

## DBMS-LAB Assig5 - JOINS

### Present database :

A database in assignment 4 is created with the names student , faculty , courses , library, department. Which gives the information regarding students who has taken a particular course in respective department.

	faculty_id	faculty_name	faculty_salary	course_id
▶	1	akki	6000	5
	2	uma	8000	2
	3	supriya	6000	2
	4	yayati	9000	1
	5	sunil	7000	3
	6	jagadeesh	6500	4
	7	pooja	4000	5
	8	ashwath	5500	6
	NULL	NULL	NULL	NULL

	student_id	student_name	student_birthyear	student_age
▶	1	lokesh	2001	19
	2	naval	2000	20
	3	avinash	2000	20
	4	geetha krishna	1999	21
	5	aditya	2001	19
	6	pranav	2000	20
*	NULL	NULL	NULL	NULL

Result Grid			
Filter Rows:		Edit:	
Export/Import:		Wrap Cell Content:	
	course_id	course_name	department_id
▶	1	toc	1
	2	dbms	2
	3	bct	2
	4	signals	4
	5	networks	1
	6	engines	3
	9	programming	2
	10	oops	2
	NULL	NULL	NULL

	book_id	book_name	department_id	student_id
▶	1	tcomputation	1	1
	2	control signals	2	3
	3	database	1	2
	4	computer networks	2	1
	5	engine function	3	2
*	NULL	NULL	NULL	NULL

	department_id	department_name
▶	1	cse
	2	ece
	3	mech
	4	eee
	5	civil
*	NULL	NULL

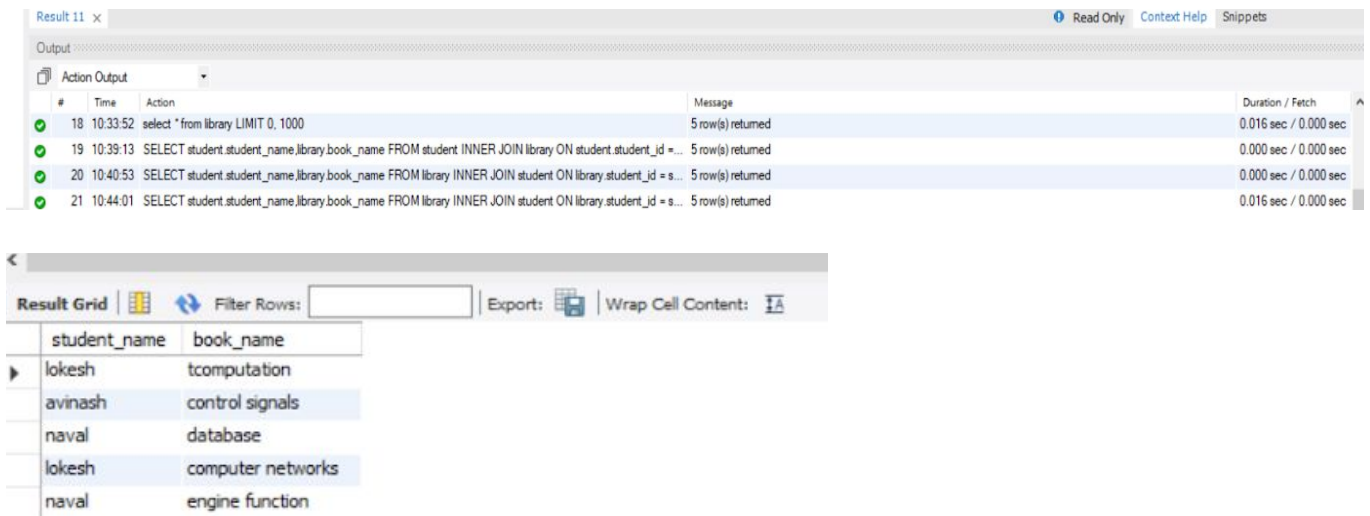
## 1. INNER JOIN - 3 queries

Finding the students who have taken books from the library using join.

Query :

```
1 • USE university_model;
2 • show tables;
3 • select * from library;
4 • SELECT student.student_name,library.book_name
5 FROM library
6 INNER JOIN student
7 ON library.student_id = student.student_id;
```

Output :



Result 11 x

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Output

Action Output

#	Time	Action	Message	Duration / Fetch
18	10:33:52	select * from library LIMIT 0, 1000	5 row(s) returned	0.016 sec / 0.000 sec
19	10:39:13	SELECT student.student_name,library.book_name FROM student INNER JOIN library ON student.student_id = ...	5 row(s) returned	0.000 sec / 0.000 sec
20	10:40:53	SELECT student.student_name,library.book_name FROM library INNER JOIN student ON library.student_id = s...	5 row(s) returned	0.000 sec / 0.000 sec
21	10:44:01	SELECT student.student_name,library.book_name FROM library INNER JOIN student ON library.student_id = s...	5 row(s) returned	0.016 sec / 0.000 sec

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

student_name	book_name
lokesh	tcomputation
avinash	control signals
naval	database
lokesh	computer networks
naval	engine function

Finding the faculty who are teaching for certain subjects including labs in all departments using join.

Query :

```
Query 1 assign4 assign4* x
Limit to 1000 rows
1 use university_model;
2 show tables;
3 select * from course;
4 SELECT student.student_name, library.book_name
5 FROM students
6 INNER JOIN library
7 ON student.student_id = library.student_id;
```

Output :

#	Time	Action	Message	Duration / Fetch
7	13:01:28	SELECT student.student_name, library.book_name FROM students INNER JOIN library ON student.student_id...	Error Code: 1146. Table 'university_model.students' doesn't exist	0.000 sec
8	13:02:05	SELECT student.student_name, library.book_name FROM students INNER JOIN library ON student.student_id...	Error Code: 1146. Table 'university_model.students' doesn't exist	0.000 sec
9	13:02:41	SELECT student.student_name, library.book_name FROM student INNER JOIN library ON student.student_id...	5 row(s) returned	0.015 sec / 0.000 sec
10	13:05:42	SELECT course.course_name, faculty.faculty_name FROM course INNER JOIN faculty ON course...	8 row(s) returned	0.000 sec / 0.000 sec

course_name	faculty_name
toc	yayati
dbms	uma
dbms	supriya
bct	sunil
signals	jagadeesh
networks	akki
networks	pooja
engines	ashwath

Finding the faculty who are teaching for certain subjects excluding labs in all departments using join.

Query :

```
SELECT course.course_name,facaulty.facaulty_name
FROM course
INNER JOIN facaulty
ON course.course_id = facaulty.facaulty_id;
```

Output :

Output				
Action Output				
#	Time	Action	Message	Duration / Fetch
14	11:41:54	SELECT course.course_name,facaulty.facaulty_name FROM course left outer JOIN facaulty ON course.cours...	8 row(s) returned	0.015 sec / 0.000 sec
15	11:42:12	SELECT course.course_name,facaulty.facaulty_name FROM course left outer JOIN facaulty ON course.cours...	8 row(s) returned	0.000 sec / 0.000 sec
16	11:43:37	SELECT course.course_name,facaulty.facaulty_name FROM course INNER JOIN facaulty ON course.cours...	6 row(s) returned	0.000 sec / 0.000 sec
17	11:49:56	SELECT course.course_name,facaulty.facaulty_name FROM course INNER JOIN facaulty ON course.cours...	6 row(s) returned	0.000 sec / 0.000 sec

Result Grid			Filter Rows:	Export:	Wrap
	course_name	facaulty_name			
▶	toc	akki			
	dbms	uma			
	bct	supriya			
	signals	yayati			
	networks	sunil			
	engines	jagadeesh			

## 2. LEFT OUTER JOIN – 3 Queries

Finding the students who have taken books from the library and who have not taken using left outer join.

Query :

```
3 • select * from course;
4 • SELECT student.student_name,library.book_name
5   FROM student
6  left outer JOIN library
7  ON library.student_id = student.student_id;
8
```

Output :

Output				
Action Output				
#	Time	Action	Message	Duration / Fetch
2	10:20:53	select * from course LIMIT 0, 1000	6 row(s) returned	0.000 sec / 0.000 sec
3	10:22:50	USE university_model	0 row(s) affected	0.000 sec
4	10:23:00	SELECT student.student_name,library.book_name FROM student left outer JOIN library ON library.student_id = ...	8 row(s) returned	0.000 sec / 0.000 sec
5	10:23:38	SELECT student.student_name,library.book_name FROM student left outer JOIN library ON library.student_id = ...	8 row(s) returned	0.000 sec / 0.000 sec

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	student_name	book_name			
▶	lokesh	tcomputation			
	lokesh	computer networks			
	naval	database			
	naval	engine function			
	avinash	control signals			
	geetha krishna	HULL			
	aditya	HULL			
	pranav	HULL			



Finding the courses of each department whether the department has course or not using left outer join

Query :

```
3 • SELECT * FROM course;  
4 • SELECT department.department_name,course.course_name  
5 FROM department  
6 left outer JOIN course  
7 ON department.department_id = course.department_id;  
8
```

Output :

#	Time	Action	Message	Duration / Fetch
7	10:31:29	select * from course LIMIT 0, 1000	6 row(s) returned	0.000 sec / 0.000 sec
8	10:35:54	SELECT department.department_name,course.course_name FROM department left outer JOIN course ON de...	Error Code: 1054. Unknown column 'department.course_id' in 'on clause'	0.016 sec
9	10:36:50	SELECT department.department_name,course.course_name FROM department left outer JOIN course ON de...	7 row(s) returned	0.031 sec / 0.000 sec
10	10:37:10	SELECT department.department_name,course.course_name FROM department left outer JOIN course ON de...	7 row(s) returned	0.000 sec / 0.000 sec

department_name	course_name
cse	toc
cse	networks
ece	dbms
ece	bct
mech	engines
eee	signals
civil	

Finding the faculty of each course whether the course has faculty or not using left outer join

Query :

```
• select * from facaulty;  
• SELECT course.course_name,facaulty.facaulty_name  
FROM course  
left outer JOIN facaulty  
ON course.course_id = facaulty.facaulty_id;
```

Output :

#	Time	Action	Message	Duration / Fetch
12	11:31:34	select * from facaulty LIMIT 0, 1000	8 row(s) returned	0.000 sec / 0.000 sec
13	11:38:24	INSERT INTO course(course_id,course_name,department_id) VALUES (9,'programming',2), (10,'oops',2)	2 row(s) affected Records: 2 Duplicates: 0 Warnings: 0	0.016 sec
14	11:41:54	SELECT course.course_name,facaulty.facaulty_name FROM course left outer JOIN facaulty ON course.cours...	8 row(s) returned	0.015 sec / 0.000 sec
15	11:42:12	SELECT course.course_name,facaulty.facaulty_name FROM course left outer JOIN facaulty ON course.cours...	8 row(s) returned	0.000 sec / 0.000 sec

course_name	facaulty_name
toc	akki
dbms	uma
bct	supriya
signals	yayati
networks	sunil
engines	jagadeesh
programming	NULL
oops	NULL



### 3. RIGHT OUTER JOINS – 3 QUERIES

Finding the students who have taken books from the library and who have not taken using the right outer join.

Query :

```
SELECT library.book_name, student.student_name
FROM library
right outer JOIN student
ON library.student_id = student.student_id;
```

Output :

Output				
Action Output				
#	Time	Action	Message	Duration / Fetch
18	13:32:55	SELECT COUNT(student_id), student_age FROM student GROUP BY student_age HAVING COUNT(student...	2 row(s) returned	0.016 sec / 0.000 sec
19	13:36:19	SELECT library.book_name, student.student_name FROM library right outer JOIN student ON library.student_id...	Error Code: 1111. Invalid use of group function	0.000 sec
20	13:37:18	SELECT library.book_name, student.student_name FROM library right outer JOIN student ON library.student_id...	8 row(s) returned	0.031 sec / 0.000 sec
21	13:39:07	SELECT library.book_name, student.student_name FROM library right outer JOIN student ON library.student_id...	8 row(s) returned	0.000 sec / 0.000 sec

book_name	student_name
tcomputation	lokesh
computer networks	lokesh
database	naval
engine function	naval
control signals	avinash
HALL	geetha krishna
HALL	aditya
HALL	pranav

Finding the faculty of each course whether the course has faculty or not using right outer join

Query :

```
3 • select * from facaulty;
4 • SELECT facaulty.facaulty_name,course.course_name
5 FROM facaulty
6 right outer JOIN course
7 ON facaulty.course_id = course.course_id;
```

Output :

Output				
Action Output				
#	Time	Action	Message	Duration / Fetch
24	13:53:59	SELECT facaulty.facaulty_name,course.course_name FROM facaulty right outer JOIN course ON facaulty.co...	10 row(s) returned	0.031 sec / 0.000 sec
25	13:55:08	SELECT facaulty.facaulty_name,course.course_name FROM facaulty right outer JOIN course ON facaulty.co...	10 row(s) returned	0.000 sec / 0.000 sec
26	13:56:03	SELECT facaulty.facaulty_name,course.course_name FROM facaulty right outer JOIN course ON facaulty.co...	10 row(s) returned	0.000 sec / 0.000 sec
27	13:56:33	SELECT facaulty.facaulty_name,course.course_name FROM facaulty right outer JOIN course ON facaulty.co...	10 row(s) returned	0.016 sec / 0.000 sec

Result Grid		Filter Rows:	Export:	Wrap Cell Contents:
	facaulty_name	course_name		
▶	yayati	toc		
	uma	dbms		
	supriya	dbms		
	sunil	bct		
	jagadeesh	signals		
	akki	networks		
	pooja	networks		
	ashwath	engines		
	NULL	programming		
	NULL	oops		

Finding the courses of each department whether the department has course or not using right outer join

Query :

```
4 • SELECT course.course_name,department.department_name
5 FROM course
6 right outer JOIN department
7 ON department.department_id = course.department_id;
8
```

Output :

Result 24 x					Read Only	Context Help	Snippets
Output							
Action Output							
#	Time	Action	Message	Duration / Fetch			
29	14:01:23	SELECT course.course_name,department.department_name FROM department right outer JOIN course ON d...	Error Code: 1054, Unknown column 'department.course_id' in 'on clause'	0.000 sec			
30	14:02:11	SELECT course.course_name,department.department_name FROM department right outer JOIN course ON d...	8 row(s) returned	0.031 sec / 0.000 sec			
31	14:03:04	SELECT course.course_name,department.department_name FROM course right outer JOIN department ON d...	9 row(s) returned	0.016 sec / 0.000 sec			
32	14:04:20	SELECT course.course_name,department.department_name FROM course right outer JOIN department ON d...	9 row(s) returned	0.000 sec / 0.000 sec			

	course_name	department_name
▶	toc	cse
	networks	cse
	dbms	ece
	bct	ece
	programming	ece
	oops	ece
	engines	mech
	signals	eee
	HULL	civil

4. Make use of different types of operators and clauses within all the queries.

Finding each department has how many courses using join and with operator “group by” .

Query :

```
SELECT department.department_name, count(course.course_id)
FROM course
JOIN department
ON department.department_id = course.department_id
group by course.department_id;
```

Output :

#	Time	Action	Message	Duration / Fetch
47	15:26:15	SELECT count(course.course_id), department.department_name FROM course JOIN department ON department.department_id = course.department_id	4 row(s) returned	0.000 sec / 0.000 sec
48	15:26:48	SELECT department.department_name, count(course.course_id) FROM course JOIN department ON department.department_id = course.department_id	4 row(s) returned	0.000 sec / 0.000 sec
49	15:27:38	SELECT department.department_name, count(course.course_id) FROM course JOIN department ON department.department_id = course.department_id	4 row(s) returned	0.000 sec / 0.000 sec
50	15:28:02	SELECT department.department_name, count(course.course_id) FROM course JOIN department ON department.department_id = course.department_id	4 row(s) returned	0.000 sec / 0.000 sec

department_name	count(course.course_id)
cse	2
ece	4
mech	1
eee	1

Finding the books taken from the library by students having >1 and <3 using join and with the “and” operator

Query :

```
SELECT student.student_name, count(library.student_id)
FROM student
JOIN library
ON student.student_id = library.student_id
group by student.student_id
having count(library.student_id)>1 and count(library.student_id)<3;
```

Output :

#	Time	Action	Message	Duration / Fetch
55	15:42:51	SELECT student.student_name, count(library.student_id) FROM student JOIN library ON student.student_id = 1...	Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your MySQL se...	0.031 sec
56	15:43:29	SELECT student.student_name, count(library.student_id) FROM student JOIN library ON student.student_id = 1...	2 row(s) returned	0.000 sec / 0.000 sec
57	15:44:58	SELECT student.student_name, count(library.student_id) FROM student JOIN library ON student.student_id = 1...	2 row(s) returned	0.016 sec / 0.000 sec
58	15:45:19	SELECT student.student_name, count(library.student_id) FROM student JOIN library ON student.student_id = 1...	0 row(s) returned	0.016 sec / 0.000 sec

student_name	count(library.student_id)
lokesh	2
naval	2

Finding the no of faculty members for specific courses like having course id >1 and <3 using join and “or” operator.

Query :

```
SELECT course.course_name,count(facaulty.course_id)
FROM facaulty
JOIN course
ON facaulty.course_id = course.course_id
group by course.course_id
having count(facaulty.course_id)>1 or count(facaulty.course_id)<3 ;
```

Output :

#	Time	Action	Message	Duration / Fetch
64	15:54:53	SELECT course.course_name,count(facaulty.course_id) FROM facaulty JOIN course ON facaulty.course_id ...	Error Code: 1054. Unknown column 'facaulty.facaulty_salary' in 'having clause'	0.016 sec
65	15:55:16	SELECT course.course_name,count(facaulty.course_id) FROM course JOIN facaulty ON facaulty.course_id ...	Error Code: 1054. Unknown column 'facaulty.facaulty_salary' in 'having clause'	0.000 sec
66	15:57:12	SELECT course.course_name,count(facaulty.course_id) FROM facaulty JOIN course ON facaulty.course_id ...	6 row(s) returned	0.000 sec / 0.000 sec
67	15:57:40	SELECT course.course_name,count(facaulty.course_id) FROM facaulty JOIN course ON facaulty.course_id ...	6 row(s) returned	0.000 sec / 0.000 sec

course_name	count(facaulty.course_id)
toc	1
dbms	2
bct	1
signals	1
networks	2
engines	1