

《数据库原理与设计》实验报告

年级、专业、班级	2023 级软件工程 01		姓名	
实验题目	实验 10 存储过程和用户自定义函数			
实验时间	2024/11/5	实验地点	DS1501	
实验成绩		实验性质	<input checked="" type="checkbox"/> 验证性 <input type="checkbox"/> 设计性 <input type="checkbox"/> 综合性	
<p>教师评价：</p> <p><input type="checkbox"/>算法/实验过程正确； <input type="checkbox"/>源程序/实验内容提交 <input type="checkbox"/>程序结构/实验步骤合理；</p> <p><input type="checkbox"/>实验结果正确； <input type="checkbox"/>语法、语义正确； <input type="checkbox"/>报告规范；</p> <p>其他：</p> <p>评价教师签名：</p>				
<p>一、实验目的</p> <p>[1] 掌握创建、执行存储过程的方法；</p> <p>[2] 掌握查看、修改、删除存储过程的方法；</p> <p>[3] 掌握用户定义函数的创建、修改和删除的方法。</p>				
<p>二、实验项目内容</p> <p>1. 针对数据库 Library 创建下面存储过程：</p> <p>(1) 利用读者姓名查询该读者借阅的书籍名称、借阅时间、书籍的作者。</p> <p>(2) 查询书籍的最高价格和最低价格。</p> <p>(3) 利用读者姓名和书籍名检索该书籍的作者、价格、书籍的借阅时间和归还时间。</p> <p>(4) 根据书籍名统计该书籍借阅的人数，并给出“数据结构”的人数。</p> <p>(5) 根据书籍名查询借阅该书籍的读者姓名、年龄、教育程度、借阅时间、归还时间，给出“操作系统概论”书籍的查询信息，并按书籍借阅时间降序排序。</p> <p>2. 针对数据库 Library 创建以下存储函数：</p> <p>(1) 创建一个函数，要求：根据读者姓名和借阅书籍名查询该读者借阅的时间。</p> <p>(2) 创建一个函数，要求：根据借阅书籍名，统计读者平均年龄。</p> <p>(3) 使用流程控制函数 case()实现如下功能：查询读者的编号和读者借书次数，根据读者借书次数输出读者等级，如果读者借书次数大于等于 5，读者等级为 A，如果读者借书次数大于等于 2 并且小于 5，读者等级为 B，如果读者借书次数大于等于 0 并且小于 2，读者等级为 C，否则读者等级为 D。</p>				

报告创建时间：

三、实验过程或算法（源程序）

1.1

delimiter \$

```
create procedure as01(in in_name varchar(20),out out_btitle varchar(100),out  
out_borrowdata timestamp,out out_returndata timestamp )
```

```
begin
```

```
select                btitle,borrowdate,returndate                into  
out_btitle,out_borrowdata,out_returndata  from  borrow,reader,book  where  
rname=in_name and borrow.rno=reader.rno and book.bno=borrow.bno;
```

```
END$
```

delimiter ;

```
call as01('林可',@btitle, @borrowdata,@returndata);
```

```
select @btitle, @borrowdata,@returndata
```

1.2

delimiter \$

```
create procedure as02(out minprince decimal(5,2),out maxprince decimal(5,2) )
```

```
begin
```

```
select max(bprice) into maxprince from book;
```

```
select min(bprice) into minprince from book;
```

```
END$
```

delimiter ;

```
call as02( @minprice,@maxprice);
```

```
select  @minprice,@maxprice
```

1.3

delimiter \$

```
create procedure as7(in inname varchar(20),out outbtitle varchar(100),out  
outborrowdate timestamp,out outauthor varchar(50))
```

```
begin
```

```
select btitle,borrowdate,bauthor into outbtitle,outborrowdate, outauthor from  
book,borrow,reader where book.bno=borrow.bno and reader.rno=borrow.rno  
and rname=inname;
```

```
END$
```

delimiter ;

```
call as7('林可',@btitle,@bdate,@bauthor);
```

```
select @btitle,@bdate,@bauthor
```

1.4

delimiter \$

```
create procedure as11(in in_btitle varchar(100),out num int(4),out num_shuju  
int(4))
```

```
begin
```

```

select count(*) into num from book,borrow where book.bno=borrow.bno and
btitle=in_btitle group by btitle;
select count(*) into num_shuju from book,borrow where book.bno=borrow.bno
and btitle='数据结构' group by btitle;
END$
delimiter ;
call as11('英语世界',@num,@num_shuju);
select @num,@num_shuju

```

1.5

```

delimiter $
create procedure as11(in in_btitle varchar(100))
begin
select rname,rage,reduction,borrowdate,returndate from book,borrow,reader
where book.bno=borrow.bno and borrow.rno=reader.rno and btitle=in_btitle
group by btitle desc;
select rname,rage,reduction,borrowdate,returndate from book,borrow,reader
where book.bno=borrow.bno and borrow.rno=reader.rno and btitle='操作系统
概论' group by btitle;
END$
delimiter ;

```

2.1

```

use library
drop function if exists as3
delimiter $
create function as3(in_btitle varchar(100),in_rname varchar(20))
returns timestamp
reads sql data
return(select borrowdate from borrow,reader,book where
reader.rno=borrow.rno and book.bno=borrow.bno and btitle=in_btitle and
rname=in_rname
)$
delimiter ;
select as3('计算机网络基础','黄河')

```

2.2

```

use library
drop function if exists as4
delimiter $
create function as4(in_btitle varchar(100))
returns float
reads sql data
return(select avg(rage) from borrow,reader,book where reader.rno=borrow.rno

```

```

and book.bno=borrow.bno and btitle=in_btitle
)$
delimiter ;
select as4('数据库基础')

```

2.3

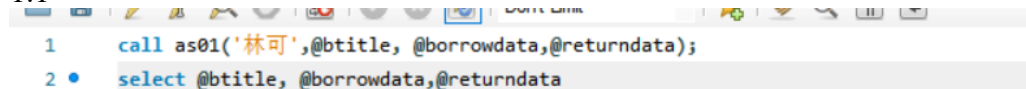
```

select rno,count(*) 借阅,
case when count(*)>=5 then 'A'
when count(*)>=2 and count(*)<5 then 'B'
when count(*)>=0 and count(*)<2 then 'C'
else 'D'
end 等级
from borrow group by rno;

```

四、实验结果及分析和（或）源程序调试过程

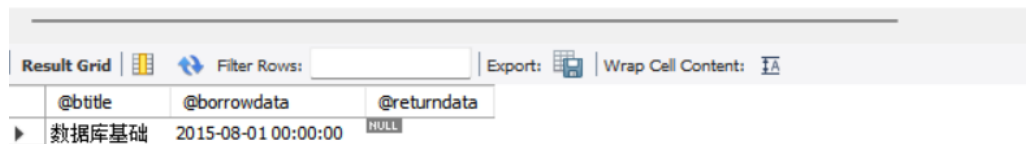
1.1



```

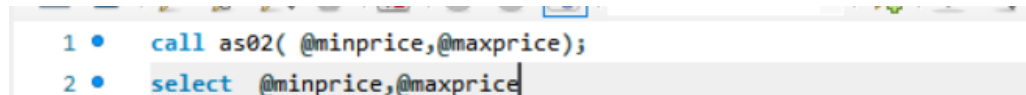
1 call as01('林可',@btitle, @borrowdata,@returndata);
2 select @btitle, @borrowdata,@returndata

```



	@btitle	@borrowdata	@returndata
▶	数据库基础	2015-08-01 00:00:00	NULL

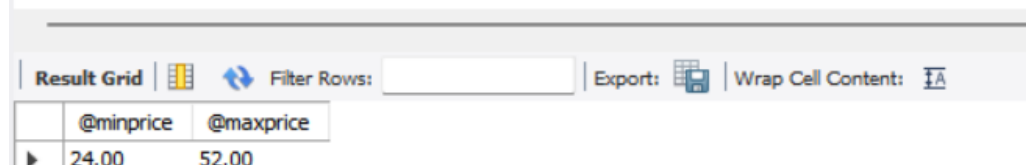
1.2



```

1 call as02(@minprice,@maxprice);
2 select @minprice,@maxprice

```



	@minprice	@maxprice
▶	24.00	52.00

1.3

```
1 call as7('林可',@btitle,@bdate,@bauthor);
2 • select @btitle,@bdate,@bauthor
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	@btitle	@bdate	@bauthor		
▶	数据库基础	2015-08-01 00:00:00	陈宏伟		

1.4

```
1 call as11('英语世界',@num,@num_shuju);
2 • select @num,@num_shuju
```

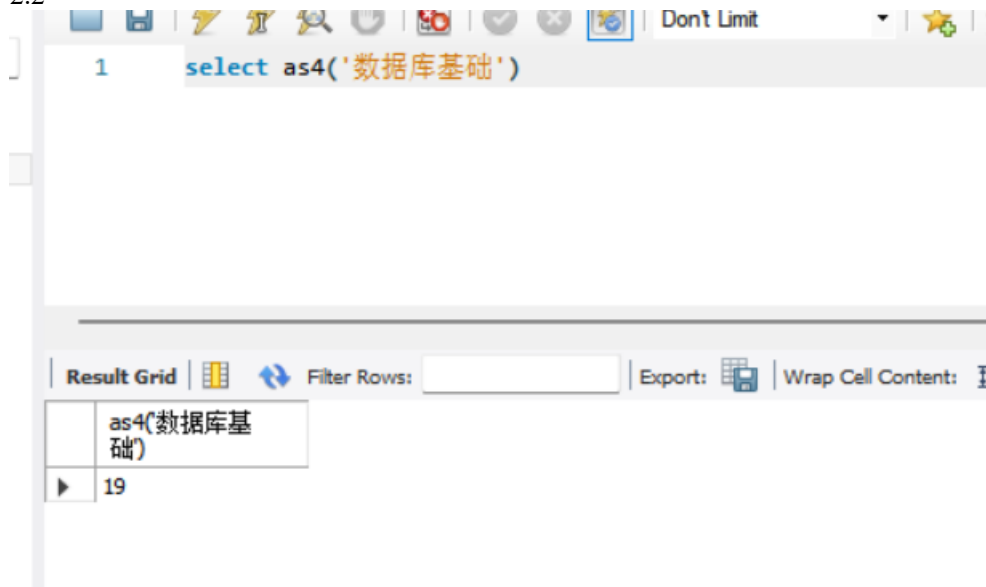
Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	@num	@num_shuju			
▶	1	2			

2.1

```
1 select as3('计算机网络基础','黄河')
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	as3('计算机网络基础','黄河')				
▶	2015-06-05 00:00:00				

2.2

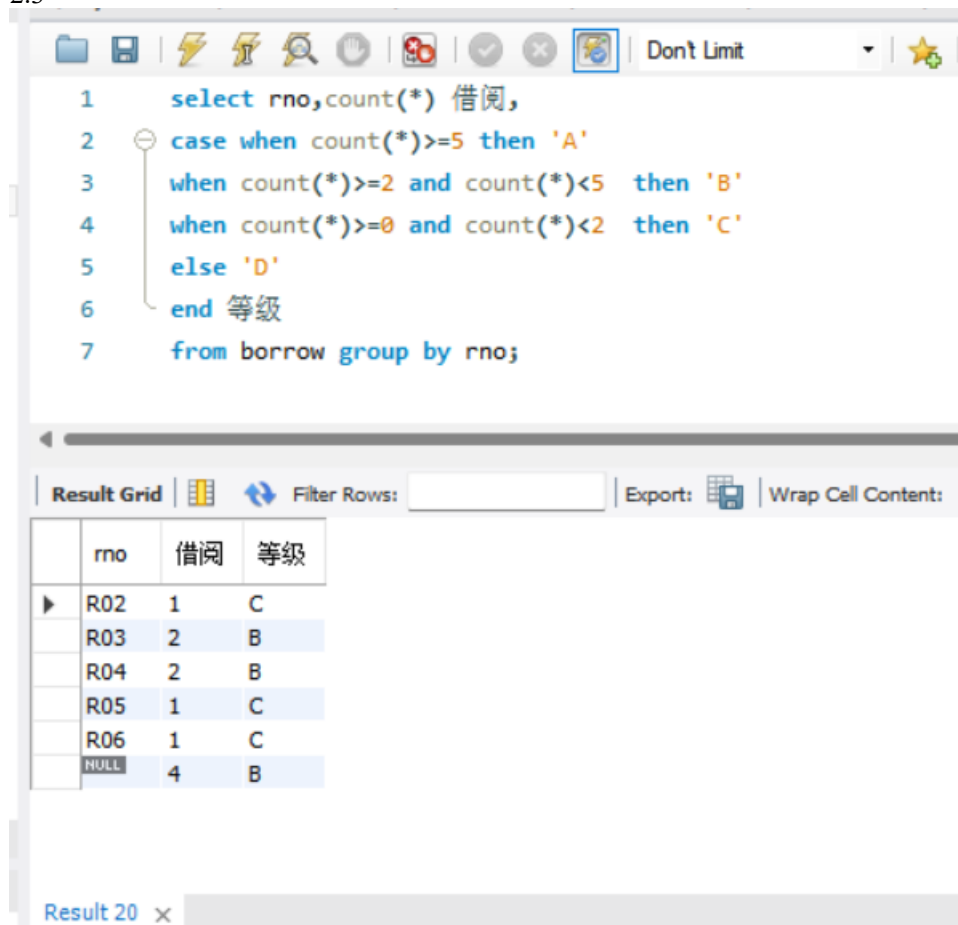


The screenshot shows a SQL IDE interface. At the top, there is a toolbar with various icons and a dropdown menu set to "Don't Limit". Below the toolbar, a SQL query is entered in a text area:

```
1 select as4('数据库基础')
```

Below the query editor, there is a "Result Grid" section. It includes a "Filter Rows:" input field, an "Export:" button, and a "Wrap Cell Content:" checkbox. The result grid itself contains a single row with two columns: the first column contains the text "as4(数据库基础)" and the second column contains the value "19".

2.3



The screenshot shows a SQL IDE interface. At the top, there is a toolbar with various icons and a dropdown menu set to "Don't Limit". Below the toolbar, a SQL query is entered in a text area:

```
1 select rno,count(*) 借阅,
2 case when count(*)>=5 then 'A'
3 when count(*)>=2 and count(*)<5 then 'B'
4 when count(*)>=0 and count(*)<2 then 'C'
5 else 'D'
6 end 等级
7 from borrow group by rno;
```

Below the query editor, there is a "Result Grid" section. It includes a "Filter Rows:" input field, an "Export:" button, and a "Wrap Cell Content:" checkbox. The result grid displays the following data:

	rno	借阅	等级
▶	R02	1	C
	R03	2	B
	R04	2	B
	R05	1	C
	R06	1	C
	NULL	4	B

At the bottom of the IDE, there is a tab labeled "Result 20" with a close button (X).

