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)

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create database student_faculty;

use student_faculty;

create table student(

snum int primary key,

sname varchar(30),
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major varchar(30),
lvl 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,'Rahul','CS','JR',20),(6,'RANa','CS','FR',21);

	snum	sname	major	lvl	age
Edit Copy Delete	1	Jhon	CS	SR	19
Edit Copy Delete	2	Smith	CS	JR	17
Edit Copy Delete	3	Jacob	CV	FR	20
Edit Copy Delete	4	Tom	CS	FR	25
Edit Copy Delete	5	Rahul	CS	JR	20
Edit Copy Delete	6	Rana	CS	FR	21

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

	fid	fname	dept_id
Edit Copy Delete	11	Harish	1000
Edit Copy Delete	12	MV	1000
Edit Copy Delete	13	Mira	1001
Edit Copy Delete	14	Shiva	1002
Edit Copy Delete	15	Nupur	1000

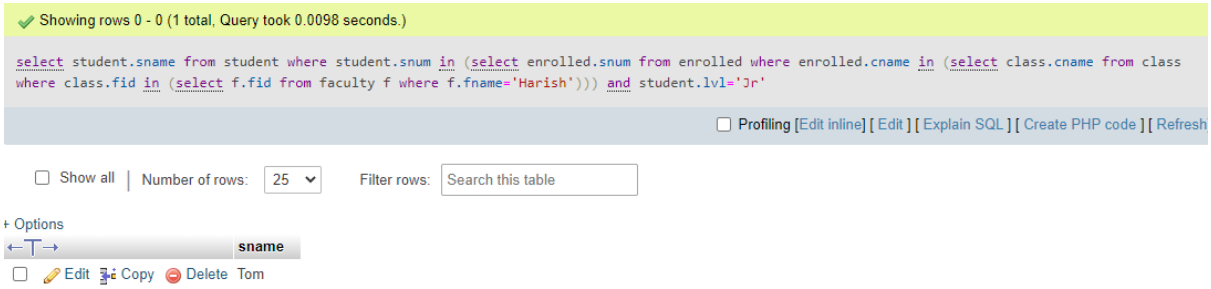
insert into class values ('class1','12/11/15 10:15:16','R1',14),('class10','12/11/15 10:15:16','R128',14),('class2','12/11/15 10:15:20','R2',12),('class3','12/11/15 10:15:25','R3',11),('class4','12/11/15 20:15:20','R4',14),('class5','12/11/15 20:15:20','R3',15),('class6','12/11/15 13:20:20','R128',14),('class7','12/11/15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

	cname	meets_at	room	fid
Edit Copy Delete	class1	12/11/15 10:15:16	R1	14
Edit Copy Delete	class10	12/11/15 10:15:16	R128	14
Edit Copy Delete	class2	12/11/15 10:15:20	R2	12
Edit Copy Delete	class3	12/11/15 10:15:25	R3	11
Edit Copy Delete	class4	12/11/15 20:15:20	R4	14
Edit Copy Delete	class5	12/11/15 20:15:20	R3	15
Edit Copy Delete	class6	12/11/15 13:20:20	R128	14
Edit Copy Delete	class7	12/11/15 10:10:10	R3	14

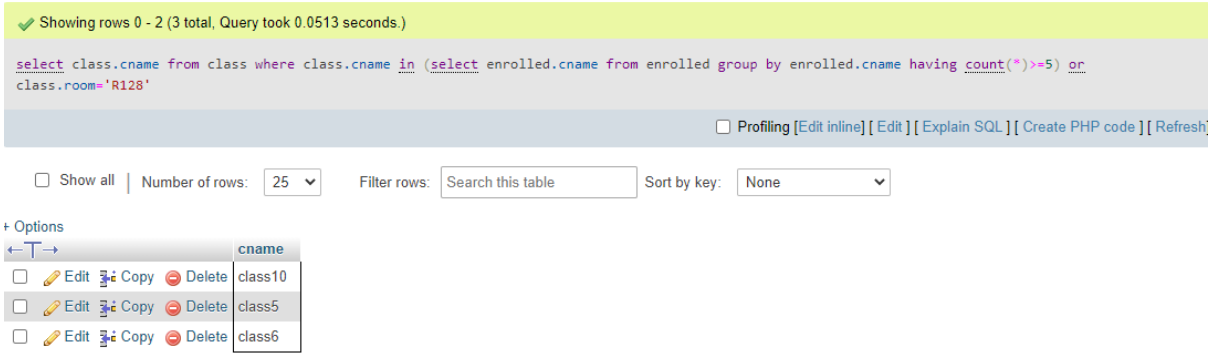
insert into enrolled values
(1,'class1'),(2,'class1'),(3,'class3'),(4,'class3'),(5,'class4'),(1,'class5'),(2,'class5'),(3,'class5'),(4,'class5'),(5,'class5');

snum	cname
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)

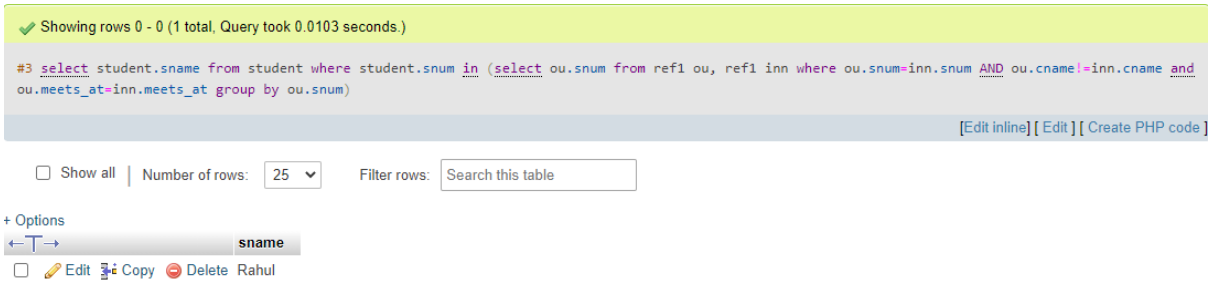
); #3

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



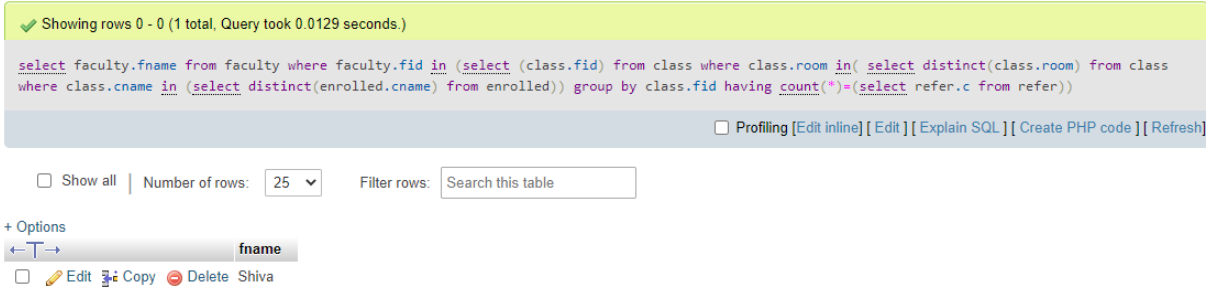
create table ref1 as(

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

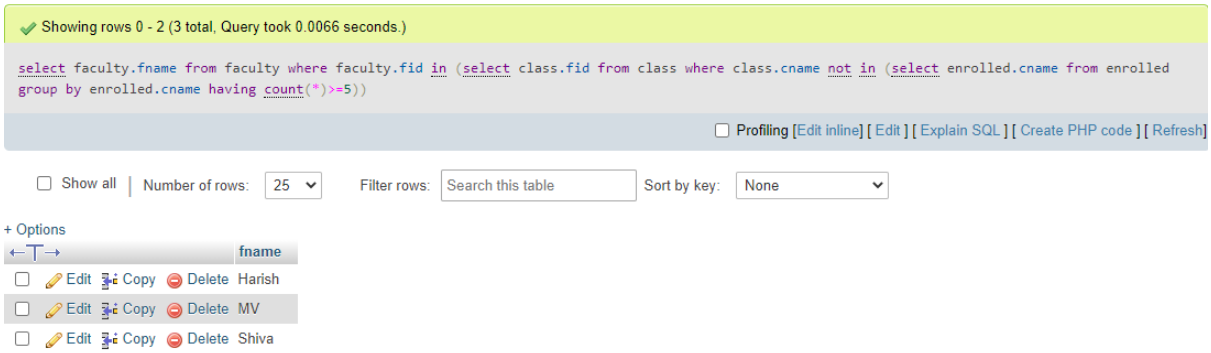
); #4

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));



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