


# BDD Advanced : Test of Tuesday 29th March 2022

A pilot may have drive on several circuits. For each circuit, a pilot win a certain number of **points**. He plays a circuit only one time per year.

Here is our data model: <u>Underline:</u> <u>primary key</u> <b>Bold: foreign key</b>	<ul style="list-style-type: none"><li>- Pilot (<b>pid: integer</b>, pname: string, age: real, country: string)<ul style="list-style-type: none"><li>- country: nationality of the pilot ('FRANCE', 'USA' ...)</li></ul></li><li>- Drive (<b>pid: integer, cid: integer, points: int, year: string</b>)<ul style="list-style-type: none"><li>- pid is a foreign key references to Pilot</li><li>- cid is a foreign key references to Circuit</li></ul></li><li>- Circuit (<b>cid: integer</b>, cname: string, category: string, country: string)<ul style="list-style-type: none"><li>- category can be 'F1', 'F2', 'F3', 'IndyCar', 'Rally'...</li><li>- country: place of the circuit ('FRANCE', 'USA' ...)</li></ul></li></ul>	
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## **1 - SQL query: Find Pilots younger than 18 that have won a 'F1' circuit (2 points) !:**

```
select * from
    Pilot p INNER join drive d1 on d1.pid = p.pid
    INNER JOIN Circuit c1 on d1.cid = c1.cid
    WHERE p.age < 30
        AND d1.points = (
            SELECT MAX(points) FROM Drive D2
            INNER JOIN Circuit C2 ON D2.cid = C2.cid
            WHERE D2.year = d1.year
            AND C2.category = C1.category
        )
    AND category = 'F1'

-- 2024 F1 => 25 points
-- 2024 IndyCar => 30 points
-- 1990 => 20 points
```

## **2 - SQL query: Display how many circuits have raced each pilots and in the same query display only pilots who have raced at least 5 circuits (4 points):**

```
select count(*)
    from Drive
    GROUP BY drive.pid
    HAVING count(*) > 5
```

## **3 - SQL query: Display the leaderboard of pilots (the ones who won the most points), in "F1" for year 2021, only display the top 3 (4 points):**

7- Bonus: Find the percentage of races in 'F1' for each pilot

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```
select pname, SUM(points) as total_points
  from Drive d INNER JOIN Circuit c ON d.cid = c.cid
        INNER JOIN Pilot p ON p.pid = d.pid
 WHERE category = 'F1'
 GROUP BY p.pid, pname
 ORDER BY total_points DESC
 LIMIT 3
```

**4 - SQL query: Find pname of Pilots who've raced a circuit in 'F1' but never in 'F2' (4 points)**  
**(bonus: and also raced in a 'Rally'):**

```
SELECT pname, pid from pilot p inner join Drive d on p.pid = d.pid
      INNER JOIN circuit c ON d.cid = c.cid
      WHERE c.category = 'F1'
INTERSECT
SELECT pname, pid from pilot p inner join Drive d on p.pid = d.pid
      INNER JOIN circuit c ON d.cid = c.cid
      WHERE c.category = 'Rally'
EXCEPT
SELECT pname, pid from pilot p inner join Drive d on p.pid = d.pid
      INNER JOIN circuit c ON d.cid = c.cid
      WHERE      c.category = 'F2'
```

**5 - SQL query: Write the Division query to find pilots that have raced all circuits (4 points):**

```
select pid FROM Drive NATURAL JOIN Circuit
      WHERE cid IN (SELECT cid FROM Circuit)
      GROUP BY pid
      HAVING (COUNT(DISTINCT(cid)) = (SELECT count(cid) FROM Circuit))
```

7- Bonus: Find the percentage of races in 'F1' for each pilot
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## **6 - SQL query: Display the top 2 of Pilots (best stars score) per circuit category (2 points):**

**Reminder:** ANALYTICAL\_FUNCTION() over (PARTITION BY columnA ORDER BY columnB desc) AS alias\_name

WITH

pilots\_category\_score AS (

select d.pid, c.category, SUM(points) AS score

FROM Circuit c INNER JOIN Drive d on c.cid = d.cid

GROUP BY d.pid, c.category

),

top2\_pilots\_per\_category AS (

select \*, rank() over (PARTITION BY category ORDER BY score DESC) as rank

from pilots\_category\_score

)

SELECT \* from top2\_pilots\_per\_category

WHERE rank < 3

7- Bonus: Find the percentage of races in 'F1' for each pilot