

1. Создать новую базу данных и перейти в нее.

```
CREATE DATABASE Restmenu
```

```
Query id: 73bc3c3e-39ee-43b1-a126-cedce5064981
```

```
Ok.
```

```
0 rows in set. Elapsed: 0.008 sec.
```

```
ch1 :) show databases
```

```
SHOW DATABASES
```

```
Query id: b2803c49-9309-4aed-b8cf-8e6aec73526d
```

	name
1.	INFORMATION_SCHEMA
2.	Restmenu
3.	default
4.	information_schema
5.	system

```
5 rows in set. Elapsed: 0.007 sec.
```

```
ch1 :) use Restmenu
```

```
USE Restmenu
```

```
Query id: 9d8dc182-4524-4c15-b8bc-9042a76054cd
```

```
Ok.
```

```
0 rows in set. Elapsed: 0.020 sec.
```

```
ch1 :) █
```

2. Создать таблицу для бизнес-кейса "Меню ресторана" с 5+ полями, наполнить ее данными. Обязательно указывать, где нужно, модификаторы Nullable, LowCardinality и пр. Добавить комментарии.

```
ch1 :) CREATE TABLE Menu
(
  MenuID Int32 COMMENT 'Int32 так как будут только целые числа',
  MenuItem String COMMENT 'String так как идет просто наименование блюда',
  Category String COMMENT 'String так как просто наименование категории',
  Description String COMMENT 'String так как перечисление состава',
  Price Float32 COMMENT 'Float32 так как необходима дробная часть, можно конечно использовать int, просто умножив на 100 и потом поделив, но показалось перебор',
  Image String COMMENT 'String имеется ввиду как бы ссылка на картинку'
)
Engine MergeTree ORDER BY MenuID

CREATE TABLE Menu
(
  MenuID Int32 COMMENT 'Int32 так как будут только целые числа',
  MenuItem String COMMENT 'String так как идет просто наименование блюда',
  Category String COMMENT 'String так как просто наименование категории',
  Description String COMMENT 'String так как перечисление состава',
  Price Float32 COMMENT 'Float32 так как необходима дробная часть, можно конечно использовать int, просто умножив на 100 и потом поделив, но показалось перебор',
  Image String COMMENT 'String имеется ввиду как бы ссылка на картинку'
)
ENGINE = MergeTree
ORDER BY MenuID

Query id: df9e3d26-97cb-42a0-b705-55a7bf0bb994

Ok.

0 rows in set. Elapsed: 0.063 sec.

ch1 :) █
```

```
ch1 :) INSERT INTO Menu (*) VALUES (1,'Burger','Fast Food','Juicy beef patty, lettuce, tomato, cheese, and our special sauce on a toasted bun',8.99,'burger.jpg'),(2,'Salad','Health y Options','Mixed greens, cherry tomatoes, cucumber, and balsamic vinaigrette dressing',6.50,'salad.jpg'),(3,'Pasta','Italian','Spaghetti with marinara sauce, topped with parmesan cheese and parsley',12.99,'pasta.jpg'),(4,'Wings','Appetizers','Crispy fried chicken wings with BBQ sauce, served with celery sticks and blue cheese dressing',10.99,'wings.jpg'),(5,'Tacos','Mexican','Soft shell tacos with seasoned beef, lettuce, diced tomatoes, and shredded cheese, served with salsa and sour cream',9.99,'tacos.jpg'),(6,'Fries','Side Dishes','Golden crispy fries served with ketchup and mustard',4.99,'fries.jpg'),(7,'Pizza','Italian','Cheese pizza with tomato sauce, mozzarella cheese, and fresh basil leaves',14.99,'pizz a.jpg'),(8,'Soup','Soup of the Day','Creamy broccoli soup with crusty bread and a side salad',7.99,'soup.jpg'),(9,'Dessert','Cakes','Decadent chocolate lava cake with vanilla ice c ream and caramel sauce',5.99,'cake.jpg'),(10,'Breadsticks','Appetizers','Freshly baked breadsticks with marinara sauce and melted mozzarella cheese',8.99,'breadsticks.jpg'),(11,'Quesadilla','Mexican','Tortilla filled with seasoned beef, cheese, and veggies, served with sour cream and salsa',10.99,'quesadilla.jpg'),(12,'Grilled Chicken','Entrees','Marinated g rilled chicken breast with roasted vegetables and quinoa',15.99,'chicken.jpg'),(13,'Fajitas','Mexican','Sizzling beef or chicken fajitas with sautéed onions, bell peppers, and warm flour tortillas',14.99,'fajitas.jpg'),(14,'Ribs','Appetizers','Fall-off-the-bone tender pork ribs with BBQ sauce, served with coleslaw and cornbread',13.99,'ribs.jpg'),(15,'Tiramisu','Dessert','Italian coffee-soaked ladyfingers with mascarpone cheese and cocoa powder',6.99,'tiramisu.jpg'),(16,'Chicken Wings','Appetizers','Crispy fried chicken wings with buf falo sauce, served with celery sticks and blue cheese dressing',10.99,'wings.jpg'),(17,'Mac and Cheese','Comfort Food','Creamy macaroni and cheese with crispy breadcrumbs and a sid e salad',9.99,'macandcheese.jpg'),(18,'French Fries','Side Dishes','Truffle oil and parmesan cheese-topped fries, served with garlic aioli',7.99,'trufflefries.jpg'),(19,'Soda','Bev erages','Assorted flavors of cold soda, including cola, lemon-lime, and root beer',2.99,'soda.jpg'),(20,'Iced Tea','Beverages','Sweet or unsweet iced tea, served over ice with a le mon slice',1.99,'icedtea.jpg')

INSERT INTO Menu (*) FORMAT Values

Query id: 32173cb8-2edf-4e9e-b60e-02b7013f392f

Ok.

20 rows in set. Elapsed: 0.015 sec.
```

3. Протестировать CRUD на созданной таблице.

```
ch1 :) select * from Menu

SELECT *
FROM Menu

Query id: c7425a2e-b08c-410e-ac2a-a49986dfd1d8
```

	MenuID	MenuItem	Category	Description	Price	Image
1.	1	Burger	Fast Food	Juicy beef patty, lettuce, tomato, cheese, and our special sauce on a toasted bun	8.99	burger.jpg
2.	2	Salad	Healthy Options	Mixed greens, cherry tomatoes, cucumber, and balsamic vinaigrette dressing	6.5	salad.jpg
3.	3	Pasta	Italian	Spaghetti with marinara sauce, topped with parmesan cheese and parsley	12.99	pasta.jpg
4.	4	Wings	Appetizers	Crispy fried chicken wings with BBQ sauce, served with celery sticks and blue cheese dressing	10.99	wings.jpg
5.	5	Tacos	Mexican	Soft shell tacos with seasoned beef, lettuce, diced tomatoes, and shredded cheese, served with salsa and sour cream	9.99	tacos.jpg
6.	6	Fries	Side Dishes	Golden crispy fries served with ketchup and mustard	4.99	fries.jpg
7.	7	Pizza	Italian	Cheese pizza with tomato sauce, mozzarella cheese, and fresh basil leaves	14.99	pizza.jpg
8.	8	Soup	Soup of the Day	Creamy broccoli soup with crusty bread and a side salad	7.99	soup.jpg
9.	9	Dessert	Cakes	Decadent chocolate lava cake with vanilla ice cream and caramel sauce	5.99	cake.jpg
10.	10	Breadsticks	Appetizers	Freshly baked breadsticks with marinara sauce and melted mozzarella cheese	8.99	breadsticks.jpg
11.	11	Quesadilla	Mexican	Tortilla filled with seasoned beef, cheese, and veggies, served with sour cream and salsa	10.99	quesadilla.jpg
12.	12	Grilled Chicken	Entrees	Marinated grilled chicken breast with roasted vegetables and quinoa	15.99	chicken.jpg
13.	13	Fajitas	Mexican	Sizzling beef or chicken fajitas with sautéed onions, bell peppers, and warm flour tortillas	14.99	fajitas.jpg
14.	14	Ribs	Appetizers	Fall-off-the-bone tender pork ribs with BBQ sauce, served with coleslaw and cornbread	13.99	ribs.jpg
15.	15	Tiramisu	Dessert	Italian coffee-soaked ladyfingers with mascarpone cheese and cocoa powder	6.99	tiramisu.jpg
16.	16	Chicken Wings	Appetizers	Crispy fried chicken wings with buffalo sauce, served with celery sticks and blue cheese dressing	10.99	wings.jpg
17.	17	Mac and Cheese	Comfort Food	Creamy macaroni and cheese with crispy breadcrumbs and a side salad	9.99	macandcheese.jpg
18.	18	French Fries	Side Dishes	Truffle oil and parmesan cheese-topped fries, served with garlic aioli	7.99	trufflefries.jpg
19.	19	Soda	Beverages	Assorted flavors of cold soda, including cola, lemon-lime, and root beer	2.99	soda.jpg
20.	20	Iced Tea	Beverages	Sweet or unsweet iced tea, served over ice with a lemon slice	1.99	icedtea.jpg

20 rows in set. Elapsed: 0.021 sec.

```
ch1 :) select * from Menu \G
```

```
SELECT *  
FROM Menu
```

Query id: b7230d92-2e54-4ea3-942b-b812680ad133

Row 1:

MenuID:	1
MenuItem:	Burger
Category:	Fast Food
Description:	Juicy beef patty, lettuce, tomato, cheese, and our special sauce on a toasted bun
Price:	8.99
Image:	burger.jpg

Row 2:

MenuID:	2
MenuItem:	Salad
Category:	Healthy Options
Description:	Mixed greens, cherry tomatoes, cucumber, and balsamic vinaigrette dressing
Price:	6.5
Image:	salad.jpg

Row 3:

MenuID:	3
MenuItem:	Pasta
Category:	Italian

```
ch1 :) select * from Menu where `MenuID` = 19 \G
```

```
SELECT *  
FROM Menu  
WHERE MenuID = 19
```

Query id: eb1b4545-7038-480e-a36d-f377577fe646

Row 1:

MenuID:	19
MenuItem:	Soda
Category:	Beverages
Description:	Assorted flavors of cold soda, including cola, lemon-lime, and root beer
Price:	5.98
Image:	soda.jpg

1 row in set. Elapsed: 0.006 sec.

```
ch1 :)
```

```
ch1 :)
```

```
ch1 :) ALTER TABLE Menu UPDATE `Price` = `Price`*2 where `MenuID`=19
```

```
ALTER TABLE Menu  
(UPDATE Price = Price * 2 WHERE MenuID = 19)
```

Query id: ea183305-794c-438e-b402-7f95f72c3c85

Ok.

0 rows in set. Elapsed: 0.009 sec.

```
ch1 :) select * from Menu where `MenuID` = 19 \G
```

```
SELECT *  
FROM Menu  
WHERE MenuID = 19
```

Query id: 563ec72f-867d-433c-b191-747cc1d558e2

Row 1:

MenuID:	19
MenuItem:	Soda
Category:	Beverages
Description:	Assorted flavors of cold soda, including cola, lemon-lime, and root beer
Price:	11.96
Image:	soda.jpg

1 row in set. Elapsed: 0.009 sec.

```
ch1 :) █
```

```
ch1 :) ALTER TABLE Menu DELETE where `MenuID` = 19
```

```
ALTER TABLE Menu
  (DELETE WHERE MenuID = 19)
```

Query id: cefb5e9b-905d-4910-8e18-d4d2249b955a

Ok.

0 rows in set. Elapsed: 0.006 sec.

```
ch1 :) select * from Menu where `MenuID` = 19 \G
```

```
SELECT *
FROM Menu
WHERE MenuID = 19
```

Query id: be90d979-9f74-4f8f-826e-50cfe80f6af3

Ok.

0 rows in set. Elapsed: 0.006 sec.

```
ch1 :) █
```

4. Добавить несколько новых полей, удалить пару старых.

```
ch1 :) ALTER TABLE Menu DROP COLUMN `add_column`
```

```
ALTER TABLE Menu
  (DROP COLUMN add_column)
```

Query id: 995eaa61-e16a-4226-b9e4-004b82ac2019

Ok.

0 rows in set. Elapsed: 0.019 sec.

```
ch1 :) show create Menu
```

```
SHOW CREATE TABLE Menu
```

Query id: 0ec86f2b-538d-4530-8d0d-9fe090dd4946

```
statement
1. | CREATE TABLE Restmenu.Menu
  (
    'MenuID' Int32 COMMENT 'Int32 так как будут только целые числа',
    'MenuItem' String COMMENT 'String так как идет просто наименование блюда',
    'Category' String COMMENT 'String так как просто наименование категории',
    'Description' String COMMENT 'String так как перечисление состава',
    'Price' Float32 COMMENT 'Float32 так как необходима дробная часть, можно конечно использовать int, просто умножив на 100 и потом поделив, но показалось перебор',
    'Image' String COMMENT 'String имеется ввиду как бы ссылка на картинку'
  )
ENGINE = MergeTree
ORDER BY MenuID
SETTINGS index_granularity = 8192 |
```

1 row in set. Elapsed: 0.008 sec.

```
ch1 :) █
```

```
ALTER TABLE dish
(ADD COLUMN `l_and_h` String MATERIALIZED toString(lowest_price * highest_price))
```

Query id: a0529bc5-7269-456d-aaa2-86c24caea5b2

Ok.

0 rows in set. Elapsed: 0.008 sec.

```
ch1 :) select l_and_h from dish limit 10
```

```
SELECT l_and_h
FROM dish
LIMIT 10
```

Query id: ac8feb53-1e78-4ca8-9d11-e84f6dae1048

	l_and_h
1.	0.08
2.	0.08
3.	0.1
4.	0.25
5.	0
6.	0
7.	0.06
8.	0.06
9.	0
10.	15

10 rows in set. Elapsed: 0.010 sec.

```
ch1 :) █
```

5. Заселектить таблицу (любую) из sample dataset

- <https://clickhouse.com/docs/en/getting-started/example-datasets/menus>.

```
ch1 :) select * from file('Dish.csv') limit 10
```

```
SELECT *
FROM file('Dish.csv')
LIMIT 10
```

Query id: 7239fe22-f39d-4fc6-b1b9-b8dae6f2c7f6

	id	name	description	menus_appeared	times_appeared	first_appeared	last_appeared	lowest_price	highest_price
1.	1	Consomme printaniere royal	NULL	8	8	1897	1927	0.2	0.4
2.	2	Chicken gumbo	NULL	111	117	1895	1960	0.1	0.8
3.	3	Tomato aux croutons	NULL	14	14	1893	1917	0.25	0.4
4.	4	Onion au gratin	NULL	41	41	1900	1971	0.25	1
5.	5	St. Emilion	NULL	66	68	1881	1981	0	18
6.	7	Radishes	NULL	3262	3346	1854	2928	0	25
7.	8	Chicken soup with rice	NULL	48	49	1897	1961	0.1	0.6
8.	9	Clam broth (cup)	NULL	14	16	1899	1962	0.15	0.4
9.	10	Cream of new asparagus, croutons	NULL	2	2	1900	1900	0	0

	id	name	description	menus_appeared	times_appeared	first_appeared	last_appeared	lowest_price	highest_price
10.	11	Clear green turtle	NULL	156	156	1893	1937	0.25	60

10 rows in set. Elapsed: 0.079 sec.

```
ch1 :) █
```

6. Материализовать таблицу из п.5 (в виде таблицы)

```
CREATE TABLE dish_view_out
(
  `id` Int32,
  `name` String,
  `lowest_price` Decimal32(2)
)
ORDER BY id
```

Query id: e1fc62db-3ff8-447d-b826-02dfbf7dd41e

Ok.

0 rows in set. Elapsed: 0.046 sec.

SHOW CREATE TABLE dish_view

Query id: 35efd91c-2f20-47f7-aceb-5d38166b5a2a

```
statement
1. CREATE MATERIALIZED VIEW Restmenu.dish_view TO Restmenu.dish_view_out
(
  `id` UInt32,
  `name` String,
  `lowest_price` Decimal(18, 3)
)
AS SELECT
  id,
  name,
  lowest_price
FROM Restmenu.dish
ORDER BY id ASC
```

1 row in set. Elapsed: 0.015 sec.

ch1 :) **show create** dish_view_out

SHOW CREATE TABLE dish_view_out

Query id: e1e5d527-67db-4b85-9061-7fe71fb7424e

```
statement
1. CREATE TABLE Restmenu.dish_view_out
(
  `id` Int32,
  `name` String,
  `lowest_price` Decimal(9, 2)
)
ENGINE = MergeTree
ORDER BY id
SETTINGS index_granularity = 8192
```

1 row in set. Elapsed: 0.005 sec.

ch1 :) █

```
ch1 :) select * from dish_view_out limit 10
```

```
SELECT *  
FROM dish_view_out  
LIMIT 10
```

Query id: d8db1c00-524e-404e-93cd-ab97283af607

	id	name	lowest_price
1.	1	Consomme printaniere royal	0.2
2.	2	Chicken gumbo	0.1
3.	3	Tomato aux croutons	0.25
4.	4	Onion au gratin	0.25
5.	5	St. Emilion	0
6.	7	Radishes	0
7.	8	Chicken soup with rice	0.1
8.	9	Clam broth (cup)	0.15
9.	10	Cream of new asparagus, croutons	0
10.	11	Clear green turtle	0.25

10 rows in set. Elapsed: 0.040 sec.

```
ch1 :) █
```

7. Поработать с партами. Сделать attach/detach/drop. Добавить данных в первоначально созданную таблицу.

```
ch1 :) insert into dish select * from file('Dish.csv')
```

```
INSERT INTO dish SELECT *  
FROM file('Dish.csv')
```

Query id: 1c8ca330-e648-439b-9059-2f6d58d585ce

Ok.

0 rows in set. Elapsed: 1.141 sec. Processed 428.15 thousand rows, 26.77 MB (375.07 thousand rows/s., 23.45 MB/s.)
Peak memory usage: 81.85 MiB.

```
ch1 :) █
```

```
ch1 :) select count() from dish
```

```
SELECT count()  
FROM dish
```

Query id: 88227277-f95c-4362-9e6c-00e233088d32

1.	<div>count() 428146</div>
----	-------------------------------

1 row in set. Elapsed: 0.009 sec.

```
ch1 :) ALTER TABLE dish DETACH PART 'all_6_6_0'
```

```
ALTER TABLE dish  
  (DETACH PART 'all_6_6_0')
```

Query id: 49220b6f-b95c-48f2-95f1-45c068a054e7

Ok.

0 rows in set. Elapsed: 0.005 sec.

```
ch1 :) select count() from dish
```

```
SELECT count()  
FROM dish
```

Query id: 1b1ed7bc-8dff-48a7-bfb4-7263dcfe584d

	count()
1.	0

1 row in set. Elapsed: 0.011 sec.

```
ch1 :) █
```

```
ch1 :) ALTER TABLE dish ATTACH PART 'all_1_1_0_4'
```

```
ALTER TABLE dish  
  (ATTACH PART 'all_1_1_0_4')
```

Query id: 4602a530-9e91-4dbd-b948-eecddca2691e

Ok.

0 rows in set. Elapsed: 0.037 sec.

```
ch1 :) select count() from dish
```

```
SELECT count()  
FROM dish
```

Query id: a28485af-1f4e-40d4-818e-0da8492d045b

	count()
1.	428146

1 row in set. Elapsed: 0.008 sec.

```
ch1 :) █
```