	Студент	Якупова Д.А.
	Группа	ПрИн-366
Лабораторная работа №3 Реляционная модель и нормализация	Преподаватель	Соколов А. А.
	Оценка	
	Срок сдачи	

1 часть

Реляционная модель из 2-й лабораторной:
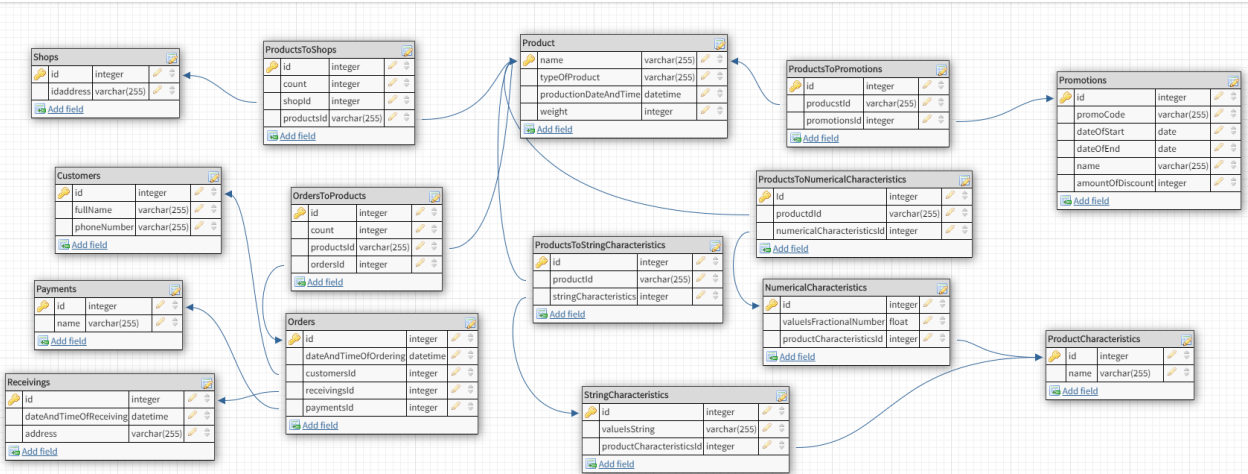
Реляционная модель, созданная с помощью MySQL:
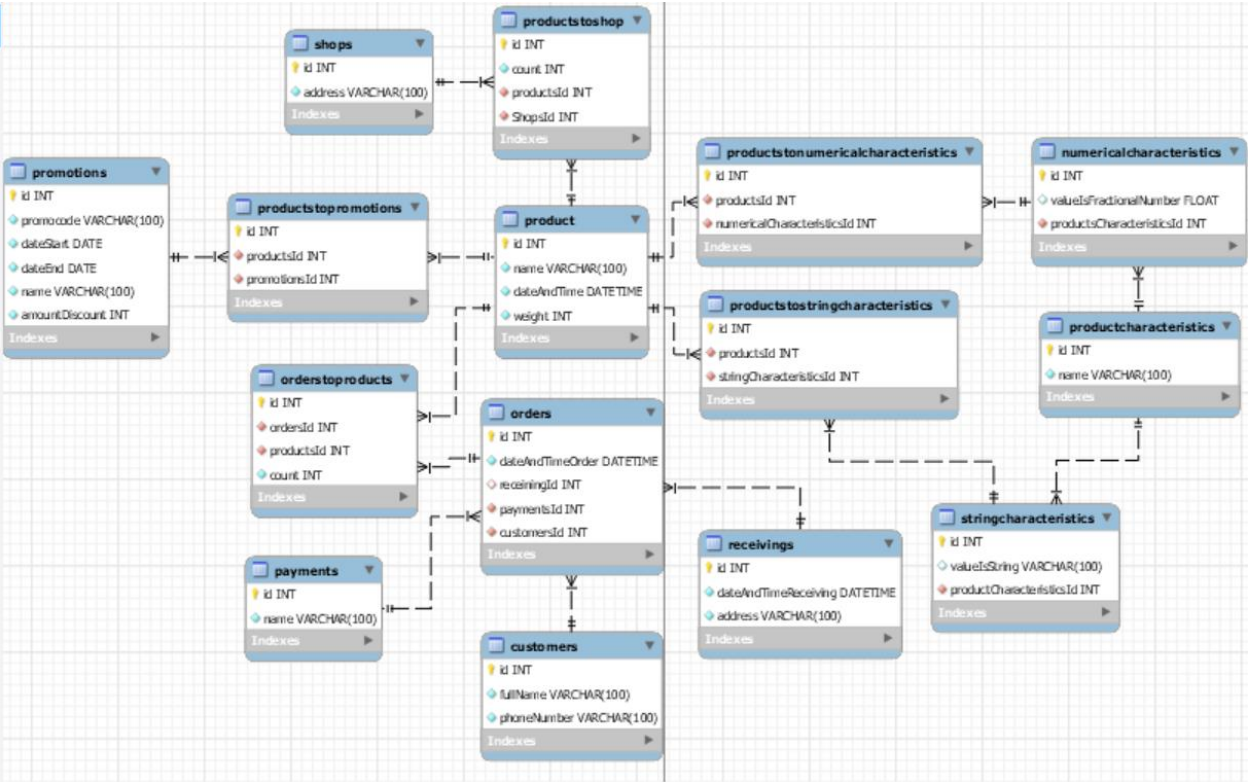
Customers:

id	fullName	phoneNumber
1	Иванов И. И.	89614532398
2	Петров И. А.	89025671398
3	Сидоров Г. И.	89025679898
4	Иванов М. И.	89615672398
5	Петров В. И.	89025687398
6	Иванов И. А.	89618942398
7	Петров Е. И.	89026772356
8	Иванов И. Д.	89027839098
9	Сидоров А. М.	89029042398
10	Сидоров К. И.	89049048723

NumericalCharacteristics:

id	valueIsFractionalNumber	productsCharacteristicsId
1	50	10
2	60	9
3	100	10
4	120	11
5	90	12
6	30	9
7	30	9
8	230	10
9	100	11
10	90	12

Orders:

id	dateAndTimeOrder	receiningId	paymentsId	customersId
1	2020-04-05 13:34:09	1	1	1
2	2020-11-23 15:43:56	2	2	2
3	2020-06-11 18:07:45	3	1	3
4	2020-07-14 19:30:51	4	1	4
5	2020-10-16 11:10:23	5	3	5
6	2020-03-23 19:17:54	6	2	6
7	2020-04-24 10:09:23	7	1	7
8	2020-09-25 14:05:05	8	2	8
9	2020-02-15 15:05:15	9	3	9
10	2020-07-18 16:23:14	10	1	10

Payments:

id	name
1	Наличными
2	Карта
3	Перевод на номер т…

Products:

id	name	dateAndTime	weight
2	Медовик	2020-10-20 17:15:04	1800
3	Тирамису	2020-10-20 17:44:20	1950
4	Маффин шоколадн...	2020-10-20 15:38:45	800
5	Булочка груша-сыр	2020-10-20 11:30:02	200
6	Печенье имбирное	2020-10-20 13:06:45	180
7	Чизкейк клубничный	2020-10-20 17:50:15	2100
8	Медовик	2020-10-20 18:04:45	2000
9	Хлеб баварский	2020-10-20 13:34:45	400
10	Печенье творожное	2020-10-20 14:34:27	160
NULL	NULL	NULL	NULL

ProductsCharacteristics:

id	name
1	Начинка
2	Крем
3	Мука
4	Наполнение
5	Тип продукта
6	Ганаш
7	Посыпка
8	Топпинг
9	Количество сахара
10	Количество топпинга
11	Количество начинки
12	Количество наполн...
13	Количество крема

Promotions:

id	promocode	dateStart	dateEnd	name	amountDiscount
1	ABC87	2020-12-03	2020-12-14	Новинка	10
2	J87J	2020-01-14	2020-01-29	Вечерняя	5
3	Yf09	2020-04-05	2020-04-10	Скидки на весь ассорт...	15
4	HDKD	2020-06-01	2020-06-05	Лето	20
5	LK09	2020-06-18	2020-07-01	Летние новинки	10
6	VH09	2020-09-01	2020-09-14	Вс... Летние новинки	15
7	MM091	2020-10-16	2020-10-20	Торты	25
8	S100	2020-11-14	2020-11-29	Маффины	15
9	45AA	2020-05-10	2020-05-30	Скидки на весь ассорт...	10
10	FF012	2020-03-08	2020-03-10	Праздничный	15
NULL	NULL	NULL	NULL	NULL	NULL

Receivings:

id	dateAndTimeReceiving	address
1	2020-04-23 13:34:05	51 Гвардейская 18 114
2	2020-12-12 15:34:10	Ткачева 43Б 23
3	2020-04-05 12:38:05	51 Гвардейская 20 45
4	2020-09-23 13:34:05	Танкистов 2 68
5	2020-04-18 20:03:05	Ряжская 2 56
6	2020-04-23 18:41:16	Хорошева 34Б 86
7	2020-10-14 22:34:05	Космонавтов 34
8	2020-06-23 21:34:30	Еременко 67 111
9	2020-08-23 13:34:45	Савкина 16 12
10	2020-07-29 14:05:45	Мира 3 112
NULL	NULL	NULL

Shops:

id	address
2	Хорошева 56 80
3	Качинцев 32А 146
4	Каспийская 120
5	Балонина 32В
6	Космонавтов 31А 43
7	51 Гвардейская 32 23
8	Танкистов 1А 34
9	Ряжская 54
10	Ткачева 13А 100
NULL	NULL

StringCharacteristics:

id	valueIsString	productCharacteristicsId
1	Яблочный джем	1
2	Сливочный	2
3	Пшеничная	3
4	Заварной крем	4
5	Булочки	5
6	Шоколадный	6
7	Ванильный	4
8	Карамельный	8
9	Пончик	5
10	Клубничный джем	8

2 часть
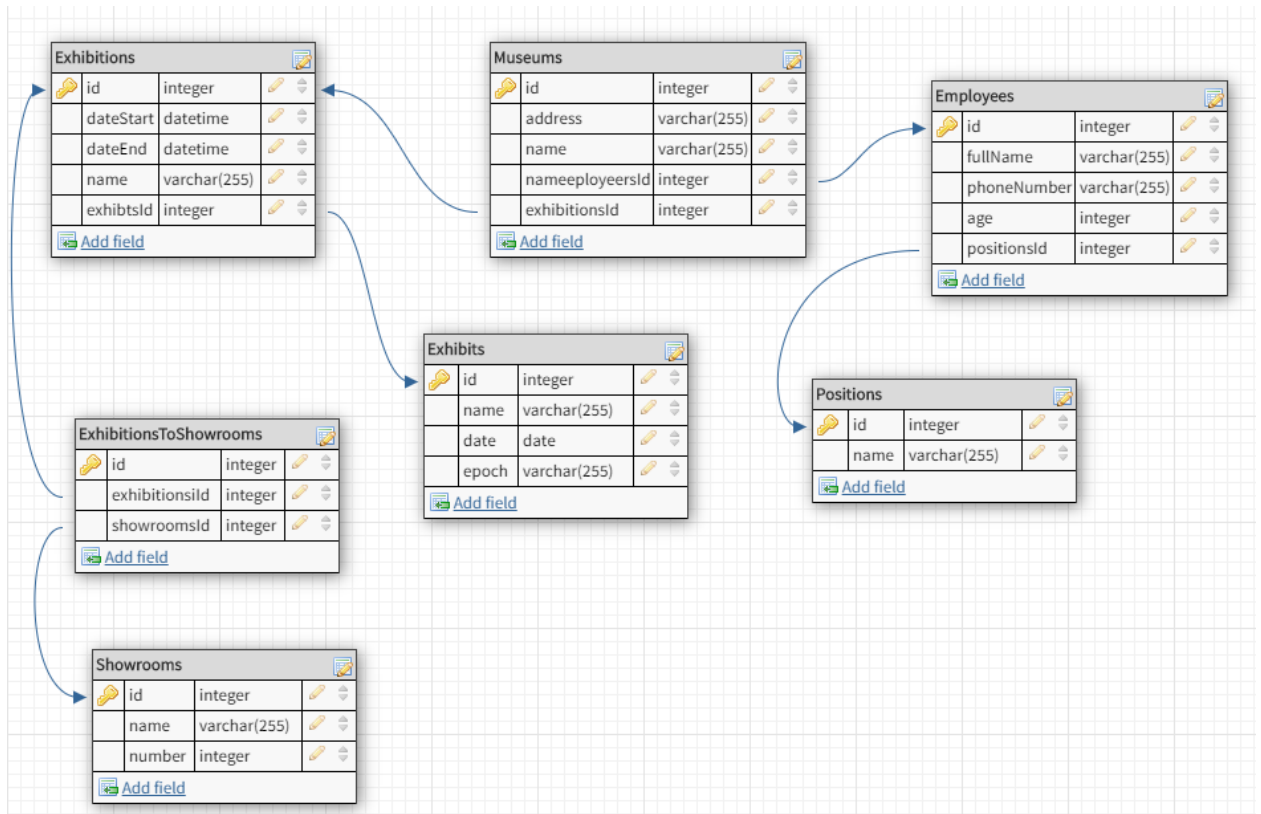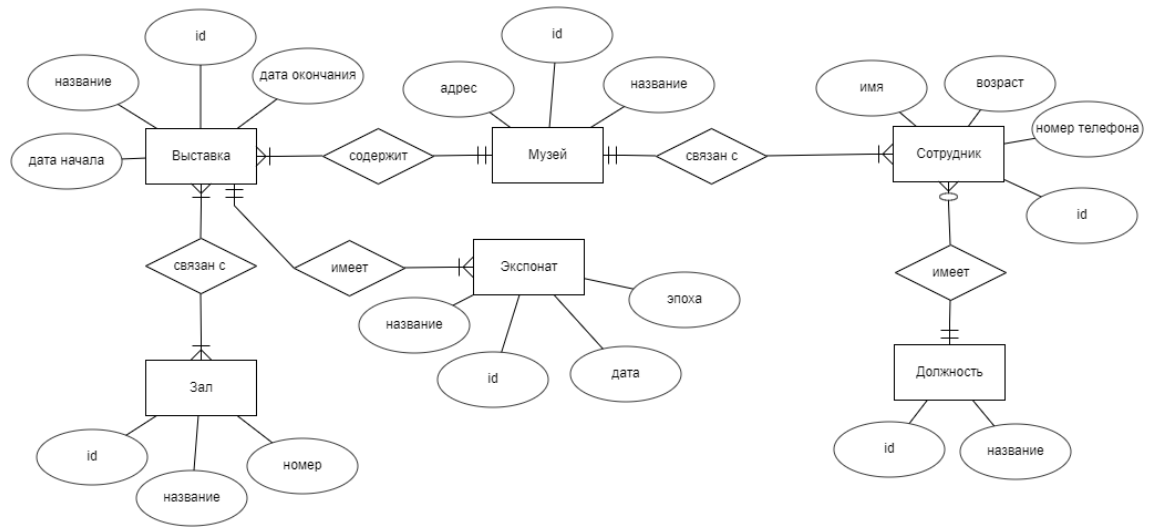
Создаем базу данных и таблицы:

```
mysql> create database museum_db;
Query OK, 1 row affected (0.15 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| museum_db          |
| mysql              |
| performance_schema |
| sakila             |
| shop               |
| sys                |
| world              |
+--------------------+
8 rows in set (0.07 sec)

mysql> use museum_db;
Database changed
```

```
mysql> create table exhibits(
    -> id int not null auto_increment,
    -> name varchar(100) not null,
    -> date date not null,
    -> epoch varchar(100) not null,
    -> PRIMARY KEY (id)
    -> );
Query OK, 0 rows affected (0.34 sec)

mysql> create table positions(
    -> id int not null auto_increment,
    -> name varchar(100) not null,
    -> PRIMARY KEY (id)
    -> );
Query OK, 0 rows affected (0.10 sec)

mysql> create table showrooms(
    -> id int not null auto_increment,
    -> name varchar(100) not null,
    -> number int not null,
    -> PRIMARY KEY (id)
    -> );
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> create table employees(
    -> id int not null auto_increment,
    -> fullname varchar(100) not null,
    -> phonenumber varchar(100) not null,
    -> age int not null,
    -> positionsid int not null,
    -> PRIMARY KEY (id),
    -> CONSTRAINT positionsfk
    -> FOREIGN KEY (positionsid)
    -> REFERENCES positions(id)
    -> );
Query OK, 0 rows affected (0.17 sec)
```

```
mysql> create table exhibitions(
    -> id int not null auto_increment,
    -> datestart datetime not null,
    -> dateend datetime not null,
    -> name varchar(100) not null,
    -> exhibitsid int not null,
    -> PRIMARY KEY (id),
    -> CONSTRAINT exhibitsfk
    -> FOREIGN KEY (exhibitsid)
    -> REFERENCES exhibits(id)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> create table exhibitionstoshowrooms(
    -> id int not null auto_increment,
    -> exhibitionsid int not null,
    -> showroomsid int not null,
    -> PRIMARY KEY (id),
    -> CONSTRAINT exhibitionsfk
    -> FOREIGN KEY (exhibitionsid)
    -> REFERENCES exhibitions(id),
    -> CONSTRAINT showroomsfk
    -> FOREIGN KEY (showroomsid)
    -> REFERENCES showrooms(id)
    -> );
Query OK, 0 rows affected (0.10 sec)

mysql> create table museums(
    -> id int not null auto_increment,
    -> address varchar(100) not null,
    -> name varchar(100) not null,
    -> exhibitionsid int not null,
    -> employeesid int not null,
    -> PRIMARY KEY (id),
    -> CONSTRAINT exhibitionsmusfk
    -> FOREIGN KEY (exhibitionsid)
    -> REFERENCES exhibitions(id),
    -> CONSTRAINT employeesfk
    -> FOREIGN KEY (employeesid)
    -> REFERENCES employees(id));
Query OK, 0 rows affected (0.19 sec)

mysql> show tables;
+-------------------------+
| Tables_in_museum_db     |
+-------------------------+
| employees               |
| exhibitions             |
| exhibitionstoshowrooms  |
| exhibits                |
| museums                 |
| positions               |
| showrooms               |
+-------------------------+
7 rows in set (0.06 sec)
```

- ALTER запросы

```
mysql> alter table showrooms
    -> add partofmuseum varchar(30) not null;
Query OK, 0 rows affected (0.27 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table positions
    -> add experience int;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table exhibits
    -> add material varchar(45);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table exhibits
    -> add placeoffind varchar(100);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table employees
    -> add residenceaddress varchar(100);
Query OK, 0 rows affected (0.30 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table employees
    -> add gender varchar(3) not null;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table exhibitions
    -> add theme varchar(45) not null;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table showrooms
    -> add square int not null;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table exhibits
    -> add weight int not null;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table exhibits
    -> add description varchar(255) not null;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

- RENAME запросы

```
mysql> alter table employees
    -> rename column age to employeeage
    -> ;
Query OK, 0 rows affected (0.24 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table showrooms
    -> rename column number to roomnumber;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table showrooms
    -> rename column partofmuseum to museumpart;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

- INSERT запросы

```
mysql> insert positions(id,name,experience)
    -> VALUES
    -> (1,'Alex',1),
    -> (2,'Alice',2),
    -> (3,'Rocky',3);
Query OK, 3 rows affected (0.10 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
mysql> insert showrooms(id,name,number,partofmuseum,square)
    -> VALUES
    -> (1,'room1',2,'first',20),
    -> (2,'room2',3,'second',30),
    -> (3,'room3',1,'eastern',25),
    -> (4,'room4',4,'western',18);
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

```
mysql> insert exhibits(id,name,date,epoch,material,placeoffind,weight,description)
    -> VALUES
    -> (1,'bowl','1817-06-13','default','unknown','unknown',2,'something'),
    -> (2,'spoon','1890-03-08','default','unknown','somewhere',4,'something also'),
    -> (3,'spoon','1890-03-08','question','unknown','somewhere also',13,'blablabla');
Query OK, 3 rows affected (0.10 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

ERD диаграмма, смоделированная по созданной базе данных:
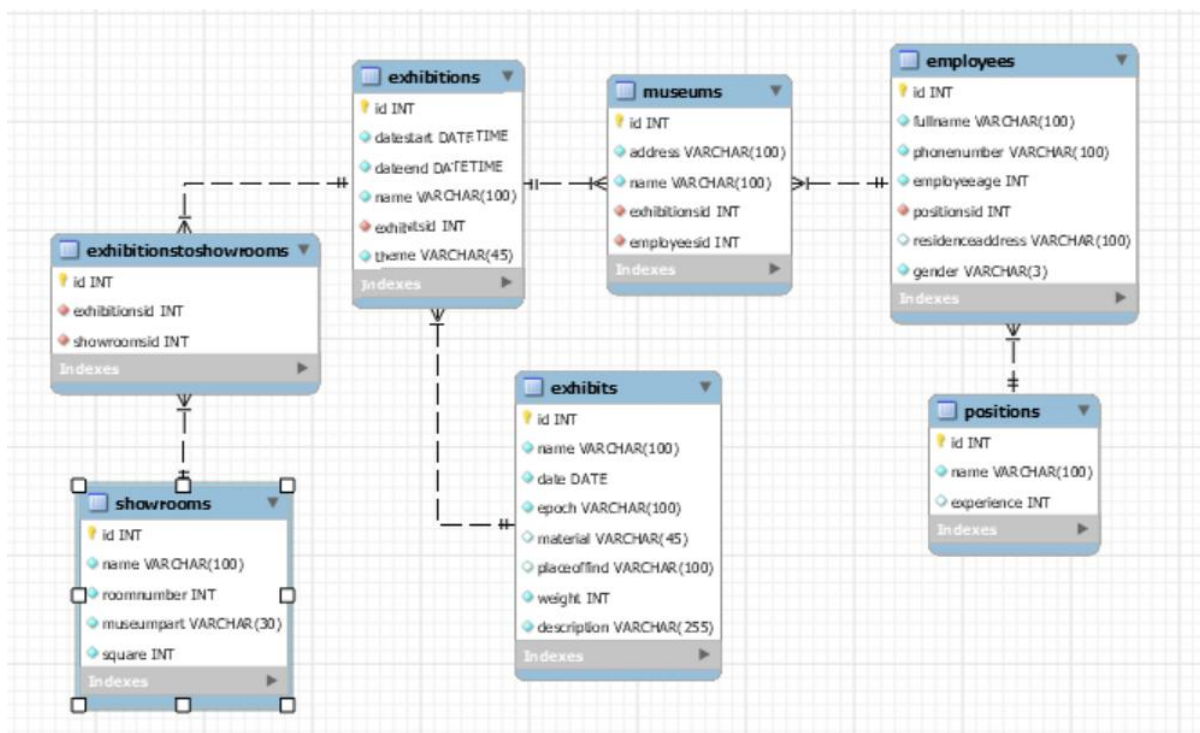
- DROP запросы

```
mysql> drop table exhibitionstoshowrooms;
Query OK, 0 rows affected (0.22 sec)
```

```
mysql> drop table museums;
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> drop table exhibitions;
Query OK, 0 rows affected (0.09 sec)
```

```
mysql> drop table employees;
Query OK, 0 rows affected (0.04 sec)

mysql> drop table exhibits;
Query OK, 0 rows affected (0.02 sec)

mysql> drop table positions;
Query OK, 0 rows affected (0.02 sec)

mysql> drop table showrooms;
Query OK, 0 rows affected (0.02 sec)

mysql> drop database museum_db;
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> insert into product(name,dateandtime,weight)
    -> /*add new product*/
    -> value('Багет французский','2020-08-11 14:06:54',250);
Query OK, 1 row affected (0.01 sec)

mysql> update product /*update information about product*/ set weight = 300 where name = "Багет французский";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> delete from product
    -> /*delete note about product*/
    -> where name = "Багет французский";
Query OK, 1 row affected (0.01 sec)

mysql> insert into orders(dateandtimeorder,receiningid,paymentsid,customersid)
    -> /*add new order*/
    -> value('2020-07-07 12:07:09',1,2,3);
Query OK, 1 row affected (0.01 sec)

mysql> update orders /*update information about order*/ set paymentsid = 1 where id = 11;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> delete from orders
    -> /*delete note about order*/
    -> where id = 11;
Query OK, 1 row affected (0.00 sec)
```