Ferhat Abbas University - Setif 1
Computer Science department
Academic Year 2024-2025
Module: BD (2 L Computer Science)

TP No. 02 Database Solution

Notes:

- In character strings, it is important to distinguish between lowercase and uppercase letters.
- My SQL 5.5.25 <u>Doesn't support</u> many operators like: INTERSECT, EXCEPT, MINUS, Max (count (*)), ... So, all queries colored in red are not supported by this version.
- For strings, pay attention to the apostrophe ! Do not copy/paste directly, instead use the key "4" above the AZERTY keyboard.

States:

Consider the **same** Database of the previous practical work:

TRAVELER (<u>NoTR</u> , LastName, FirstName, BirthDat, Gender).

FLIGHT (<u>NoFL</u>, Destination, FlightDat, DepartTime, NbrPlaces).

RESERVATION (**#NoTR , #NoFL**)

Primary keys are bold underlined, while foreign keys are preceded by **#**.

With the following extension:

NoTR	LastName	FirstName	BirthDat	Gender
1	Aissani	Mohamed	1970-01-01	M
2	Mohamedi	Mustafa	1980-07-05	M
3	Yahiaoui	Djamila	1985-04-02	F
4	Smaili	Faiza	1990-09-18	F
5	Brahimi	Mohamed	1976-12-23	M
6	Mostefaoui	Kamel	1990-12-12	M

NoTR	NoFL
1	1000
2	1000
3	1001
4	1002
1	1002
5	1002
3	1003

NoFL	Destination	FlightDat	DepartTime	NbrPlaces
1000	Algiers	2024-03-01	08:00	200
1001	Oran	2024-03-01	13:00	150
1002	Algiers	2014-03-02	12:00	120
1003	Ouargla	2024-03-03	08:00	100
1004	Bejaia	2024-03-05	20:00	180
1005	Setif	2024-03-06	06:00	200

Required work:

Using SQL **DML commands:** Answer the following questions.

1. The numbers and last names of all travelers.
   SELECT Notr, lastName
   FROM traveler

2. The list of all flights.
   SELECT *
   FROM Flight
3. The list of travelers sorted in ascending order of their last names.
   SELECT *
   FROM Traveler
   ORDER BY LastName **ASC**

4. The list of travelers sorted in descending order of their last names.
   SELECT *
   FROM Traveler
   ORDER BY LastName **DESC**
5. The list of destinations by removing duplicates.
   SELECT DISTINCT Destination
   FROM Flight
6. Travelers' last names starting with the letter "M".
   SELECT LastName
   FROM traveler
   WHERE LastName **LIKE** 'M%'
7. The destinations ending with the letter "a".
   SELECT DISTINCT Destination
   FROM Flight
   WHERE Destination **LIKE** '%a'
8. Travelers' first names containing the letters "me".
   SELECT FirstName
   FROM traveler
   WHERE FirstName LIKE '%me%'
9. The list of travelers born in 1990. (*using 02 methods*).
   SELECT *
   FROM Traveler
   WHERE BirthDat >='1990-01-01' **AND** Birth_Dat <='1990-12-31'

   SELECT *
   FROM traveler
   WHERE BirthDat **BETWEEN** '1990-01-01' **AND** '1990-12-31'
10. The list of flights to the destination "Algiers".
    SELECT *
    FROM flight
    WHERE Destination = 'Algiers'

11. The numbers of travelers who are **men**.
    SELECT NoTr
    FROM traveler
    WHERE Gender ='M'
12. The flight numbers to "Algiers" **OR** "Setif" (With 02 methods).
    SELECT NoFL
    FROM flight
    WHERE Destination = 'Algiers' **OR** Destination = 'Setif '

    SELECT NoFL
    FROM flight
    WHERE Destination **IN** ('Algiers', 'Setif ')
13. The Flight numbers to "Algiers" with a number of places greater than 150. (With 02 methods).
    SELECT NoFL
    FROM flight
    WHERE Destination = 'Algiers' **AND** NbrPlaces > 150

    SELECT NoFL
    FROM flight
    WHERE Destination = 'Algiers'
    INTERSECT
    SELECT NoFL
    FROM flight
    WHERE NbrPlaces > 150

    SELECT NoFL
    FROM flight
    WHERE Destination = 'Algiers' **AND** NoFL **IN (SELECT** NoFL
                                            FROM flight
                                            WHERE NbrPlaces > 150**)**
14. The numbers of travelers who have **at least** one reservation.
    SELECT NoTr
    FROM Reservation
15. Numbers of travelers **without** reservations.
    SELECT NoTr
    FROM traveler
    WHERE NoTr **NOT IN (SELECT** NoTr
                        FROM Reservation)

SELECT NoTr
FROM traveler
WHERE NoTr
MINUS
SELECT NoTr
FROM Reservation

16. The numbers and **Last names** of travelers with **at least one** reservation. (With 03 methods).
SELECT NoTr, LastName
FROM traveler
WHERE NoTr **IN** (**SELECT** NoTr
                        FROM Reservation)

SELECT DISTINCT T.NoTr, LastName
FROM traveler T **INNER JOIN** Reservation R **ON** T.NoTr=R.NoTr
ORDER BY T.NoTr

SELECT DISTINCT T.NoTr, LastName
FROM traveler T **,** Reservation R
WHERE T.NoTr=R.NoTr
ORDER BY T.NoTr

SELECT NoTr, LastName
FROM traveler T
WHERE EXISTS (**SELECT** NULL
                    FROM Reservation R
                    WHERE T.NoTr=R. NoTr)

17. The __numbers__ of travelers who have at least one reservation to "**Algiers**".
SELECT DISTINCT NoTr
FROM Reservation R **INNER JOIN** Flight F **ON** R.NoFL=F.NoFL
WHERE Destination='Algiers'

18. The __names__ of travelers who have at least one reservation to "Algiers".
SELECT DISTINCT LastName
FROM traveler T **INNER JOIN** Reservation R **ON** T.NoTr=R.NoTr **INNER JOIN** Flight F
ON R.NoFL=F.NoFL
WHERE Destination='Algiers'

SELECT DISTINCT LastName
FROM traveler T, Reservation R INNER JOIN Flight F **ON** R.NoFL=F.NoFL
WHERE T.NoTr=R.NoTr **AND** R.NoFL=F.NoFL **AND** Destination='Algiers'

19. The numbers of **female** travelers who have a reservation at 08:00.
    SELECT DISTINCT T.NoTR
    FROM traveler **T INNER JOIN** Reservation R **ON** T.NoTr=R.NoTr **INNER JOIN** Flight F
    ON R.NoFL=F.NoFL
    WHERE Gender='F' **AND** DepartTime='08:00'

20. The numbers of travelers having at least: one reservation to "Oran" **and** one reservation to "Ouargla".
    SELECT DISTINCT NoTr
    FROM Reservation **R INNER JOIN** Flight F **ON** R.NoFL=F.NoFL
    WHERE Destination='Oran' **AND** NoTr **IN**
    　　　　　　　　　　(**SELECT** NoTr
    　　　　　　　　　　FROM Reservation R **INNER JOIN** Flight F **ON** R.NoFL=F.NoFL
    　　　　　　　　　　WHERE Destination='Ouargla')

    SELECT DISTINCT NoTr
    FROM Reservation **R INNER JOIN** Flight F **ON** R.NoFL=F.NoFL
    WHERE Destination='Oran'
    INTERSECT
    (**SELECT** NoTr
    FROM Reservation **R INNER JOIN** Flight F **ON** R.NoFL=F.NoFL
    WHERE Destination='Ouargla')

21. The flight numbers having the **same** number of places as the flight 1000.
    SELECT NoFL
    FROM flight F1
    WHERE NbrPlaces **IN** (**SELECT** NbrPlaces
    　　　　　　　　　　FROM flight F2
    　　　　　　　　　　WHERE NoFL=1000)
    　　　　　　　　　　AND NoFL<>1000

    SELECT F2.NoFL
    FROM flight F1, Flight F2
    WHERE F1.NoFL=1000 **AND** F1.NbrPlaces=F2.NbrPlaces **AND** F1.NoFL<>F2.NoFL

22. The flight numbers having the **greatest** number of places. (Using the function **ALL**).
    SELECT NoFL
    FROM flight
    WHERE NbrPlaces **>= ALL** (**SELECT** NbrPlaces
    　　　　　　　　　　　　FROM flight)

23. The flight numbers having a number of places greater than at least one flight to "Algiers'. (Using the function **ANY**).
SELECT NoFL
FROM flight
WHERE NbrPlaces **> ANY** (**SELECT** NbrPlaces
                    FROM flight
                    WHERE Destination='Algiers')