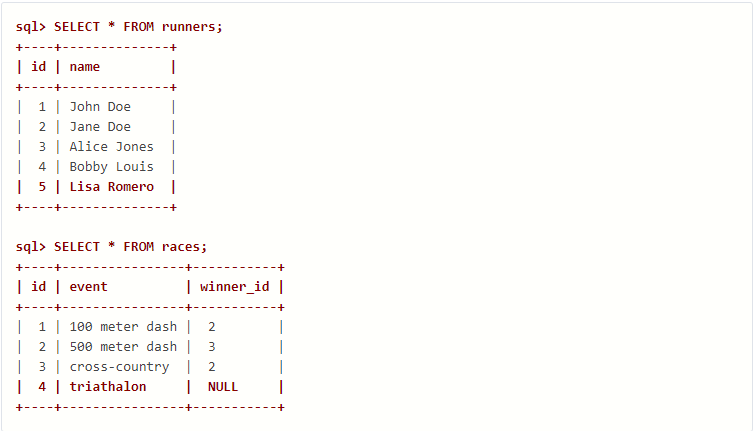
**SQL:**

**Question: 1**

**Given the following tables:**

****

**What will be the result of the query below?**

**SELECT \* FROM runners WHERE id NOT IN (SELECT winner\_id FROM races)**

**Explain your answer and also provide an alternative version of this query that will avoid the issue that it exposes.**

Answer:

SELECT \* FROM runners WHERE id NOT IN (SELECT winner\_id FROM races)

This query selects all records from the 'runners' table where the 'id' of the runner is not found in the 'winner\_id' column of the 'races' table.

This query has an issue, 'winner\_id' column in the 'races' table contains NULL values.

**the alternative version using LEFT JOIN of this query that will avoid the issue:**

**```**

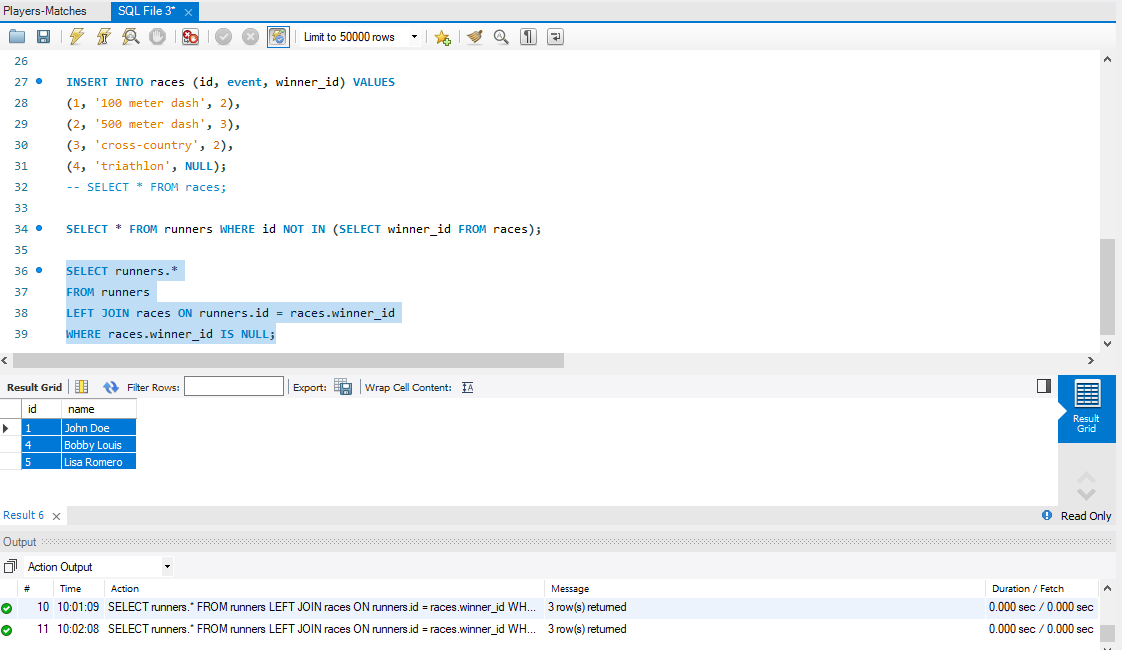
**SELECT runners.\***

**FROM runners LEFT JOIN races**

**ON runners.id = races.winner\_id**

**WHERE races.winner\_id IS NULL;**

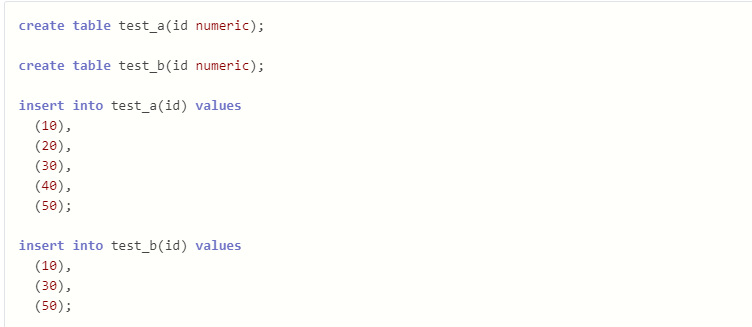
**```**

****

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question: 2**

Given two tables created as follows



Write a query to fetch values in table test\_a that are and not in test\_b without using the NOT keyword.

Answer:

```

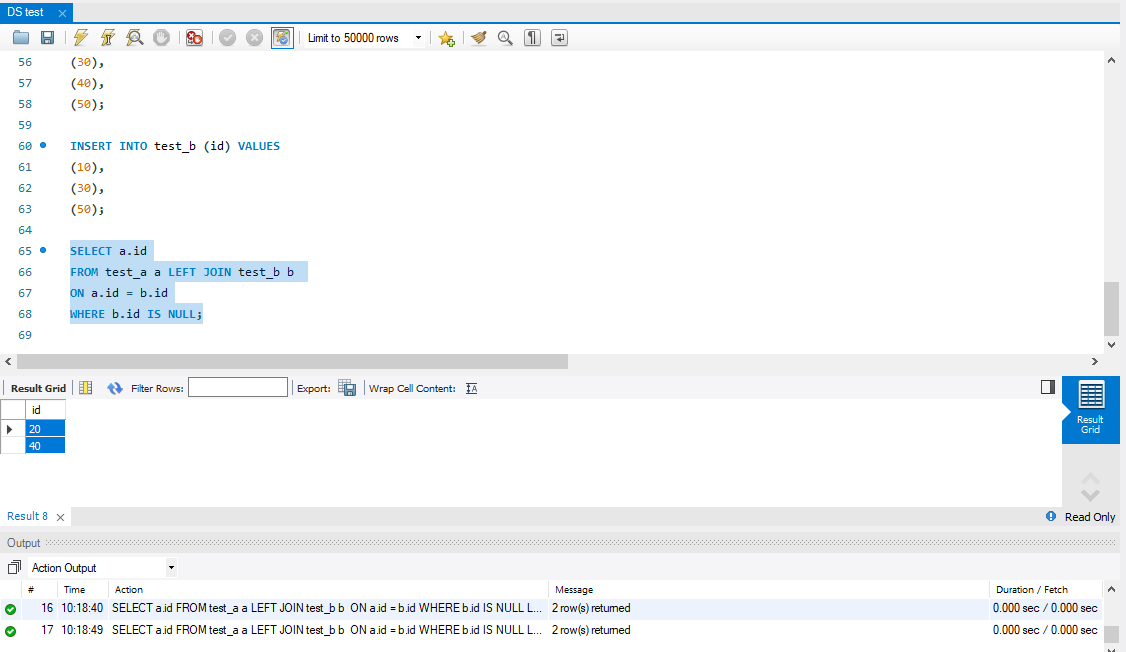
SELECT a.id

FROM test\_a a

LEFT JOIN test\_b b ON a.id = b.id

WHERE b.id IS NULL;

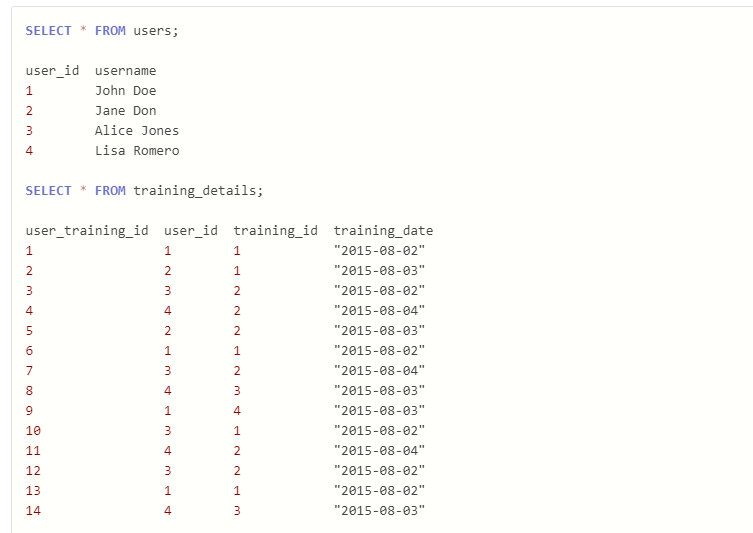
```



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question: 3**

Given the following tables:



Write a query to to get the list of users who took the a training lesson more than once in the same day, grouped by user and training lesson, each ordered from the most recent lesson date to oldest date.

Answer:

```

SELECT u.user\_id, u.username, td.training\_id, td.training\_date

FROM users u

JOIN training\_details td ON u.user\_id = td.user\_id

WHERE td.training\_date IN (

SELECT training\_date

FROM training\_details

WHERE user\_id = u.user\_id AND training\_id = td.training\_id

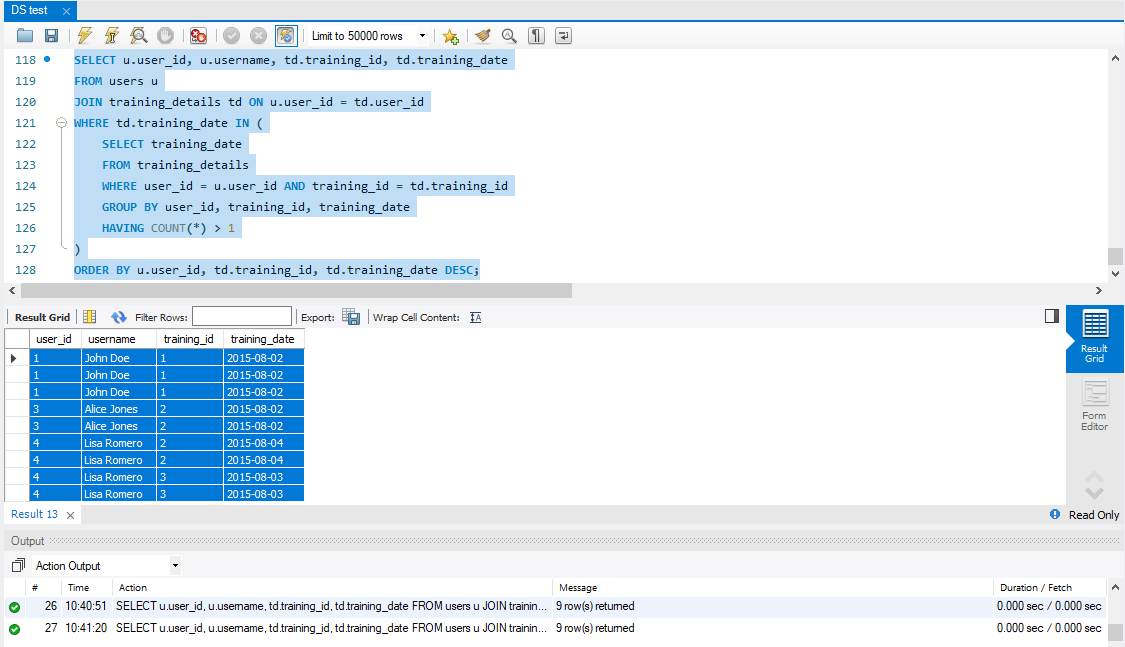
GROUP BY user\_id, training\_id, training\_date

HAVING COUNT(\*) > 1

)

ORDER BY u.user\_id, td.training\_id, td.training\_date DESC;

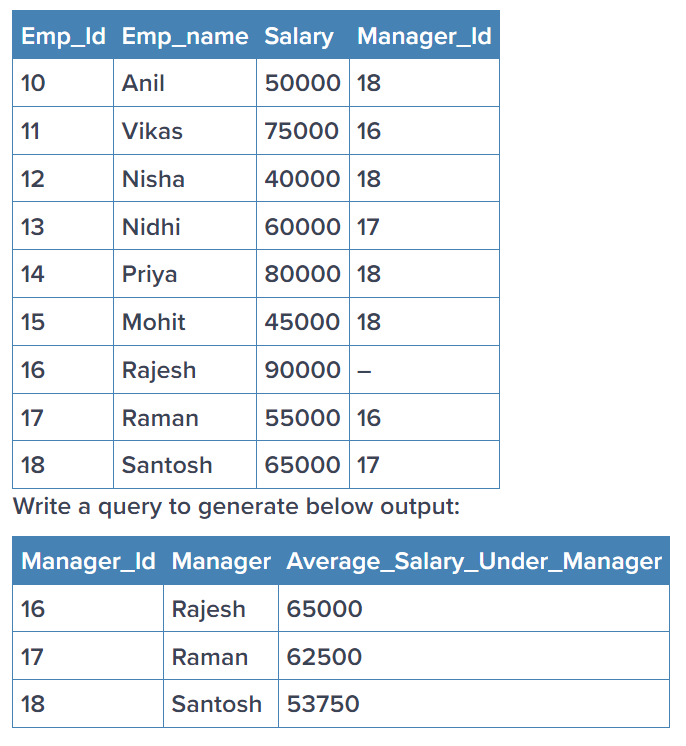
```



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question: 4**

Consider the Employee table below.



Answer:

```

WITH ManagerData AS (

SELECT

e.Manager\_Id AS Manager\_Id,

m.Emp\_Name AS Manager\_Name,

e.Salary,

AVG(e.Salary) OVER (PARTITION BY e.Manager\_Id) AS Average\_Salary\_Under\_Manager

FROM Employe e INNER JOIN Employe m ON e.Manager\_Id = m.Emp\_Id

)

SELECT

DISTINCT Manager\_Id AS Manager\_Id,

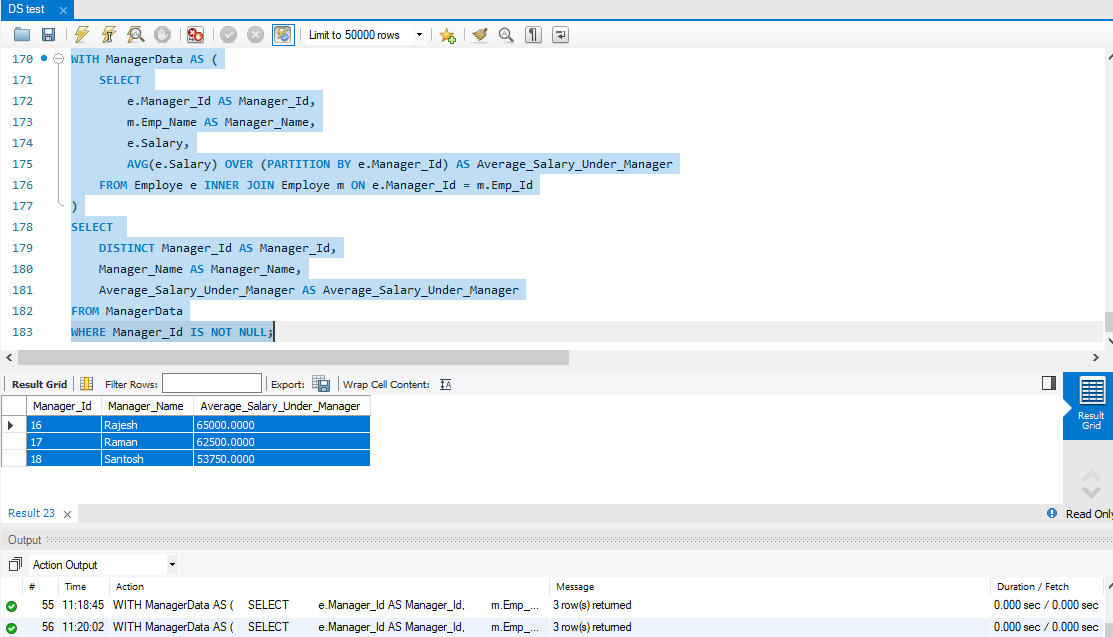
Manager\_Name AS Manager\_Name,

Average\_Salary\_Under\_Manager AS Average\_Salary\_Under\_Manager

FROM ManagerData

WHERE Manager\_Id IS NOT NULL;

```



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Statistics:**

**Question: 1**

What is the meaning of six sigma in statistics? Give proper example

Answer:

In statistics, sigma represents the standard deviation, which measures how spread out data points are from the average value (mean) in a particular set of data.

Six Sigma uses sigma as a metric for process capability. It refers to a process that has very minimal variability, resulting in almost no defects. A six sigma process achieves a defect rate of only 3.4 DPMO (defects per million opportunities), which translates to a 99.99966% success rate.

Eg:

A normal shop might have some pizzas with slightly burnt crusts (a few standard deviations away from ideal). Six Sigma aims to get nearly every pizza perfect, with almost no burnt crusts (very few standard deviations from ideal). This translates to super happy customers.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_