

Assignment 05

EPPS 6354 Information Management

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1. What do disconnected graphs or cycles in E-R diagrams reveal about enterprise schema structure?

- a. The graph is disconnected.
 - i. This will mean that some entities or also components in the enterprise schema will not be able to easily communicate or that the structure is poor.
- b. The graph has a cycle.
 - i. This means that there is a circular relationship among the entities

3. We can convert any **weak entity set** to a **strong entity set** by simply **adding appropriate attributes**. *Why, then, do we have weak entity sets?*

- Sometimes we want to make an entity depend on another like in the case of a dependent tied to an employee. It is important for certain data to only exist then tied to an owning entity. This helps us reduce redundancy and ensure integrity in our database.

4.a.i Find ID and name of each employee who lives in the same city as the location of the company for which the employee works.

SQL

```
SELECT e.ID, e.name
FROM employee e, works w, company c
WHERE e.ID = w.ID
      AND w.company_name = c.company_name
      AND e.city = c.city;
```

4.a.ii Find ID and name of each employee who lives in the same city and on the same street as does her or his manager.

SQL

```
SELECT e.ID, e.name
FROM employee e, manages m, employee mgr
WHERE e.ID = m.ID
      AND m.manager_ID = mgr.ID
      AND e.street = mgr.street
      AND e.city = mgr.city;
```

4.a.iii Find ID and name of each employee who earns more than the average salary of all employees of her or his company.

```
SELECT e.ID, e.name
FROM employee e, works w
WHERE e.ID = w.ID

      AND e.salary > (

      SELECT AVG(e2.salary)

      FROM employee e2, works w2

      WHERE e2.ID = w2.ID

      AND w2.company_name = w.company_name

      );
```

4.b Consider the following SQL query that seeks to find a list of titles of all courses taught in Spring 2017 along with the name of the instructor.

```
select name, title
from instructor natural join teaches natural join section natural
join course
where semester = 'Spring' and year = 2017
```

What is wrong with this query? (Hint: check book website)

- The above used NATURAL JOIN on all common attributes between tables. If tables share multiple attribute names like ID, course_id, etc., NATURAL JOIN may join on unintended columns. We would want to use explicit joins to make sure to control for attributes joined.