# 实验报告

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| 《数据库系统》——实验报告 |
| 实验内容与完成情况：  前置知识：  **供应商表S(SNO,SNAME,STATUS,CITY)**  **零件表P(PNO,PNAME,COLOR,WEIGHT)**  **工程项目表J(JNO,JNAME,CITY)**  **供应情况表SPJ(S NO,PNO,JNO,QTY)**  1. 从供应商表 S 中 找出所有供应商姓名与城市  select SNAME, s.CITY from s;    2. 从 零件表 P 中 找出所有零件的 名称、颜色和重量  select PNAME, COLOR, WEIGHT from p;    3.从 SPJ 表中找出工程号码，它使用了 S1 供应的零件  select JNO from spj where SNO = 'S1';    4.从 P 表中找出工程 J2 使用的零件名称，并从 SPJ 表中找出零件的数量，将他们联结在一起。  select p.PNAME, spj.QTY from p inner join spj on p.PNO = spj.PNO where spj.JNO = 'J2';    5. 从 SPJ 表格中搜索出使用上海厂商生产的零件  select PNO from spj inner join s on spj.SNO = s.SNO where s.CITY = '上海';    6. *找出使用了上海供应商供应的零件的工程名称。* select distinct JNAME from j  inner join spj on spj.JNO = j.JNO  inner join s where spj.PNO  in  (select PNO  from spj inner join s on spj.SNO = s.SNO  where s.CITY = '上海');    7.找出供应工程J1零件的供应商号SNO。select distinct SNO from spj where JNO = 'J1';    8. 找出供应工程J1零件P1的供应商号SNO。select distinct SNO from spj where JNO = 'J1' and PNO = 'P1';    9. 找出供应工程J1零件P1的供应商号SNO。select distinct SNO from spj where JNO = 'J1' and PNO = 'P1';    10.找出没有使用 天津供应商生产的 红色零件的 工程号JNO。  select JNO from j where JNO not in select JNO  from spj,s,p  where spj.PNO = p.PNO and spj.SNO = s.SNO  and s.city='天津'and p.COLOR='红');    11. 求解关于 project 的所有信息。  select *\** from j;    12.求解在北京的所有 project 的信息  select *\** from j where CITY = '北京';    13.求为project（工程）J1 提供part（零件）的supplier（供应商）的号码。select distinct SNO from spj where spj.JNO = 'J1';    14.求数量在300 到750 之间的发货。select *\** from spj where QTY between 300 and 750;    15. *求所有的零件颜色 / 城市对。注意：这里及以后所说的“所有”特指在数据库中* select COLOR, s.CITY  from p  inner join spj  inner join s on spj.SNO = s.SNO  inner join j on spj.JNO = j.JNO union select COLOR, j.CITY  from p  inner join spj  inner join s on spj.SNO = s.SNO  inner join j on spj.JNO = j.JNO;    16.求所有的supplier-number / part-number / project-number 对。其中所指的供应商和工程在同一个城市。select spj.SNO, spj.PNO, spj.JNO from spj  inner join s on spj.SNO = s.SNO  inner join j on spj.JNO = j.JNO where s.CITY = j.CITY;    17.求所有的supplier-number / part-number / project-number 对。其中所指的供应商和工程不在同一个城市。select spj.SNO, spj.PNO, spj.JNO from spj  inner join s on spj.SNO = s.SNO  inner join j on spj.JNO = j.JNO where s.CITY != j.CITY;    18.求由北京供应商提供的零件的信息。select distinct p.PNO, p.COLOR, p.PNAME, p.WEIGHT from p inner join spj on p.PNO = spj.PNO inner join s on s.SNO = spj.SNO where s.CITY = '北京';    19. 求由北京供应商为北京工程供应的零件号。  select distinct spj.PNO  from spj  inner join s on spj.SNO = s.SNO  inner join j on spj.JNO = j.JNO  where s.CITY = '北京' and j.CITY = '北京';    20.求满足下面要求的城市对，在第一个城市的供应商为第二个城市的工程供应零件。 select s.CITY, j.CITY from s, j, spj where s.SNO = spj.SNO and j.JNO = spj.JNO;      21.求供应商为工程供应的零件的号码，要求供应商和工程在同一城市。select distinct spj.PNO from spj inner join j on spj.JNO = j.JNO inner join s on spj.SNO = s.SNO where s.CITY = j.CITY;    22.求至少被一个不在同一城市的供应商供应零件的工程号。 select distinct spj.JNO from s, j, spj where s.SNO=spj.SNO and j.JNO=spj.JNO and s.CITY <> j.CITY group by spj.JNO having *count*(spj.JNO) > 1;    23.求由同一个供应商供应的零件号的对。select distinct spj.PNO, back.PNO  from spj, spj as back  where spj.SNO = back.SNO and spj.PNO <> back.PNO;    24. 求所有由供应商S1 供应的工程号。  select JNO from spj where SNO = 'S1';    25.求供应商S1 供应的零件P1 的总量。select *SUM*(spj.QTY) from spj where spj.SNO = 'S1' and spj.PNO = 'P1';    26.对每个供应给工程的零件，求零件号、工程号和相应的总量。select spj.PNO, spj.JNO, spj.QTY from spj;      27.求为单个工程供应的零件数量超过350 的零件号。select distinct spj.PNO  from spj  where QTY > 350;    28.求由S1 供应的工程名称。select distinct j.JNAME  from j  inner join spj on j.JNO = spj.JNO  where spj.SNO = 'S1';    29.求由S1 供应的零件颜色。select distinct COLOR from p  inner join spj  on p.PNO = spj.PNO where spj.SNO = 'S1';    30.求供应给北京工程的零件号。select distinct spj.PNO from spj inner join j on spj.JNO = j.JNO where j.CITY = '北京';    31.求使用了S1 供应的零件的工程号。select distinct JNO  from spj  where PNO in  (select PNO from spj where SNO = 'S1');    32.求status 比S1 低的供应商号码。select s.SNO  from s  where s.STATUS < (select s.STATUS from s where s.SNO = 'S1');    33.求所在城市按字母排序为第一的工程号。select j.JNO from j order by CITY asc limit 1;    34.*求被供应零件P1 的平均数量大于供应给工程J1 的任意零件的最大数量的工程号。* select spj.JNO  from spj  where  (select *avg*(spj.QTY) from spj where PNO = 'P1') > (select *max*(spj.QTY) from spj where JNO = 'J1');    35. *求满足下面要求的供应商号码，该供应商供应给某个工程零件P1 的数量大于这个工程被供应的零件P1 的平均数量。*  select spj.SNO from spj where spj.PNO = 'P1'  and spj.QTY > (  select *AVG*(spj.QTY)  from spj  where spj.PNO = 'P1' ) group by spj.SNO;    36.求没有被北京供应商供应过红色零件的工程号码。select distinct spj.JNO from spj where JNO not in(  select distinct spj.JNO  from spj  inner join p on spj.PNO = p.PNO  inner join s on spj.SNO = s.SNO  inner join j on spj.JNO = j.JNO  where s.CITY = '北京' and p.COLOR = '红' );    37.求所用零件全被S1 供应的工程号码。select j.JNO from j where not exists(  select 1  from spj  where spj.JNO = j.**JNO** and spj.SNO != 'S1' )  and exists(  select 1  from spj  where spj.JNO = j.**JNO** and spj.SNO = 'S1' );    38. *求所有北京工程都使用的零件号码。* select distinct spj.PNO from spj join j on spj.JNO = j.JNO where j.CITY = '北京';    39. *求对所有工程都提供了同一零件的供应商号码。* select distinct spj.SNO from spj, spj as back where back.PNO = spj.PNO;    40. *求使用了S1 提供的所有零件的工程号码。* select distinct spj.JNO from spj, j where NOT *EXISTS* (  SELECT 1  FROM spj  WHERE spj.JNO = j.**JNO** AND spj.SNO != 'S1' )  AND *EXISTS* (  SELECT 1  FROM spj  WHERE spj.JNO = j.**JNO** AND spj.SNO = 'S1' );    41.求至少有一个供应商、零件或工程所在的城市。select distinct j.CITY from j union select distinct s.CITY from s;    42.求被北京供应商供应或被北京工程使用的零件号码。select distinct spj.PNO from spj where spj.SNO in (select SNO from s where CITY = '北京') or spj.JNO in (select JNO from j where CITY = '北京');    43.*求所有supplier-number / part-number 对，其中指定的供应商不供应指定的零件。* select distinct s.SNO, p.PNO from s join p where not *exists*(  select spj.SNO, spj.PNO  from spj  where s.**SNO** = spj.SNO and p.**PNO** = spj.SNO );      44.向p表追加如下记录（P0,PN0,蓝）。insert into db\_spj.p (PNO, PNAME, COLOR, WEIGHT) values ('P0', 'PNO', '蓝', 10.00);    45.把零件重量在15到20之间的零件信息追加到新的表p1中。create table p1 (  PNO varchar(10) not null comment '零件编号'  primary key,  PNAME varchar(10) not null comment '零件名称',  COLOR varchar(20) default 'Unknown' null comment '零件颜色',  WEIGHT decimal(10, 2) not null comment '零件重量（单位：克）',  constraint P\_UNIQUE  unique (PNO),  check (`WEIGHT` > 0) )  comment '零件备份表'; insert into p1 (PNO, PNAME, COLOR, WEIGHT) select PNO, PNAME, COLOR, WEIGHT from p where WEIGHT between 15 and 20;      46.向s表追加记录（s1, n2, ’上海’）能成功吗?为什么？insert into s (SNO, SNAME, STATUS, CITY) values ('S1', 'N2', '上海');    追加记录无法成功，因为没有指定供应商的状态。    48. 向spj表追加（s6,p1,j6,1000）本操作能正确执行吗？为什么？ 如果追加(s4,p1,j6,-10) 行吗？如果现在想强制追加这两条记录该怎么办？insert into spj (SNO, PNO, JNO, QTY) values ('S6', 'P1', 'J6', 1000); insert into spj (SNO, PNO, JNO, QTY) values ('S4', 'P1', 'J2', -10);    第一题的操作是不行的，因为第一题的操作需要修改 S 表的内容，存在外键约束    追加是可行的，因为在建表语句的时候并没有规定 QTY 为 unsigned int  如果现在想强制追加这两条记录，首先需要在 S 表中添加 S6的信息  然后需要修改 SPJ 表格的信息，让 QTY 允许为负值。  49.把s1供应商供应的零件为p1的所有项目对应的数量qty改为500。  UPDATE spj t SET t.QTY = 500 WHERE t.SNO = 'S1' AND t.PNO = 'P1';    50. 把qty值大于等于1000的所有供应商城市更改为‘北京’ 。UPDATE s, spj SET s.CITY = '北京' WHERE s.SNO in (select spj.SNO from spj where spj.QTY >= 1000);    这一道题有歧义，可以用 SUM 也可以不用 SUM  51.    无法正确执行，因为J表和SPJ表之间存在外键约束，      改成 J0 也是失败的，因为外键约束控制了修改的权限  52. 把零件重量低于15的增加3，高于15的增加2。update p set p.WEIGHT = p.WEIGHT + 2 where p.WEIGHT >= 15; update p set p.WEIGHT = p.WEIGHT + 3 where WEIGHT < 15;      *53. 删除为j7工程供应零件的所有供应商信息（如果建立外键时没有带级联删除选项，本操作能正确执行吗？为什么？）* delete from spj where JNO = 'J7';  在建立外键时没有指定级联删除（ON DELETE CASCADE），那么这个删除操作可能不会成功执行。因为必须确保spj表中没有引用这些即将被删除的供应商编号的记录。如果没有级联删除，不能直接删除供应商，因为这会导致spj表中的外键约束违反。    54.删除p1表中所有记录。delete from p1;      55． 删除供应商和工程在同一个城市的供应商信息。delete from spj where spj.SNO in (select s.SNO from s where s.CITY in (select j.CITY from j));    在做这两题之前，先把 spj 表的数据进行复原  create view sanjian\_view as select spj.SNO, spj.PNO, spj.QTY from spj where spj.JNO in (select j.JNO from j where j.JNAME = '三建');    *56.* 找出三建工程项目使用的各种零件代码及其数量；  select sanjian\_view.PNO, sanjian\_view.QTY from sanjian\_view; *57.* 找出供应商S1的供应情况；  select \* from sanjian\_view where SNO = 'S1'; *58.* 尝试更改该视图的每个字段，看看会发生什么？        首先，外键的约束在视图同样成立，  其次，视图的变化也会影响底层表格的变化。 |