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1BM19CS230
CSE-4A

Consider the following database for
student enrollment for course :

STUDENT(snum: integer, sname:string, major: string, lvl: string, age: integer)

CLASS(cname: string, meetsat: time, room: string, fid: integer)

ENROLLED(snum: integer, cname:string)

FACULTY(fid: integer, fname:string, deptid: integer)

The meaning of these relations is straightforward; for example, Enrolled has one record per student-class pair such that the student is enrolled in the class. Level(lvl) is a two character code with 4 different values (example: Junior: JR etc)

Write the following queries in SQL.

No duplicates should be printed in any of the answers.

- i. Find the names of all Juniors (level = JR) who are enrolled in a class taught by "name"
- ii. Find the names of all classes that either meet in room R128 or have five or more Students enrolled.
- iii. Find the names of all students who are enrolled in two classes that meet at the same time.
- iv. Find the names of faculty members who teach in every room in which some class is taught.
- v. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.
- vi. Find the names of students who are not enrolled in any class.
- vii. For each age value that appears in Students, find the level value that appears most often. For example, if there are more FR level students aged 18 than SR, JR, or SO students aged 18, you should print the pair (18, FR).

```
create database studentfaculty;  
use studentfaculty;
```

```
create table Student(  
    snum int not null,  
    sname varchar(20) not null,  
    major varchar(2) not null,  
    lvl varchar(2) not null,  
    age int not null,  
    primary key(snum)  
);
```

```
create table Faculty(  
    fid int not null,  
    fname varchar(20) not null,
```

```

        deptid int not null,
        primary key(fid)
);

create table Class(
    cname varchar(20) not null,
    meetsat datetime not null,
    room varchar(4) not null,
    fid int not null,
    primary key(cname),
    foreign key(fid) references Faculty(fid)
);

```

```

create table Enrolled(
    snum int not null,
    cname varchar(20) not null,
    primary key(snum,cname),
    foreign key(snum) references Student(snum),
    foreign key(cname) references Class(cname)
);

```

```

insert into Student(snum,sname,major,lvl,age)
values (1,"Jhon","CS","Sr",19),
       (2,"Smith","CS","Jr",20),
       (3,"Jacob","CV","Sr",20),
       (4,"Tom","CS","Jr",20),
       (5,"Rahul","CS","Jr",20),
       (6,"Ria","CS","Sr",21);

```

```

insert into Faculty(fid,fname,deptid)
values (11,"Harish",1000),
       (12,"MV",1000),
       (13,"Mira",1001),
       (14,"Shiva",1002),
       (15,"Nupur",1000);

```

```

insert into Class(cname,meetsat,room,fid)
values ("Class1","2015-11-12 10:15:16","R1",14),
       ("Class10","2015-11-12 10:15:16","R128",14),
       ("Class2","2015-11-12 10:15:20","R2",12),
       ("Class3","2015-11-12 10:15:25","R3",11),
       ("Class4","2015-11-12 20:15:20","R4",14),
       ("Class5","2015-11-12 20:15:20","R3",15),
       ("Class6","2015-11-12 13:20:20","R2",14),

```

```
("Class7","2015-11-12 10:10:10","R3",14);
```

```
insert into Enrolled(snum,cname)
values (1,"Class1"),
       (2,"Class1"),
       (3,"Class3"),
       (4,"Class3"),
       (5,"Class4");
```

```
-- Find the names of all Juniors (level = JR) who are enrolled in a class taught by "name"
select s.sname from Student s,Enrolled e,Class c
       where s.snum = e.snum and c.cname = e.cname and c.fid = (select fid from Faculty
where fname = "Harish") and S.lvl = "Jr";
```

	sname
▶	Tom

```
-- Find the names of all classes that either meet in room R128 or have five or more Students
enrolled.
```

```
select c.cname from Class c where c.room = "R128" or c.cname in (select e.cname from
Enrolled e group by e.cname having count(*) >= 5);
```

	cname
▶	Class10
*	NULL

```
-- Find the names of all students who are enrolled in two classes that meet at the same time.
```

```
select distinct s.sname
from Student s
where S.snum in (select E1.snum
                 from Enrolled E1, Enrolled E2, Class C1, Class C2
                 where E1.snum = E2.snum and E1.cname <> E2.cname
                   and E1.cname = C1.cname
                   and E2.cname = C2.cname and C1.meetsat = C2.meetsat);
```

	sname
--	-------

```
-- Find the names of faculty members who teach in every room in which some class is taught
select f.fname,c.fid from Faculty f,Class c where f.fid = c.fid group by c.fid having count(c.fid) =
(select count(distinct room) from Class);
```

	fname	fid
▶	Shiva	14

-- Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.

select distinct fname from Faculty f where 5 > (select count(e.snum) from Enrolled e,Class c where c.cname = e.cname and c.fid = f.fid);

	fname
▶	Harish
	MV
	Mira
	Shiva
	Nupur

-- Find the names of students who are not enrolled in any class.

select s.sname from Student s where snum not in (select snum from Enrolled);

	sname
▶	Ria

-- For each age value that appears in Students, find the level value that appears most often.

select s.age,s.lvl from Student s group by s.age having s.lvl in

(select s1.lvl from Student s1 where s1.age = s.age group by s1.age having count(*) >= all (select s2.lvl from Student s2 where s2.age = s1.age group by s2.age));

	age	lvl
▶	19	Sr
	20	Jr
	21	Sr