

- L3 MIASHS/Ingémath/METIS
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## CC1 du 17 octobre 2025 - English translation

### Presentation of the database

All the questions concern a `hôtel` database used by a hotel to manage its reservations.

For each relationship (table), we indicate its schema with the type of each attribute in the form `attribute_name: type`.

By default, `NULL` values are allowed, unless `NOT NULL` is specified.

For each table, the values of the `numéro` attribute are unique, i.e. each row is identified by the value of the `numéro` attribute.

```
client(
    numéro : int (NOT NULL),
    nom : varchar (NOT NULL),
    prénom : varchar (NOT NULL),
    rue : varchar,
    ville : varchar,
    cp : int,
    pays : varchar,
    tel : varchar (NOT NULL),
    email : vachar
)
```

```
chambre(
    numéro : int (NOT NULL),
    étage : int (NOT NULL),
    nblitdouble : int (NOT NULL),
    nblitsimple : int (NOT NULL),
    description : varchar
)
```

- The attributes `nblitdouble` and `nblitsimple` specify the number of double beds and single beds respectively in the room.

```
réservation(
    numéro : int (NOT NULL),
    chambre : int (NOT NULL),
    client : int (NOT NULL),
    arrivée : date (NOT NULL),
    départ : date (NOT NULL),
    nbadulte : int (NOT NULL),
    nbenfant : int (NOT NULL)
)
```

- The `room` attribute refers to the `number` attribute of the `room` table.
- The `client` attribute refers to the `number` attribute of the `client` table.
- The `nadult` and `nchild` attributes specify the number of adults and children respectively who will stay in the room.
- The `date` type has the usual order relationship.

Here are some examples of rows for each table :

client

numéro	nom	prénom	rue	ville	cp	pays
113	'Legrand'	'Claire'	'12 rue d'If'	'Orléans'	45000	'France'

tel	email
'0610101010'	'jlegrand@cecher.fr'

chambre

numéro	étage	nblitdouble	nblitsimple	description
104	1	1	0	'spacieuse, ensoleillée, balcon, WC, douche'

réservation

numéro	chambre	client	arrivée	départ	nbadulte	nbenfant
512	104	113	'2025/12/15'	'2025/12/21'	2	0

This row in the reservation table stores that customer 113 in the ‘customers’ table (Claire Legrand) has booked room 104 in the ‘room’ table from 2025/12/15 to 2025/12/21 for 2 adults.

## Questions

1. Write **in relational algebra and SQL** a query that lists the first and last names of customers who live in the city ‘Bordeaux’.

 Solution

2. Write **in relational algebra and SQL** a query that lists the bookings where the number of people (adults and children) does not respect the number of beds available in the room booked.

 Solution

3. Write **in SQL** a query that lists the numbers of customers who have no reservations on the 1st floor.

 Solution

EXISTS

4. Write **in SQL** a query that lists the surnames, first names and number of bookings of the 10 customers who have made the most bookings.

5. This query looks for cases where two different bookings for the same room have at least one night in common. These are incompatible bookings.

Write **in SQL** a query which lists, for each incompatibility, the number of the room concerned and the numbers of the two reservations.

 Solution

6. Write **in SQL and without subqueries and without INTERSECT**, a query that lists the numbers of customers who have at least one reservation for room 101 **and** at least one reservation for room 303.

 Solution

`double jointure`

7. Write **in SQL with no aggregation function and no subquery**, a query that lists the numbers of the rooms that have been booked by at least two different people from the city of ‘Brest’.
8. Write **in SQL with no aggregation function**, a query that lists the floors for which all the rooms are reserved on the date ‘2025/12/15’.

 Solution

`différence`