

## LAB-4 (program)

### **PROGRAM 4: STUDENT FACULTY DATABASE**

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)

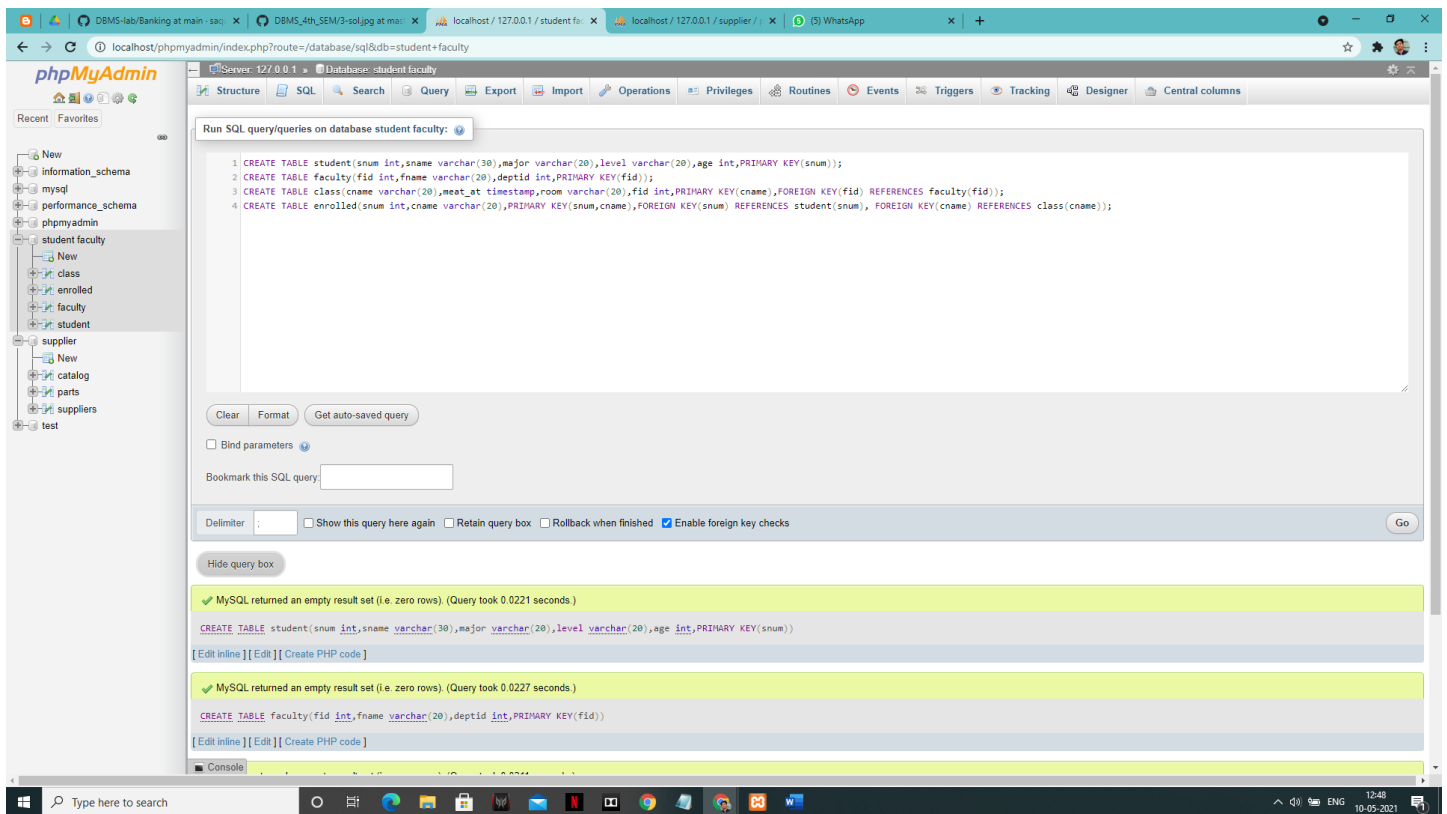
Write the following queries in SQL. No duplicates should be printed in any of the answers.

i. Create above mentioned tables

ii. insert records into each of the tables

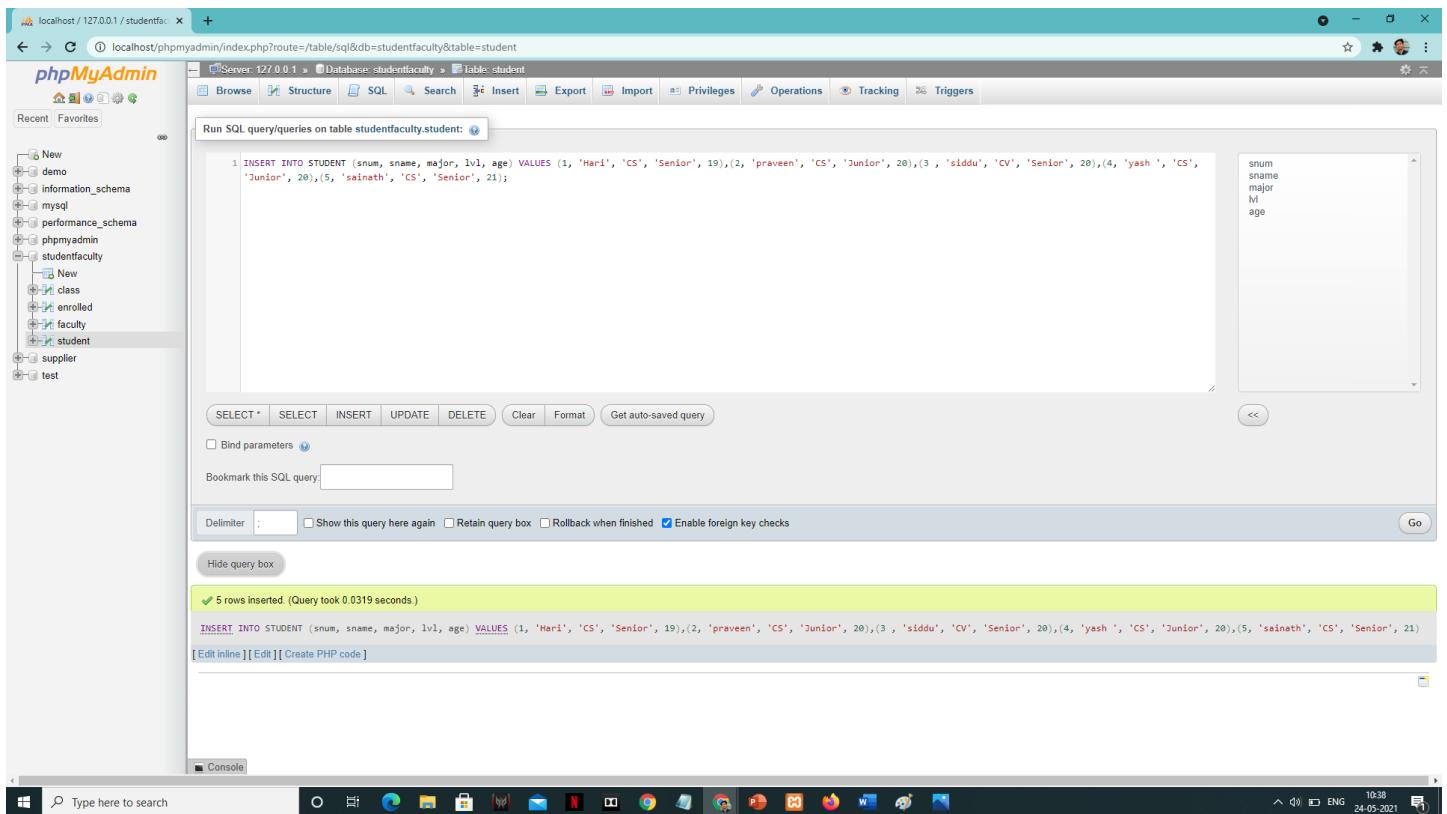
- 1) Find the names of all Juniors (level = JR) who are enrolled in a class taught by
- 2) Find the names of all classes that either meet in room R128 or have five or more Students enrolled.
- 3) Find the names of all students who are enrolled in two classes that meet at the same time.
- 4) Find the names of faculty members who teach in every room in which some class is taught.
- 5) Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.
- 6) Find the names of students who are not enrolled in any class.
- 7) 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).
- 8) Create the above tables by properly specifying the primary keys and the foreign keys.**

**Create table:-**

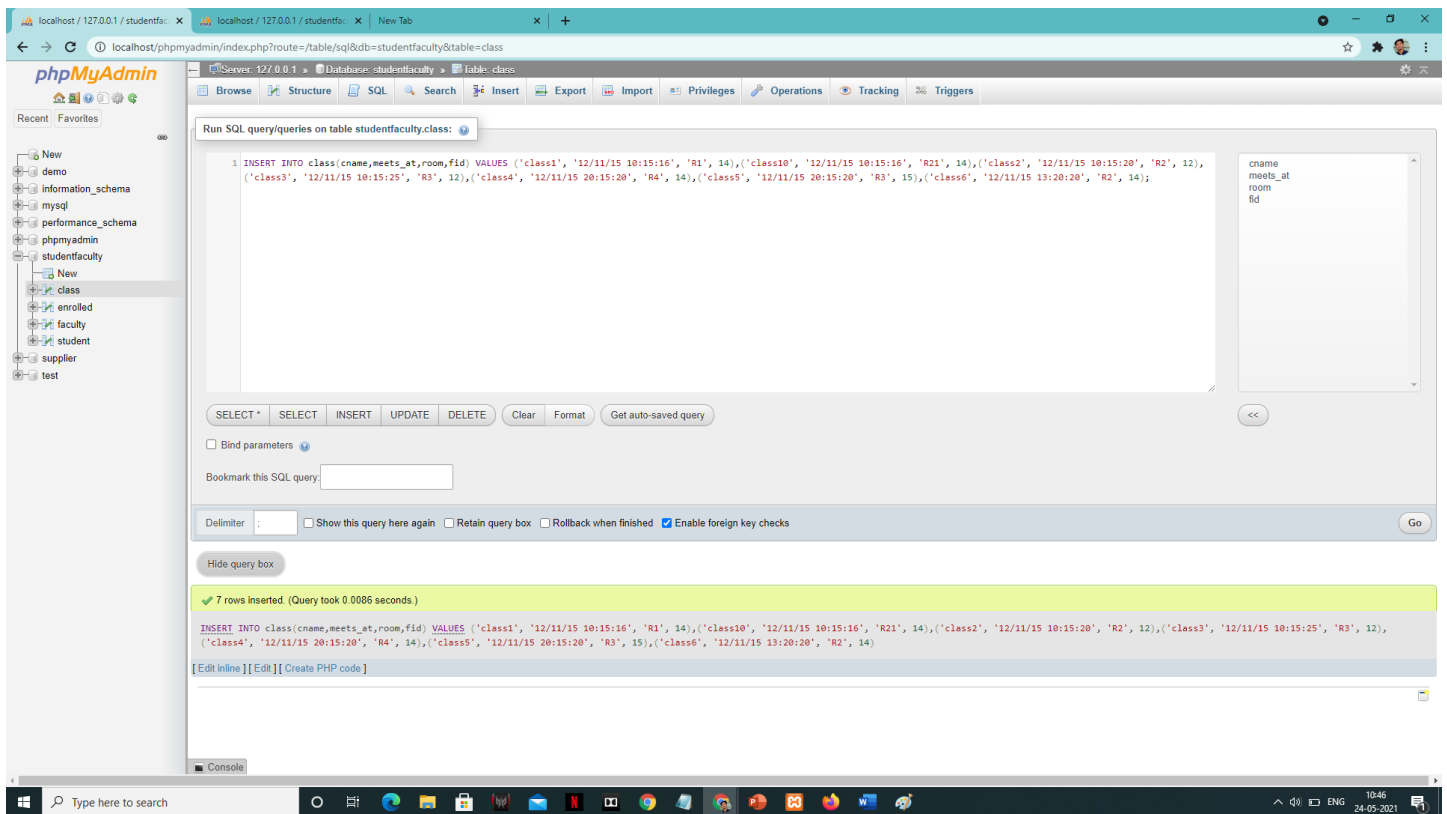


## 2) Enter tuples for each relation.

‘student’ table:



**'class' table:**



‘enrolled’ table:

localhost / 127.0.0.1 / studentfa: X | New Tab

localhost/phpmyadmin/index.php?route=/table/sql&db=studentfaculty&table=enrolled

Server: 127.0.0.1 Database: studentfaculty Table: enrolled

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on table studentfaculty.enrolled:

```
1 INSERT into enrolled (snum, cname) VALUES(1, 'class1'),(2, 'class1'),(3, 'class3'),(4, 'class3'),(5, 'class4'),(1, 'class5'),(3, 'class5');
```

SELECT \* SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

7 rows inserted (Query took 0.0092 seconds)

```
INSERT into enrolled (snum, cname) VALUES(1, 'class1'),(2, 'class1'),(3, 'class3'),(4, 'class3'),(5, 'class4'),(1, 'class5'),(3, 'class5')
```

[Edit inline] [Edit] [Create PHP code]

Console

## Faculty value:-

localhost / 127.0.0.1 / studentfa: X | New Tab

localhost/phpmyadmin/index.php?route=/table/sql&db=studentfaculty&table=faculty

Server: 127.0.0.1 Database: studentfaculty Table: faculty

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on table studentfaculty.faculty:

```
1 INSERT INTO faculty(fid, fname, deptid) VALUES (10, 'rahul', 1000),
2 (11, 'karan', 1000),(12, 'SK', 1001),(13, 'Neha', 1001),(14, 'Shiva', 1002),(15, 'krishna', 1000);
```

SELECT \* SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

6 rows inserted (Query took 0.0082 seconds)

```
INSERT INTO faculty(fid, fname, deptid) VALUES (10, 'rahul', 1000), (11, 'karan', 1000),(12, 'SK', 1001),(13, 'Neha', 1001),(14, 'Shiva', 1002),(15, 'krishna', 1000)
```

[Edit inline] [Edit] [Create PHP code]

Console

1:-

The screenshot shows the phpMyAdmin web interface. The left sidebar displays a database structure tree with the following items: New, demo, information\_schema, mysql, performance\_schema, phpmyadmin, studentfaculty, New, class, enrolled, faculty, student, supplier, and test. The 'studentfaculty' database is selected, and the 'student' table is highlighted. The main panel shows a SQL query editor with the following query:

```
1 SELECT DISTINCT S.Sname
2 FROM student S, class C, enrolled E, faculty F
3 WHERE S.snum = E.snum AND E.cname = C.cname AND C.fid = F.fid AND
4 F.fname = 'SK' AND S.lvl = 'Junior';
5
```

Below the query editor, there are buttons for 'Clear', 'Format', and 'Get auto-saved query'. There is also a checkbox for 'Bind parameters' and a text input for 'Bookmark this SQL query:'. The 'Delimiter' is set to semicolon, and 'Enable foreign key checks' is checked. A 'Hide query box' button is also present.

The query results are displayed in a table with the following data:

Sname
yash

The table has 1 row and 1 column. The query took 0.0046 seconds to execute. Below the table, there are buttons for 'Show all', 'Number of rows: 25', and 'Filter rows: Search this table'. There are also buttons for 'Options', 'Edit', 'Copy', 'Delete', and 'Export'. The 'Query results operations' section includes buttons for 'Print', 'Copy to clipboard', 'Export', 'Display chart', and 'Create view'. The bottom status bar shows the Windows taskbar with the search bar and various application icons.

2:-

localhost / 127.0.0.1 / studentfac - X | New Tab

localhost/phpmyadmin/index.php?route=/database/sql&db=studentfaculty

Server: 127.0.0.1 Database: studentfaculty Table: class

Run SQL query/queries on database studentfaculty:

```
1 SELECT * FROM class as c WHERE c.room="R21" or c.cname in (SELECT cname from enrolled GROUP BY cname HAVING COUNT(cname)>=5);
```

Showing rows 0 - 0 (1 total, Query took 0.0235 seconds)

```
SELECT * FROM class as c WHERE c.room="R21" or c.cname in (SELECT cname from enrolled GROUP BY cname HAVING COUNT(cname)>=5)
```

Options

	cname	meets_at	room	fid
<input type="checkbox"/>	class10	2012-11-15 10:15:16	R21	14

Query results operations

Bookmark this SQL query

Console

3:-

localhost / 127.0.0.1 / students - X | Lab Program

localhost/phpmyadmin/index.php?route=/database/sql&db=students

Server: 127.0.0.1 Database: students Table: student

Run SQL query/queries on database students:

```
1 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 );
```

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0039 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 )
```

Query results operations

Bookmark this SQL query

Label:  ☐ Let every user access this bookmark

Bookmark this SQL query

Console

4:-

localhost / 127.0.0.1 / students | localhost / 127.0.0.1 / students | Lab Program

localhost/phpmyadmin/index.php?route=/database/sql&db=students

Server: 127.0.0.1 » Database: students » Table: faculty

Run SQL query/queries on database students:

```

1 SELECT f.fname,f.fid
2 FROM faculty f
3 WHERE f.fid in ( SELECT fid FROM class
4 GROUP BY fid HAVING COUNT(*)=(SELECT COUNT(DISTINCT room) FROM class) );

```

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Hide query box

Showing rows 0 - 0 (1 total, Query took 0.0025 seconds)

```

SELECT f.fname,f.fid FROM faculty f WHERE f.fid in ( SELECT fid FROM class GROUP BY fid HAVING COUNT(*)=(SELECT COUNT(DISTINCT room) FROM class) )

```

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

☐ Show all | Number of rows: 25 | Filter rows: Search this table

+ Options

	fname	fid
<input type="checkbox"/> Edit Copy Delete	Neha	14

☐ Check all With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table

Query results operations

Console Copy to clipboard Export Display chart Create view

5:-

localhost / 127.0.0.1 / students | localhost / 127.0.0.1 / studentfac | New Tab

localhost/phpmyadmin/index.php?route=/database/sql&db=studentfaculty

Server: 127.0.0.1 » Database: studentfaculty » Table: faculty

Run SQL query/queries on database studentfaculty:

```

1 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);

```

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Hide query box

Showing rows 0 - 5 (6 total, Query took 0.0071 seconds)

```

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)

```

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
<input type="checkbox"/> Edit Copy Delete	rahul
<input type="checkbox"/> Edit Copy Delete	karan
<input type="checkbox"/> Edit Copy Delete	SK
<input type="checkbox"/> Edit Copy Delete	Neha
<input type="checkbox"/> Edit Copy Delete	Shiva
<input type="checkbox"/> Edit Copy Delete	krishna

☐ Check all With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Console



6:-

The screenshot shows the phpMyAdmin web interface in a browser. The left sidebar displays a database structure with the following items: New, information\_schema, mysql, performance\_schema, phpmyadmin, student faculty, New, class, Columns, Indexes, enrolled, faculty, student, supplier, New, catalog, parts, suppliers, and test. The main panel is titled 'Run SQL query/queries on database student+faculty:'. It contains a text area with the following SQL query:

```
1 SELECT DISTINCT S.sname FROM student S WHERE S.snum NOT IN (SELECT E.snum FROM enrolled E );
```

Below the query area are buttons for 'Clear', 'Format', and 'Get auto-saved query'. There is a checkbox for 'Bind parameters' and a 'Bookmark this SQL query' field. The 'Delimiter' is set to ';'. At the bottom of the query area are checkboxes for 'Show this query here again', 'Retain query box', 'Rollback when finished', and 'Enable foreign key checks', along with a 'Go' button. A 'Hide query box' button is also present. The results section shows a green bar indicating 'Showing rows 0 - 0 (1 total. Query took 0.0035 seconds.)'. Below this, the SQL query is repeated. There are links for 'Profiling', 'Edit inline', 'Edit', 'Explain SQL', 'Create PHP code', and 'Refresh'. Below the results, there are controls for 'Show all', 'Number of rows' (set to 25), and a 'Filter rows' search box. A '+ Options' section shows a table with one row:

sname
hari

Below the table are buttons for 'Edit', 'Copy', and 'Delete'. There are also checkboxes for 'Check all', 'With selected', 'Edit', 'Copy', 'Delete', and 'Export'. Another set of controls for 'Show all', 'Number of rows' (25), and 'Filter rows' is present. The 'Query results operations' section includes buttons for 'Print', 'Copy to clipboard', 'Export', 'Display chart', and 'Create view'. At the bottom, there is a 'Bookmark this SQL query' button and a 'Console' tab.

7:-

localhost / 127.0.0.1 / studentfac... x localhost / 127.0.0.1 / studentfac... x New Tab

localhost/phpmyadmin/index.php?route=/database/sql&db=studentfaculty

phpMyAdmin

Recent Favorites

- New
- demo
- information\_schema
- mysql
- performance\_schema
- phpmyadmin
- studentfaculty
  - New
  - class
  - enrolled
  - faculty
  - student
  - supplier
  - test

Run SQL query/queries on database studentfaculty:

```
1 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.lvl,S2.age));
```

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Hide query box

Showing rows 0 - 2 (3 total, Query took 0.0225 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.lvl,S2.age));
```

☐ 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

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

Check all With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Console Copy to clipboard Export Display chart Create view

Type here to search

11:49 24-05-2021