**Exercise 1: Inner Join**

**Problem:** You have two tables:

* Employees (EmployeeID, Name, DepartmentID)
* Departments (DepartmentID, DepartmentName)

Write a query to find the names of employees and their department names.

**Solution:**

SELECT e.Name AS EmployeeName, d.DepartmentName

FROM Employees e

INNER JOIN Departments d

ON e.DepartmentID = d.DepartmentID;

**Exercise 2: Left Outer Join**

**Problem:** List all employees, including those who do not belong to any department.

**Solution:**

SELECT e.Name AS EmployeeName, d.DepartmentName

FROM Employees e

LEFT OUTER JOIN Departments d

ON e.DepartmentID = d.DepartmentID;

**Exercise 3: Right Outer Join**

**Problem:** List all departments, including those that do not have any employees.

**Solution:**

SELECT e.Name AS EmployeeName, d.DepartmentName

FROM Employees e

RIGHT OUTER JOIN Departments d

ON e.DepartmentID = d.DepartmentID;

**Exercise 4: Full Outer Join**

**Problem:** Display all employees and departments, including employees without a department and departments without employees.

**Solution:**

SELECT e.Name AS EmployeeName, d.DepartmentName

FROM Employees e

FULL OUTER JOIN Departments d

ON e.DepartmentID = d.DepartmentID;

**Exercise 5: ANSI Join Syntax**

**Problem:** Rewrite the query from Exercise 1 using ANSI join syntax.

**Solution:**

SELECT Employees.Name AS EmployeeName, Departments.DepartmentName

FROM Employees

JOIN Departments

ON Employees.DepartmentID = Departments.DepartmentID;

**Exercise 6: Self-Join**

**Problem:** You have an Employees table with columns (EmployeeID, Name, ManagerID). Write a query to list employees and their managers' names.

**Solution:**

SELECT e.Name AS EmployeeName, m.Name AS ManagerName

FROM Employees e

LEFT JOIN Employees m

ON e.ManagerID = m.EmployeeID;

**Exercise 7: Equi Join**

**Problem:** Find all employees working in a specific department, say "HR," using equi join.

**Solution:**

SELECT e.Name AS EmployeeName, d.DepartmentName

FROM Employees e, Departments d

WHERE e.DepartmentID = d.DepartmentID

AND d.DepartmentName = 'HR';

**Exercise 8: Non-Equi Join**

**Problem:** You have a SalaryGrades table (GradeID, MinSalary, MaxSalary) and an Employees table (EmployeeID, Name, Salary). Write a query to find the grade of each employee based on their salary.

**Solution:**

SELECT e.Name AS EmployeeName, sg.GradeID

FROM Employees e

JOIN SalaryGrades sg

ON e.Salary BETWEEN sg.MinSalary AND sg.MaxSalary;

**Exercise 9: Combining Inner and Outer Joins**

**Problem:** You have Employees, Departments, and Projects (ProjectID, EmployeeID). Write a query to find employees and their projects, including employees without projects.

**Solution:**

SELECT e.Name AS EmployeeName, p.ProjectID

FROM Employees e

LEFT JOIN Projects p

ON e.EmployeeID = p.EmployeeID;

**Exercise 10: Advanced Self-Join**

**Problem:** Find all employees who share the same manager.

**Solution:**

SELECT e1.Name AS Employee1, e2.Name AS Employee2, m.Name AS ManagerName

FROM Employees e1

JOIN Employees e2

ON e1.ManagerID = e2.ManagerID

AND e1.EmployeeID <> e2.EmployeeID

JOIN Employees m

ON e1.ManagerID = m.EmployeeID;