

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 pair 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.

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0000 seconds.)

```
use student_faculty
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.2910 seconds.)

```
create table student(snum int , sname varchar(20) , major varchar(10) , lvl varchar(2) , age int , primary key(snum))
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.3370 seconds.)

```
create table faculty(fid int , fname varchar(20) , deptid int , primary key(fid))
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.1960 seconds.)



```
create table class(cname varchar(10) , meets_at timestamp , room varchar(10) , fid int , primary key(cname) , foreign key(fid) references faculty(fid))
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.2360 seconds.)

```
create table enrolled(snum int , cname varchar(10) , foreign key(snum) references student(snum) , foreign key(cname) references class(cname))
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

	Table ▲	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/>	class	★  Browse  Structure  Search  Insert  Empty  Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
<input type="checkbox"/>	enrolled	★  Browse  Structure  Search  Insert  Empty  Drop	0	InnoDB	utf8mb4_general_ci	48.0 KiB	-
<input type="checkbox"/>	faculty	★  Browse  Structure  Search  Insert  Empty  Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/>	student	★  Browse  Structure  Search  Insert  Empty  Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
4 tables Sum			0	InnoDB	utf8mb4_general_ci	112.0 KiB	0 B

✓ 1 row inserted. (Query took 0.0310 seconds.)

```
insert into student values(1, 'Ross', 'CS', 'Sr', 19)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.1110 seconds.)

```
insert into student values(2, 'Rachel', 'CS', 'Jr', 20)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0300 seconds.)

```
insert into student values(3 , 'Penny', 'EC', 'Sr', 20)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0480 seconds.)

```
insert into student values(4, 'Joey', 'CS', 'Jr', 20)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0460 seconds.)

```
insert into student values(5, 'Chandler', 'CS', 'Jr', 20)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0460 seconds.)

```
insert into student values(6, 'Monica', 'EC', 'Sr', 21)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]



✓ Showing rows 0 - 5 (6 total, Query took 0.0030 seconds.)

`SELECT * FROM `student``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ Filter rows: Sort by key: None ▼

+ Options

				snum	sname	major	lvl	age
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	Ross	CS	Sr	19
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	Rachel	CS	Jr	20
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	Penny	EC	Sr	20
<input type="checkbox"/>	 Edit	 Copy	 Delete	4	Joey	CS	Jr	20
<input type="checkbox"/>	 Edit	 Copy	 Delete	5	Chandler	CS	Jr	20
<input type="checkbox"/>	 Edit	 Copy	 Delete	6	Monica	EC	Sr	21

 ☐ Check all With selected:  Edit  Copy  Delete  Export

✓ 1 row inserted. (Query took 0.0810 seconds.)

```
insert into faculty values(101, 'Abhimanyu', 1000)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.1150 seconds.)

```
insert into faculty values(102, 'Shivam', 1000)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0210 seconds.)

```
insert into faculty values(103 , 'Syed', 1001)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0350 seconds.)

```
insert into faculty values(104, 'Shreenidhi', 1002)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0400 seconds.)

```
insert into faculty values(105, 'Rushil', 1000)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ Showing rows 0 - 4 (5 total, Query took 0.0020 seconds.)

`SELECT * FROM `faculty``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]


☐ Show all

Number of rows: 25 ▼

Filter rows:

Sort by key: None ▼

+ Options

				fid	fname	deptid
<input type="checkbox"/>	 Edit	 Copy	 Delete	101	Abhimanyu	1000
<input type="checkbox"/>	 Edit	 Copy	 Delete	102	Shivam	1000
<input type="checkbox"/>	 Edit	 Copy	 Delete	103	Syed	1001
<input type="checkbox"/>	 Edit	 Copy	 Delete	104	Shreenidhi	1002
<input type="checkbox"/>	 Edit	 Copy	 Delete	105	Rushil	1000

✓ 1 row inserted. (Query took 0.0480 seconds.)

```
insert into class values('c1', '13/12/15 10:15:16', 'R1', 104)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.1050 seconds.)

```
insert into class values('c10', '13/12/15 10:15:16', 'R128', 104)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0220 seconds.)

```
insert into class values('c2', '13/12/15 10:15:20', 'R2', 102)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0280 seconds.)

```
insert into class values('c3', '13/12/15 10:15:25', 'R3', 101)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0270 seconds.)

```
insert into class values('c4', '13/12/15 20:15:20', 'R4', 104)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0230 seconds.)

```
insert into class values('c5', '13/12/15 20:15:20', 'R3', 105)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0310 seconds.)

```
insert into class values('c6', '13/12/15 13:20:20', 'R2', 104)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0290 seconds.)

```
insert into class values('c7', '13/12/15 10:10:10', 'R3', 104)
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ Showing rows 0 - 7 (8 total, Query took 0.0020 seconds.)

SELECT * FROM `class`

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]



















☐ Show all

Number of rows: 25 ▼

Filter rows:

Sort by key: None ▼

+ Options

				▼	cname	meets_at	room	fid
<input type="checkbox"/>	 Edit	 Copy	 Delete		c1	2013-12-15 10:15:16	R1	104
<input type="checkbox"/>	 Edit	 Copy	 Delete		c10	2013-12-15 10:15:16	R128	104
<input type="checkbox"/>	 Edit	 Copy	 Delete		c2	2013-12-15 10:15:20	R2	102
<input type="checkbox"/>	 Edit	 Copy	 Delete		c3	2013-12-15 10:15:25	R3	101
<input type="checkbox"/>	 Edit	 Copy	 Delete		c4	2013-12-15 20:15:20	R4	104
<input type="checkbox"/>	 Edit	 Copy	 Delete		c5	2013-12-15 20:15:20	R3	105
<input type="checkbox"/>	 Edit	 Copy	 Delete		c6	2013-12-15 13:20:20	R2	104
<input type="checkbox"/>	 Edit	 Copy	 Delete		c7	2013-12-15 10:10:10	R3	104



☐ Check all

With selected:

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✔ 1 row inserted. (Query took 0.0720 seconds.)

```
insert into enrolled values(5, 'c4')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ 1 row inserted. (Query took 0.0750 seconds.)

```
insert into enrolled values(2, 'c1')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ 1 row inserted. (Query took 0.0210 seconds.)

```
insert into enrolled values(3, 'c3')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ 1 row inserted. (Query took 0.0340 seconds.)

```
insert into enrolled values(3, 'c5')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ 1 row inserted. (Query took 0.0350 seconds.)

```
insert into enrolled values(1, 'c1')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ 1 row inserted. (Query took 0.0270 seconds.)

```
insert into enrolled values(4, 'c3')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✔ 1 row inserted. (Query took 0.0290 seconds.)

```
insert into enrolled values(4, 'c5')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0330 seconds.)

```
insert into enrolled values(5, 'c5')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.0270 seconds.)

```
insert into enrolled values(1, 'c5')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ 1 row inserted. (Query took 0.1620 seconds.)

```
insert into enrolled values(2, 'c5')
```

[[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)]

✓ Showing rows 0 - 9 (10 total, Query took 0.0010 seconds.)

SELECT * FROM `enrolled`

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ Filter rows: Sort by key: None ▼

+ Options

snum	cname
5	c4
2	c1
3	c3
3	c5
1	c1
4	c3
4	c5
5	c5
1	c5
2	c5

☐ Show all | Number of rows: 25 ▼ Filter rows: Sort by key: None ▼

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

✓ Showing rows 0 - 0 (1 total, Query took 0.0290 seconds.)

```
select s.sname from student s , faculty f , class c , enrolled e where s.snum = e.snum and f.fid = c.fid and e.cname = c.cname and f.fname = 'Abhimanyu' and s.lvl = 'Jr'
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ Filter rows:

+ Options



sname



Edit

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Delete

Joey

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

✓ Showing rows 0 - 1 (2 total, Query took 0.0800 seconds.)

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

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)







☐ Show all

Number of rows: 25 ▼

Filter rows:

Sort by key: None ▼

+ Options

				cname
<input type="checkbox"/>	 Edit	 Copy	 Delete	c10
<input type="checkbox"/>	 Edit	 Copy	 Delete	c5

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

✓ Showing rows 0 - 0 (1 total, Query took 0.0290 seconds.)

```
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)
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ Filter rows:


+ Options

← T →

sname




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Chandler

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




 Showing rows 0 - 0 (1 total, Query took 0.0300 seconds.)

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

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ | Filter rows:

+ Options

				fname
<input type="checkbox"/>	 Edit	 Copy	 Delete	Shreenidhi

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

✓ Showing rows 0 - 3 (4 total, Query took 0.0080 seconds.)

```
select distinct f.fname from faculty f left join class c on f.fid = c.fid where 5 > (select count(*) from enrolled e where e.cname = c.cname)
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]



Show all

Number of rows:

25



Filter rows:

Search this table

Sort by key:

None



+ Options

fname

Abhimanyu

Shivam

Syed

Shreenidhi

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

✓ Showing rows 0 - 0 (1 total, Query took 0.0080 seconds.)

```
select s.sname from student s where s.snum not in (select e.snum from enrolled e)
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25 ▼ | Filter rows:

+ Options

				sname
<input type="checkbox"/>	Edit	Copy	Delete	Monica

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).

✓ Showing rows 0 - 2 (3 total, Query took 0.0350 seconds.)

```
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.lvl , s1.age having count(*) >= all (select count(*) from student s2 where s1.age = s2.age group by s2.age , s2.lvl))
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: Filter rows: Sort by key:

+ Options

←T→

				age	lvl
<input type="checkbox"/>	Edit	Copy	Delete	19	Sr
<input type="checkbox"/>	Edit	Copy	Delete	20	Jr
<input type="checkbox"/>	Edit	Copy	Delete	21	Sr