Consider the following database for student enrollment for course :

STUDENT(snum: integer, sname:string, major: string, lvl: string, age: integer)
CLASS(cname: string, meets-at: 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.

```
create database StudentFaculty;

create table student(
    snum int,
    sname varchar(60),
    major varchar(60),
    level varchar(6),
    age int,
    primary key(snum));

create table faculty(
    fid int,
    fname varchar(60),
    deptid int,
    primary key(fid));

create table class(
    cname varchar(60),
    meets_at timestamp,
    room varchar(60),
    fid int,
    primary key(cname),
    foreign key(fid) references faculty(fid));

create table enrolled(
    snum int,
    cname varchar(60),
    primary key(snum,cname),
    foreign key(cname) references class(cname),
    foreign key(snum) references student(snum));

insert into student values
      (1,'john','cs','sr',19),
      (2,'smith','cs','jr',20),
      (3,'jacob','cv','sr',20),
      (4,'tom','cs','jr',20),
      (5,'rahul','cs','jr',20),
      (6,'rita','cs','sr',21),(7,’prathiksha’,’cv’,’jr’,19);
```

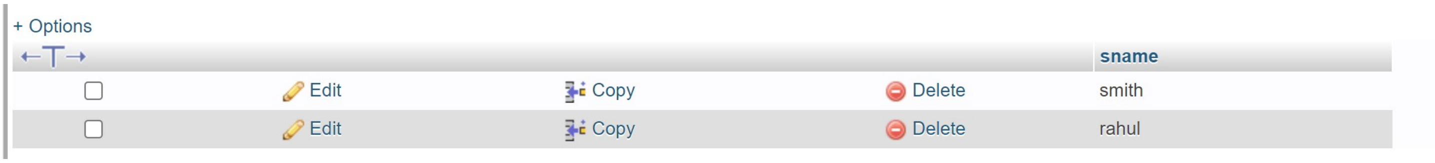
```
insert into faculty values
     (11,'harish',1000),
     (12,'manav',1000),
     (13,'mira',1001),
     (14,'shiva',1002),
     (15,'nupur',1000);

insert into class values
       ('class1','12/11/15 10:15:16','R1',14),
       ('class10','12/11/15 10:15:16','R1',14),
       ('class2','12/11/15 10:15:20','R2',12),
       ('class3','12/11/15 10:15:25','R3',12),
       ('class4','12/11/15 10:15:20','R4',14),
       ('class5','12/11/15 20:15:20','R3',15),
       ('class6','12/11/15 13:20:20','R2',14),
       ('class7','12/11/15 10:10:10','R3',15);

insert into enrolled values
     (1,'class1'),
     (2,'class1'),
     (3,'class3'),
     (4,'class3'),
     (5,'class4'),
     (1,'class5'),
     (2,'class5'),
     (3,'class5'),
     (4,'class5'),
     (5,'class5'),
     (6,’class8’),
     (6,'class7'),
     (4,'class7');
```

i.Find the names of all Juniors (level = JR) who are enrolled in a class taught by 'shiva'.

```
select distinct s.sname
from student s,class c,enrolled e,faculty f
where s.snum=e.snum and e.cname=c.cname and c.fid=f.fid and
f.fname='shiva' and s.level='jr';
```

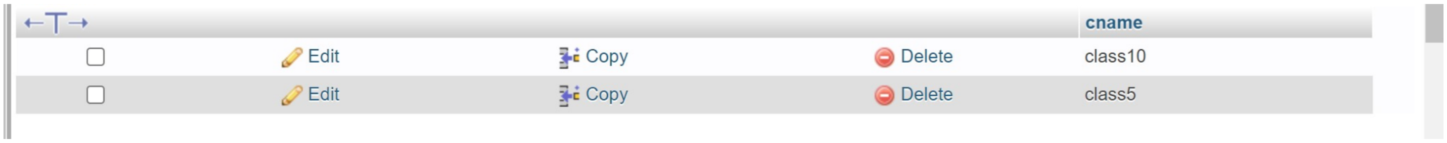


+ Options

←T→				sname
□	Edit	Copy	Delete	smith
□	Edit	Copy	Delete	rahul

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

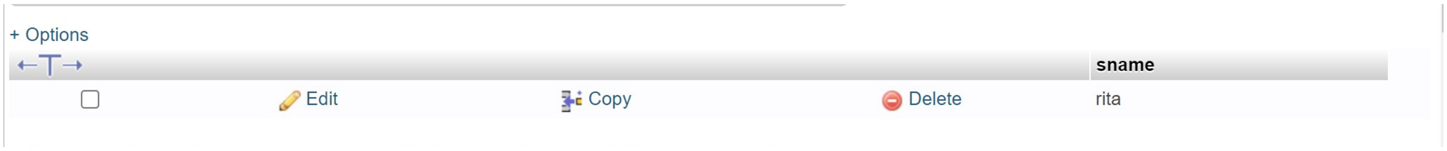
```
select c.cname from class c
where c.room='R128'
or c.cname in(select e.cname from enrolled e,class c
                    where c.cname=e.cname group by e.cname having count(*) >= 5);
```



←T→				cname
□	Edit	Copy	Delete	class10
□	Edit	Copy	Delete	class5

iii.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.meets_at=c2.meets_at);
```

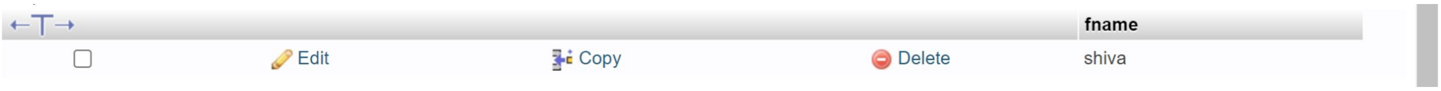


+ Options

←T→				sname
□	Edit	Copy	Delete	rita

iv.Find the names of faculty members who teach in every room in which some class is taught.

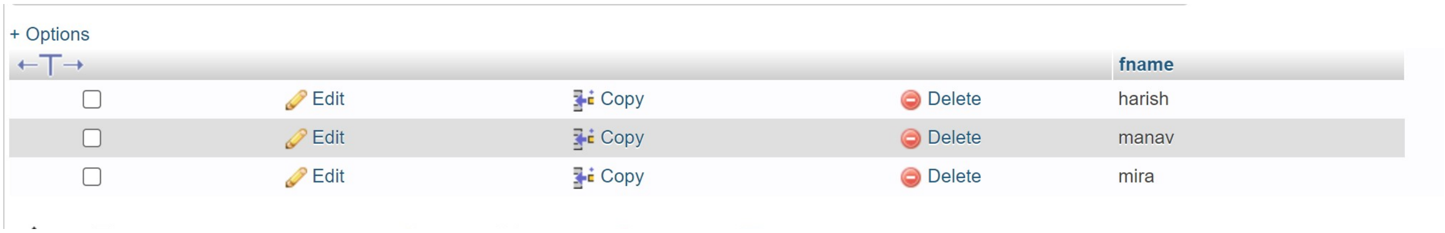
```
SELECT F.fname FROM Faculty F
WHERE NOT EXISTS (( SELECT C.room FROM Class C )
                EXCEPT
                (SELECT C1.room FROM Class C1 WHERE C1.fid = F.fid ));
```



←T→				fname
□	Edit	Copy	Delete	shiva

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

```
SELECT DISTINCT F.fname FROM Faculty F
WHERE 5 > (SELECT COUNT(E.snum) FROM Class C, Enrolled E
          WHERE C.cname = E.cname AND C.fid = F.fid);
```

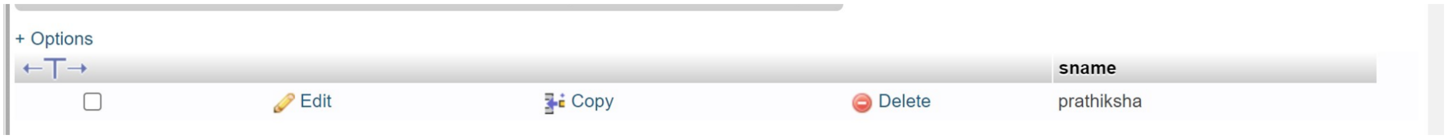


+ Options

←T→				fname
□	Edit	Copy	Delete	harish
□	Edit	Copy	Delete	manav
□	Edit	Copy	Delete	mira

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

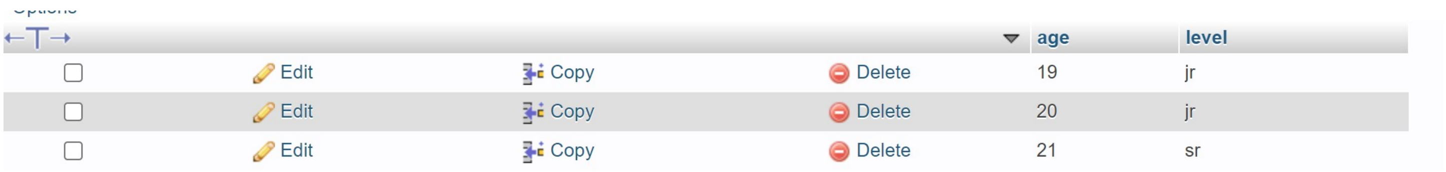
```
SELECT DISTINCT S.sname FROM Student S
WHERE S.snum NOT IN (SELECT E.snum FROM Enrolled E );
```



←T→				sname
□	Edit	Copy	Delete	prathiksha

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).

```
SELECT S.age, S.level FROM Student S
GROUP BY S.age, S.level
HAVING S.level IN (SELECT S1.level FROM Student S1
                WHERE S1.age = S.age
                GROUP BY S1.level, S1.age
                HAVING COUNT(*) >= ALL (SELECT COUNT(*) FROM Student S2
                                WHERE s1.age = S2.age
                                GROUP BY S2.level, S2.age))
```



←T→				age	level
□	Edit	Copy	Delete	19	jr
□	Edit	Copy	Delete	20	jr
□	Edit	Copy	Delete	21	sr