

DBMS Assignment 6

Pulkit Mahajan
2019ucs0073

Question 1

```
--creating database first
create table table1(
id_1 int,
name varchar(4)
);
create table table2(
id_2 int, name varchar(4)
);
insert into table1 values
(1, 'A'), (2, 'B'), (3, 'C');
insert into table1 values
(1, 'A'), (2, 'B'), (3, 'D');
```

```
calhost:3306 ssl institute SQL > create table table1(
    -> id_1 int,
    -> name varchar(4)
    -> );
0 rows affected (0.0587 sec)
calhost:3306 ssl institute SQL > create table table2
    -> (
    -> id^C
calhost:3306 ssl institute SQL > create table table2(
    -> id_2 int,
    -> name varchar(4)
    -> );
0 rows affected (0.0260 sec)
calhost:3306 ssl institute SQL > insert into table1
    -> values
    -> (1,'A'),
    -> (2,'B'),
    -> (3,'C');
3 rows affected (0.0156 sec)

    Duplicates: 0  Warnings: 0
calhost:3306 ssl institute SQL > insert into table2
    -> values
    -> (1,'A'),
    -> (2,'B'),
    -> (3,'D');
3 rows affected (0.0125 sec)

    Duplicates: 0  Warnings: 0
```

```
MySQL localhost:3306 ssl institute SQL > select * from table1;
+-----+-----+
| id_1 | name |
+-----+-----+
| 1 | A |
| 2 | B |
| 3 | C |
+-----+-----+
3 rows in set (0.0106 sec)

MySQL localhost:3306 ssl institute SQL > select* from table2;
+-----+-----+
| id_2 | name |
+-----+-----+
| 1 | A |
| 2 | B |
| 3 | D |
+-----+-----+
3 rows in set (0.0010 sec)
```

a)

```
--Natural Join:
select *
from table1 natural join table2;
```

```
MySQL localhost:3306 ssl institute SQL > select *
-> from
-> table1 NATURAL JOIN table2;

+-----+-----+-----+
| name | id_1 | id_2 |
+-----+-----+-----+
| A | 1 | 1 |
| B | 2 | 2 |
+-----+-----+-----+
2 rows in set (0.0106 sec)
```

b)

```
--Left Outer Join and Right outer join
select *
from table 1 left join table2
on table1.name = table2.name;
select *
from table 1 right join table2
on table1.name = table2.name;
```

```
MySQL localhost:3306 ssl institute SQL > select *
-> from table1 LEFT JOIN table2
-> ON table1.name = table2.name;

+-----+-----+-----+-----+
| id_1 | name | id_2 | name |
+-----+-----+-----+
| 1 | A | 1 | A |
| 2 | B | 2 | B |
| 3 | C | NULL | NULL |
+-----+-----+-----+
3 rows in set (0.0007 sec)

MySQL localhost:3306 ssl institute SQL > select *
-> from table1 RIGHT JOIN table2
-> ON table1.name = table2.name;

+-----+-----+-----+-----+
| id_1 | name | id_2 | name |
+-----+-----+-----+
| 1 | A | 1 | A |
| 2 | B | 2 | B |
| NULL | NULL | 3 | D |
+-----+-----+-----+
3 rows in set (0.0006 sec)

MySQL localhost:3306 ssl institute SQL >
```

d)

```
--Full outer join
(select * from table1 t1 left join table2 t2 on t1.name = t2.name)
union
(select * from table1 t1 right join table2 t2 on t1.name = t2.name);

MySQL localhost:3306 ssl institute SQL > (select * from table1 t1 left join table2 t2 on t1.name = t2.name)
-> union
-> (select * from table1 t1 right join table2 t2 on t1.name = t2.name);

+-----+-----+-----+-----+
| id_1 | name | id_2 | name |
+-----+-----+-----+
| 1 | A | 1 | A |
| 2 | B | 2 | B |
| 3 | C | NULL | NULL |
| NULL | NULL | 3 | D |
+-----+-----+-----+
4 rows in set (0.0156 sec)

MySQL localhost:3306 ssl institute SQL >
```

Question 2

a)

```
select course.title, section.room_number, section.semester, section.year
from course left join section
on course.course_id = section.course_id;
```

```
MySQL localhost:3306 ssl institute SQL> select course.title, section.room_number, section.semester, section.year
-> from course left join section
-> on course.course_id = section.course_id;
```

title	room_number	semester	year
Intro. to Biology	514	Summer	2009
Genetics	514	Summer	2010
Computational Biology	NULL	NULL	NULL
Intro. to Computer Science	101	Spring	2010
Intro. to Computer Science	101	Fall	2009
Game Design	3128	Spring	2009
Game Design	3128	Spring	2009
Robotics	120	Spring	2010
Image Processing	3128	Spring	2010
Image Processing	100	Spring	2010
Database System Concepts	3128	Fall	2009
Intro. to Digital Systems	3128	Spring	2009
Investment Banking	101	Spring	2010
World History	514	Spring	2010
Music Video Production	101	Spring	2010
Physical Principles	100	Fall	2009

```
16 rows in set (0.0010 sec)
```

b)

```
select course.title, section.year
from course left join section
on course.course_id = section.course_id
where year = 2009;
```

```
MySQL localhost:3306 ssl institute SQL> select course.title, section.year
-> from course left join section
-> on course.course_id = section.course_id
-> where year = 2009;
```

title	year
Intro. to Biology	2009
Intro. to Computer Science	2009
Game Design	2009
Game Design	2009
Database System Concepts	2009
Intro. to Digital Systems	2009
Physical Principles	2009

```
7 rows in set (0.0008 sec)
```

c)

```
select instructor.name, teachers.course_id
from instructor left join teachers
on instructor.id = teachers.id;
```

```
MySQL localhost:3306 ssl institute SQL > select instructor.name, teachers.course_id
-> from instructor left join teachers
-> on instructor.id = teachers.id;

+-----+-----+
| name   | course_id |
+-----+-----+
| Einstein | PHY-101   |
| Wu      | FIN-201   |
| El Said | HIS-351   |
| Katz     | CS-319    |
| Katz     | CS-101    |
| Kim     | EE-181    |
| Crick   | BIO-319   |
| Crick   | BIO-101   |
| Srinivasn | CS-347    |
| Srinivasn | CS-315    |
| Srinivasn | CS-101    |
| Califieri | NULL     |
| Brandt  | CS-319    |
| Brandt  | CS-190    |
| Brandt  | CS-190    |
| Mozart  | MU-199    |
| Gold    | NULL     |
| Singh   | NULL     |
+-----+-----+
18 rows in set (0.0007 sec)
```

Question 3

a)

```
select distinct name, building
from instructor I left join teachers T
on I.id = T.id
left join section S
on S.course_id = T.course_id
where S.building = "Taylor";
```

```
MySQL localhost:3306 ssl institute SQL > select distinct name, building from instructor I left join teachers T
on I.id = T.id left join section S on S.course_id = T.course_id where S.building = "Taylor";

+-----+-----+
| name   | building |
+-----+-----+
| Katz    | Taylor   |
| Kim     | Taylor   |
| Srinivasn | Taylor   |
| Brandt  | Taylor   |
+-----+-----+
4 rows in set (0.0010 sec)
```

b)

```
select title, semester
from course c left join section s
```

```
on c.course_id = s.course_id
where semester = "Spring";
```

```
MySQL localhost:3306 ssl institute SQL > select title, semester
-> from course c left join section s
-> on c.course_id = s.course_id
-> where semester = "Spring";

+-----+-----+
| title                | semester |
+-----+-----+
| Intro. to Computer Science | Spring   |
| Game Design          | Spring   |
| Game Design          | Spring   |
| Robotics             | Spring   |
| Image Processing     | Spring   |
| Image Processing     | Spring   |
| Intro. to Digital Systems | Spring   |
| Investment Banking   | Spring   |
| World History        | Spring   |
| Music Video Production | Spring   |
+-----+-----+
10 rows in set (0.0007 sec)
```

c)

```
select title, dept_name, room_number
from course left join section
on course.course_id = section.course_id
where dept_name = "Biology"
and
room_number = 514;
select count(title)
from course left join section
on course.course_id = section.course_id
where dept_name = "Biology"
and room_number = 514;
```

```
MySQL localhost:3306 ssl institute SQL > select title, dept_name, room_number
r from course left join section on course.course_id = section.course_id where dept_name = "Biology" and room_number = 514;

+-----+-----+-----+
| title                | dept_name | room_number |
+-----+-----+-----+
| Intro. to Biology    | Biology   | 514         |
| Genetics             | Biology   | 514         |
+-----+-----+-----+
2 rows in set (0.0007 sec)
```

```
MySQL localhost:3306 ssl institute SQL > select count(title)
-> from course left join section
-> on course.course_id = section.course_id
-> where dept_name = "Biology"
-> and room_number = 514;

+-----+
| count(title) |
+-----+
|          2 |
+-----+
1 row in set (0.0111 sec)
```