Homework due on 2021-10-05 by 23:59:00 New York Time

Contents

1 General Instructions

1. You need to follow carefully the instructions for the assignment as written below.

   It is advisable to print out this document and check off various points as they are addressed. It is easy to miss something when switching between the assignment and the solution on a single screen, especially on a laptop with a relatively small screen.

   If you do not have access to a printer, at least review your solution before the submission to make sure that you did all that you were requested to do and only what you were requested to do.

2. If you want to refer to a specific line in this document, refer to the small numbers in the left margin.

3. If you have questions concerning this homework email Yiqi Yuan, mailto:yy3754@nyu.edu, *in the way specified in the course syllabus.*

   To be sure that you get an answer to your question before the submission deadline, *do not delay your question to the date on which the assignment is due.*

   If you still have unresolved questions, email Zvi Kedem, mailto:zk1@nyu.edu, including all relevant correspondence with the assistant(s) listed above, *in the way specified in the course syllabus.*

4. Submit your homework in an electronic form by uploading it by the due date and time. Use only permitted software and format. E.g., if you are asked for a relational database specification using SQL Power Architect and the `.architect` format, then that's what you must submit.

5. If you submit a scanned, handwritten assignment when permitted, it has to be written neatly, that is, it should be neatly divided into lines just as a typeset document, etc. You may submit a handwritten assignment only when that is explicitly allowed. And, unless stated otherwise, you must submit such a handwritten assignment as a file in PDF format only.

6. It is important that you follow the directions precisely. Also, please *check* that you submitted what you intended to submit, as you are responsible for making sure of that. The best way to do is to download what you submitted to check that.

   And the best way to manage your work is to dedicate a folder/directory to each assignment.

7. Do not email your submission to any of the assistants. If you did not submit your solution on time, please email Zvi Kedem, mailto:zk1@nyu.edu, *in the way specified in the course syllabus* with an explanation of what has happened, and if you have a solution (possibly partial), email the solution also.

   If you do need to submit the solution by email, and *only* if you need to submit by email because you are late or for other reasons, please follow the format as described next. Assuming that you are submitting your solution to Homework due 2034-02-15 and your Net ID is abc123, all the files of your homework should be

emailed as a zip file named `20340215abc123.zip`. Of course you need to specify the correct date and the correct Net ID.

Do not communicate with any of the graders concerning a late submission.

8. Be sure to follow the academic integrity rules listed in the posted syllabus. The department, the GSAS, and NYU treat academic integrity very seriously and we are required to report all possible violations.

9. **Note:** Due to the unusual circumstances, we will be more able to extend deadlines, but generally only on a one-by-one case. All such requests need to be addressed to Zvi Kedem, `mailto:zk1@nyu.edu` *in the way specified in the course syllabus*, with a reason for such a request.

2 Homework

Reminder: If you are not officially registered in the class and the class does not show on Albert for you, do not submit any assignments.

Please read and follow carefully the instructions in Section 1.

2.1 Description

The are two assignments. One is to review some course material; two to create an ER diagram with an annotations file.

Precise submission details are given in Section 3.

2.2 Assignments

1. Please read the file `University01.pdf` and review the implementation of that application as an ER diagram in Unit 2.

2. For the third-person singular pronoun I will generally use "it" and its declensions.

   Some words are in bold. This has no semantic implications and they are written in this way to make the reading easier.

   Consider the application described in Section 2.2.1. Do *not* make any assumptions about the application beyond the specifications listed.

   Following the notation we used in class, using draw.io and the shapes provided by it, produce an ER diagram for the application. Do not use any other notation. For example, you may not use cardinality constraints in your diagram. Start with the given `ER02.drawio` and put your own Net ID in the cloud there.

   Because the software you will use has slight differences compared to what we did, please consult the file `NotationForER.pdf` so that you know how to produce your diagram.

   Do not optimize your design, just follow the specification given.

   Anything that cannot be specified in your ER diagram, put as annotations in `text02.txt` file, as described in Item 1 of Section 3, starting with 1. and continuing as needed.

   Do *not* put anything in the annotations that can be reflected in the ER diagram, make sure that the diagram reflects that. The idea is for you to think what's needed and where to put it: the diagram or the annotations.

2.2.1 The Application

Note that you cannot make any assumptions that are not forced by the specifications. For example, if the value of an attribute is not required to be known, you cannot assume that it is always known.

There are **Companies**. A **Company** may be **Small** or **Big** but cannot be both. **Companies** have an attribute **TIN** (Tax Identification Number) and **RegNumber** (Registration Number) and they are always known. No two **Companies** can have the same **TIN** and no two **Companies** can have the same **RegNumber**.

A **Company** may have one or more **Nicknames**.

Small Companies may **Help** each other and we want to know which **Small Company Helps** which **Small Company**. A **Small Company** may not **Help** itself.

There are **Managers**. Each has the attribute **FamName** (Family Name) and the attribute **PerName** (Personal Name), which are always known. No two **Managers** can have both the same **PerName** and the same **FamName**. **Managers** also have the attributes **Salary** and **Bonus**, which are always known. **Bonus** is computed as 5% of **Salary**.

A **Big Company** has the attribute **Value**. For a **Big Company** there may be at most one **Manager** who **Supervises** it. If a **Manager Supervises** a **Company**, that relationship has attribute **Start**.

The domains of the attributes have not been specified.

Start with the given `ER02.drawio` but put your own NetID in the cloud drawn there.

If the system does not allow you to upload `ER02.drawio`, rename your `ER02.drawio` to be `ER02.txt`. Then upload `ER02.txt`, and state that you have done that in Item 1b of Section 3.

3 What to submit

Please upload 3 files, named *exactly* as specified and in the format *exactly* as specified.

1. `text02.txt` in the text format, by modifying the file in this assignment.

   In that file

   - Replace the Metadata with your information.
   - State the required (and only the required) Annotations.
   - State your responses by placing appropriate text after the item label as listed below (so your first item will labeled "(a)"):

     (a) Have you done what's requested in Item 1 of Section 2.2? If yes, just write "Yes".

     If not, explain why.

     (b) If you cannot upload `ER02.drawio`, state so. Otherwise leave this item empty.

2. A file with a diagram in the native format as produced by draw.io. The file should be called `ER02.drawio`.
3. A file with a PDF version of the diagram you have produced. The file should be called `ER02drawio.pdf`.