum Tomatoes, Red Onions
Supreme   Genoa Salami, Capocollo, Pepperoni, Tomatoes, Asiago Cheese, Garlic
Veggie    Spinach, Mushrooms, Red Onions, Feta Cheese, Garlic
Supreme   Coarse Sicilian Salami, Tomatoes, Green Olives, Luganega Sage, Onions, Garlic
Chicken   Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese, Alfredo Sauce
Classic   Pepperoni, Mushrooms, Green Peppers
Supreme   Brie Carré Cheese, Prosciutto, Caramelized Onions, Pears, Thyme, Garlic
sqlite> SELECT c.category_name, p.pizza_ingredients FROM pizza p LEFT JOIN category c USING (category_id) WHERE (p.pizza_ingredients == 'Mozzarella Cheese');
sqlite> SELECT c.category_name, p.pizza_ingredients FROM pizza p LEFT JOIN category c USING (category_id) WHERE (p.pizza_ingredients LIKE '%Mozzarella Cheese%');
category_name pizza_ingredients
-----
Veggie    Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Romano Cheese, Blue Cheese, Garlic
Classic   Mozzarella Cheese, Pepperoni
sqlite> SELECT c.category_name, p.pizza_ingredients FROM pizza p LEFT JOIN category c USING (category_id) WHERE (p.pizza_ingredients LIKE '%Mozzarella Cheese%');
category_name pizza_ingredients
-----
Classic   Sliced Ham, Pineapple, Mozzarella Cheese
Veggie    Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Romano Cheese, Blue Cheese, Garlic
Supreme   Prosciutto di San Daniele, Arugula, Mozzarella Cheese
Classic   Mozzarella Cheese, Pepperoni
Supreme   Soppressata Salami, Fontina Cheese, Mozzarella Cheese, Mushrooms, Garlic
Veggie    Ricotta Cheese, Gorgonzola Picante Cheese, Mozzarella Cheese, Parmigiano Reggiano Cheese, Garlic
sqlite>
```

## Задание 6

Выведите полный список номеров заказов, которые были сделаны в промежутке с начала апреля 2015 года включительно по август 2015 года не включительно с 13:00 по 17:00.

```
ASC LIMIT 20;
order_id datetime(order_datetime)
-----
5388 2015-04-01 13:12:00
5389 2015-04-01 13:32:58
5390 2015-04-01 13:35:10
5391 2015-04-01 13:39:52
5392 2015-04-01 13:58:04
5393 2015-04-01 13:59:22
5394 2015-04-01 14:05:26
5395 2015-04-01 14:12:09
5396 2015-04-01 14:41:29
5397 2015-04-01 14:58:56
5398 2015-04-01 15:11:01
5399 2015-04-01 15:12:18
5400 2015-04-01 15:35:16
5401 2015-04-01 15:42:42
5402 2015-04-01 15:54:54
5403 2015-04-01 16:13:54
5404 2015-04-01 16:19:31
5405 2015-04-01 16:25:02
5406 2015-04-01 16:25:54
5407 2015-04-01 16:38:26
sqlite> SELECT order_id, datetime(order_datetime) FROM orders WHERE date (order_datetime) BETWEEN date('2015-04-01')
AND date ('2015-07-30') AND time (order_datetime) BETWEEN time ('13:00') AND time('17:00') ORDER BY datetime (order_datetime)
DESC LIMIT 20;
order_id datetime(order_datetime)
-----
12635 2015-07-30 16:53:12
12634 2015-07-30 16:42:33
12633 2015-07-30 16:30:24
12632 2015-07-30 16:27:52
12631 2015-07-30 16:19:11
12630 2015-07-30 16:09:37
12629 2015-07-30 16:03:25
12628 2015-07-30 15:26:27
12627 2015-07-30 15:03:56
12626 2015-07-30 14:28:23
12625 2015-07-30 14:19:14
12624 2015-07-30 14:17:44
12623 2015-07-30 14:11:46
12622 2015-07-30 14:04:35
12621 2015-07-30 14:03:39
12620 2015-07-30 13:54:14
12619 2015-07-30 13:43:11
12618 2015-07-30 13:41:47
12617 2015-07-30 13:33:32
12616 2015-07-30 13:27:05
sqlite>
```

## Задание 7

Выведите номера заказов в порядке убывания количества купленных пицц.

Ограничьте вывод 10-ю заказами. (1 балл)

sqlite> SELECT * FROM order_details ORDER BY quantity DESC LIMIT 10;			
order_details_id	order_id	pizza_size_id	quantity
11977	5264	big_meat_s	4
18876	8286	big_meat_s	4
35497	15674	cali_ckn_l	4
184	78	spicy_ital_l	3
342	144	bbq_ckn_m	3
903	394	pepperoni_m	3
5895	2612	sicilian_m	3
7105	3136	sicilian_m	3
16831	7404	big_meat_s	3
18318	8040	thai_ckn_l	3

## Задание 8

Получите дату и время 10-ти заказов, в которых было куплено больше всего пицц. Упорядочьте записи по убыванию количества купленных позиций, по возрастанию даты и затем времени в лексикографическом порядке. (1 балла)

```
sqlite> SELECT order_details_id, datetime(order_datetime), quantity FROM order_details LEFT JOIN orders USING(order_id) ORDER BY quantity DESC, datetime (order_datetime) ASC LIMIT 10;
order_details_id  datetime(order_datetime)  quantity
-----  -----
11977            2015-03-30 13:24:35      4
18876            2015-05-19 12:42:46      4
35497            2015-09-19 14:16:35      4
184              2015-01-02 12:28:14      3
342              2015-01-03 13:44:28      3
903              2015-01-07 14:02:18      3
5895             2015-02-13 13:43:11      3
7105             2015-02-22 12:39:19      3
16831             2015-05-04 18:44:26      3
18318             2015-05-15 14:13:27      3
```

## Задание 9

Получите полное меню ресторана и цены на каждую позицию. В запросе должны быть отражены название, размер, стоимость, категория пиццы и ингредиенты, из которых она изготовлена. (1 балл)

size_name	unit_price	category_name	pizza_ingredients
M	13.25	Classic	Sliced Ham, Pineapple, Mozzarella Cheese
M	16.0	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon
L	18.5	Veggie	Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Romano Cheese, Blue Cheese, Garlic
L	20.75	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives, Garlic
M	16.0	Veggie	Tomatoes, Red Peppers, Jalapeno Peppers, Red Onions, Cilantro, Corn, Chipotle Sauce, Garlic
L	20.75	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce
M	16.5	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives, Garlic
L	20.75	Supreme	Prosciutto di San Daniele, Arugula, Mozzarella Cheese
S	12.75	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce
S	12.0	Classic	Kalamata Olives, Feta Cheese, Tomatoes, Garlic, Beef Chuck Roast, Red Onions
S	12.5	Supreme	Spinach, Red Onions, Pepperoni, Tomatoes, Artichokes, Kalamata Olives, Garlic, Asiago Cheese
S	12.0	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon
S	12.0	Veggie	Spinach, Mushrooms, Tomatoes, Green Olives, Feta Cheese
L	20.5	Classic	Capocollo, Red Peppers, Tomatoes, Goat Cheese, Garlic, Oregano
S	12.5	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives, Garlic
S	12.0	Veggie	Tomatoes, Red Peppers, Jalapeno Peppers, Red Onions, Cilantro, Corn, Chipotle Sauce, Garlic
L	20.75	Supreme	Capocollo, Tomatoes, Goat Cheese, Artichokes, Peperoncini verde, Garlic

size_name	unit_price	category_name	pizza_ingredients
L	20.75	Veggie	Spinach, Artichokes, Tomatoes, Sun-dried Tomatoes, Garlic, Pesto Sauce
S	12.0	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Peppers, Red Onions, Zucchini, Spinach, Garlic
L	20.25	Veggie	Tomatoes, Red Peppers, Jalapeno Peppers, Red Onions, Cilantro, Corn, Chipotle Sauce, Garlic
L	20.75	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers, Corn, Cilantro, Chipotle Sauce
L	20.75	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce
L	20.75	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
M	16.75	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
L	15.25	Classic	Mozzarella Cheese, Pepperoni
S	12.75	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
L	20.75	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce
S	12.0	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage
L	20.75	Supreme	Soppressata Salami, Fontina Cheese, Mozzarella Cheese, Mushrooms, Garlic
L	17.95	Veggie	Ricotta Cheese, Gorgonzola Piccante Cheese, Mozzarella Cheese, Parmigiano Reggiano Cheese, Garlic
S	12.0	Classic	Tomatoes, Anchovies, Green Olives, Red Onions, Garlic
M	16.25	Supreme	Cervelat Salami, Pancetta, Tomatoes, Red Onions, Friggitello Peppers, Garlic
M	14.75	Veggie	Ricotta Cheese, Gorgonzola Piccante Cheese, Mozzarella Cheese, Parmigiano Reggiano Cheese, Garlic
S	12.75	Veggie	Eggplant, Artichokes, Tomatoes, Zucchini, Red Peppers, Garlic, Pesto Sauce
M	16.0	Veggie	Spinach, Artichokes, Kalamata Olives, Sun-dried Tomatoes, Feta Cheese, Plum Tomatoes, Red Onions

## Задание 10

Выведите количество раз, когда каждая позиция меню (пицца и размер) была куплена не в единственном экземпляре (quantity != 1) за весь промежуток времени. (1 балл)

pizza_name	size_name	quantity
The Barbecue Chicken Pizza	L	56
The Big Meat Pizza	S	95
The Brie Carre Pizza	S	10
The Calabrese Pizza	L	10
The California Chicken Pizza	M	66
The Chicken Alfredo Pizza	L	7
The Chicken Pesto Pizza	L	12
The Classic Deluxe Pizza	M	34
The Five Cheese Pizza	L	49
The Four Cheese Pizza	L	52
The Greek Pizza	M	14
The Green Garden Pizza	M	10
The Hawaiian Pizza	S	51
The Italian Capocollo Pizza	L	23
The Italian Supreme Pizza	M	35
The Italian Vegetables Pizza	S	6
The Mediterranean Pizza	M	11
The Mexicana Pizza	L	28
The Napolitana Pizza	L	13
The Pepper Salami Pizza	M	24
The Pepperoni Pizza	M	48
The Pepperoni, Mushroom, and Peppers Pizza	S	17
The Prosciutto and Arugula Pizza	L	28
The Sicilian Pizza	S	49
The Soppressata Pizza	L	4
The Southwest Chicken Pizza	L	32
The Spicy Italian Pizza	L	35
The Spinach Pesto Pizza	L	13
The Spinach Supreme Pizza	M	10
The Spinach and Feta Pizza	L	14
The Thai Chicken Pizza	L	55
The Vegetables + Vegetables Pizza	L	16

## Задание 11

Получите полную таблицу транзакций и детализацию покупок за все время наблюдения (соединение всех таблиц в одну). Отдельными столбцами выведите дату покупки и время покупки, а также полную стоимость позиции, исходя из расчета на количество купленных товаров (total\_price). (2 балла)

```
sqlite3 pizza_orders.db
2015-01-01 13:02:59      20.75
2015-01-01 13:02:59      16.75
2015-01-01 13:02:59      15.25
2015-01-01 13:04:41      20.75
sqlite> SELECT datetime(order_datetime), quantity
* unit_price AS total_price FROM order_details LEFT JOIN orders USING (order_id) LEFT JOIN pizza_size USING (pizza_size_id) LIMIT 40;
datetime (order_datetime)    total_price
----- -----
2015-01-01 11:38:36      13.25
2015-01-01 11:57:40      16.0
2015-01-01 11:57:40      18.5
2015-01-01 11:57:40      20.75
2015-01-01 11:57:40      16.0
2015-01-01 11:57:40      20.75
2015-01-01 12:12:28      16.5
2015-01-01 12:12:28      20.75
2015-01-01 12:16:31      16.5
2015-01-01 12:21:30      16.5
2015-01-01 12:29:36      12.75
2015-01-01 12:29:36      12.0
2015-01-01 12:50:37      12.5
2015-01-01 12:51:37      12.5
2015-01-01 12:52:01      12.0
2015-01-01 12:52:01      12.0
2015-01-01 12:52:01      20.5
2015-01-01 12:52:01      20.75
2015-01-01 12:52:01      12.5
2015-01-01 12:52:01      12.0
2015-01-01 12:52:01      20.75
2015-01-01 12:52:01      20.75
2015-01-01 12:52:01      12.0
2015-01-01 13:00:15      20.25
2015-01-01 13:00:15      20.75
2015-01-01 13:02:59      20.75
2015-01-01 13:02:59      20.75
2015-01-01 13:02:59      16.75
2015-01-01 13:02:59      15.25
2015-01-01 13:04:41      20.75
2015-01-01 13:04:41      12.75
2015-01-01 13:04:41      20.75
2015-01-01 13:04:41      16.5
2015-01-01 13:11:55      20.25
2015-01-01 13:14:19      12.0
2015-01-01 13:33:00      12.0
2015-01-01 13:33:00      18.5
2015-01-01 13:33:00      20.75
2015-01-01 13:33:00      12.0
2015-01-01 13:34:07      17.95
sqlite>
```

## Задание 12

На полученную таблицу из задания 11 создайте представление с помощью команды CREATE VIEW "новое\_имя\_представления" AS ("ваш запрос"). (1 балл)

```
sqlite> CREATE VIEW total_price AS SELECT datetime (order_datetime) as date_time, quantity * unit_price as total_price FROM order_details LEFT JOIN orders USING (order_id) LEFT JOIN pizza_size USING (pizza_size_id);
sqlite> SELECT * FROM total_price LIMIT 40;
date_time          total_price
-----  -----
2015-01-01 11:38:36 13.25
2015-01-01 11:57:40 16.0
2015-01-01 11:57:40 18.5
2015-01-01 11:57:40 20.75
2015-01-01 11:57:40 16.0
2015-01-01 11:57:40 20.75
2015-01-01 12:12:28 16.5
2015-01-01 12:12:28 20.75
2015-01-01 12:16:31 16.5
2015-01-01 12:21:30 16.5
2015-01-01 12:29:36 12.75
2015-01-01 12:29:36 12.0
2015-01-01 12:50:37 12.5
2015-01-01 12:51:37 12.5
2015-01-01 12:52:01 12.0
2015-01-01 12:52:01 12.0
2015-01-01 12:52:01 20.5
2015-01-01 12:52:01 20.75
2015-01-01 12:52:01 12.5
2015-01-01 12:52:01 12.0
2015-01-01 12:52:01 20.75
2015-01-01 12:52:01 12.0
2015-01-01 13:00:15 20.25
2015-01-01 13:00:15 20.75
2015-01-01 13:02:59 20.75
2015-01-01 13:02:59 20.75
2015-01-01 13:02:59 16.75
2015-01-01 13:02:59 15.25
2015-01-01 13:04:41 20.75
2015-01-01 13:04:41 12.75
2015-01-01 13:04:41 20.75
2015-01-01 13:04:41 16.5
2015-01-01 13:11:55 20.25
2015-01-01 13:14:19 12.0
2015-01-01 13:33:00 12.0
2015-01-01 13:33:00 18.5
2015-01-01 13:33:00 20.75
2015-01-01 13:33:00 12.0
2015-01-01 13:34:07 17.95
```

### Задание 13

Подсчитать полный доход от разных категорий пицц за весь период наблюдения. Отсортируйте результат в порядке убывания дохода. Округлите результат подсчета дохода до второго знака после запятой. (1 балл)

```
sqlite> SELECT category_name, round(sum(quantity * unit_price), 2) AS total_price FROM category LEFT JOIN pizza USING (category_id) LEFT JOIN pizza_size USING (pizza_id) LEFT JOIN order_details USING(pizza_size_id) GROUP BY category_name;
category_name    total_price
-----  -----
Chicken          195919.5
Classic          220053.1
Supreme          208197.0
Veggie           193690.45
```

### Задание 14

Пиццы какого размера продавались больше всего за 3-ий и за 4-ый квартал 2015 года? (1 балл)

```
sqlite> SELECT size_name, count (*) AS count FROM order_details LEFT JOIN orders USING (order_id) LEFT JOIN pizza_size USING(pizza_size_id) LEFT JOIN size USING (size_id)
WHERE date(order_datetime) BETWEEN date('2015-07-01') AND date('2015-12-31') GROUP BY size_name;
size_name    count
-----  -----
L            9132
M            7611
S            7050
XL           251
XXL          11
```