



# SQL language

## Queries in SQL

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# Exercise n. 1

COURSE (CourseCode, CourseName, Year, Semester)

COURSE-SCHEDULE (CourseCode, DayOfWeek, StartTime, EndTime, Room)

- ⇒ Find the rooms in which none of the first-year courses has ever been given

Set of data to be excluded: Set of ROOMS used for a lecture related to the first year course

```
SELECT DISTINCT Room
FROM COUSE-SCHEDULE CS
WHERE Room NOT IN (SELECT Room
                   FROM COURSE-SCHEDULE CS1, COURSE C
                   WHERE CS1.CourseCode=C.CourseCode AND Year =1)
```

# Exercise n. 1

COURSE (CourseCode, CourseName, Year, Semester)

COURSE-SCHEDULE (CourseCode, DayOfWeek, StartTime, EndTime, Room)

- ⇒ Find the rooms in which none of the first-year courses has ever been given

Find the rooms for which do not exist a tuple in table course schedule used for the same room and related to a lecture for the first year course

```
SELECT DISTINCT Room
FROM COUSE-SCHEDULE CS
WHERE NOT EXISTS (SELECT *
                  FROM COURSE-SCHEDULE CS1, COURSE C
                  WHERE CS1.CourseCode=C.CourseCode AND Year = 1
                  AND CS.Room=CS1.Room)
```

## Exercise n. 2

COURSE (CourseCode, CourseName, Year, Semester)

COURSE-SCHEDULE (CourseCode, DayOfWeek, StartTime, EndTime, Room)

- ⇒ Find the codes, the names and the total number of weekly hours of the third-year courses whose total number of weekly hours is greater than 10 and whose schedule spans three different days of the week.

```
SELECT C.CourseCode, CourseName, SUM(EndTime-StartTime)
FROM COURSE C, COURSE-SCHEDULE CS
WHERE C.CourseCode=CS.CourseCode AND Year = 3
GROUP BY C.CourseCode, CourseName
HAVING SUM(EndTime-StartTime)>10 AND
        COUNT(DISTINCT DayOfWeek)=3
```

## Exercise n. 3

FLAT (FCode, Address, City, Surface)

LEASING-CONTRACT (LCCode, StartDate, EndDate, PersonName, MonthlyPrice, FCode)

- ⇒ For the cities in which at least 100 contracts have been signed, find the city, the maximum monthly price, the average monthly price, the maximum duration of the leasing contracts, the average duration of the leasing contracts and the total number of signed contracts.

```
SELECT F.City, MAX(L.MonthlyPrice), AVG(L.MonthlyPrice),  
        MAX(L.EndDate-L.StartDate), AVG(L.EndDate-L.StartDate), COUNT(*)  
FROM FLAT F, LEASING-CONTRACT L  
WHERE F.FCode=L.Fcode [AND EndDate IS NOT NULL]  
GROUP BY F.City  
HAVING COUNT (*)>=100
```

## Exercise n. 4

FLAT (FCode, Address, City, Surface)

LEASING-CONTRACT (LCCode, StartDate, EndDate, PersonName, MonthlyPrice, Fcode)

- Find the names of the people who have never rented any flat with a surface greater than 80 square meters

```
SELECT DISTINCT PersonName
FROM LEASING_CONTRACT LC
WHERE PersonName NOT IN (
    SELECT PersonName
    FROM LEASING_CONTRACT LC1, FLAT F
    WHERE F.Surface>80 AND LC1.FCode=F.Fcode)
```

```
SELECT DISTINCT PersonName
FROM LEASING_CONTRACT LC
WHERE NOT EXIST (
    SELECT *
    FROM LEASING_CONTRACT LC1, FLAT F
    WHERE F.Surface>80 AND LC1.FCode=F.Fcode AND
    LC.PersonName=LC1.PersonName)
```

## Exercise n. 5

FLAT (FCode, Address, City, Surface)

LEASING-CONTRACT (LCCode, StartDate, EndDate, PersonName, MonthlyPrice, Fcode)

- ⇒ Find the names of the people who have signed more than two leasing contracts for the same flat (in different periods).

```
SELECT DISTINCT PersonName
FROM LEASING_CONTRACT LC
GROUP BY PersonName, FCode
HAVING COUNT(*)>2
```



## Exercise n. 6

FLAT (FCode, Address, City, Surface)

LEASING-CONTRACT (LCCode, StartDate, EndDate, PersonName, MonthlyPrice, Fcode)

- ⊃ Find the codes and the addresses of flats in Turin whose monthly leasing price has always been greater than 500 Euro and for which more than 5 contracts have been signed.

```
SELECT FCode, Address
FROM FLAT F
WHERE City='Turin' AND Fcode NOT IN (SELECT FCode
                                     FROM LEASING-CONTRACT
                                     WHERE MonthlyPrice<=500)
AND Fcode IN (SELECT FCode
              FROM LEASING-CONTRACT
              GROUP BY Fcode
              HAVING COUNT(*)>5)
```



## Exercise n. 6 - Alternative

FLAT (FCode, Address, City, Surface)

LEASING-CONTRACT (LCCode, StartDate, EndDate, PersonName, MonthlyPrice, Fcode)

- Find the codes and the addresses of flats in Turin whose monthly leasing price has always been greater than 500 Euro and for which more than 5 contracts have been signed.

```
SELECT F.FCode, Address
FROM FLAT F, LEASING-CONTRACT LC
WHERE City='Turin' AND F.FCode NOT IN (SELECT FCode
                                        FROM LEASING-CONTRACT
                                        WHERE MonthlyPrice<=500)
      AND LC.Fcode=F.Fcode
GROUP BY F.Fcode, Address
HAVING COUNT(*)>5
```

## Exercise n. 6 - Alternative

FLAT (FCode, Address, City, Surface)

LEASING-CONTRACT (LCCode, StartDate, EndDate, PersonName, MonthlyPrice, Fcode)

- Find the codes and the addresses of flats in Turin whose monthly leasing price has always been greater than 500 Euro and for which more than 5 contracts have been signed.

```
SELECT F.FCode, Address
FROM FLAT F, LEASING-CONTRACT LC
WHERE City='Turin' AND LC.Fcode=F.Fcode
GROUP BY F.FCode, Address
HAVING COUNT(*)>5 AND MIN(MonthlyPrice)>500
```

## Exercise n. 7

PERSON (Name, Sex, Age)

PARENT (ParentName, ChildName)

- Find the name of each person younger than 10 years old who is an only child

```
SELECT DISTINCT Name
FROM PERSON P, PARENT PA
WHERE PA.ChildName=P.Name AND Age<10
      AND ParentName IN (SELECT ParentName
                          FROM PARENT
                          GROUP BY ParentName
                          Having Count(*)=1)
```

## Exercise n. 7 - Alternative

PERSON (Name, Sex, Age)

PARENT (ParentName, ChildName)

- Find the name of each person younger than 10 years old who is an only child

```
SELECT DISTINCT Name
FROM PERSON P, PARENT PA
WHERE PA.ChildName=P.Name AND Age<10
      AND ParentName NOT IN (SELECT ParentName
                              FROM PARENT
                              GROUP BY ParentName
                              Having Count(*)>1)
```

## Exercise n. 7 - Alternative

PERSON (Name, Sex, Age)

PARENT (ParentName, ChildName)

- Find the name of each person younger than 10 years old who is an only child

```
SELECT DISTINCT Name
FROM PERSON P, PARENT PA
WHERE PA.ChildName=P.Name AND Age<10
      AND NOT EXISTS (SELECT *
                      FROM PARENT PA1
                      WHERE PA1.ParentName=PA.ParentName AND
                             PA1.ChildName<> PA.ChildName)
```