Database Systems Practical

Answer the following questions:

1、 Let the following relational tables be given: R = (A, B, C) and S = (D, E, F) where A, B, C, D, E, and F are the attributes (columns). Write the SQL statements that will express each of the queries given below:

1. ΠA(R)

```
select A
from R
```

2. σB = 13(R)

```
select B
from R
where B=13
```

3. ΠA,B(R c = d S)

```
select A,B
from R inner join S on R.C = S.D
```

2、 Given relation r as:

ename	project	dept
Kasper	Forecast	Accounting
Kasper	Audit	Accounting
Kasper	Spreadsheet	Admin
Mohan	Forecast	Accounting
Mohan	Audit	Admin
Mohan	Spreadsheet	Admin
Lin	Forecast	Admin
Lin	Audit	Admin
Lin	Spreadsheet	Admin

Given relation s as:

ename	dept
Kasper	Accounting
Mohan	Admin
Lin	Admin

Provide the results of the following operations. If an operation cannot be performed, state the reasons. Do not write the equivalent SQL statements.

1. σdept = 'Admin' AND project <> 'Audit'(**r**)

```sql
select dept
from r
where dept = 'Admin' and project <> 'Audit'
```

ename	project	dept
Kasper	Spreadsheet	Admin
Mohan	Spreadsheet	Admin
Lin	Forecast	Admin
Lin	Spreadsheet	Admin

2. r U s

```sql
select *
from r
union all
select *
from s
```

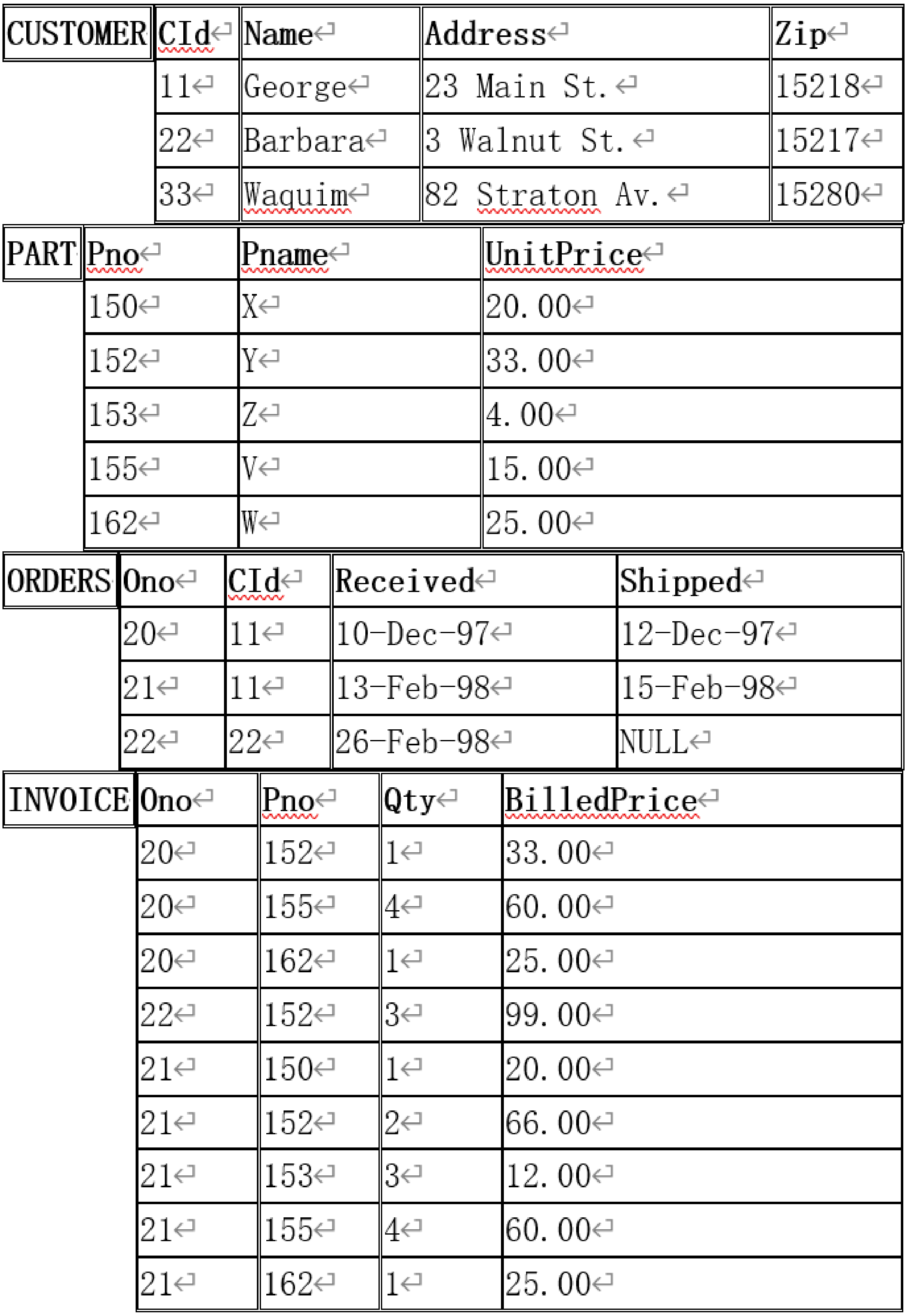
不能并，因为R,S中属性数目不相同，没有并相容性

3. Πdept(r) - Πdept(s)

```sql
(select dept from r)-(select dept from s)
```

dept
null

3、 Consider the following Mail Order database:



CUSTOMER	CId	Name	Address	Zip
	11	George	23 Main St.	15218
	22	Barbara	3 Walnut St.	15217
	33	Waquim	82 Straton Av.	15280

PART	Pno	Pname	UnitPrice
	150	X	20.00
	152	Y	33.00
	153	Z	4.00
	155	V	15.00
	162	W	25.00

ORDERS	Ono	CId	Received	Shipped
	20	11	10-Dec-97	12-Dec-97
	21	11	13-Feb-98	15-Feb-98
	22	22	26-Feb-98	NULL

INVOICE	Ono	Pno	Qty	BilledPrice
	20	152	1	33.00
	20	155	4	60.00
	20	162	1	25.00
	22	152	3	99.00
	21	150	1	20.00
	21	152	2	66.00
	21	153	3	12.00
	21	155	4	60.00
	21	162	1	25.00

In the table ORDERS above, specify in SQL the requirements that:

Received date cannot be undefined and that the Shipped date, if it is not NULL, should be greater than the Received date.

Translate in SQL the following queries. Note: The "Received" column in ORDERS table above refers to when the order is received by the system (and not when the ordered items are received by the customer).

1. Get the part number of parts that cost between 10 and 25 dollars.

```sql
select count(Pno)
from PART
where UnitPrice >10 and UnitPrice <25
```

2. For each part sold in 1998, list the total quantity sold in 1998. Sort your results in ascending order by the total billed price for each part for that year. Parts are considered sold when an order is received. The BilledPrice column in the Invoice table indicates the total price billed for that part (i.e., quantity sold multiplied by unit price minus discount, if any).

   以下两种我觉得都可行

```sql
select Pname， sum(Qty)
from INVOICE natural join ORDERS on INVOICE.Ono = ORDERS.Ono
group by Pname
having Received like "%-98"
order by BilledPrice ASC
```

```sql
select Ono,Qty,BilledPrice
from INVOICE
where Ono in (  select Ono
                from ORDERS
                where Received like "%-98")
compute sum(Qty)
order by BilledPrice ASC
```

3. Get those parts that were not sold in 1998. A part is considered sold when an order is received.

```sql
select Ono,Pno,Qty,BilledPrice
from INVOICE
where Ono not in (  select Ono
                    from ORDERS
                    where Received like "%-98"))
```

4、Given the following schema definitions, specify in SQL2 the referential integrity constraint on the EMPLOYEE relation that will prevent an employee from being assigned to a non-existent department.

create table EMPLOYEE

(id id_dom primary key deferrable,

name name_dom,

salary salary_dom,

dname dept_name_dom

);

create table DEPARTMENT

(name dept_name_dom primary key deferrable,

mgrid id_dom   foreign key references emp(id) deferrable,

budget budget_dom

);

```
create table EMPLOYEE(
id_dom char(20) not null,
name_dom char(40) not null,
salary_dom char(40) not null,
dept_name_dom char(40) not null,
primary key (id_dom));


create table DEPARTMENT(
dept_name_dom char(40) not null,
id_dom char(20) not null,
budget_dom char(40) not null,
primary key (dept_name_dom)
foreign key (id_dom) references EMPLOYEE (id_dom));
```