LAB REPORT

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SUBMITTED TO

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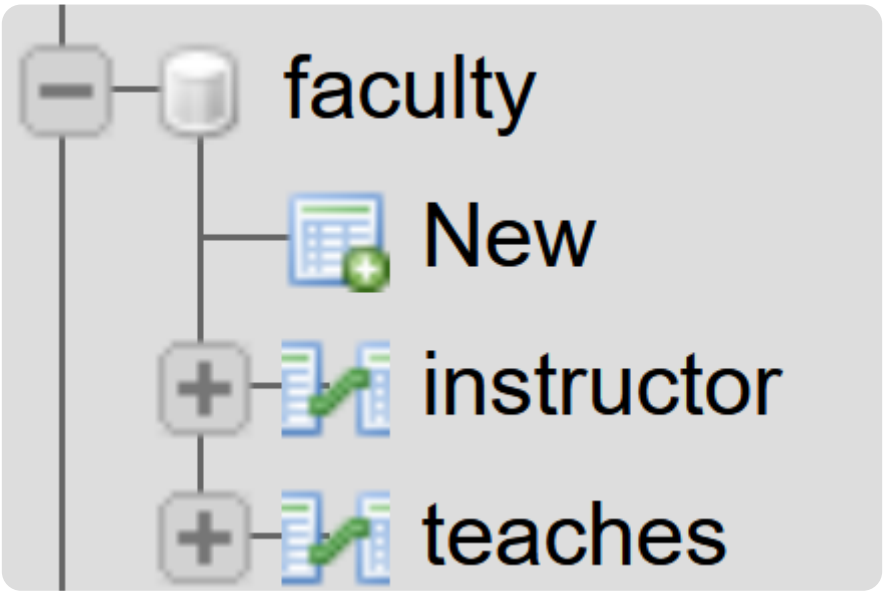
Database Systems Lab

Prerequisite

Creating a new database:

```
CREATE DATABASE faculty;
```



Creating two tables: `instructor` and `teaches`

```
CREATE TABLE instructor(
    id int(8),
    name varchar(12),
    dept_name varchar(12),
    salary int(6)
);

CREATE TABLE teaches(
    id int(8),
    c_id char(8),
```

```
    section_id int(2)
);
```

id	name	dept_name	salary

id	c_id	section_id

Inserting data to the tables:

```
-- inserting data into `instructor`
INSERT INTO instructor VALUES(10101, "Srinivasan", "CSE",
65000);
INSERT INTO instructor VALUES(12121, "Wu", "FIN", 90000);
INSERT INTO instructor VALUES(15151, "Mozart", "Music",
40000);
INSERT INTO instructor VALUES(22222, "Einstein", "Physics",
90000);
INSERT INTO instructor VALUES(32343, "Said", "History",
60000);
INSERT INTO instructor VALUES(33456, "Gold", "Physics",
87000);
INSERT INTO instructor VALUES(45565, "Katz", "CSE", 75000);
INSERT INTO instructor VALUES(58583, "Cali", "History",
62000);
INSERT INTO instructor VALUES(76543, "Singh", "FIN",
80000);
INSERT INTO instructor VALUES(76766, "Crick", "Bio",
72000);
INSERT INTO instructor VALUES(83821, "Brandt", "CSE",
92000);
INSERT INTO instructor VALUES(98345, "Kin", "EEE", 80000);

-- inserting data into `teaches`
INSERT INTO teaches VALUES(10101, "CSE_101", 1);
```

```
INSERT INTO teaches VALUES(12121, "CSE_111", 2);
INSERT INTO teaches VALUES(13131, "CSE_311", 3);
```

id	name	dept_name	salary
10101	Srinivasan	CSE	65000
12121	Wu	FIN	90000
15151	Mozart	Music	40000
22222	Einstein	Physics	90000
32343	Said	History	60000
33456	Gold	Physics	87000
45565	Katz	CSE	75000
58583	Cali	History	62000
76543	Singh	FIN	80000
76766	Crick	Bio	72000
83821	Brandt	CSE	92000
98345	Kin	EEE	80000

id	c_id	section_id
10101	CSE_101	1
12121	CSE_111	2
13131	CSE_311	3

Lab Tasks

1. Perform Cartesian Product operation between these two relations

```
SELECT * FROM instructor, teaches;
```

Alternative approach:

```
SELECT * FROM instructor CROSS JOIN teaches;
```

id	name	dept_name	salary	id	c_id	section_id
10101	Srinivasan	CSE	65000	10101	CSE_101	1
10101	Srinivasan	CSE	65000	12121	CSE_111	2
10101	Srinivasan	CSE	65000	13131	CSE_311	3
12121	Wu	FIN	90000	10101	CSE_101	1
12121	Wu	FIN	90000	12121	CSE_111	2
12121	Wu	FIN	90000	13131	CSE_311	3
15151	Mozart	Music	40000	10101	CSE_101	1
15151	Mozart	Music	40000	12121	CSE_111	2
15151	Mozart	Music	40000	13131	CSE_311	3
22222	Einstein	Physics	90000	10101	CSE_101	1
22222	Einstein	Physics	90000	12121	CSE_111	2
22222	Einstein	Physics	90000	13131	CSE_311	3
32343	Said	History	60000	10101	CSE_101	1
32343	Said	History	60000	12121	CSE_111	2
32343	Said	History	60000	13131	CSE_311	3
33456	Gold	Physics	87000	10101	CSE_101	1
33456	Gold	Physics	87000	12121	CSE_111	2
33456	Gold	Physics	87000	13131	CSE_311	3
45565	Katz	CSE	75000	10101	CSE_101	1
45565	Katz	CSE	75000	12121	CSE_111	2
45565	Katz	CSE	75000	13131	CSE_311	3
58583	Cali	History	62000	10101	CSE_101	1
58583	Cali	History	62000	12121	CSE_111	2
58583	Cali	History	62000	13131	CSE_311	3
76543	Singh	FIN	80000	10101	CSE_101	1

Figure - 1.1. Task 1

2. Find those instructors who teach any of the courses

```
SELECT name, c_id
FROM instructor INNER JOIN teaches
WHERE Instructor.ID=teaches.ID;
```

name	c_id
Srinivasan	CSE_101
Wu	CSE_111

Figure - 1.2. Task 2

3. Find only instructor names and course id for instructors in the Computer Science department

```
SELECT name, c_id
FROM instructor INNER JOIN teaches
WHERE Instructor.ID=teaches.ID AND dept_name="CSE";
```

Done using **Natural Join**:

```
SELECT name, c_id
FROM instructor NATURAL JOIN teaches
WHERE dept_name="CSE";
```

name	c_id
Srinivasan	CSE_101

Figure - 1.3. Task 3

4. Find the total no. of tuples in the `instructor` relation

```
SELECT Count(*) FROM instructor;
```

Count(*)
12

Figure - 1.4. Task 4

5. Redo task 2 using natural join

```
SELECT name, c_id
FROM instructor NATURAL JOIN teaches;
```

name	c_id
Srinivasan	CSE_101
Wu	CSE_111

Figure - 1.5. Task 5

6. Perform left outer join

```
SELECT name, c_id
FROM instructor NATURAL LEFT OUTER JOIN teaches;
```

name	c_id
Srinivasan	CSE_101
Wu	CSE_111
Mozart	*NULL*
Einstein	*NULL*
Said	*NULL*
Gold	*NULL*
Katz	*NULL*
Cali	*NULL*
Singh	*NULL*
Crick	*NULL*
Brandt	*NULL*
Kin	*NULL*

Figure - 1.6. Task 6

7. Perform right outer join

```
SELECT name, c_id
FROM instructor NATURAL RIGHT OUTER JOIN teaches;
```

name	c_id
Srinivasan	CSE_101
Wu	CSE_111
NULL	CSE_311

Figure - 1.7. Task 7