# PROGRAM 4: STUDENT\_FACULTY DATABASE

Consider the following database for student enrolment for course:

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

CLASS (name: 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 such that the student is enrolled in the class. Level 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
- 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 enrolment 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 student_faculty;
use student_faculty;
create table student(
snum int primary key,
sname varchar(30),
```

```
major varchar(30),
IvI varchar(30),
age int
);
create table faculty(
fid int primary key,
fname varchar(30),
dept_id int
);
create table class(
cname varchar(30) primary key,
meets_at varchar(30),
room varchar(30),
fid int,
constraint fk_1
foreign key(fid) references faculty(fid)
);
create table enrolled(
snum int,
cname varchar(30),
constraint fk_2
foreign key(snum) references student(snum),
constraint fk_3
foreign key(cname) references class(cname)
);
```

#### insert into student values

(1,'jhon','CS','SR',19),(2,'Smith','CS','JR',17),(3,'Jacob','CV','FR',20),(4,'Tom','CS','FR',25),(5,'Ra hul','CS','JR',20),(6,'RANa','CS','FR',21);

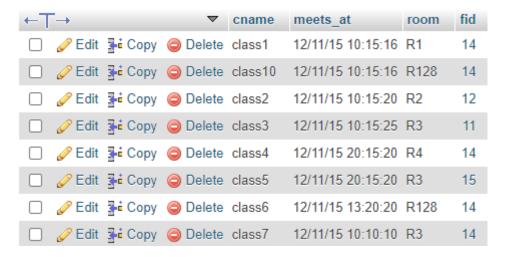


## insert into faculty values

(11, 'Harish', 1000), (12, 'MV', 1000), (13, 'Mira', 1001), (14, 'Shiva', 1002), (15, 'Nupur', 1000);

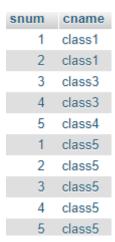


insert into class values ('class1','12/11/15 10:15:16','R1',14),('class10','12/11/15 10:15:16','R128',14),('class2','12/11/15 10:15:20','R2',12),('class3','12/11/15 10:15:25','R3',11),('class4','12/11/15 20:15:20','R4',14),('class5','12/11/15 20:15:20','R3',15),('class6','12/11/15 13:20:20','R128',14),('class7','12/11/15 10:10:10','R3',14);



### insert into enrolled values

(1,'class1'),(2,'class1'),(3,'class3'),(4,'class3'),(5,'class4'),(1,'class5'),(2,'class5'),(3,'class5'),(4,'class5'),(5,'class5');



select student.sname from student where student.snum in (select enrolled.snum from enrolled where enrolled.cname in (select class.cname from class where class.fid in (select f.fid from faculty f where f.fname='Harish'))) and student.lvl='Jr'; #1



select class.cname from class where class.cname in (select enrolled.cname from enrolled group by enrolled.cname having count(\*)>=5) or class.room='R128'; #2



#### create table ref as(

select ou.cname,ou.meets\_at from class ou where exists (select inn.cname from class inn where inn.meets\_at=ou.meets\_at having count(\*)>1)

## create table ref1 as(

select enrolled.snum,enrolled.cname,ref.meets\_at from enrolled inner join ref on enrolled.cname=ref.cname

#### ); #3

select student.sname from student where student.snum in (select ou.snum from ref1 ou, ref1 inn where ou.snum=inn.snum AND ou.cname!=inn.cname and ou.meets\_at=inn.meets\_at group by ou.snum); #3

#3 <u>select</u> student.sname from student where student.snum <u>in</u> ( <u>select</u> ou.snum from ref1 ou, ref1 inn where ou.snum=inn.snum <u>AND</u> ou.cname =inn.cname <u>and</u> ou.meets_at=inn.meets_at group by ou.snum)
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## create table ref1 as(

select count(distinct(class.room))as c from class where class.cname in (select distinct(enrolled.cname) from enrolled)

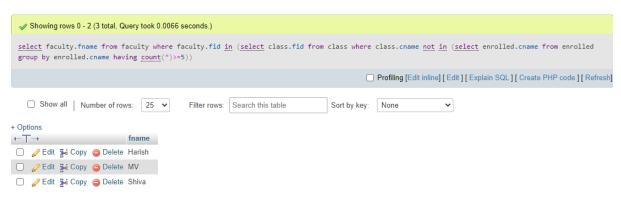
); #4

select faculty.fname from faculty where faculty.fid in (select (class.fid) from class where class.room in( select distinct(class.room) from class where class.cname in (select distinct(enrolled.cname) from enrolled)) group by class.fid having count(\*)=(select ref1.c from ref1)); #4

select distinct f.fname from faculty f where not exists ((select c.room from class c) MINUS (select c1.room from class c1 where c1.fid=f.fid));

$\frac{\text{select}}{\text{faculty.fname from faculty where faculty.fid } \underline{\text{in}}} \text{ (} \underline{\text{select}} \text{ (} \text{class.fid) from class where class.room } \underline{\text{in}} \text{ (} \underline{\text{select}} \text{ distinct(} \text{class.room)} \text{ from class where class.cname } \underline{\text{in}}} \text{ (} \underline{\text{select}} \text{ distinct(} \underline{\text{enrolled.cname}}) \text{ from enrolled)} \text{ group by class.fid having } \underline{\text{count}}(^*) = (\underline{\text{select}} \text{ refer.c from refer}))$
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select faculty.fname from faculty where faculty.fid in (select class.fid from class where class.cname not in (select enrolled.cname from enrolled group by enrolled.cname having count(\*)>=5)); #5



select student.sname from student where student.snum not in (select distinct(enrolled.snum) from enrolled); #6

$\underline{\underline{\mathtt{select}}} \ \mathtt{student.sname} \ from \ student \ where \ student.snum \ \underline{not} \ \underline{in} \ (\underline{select} \ distinct(enrolled.snum) \ from \ enrolled)$
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SELECT s.age, s.lvl FROM student s GROUP BY s.age, s.lvl HAVING s.lvl IN (SELECT s1.lvl FROM student

s1 WHERE s1.age=s.age GROUP BY s1.age, s1.lvl HAVING COUNT(\*) >= ALL (SELECT COUNT(\*) FROM

student s2 WHERE s1.age=s2.age GROUP BY s2.lvl, s2.age)) ORDER BY s.age; #7

