

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

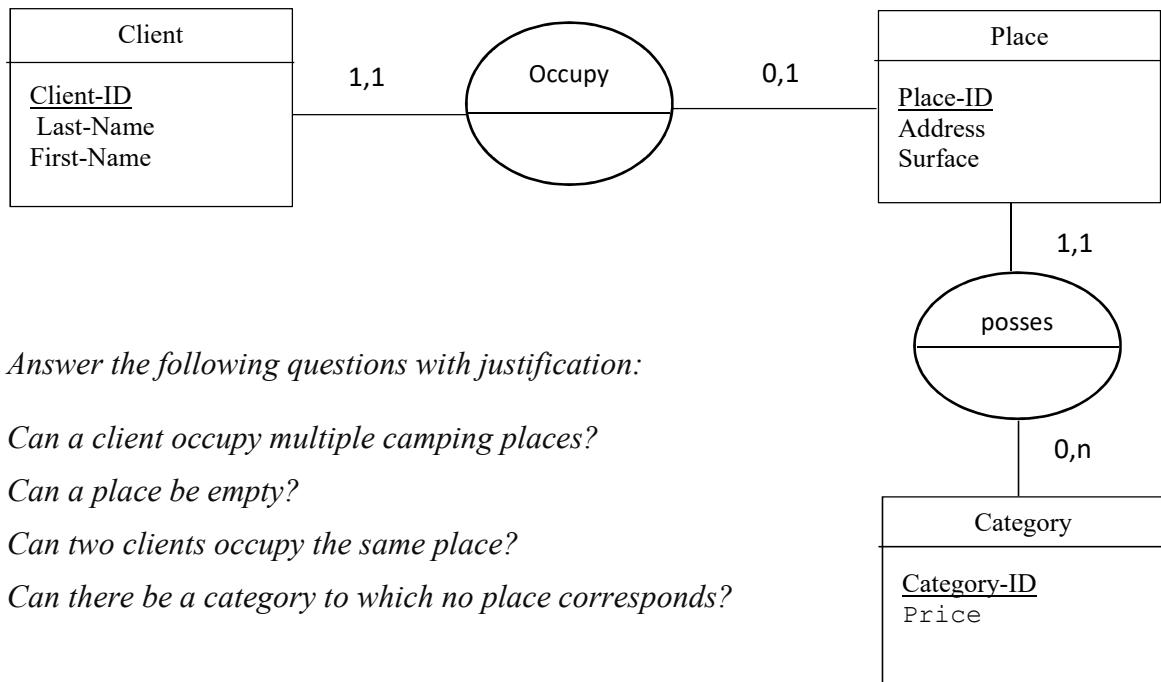
### ***Tutorial N°02***

***Objectives :***

- ☞ Understand what is an entity and know how to define entities.***
- ☞ Understand what is an association and know how to define associations.***
- ☞ Understand the meaning of cardinalities and know how to express cardinalities.***
- ☞ Know how to define the primary key of an entity.***
- ☞ Understand what is a weak entity and know how to identify weak entities.***
- ☞ Practice designing a database using the Entity-Relationship (E/R) model.***

***Exercise 01:***

*A campsite manages the occupancy of its camping places with a DBMS (Database Management System). The E-R model is presented below:*

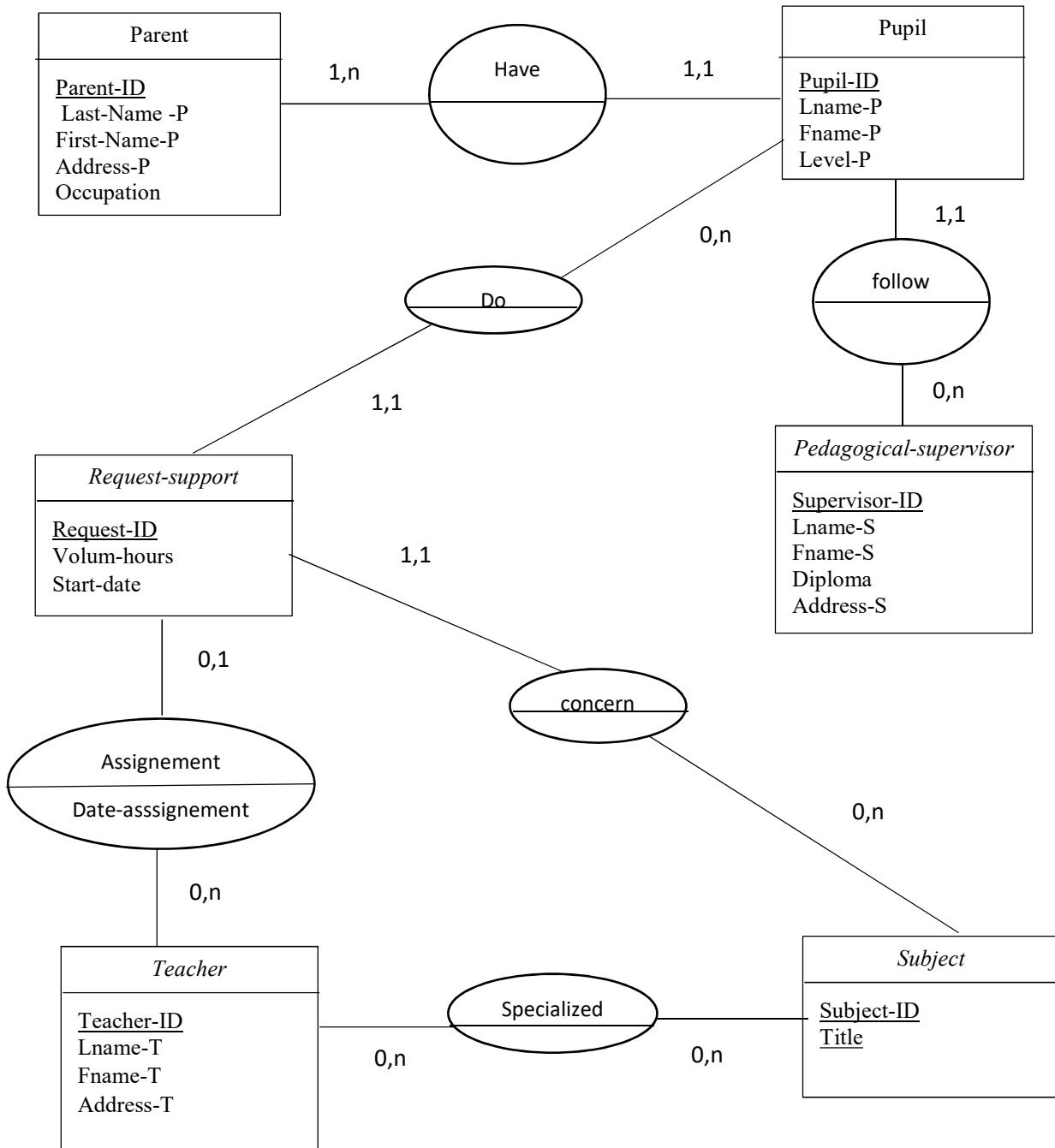


*Answer the following questions with justification:*

1. *Can a client occupy multiple camping places?*
2. *Can a place be empty?*
3. *Can two clients occupy the same place?*
4. *Can there be a category to which no place corresponds?*

***Exercise 02:***

*Example of a tutoring course, we consider the E-R model provided below:*



Answer the following questions based on the characteristics of this model (indicate if the described situation it is represented with the given model).

1. Can a student follow multiple subjects?
2. Can a request support involve multiple subjects?
3. Can a pedagogical supervisor oversee multiple pupils at the same time?
4. Can a teacher be assigned to more than one support at the same time?
5. Can two pedagogical supervisors oversee a pupil at the same time?
6. Can two different teachers specialize in the same subject?

### **Exercise 03:**

*We are considering a vehicle repair company. A repair company has several specialized departments, each comprising a certain number of employees. An employee works in only one department, has a role in the company, and a supervisor called the department head. Their salary depends on their role and their seniority within the company.*

*The repair company owns large equipment that requires specific qualifications for employees who might use it. Not all employees are qualified to use all equipment; each employee is skilled in operating specific equipment. Equipment is cataloged within the company. Complex equipment consists of multiple components.*

*A department may be involved in repairing pieces of multiple vehicles. Similarly, the repair of a vehicle may involve multiple departments.*

*A repair intervention is always requested by a client and conducted under the supervision of a supervisor. For each repair intervention, a **report** is created. A report includes the name of each department involved, the pieces repaired, and the repair cost. It also contains the total cost of the vehicle repair, the vehicle's check-in date, and the vehicle's check-out date.*

*Draw the entity-relationship schema.*