Seminar 1

Data Storage Paradigms, IV1351

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1 Introduction

In this seminar we got tasked to build a conceptual model about a music school where students could apply to learn how to play different musical instruments. We had to keep basic information about all the students, instructors, and the different types of lessons that you could choose from, individual, group and ensemble. But also, a bit about payment and how students could rent instruments. I worked together with Sushil KC.

2 Literature Study

Things learned from this seminar from watching the lectures and reading chapter three in the book is not that much different from the previous course IV1350 where there is some focus about building domain models.

Same type of method was used to find entities, the big differences here is that associations between the entities now are called relations and classes are called entities. Other differences are that in diagrams you were allowed to have a class without attributes but now it's not really allowed because an entity without attribute is useless because it doesn't contribute to any data.

Another new concept Is the cardinality ratio that is between two entities and the relationship between them this is used to help us understand how many instances of an entity is related to another.

3 Method

The methods used during this seminar was mostly the same ones that were used when we built the domain model, noun identification and category list.

Noun identification
How the noun identification method works is that we add entities for every noun we find throughout the description.

Category lists method
To make sure that you find all the entities we will not only use noun method but also category list method which looks like a set of criteria that looks like this:

Transactions
Products, services
Roles, people, organizations
Places
Records
Events
Physical objects
Devices
Descriptions
Catalogs
Systems
Quantities, units

Attributes
With both methods we just add things while going through the instructions and after you've gone through the whole text it's time to determine which of these entities are necessary to do so we must determine if the entity is not more suited as an attribute this can be the case if the entity is empty or only has one connection that is not necessary. But it can also be the other way around where we have a lot of entities with the same attributes then it might be better to create a new entity and make a connection with them instead.

Adding relations
When creating the relations, it's important to make sure that the names which they relate to are understandable and fitting otherwise it might be hard to understand what kind of connections these entities have with each other. When choosing the cardinality ratio it's also important

The program that was used for this task was Astha.

4 Result

As mentioned in the method section the determination of which entities to create and keep was determined using the two methods and then discussed with another classmate, the entities that were created that felt like they had a connection to the requirements were Address, Person, Instructor, Siblings, Student, Lessons, Discount, Payment, Leasing Instruments, Prices, Salary, Individual Lessons, Ensembles, Group Lessons, Administrative Staff and Scheduled Timeslots.

The student is kind of the spider in the web with the most relations (6) which is associated with leasing Instrument, Payment, Discount, Siblings, Person, and Lessons. We then have lessons that have an inheritance of the three different types of lessons and a relation with instructor and prices. The rest is kinds obvious we have salary for the instructor and an address for person then we also have the booking for the individual lessons and the scheduled lessons for group and ensemble.
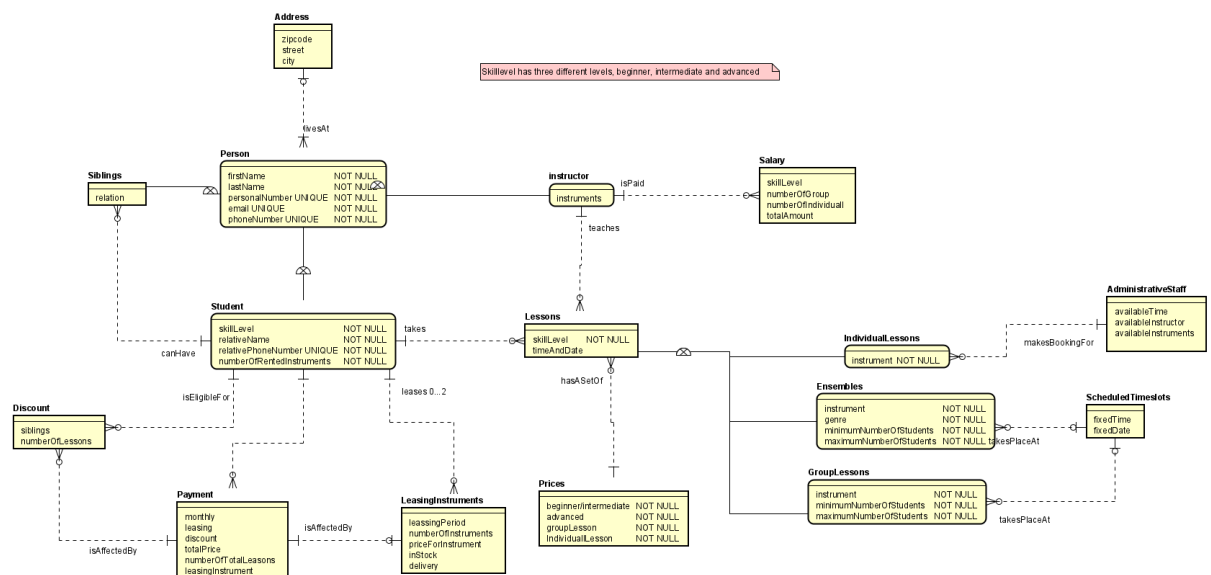

Figure 1: Illustrates the conceptual model

5 Discussion

When looking at the result of the CM it covers all the information needed by the music school Soudgood. The major entities are there and the information between all of them are easy to read and understand. The number of entities does seem to cover all the different requirements that Soundgood covers, one entity that could have been added is the school itself, but it felt like it wouldn't contribute to so much more then the entities already created. All the entities in the conceptual model does have reasonable and meaningful attributes only exception would be sibling which only have the attribute relation which was only made for the requirement that if you would have siblings going to lessons there was a discount.

The relations are explained well what they mean and NOT NULL and UNIQUE is used as advised even inheritance which felt like a better option then using a relation when it comes to "is a" like student is a person, instructor is a person etc. Person in this case is a generalization of student and instructor meaning that a student is always some kind of person, but person is not always a student. The main reason is that all the fields for the entity person is relevant to instructor and person and as stated in the lecture video that a 1 to 1, 0 relationship is not hundred percent clear that it's a fact "is a" relation. This was also done with the lesson entity where individual, group and ensemble are all inheritance to lesson. The main reason here was not done because of the clarity of what inheritance mean but because lessons is associated with three other entities and to have the three lesson types separate would clutter the CM and make it more difficult to understand it. When it comes to databases inheritance can have a drawback because it doesn't have the same effect as a relation does.