练习2

一、创建company数据库，在数据库中根据以下图示创建表，表结构如下，并插入以下数据，完成下面的sql。

表结构如下：

dept表：

序号	字段名	类型	备注
1	DEPTNO	int	部门编号
2	DNAME	varchar(14)	部门名称
3	LOC	varchar(14)	部门地点

创建语句如下所示：

```
create database company;
user company;
create table dept(deptno int comment '部门编号',
                  dname varchar(14) comment '部门名称',
                  loc varchar(14) comment '部门地点');
```

emp表：

序号	字段名	类型	备注
1	EMPNO	int	员工编号
2	ENAME	varchar(10)	员工姓名
3	JOB	varchar(9)	员工职位
4	MGR	int	领导编号
5	HIREDATE	date	入职日期
6	SAL	double	工资
7	COMM	double	奖金
8	DEPTNO	int	部门编号

创建语句如下所示：

```
create table emp(empno int comment '员工编号',
                 ename varchar(10) comment '员工姓名',
                 job varchar(9) comment '员工职位',
                 mgr int comment '领导编号',
                 hiredate date comment '入职日期',
                 sal double comment '工资',
                 comm double comment '资金',
                 deptno int comment '部门编号');
```

salgrade表：

序号	字段名	类型	备注
1	GRADE	int	工资等级
2	LOSAL	int	最低工资
3	HISAL	int	最高工资

创建语句如下所示：

```
create table salgrade(grade int comment '工资等级',
                      losal int comment '最低工资',
                      hisal int comment '最高工资');
```

dept表数据：

```
insert into dept(deptno,dname,loc) values(10,'accounting','new york'),
                    (20,'research','dallas'),
                    (30,'sales','chicago'),
                    (40,'operations','boston');
mysql> select * from dept;
+--------+------------+----------+
| deptno | dname      | loc      |
+--------+------------+----------+
|     10 | accounting | new york |
|     20 | research   | dallas   |
|     30 | sales      | chicago  |
|     40 | operations | boston   |
+--------+------------+----------+
4 rows in set (0.00 sec)
```

emp表中数据：

```
insert into emp(empno,ename,job,mgr,hiredate,sal,deptno)
values(7876,'adams','clerk',7788,'1980-04-17',1100,20),
(7900,'james','clerk',7698,'1987-06-17',950,30),
(7902,'ford','analyst',7566,'1980-07-17',3000,20),
(7934,'miller','clerk',7782,'1981-11-17',1300,10);
insert into emp(empno,ename,job,mgr,hiredate,sal,comm,deptno)
values(7844,'turner','salesman',7698,'1980-09-17',1500,0,30),
(7499,'allen','salesman',7998,'1980-02-17',1600,500,30);

mysql> select * from emp;
+-------+--------+-----------+------+------------+------+------+--------+
```

```
| empno | ename  | job       | mgr  | hiredate   | sal  | comm | deptno |
+-------+--------+-----------+------+------------+------+------+--------+
|  7369 | smith  | clerk     | 7902 | 1980-01-17 |  800 | NULL |     20 |
|  7369 | smith  | clerk     | 7902 | 1980-01-17 |  800 |  300 |     20 |
|  7499 | allen  | salesman  | 7998 | 1980-02-17 | 1600 |  500 |     30 |
|  7566 | jones  | manager   | 7839 | 1980-04-17 | 2975 | NULL |     20 |
|  7564 | martin | salesman  | 7698 | 1981-01-17 | 1250 | 1400 |     30 |
|  7698 | blake  | manager   | 7839 | 1980-04-17 | 2580 | NULL |     20 |
|  7782 | clark  | manager   | 7839 | 1980-06-17 | 2450 | NULL |     10 |
|  7788 | scott  | analyst   | 7566 | 1980-04-17 | 3000 | NULL |     20 |
|  7839 | king   | president | NULL | 1981-11-17 | 5000 | NULL |     10 |
|  7844 | turner | salesman  | 7698 | 1980-09-17 | 1500 |    0 |     30 |
|  7876 | adams  | clerk     | 7788 | 1980-04-17 | 1100 | NULL |     20 |
|  7900 | james  | clerk     | 7698 | 1987-06-17 |  950 | NULL |     30 |
|  7902 | ford   | analyst   | 7566 | 1980-07-17 | 3000 | NULL |     20 |
|  7934 | miller | clerk     | 7782 | 1981-11-17 | 1300 | NULL |     10 |
+-------+--------+-----------+------+------------+------+------+--------+
14 rows in set (0.00 sec)
```

salgrade表中的数据：

```
insert into salgrade(grade,losal,hisal) values(1,700,1200),
(2,1201,1400),
(3,1401,2000),
(4,2001,3000),
(5,3001,9999);

mysql> select * from salgrade;
+-------+-------+-------+
| grade | losal | hisal |
+-------+-------+-------+
|     1 |   700 |  1200 |
|     2 |  1201 |  1400 |
|     3 |  1401 |  2000 |
|     4 |  2001 |  3000 |
|     5 |  3001 |  9999 |
+-------+-------+-------+
5 rows in set (0.00 sec)
```

习题：

1 # 修改emp表中sal字段为salary

```
mysql> alter table emp change sal salary double;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc emp;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| empno    | int         | YES  |     | NULL    |       |
| ename    | varchar(10) | YES  |     | NULL    |       |
| job      | varchar(9)  | YES  |     | NULL    |       |
| mgr      | int         | YES  |     | NULL    |       |
```

```
| hiredate | date        | YES  |     | NULL    |       |
| salary   | double      | YES  |     | NULL    |       |
| comm     | double      | YES  |     | NULL    |       |
| deptno   | int         | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
8 rows in set (0.00 sec)
```

2 # 查找年薪在20000到30000之间的所有员工信息并按照工资降序显示

```
mysql> select * from emp where (salary*12 + ifNULL(comm,0)) between 20000
and 30000;
+-------+-------+---------+------+------------+--------+------+--------+
| empno | ename | job     | mgr  | hiredate   | salary | comm | deptno |
+-------+-------+---------+------+------------+--------+------+--------+
|  7782 | clark | manager | 7839 | 1980-06-17 |   2450 | NULL |     10 |
+-------+-------+---------+------+------------+--------+------+--------+
1 row in set (0.00 sec)
```

3 # 查找员工姓名中包含'A'的所有员工信息

```
mysql> select * from emp where ename like '%A%';
+-------+--------+----------+------+------------+--------+------+--------+
| empno | ename  | job      | mgr  | hiredate   | salary | comm | deptno |
+-------+--------+----------+------+------------+--------+------+--------+
|  7499 | allen  | salesman | 7998 | 1980-02-17 |   1600 |  500 |     30 |
|  7564 | martin | salesman | 7698 | 1981-01-17 |   1250 | 1400 |     30 |
|  7698 | blake  | manager  | 7839 | 1980-04-17 |   2580 | NULL |     20 |
|  7782 | clark  | manager  | 7839 | 1980-06-17 |   2450 | NULL |     10 |
|  7876 | adams  | clerk    | 7788 | 1980-04-17 |   1100 | NULL |     20 |
|  7900 | james  | clerk    | 7698 | 1987-06-17 |    950 | NULL |     30 |
+-------+--------+----------+------+------------+--------+------+--------+
6 rows in set (0.00 sec)
```

4 # 查找所有员工姓名中包含'A'及'E'的员工信息

```
mysql> select * from emp where ename like '%A%%E%';
+-------+-------+----------+------+------------+--------+------+--------+
| empno | ename | job      | mgr  | hiredate   | salary | comm | deptno |
+-------+-------+----------+------+------------+--------+------+--------+
|  7499 | allen | salesman | 7998 | 1980-02-17 |   1600 |  500 |     30 |
|  7698 | blake | manager  | 7839 | 1980-04-17 |   2580 | NULL |     20 |
|  7900 | james | clerk    | 7698 | 1987-06-17 |    950 | NULL |     30 |
+-------+-------+----------+------+------------+--------+------+--------+
3 rows in set (0.00 sec)
```

5 # 查找所有的职位为SALESMAN的员工信息

```
select * from emp where job = 'SALESMAN';
mysql> select * from emp where job = 'SALESMAN';
+-------+--------+----------+------+------------+--------+------+--------+
| empno | ename  | job      | mgr  | hiredate   | salary | comm | deptno |
+-------+--------+----------+------+------------+--------+------+--------+
|  7499 | allen  | salesman | 7998 | 1980-02-17 |   1600 |  500 |     30 |
|  7564 | martin | salesman | 7698 | 1981-01-17 |   1250 | 1400 |     30 |
|  7844 | turner | salesman | 7698 | 1980-09-17 |   1500 |    0 |     30 |
+-------+--------+----------+------+------------+--------+------+--------+
3 rows in set (0.00 sec)
```

6 # 将工资低于2000的员工工资涨薪200

```
mysql> update emp set salary = salary+200 where salary < 2000;
Query OK, 8 rows affected (0.41 sec)
Rows matched: 8  Changed: 8  Warnings: 0
```

7 # 查询没有上级领导的所有员工信息

```
select * from emp where mgr is null;
+-------+-------+-----------+------+------------+--------+------+--------+
| empno | ename | job       | mgr  | hiredate   | salary | comm | deptno |
+-------+-------+-----------+------+------------+--------+------+--------+
|  7839 | king  | president | NULL | 1981-11-17 |   5000 | NULL |     10 |
+-------+-------+-----------+------+------------+--------+------+--------+
1 row in set (0.00 sec)
```

8 # 查询没有奖金的所有员工信息

```
select * from emp where comm is null;
+-------+--------+-----------+------+------------+--------+------+--------+
| empno | ename  | job       | mgr  | hiredate   | salary | comm | deptno |
+-------+--------+-----------+------+------------+--------+------+--------+
|  7369 | smith  | clerk     | 7902 | 1980-01-17 |   1000 | NULL |     20 |
|  7566 | jones  | manager   | 7839 | 1980-04-17 |   2975 | NULL |     20 |
|  7698 | blake  | manager   | 7839 | 1980-04-17 |   2580 | NULL |     20 |
|  7782 | clark  | manager   | 7839 | 1980-06-17 |   2450 | NULL |     10 |
|  7788 | scott  | analyst   | 7566 | 1980-04-17 |   3000 | NULL |     20 |
|  7839 | king   | president | NULL | 1981-11-17 |   5000 | NULL |     10 |
|  7876 | adams  | clerk     | 7788 | 1980-04-17 |   1300 | NULL |     20 |
|  7900 | james  | clerk     | 7698 | 1987-06-17 |   1150 | NULL |     30 |
|  7902 | ford   | analyst   | 7566 | 1980-07-17 |   3000 | NULL |     20 |
|  7934 | miller | clerk     | 7782 | 1981-11-17 |   1500 | NULL |     10 |
+-------+--------+-----------+------+------------+--------+------+--------+
10 rows in set (0.00 sec)
```

9 # 将部门表中的40部门的地址修改成'xian'

```
mysql> update dept set loc = 'xian' where deptno = 40;
Query OK, 1 row affected (0.03 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

10 # 假设李华的工资是2000，请查询出他的工资等级

```
mysql> select grade from salgrade where losal <= 2000 and hisal >= 2000;
+-------+
| grade |
+-------+
|     3 |
+-------+
1 row in set (0.00 sec)
```

11 # 将MILLER的入职日期修改为1982年2yue23日

```
mysql> update emp set hiredate = '1982-2-23' where ename='MILLER';
Query OK, 1 row affected (0.41 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

练习3

二、继续在company数据库中根据以下图示创建表，表结构如下，并插入以下数据，完成下面的sql。

products表结构:

序号	字段名	类型	备注
1	product_id	int	商品编号
2	product_name	varchar(14)	商品名称
3	category	varchar(14)	商品类别
4	price	double	商品价格

```
create table products(product_id int comment '商品编号',
                      product_name varchar(14) comment '商品名称',
                      category varchar(14) comment '商品类别',
                      price double comment '商品价格');
```

products表数据:

```
insert into products(product_id,product_name,category,price) values
(1,'laptop','electronics',1000.00),
(2,'smartphone','electronics',800.00),
(3,'headphones','accseeories',100.00),
(4,'t-shirt','clothing',25.00),
(5,'mouse','electronics',20.00);
```

完成以下sql：

1 # 写一条SQL查询语句，找出所有属于"Electronics"类别的产品信息。

```
select * from products where category = 'Electronics';
+------------+--------------+-------------+-------+
| product_id | product_name | category    | price |
+------------+--------------+-------------+-------+
|          1 | laptop       | electronics |  1000 |
|          2 | smartphone   | electronics |   800 |
|          5 | mouse        | electronics |    20 |
+------------+--------------+-------------+-------+
3 rows in set (0.00 sec)
```

2 # 写一条SQL查询语句，找出价格高于等于100.00的产品信息。

```
select * from products where price >= 100;
+------------+--------------+-------------+-------+
| product_id | product_name | category    | price |
+------------+--------------+-------------+-------+
|          1 | laptop       | electronics |  1000 |
|          2 | smartphone   | electronics |   800 |
|          3 | headphones   | accseeories |   100 |
+------------+--------------+-------------+-------+
3 rows in set (0.00 sec)
```

3 # 写一条SQL查询语句，找出价格在20.00到1000.00之间的产品信息。

```
select * from products where price between 20 and 1000;
+------------+--------------+-------------+-------+
| product_id | product_name | category    | price |
+------------+--------------+-------------+-------+
|          1 | laptop       | electronics |  1000 |
|          2 | smartphone   | electronics |   800 |
|          3 | headphones   | accseeories |   100 |
|          4 | t-shirt      | clothing    |    25 |
|          5 | mouse        | electronics |    20 |
+------------+--------------+-------------+-------+
5 rows in set (0.00 sec)
```

4 # 对于"products"表，有一个新的需求：将"category"列改名为"product_category"

```
mysql> alter table products change category product_category varchar(14);
Query OK, 0 rows affected (0.38 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

5 # 将"price"列的数据类型从DECIMAL(10, 2)改为DECIMAL(12, 2)。请提供相应的SQL语句来执行这些修改。

```
mysql> ALTER TABLE products MODIFY COLUMN price decimal(12,2);
Query OK, 5 rows affected (0.10 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

6 # 对于"products"表，又有一个新的需求：由于某些原因，我们不再销售名为"Laptop"的产品，需要从表中删除该记录。请提供一条SQL删除语句来执行此操作。

```
mysql> delete from products where product_name = 'Laptop';
Query OK, 1 row affected (0.03 sec)
```

7 # 写一条SQL查询语句，找出商品名称包含字母"e"的商品信息。

```
mysql> select * from products where product_name like '%e%';
+------------+--------------+------------------+--------+
| product_id | product_name | product_category | price  |
+------------+--------------+------------------+--------+
|          2 | smartphone   | electronics      | 800.00 |
|          3 | headphones   | accseeories      | 100.00 |
|          5 | mouse        | electronics      |  20.00 |
+------------+--------------+------------------+--------+
3 rows in set (0.00 sec)
```

8 # 如果要购买10个Mouse，请显示出最终的价格。

```
mysql> select 10 * price as price from products where product_name =
'mouse';
+-------+
| price |
+-------+
|   200 |
+-------+
1 row in set (0.00 sec)
```

9 # 将商品的名字，商品的类别全部转换成小写形式并展示所有信息。

```
mysql> select lower(product_category) as '商品类别',lower(product_name) as
'商品名字' from products;
+-------------+------------+
| 商品类别    | 商品名字   |
+-------------+------------+
| electronics | smartphone |
| accseeories | headphones |
| clothing    | t-shirt    |
| electronics | mouse      |
+-------------+------------+
4 rows in set (0.00 sec)
```

10 # 将商品类别和名称拼接起来并显示其余的信息。比如：Elctronics-Mouse

```
mysql> select product_id,concat(product_category,'-',product_name) as '拼接',price from products;
+------------+------------------------+--------+
| product_id | 拼接                   | price  |
+------------+------------------------+--------+
|          2 | electronics-smartphone | 800.00 |
|          3 | accseeories-headphones | 100.00 |
|          4 | clothing-t-shirt       |  25.00 |
|          5 | electronics-mouse      |  20.00 |
+------------+------------------------+--------+
4 rows in set (0.00 sec)
```