



# Relational databases SQL language *Final evaluation*

ISEN – Master 1

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# Objectives

Evaluate understanding of SQL



# Objectives

- This work has for objectives, beyond than the pure evaluation of the good acquisition of knowledge around databases, to make you integrate all concepts seen during training in design of the databases and use of the SQL language.
- To do this by group of students, you will complete the CDM given as an example and then implement a relational database from this CDM.
- After loading the tables in your database, you will answer the questions requested at the end of this document.
- So, to evaluate this work, please provide a file in pdf format embedding:
  - your LDM, the structure of your tables
  - SQL statements used to fill your tables with test data
  - SQL statements associated with their result
- We let you the choice of tools including the database engine. However, to facilitate the implementation of the database, you can use the database used for the SQL labs. In this case, be sure to use the correct **isen\*** identifier so as not to pollute the work of your colleagues. The tables should be prefixed by your **isen\*** login ID.
- For example, to create a table in SLQ labs database, i.e Db2, you could use something like this SQL create statement:

*Create table isen46.toto (Col1 char(10) ....) in case user isen46 is used to create tables.*

# Expectations

Work expected from students

Preparation phase

How to present results



# Environment

- All questions are based on database designed during the database design course
- To let all students starting from the same starting point, the CDM of this database is provided in file EN\_Global\_CDMV1.02.loo available in Teams files
- This file uses **loo** format which is format provided by **Looping** software, also available in course repository or on web at <https://www.looping-mcd.fr/Looping.zip>

# Work to be done

- As stated before, your work will be:
  - Generate logical data model from this CDM
  - Generate SQL statements for table creation including primary and foreign keys
  - Create tables in database engine of your choice (Db2, PostgreSQL, MySQL, Oracle, SQL Server to site few engines)
  - Initialize tables with data to be able to get some results from your queries answering to asked questions
  - Answer in SQL language to questions requested in human language

# Expected results

- One document per group must be sent to [vbracq@fr.ibm.com](mailto:vbracq@fr.ibm.com) describing work done for this evaluation. This document should be in **pdf** format. Classical office tools can save document in pdf format.
- This document should have hereafter information; should being the polite form for MUST:
  - **Id** of the group. A group is made of three to five students (3 to 5) and Id is a number
  - Name of all members of the group having effectively worked on this evaluation
  - Light description of your database environment
  - MLD schema
  - All SQL statements related to creation of relational object, mainly Tables
  - All SQL statements related to data creation, mainly insert statements associated to tables used in your queries
  - For each requested question:
    - Text of the question
    - Text of SQL statement answering to the current question
    - Extract of SQL select result
  - Name your pdf document like `<group_id>.BDD4.2024.pdf`

# Remarks

- Questions are related to a subset of all tables in the model. This means that you need to insert data at least in this table subset but also in tables needed to travel through relationships
- We do not expect you insert 1000's of rows in tables but try to insert data in tables that are representative of expected result. For example, if we expect a list of entity being referenced in one table and not in another, you should at least insert data in one table and not in another
- Results should be sent one time per group before a deadline defined in course. For each result document sent, an acknowledgement will be sent back to sender and if applicable to CC'ed addresses to ensure document was received AND pdf file is readable. It is best to CC all members of a group in this mail
- Each member of a group get for final evaluation notation the evaluation notation of the group. Be sure that all members in a group **effectively** work
- You are free to form groups as you wish, we absolutely don't care about this process, but **NO** student should be alone outside of a group



# Questions

Answer to questions by SQL statements



# We speak English, you answer in SQL

1. Give a list of all staff members sorted by position descending and last name ascending
2. For each staff member give total flight hours per month of last year (2023)
3. For each staff member give total flight hours per year
4. List all staff members that manage persons and their managed persons
5. List all staff members who actually have been a pilot last year (2023)
6. List all staff members without assignments this year (2024)
7. What are the flights performed without stopovers
8. What are the aircrafts not able to perform the longest air link without stopovers
9. List of all staff members who worked during a weekend (Saturday or Sunday)
10. Give a list of all flights having an actual number of seat occupied different from expected number of seat occupied
11. List of all flight that have been done a weekend (Saturday or Sunday)
12. For each flight, what is the total amount perceived for tickets compared to the expected one.
13. What is the five most frequently used aircrafts



The monkey is on your shoulder now so, let's go!