

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
НАЦІОНАЛЬНОМУ УНІВЕРСИТЕТІ “ЛЬВІВСЬКА ПОЛІТЕХНІКА”

Кафедра систем штучного інтелекту

**Лабораторні роботи № 2**  
з дисципліни  
«Організація баз даних та знань»

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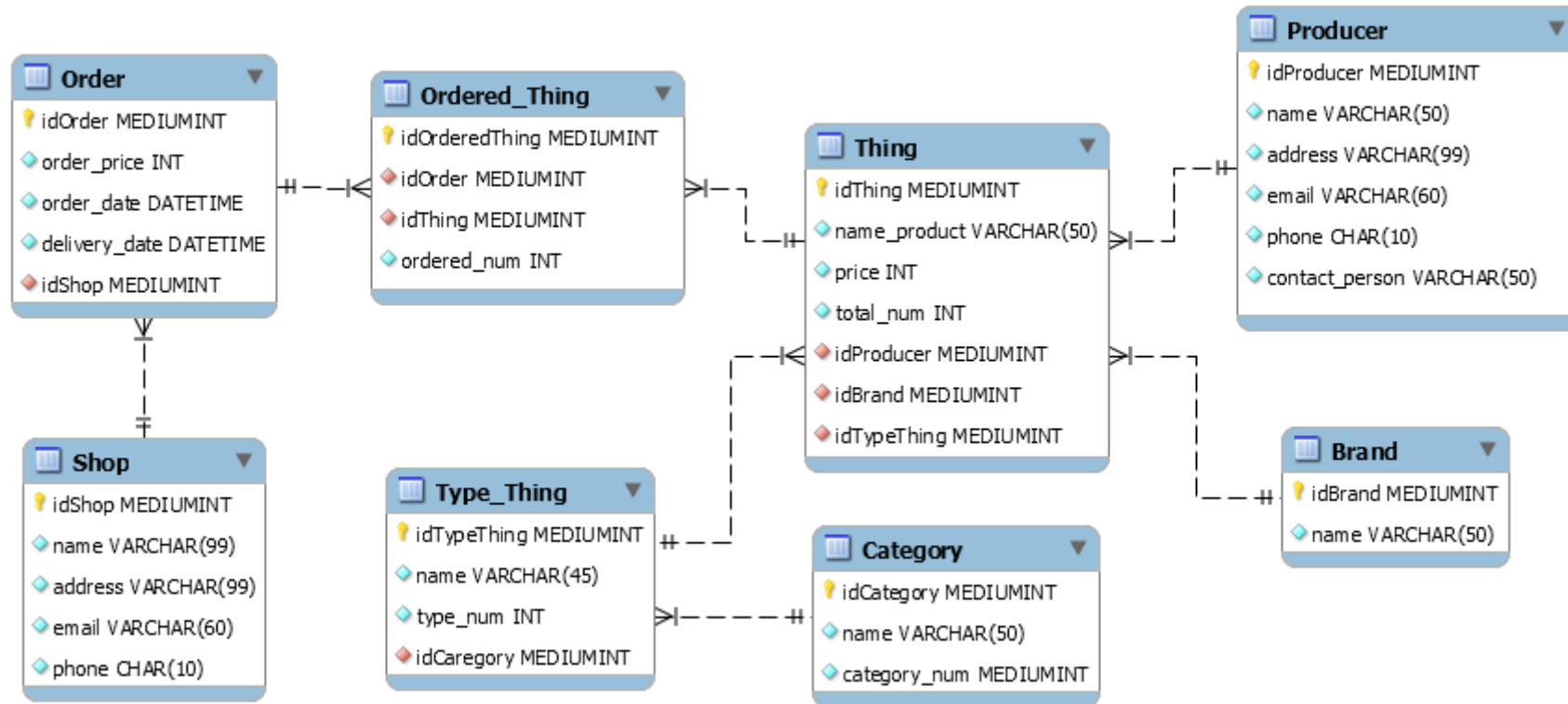
Львів – 2019 р

## Лабораторна робота №2

**Тема:** створення таблиць бази даних засобами SQL.

**Мета роботи:** побудувати даталогічну модель бази даних; визначити типи, розмірності та обмеження полів; визначити обмеження таблиць; розробити SQL запити для створення спроектованих таблиць.

### Даталогічна модель



## SQL-запити

```
CREATE DATABASE `Shop` CHARACTER SET utf8;
```

```
CREATE TABLE `Shop`.`Producer` (  
  `idProducer` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,  
  `name` VARCHAR(50) NOT NULL,  
  `address` VARCHAR(99) NOT NULL,  
  `email` VARCHAR(60) NOT NULL,  
  `phone` CHAR(10) NOT NULL,  
  `contact_person` VARCHAR(50) NOT NULL,  
  PRIMARY KEY (`idProducer`)  
);
```

```
CREATE TABLE `Shop`.`Shop` (  
  `idShop` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,  
  `name` VARCHAR(99) NOT NULL,  
  `address` VARCHAR(99) NOT NULL,  
  `email` VARCHAR(60) NOT NULL,  
  `phone` CHAR(10) NOT NULL,  
  PRIMARY KEY (`idShop`)  
);
```

```
CREATE TABLE `Shop`.`Order` (  
  `idOrder` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,  
  `order_price` INT UNSIGNED NOT NULL,  
  `order_date` DATETIME NOT NULL,  
  `delivery_date` DATETIME NOT NULL,  
  `idShop` MEDIUMINT UNSIGNED NOT NULL,  
  PRIMARY KEY (`idOrder`),  
  CONSTRAINT `Order_Shop`  
    FOREIGN KEY (`idShop`)  
    REFERENCES `Shop`.`Shop` (`idShop`)  
    ON DELETE NO ACTION  
    ON UPDATE NO ACTION  
);
```

```
CREATE TABLE `Shop`.`Brand` (  
  `idBrand` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,  
  `name` VARCHAR(50) NOT NULL,  
  PRIMARY KEY (`idBrand`),  
  CONSTRAINT `name_UNIQUE` UNIQUE (`name`)  
);
```

```
CREATE TABLE `Shop`.`Category` (  
  `idCategory` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,  
  `name` VARCHAR(50) NOT NULL,
```

```

        `category_num` MEDIUMINT UNSIGNED NOT NULL,
        PRIMARY KEY (`idCategory`),
        CONSTRAINT `name_UNIQUE` UNIQUE (`name`)
    );

CREATE TABLE `Shop`.`Type_Thing` (
    `idTypeThing` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,
    `name` VARCHAR(45) NOT NULL,
    `type_num` INT UNSIGNED NOT NULL,
    `idCategory` MEDIUMINT UNSIGNED NOT NULL,
    PRIMARY KEY (`idTypeThing`),
    CONSTRAINT `name_UNIQUE` UNIQUE (`name`),
    CONSTRAINT `Type_Thing__Category`
        FOREIGN KEY (`idCategory`)
        REFERENCES `Shop`.`Category` (`idCategory`)
        ON DELETE NO ACTION
        ON UPDATE NO ACTION
    );

CREATE TABLE `Shop`.`Thing` (
    `idThing` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,
    `name_product` VARCHAR(50) NOT NULL,
    `price` INT UNSIGNED NOT NULL,
    `total_num` INT UNSIGNED NOT NULL,
    `idProducer` MEDIUMINT UNSIGNED NOT NULL,
    `idBrand` MEDIUMINT UNSIGNED NOT NULL,
    `idTypeThing` MEDIUMINT UNSIGNED NOT NULL,
    PRIMARY KEY (`idThing`),
    CONSTRAINT `Thing_Producer`
        FOREIGN KEY (`idProducer`)
        REFERENCES `Shop`.`Producer` (`idProducer`),
    CONSTRAINT `Thing__Brand`
        FOREIGN KEY (`idBrand`)
        REFERENCES `Shop`.`Brand` (`idBrand`)
        ON DELETE NO ACTION
        ON UPDATE NO ACTION,
    CONSTRAINT `Type_Thing__Thing`
        FOREIGN KEY (`idTypeThing`)
        REFERENCES `Shop`.`Type_Thing` (`idTypeThing`)
        ON DELETE NO ACTION
        ON UPDATE NO ACTION
    );

CREATE TABLE `Shop`.`Ordered_Thing` (
    `idOrderedThing` MEDIUMINT UNSIGNED NOT NULL AUTO_INCREMENT,
    `idOrder` MEDIUMINT UNSIGNED NOT NULL,
    `idThing` MEDIUMINT UNSIGNED NOT NULL,
    `ordered_num` INT UNSIGNED NOT NULL,
    PRIMARY KEY (`idOrderedThing`),

```

```

CONSTRAINT `Ordered_Thing__Order`
  FOREIGN KEY (`idOrder`)
  REFERENCES `Shop`.`Order` (`idOrder`)
  ON DELETE CASCADE
  ON UPDATE CASCADE,
CONSTRAINT `Ordered_Thing__Thing`
  FOREIGN KEY (`idThing`)
  REFERENCES `Shop`.`Thing` (`idThing`)
  ON DELETE CASCADE
  ON UPDATE CASCADE
);

```

## Результат

```

mysql> DESCRIBE Brand;
+-----+-----+-----+-----+-----+-----+
| Field | Type                               | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| idBrand | mediumint(8) unsigned             | NO   | PRI | NULL    | auto_increment |
| name   | varchar(50)                       | NO   | UNI | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.03 sec)

mysql> DESCRIBE Producer;
+-----+-----+-----+-----+-----+-----+
| Field          | Type                               | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| idProducer     | mediumint(8) unsigned             | NO   | PRI | NULL    | auto_increment |
| name           | varchar(50)                       | NO   |     | NULL    |                 |
| address        | varchar(99)                       | NO   |     | NULL    |                 |
| email          | varchar(60)                       | NO   |     | NULL    |                 |
| phone          | char(10)                          | NO   |     | NULL    |                 |
| contact_person | varchar(50)                       | NO   |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> DESCRIBE Thing;
+-----+-----+-----+-----+-----+-----+
| Field          | Type                               | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| idThing        | mediumint(8) unsigned             | NO   | PRI | NULL    | auto_increment |
| name_product   | varchar(50)                       | NO   |     | NULL    |                 |
| price          | int(10) unsigned                  | NO   |     | NULL    |                 |
| total_num      | int(10) unsigned                  | NO   |     | NULL    |                 |
| idProducer     | mediumint(8) unsigned             | NO   | MUL | NULL    |                 |
| idBrand        | mediumint(8) unsigned             | NO   | MUL | NULL    |                 |
| idTypeThing    | mediumint(8) unsigned             | NO   | MUL | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> DESCRIBE Type_Thing;
+-----+-----+-----+-----+-----+-----+
| Field          | Type                               | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| idTypeThing    | mediumint(8) unsigned             | NO   | PRI | NULL    | auto_increment |
| name           | varchar(45)                       | NO   | UNI | NULL    |                 |
| type_num       | int(10) unsigned                  | NO   |     | NULL    |                 |
| idCategory     | mediumint(8) unsigned             | NO   | MUL | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> DESCRIBE Category;
+-----+-----+-----+-----+-----+-----+
| Field          | Type                               | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| idCategory     | mediumint(8) unsigned             | NO   | PRI | NULL    | auto_increment |
| name           | varchar(50)                       | NO   | UNI | NULL    |                 |
| category_num   | mediumint(8) unsigned             | NO   |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

```

```
mysql> DESCRIBE Ordered_Thing;
```

Field	Type	Null	Key	Default	Extra
idOrderedThing	mediumint(8) unsigned	NO	PRI	NULL	auto_increment
idOrder	mediumint(8) unsigned	NO	MUL	NULL	
idThing	mediumint(8) unsigned	NO	MUL	NULL	
ordered_num	int(10) unsigned	NO		NULL	

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

```
mysql> USE Shop;
Database changed
mysql> DESCRIBE `Order`;
```

Field	Type	Null	Key	Default	Extra
idOrder	mediumint(8) unsigned	NO	PRI	NULL	auto_increment
order_price	int(10) unsigned	NO		NULL	
order_date	datetime	NO		NULL	
delivery_date	datetime	NO		NULL	
idShop	mediumint(8) unsigned	NO	MUL	NULL	

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

```
mysql> DESCRIBE Shop;
```

Field	Type	Null	Key	Default	Extra
idShop	mediumint(8) unsigned	NO	PRI	NULL	auto_increment
name	varchar(99)	NO		NULL	
address	varchar(99)	NO		NULL	
email	varchar(60)	NO		NULL	
phone	char(10)	NO		NULL	

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

```
mysql> SHOW TABLES;
```

Tables_in_shop
brand
category
order
ordered_thing
producer
shop
thing
type_thing

## Висновки

Була побудована даталогічна модель бази даних на основі контекстної діаграми, визначено типи, розмірності та обмеження полів, розроблено запити SQL для створення спроектованих таблиць.