CS 327E Lecture 4

Shirley Cohen

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Agenda

- Announcements
- Homework for today
- Reading Quiz
- Concept Questions
- Homework for next time

Announcements

- Reminder: Do the exercises at the end of the assigned chapter
- Reminder: Midterm #1 will be a closed book exam

Homework for Today

- Chapter 5 from the Learning SQL book
- Exercises at the end of Chapter 5

Quiz Question 1

```
mysql> select * from employee;
+---------+-----------+---------+
| fname   | lname     | dept_id |
+---------+-----------+---------+
| Michael | Smith     |       3 |
| Susan   | Barker    |       3 |
| Robert  | Tyler     |       3 |
| Susan   | Hawthorne |       1 |
| John    | Gooding   |       2 |
+---------+-----------+---------+
```

```
mysql> select * from department;
+---------+----------------+
| dept_id | name           |
+---------+----------------+
|       1 | Operations     |
|       2 | Loans          |
|       3 | Administration |
+---------+----------------+
```

How many **rows** does the following query return?

```
SELECT e.fname, e.lname, e.dept_id, d.name
FROM employee e
JOIN department d;
```

A. 0 B. 3 C. 5 D. 15

Quiz Question 2

```
mysql> select * from employee;
+---------+----------+---------+
| fname   | lname    | dept_id |
+---------+----------+---------+
| Michael | Smith    |       3 |
| Susan   | Barker   |       3 |
| Robert  | Tyler    |       3 |
| Susan   | Hawthorne |       1 |
| John    | Gooding  |       2 |
+---------+----------+---------+
```

```
mysql> select * from department;
+---------+----------------+
| dept_id | name           |
+---------+----------------+
|       1 | Operations     |
|       2 | Loans          |
|       3 | Administration |
+---------+----------------+
```

How many **columns** does the following query return?

```
SELECT e.*, d.*
FROM employee e
JOIN department d;
```

A. 0 B. 3 C. 4 D. 5

Quiz Question 3

```
mysql> select * from employee;
+--------+----------+-----------+------------------+
| emp_id | fname    | lname     | superior_emp_id |
+--------+----------+-----------+------------------+
|      1 | Michael  | Smith     |             NULL |
|      2 | Susan    | Barker    |                1 |
|      3 | Robert   | Tyler     |                1 |
|      4 | Susan    | Hawthorne |                3 |
|      5 | John     | Gooding   |                4 |
|      6 | Helen    | Fleming   |                4 |
+--------+----------+-----------+------------------+
```

How many **rows** does the following query return?

```
SELECT e.fname, e.lname, emgr.fname, emgr.lname
FROM employee e INNER JOIN employee emgr
ON e.superior_emp_id = emgr.emp_id;
```

A. 5 B. 6 C. 11 D. 36

Quiz Question 4

When can the `using` subclause be used in a join between two tables?

A. Only when doing a Cartesian product (or cross join)
B. Only when doing an inner join
C. Only when the column name specified is the same in both tables
D. None of the above

Quiz Question 5

Which of the following statements is **true**?

A. Join conditions are limited to checking equality
B. Performing an inner join on two columns requires their column names to be identical.
C. The ANSI SQL standard permits joins between no more than two tables.
D. The same table may be used twice so long as each instance is using a distinct alias.

Concept Question 1

Suppose we have a database of favorite cooking recipes. We want to find all recipes that are **main** courses and have **notes**. Assume that the field `RecipeClassDescription` indicates the course type (e.g. 'main', 'dessert', etc.)

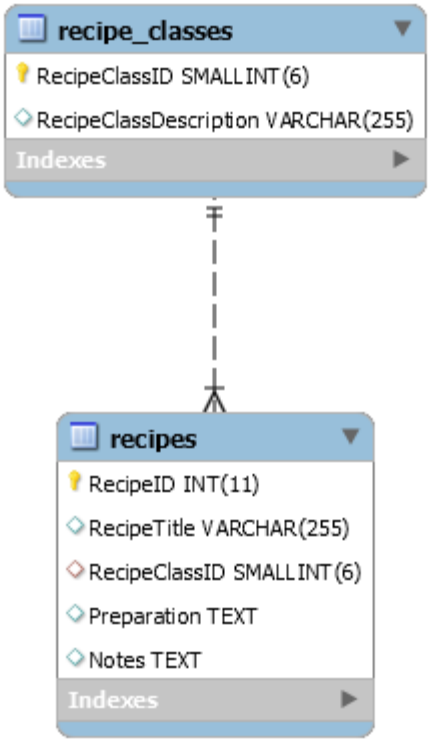
A.
```
select r.*, rc.*
from recipes r join recipe_classes rc
using (recipeClassID)
where rc.RecipeClassDescription =
'main'
and r.notes is not null
```

B.
```
select r.*, rc.*
from recipes r, recipe_classes rc
where r.RecipeClassID =
rc.RecipeClassID
and r.notes is not null
and rc.RecipeClassDescription = 'main'
```

C.
```
select r.*, rc.*
from recipe_classes rc join recipes r
on rc.RecipeClassID = r.RecipeClassID
and rc.RecipeClassDescription = 'main'
and r.notes is not null
```

D. All of the above

E. None of the above



Concept Question 2

Suppose we have a student enrollment database and we want to report on students and all the classes in which they are currently enrolled. How can we express the `FROM-JOIN-WHERE` clauses of this query?

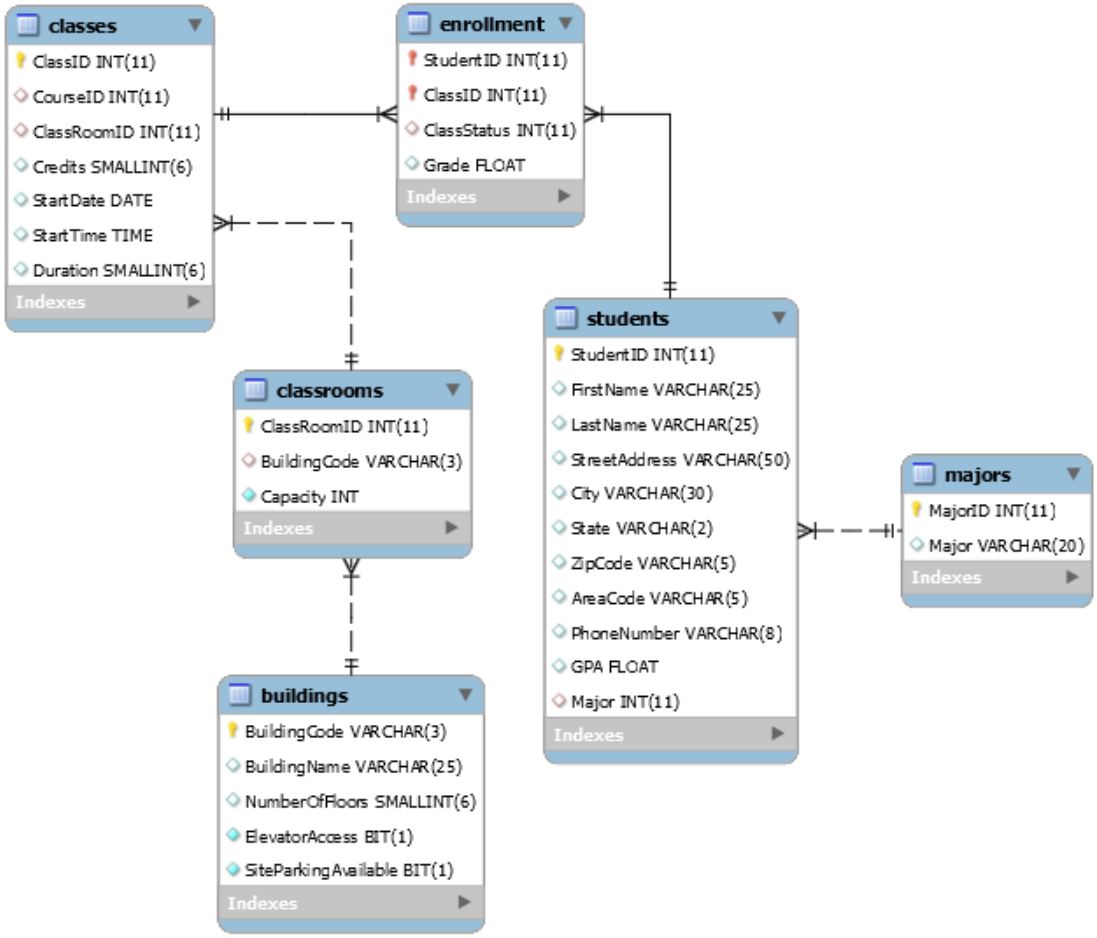
A.
```
from students s, enrollment e,
classes c
where s.studentid = e.studentid
and e.classid = c.classid
and c.startdate = '2016-01-19'
```

B.
```
from students s join enrollment e
using (student_id)
join classes c
using (classid)
and c.startdate = '2016-01-19'
```

C.
```
from enrollment e join students s
on e.studentid = s.studentid
join classes c
on e.classid = c.classid
and c.startdate = '2016-01-19'
```

D.
```
from classes c join enrollment e
on e.classid = c.classid
join students s
on e.studentid = s.studentid
and c.startdate = '2016-01-19'
```

E. All of the above



Concept Question 3

Are these two queries semantically **equivalent**?

```
Query #1:

select buyer
from sku_data
where sku in
             (select sku
              from order_item
              where orderNumber in
                                  (select orderNumber
                                   from retail_order
                                   where orderMonth = 'January'
                                   and orderYear = 2016))

Query #2:

select s.buyer
from sku_data s join order_item o on s.sku = o.sku
join retail_order r on o.orderNumber = r.orderNumber
where r.orderMonth = 'January'
and r.orderYear = 2016
```

A. Yes B. No C. Not enough information

Concept Question 4

Suppose we work at an employment agency and we want to find all job candidates who are skilled in both `'Linux'` and `'Python'`. What query can we use to compute this answer?

```
CREATE TABLE CandidateSkills
(
 candidate_id INTEGER NOT NULL,
 skill_code CHAR(15) NOT NULL,
 PRIMARY KEY (candidate_id, skill_code)
);

INSERT INTO CandidateSkills VALUES(1, 'Linux');
INSERT INTO CandidateSkills VALUES(1, 'Python');
INSERT INTO CandidateSkills VALUES(2, 'Python');
INSERT INTO CandidateSkills VALUES(3, 'Linux');
INSERT INTO CandidateSkills VALUES(3, 'Windows');
```

A.

```
SELECT candidate_id
FROM CandidateSkills
WHERE skill_code = 'Linux'
AND skill_code = 'Python'
```

B.

```
SELECT candidate_id
FROM CandidateSkills
WHERE skill_code = 'Linux'
OR skill_code = 'Python'
```

C.

```
SELECT c1.candidate_id
FROM CandidateSkills as c1, CandidateSkills as c2
WHERE c1.candidate_id = c2.candidate_id
AND c1.skill_code = 'Linux'
AND c2.skill_code = 'Python'
```

D.

```
SELECT candidate_id
FROM CandidateSkills
WHERE skill_code IN ('Linux', 'Python')
```

E.

None of the above

Concept Question 5

Here is a view of the bank schema from our book. From this diagram, what can you tell about the relationship between a customer, an individual, and a business?

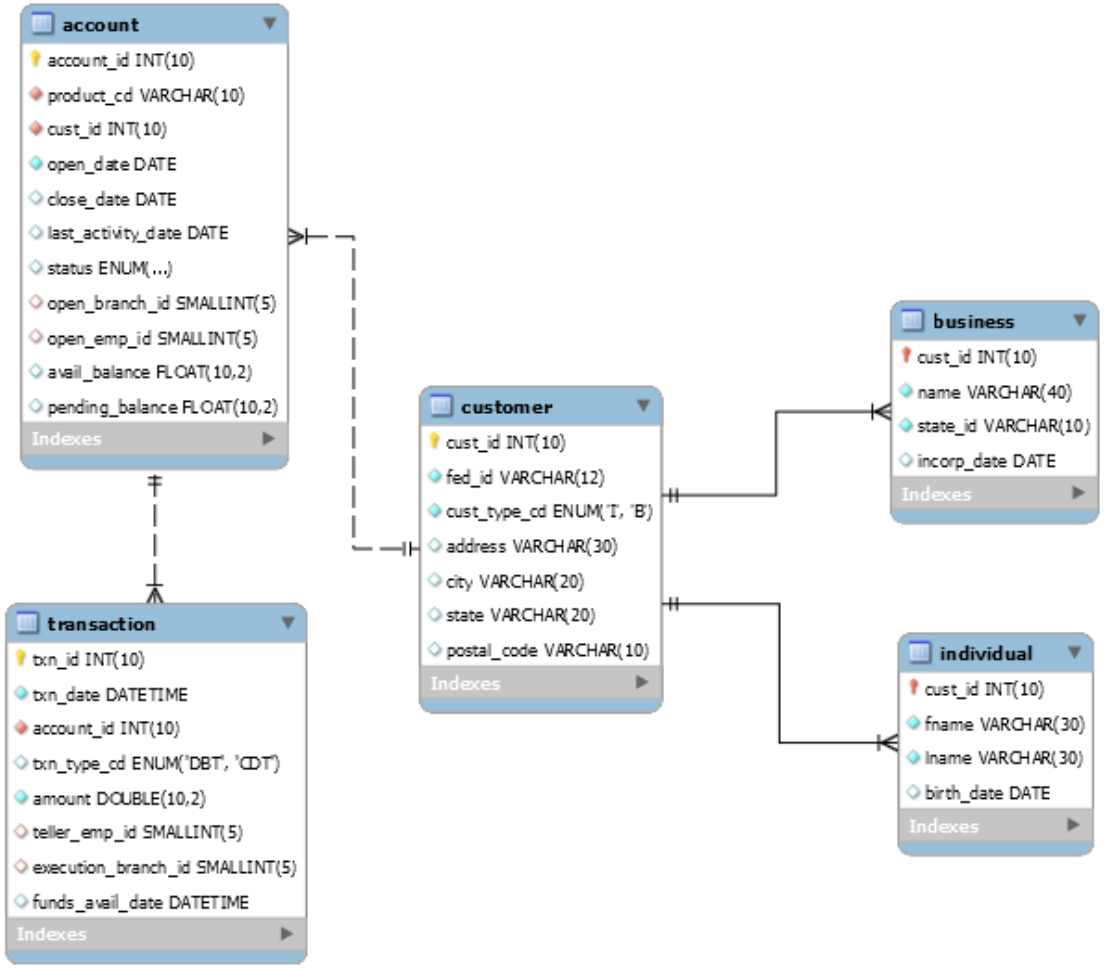
A. A customer is one or more individuals

B. A customer is one or more businesses

C. A customer is either one or more individuals or one or more businesses

D. A customer is at most one individual or at most one business

E. None of the above



Homework for Next Time

- Read chapter 10 from the book
- Exercises at the end of chapter 10