

Basi di Dati - 2019

Assignment 1 (Phase 1)

Preliminaries

The assignment consists of 2 phases: one major and one minor. This is the major phase. Read everything carefully. Make sure that the names of the files are exactly as described here. The files will be processed by a software and any misspellings or variations that you make will make the software to give you zero marks. The goal of this phase is to teach you to design the semantic models of a database from a set of specifications. The minor phase will teach you to evaluate databases that are already designed by others.

The assignment is done individually (1 person delivers one assignment).

Deadline

This phase has a strict deadline the **Saturday 19 October 2018 at 23:59**. Any assignment delivered after that time will not be considered. (Since the output of the next phase will be based on the results of this phase, no assignment can be accepted after this deadline). Any clarification questions need to be asked on google classroom before the 15th of October. No questions will be answered after that date.

Task Description & Marking

You have received a letter from the president of the ministry of Health. You can see the letter in the next page. He is asking you to help designing a database they need at the ministry, by providing them the ER diagram so that they can give it to a programmer to turn it to relational and implement it. The assignment will be losing marks for every requirement described in the specification that can be implemented in ER but has not been implemented. Assumptions about the data that are not explicitly stated in the specification cannot be made.

Delivery

Assignments are marked with the use of a software so make sure you follow EXACTLY the instructions. Not following the instructions results into a 0 mark. 0 is also given to both students that are found to have the same solution.

1. Create your ER diagram using some computer tool (PowerPoint, yEd, lucichart, draw.io...) or anything else you like. No handwritten assignments are accepted. **Make sure that the notation you use is the one that was used in the class and the textbook. Different notation will not be considered and will only result in lost of points.**
2. Save your ER diagram in a pdf file. Make sure that all your ER diagram fits in **one** page (the pdf has to have only one page). **DO NOT PUT YOUR MATRICOLA, YOUR EMAIL, YOUR NAME or any other identification information inside the pdf.** If your pdf contains inside any information that can identify you (e.g., your name, email, matricola, etc.,) it will automatically get 0 marks.
3. **The name of the pdf file should be "ER" followed by your matricola separated by the "_" symbol.** For example, if your matricola is 12345 then the file should have the name **ER_12345.pdf**.
4. To deliver, click OPEN on the assignment as you see it on the Stream of the google classroom. Click ADD and from the pull-down menu select FILE. Drag your pdf file on the space that opens (Or click SELECT FILE to select the file from the disk) and click UPLOAD. Once you are ready to submit click TURN IN. In case you find a mistake in your assignment before the deadline, you can take it back by clicking UNSUBMIT, correct it, and then submit it again.

Ministro Roberto Speranza
Ministero della Salute
Lungotevere Ripa, 1
00153 - Roma

Dear UNITN student of the course Basi di Dati,

As the minister of health, I am responsible in modernizing the governance of our lovely country. One of the main efforts we do, is to try to ensure that our services are of the best quality. For this reason, we have established a new program in which we assign teams to investigate various theories on how well the medicines work, and report the results. We need to create a database to keep track of the information of the experiments we do. Thus, we would like to ask you as an expert in databases to provide us with an ER that models the following requirements. So here is what we have:

1. The database should contain information about doctors. Each doctor is characterized by unique id, and we need to keep also her/his phone number and email, in order to be able to contact them when we need them.
2. Each doctor works for a hospital.
3. The hospital for which a doctor works is the one that pays him/her for his/her services. Salaries are not fixed but is the result of any negotiation that the doctor has done with the hospital.
4. Doctors participate in lab experiments. A lab experiment is done with a number of doctors that get together to experiment with something. No lab experiment can be done without doctors.
5. The doctors get a lump-sum funding when they participate in a lab experiment. (This is done in order to top-up the salary they already get with some more money. This means that this funding is extra and is different from their basic salary.) Different lab experiments have different lump-sum that they offer to their participants.
6. A Doctor who participates in lab experiment receives also some compensation that is flat (meaning it is the same for everyone participating in the experiment and is not related to compensations other lab experiments give to their participants).
7. The goal of lab experiments is to prove theories. In particular, for a theory to be proven a set of lab experiments need to be performed. This means that every theory has a set of lab experiments (no theory exists without at least one lab experiment). It is possible for a lab experiment to be serving more than one theory. For every lab experiment that is done for a specific theory, there is an appointed director. The directors are doctors and are decided during the previous lab experiment. Only the first lab experiment among those of a theory does not have a director because people do not know each other yet. But for the other subsequent lab experiments there is always a doctor serving as director.
8. When a doctor participates in a lab experiment, he/she has the option to bring in a training team. The trainee team consists of exactly 4 trainees. In particular, two are general MD, one anesthesiologist, and one microbiologist.
9. All the trainees are students in some university. It is also possible to be students in more than one university.
10. The universities collaborate with hospitals. Such collaboration has a duration of one year. This year needs to be recorded for every possible collaboration, even if the year has passed. For each such collaboration, there is a Principal Investigator that oversees the collaboration to ensure that everything goes well.
11. Sometimes, at the end of a lab experiment a report is generated.
12. The report consists of sections. These sections have a number code used to refer to it. The sections can be nested, meaning that they can have inside them other smaller sections (subsections) that in turn also may have inside them other subsections.... etc.
13. The top-level sections of a report have a color associated to them.
14. The ministry has also a set of secretaries that are checking for typos and expressions of the language. Every time a section is nested into another section, a secretary is appointed to be responsible for reading the two sections and making sure that the flow is good. We do not keep info of secretaries if they are not appointed as responsible to some section/subsection nesting.
15. Hospitals have also clinics. Each clinic is part of one specific hospital. We need to keep the information about what clinics each hospital has, but only for the hospitals we have in our database.

Sincerely

Roberto Speranza