

DBS lab2

1. 建立数据库

1) 以自己学号为数据库名字建立数据库。

```
1 | create DATABASE 3200102888_;
```

2. 在新建的数据库中新建三张表

1) 书book(书号, 类别, 书名,出版社,出版年份,作者,价格,总藏书量,目前库存量)

各属性的类型如下:

bno char(8) primary key,

category char(10),

title varchar(40),

press varchar(30),

year int,

author varchar(20),

price decimal(7,2),

total int ,

stock int,

```
1 | CREATE TABLE book(  
2 |     bno CHAR(8) NOT NULL,  
3 |     category CHAR(10) NOT NULL,  
4 |     title VARCHAR(30) NOT NULL,  
5 |     press VARCHAR(30) NOT NULL,  
6 |     year INT NOT NULL,  
7 |     author VARCHAR(20) NOT NULL,  
8 |     price DECIMAL(7,2) NOT NULL,  
9 |     total INT NOT NULL,  
10 |    stock INT NOT NULL,  
11 |    PRIMARY KEY (bno)  
12 | )ENGINE = InnoDB DEFAULT CHARSET=utf8;
```

2) 借书证card(卡号,姓名,单位,类别--其中T, G, U, O分别代表教师、研究生、本科生、管理人员)

各属性的类型如下:

cno char(7) primary key,

name varchar(10),

department varchar(40),

type char(1)

```

1 CREATE TABLE card(
2     cno CHAR(7) NOT NULL,
3     name VARCHAR(7) NOT NULL,
4     department VARCHAR(40) NOT NULL,
5     type CHAR(1) NOT NULL,
6     PRIMARY KEY (cno)
7 )ENGINE = InnoDB DEFAULT CHARSET=utf8;

```

3) 借书记录borrow(卡号,书号,借期,还期) 各属性的类型如下:

cno char(7),
bno char(8),
borrow_date date,
return_date date,

```

1 CREATE TABLE borrow(
2     cno CHAR(7) NOT NULL,
3     bno CHAR(8) NOT NULL,
4     borrow_date DATE NOT NULL,
5     return_date DATE NOT NULL
6 )ENGINE = InnoDB DEFAULT CHARSET=utf8;

```

3. 修改表结构、索引操作、视图操作

1) 给book表添加一个字段author_country varchar(30)。

```

1 DESC book;
2
3 +-----+-----+-----+-----+-----+-----+
4 | Field | Type | Null | Key | Default | Extra |
5 +-----+-----+-----+-----+-----+-----+
6 | bno   | char(8) | NO | PRI | NULL | |
7 | category | char(10) | NO | | NULL | |
8 | title | varchar(30) | NO | | NULL | |
9 | press | varchar(30) | NO | | NULL | |
10 | year  | int | NO | | NULL | |
11 | author | varchar(20) | NO | | NULL | |
12 | total | int | NO | | NULL | |
13 | stock | int | NO | | NULL | |
14 +-----+-----+-----+-----+-----+-----+
15 ALTER TABLE book ADD author_country VARCHAR(30);
16 DESC book;
17
18 +-----+-----+-----+-----+-----+-----+
19 | Field | Type | Null | Key | Default | Extra |
20 +-----+-----+-----+-----+-----+-----+
21 | bno   | char(8) | NO | PRI | NULL | |
22 | category | char(10) | NO | | NULL | |
23 | title | varchar(30) | NO | | NULL | |
24 | press | varchar(30) | NO | | NULL | |
25 | year  | int | NO | | NULL | |
26 | author | varchar(20) | NO | | NULL | |
27 | total | int | NO | | NULL | |

```

```

26 | stock          | int      | NO   |      | NULL   |      |
27 | author_country | varchar(30) | YES  |      | NULL   |      |
28 | +-----+-----+-----+-----+-----+-----+

```

2) 删除book表新添加的字段author_country。

```

1 | ALTER TABLE book DROP author_country;
2 | DESC book;
3 | +-----+-----+-----+-----+-----+-----+
4 | Field      | Type      | Null | Key | Default | Extra |
5 | +-----+-----+-----+-----+-----+-----+
6 | bno        | char(8)   | NO   | PRI | NULL    |      |
7 | category   | char(10)  | NO   |     | NULL    |      |
8 | title      | varchar(30) | NO   |     | NULL    |      |
9 | press      | varchar(30) | NO   |     | NULL    |      |
10 | year       | int       | NO   |     | NULL    |      |
11 | author     | varchar(20) | NO   |     | NULL    |      |
12 | total      | int       | NO   |     | NULL    |      |
13 | stock      | int       | NO   |     | NULL    |      |
14 | +-----+-----+-----+-----+-----+-----+

```

3) 在book表title字段增加一个索引。

```

1 | ALTER TABLE book ADD index title_index(title);
2 | mysql> DESC book;
3 | +-----+-----+-----+-----+-----+-----+
4 | Field      | Type      | Null | Key | Default | Extra |
5 | +-----+-----+-----+-----+-----+-----+
6 | bno        | char(8)   | NO   | PRI | NULL    |      |
7 | category   | char(10)  | NO   |     | NULL    |      |
8 | title      | varchar(30) | NO   | MUL | NULL    |      |
9 | press      | varchar(30) | NO   |     | NULL    |      |
10 | year       | int       | NO   |     | NULL    |      |
11 | author     | varchar(20) | NO   |     | NULL    |      |
12 | total      | int       | NO   |     | NULL    |      |
13 | stock      | int       | NO   |     | NULL    |      |
14 | +-----+-----+-----+-----+-----+-----+

```

4) 删除前面刚建立的索引。

```

1 | drop index title_index on book;
2 | mysql> DESC book;
3 | +-----+-----+-----+-----+-----+-----+
4 | Field      | Type      | Null | Key | Default | Extra |
5 | +-----+-----+-----+-----+-----+-----+
6 | bno        | char(8)   | NO   | PRI | NULL    |      |
7 | category   | char(10)  | NO   |     | NULL    |      |
8 | title      | varchar(30) | NO   |     | NULL    |      |
9 | press      | varchar(30) | NO   |     | NULL    |      |
10 | year       | int       | NO   |     | NULL    |      |
11 | author     | varchar(20) | NO   |     | NULL    |      |
12 | total      | int       | NO   |     | NULL    |      |
13 | stock      | int       | NO   |     | NULL    |      |
14 | +-----+-----+-----+-----+-----+-----+
15 | 8 rows in set (0.00 sec)

```

5) 以book表为基础建立视图book_view, 包括bno,category,title,press,year,author这些字段。

```
1 CREATE VIEW book_view AS SELECT bno,category,title,press,year,author FROM
  book;
2 mysql> desc book_view;
3 +-----+-----+-----+-----+-----+
4 | Field | Type | Null | Key | Default | Extra |
5 +-----+-----+-----+-----+-----+
6 | bno   | char(8) | NO | | NULL | |
7 | category | char(10) | NO | | NULL | |
8 | title | varchar(30) | NO | | NULL | |
9 | press | varchar(30) | NO | | NULL | |
10 | year | int | NO | | NULL | |
11 | author | varchar(20) | NO | | NULL | |
12 +-----+-----+-----+-----+-----+
```

4. 导入数据

1) 批量执行如下语句插入如下数据供后面实验使用。

```
1 insert into book values('bno1','计算机','SQL Server 2008完全学习手册','清华出版
  社',2001,'郭郑州',79.80,5,3);
2
3 insert into book values('bno2','计算机','程序员的自我修养','电子工业出版
  社',2013,'俞甲子',65.00,5,5);
4
5 insert into book values('bno3','教育','做新教育的行者','福建教育出版社',2002,'高云
  鹏',25.00,3,2);
6
7 insert into book values('bno4','教育','做孩子眼中有本领的父母','电子工业出版
  社',2013,'高云鹏',23.00,5,5);
8
9 insert into book values('bno5','英语','实用英文写作','高等教育出版社',2008,'庞继
  贤',33.00,3,2);
10
11
12
13 insert into card values('cno1','张三','计算机学院','U');
14
15 insert into card values('cno2','李四','农学院','U');
16
17 insert into card values('cno3','王五','计算机学院','T');
18
19 insert into card values('cno4','朱六','计算机学院','G');
20
21 insert into card values('cno5','延七','经济学院','O');
22
23 insert into card values('cno6','凤姐','经济学院','O');
24
25
26
27 insert into borrow values('cno1','bno1','2010-6-4','2010-6-10');
28
29 insert into borrow values('cno1','bno2','2010-6-5','2010-6-10');
```

```

31 insert into borrow values('cno2','bno2','2010-7-4','2010-7-10');
32
33 insert into borrow values('cno3','bno3','2010-8-4','2010-8-10');
34
35 insert into borrow values('cno4','bno4','2010-9-4','2010-9-10');
36

```

5. 按要求插入删除数据

1) 删除名字为'凤姐'的借书卡记录。

```

1  mysql> select * from card;
2
3  +-----+-----+-----+-----+
4  | cno  | name  | department  | type |
5  +-----+-----+-----+-----+
6  | cno1 | 张三  | 计算机学院  | U    |
7  | cno2 | 李四  | 农学院      | U    |
8  | cno3 | 王五  | 计算机学院  | T    |
9  | cno4 | 朱六  | 计算机学院  | G    |
10 | cno5 | 延七  | 经济学院    | O    |
11 | cno6 | 凤姐  | 经济学院    | O    |
12 +-----+-----+-----+-----+
13 DELETE FROM card WHERE name='凤姐';
14 mysql> select * from card;
15
16 +-----+-----+-----+-----+
17 | cno  | name  | department  | type |
18 +-----+-----+-----+-----+
19 | cno1 | 张三  | 计算机学院  | U    |
20 | cno2 | 李四  | 农学院      | U    |
21 | cno3 | 王五  | 计算机学院  | T    |
22 | cno4 | 朱六  | 计算机学院  | G    |
23 | cno5 | 延七  | 经济学院    | O    |
24 +-----+-----+-----+-----+

```

2) 修改名字为'延七'的借书卡记录中department改为'管理学院'

```

1  UPDATE card SET department='管理学院' WHERE NAME='延七';
2  mysql> select * from card;
3
4  +-----+-----+-----+-----+
5  | cno  | name  | department  | type |
6  +-----+-----+-----+-----+
7  | cno1 | 张三  | 计算机学院  | U    |
8  | cno2 | 李四  | 农学院      | U    |
9  | cno3 | 王五  | 计算机学院  | T    |
10 | cno4 | 朱六  | 计算机学院  | G    |
11 | cno5 | 延七  | 管理学院    | O    |
12 +-----+-----+-----+-----+

```

6. SQL**查询、修改等操作**

1) 列出当前库存在5本以下的书（书名、作者、出版社、年份，库存量）。

```

1 SELECT author,title,press,year,stock FROM book WHERE STOCK<5;
2 mysql> SELECT author,title,press,year,stock FROM book WHERE STOCK<5;
3 +-----+-----+-----+-----+-----+
4 | author | title | press |
5 | year | stock |
6 +-----+-----+-----+-----+-----+
7 | 郭郑州 | SQL Server 2008完全学习手册 | 清华大学出版社 |
8 | 2001 | 3 |
9 | 高云鹏 | 做新教育的行者 | 福建教育出版社 |
10 | 2002 | 2 |
11 | 庞继贤 | 实用英文写作 | 高等教育出版社 |
12 | 2008 | 2 |
13 +-----+-----+-----+-----+-----+

```

2) 列出张三同学借过的书的信息（列出姓名、书名、借书时间字段）。

```

1 SELECT name,title,borrow_date FROM book a JOIN borrow b JOIN card c on
2 b.cno=c.cno and a.bno=b.bno WHERE name ='张三';
3 +-----+-----+-----+
4 | name | title | borrow_date |
5 | 张三 | SQL Server 2008完全学习手册 | 2010-06-04 |
6 | 张三 | 程序员的自我修养 | 2010-06-05 |
7 +-----+-----+-----+

```

3) 列出book表中价格最高的书的所有字段信息。

```

1 mysql> SELECT *
2 -> FROM book
3 -> WHERE price=(SELECT MAX(price) FROM book);
4 +-----+-----+-----+-----+-----+
5 | bno | category | title | press |
6 | year | author | price | total | stock |
7 +-----+-----+-----+-----+-----+
8 | bno1 | 计算机 | SQL Server 2008完全学习手册 | 清华大学出版社 |
9 | 2001 | 郭郑州 | 79.80 | 5 | 3 |
10 +-----+-----+-----+-----+-----+

```

4) 求当前库所有书的总藏书量、最高书价、最低书价。

```

1 mysql> SELECT MAX(price) AS max_price FROM book;
2 +-----+
3 | max_price |
4 +-----+
5 | 79.80 |
6 +-----+
7 1 row in set (0.00 sec)
8
9 mysql> SELECT MIN(price) AS min_price FROM book;

```

```

10  +-----+
11  | min_price |
12  +-----+
13  |      2.00 |
14  +-----+
15  1 row in set (0.00 sec)
16
17  mysql> SELECT SUM(stock) AS sum_stock FROM book;
18  +-----+
19  | sum_stock |
20  +-----+
21  |      19 |
22  +-----+
23  1 row in set (0.00 sec)

```

5) 列出藏书量大于1的出版社的名称和藏书数。

```

1  SELECT press,stock FROM book WHERE stock>1;
2  +-----+-----+
3  | press                | stock |
4  +-----+-----+
5  | 清华大学出版社      |      3 |
6  | 电子工业出版社      |      5 |
7  | 福建教育出版社      |      3 |
8  | 电子工业出版社      |      5 |
9  | 高等教育出版社      |      3 |
10 +-----+-----+

```

6) 列出从未借过书的借书证卡号。

```

1  mysql> SELECT a.cno FROM card a LEFT JOIN borrow b ON a.cno=b.cno WHERE
   borrow_date IS NULL;
2  +-----+
3  | cno |
4  +-----+
5  | cno5 |
6  +-----+
7  1 row in set (0.00 sec)

```

7) 通过 book_view视图 列出所有的书籍字段信息 (bno,category,title,press,year,author) 。

```

1  select * from book_view;
2  +-----+-----+-----+-----+-----+
   | bno | category | title | year | author | press |
3  +-----+-----+-----+-----+-----+
4  | bno1 | 计算机 | SQL Server 2008完全学习手册 | 2001 | 郭郑州 | 清华大学出版社 |
5  +-----+-----+-----+-----+-----+
6  | bno2 | 计算机 | 程序员的自我修养 | 2013 | 俞甲子 | 电子工业出版 |
7  | bno3 | 教育 | 做新教育的行者 | 2002 | 高云鹏 | 福建教育出版 |
8  | bno4 | 教育 | 做孩子眼中有本领的父母 | 2013 | 高云鹏 | 电子工业出版 |
9  +-----+-----+-----+-----+-----+

```

