```sql
drop table supplier;

drop table part;

drop table SP;



create table supplier (

s#    char(4),

sname varchar2(10),

status   int,

city varchar2(20),

primary key (s#));



create table part (

p#    char(4),

pname varchar2(10),

color   varchar2(10),

weight  float,

city varchar2(20),

primary key (p#));
```

```sql
create table SP (

s#    char(4),

p#    char(4),

QTY  int,

primary key (s#,p#),

foreign key (s#) references supplier (s#),

foreign key (p#) references part (p#));



insert into supplier values ('S1', 'Smith', 20, 'London');

insert into supplier values ('S2', 'Jones', 30, 'Paris');

insert into supplier values ('S3', 'Blake', 30, 'Paris');

insert into supplier values ('S4', 'Litva', 20, 'London');

insert into supplier values ('S5', 'Adams', 30, 'Athens');


insert into part values ('P1', 'Nut', 'Red', 12.0, 'London');

insert into part values ('P2', 'Bolt', 'Green', 17.0, 'Paris');

insert into part values ('P3', 'Nail', 'Red', 12.0, 'Paris');

insert into part values ('P4', 'Screw', 'Red', 14.0, 'London');

insert into part values ('P5', 'Cam', 'Blue', 12.0, 'Paris');

insert into part values ('P6', 'Cog', 'Red', 19.0, 'London');
```

```sql
insert into SP values ('S1', 'P1', 300);

insert into SP values ('S1', 'P2', 200);

insert into SP values ('S1', 'P3', 400);

insert into SP values ('S1', 'P4', 200);

insert into SP values ('S1', 'P5', 100);

insert into SP values ('S1', 'P6', 100);

insert into SP values ('S2', 'P1', 300);

insert into SP values ('S2', 'P2', 400);

insert into SP values ('S2', 'P3', 500);

insert into SP values ('S3', 'P2', 200);

insert into SP values ('S3', 'P3', 200);

insert into SP values ('S3', 'P4', 300);

insert into SP values ('S4', 'P2', 300);

insert into SP values ('S4', 'P3', 400);

commit;
```

select pname

from part p, supplier s, SP sp

where s.sname = 'Litva' and sp.s# = s.s# and sp.p# = p.p#;

```
SQL> select pname
from part p, supplier s, SP sp
where s.sname = 'Litva' and sp.s# = s.s# and sp.p# = p.p#;    2     3

PNAME
----------
Bolt
Screw

SQL>
```

select sname

from supplier s, part p, SP sp
where p.pname = 'Bolt' and
sp.p# = p.p# and s.s# = sp.s#;

```
SQL> select sname
from supplier s, part p, SP sp
where p.pname = 'Bolt' and
sp.p# = p.p# and s.s# = sp.s#;   2     3     4

SNAME
----------
Smith
Jones
Blake
Litva

SQL>
```

select sname from

supplier s, SP sp
where s.s# = sp.s#
and sp.QTY > 400;

```
SQL> select sname from
supplier s, SP sp
where s.s# = sp.s#
and sp.QTY > 400;    2    3    4

SNAME
----------
Jones

SQL>
```

select distinct sname from

supplier s, part p, SP sp
where p.color = 'Blue' or p.color = 'Green'
and p.p# = sp.p# and s.s# = sp.s#;

```
SQL>
SQL> select distinct sname from
  2  supplier s, part p, SP sp
  3  where p.color = 'Blue' or p.color = 'Green'
  4  and p.p# = sp.p# and s.s# = sp.s#;

SNAME
----------
Adams
Litva
Blake
Jones
Smith

SQL>
```

select distinct sname

from supplier s, part p1, part p2, SP sp1, SP sp2
where p1.color = 'Blue' and p2.color = 'Green' and sp1.p# =
p1.p#
and sp2.p# = p2.p# and sp1.s# = s.s# and sp2.s# = s.s#;

```
SQL> select distinct sname
from supplier s, part p1, part p2, SP sp1, SP sp2
where p1.color = 'Blue' and p2.color = 'Green' and sp1.p# = p1.p#
and sp2.p# = p2.p# and sp1.s# = s.s# and sp2.s# = s.s#;
  2    3    4

SNAME
----------
Litva
Blake
Jones
Smith

SQL>
```

select sname, pname

from supplier s, part p
where not exists (select * from sp where
sp.s# = s.s# and sp.p# = p.p#);

```
SQL> select sname, pname
from supplier s, part p
where not exists
( select * from sp where sp.s# = s.s# and sp.p# = p.p#);
  2    3    4
SNAME        PNAME
---------- ----------
Jones        Screw
Jones        Cam
Jones        Cog
Blake        Nut
Blake        Cam
Blake        Cog
Litva        Nut
Litva        Screw
Litva        Cam
Litva        Cog
Adams        Nut

SNAME        PNAME
---------- ----------
Adams        Bolt
Adams        Screw
Adams        Screw
Adams        Cam
Adams        Cog

16 rows selected.

SQL>
```

select sname from supplier s

where not exists(select * from SP where SP.s# = s.s#);

```
SQL>
select sname from supplier s
where not exists(select * from SP where SP.s# = s.s#); SQL>    2

SNAME
----------
Adams

SQL>
```

select sname from

supplier s where not exists(

select * from part p where not exists(

select * from SP sp where p.p# = SP.p# and s.s# = sp.s#));

```
SQL> select sname from
supplier s where not exists(
select * from part p where not exists(
select * from SP sp where p.p# = SP.p# and s.s# = sp.s#));    2    3    4

SNAME
----------
Smith

SQL>
```

select s1.sname from supplier s1

where s1.sname != 'Litva' and not exists(

select p.p# from part p, supplier s, SP sp

where s.sname = 'Litva' and s.s# = sp.s# and p.p# = sp.p#

minus

select p.p#

from part p, SP sp

where s1.s# = sp.s# and p.p# = sp.p#);

```
SQL>
SQL>
SQL> select s1.sname from supplier s1
where s1.sname != 'Litva' and not exists(
select p.p# from part p, supplier s, SP sp
where s.sname = 'Litva' and s.s# = sp.s# and p.p# = sp.p#
minus
select p.p#
from part p, SP sp
where s1.s# = sp.s# and p.p# = sp.p#);    2    3    4    5    6    7    8

SNAME
----------
Smith
Jones
Blake

SQL>
```

select sname, count(*), sum(QTY)
      from supplier natural join SP
      group by sname;

```
SQL> select sname, count(*), sum(QTY)
from supplier natural join SP
group by sname;   2    3

SNAME           COUNT(*)   SUM(QTY)
---------- ---------- ----------
Litva               2        700
Blake               3        700
Jones               3       1200
Smith               6       1300

SQL>
```