What is  Join ?  
a join is an operation   
that combines rows from one or more tables are based   
a releated column between them  (PK--FK)

joins are essential for retriveing data from multiple tables   
in relational database.  
  
Different types of joins:  
  
INNER  JOIN  
Description:  
  Returns  only rows  that have matching values in both tables  
Use case:  
  When  you want to retriever recrods  that exist in both tables

Example:  
if you have a customers table and orders tables,  
an INNERT join will return only customers who have placed orders  
  
LEFT JOIN  
Description:  
   Returns all rows from the left table   
     and the matched rows from the right table.   
   If there’s no match, NULL values are returned for columns from the right table.

use Case:  
  Useful when you want to see all records from one table   
  the related records from another table, if they exist.  
    Left            right  
     Customers Table    ------ Orders Tables  
  
Example:  
   List all customers and their orders,  
     including customers who have not placed any orders   
     (they will show with NULL for order details).

RIGHT JOIN

Description: Returns all rows from the right table  
        and the matched rows from the left table.  
               If there’s no match,   
               NULL values are returned for columns from the left table.  
Use Case:  
      Similar to LEFT JOIN, but it focuses on the right table.  
  
Example:  
      List all orders and the corresponding customers,  
      including orders that don’t have associated customers.

Customers Table  
  CustomerID  CustomerName  ContactName  
  1      John Doe    John  
  2      Jane Smith    Jane  
  3      Mike Johnson  Mike

Orders Table  
  OrderID    CustomerID    OrderDate  
  101      1        2024-01-10  
  102      1        2024-01-15  
  103      2        2024-02-01  
    104      4        2024-03-15

"To retrieve all customers along with their orders (if any)"  
SELECT  Customers.CustomerID, Customers.CustomerName, Orders.OrderID, Orders.OrderDate  
FROM  Customers    
LEFT JOIN  Orders ON  Customers.CustomerID = Orders.CustomerID;

Output

CustomerID  CustomerName  OrderID    OrderDate  
1      John Doe    101      2024-01-10  
1      John Doe    102      2024-01-15  
2      Jane Smith      103      2024-02-01  
3      Mike Johnson  NULL    NULL

RIGHT JOIN

SELECT  Customers.CustomerID, Customers.CustomerName, Orders.OrderID, Orders.OrderDate  
FROM Customers  
RIGHT JOIN  ON Orders ON  Customers.CustomerID = Orders.CustomerID;

Out put of RIGHT JOIN

CustomerID  CustomerName  OrderID    OrderDate  
1      John Doe    101      2024-01-10  
1      John Doe    102      2024-01-15  
2      Jane Smith      103      2024-02-01  
NULL    NULL        104      2024-03-15

EmployeeID    EmployeeName      ManagerID  
1        Sachin Raje        NULL  
2        Ramakant Pande      1  
3        Seeta Varma        1  
4        Ganesh Patil      2  
5        Sitaram  Jadhav      3

Expected: output of query: Show each person with his boss name as one record

EmployeeID     EmplyeeName     ManagerName  
1        Sachin Raje        NULL  
2        Ramakant Pande      Sachin Raje  
3        Seeta Varma        Sachin Raje  
4        Ganesh Patil      Ramakant Pande  
5        Sitaram  Jadhav      Seeta Varma

SELECT  e.EmployeeID  AS  EmployeeID,  
        e.EmployeeName AS EmployeeName,  
        m.EmployeeName  AS ManagerName  
FROM  Employees e  
LEFT JOIN Employees m ON e.ManagerID =m.EmployeeID;