

ЗЕРТХАНАЛЫҚ ЖҰМЫСТЫ орындауға арналған ӘДІСТЕМЕЛІК НҰСҚАУЛЫҚ

Тақырыбы: Linux дистрибутивінде мәліметтер қорын басқару

Жұмыстың мақсаты: Linux дистрибутивінде мәліметтер қорын (MySQL/MariaDB) басқаруды үйрену

Жұмыстың орындалу қадамы:

- 1) MariaDB МҚБЖ-ін орнату және конфигурациялау;
- 2) MariaDB МҚБЖ-не SQL командаларын (DML, DDL, TCL, DCL) қолдану.
- 3) Кестелерді біріктіру командаларын (INNER JOIN, OUTER JOIN, CROSS JOIN) орындау.

SQL командалары:

- **DML** (SELECT, INSERT, UPDATE, DELETE, MERGE);
- **DDL** (CREATE, ALTER, DROP, RENAME, TRUNCATE);
- **TCL** (COMMIT, ROLLBACK, SAVEPOINT);
- **DCL** (GRANT, REVOKE).

1-қадам: MariaDB МҚБЖ-ін орнату және конфигурациялау

MariaDB/MySQL – Мәліметтер қорын басқару жүйесі (МҚБЖ)

Package атауы: **MariaDB-server**

Daemon (service) атауы: **mariadb**

Port нөмірі: **3306**

MariaDB МҚБЖ-ін орнату

Repository тізімінен пакетті іздеу

```
student@centos7~$ yum search mariadb-server
mariadb-server.x86_64
```

Пакет (орнатылмаған) туралы ақпаратты көру

```
student@centos7~$ yum info mariadb-server
```

```
Name      : mariadb-server
Arch      : x86_64
Epoch    : 1
Version   : 5.5.68
Release   : 1.el7
Size      : 11 M
Repo      : base/7/x86_64
Summary   : The MariaDB server and related files
URL       : http://mariadb.org
License   : GPLv2 with exceptions and LGPLv2 and BSD
```

<https://en.wikipedia.org/wiki/MariaDB>

MariaDB

System software

MariaDB is a community-developed, commercially supported fork of the MySQL relational database management system, intended to remain free and open-source software under the GNU General Public License. [Wikipedia](#)

Initial release date: October 29, 2009

License: GPLv2, LGPLv2.1 (client libraries)

Developer(s): MariaDB plc, MariaDB Foundation

Operating system: Linux, Windows, macOS

Preview release: 11.1.0 (27 March 2023; 21 days ago)

Stable release: 10.11.2 / 16 February 2023; 60 days ago

Programming languages: C, C++, Perl

MariaDB пакетінің Repository сілтемесі

<https://mariadb.org/download/?t=repo-config>

1. Choose a Distro

- SLES
- openSUSE
- Arch Linux
- Mageia
- Fedora
- **CentOS**
- RedHat
- Mint
- Ubuntu
- Debian

2. Choose a Release

- CentOS 8 (ppc64le)
- CentOS 8 (x86_64)
- CentOS 7 (ppc64le)
- CentOS 7 (ppc64)
- **CentOS 7 (x86_64)**
- CentOS 6 (x86_64)
- CentOS 6 (x86)

3. Choose a Version

- **10.5 [Stable]**
- 10.4 [Old Stable]
- 10.3 [Old Stable]
- 10.2 [Old Stable]

MariaDB пакетінің жаңа нұсқасын, CentOS Linux дистрибутивінің repository тізіміне қосу

```
student@centos7~$ sudo vim /etc/yum.repos.d/MariaDB.repo
```

```
[mariadb]
```

```
name = MariaDB
```

```
baseurl =
```

```
https://mirrors.aliyun.com/mariadb/yum/10.5/centos/$releasever/$basearch
```

```
module_hotfixes = 1
```

```
gpgkey = https://mirrors.aliyun.com/mariadb/yum/RPM-GPG-KEY-MariaDB
```

```
gpgcheck = 1
```

Shift+ZZ

Ctrl+L

```
student@centos7~$ ls /etc/yum.repos.d/
```

```
CentOS-Base.repo      CentOS-fasttrack.repo  CentOS-Vault.repo
CentOS-CR.repo        CentOS-Media.repo      CentOS-x86_64-kernel.repo
CentOS-Debuginfo.repo CentOS-Sources.repo     MariaDB.repo
```

Repository тізімінен MariaDB пакетінің (орнатылмаған) нұсқасын анықтау

```
student@centos7~$ yum info mariadb-server
```

```
Name      : MariaDB-server
Arch      : x86_64
Version   : 10.5.19
Release   : 1.el7.centos
Size      : 26 M
Repo      : mariadb/7/x86_64
Summary   : MariaDB database server binaries
URL       : http://mariadb.org
License   : GPLv2
Description : MariaDB: a very fast and robust SQL database server
```

MariaDB пакетін орнату

```
student@centos7~$ sudo yum install -y MariaDB-server MariaDB-client
```

```
Complete!
```

Пакеттің орнатылған немесе орнатылмағанын анықтау

```
student@centos7~$ rpm -q MariaDB-server
```

```
MariaDB-server-10.5.9-1.el7.centos.x86_64
```

Орнатылған пакеттердің тізімінен іздеу

```
student@centos7~$ rpm -qa | grep -i mariadb
```

```
MariaDB-common-10.5.9-1.el7.centos.x86_64
MariaDB-client-10.5.9-1.el7.centos.x86_64
MariaDB-server-10.5.9-1.el7.centos.x86_64
MariaDB-compatible-10.5.9-1.el7.centos.x86_64
```

Пакет (орнатылған) туралы ақпаратты көру

```
student@centos7~$ rpm -qi MariaDB-server
```

```
Name      : MariaDB-server
Version   : 10.5.9
Release   : 1.el7.centos
Architecture: x86_64
Install Date: Sat 13 Mar 2021 07:33:12 PM +06
Group     : Applications/Databases
Size      : 135961796
License   : GPLv2
```

```
student@centos7~$ sudo systemctl status mariadb
```

```
student@centos7~$ sudo systemctl start mariadb
```

```
student@centos7~$ sudo systemctl is-enabled mariadb
student@centos7~$ sudo systemctl enable mariadb
```

```
student@centos7~$ ps -ef | grep mariadb
```

```
mysql      1792      1  0 13:03 ?        00:00:00 /usr/sbin/mariadbd
```

```
student@centos7~$ sudo yum install -y net-tools
student@centos7~$ netstat -tulpn
```

Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
tcp	0	0	0.0.0.0:22	0.0.0.0:*	LISTEN
tcp	0	0	127.0.0.1:25	0.0.0.0:*	LISTEN
tcp6	0	0	:::8080	:::*	LISTEN
tcp6	0	0	:::80	:::*	LISTEN
tcp6	0	0	:::22	:::*	LISTEN
tcp6	0	0	:::1:25	:::*	LISTEN
tcp6	0	0	:::443	:::*	LISTEN
tcp6	0	0	:::3306	:::*	LISTEN

```
student@centos7~$ mysql -V
```

```
mysql Ver 15.1 Distrib 10.5.19-MariaDB, for Linux (x86_64) using readline 5.1
```

```
student@centos7~$ mysql
```

```
Welcome to the MariaDB monitor
```

```
MariaDB> exit
```

MariaDB МҚБЖ-ін конфигурациялау

```
student@centos7~$ sudo mysql_secure_installation
```

```
Enter current password for root (enter for none): ENTER
```

```
Switch to unix_socket authentication [Y/n] Y
```

```
Change the root password? [Y/n] Y
```

```
New password: P@s$w0rd
```

```
Re-enter new password: P@s$w0rd
```

```
Remove anonymous users? [Y/n] Y
```

```
Disallow root login remotely? [Y/n] Y
```

```
Remove test database and access to it? [Y/n] Y
```

```
Reload privilege tables now? [Y/n] Y
```

```
student@centos7~$ sudo systemctl restart mariadb
```

```
student@centos7~$ sudo mysql -u root -p
```

```
Enter password: P@s$w0rd
```

```
MariaDB> SELECT user,plugin,host FROM mysql.user;
```

User	plugin	Host
mariadb.sys	mysql_native_password	localhost
root	mysql_native_password	localhost
mysql	mysql_native_password	localhost

MariaDB> CREATE USER `admin@localhost` IDENTIFIED BY 'P@s\$w0rd';

MariaDB> SELECT user,plugin,host FROM mysql.user;

User	plugin	Host
mariadb.sys	mysql_native_password	localhost
root	mysql_native_password	localhost
mysql	mysql_native_password	localhost
admin	mysql_native_password	localhost

MariaDB> GRANT ALL PRIVILEGES ON *.* TO `admin@localhost` WITH GRANT OPTION;

MariaDB> FLUSH PRIVILEGES;

MariaDB> SHOW GRANTS FOR `admin@localhost`;

```
GRANT ALL PRIVILEGES ON *.* TO `admin`@`localhost`
```

MariaDB> exit

student@centos7~\$ mysql -u `admin` -p

Enter password: P@s\$w0rd

MariaDB> SHOW DATABASES;

Database
information_schema
mysql
performance_schema

MariaDB> USE mysql;

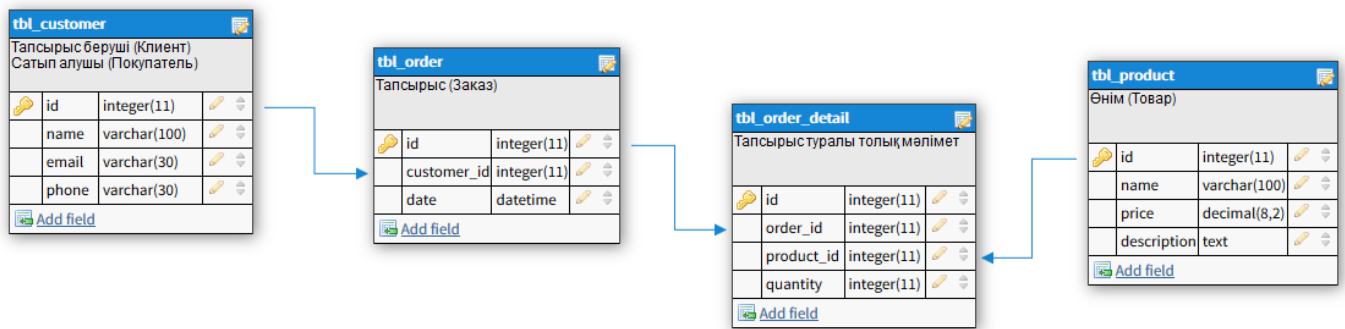
MariaDB> SHOW TABLES;

Tables_in_mysql
column_stats
columns_priv
db
event

MariaDB> exit

2-қадам: Мәліметтер қорын жобалау (Database Design)

<https://app.dbdesigner.net/>



3-қадам: Мәлімет қорын (Database) құру

```
student@centos7~$ mysql -u admin -p
Enter password: P@s$w0rd
```

```
MariaDB> CREATE DATABASE db_store;
Query OK, 1 row affected (0.00 sec)
```

```
MariaDB> SHOW DATABASES;
```

```
+-----+
| Database |
+-----+
| db_store |
| information_schema |
| mysql |
| performance_schema |
+-----+
```

4-қадам: Кесте (Table) құру

```
MariaDB> USE db_store;
Database changed
```

```
MariaDB> CREATE TABLE tbl_customer (
  id INT UNSIGNED NOT NULL AUTO_INCREMENT,
  name VARCHAR(100) NOT NULL,
  email VARCHAR(30) NOT NULL UNIQUE,
  phone VARCHAR(30) NOT NULL,
  PRIMARY KEY (id)
) ENGINE = InnoDB CHARSET=utf8 COLLATE utf8_general_ci AUTO_INCREMENT
= 101;
```

```
MariaDB> SHOW TABLES;
```

```
+-----+
| Tables_in_db_store |
+-----+
| tbl_customer |
+-----+
```

```
MariaDB> DESCRIBE tbl_customer;
немеce
```

```
MariaDB> SHOW COLUMNS IN tbl_customer;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
name	varchar(100)	NO		NULL	
email	varchar(30)	NO	UNI	NULL	
phone	varchar(30)	NO		NULL	

```
MariaDB> CREATE TABLE tbl_order (
id INT UNSIGNED NOT NULL AUTO_INCREMENT,
customer_id INT UNSIGNED NOT NULL,
date DATETIME NOT NULL COMMENT 'дата заказа',
PRIMARY KEY (id)
) ENGINE = InnoDB CHARSET=utf8 COLLATE utf8_general_ci AUTO_INCREMENT
= 5001;
```

```
MariaDB> SHOW TABLES;
```

```
MariaDB> DESCRIBE tbl_order;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
customer_id	int(10) unsigned	NO		NULL	
date	datetime	NO		NULL	

```
MariaDB> CREATE TABLE tbl_product (
id INT UNSIGNED NOT NULL AUTO_INCREMENT COMMENT 'код товара',
name VARCHAR(100) NOT NULL COMMENT 'название товара',
price DECIMAL(8,2) NOT NULL DEFAULT 0.00 COMMENT 'цена товара',
description TEXT NULL,
PRIMARY KEY (id)
) ENGINE = InnoDB CHARSET=utf8 COLLATE utf8_general_ci AUTO_INCREMENT
= 1001;
```

```
MariaDB> SHOW TABLES;
```

```
MariaDB> DESCRIBE tbl_product;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
name	varchar(100)	NO		NULL	
price	decimal(8,2)	NO		0.00	
description	text	YES		NULL	

```
MariaDB> CREATE TABLE tbl_order_detail (
id INT UNSIGNED NOT NULL AUTO_INCREMENT,
order_id INT UNSIGNED NOT NULL COMMENT 'номер заказа',
product_id INT UNSIGNED NOT NULL COMMENT 'код товара',
```

```
quantity INT UNSIGNED NOT NULL COMMENT 'кол-во товара',
PRIMARY KEY (id)
) ENGINE = InnoDB CHARSET=utf8 COLLATE utf8_general_ci AUTO_INCREMENT
= 11;
```

```
MariaDB> SHOW TABLES;
```

```
+-----+
| Tables_in_db_store |
+-----+
| tbl_customer       |
| tbl_order          |
| tbl_order_detail   |
| tbl_product        |
+-----+
```

```
MariaDB> DESCRIBE tbl_order_detail;
```

```
+-----+-----+-----+-----+-----+-----+
| Field      | Type                | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| id         | int(10) unsigned   | NO   | PRI | NULL    | auto_increment |
| order_id   | int(10) unsigned   | NO   |     | NULL    |                |
| product_id | int(10) unsigned   | NO   |     | NULL    |                |
| quantity   | int(10) unsigned   | NO   |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
```

5-қадам: Кестеге FOREIGN KEY қосу және кестелерді өзара INDEX (PRIMARY және FOREIGN KEY) арқылы байланыстыру

```
MariaDB> ALTER TABLE tbl_order
ADD CONSTRAINT tbl_order_fk0
FOREIGN KEY (customer_id)
REFERENCES tbl_customer(id)
ON DELETE CASCADE ON UPDATE CASCADE;
```

```
MariaDB> ALTER TABLE tbl_order_detail
ADD CONSTRAINT tbl_order_details_fk0
FOREIGN KEY (order_id)
REFERENCES tbl_order(id)
ON DELETE CASCADE ON UPDATE CASCADE;
```

```
MariaDB> ALTER TABLE tbl_order_detail
ADD CONSTRAINT tbl_order_details_fk1
FOREIGN KEY (product_id)
REFERENCES tbl_product(id)
ON DELETE CASCADE ON UPDATE CASCADE;
```

Қосымша ақпарат!

Егер, кестедегі INDEX-ті (FOREIGN KEY) жою қажет болса, онда төмендегідей команда орындалады:

```
ALTER TABLE tbl_order DROP FOREIGN KEY tbl_order_fk0;
```



```
ALTER TABLE tbl_order_detail DROP FOREIGN KEY tbl_order_details_fk0;
ALTER TABLE tbl_order_detail DROP FOREIGN KEY tbl_order_details_fk1;
```

Егер, кестелерді жою қажет болса, онда төмендегідей команда орындалады:

```
DROP TABLE tbl_customer;
DROP TABLE tbl_product;
DROP TABLE tbl_order;
DROP TABLE tbl_order_detail;
```

ЕСКЕРТУ! Қосымша ақпарат бөліміндегі мәліметтерді қолдану, міндетті емес!

6-қадам: Кестеге мәлімет енгізу (INSERT) және көру (SELECT)

```
MariaDB> INSERT INTO tbl_customer VALUES
  (NULL, 'Ахметов Марат', 'marat@yahoo.com', '+77074445599'),
  (NULL, 'Саматов Жарас', 'jaras@gmail.com', '+77076662277');
```

```
MariaDB> SELECT * FROM tbl_customer;
```

id	name	email	phone
101	Ахметов Марат	marat@yahoo.com	+77074445599
102	Саматов Жарас	jaras@gmail.com	+77076662277

```
MariaDB> INSERT INTO tbl_product VALUES
  (NULL, 'Моноблок', '250000', 'ASUS/FHD/Corei5-9500T/8GB
DDR4/256GB SSD/OS Linux'),
  (NULL, 'Ноутбук', '400000', 'Lenova/FHD/Corei7-9750H/16GB
DDR4/SSD 1TB/GeForce RTX'),
  (NULL, 'Ультрабук', '300000', 'Asus VivoBook/Corei5-8265U/8GB
DDR4/SSD 512GB'),
  (NULL, 'Наушник', '2000', 'Xiaomi Headphone Mi'),
  (NULL, 'Системный блок', '400000', 'ASUS/Core i5-9400F
2.9GHz/16GB DDR4/SSD 960GB/GeForce GTX/600W'),
  (NULL, 'Смартфон', '70000', 'Xiaomi Redmi Note 8 Pro');
```

```
MariaDB> SELECT * FROM tbl_product;
```

id	name	price	description
1001	Моноблок	250000.00	ASUS/FHD/Corei5-9500T/8GB DDR4/256GB SSD/OS Linux
1002	Ноутбук	400000.00	Lenova/FHD/Corei7-9750H/16GB DDR4/SSD 1TB/GeForce RTX
1003	Ультрабук	300000.00	Asus VivoBook/Corei5-8265U/8GB DDR4/SSD 512GB
1004	Наушник	2000.00	Xiaomi Headphone Mi
1005	Системный блок	400000.00	ASUS/Core i5-9400F 2.9GHz/16GB DDR4/SSD 960GB/GeForce GTX/600W
1006	Смартфон	70000.00	Xiaomi Redmi Note 8 Pro

```
MariaDB> INSERT INTO tbl_order VALUES
  (NULL, '101', '2019-05-25 00:00:00'),
  (NULL, '102', '2019-07-15 00:00:00');
```

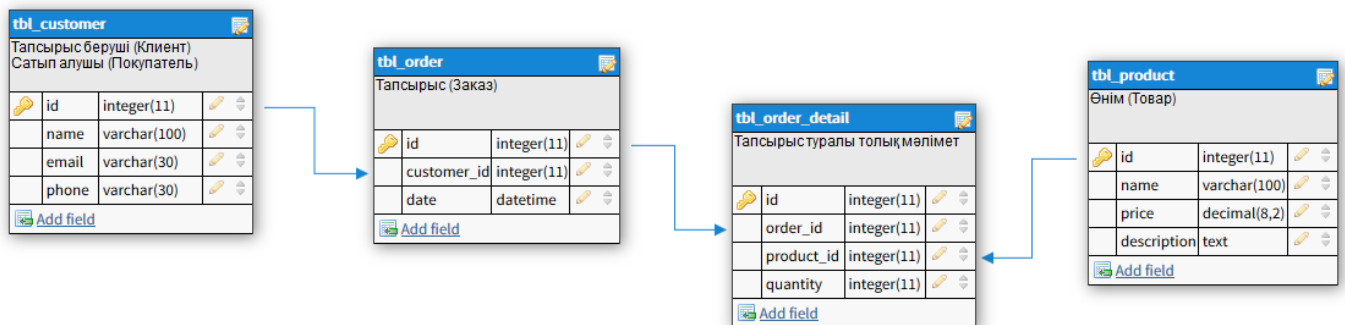
```
MariaDB> SELECT * FROM tbl_order;
```

id	customer_id	date
5001	101	2019-05-25 00:00:00
5002	102	2019-07-15 00:00:00

```
MariaDB> INSERT INTO tbl_order_detail VALUES
  (NULL, '5001', '1001', '2'),
  (NULL, '5002', '1006', '4');
```

```
MariaDB> SELECT * FROM tbl_order_detail;
```

id	order_id	product_id	quantity
11	5001	1001	2
12	5002	1006	4



tbl_customer

id	name	email	phone
101	Ахметов Марат	marat@yahoo.com	+77074445599
102	Саматов Жарас	jaras@gmail.com	+77076662277

tbl_order

id	customer_id	date
5001	101	2019-05-25 00:00:00
5002	102	2019-07-15 00:00:00

tbl_order_detail

id	order_id	product_id	quantity
11	5001	1001	2
12	5002	1006	4

tbl_product

id	name	price	description
1001	Моноблок	250000.00	ASUS/FHD/Corei5-9500T/8G
1002	Ноутбук	400000.00	Lenova/FHD/Corei7-9750H/
1003	Ультрабук	300000.00	Asus VivoBook/Corei5-826
1004	Наушник	2000.00	Xiaomi Headphone Mi
1005	Системный блок	400000.00	ASUS/Core i5-9400F 2.9GH
1006	Смартфон	70000.00	Xiaomi Redmi Note 8 Pro

```
MariaDB> SELECT c.name, od.order_id, p.name FROM tbl_customer c,
tbl_order_detail od, tbl_product p, tbl_order o WHERE
c.id=o.customer_id and od.product_id=p.id and o.id=od.order_id;
```

name	order_id	name
Ахметов Марат	5001	Моноблок
Саматов Жарас	5002	Смартфон

```
MariaDB> SELECT c.name as "Тапсырыс беруші", od.order_id as "Тапсырыс
нөмірі", p.name as "Өнім атауы" FROM tbl_customer c, tbl_order_detail
od, tbl_product p, tbl_order o WHERE c.id=o.customer_id and
od.product_id=p.id and o.id=od.order_id;
```

Тапсырыс беруші	Тапсырыс нөмірі	Өнім атауы
Ахметов Марат	5001	Моноблок
Саматов Жарас	5002	Смартфон

7-қадам: Кестедегі мәліметті жаңалау (UPDATE)

```
MariaDB> SELECT * FROM tbl_customer;
```

id	name	email	phone
101	Ахметов Марат	marat@yahoo.com	+77074445599
102	Саматов Жарас	jaras@gmail.com	+77076662277

```
MariaDB> UPDATE tbl_customer SET phone = '3556688' WHERE id = 102;
```

```
MariaDB> SELECT * FROM tbl_customer;
```

id	name	email	phone
101	Ахметов Марат	marat@yahoo.com	+77074445599
102	Саматов Жарас	jaras@gmail.com	3556688

8-қадам: Кестедегі мәліметті жою (DELETE)

```
MariaDB> SELECT * FROM tbl_product;
```

id	name	price	description
1001	Моноблок	250000.00	ASUS/FHD/Corei5-9500T/8G
1002	Ноутбук	400000.00	Lenova/FHD/Corei7-9750H/
1003	Ультрабук	300000.00	Asus VivoBook/Corei5-826
1004	Наушник	2000.00	Xiaomi Headphone Mi
1005	Системный блок	400000.00	ASUS/Core i5-9400F 2.9GH
1006	Смартфон	70000.00	Xiaomi Redmi Note 8 Pro

```
MariaDB> DELETE FROM tbl_product WHERE id = 1004;
```

```
MariaDB> SELECT * FROM tbl_product;
```

id	name	price	description
1001	Моноблок	250000.00	ASUS/FHD/Corei5-9500T/8G
1002	Ноутбук	400000.00	Lenova/FHD/Corei7-9750H/
1003	Ультрабук	300000.00	Asus VivoBook/Corei5-826
1005	Системный блок	400000.00	ASUS/Core i5-9400F 2.9GH
1006	Смартфон	70000.00	Xiaomi Redmi Note 8 Pro

9-қадам: Кестеге жаңа баған қосу (ALTER TABLE: ADD)

баған - column, field, attribute

қатар, жазба, жол - row, record, tuple

```
MariaDB> DESCRIBE tbl_order;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
customer_id	int(10) unsigned	NO	MUL	NULL	
date	datetime	NO		NULL	

```
MariaDB> ALTER TABLE tbl_order ADD status VARCHAR(20) NULL;
```

```
MariaDB> DESCRIBE tbl_order;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
customer_id	int(10) unsigned	NO	MUL	NULL	
date	datetime	NO		NULL	
status	varchar(20)	YES		NULL	

```
MariaDB> SELECT * FROM tbl_order;
```

id	customer_id	date	status
5001	101	2019-05-25 00:00:00	NULL
5002	102	2019-07-15 00:00:00	NULL

10-қадам: Кестедегі бағанның типін өзгерту (ALTER TABLE: MODIFY)

```
MariaDB> ALTER TABLE tbl_order MODIFY status INT UNSIGNED;
```

```
MariaDB> DESCRIBE tbl_order;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
customer_id	int(10) unsigned	NO	MUL	NULL	
date	datetime	NO		NULL	
status	int(10) unsigned	YES		NULL	

11-қадам: Кестедегі бағанның атауын өзгерту (ALTER TABLE: CHANGE)

```
MariaDB> ALTER TABLE tbl_order CHANGE status order_status INT UNSIGNED;
```

```
MariaDB> DESCRIBE tbl_order;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
customer_id	int(10) unsigned	NO	MUL	NULL	
date	datetime	NO		NULL	
order_status	int(10) unsigned	YES		NULL	

12-қадам: Кестедегі бағанды жою (ALTER TABLE: DROP)

```
MariaDB> ALTER TABLE tbl_order DROP order_status;
```

```
MariaDB> DESCRIBE tbl_order;
```

Field	Type	Null	Key	Default	Extra
id	int(10) unsigned	NO	PRI	NULL	auto_increment
customer_id	int(10) unsigned	NO	MUL	NULL	
date	datetime	NO		NULL	

13-қадам: Кестенің атауын өзгерту (ALTER TABLE: RENAME)

```
MariaDB> SHOW TABLES;
```

```
+-----+
| Tables_in_db_store |
+-----+
| tbl_customer       |
| tbl_order          |
| tbl_order_detail   |
| tbl_product        |
+-----+
```

```
MariaDB> ALTER TABLE tbl_order_detail RENAME tbl_order_product;
```

```
MariaDB> SHOW TABLES;
```

```
+-----+
| Tables_in_db_store |
+-----+
| tbl_customer       |
| tbl_order          |
| tbl_order_product  |
| tbl_product        |
+-----+
```

14-қадам: WHERE (Comparison және Logical operator)

- 1) SQL **Comparison** Operator: =, >, <, >=, <=, <>, !=
- 2) SQL **Logical** Operator: ALL, NOT, AND, OR, ANY, SOME, BETWEEN, IN, EXISTS, LIKE

```
MariaDB> SELECT id,name,price FROM tbl_product;
```

```
+-----+-----+-----+
| id  | name          | price    |
+-----+-----+-----+
| 1001 | Моноблок      | 250000.00 |
| 1002 | Ноутбук       | 400000.00 |
| 1003 | Ультрабук     | 300000.00 |
| 1005 | Системный блок | 400000.00 |
| 1006 | Смартфон      | 70000.00  |
+-----+-----+-----+
```

```
MariaDB> SELECT id,name,price FROM tbl_product WHERE price =
"400000";
```

```
+-----+-----+-----+
| id  | name          | price    |
+-----+-----+-----+
| 1002 | Ноутбук       | 400000.00 |
| 1005 | Системный блок | 400000.00 |
+-----+-----+-----+
```

15-қадам: LIMIT, DISTINCT

...

16-қадам: ORDER BY (DESC, ASC), GROUP BY

...

References

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