

Homework: queries in SQL language - **Solution**

1. **Given the following relational schema (primary keys are underlined, optional attributes are indicated with *):**

JUDGE (SSN, Name, Surname, BirthDate)

COURT (CodCourt, CourtName, City)

COURTROOM (CodCourt, CodRoom, RoomName)

LAWSUIT (CodLawsuit, LawsuitType, StartDate, EndDate*, SSN)

COURT-HEARING (CodCourt, CodRoom, Date, StartTime, EndTime, CodLawsuit)

Express the following queries in SQL language:

- a. For each judge who has never presided over any defamation lawsuit (LawsuitType = 'Defamation') in the year 2020, show SSN, surname and number of different types of lawsuits he has presided over.

```
SELECT SSN, Surname, COUNT(DISTINCT LawsuitType)
FROM JUDGE J, LAWSUIT L
WHERE J.SSN = L.SSN and J.SSN NOT IN
      (SELECT L2.SSN
       FROM LAWSUIT L2, COURT-HEARING H
        WHERE (Date >=1/1/2020 AND Date <=31/12/2020) AND LawsuitType = 'Defamation' AND H.CodLawsuit =
              L2.CodLawsuit)
GROUP BY J.SSN, Surname
```

- b. Considering the lawsuits still pending and presided over by a judge who, overall over the course of his career, has presided over court hearings in at least three different courts, show the code of each lawsuit and the date of the last court hearing held for the cause.

```
SELECT C.CodLawsuit, MAX(Date)
FROM LAWSUIT L, COURT-HEARING H
WHERE L.EndDate IS NULL L.CodLawsuit = H.CodLawsuit
AND C.SSN IN
      (SELECT L2.SSN
       FROM LAWSUIT L2, COURT-HEARING H2
        WHERE L2.CodLawsuit = H2.CodLawsuit
        GROUP BY L2.SSN
        HAVING COUNT(DISTINCT CodCourt)>=3)
GROUP BY L.CodLawsuit;
```

- c. Show name, surname and birthdate of each judge who has presided over court hearings in *every* court, in which (i.e. in each of which) at least 50 divorce lawsuits (LawsuitType = 'Divorce') have been discussed.

```
SELECT DISTINCT J.Name, J.Surname, J.BirthDate
FROM JUDGE J, COURT-HEARING H, LAWSUIT L
WHERE J.SSN = L.SSN AND H.CodLawsuit = L.CodLawsuit
AND H.CodCourt IN
    (SELECT H2.CodCourt
     FROM COURT-HEARING H2, LAWSUIT L2
     WHERE H2.CodLawsuit = L2.CodLawsuit
     AND L2.LawsuitType = 'Divorce'
     GROUP BY H2.CodCourt
     HAVING COUNT(DISTINCT H2.CodLawsuit) >= 50)
GROUP BY J.SSN, J.Name, J.Surname, J.BirthDate
HAVING COUNT(DISTINCT CodCourt) =
    (SELECT COUNT(DISTINCT CodCourt)
     FROM COURTROOM CR
     WHERE CR.CodCourt IN
         (SELECT H3.CodCourt
          FROM COURT-HEARING H3, LAWSUIT L3
          WHERE H3.CodLawsuit = L3.CodLawsuit
          AND L3.LawsuitType = 'Divorce'
          GROUP BY H3.CodCourt
          HAVING COUNT(DISTINCT H3.CodLawsuit) >= 50));
```

2. **Given the following relational schema (primary keys are underlined, optional attributes are indicated with *):**

TRAINER (SSN, NameT, Surname, City)

GYM (CodG, NameG, Address, City)

SPECIALTY (CodS, NameS, Description)

LESSON (SSN, CodG, Date, CodS, ParticipantsNumber)

Express the following queries in SQL language:

- a. For each gym in Turin where Judo lessons (NameS="Judo") have been given by at least 5 different trainers, but yoga lessons have never been given (NameS="Yoga"), show the name of the gym and the number of different trainers who have given lessons (of each specialty, not just judo) there.

```
SELECT NameG, COUNT(DISTINCT SSN)
FROM GYM G, LESSON L
WHERE City = 'Turin' G.CodG =L.CodG
AND G.CodG IN
    (SELECT CodG
     FROM LESSON L, SPECIALTY S
     WHERE NameS = 'Judo' AND L.CodS = S.CodS
     GROUP BY CodG
     HAVING COUNT (DISTINCT SSN >=5)
    )
AND G.CodG NOT IN
    (SELECT CodG
     FROM LESSON L, SPECIALTY S
     WHERE NameS = 'Yoga' AND L.CodS = S.CodS)
GROUP BY P.CodG, NameG
```

- b. For each trainer who has given *only* Yoga lessons, show the name, the surname and the city of the gym where he has given the highest number of lessons.

```

SELECT NameT, NameG, Address, City
FROM TRAINER T, LESSON L, GYM G
WHERE T.SSN NOT IN
        (SELECT
          FROM LESSON L, SPECIALTY S
          WHERE NameS='Yoga' AND L.CodS=S.CodS)
WHERE T.SSN = L.SSN AND L.CodG=G.CodG
GROUP BY T.SSN, G.CodG
HAVING COUNT(*) =
        (SELECT MAX(NumLess)
         (SELECT SSN, CodG, COUNT(*) AS NumLess
          FROM LESSON
          GROUP BY SSN, CodG) AS TotLess
         WHERE TotLess.SSN=T.SSN))

```

- c. For each trainer who has trained in every gym in his city of residence, show name, surname and number of specialties for which he has given lessons.

```

SELECT T.Name, T.Surname, COUNT(DISTINCT CodS)
FROM TRAINER T, LESSON L
WHERE T.SSN=L.SSN
ANS T.SSN IN (SELECT SSN
              FROM TRAINER T2, GYM G2, LESSON L2
              WHERE G2.CodG=L2.CodG
              AND T2.SSN=L2.SSN
              AND G2.City=T2.City
              GROUP BY T2.SSN, T2.City
              HAVING COUNT (DISTINCT CodP) = (SELECT COUNT (*)
                                              FROM GYM G3
                                              G3.City=T2.City))
GROUP BY T.SSN, T.Name, T.Surname

```