

Homework Due 2022-04-01 by 23:59 New York Time

Contents

1	General Instructions	1
2	Homework	2
2.1	Description	2
2.2	Assignments	2
2.3	What to submit	4

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 followed the instructions and 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 Shubham Srivastava, <mailto:ss14687@nyu.edu>, in the way specified in the course description. Note, however, that you should not ask for help in producing your submission. If you need help in understanding the material required, contact Zvi Kedem, <mailto:zk1@nyu.edu> in the way specified in the course description.

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 description.*

4. Submit your homework in an electronic form by uploading it to Brightspace 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.

Do not package the files you need to submit in an archive unless specifically asked to do that.

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. Until the deadline you may 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. If you submit your homework after the deadline, it may not be noticed or evaluated.

8. 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 description* 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.

9. 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.
10. Under some circumstance, we may be able to extend a deadline on request, 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 description*, as soon as possible and preferably before the deadline, and 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

This is the first of two assignments dealing with SQL. Both assignments will use the same (or almost the same) small database. time you are actually writing and executing Oracle queries.

2.2 Assignments

1. (a) You are already supposed to know how to run SQL queries/commands on the Oracle systems at CIMS. You were asked to familiarize yourself with and follow the instructions in [How_To_Use_Oracle_At_CIMS.pdf](#).

You were asked to do that earlier in order to save you time while working on this homework.

So it is assumed that you know how to do that.

- (b) Look at the files `ER06.drawio` and `relational06.architect`. They will help you understand the database schema defined in the files `script06.sql` and `dataSetupScript06.sql`. These files fully specify the application.

- (c) Read `script06.sql` and `dataSetupScript06.sql` carefully. These scripts both define and create the sample database and serves as the placeholder for putting in your solutions.

Look carefully over ANSWER0 there. It shows you how to insert a result of a query into an empty table. It also uses the temp table TEMP0, just to demonstrate the usage of temp tables.

- (d) Input your queries into `script06.sql` after doing what is requested in [Item 1e](#) of [Section 2.2](#).

Please note which operations to use. Use only the operations that were introduced in Unit 4 and the CREATE TABLE ... AS ..., used in the example of ANSWER0 in the script. So base your queries on the operations of selection, projection, cartesian product, minus, union, and intersection, with renaming and creation of new tables: creation, as shown in the script. Do not, e.g., use JOINS of any kind. *To reiterate: A solution that used other operations (including those covered in Unit 5) will not be acceptable.*

The goal of the restriction is to make sure that you consider solutions that are clearly seen as expressions in an algebra on which SQL is based, and not relatively less fundamental syntax.

In addition, use DISTINCT and ORDER BY as described below. If the output is to be sorted in a different way, use an appropriate variant of ASC and DESC (ascending and descending) and list the sorting instructions in the appropriate order,

For each query, *unless something else is required by the query* make sure to

- i. Remove duplicates from the answer (unless requested otherwise); that's what DISTINCT does
- ii. Sort the result in ascending order (unless requested otherwise); that's what ORDER BY does

This is *extremely important* to make the grading more manageable.

So, for example, assuming that you are going to select `a` and `b` and rename `b` as `c`, you should actually *explicitly* use:

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

Do not rely the on default removal of duplicates and sorting order. Add the DISTINCT and ORDER BY instructions even if you think that they are not necessary.

You may use temporary tables. If you choose to do that, use tables TEMP1, TEMP2, ..., TEMP20.

- (e) Replace “zk1” in `script06.sql` with your NetID.
- (f) Do not remove the existing sample query.
- (g) Execute `script06.sql`, which internally calls `dataSetupScript06.sql` and produces a spool file `spool06.txt`. The spool file must only include the details of the queries from `script06.sql`. The spool file created will be a part of the submission.

Do not be concerned if there are more placeholder ANSWERS, than the queries that you are supposed to produce.

For reference, `spool06.txt` corresponding to the given `script06.sql` (with one sample query) is enclosed.

The requested queries are listed below. Your answers must work for every instance of the database and not only for the specific instance provided. The expected spool output file, `solutionspool06.txt`, has been attached along with the assignment to give you a sense of the expected output against the data specified in the `dataSetupScript06.sql`. The actual testing would be done on other hidden test cases, but the data should be an extended version of similar data.

The tables are named AnswerX, where “X” stands for the item number below. So, as the first item is item number 1, the first table is Answer1.

1. Produce table AnswerX(NNumber, Deposit) that lists all the students and their deposit, sorted descending by NNumber. The order of Deposit is not important.
2. Produce table AnswerX(NNumber) that lists all the students whose deposit is greater than 100.
3. Produce table AnswerX(student1NetID, student2NetID) that lists all the pairs of students who both bought a dog of the same breed. Note that (NetID1, NetID2) and (NetID2, NetID1) are not duplicates if NetID1 and NetID2 are not the same.
4. Produce table AnswerX(SerialNumber, NNumber) that lists all the dogs, and NNumber of respective students of dogs that bite both dog with SerialNumber '2' as well as dog with SerialNumber '3'.
5. Produce table AnswerX(NetID, NNumber) that lists all the students who did not buy a dog with serial number between 1 and 1000 (both included).
6. Produce table AnswerX(SerialNumberA, SerialNumberC) that lists the pairs of dogs dogA and dogC, such that dogA bites dogB and dogB bites dogC.
7. Produce table AnswerX(SerialNumber, NNumber) that lists all the dogs that bite the dog with serialNumber '4', OR are bitten by both the dog with serialNumber '5' and the dog with serialNumber '6'.

130 2.3 What to submit

131 Please upload 2 files, named *exactly* as specified and in the format *exactly* as specified.

132 1. `script06.sql`, the script with your answers

133 2. `spool06.txt`, the resulting spool file