

Study stream : Computer Science
Level: 2nd Year Bachelor's Degree
Module: DataBase
Instructor: Dr. Bouneb M.

Tutorial N°06

Objectives :

☞ **Mastering SQL(Structured Query Language)**

☞ **Mastering query writing**

Exercise 01:

Considering the following relational schema for managing Master's thesis defenses:

- **Student** (Num, LastName-S, FirstName-S, BirthDate, #ThesisNum).
- **Teacher** (Code, LastName-T, FirstName-T, Specialty).
- **Thesis** (ThesisNum, Title, Specialty).
- **Session** (SessionNum, StartDate, EndDate).
- **Defense** (DefenseNum, #ThesisNum, #SessionNum, Decision, Mention).

Questions:

1. Write the SQL commands to create the corresponding physical data model.
2. Write the command to add the column **DefenseDate** to the **Defense** table.
3. Write the command to add the column **Rank** to the **Teacher** table.
4. Write the commands to delete the tables **Teacher**.
5. Write the command to modify the title of the thesis with the number **410** to the title "Development of an E-commerce Website".
6. Write the command to assign the mention "**Excellent**" to all theses defended in session number 2.

Exercise 02 :

Given the following relational schema:

- **PILOT** (Numpil, Name-pil, Adr, Sal)
- **PLANE** (Num-plane, Name-plane, Cap, Loc)

- *FLIGHT* (#Num-FL, #Numpil, #Num-plane, City_Dep, City_Arr, H_Dep, H_Arr)

Write the following SQL queries:

1. List all planes with a capacity greater than 350 passengers.
2. What are the numbers and names of planes located in Constantine?
3. What are the numbers of pilots on duty and the departure cities of their flights?
4. Provide all information about the pilots in the company.
5. What are the names of pilots residing in Algiers with a salary greater than 220,000 DA?
6. What are the planes (number and name) located in Constantine or with a capacity less than 350 passengers?
7. List all flights departing from Constantine to Algiers after 6:00 PM.
8. What are the numbers of pilots who are not on duty?
9. What are the flights (number, departure city) performed by pilots with numbers 100 and 204?
10. Provide the numbers of flights departing from Constantine performed by pilots residing in Constantine.
11. What are the flights performed by a plane that is not located in Constantine?
12. What are the pilots (number and name) ensuring at least one flight departing from Constantine with a plane of capacity greater than 300 seats?
13. What are the names of pilots residing in Algiers with a salary greater than 220,000 DA and ensuring a flight departing from Constantine with an Airbus?
14. What are the flight numbers performed either departing from or arriving in Constantine with a plane located in Algiers?
15. What are the pilots (number, name) living in the same city as the pilot named Ali?
16. What are the numbers of pilots on duty different from that of Ali?
17. What are the cities served from the arrival city of a flight departing from Algiers?
18. What are the planes (their numbers) located in the same city as the plane with number 100?
19. What are the numbers and names of pilots residing in the same city as the pilot Ali and earning a salary higher than Ali's?
20. What are the numbers and names of pilots who perform a flight departing from their city of residence?

Exercise 03:

Consider the "cinema" database with the following relational schema:

- **CITY** (CodePostal, CityName).
- **CINEMA** (CinemaNum, CinemaName, Address, #CodePostal).
- **ROOM** (RoomNum, Capacity, #CinemaNum).
- **FILM** (ExploitationNum, Title, Duration, DistributorCode).
- **SCREENING** (#ExploitationNum, #RoomNum, WeekNum, NumberOfEntries).

Write the following SQL queries:

1. Titles of films with a duration greater than or equal to two hours.
2. Names of cities hosting a cinema named "Elmodjahed."
3. Names of cinemas located in Oran or containing at least one room with more than 100 seats.
4. Name, address, and city of cinemas where the film "Famous Star" is playing during week 18.
5. Exploitation numbers of films screened in all rooms.
6. Titles of films that have not been screened.

Exercise 04:

Consider the following relation: Order (OrderNum, ProductCode, Quantity).

Write the following SQL queries:

1. Provide the total quantity of products ordered.
2. What is the value of the largest quantity ordered?
3. What are the order numbers that require an additional quantity of 50 products to exceed 100 products?