Assignment 1

Report

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Contents

1 Task1: MoviesDB

1.1 Assumptions

We have made some assumptions when we were solving this task, they are as followed:

- A relationship can be one to one, one to many and many to many.
- An arrow indicates at most one, no arrow indicates one or more
- We assume any statement that has numbers '10' or words such as 'Dozen', if the relationship is many-to-many we take it as maybe. Since we cannot be 100 percent sure of the exact number.
- For a statemtemt that has 'every' to be true, there should not be a counter argument.

1.2 Answer

1. **True** There are no actors in this database that have been in no movies.
2. **Maybe** There are some actors who have acted in more than ten movies.
   - Here we said 'maybe' because the relationship between actors and movies is many-to-many this means that some actors could have acted in more that 10 movies but it could also be less.
3. **True** Some actors have done a lead role in multiple movies.
4. **False** A movie can have only a maximum of two lead actors.
5. **False** Every director has been an actor in some movie.
6. **False** No producer has ever been an actor.
7. **False** A producer cannot be an actor in some other movie.
8. **True** There are movies with more than a dozen actors.
9. **False** Some producers have been a director as well.
10. **Maybe** Most movies have one director and one producer.
    - Since the relationship between producers and movies is many-to-many this means a movie could have one producer or many and that's why we answered maybe here.
11. **Maybe** Some movies have one director but several producers.

    - The relation between directors and movies is many-to-one and the relation between producers and movies is many-to-many this means that a movie could have one or more producers and that's why we answered maybe here.
12. **True** There are some actors who have done a lead role, directed a movie, and produced a movie.
13. **False** No movie has a director who also acted in that movie.

2 Births

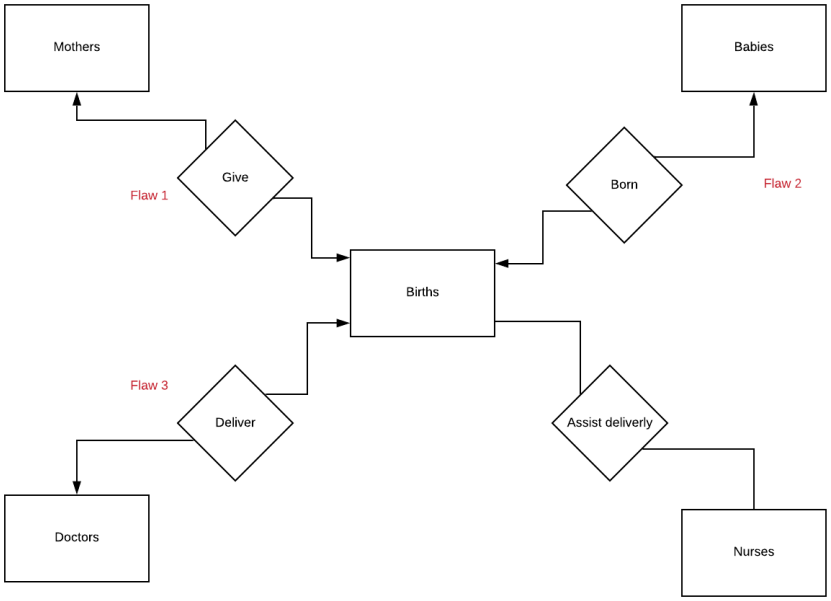

Figure 1: Model base on the conditions

As we mentioned before, an arrow indicate at most one. To prove the uniqueness, we applied the an arrow between babies and birth. Also for, mothers and births, doctors and births. Since there is no condition that describe nurses entity set, we applied real world scenario to it. Which is why we are using no arrow that indicate one or more.
We also assume that in every birth there is only one doctor that delivers it, that's why the relationship between the doctor and births is (one-to-one).

Flaws

1. It is possible for mothers to give one or more births, it should be Mother <— Births (many-to-one) not Mothers <—> Births (one-to-one)
2. A doctor can deliver more than one birth
3. A birth can give many babies. For instance twins (Births —> Babies)

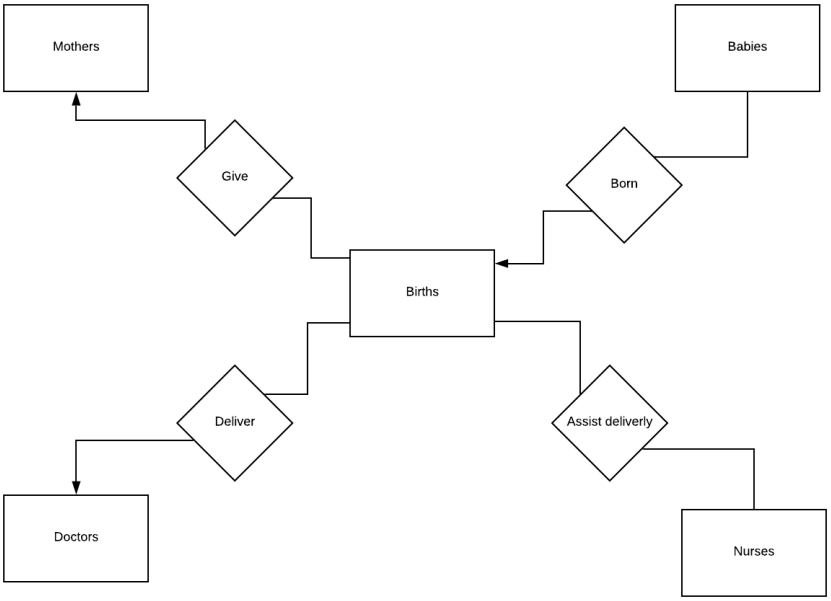

Figure 2: New model

We allow a birth to involve more than one baby born to one mother, also we changed the relationship between Mothers and Births to one-to-many. The fact that every baby has a unique mother still applied. Since each birth has relation with one mother. Also, we changed the relation between doctor and birth to one-to-many. The 3rd condition still applied in the new model since each birth has relation with one doctor.

3 The registrar's office

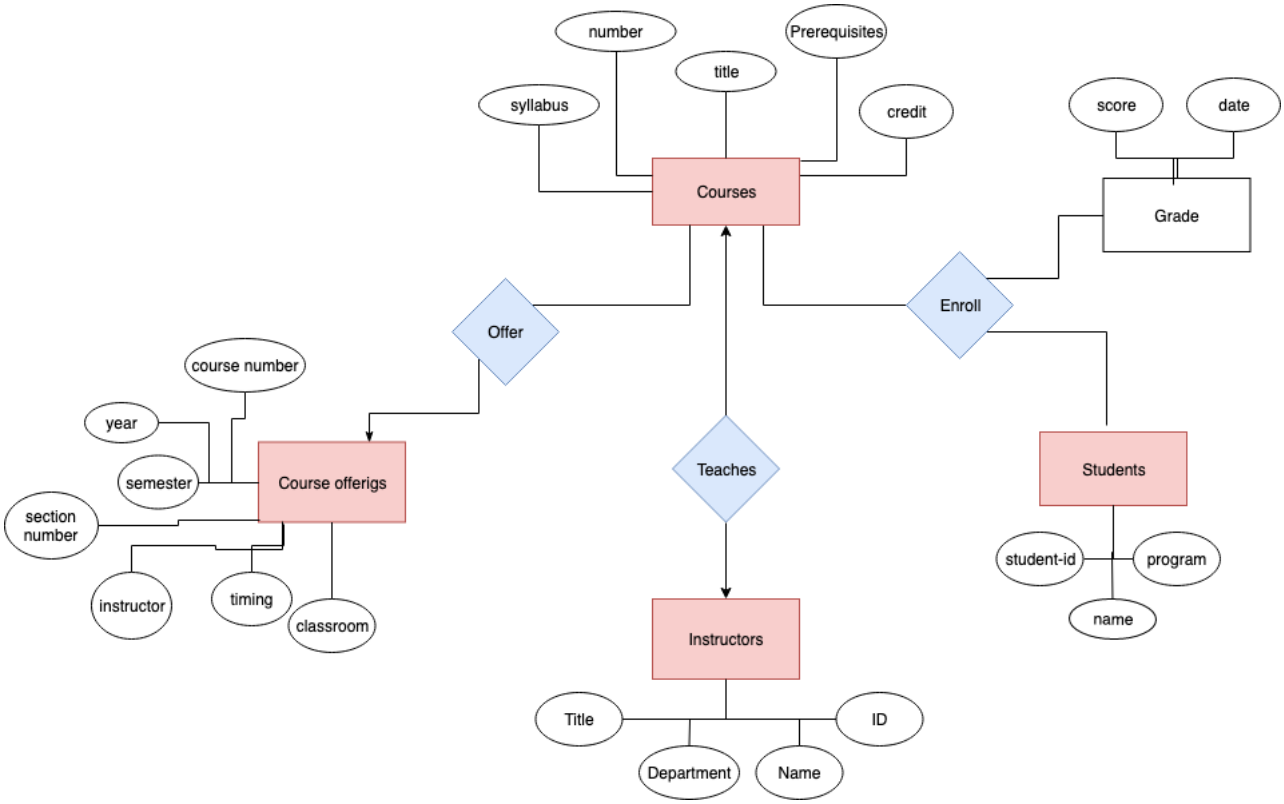

Figure 3: Registrar's office

The students are enrolled in one or more courses and this enrollment has a grade entity. For a person to be student they have to be enrolled to at least one course. The grade entity set has an enrollment relationship with student and course.

When we created this diagram we have made some few assumptions, the relations between instructors and courses is (one-to-one) we are assuming that each course has only one instructor.

4 Classroom scheduling

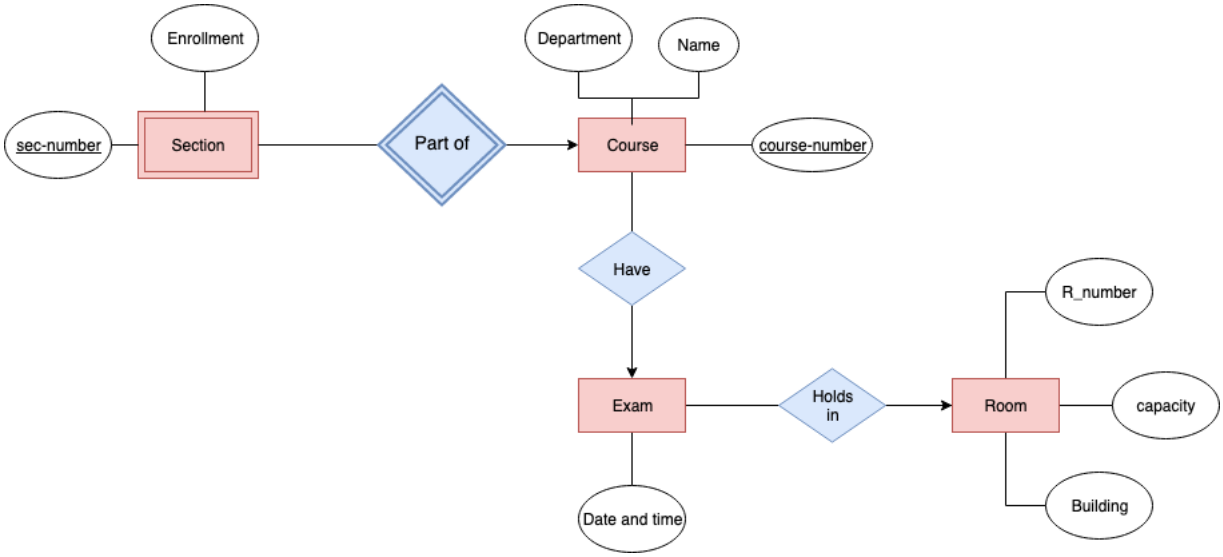

Figure 4: Classroom scheduling

4.1 Assumption

We have made some assumptions when we were solving this task, they are as followed:

- Each course have only one exam.
- Each course have zero or more section.
- The room which the exam is hold in is a big room so that many exam (difference courses) can hold in the same room. Like what we do here at LNU.

4.2 application characteristics

When creating the E/R diagram we have included all the new entity sets that were constructed from the attributes of the single entity. If we discard one of the entity sets the application would not function as it should. We also renamed the attribute of the exam entity set to (date and time) because we think that including the date of the exam is important.