Homework Due 2018-04-06 by 11:55 pm

1 General Instructions

Please read these instructions carefully for each assignment, though they generally do not vary much between the assignments.

1. You need to follow carefully the specific 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.

2. If you have questions concerning this homework email Guang Yang, mailto:gy552@nyu.edu *in the way specified in the course description.*

3. Submit your homework in electronic form by uploading it to NYU Classes 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 than that's what you must submit.

4. If you submit a scanned, handwritten assignment, it has to be written neatly, that is, it should be neatly divided into lines just as a typeset document, etc.

5. Show *all* your applicable work (other than for reading assignments, if any).

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

7. Your solution should be uploaded as a single `zip` file containing all the files that you need to produce. Assuming that your Net ID is abc123 and you are submitting your solution to Homework due 2034-02-15, your zip file should be named `20340215abc123.zip`, of course you need to specify the correct date and the correct Net ID.

8. Do not email your submission to any of the assistants. If you run into problems uploading your solution and the time for the submission has passed, please email Zvi Kedem *in the way specified in the course description* and if you have a solution, email the solution also.

9. Until the deadline that the system imposes you can resubmit your homework as many times as you like and you may want to submit it relatively frequently in case something happens to your partial work on your machine.

10. In addition, there is a one-hour automatic extension, which you can use without any penalty. But do not count on it as it is only there in case you have communication problems and did not succeed in uploading the solution because of them.

11. **Be sure to follow the academic integrity rules listed in the course description posted on NYU Classes**. The department and the GSAS treat academic integrity very seriously and I am required to report all possible violations.

2 Assignments

1. **Instructions**:

   First review the instruction about how to use Oracle that have been previously uploaded.

   Then look at the database depicted in `Homework05Relation.architect`. It describes a company system, which contains the relations between people and projects. This database scheme is the same with the one in Homework 4, but data may be different.

   Please also read the script `N12345678_Homework05Script.sql` carefully. It defines and creates the sample database and has placeholders for putting in your solutions. You need to produce the queries listed in item 3 below; put your solutions in `N12345678_Homework05Script.sql` and rename the file as `yourNnumber_Homework05Script.sql`. You also need to change the name of the spool file from `N12345678_Homework05Spool.txt` to `yourNnumber_Homework05Spool.txt`, towards the end of the script file.

   For each query listed in item 3 below, *unless stated otherwise,*

   (a) *Explicitly* sort the results in ascending order

   (b) *Explicitly* remove duplicates from the answer

   Do not rely on the system to do it for you, even if it does so.

   So assuming you are going to select a and b, you should actually use:

   ```
   SELECT DISTINCT a, b
   ...
   ORDER BY a ASC, b ASC;
   ```

   Please use only those SQL operations that are listed in the class presentations.

   You may use intermediate tables while producing your answers. In order to run your queries without getting errors, please use TEMP1, TEMP2, . . . , TEMP20 as your intermediate table names. There is no assumption that you will need that many intermediate tables or even one. If you do use such tables, start use them in order, that is first TEMP1, then TEMP2, etc. The temporary tables will be explicitly DROPped them before your queries so that their old values, if any, will not create problems.

   After filling your solutions in `yourNnumber_Homework05Script.sql`, you need then run your script on Oracle and it will automatically save the spool records in a file called `yourNnumber_Homework05Spool.txt`. You need to hand in both

`yourNnumber_Homework05Script.sql` and `yourNnumber_Homework05Spool.txt`, in a way stated in item 4 below.

2. **Files in this zip archive**:
   (a) The file you are reading.
   (b) `Homework05Relation.architect`, an SQL Power Architect implementation of the database as described before.
   (c) `N12345678_Homework05Script.sql`, a script that will produce the database in Oracle and also contains placeholder to put your solutions to item 3.
3. **Queries**: Produce queries for the following questions and put your answer into `Homework05Script.sql`.
   (a) Look at the structure of Person table and insert a person called 'Abigail Black' with ID-number '121'.
   (b) Look at the structure of Funding table and delete the funding with fundingID '106'.
   (c) Produce table Answer01 (Project_Name) which contains all the projects that include two or more teams, but have no funding.
   (d) Produce table Answer02 (Engineer_Name) which contains all the engineers that participate in at least one team that included by 2 or more projects. (Your solution should work with minor changes for any number of projects. So if the question stated "by 1,000 or more" you could make a small modification to your solution to the question to get a correct answer for 1,000 to get a correct query. To stress, you are *only* asked to produce the query for 2.)
   (e) Produce table Answer03 (Project_Name) which contains all the projects which include all teams with at least one engineer of level 4.
   (f) Suppose that the attribute 'mentor' of engineer is transitive. That is, if engineer A is the mentor of engineer B, then he or she will also be the mentor of engineers who is mentored by engineer B. Then produce table Answer04 (Engineer_ID, Mentor_ID) which contains all the (engineer, mentor) pairs.
   (g) Create View05 (Project_Name, Room_Layer) which contains the project names a manager managed, and their room layers. Now, by running the existing script, from which you should not remove the existing update of the view, it should give you an error.

   To resolve this, create a trigger that is triggered when you try to update an entry of the view. Any update of the view must also be reflected in the base tables using this trigger.
4. **What to Submit**: Please submit a single zip file as described in item 7 of section 1.

   The archive should contain two files
   (a) `yourNnumber_Homework05Script.sql`
   (b) `yourNnumber_Homework05Spool.txt`