SQL language

Queries in SQL

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MAGAZINE (<u>MId</u>, MName, Publisher)
ARTICLE (<u>AId</u>, Title, Topic, MId)

▷ Find the names of the magazines that have never published any article about motorcycles

> Set of data to be excluded: Set of magazines that published at least an article on Motorcycle topic

```
SELECT MName
FROM MAGAZINE
WHERE MID NOT IN  (SELECT MID
                   FROM ARTICLE
                   WHERE Topic= 'Motorcycle')
```

MAGAZINE (MId, MName, Publisher)
ARTICLE (AId, Title, Topic, MId)

▷ Find the names of the magazines that have never published any article about motorcycles

Find the names of the magazines for which do
not exist articles about motorcycles

SELECT Mname
FROM MAGAZINE M
WHERE NOT EXISTS (SELECT *
FROM ARTICLE A
WHERE Topic ='Moto' AND M.MID=A.MID)

MAGAZINE (MId, MName, Publisher)
ARTICLE (AId, Title, Topic, MId)

⇨ Find the names of the magazines that have only ever published articles about motorcycles

Set to be excluded: Magazines with at least an article on a topic different than Motorcycle

SELECT MName
FROM MAGAZINE M, ARTICLE A
WHERE M.MID=A.MID and M.MID NOT IN (SELECT MID
                                    FROM ARTICLE
                                    WHERE TOPIC <> 'Motorcycle')

MAGAZINE (MId, MName, Publisher)
ARTICLE (AId, Title, Topic, MId)

⟫ Find the names of the magazines that publish both articles about motorcycles and articles about cars.

SELECT MName
FROM MAGAZINE M
WHERE MID IN (SELECT MID
                      FROM ARTICLE
                      WHERE Topic ='Motorcycle')
AND MID IN (SELECT MID
                      FROM ARTICLE
                      WHERE Topic ='Car')

MAGAZINE (MId, MName, Publisher)
ARTICLE (AId, Title, Topic, MId)

▷ Find the names of the magazines that publish both articles about motorcycles and articles about cars.

Find the names of the magazines for which exist both articles about motorcycle and articles about cars

```
SELECT MName
FROM MAGAZINE M
WHERE EXISTS (SELECT *
                    FROM ARTICLE A1
                    WHERE Topic ='Motorcycle'
                    AND A1.MID=M.MID)
      AND EXISTS (SELECT *
                    FROM ARTICLE A2
                    WHERE Topic ='Car'
                    AND A2.MID=M.MID)
```

MAGAZINE (MId, MName, Publisher)
ARTICLE (AId, Title, Topic, MId)

⟫ Find the names of the magazines that publish both articles about motorcycles and articles about cars.

```
SELECT MName
FROM MAGAZINE M, ARTICLE A
WHERE M.MID=A.MID AND Topic='Motorcycle'
AND M.MID IN (SELECT MID
                      FROM ARTICLE
                      WHERE Topic ='Car')
```

MAGAZINE (MId, MName, Publisher)
ARTICLE (AId, Title, Topic, MId)

⟩ Find the names of the magazines that publish both articles about motorcycles and articles about cars.

```
SELECT MName
FROM MAGAZINE M
WHERE MID IN (SELECT MID
             FROM ARTICLE A
             WHERE Topic='Motorcycle')
AND M.MID IN (SELECT MID
              FROM ARTICLE A1
              WHERE Topic ='Car'
              CORRELATION CONDITION)
```

SAILOR (SId, SName, Expertise, DateofBirth)
BOOKING (SId, BId, Date)
BOAT(Bid, BName, Color)

▷ Find the codes of the sailors who have never booked a red boat

Set to be excluded: set of sailors who booked a red boat

SELECT SID
FROM SAILOR
WHERE SID NOT IN (SELECT SID
FROM BOOKING BK, BOAT BT
WHERE BK.BID= BT.BID AND Color ='Red')

SAILOR (<u>SId</u>, SName, Expertise, DateofBirth)
BOOKING (<u>SId</u>, <u>BId</u>, <u>Date</u>)
BOAT(<u>Bid</u>, BName, Color)

▷ Find the codes of the sailors who have never booked a red boat

  Set to be excluded: set of sailors who booked a red boat

```
SELECT SID
FROM SAILOR
WHERE SID NOT IN (SELECT SID
                  FROM BOOKING BK
                  WHERE BK.BID IN  (SELECT BID
                                    FROM BOAT
                                    WHERE Color ='Red')
```

SAILOR (SId, SName, Expertise, DateofBirth)
BOOKING (SId, BId, Date)
BOAT(Bid, BName, Color)

▷ Find the codes of the sailors who have never booked a red boat

Find the codes of the sailors for which do not exist a red boat booked

```
SELECT SID
FROM SAILOR  S
WHERE NOT EXISTS (SELECT *
                  FROM BOOKING BK, BOAT BT
                  WHERE BK.BID=BT.BID AND Color='Red'
                  AND BK.SIS=S.SID)
```

SAILOR (SId, SName, Expertise, DateofBirth)
BOOKING (SId, BId, Date)
BOAT(Bid, BName, Color)

▷ Find the codes and the names of the sailors who have booked a red boat (only one) and a green boat (only one)

```
SELECT S.SID, SName
FROM SAILOR
WHERE SID IN (SELECT SID
            FROM BOOKING BK, BOAT BT
            WHERE BK.BID=BT.BID AND Color ='Red'
            GROUP BY SID
            HAVNG COUNT (DISTINCT BID)=1 )
            AND S.SID IN (SELECT SID
                    FROM BOOKING BK1, BOAT BT1
                    WHERE BK1.BID=BT1.BID and Color = 'green'
                    GROUP BY SID
                    HAVNG COUNT (DISTINCT BID)=1)
```

SAILOR (SId, SName, Expertise, DateofBirth)
BOOKING (SId, BId, Date)
BOAT(Bid, BName, Color)

▷ Find the codes and the names of the sailors who have booked at least a red boat and at least a green boat

```
SELECT DISTINCT S.SID, SName
FROM BOOKING BK, SAILOR S, BOAT BT
WHERE BK.BID=BT.BID AND S.SID=BK.SID
        AND Color ='Red'
        AND S:SID IN (SELECT SID
                    FROM BOOKING BK1, BOAT BT1
                    WHERE BK1.BID=BT1.BID and Color = 'green')
```

SAILOR (SId, SName, Expertise, DateofBirth)
BOOKING (SId, BId, Date)
BOAT(Bid, BName, Color)

▷ Find the codes and the names of the sailors who have booked at least a red boat and at least a green boat

SELECT S.SID, SName
FROM SAILOR
WHERE SID IN (SELECT SID
              FROM BOOKING BK, BOAT BT
              WHERE BK.BID=BT.BID AND Color ='Red')
         AND S.SID IN (SELECT SID
                       FROM BOOKING BK1, BOAT BT1
                       WHERE BK1.BID=BT1.BID and Color = 'green')

AIRCRAFT (AId, AName, MaximumRange)
CERTIFICATE (AId, PId)
PILOT(Pid, PName, Salary)

⟫ Find the codes and the names of the pilots who are qualified to fly on at least two aircrafts that can cover distances greater than 5,000 km (MaximumRange>=5,000), and who are qualified to fly on a Boeing

```
SELECT P.PID, PName
FROM AIRCRAFT A, CERTIFICATE C, PILOT P
WHERE A.AID=C.AID AND C.PID=P.PID
        AND MaximumRange >= 5,000
        AND P.PID IN (SELECT PID
                FROM AIRCRAFT A1, CERTIFICATE C1
                WHERE A1.Aid=C1.AID
                        AND AName ='Boeing')
GROUP BY P.PID, PName
HAVING COUNT(*) >=2
```

Exercise n. 6 – Alternative solution

AIRCRAFT (AId, AName, MaximumRange)
CERTIFICATE (AId, PId)
PILOT(Pid, PName, Salary)

▷ Find the codes and the names of the pilots who are qualified to fly on at least two aircrafts that can cover distances greater than 5,000 km (MaximumRange>=5,000), and who are qualified to fly on a Boeing

```
SELECT PID, PName
FROM PILOT
WHERE PID IN (SELECT PID
                FROM AIRCRAFT A, CERTIFICATE C
                WHERE A.AID=C.AID AND MaximumRange >= 5,000
                GROUP BY P.PID
                HAVING COUNT(*) >=2)
        AND PID IN (SELECT PID
                FROM AIRCRAFT A1, CERTIFICATE C1
                WHERE A1.Aid=C1.AID
                        AND AName ='Boeing')
```