Basi di Dati – 2017 Assignment 1 (Phase 2)

Deadline

This phase has a strict deadline **Friday 19 October 2017 at 23:59**. Any assignment delivered after that time will not be considered.

Task Description & Marking

Jean Claude Junker received a lot of ER diagrams. Three of them were found to be the best (the RED the GREEN and the BLUE). He would like to ask you for some consultancy job. He needs you to evaluate these three ER diagrams and tell him your expert opinion. Basically, he would like you to look at the specification letter he had written and indicate whether the ER diagram is designed in such a way that the points mentioned in the letter are taken into consideration. If they are taken, signal the point as correctly implemented. If not, signal it as incorrectly. You are losing marks for every point you fail to identify as wrong when it is wrong, and for every point you say that is wrong while it is correct.

Delivery

3 emails have been sent to you (specifically to the person that derived the Part 1 in case you are a group. If you have not received the email ask your colleagues). In each of these emails there is an attachment. The name of the subject and of the attachment is RED, GREEN, and BLUE. If you have not received that email, it is because you did not deliver the phase 1 of the assignment or because the mail went to spam. Check your spam folder. The groups are the same as those that delivered the phase 1. Only the person that delivered the phase 1 of the assignment 1 will have to deliver the phase 2. For the delivery the only thing that you need to do is to fill up this form:

https://goo.gl/forms/BJCMBQeDt53EHOLp2

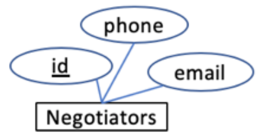
You are able to edit/modify your responses as many times as you want before the deadline. And keep In mind that the form is accessible only with your @studenti.unitn.it account .. NO GMAIL.

Guidelines

Below is a number of guidelines for the evaluation. Note that the examples provided are only one way to implement the described constraint. Other ways of modeling the specification may also be possible. So, make sure that you check well the ER you see to understand if it correctly models the requirement.

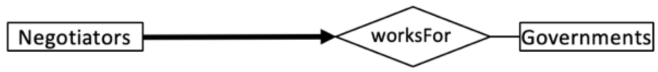
1. *The database contains information about negotiators. For each negotiator, it contains the negotiator id that uniquely identifies a negotiator, the telephone number and the email that can be used to contact them.*

Check whether there is an entity for negotiators with these three attributes (id, phone and email). It is ok if the names are different, e.g., telephone instead of phone. Check also whether the id is underlined (indicating that it is a key). Here is an example of modeling it.



2. *Each negotiator works for a specific government.*

There should be a many-to-one and total-participation relationship between an entity Negotiators and Governments. For example:

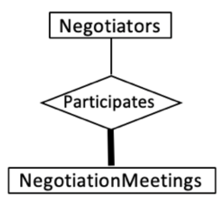


3. *The government for which a negotiator works, pay the negotiator a salary for his/her services.*

Since the salary is for the negotiator and by the government, it means that there should be an attribute for the salary on the relationship worksFor that was mentioned in point 2 above. (Attention: If the salary is an entity connected to the worksFor, it allows a negotiator to work for a government and have different salaries which is not correct, unless a special care has been taken in the ER diagram.)

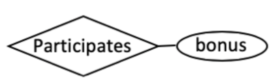
4. *Negotiators participate in negotiation meetings. A negotiation meeting is a meeting of a number of negotiators that get together to negotiate about an issue. No negotiation meeting can be done without negotiators.*

There must be a total participation relationship (thick line, no arrow) from an entity set “NegotiationMeetings” to “Negotiators”.



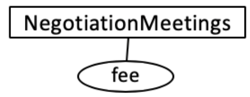
5. *The negotiators get a bonus when they participate in a negotiation meeting (that is extra money that has nothing to do with the salary they take from the government for which they work). That compensation is different for each negotiation meeting that a negotiator participates.*

Since the bonus is for the participation in the meetings (and not for the meeting or for the negotiator), it should be an attribute on the “Participates” relationship.



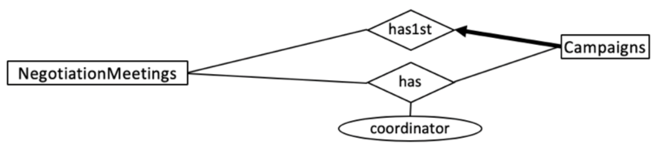
6. *A negotiator who participates in a negotiation meeting, must pay a fee. That fee is fixed for each different negotiation meeting and is the same for every negotiator that participates in the negotiation meeting.*

Since this is fixed per negotiation meeting, and independent of who comes to the meeting, then it should be an attribute of the negotiation meeting



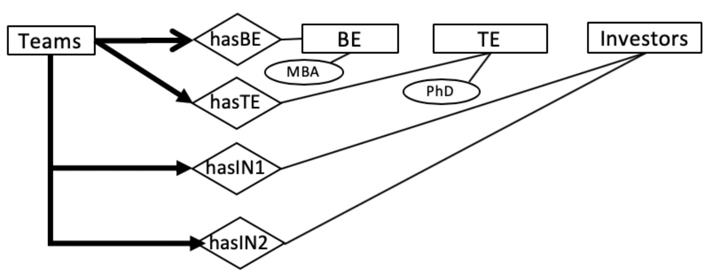
7. *A negotiation meeting may be part of a number of campaigns (or not be part of any campaign). The role of the campaign is to get an agreement; thus, a campaign consists of a set of negotiation meetings. Clearly, a campaign makes no sense without negotiation meetings. Every negotiation meeting in a campaign has a coordinator, apart from the first one, because in that meeting the negotiators meet only to get to know each other and not to actually solve any issue, thus, there is no need to have any coordinator.*

There should be an entity called campaign and a negotiation meeting associate to it through a relationship. Since a campaign cannot exist with at least one negotiation meeting, we need a total participation (thick line) on the side of the Campaign entity and a normal line on the side of the negotiation meeting. Furthermore, since a negotiation meeting in a campaign has one coordinator, we place the coordinator as an attribute on the relationship. The challenging part is that the first meeting of a campaign does not have a coordinator. For this reason, we need to separate the first meeting from the rest. To do that, we create two relationships. One as before and one for the first meeting. Since every campaign has always a first meeting, the line on the campaign side should be a thick arrow for the first meeting while for the other meetings it should be plain line (no thick no arrow).

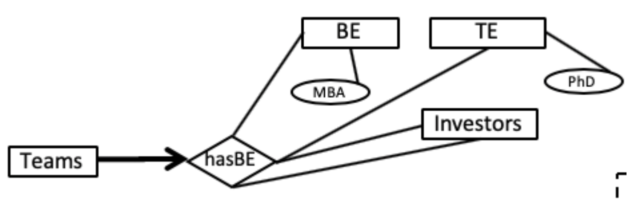


8. *When a negotiator participates in a negotiation meeting he or she can come alone or bring with him/her a team of exactly 4 consultants. One of them has to be a business expert with an MBA, one has to be a technology expert with a PhD, and the remaining two have to be investors.*

Since we are asking for exactly 4, it is hard to impose it with a simple relationship. So we create an entity called Team in which we explicitly state the members it must have, one by one, with a total participation and many to one relationship each one. And we create also an entity for every type of member.

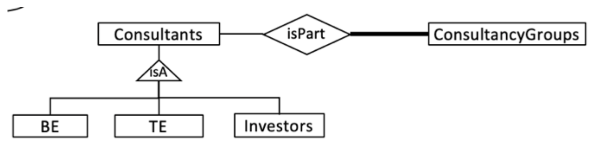


An alternative that is also correct is the following:



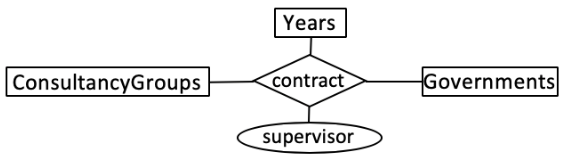
9. *The consultants can be independent or may come from consultancy groups. A consultancy group is a group of consultants.*

We need to associate the consultants to a group. To do so, we need to put them all under the same category. For this reason, we create an entity consultant that has the three types we had before as IsA. Note that before (in point 8) we did not actually need to have the isA. Now we need it. So, we associate the consultant with a new entity consultancy group. And since the consultancy group is defined to be a group of consultants, it means that each group must have at least one consultant. So the relationship has to be total participation.



10. *The consultancy groups establish contracts with governments. Such contracts have one-year duration; thus, it is important to know the year of each contract. When a consultancy group establishes a contract with a specific government for a specific year, a director is appointed to ensure that the consultancy group operates within the limits of the law.*

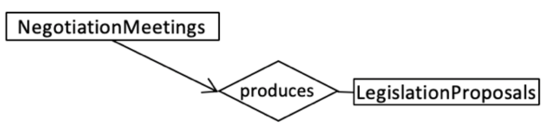
We create a relationship between the consultancy groups and the Government. Since we need to keep also the year of each contract we need to make the year an entity and connect it also to the relationship. If we had the year as an attribute, then the database will not be able to keep track of the different years of the contracts but only the latest year. Furthermore, one may assume that the a consultancy group has at least one contract with the government. This is ok and making the line between the consultancy group and the relationship being thick is not an error. A director (supervisor) can simply be an attribute.



The above modeling does not allow a consultancy group and a government to establish more than one contract in the same year. This is something that was not explicitly stated in the requirements, so a solution that has the contract as an entity that has many to one and total participation (meaning thick arrow) relationship to Governments, and Consultancy Groups and the Year and supervisor as an attribute, is also accepted as a solution.

11. *Sometimes, at the end of a negotiation meeting a legislation proposal is produced.*

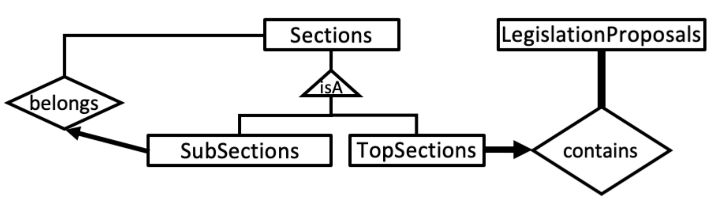
We create a legislation proposal entity and associate it through a relationship with the negotiation meeting. Since one negotiation proposal is created for a meeting, we need an arrow from the side of the negotiation meeting. And since it says “sometimes”, then it should not be thick. So only many to one.



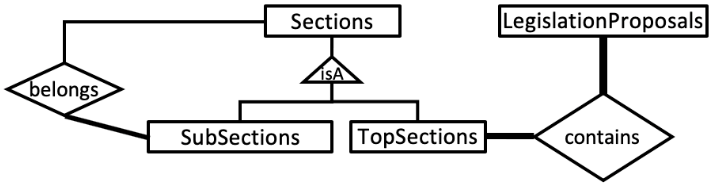
The text says nothing on whether the legislation proposal is for one meeting or not. So it is fine if the line between the produces and LegislationProposals is thin, but it is also ok if that line is like a thick arrow.

12. *The legislation proposal contains sections. Each section may contain smaller subsections, that may also in turn contain subsections.*

We can see that there are two kinds of sections. Those that can be at the top level, and those that can be nested. So we create two entity sets. One that represents the top level sections and one that represents those that are not top-level. Any of the two kinds (top level or not top level) can have other sections as subsections inside it. But only the non-top level sections have a parent section (where they are nested). That parent section can be either top-level section, or another non-top level. So we create a new entity called section, that has the top level and the non-top-level as isA subclasses. Then, only for the non-top level sections, we create a relationship that indicates the parent section. Then we need to also associate the Legislation proposals with the sections. That is a many to many relationship. The important part here is that the relationship is with the top-level section and not with the generic superclass entity Sections. So all in one, the ER may look like this:



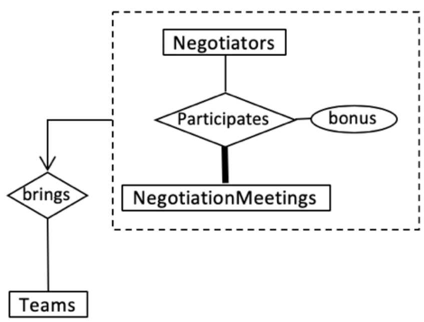
The above modeling does not allow subsections to be part of more than one sections (for instance a section repeated in different documents as is. The text does not specify that situation. So if we want to allow this to happen, we can simply make the model without the thick arrow. Like this:



The important part is that it is not possible to have a section (or subsection) not belonging to another bigger section or legislation proposal (This is because the text does not say if anyone is ever creating any sections without a proposal. It only says that Legislation proposals are created and these are having sections and subsections. So why was a section ever created? The text does not say anything about having sections that are not part of a proposal or of another subsection, which is why the links between "Subsections" and "belongs", or between "TopSections" and "contains" have to be thick.
If we want to allow a Legislation proposal to consist of sections that are part of bigger sections, then we simply need to NOT create the entity set "TopSections" and instead associate the "contains" to the "Sections" entity.

13. *When a negotiator participates in a negotiation meeting he or she can come alone or bring with him/her a team …*

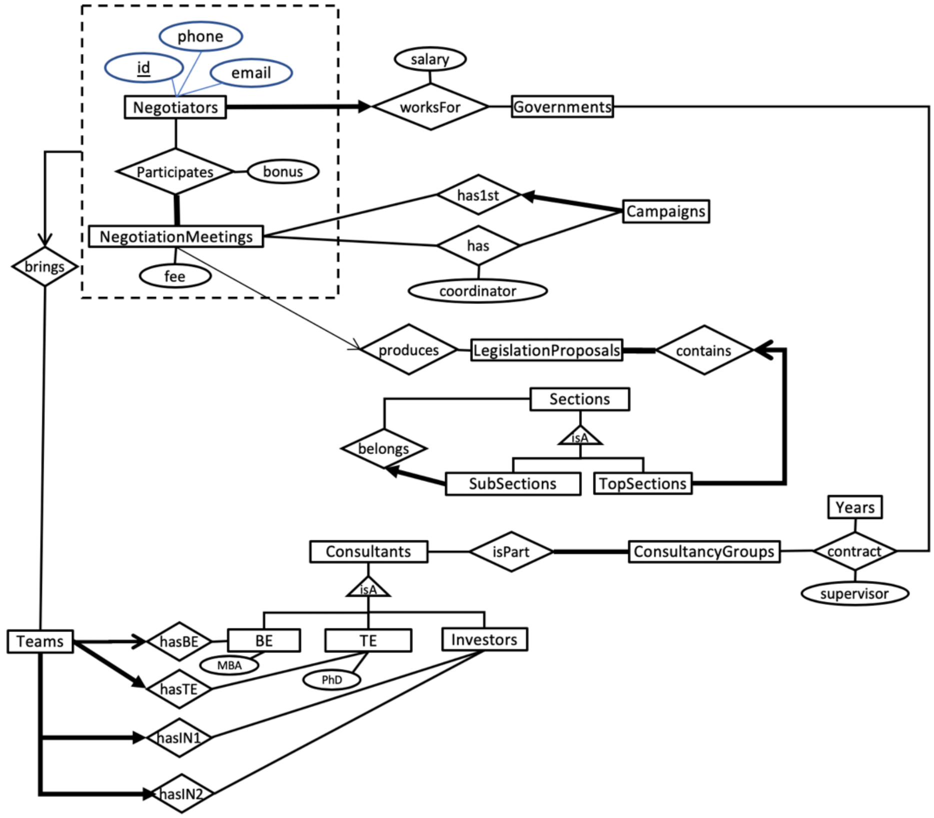
Since the team is optional and is related to the participation of a consultant in a meeting, it should be related to the relationship "Participates" with a many to one relationship, but since this is not possible to have relationship on relationship we need to do an aggregation. Note that we cannot connect the team to the "Participates" directly because if we do that it will be mandatory that for every participation there must be a team.



14. *Anonymity & Conformity*

Is there something on the ER that reveals the name of the author? (email or name?) If yes, mark this point as incorrect. Is also the standard notation used? (Meaning the one that was mentioned in the classroom?). If any different not-standard symbols are used, mark this point as incorrect.

Overall the complete ER diagram is:



Let's repeat here that in the actual ER all the entities will have attributes associated to them, and some of these attributes will be keys, exactly as we did on the entity Negotiators. The reason that here we have no attributes is because the letter from the client does not specify them (so we have to ask for them) and also in this way the ER diagram has become easier to read.