**Lab 1: INNER JOIN**

**Problem:**

Retrieve a list of employees along with their department names.

**Tables:**

* Employees(EmpID, EmpName, DeptID)
* Departments(DeptID, DeptName)

**SQL Solution:**

SELECT e.EmpID, e.EmpName, d.DeptName

FROM Employees e

INNER JOIN Departments d ON e.DeptID = d.DeptID;

**Lab 2: LEFT JOIN**

**Problem:**

Retrieve all departments along with their employees. Include departments that have no employees.

**Tables:**

* Employees(EmpID, EmpName, DeptID)
* Departments(DeptID, DeptName)

**SQL Solution:**

SELECT d.DeptID, d.DeptName, e.EmpName

FROM Departments d

LEFT JOIN Employees e ON d.DeptID = e.DeptID;

**Lab 3: RIGHT JOIN**

**Problem:**

Retrieve all employees along with their department names, including employees without departments.

**Tables:**

* Employees(EmpID, EmpName, DeptID)
* Departments(DeptID, DeptName)

**SQL Solution:**

SELECT e.EmpID, e.EmpName, d.DeptName

FROM Employees e

RIGHT JOIN Departments d ON e.DeptID = d.DeptID;

**Lab 4: FULL OUTER JOIN**

**Problem:**

Retrieve all employees and departments, ensuring all records appear even if they don't have a match.

**Tables:**

* Employees(EmpID, EmpName, DeptID)
* Departments(DeptID, DeptName)

**SQL Solution:**

SELECT e.EmpID, e.EmpName, d.DeptName

FROM Employees e

FULL OUTER JOIN Departments d ON e.DeptID = d.DeptID;

**Lab 5: SELF JOIN**

**Problem:**

Find employees and their managers from the same Employees table.

**Table:**

* Employees(EmpID, EmpName, ManagerID)

**SQL Solution:**

SELECT e1.EmpID, e1.EmpName, e2.EmpName AS ManagerName

FROM Employees e1

LEFT JOIN Employees e2 ON e1.ManagerID = e2.EmpID;

**Lab 6: CROSS JOIN**

**Problem:**

Generate all possible pairs of employees and departments.

**Tables:**

* Employees(EmpID, EmpName)
* Departments(DeptID, DeptName)

**SQL Solution:**

SELECT e.EmpName, d.DeptName

FROM Employees e

CROSS JOIN Departments d;

**Lab 7: INNER JOIN with Multiple Tables**

**Problem:**

Retrieve order details including customer name, order date, and product name.

**Tables:**

* Orders(OrderID, CustomerID, OrderDate)
* Customers(CustomerID, CustomerName)
* OrderDetails(OrderID, ProductID, Quantity)
* Products(ProductID, ProductName)

**SQL Solution:**

SELECT o.OrderID, c.CustomerName, o.OrderDate, p.ProductName, od.Quantity

FROM Orders o

INNER JOIN Customers c ON o.CustomerID = c.CustomerID

INNER JOIN OrderDetails od ON o.OrderID = od.OrderID

INNER JOIN Products p ON od.ProductID = p.ProductID;

**Lab 8: LEFT JOIN with WHERE Condition**

**Problem:**

Retrieve all customers and their orders. If they have not placed an order, display "No Orders".

**Tables:**

* Customers(CustomerID, CustomerName)
* Orders(OrderID, CustomerID, OrderDate)

**SQL Solution:**

SELECT c.CustomerID, c.CustomerName,

ISNULL(o.OrderID, 'No Orders') AS OrderID

FROM Customers c

LEFT JOIN Orders o ON c.CustomerID = o.CustomerID;

**Lab 9: RIGHT JOIN with Aggregate Function**

**Problem:**

Retrieve department-wise employee count, including departments with no employees.

**Tables:**

* Employees(EmpID, EmpName, DeptID)
* Departments(DeptID, DeptName)

**SQL Solution:**

SELECT d.DeptID, d.DeptName, COUNT(e.EmpID) AS EmployeeCount

FROM Departments d

LEFT JOIN Employees e ON d.DeptID = e.DeptID

GROUP BY d.DeptID, d.DeptName;

**Lab 10: FULL OUTER JOIN with NULL Handling**

**Problem:**

List all students and courses, even if a student is not enrolled in any course or a course has no students.

**Tables:**

* Students(StudentID, StudentName)
* Enrollments(StudentID, CourseID)
* Courses(CourseID, CourseName)

**SQL Solution:**

SELECT s.StudentName, c.CourseName

FROM Students s

FULL OUTER JOIN Enrollments e ON s.StudentID = e.StudentID

FULL OUTER JOIN Courses c ON e.CourseID = c.CourseID;