广州大学学生实验报告

开课实验室： 电子楼 418　　2019 年 5 月 30 日

学院	计算机科学与网络工程学院	年级、专业、班	软件 171	姓名	谢金宏	学号	1706300001
实验课程名称	数据库原理					成绩	
实验项目名称	实验七 数据库综合实验					指导老师	张少宏

教师评语：

一、实验目的

设计、实现与下面给定问题背景的相关的功能，涵盖尽量多的数据库系统提供的功能（比如用关键码、约束、触发器等保证数据的一致性，用过程或函数简化输入/查询功能，用视图做数据表的连接/分类统计等）。

二、实验环境

安装有 Oracle 11g 数据库软件的远程计算机和安装有 SQL Developer 软件的本地计算机。

三、实验内容

已知关系模型如下：

供应商：S(SNO,SNAME,CITY,STATUS)

零件：P(PNO,PNAME,WEIGHT,COLOR,CITY)

供应货：SP(SNO,PNO,QTY)

各属性的含义可由属性名体现，供应货关系 SP 表示某供应商 SNO 供应了 PNO 零件，数量为 QTY。

四、实验步骤

本次实验中使用的代码：

代码.sql

```sql
-- 创建 S 表
create table "S"(
    "SNO" integer primary key,
    "SName" nvarchar2(16) not null,
    "City" nvarchar2(16) not null,
    "Status" nvarchar2(16) check("Status" in ('正常', '停工')) not null
);


-- 同一个城市不存在同名的两个工厂
create unique index "SName_City_UK" on "S" (
    "SName" DESC,
    "City" DESC
);

-- 创建 P 表
create table "P"(
    "PNO" integer primary key,
    "PName" nvarchar2(16) not null,
    "Weight" number not null,
    "Color" nvarchar2(16) not null,
    "City" nvarchar2(16) not null
);

-- 创建 SP 表
create table "SP"(
    "SNO" integer references "S"("SNO"),
    "PNO" integer references "P"("PNO"),
    "Qty" integer not null,
    primary key ("SNO", "PNO")
);

-- 用于产生 ID 的序列
create sequence "UIDSequence"
start with 1
increment by 1
nocycle;
```

```
-- 为插入语句绑定触发器
create trigger "AutoID_S" before insert
on "S" for each row
begin
    select "UIDSequence".nextval into :new."SNO" from dual;
end;

create trigger "AutoID_P" before insert
on "P" for each row
begin
    select "UIDSequence".nextval into :new."PNO" from dual;
end;

-- 插入 S 表数据
insert into "S" ("SName", "City", "Status") values ('广岭重工', '郑州', '正常');
insert into "S" ("SName", "City", "Status") values ('神奇化工', '郑州', '正常');
insert into "S" ("SName", "City", "Status") values ('恒阳一汽', '郑州', '正常');
insert into "S" ("SName", "City", "Status") values ('福安通化', '长沙', '正常');
insert into "S" ("SName", "City", "Status") values ('黑钢国际', '沈阳', '正常');
insert into "S" ("SName", "City", "Status") values ('碱叶五代', '天津', '停工');
insert into "S" ("SName", "City", "Status") values ('海口制造', '海口', '正常');

-- 插入 P 表数据
insert into "P" ("PName", "Weight", "Color", "City")
 values ('双铜', 34, '紫黑', '康定');
insert into "P" ("PName", "Weight", "Color", "City")
values ('双铜', 34, '紫黑', '广州');
insert into "P" ("PName", "Weight", "Color", "City")
values ('赤金', 20, '金', '康定');
……

-- 插入 SP 表数据
insert into "SP" ("SNO", "PNO", "Qty") values (1, 8, 1);
insert into "SP" ("SNO", "PNO", "Qty") values (2, 9, 2);
insert into "SP" ("SNO", "PNO", "Qty") values (3, 10, 3);
insert into "SP" ("SNO", "PNO", "Qty") values (4, 11, 4);
insert into "SP" ("SNO", "PNO", "Qty") values (7, 14, 7);
insert into "SP" ("SNO", "PNO", "Qty") values (1, 15, 8);
……
```

```
-- SP 表人类友好视图
create or replace view "FriendlySP"
as
select "SName", "S"."City" "SCity", "Status" "SStatus", "PName", "Weight",
"Color", "P"."City" "PCity", "Qty"
from "P", "S", "SP"
where "SP"."PNO"="P"."PNO" and "SP"."SNO"="S"."SNO"
with check option;

-- 正常运作的工厂一览视图
create or replace view "WokingSupplier"
as
select "SName", "City", "Status"
from "S"
where "S"."Status"='正常'
with check option;

-- 广州零件一览视图
create or replace view "PartsOfGuangzhou"
as
select *
from "FriendlySP"
where "PCity"='广州'
with check option;

-- 康定零件一览视图
create or replace view "PartsOfKangding"
as
select *
from "FriendlySP"
where "PCity"='康定'
with check option;
```

五、分析总结

完成了实验的基本要求。