Name : Deepankar Sharma

Course: BCA

University Roll No: 2092014

Student Id : 20041299

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**Practical 04: Joins in SQL**

**Objective:**  Implementation of different types of Joins.

mysql> use bca;

Database changed

mysql> show tables;

+---------------+

| Tables\_in\_bca |

+---------------+

| department |

| employee |

| shopcart |

| students |

| user |

+---------------+

5 rows in set (0.50 sec)

mysql> desc department ;

+--------------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+--------------+-------------+------+-----+---------+-------+

| deptName | varchar(20) | YES | | NULL | |

| deptNo | int | NO | PRI | NULL | |

| deptLocation | varchar(20) | YES | | NULL | |

| deptID | int | YES | | NULL | |

+--------------+-------------+------+-----+---------+-------+

4 rows in set (0.02 sec)

mysql> desc employee;

+------------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+------------+-------------+------+-----+---------+-------+

| empID | char(8) | NO | PRI | NULL | |

| empName | varchar(20) | YES | | NULL | |

| deptNo | int | YES | MUL | NULL | |

| empContact | int | YES | | NULL | |

+------------+-------------+------+-----+---------+-------+

4 rows in set (0.00 sec)

mysql> select \* from employee;

+-------+---------+--------+------------+

| empID | empName | deptNo | empContact |

+-------+---------+--------+------------+

| 1 | Amit | 11 | 12345 |

| 2 | Rohan | 12 | 67892 |

| 3 | Sham | 13 | 23499 |

| 4 | Riya | 14 | 79282 |

| 5 | Harman | 15 | 57123 |

| 6 | Parth | 16 | 45721 |

| 7 | Naveen | 17 | 59231 |

| 8 | Adarsh | 18 | 57781 |

| 9 | Teena | 19 | 23491 |

+-------+---------+--------+------------+

9 rows in set (0.00 sec)

mysql> select \* from department;

+------------+--------+--------------+--------+

| deptName | deptNo | deptLocation | deptID |

+------------+--------+--------------+--------+

| bca | 11 | SecondFloor | 22 |

| bfd | 12 | ThirdFloor | 33 |

| bba | 13 | FourthFloor | 44 |

| bsc | 14 | GroundFloor | 55 |

| btech | 15 | SixthFloor | 66 |

| cs | 16 | FifthFloor | 77 |

| mechanical | 17 | FirstFloor | 88 |

| civil | 18 | EigthFloor | 88 |

| diploma | 19 | NinthFloor | 11 |

+------------+--------+--------------+--------+

9 rows in set (0.00 sec)

mysql>

1. **Inner Join-**Returns records that have matching values in both tables.
   * + - 1. Natural Join
         2. Theta Join
         3. Equi Join

mysql> select deptname , deptlocation, empname from department INNER JOIN employee ON department.deptno= employee.deptno;

+------------+--------------+---------+

| deptname | deptlocation | empname |

+------------+--------------+---------+

| bca | SecondFloor | Amit |

| bfd | ThirdFloor | Rohan |

| bba | FourthFloor | Sham |

| bsc | GroundFloor | Riya |

| btech | SixthFloor | Harman |

| cs | FifthFloor | Parth |

| mechanical | FirstFloor | Naveen |

| civil | EigthFloor | Adarsh |

| diploma | NinthFloor | Teena |

+------------+--------------+---------+

9 rows in set (0.03 sec)

mysql>

mysql> select empID, empName, deptName , deptNo from employee NATURAL JOIN department ;

+-------+---------+------------+--------+

| empID | empName | deptName | deptNo |

+-------+---------+------------+--------+

| 1 | Amit | bca | 11 |

| 2 | Rohan | bfd | 12 |

| 3 | Sham | bba | 13 |

| 4 | Riya | bsc | 14 |

| 5 | Harman | btech | 15 |

| 6 | Parth | cs | 16 |

| 7 | Naveen | mechanical | 17 |

| 8 | Adarsh | civil | 18 |

| 9 | Teena | diploma | 19 |

+-------+---------+------------+--------+

9 rows in set (0.00 sec)

mysql> select empID, empName, deptName, empContact from employee THETA JOIN department ON deptName= 'bca';

+-------+---------+----------+------------+

| empID | empName | deptName | empContact |

+-------+---------+----------+------------+

| 1 | Amit | bca | 12345 |

| 2 | Rohan | bca | 67892 |

| 3 | Sham | bca | 23499 |

| 4 | Riya | bca | 79282 |

| 5 | Harman | bca | 57123 |

| 6 | Parth | bca | 45721 |

| 7 | Naveen | bca | 59231 |

| 8 | Adarsh | bca | 57781 |

| 9 | Teena | bca | 23491 |

+-------+---------+----------+------------+

9 rows in set (0.00 sec)

mysql> select empID, empName, deptName from department JOIN employee ON department.deptno= employee.deptno;

+-------+---------+------------+

| empID | empName | deptName |

+-------+---------+------------+

| 1 | Amit | bca |

| 2 | Rohan | bfd |

| 3 | Sham | bba |

| 4 | Riya | bsc |

| 5 | Harman | btech |

| 6 | Parth | cs |

| 7 | Naveen | mechanical |

| 8 | Adarsh | civil |

| 9 | Teena | diploma |

+-------+---------+------------+

9 rows in set (0.00 sec)

1. **Outer Join**- Return records that have matching or non matching values in either or both tables.
   * + - 1. Left(Outer) Join
         2. Right(Outer) Join
         3. Full(Outer) Join

mysql> select empId, empName, deptName from employee LEFT JOIN department ON department.deptName IN ('bca', 'bfd');

+-------+---------+----------+

| empId | empName | deptName |

+-------+---------+----------+

| 1 | Amit | bfd |

| 1 | Amit | bca |

| 2 | Rohan | bfd |

| 2 | Rohan | bca |

| 3 | Sham | bfd |

| 3 | Sham | bca |

| 4 | Riya | bfd |

| 4 | Riya | bca |

| 5 | Harman | bfd |

| 5 | Harman | bca |

| 6 | Parth | bfd |

| 6 | Parth | bca |

| 7 | Naveen | bfd |

| 7 | Naveen | bca |

| 8 | Adarsh | bfd |

| 8 | Adarsh | bca |

| 9 | Teena | bfd |

| 9 | Teena | bca |

+-------+---------+----------+

18 rows in set (0.00 sec)

mysql> select empId, empName, deptName from employee RIGHT JOIN department ON department.deptName IN ('bca', 'bfd');

+-------+---------+------------+

| empId | empName | deptName |

+-------+---------+------------+

| 9 | Teena | bca |

| 8 | Adarsh | bca |

| 7 | Naveen | bca |

| 6 | Parth | bca |

| 5 | Harman | bca |

| 4 | Riya | bca |

| 3 | Sham | bca |

| 2 | Rohan | bca |

| 1 | Amit | bca |

| 9 | Teena | bfd |

| 8 | Adarsh | bfd |

| 7 | Naveen | bfd |

| 6 | Parth | bfd |

| 5 | Harman | bfd |

| 4 | Riya | bfd |

| 3 | Sham | bfd |

| 2 | Rohan | bfd |

| 1 | Amit | bfd |

| NULL | NULL | bba |

| NULL | NULL | bsc |

| NULL | NULL | btech |

| NULL | NULL | cs |

| NULL | NULL | mechanical |

| NULL | NULL | civil |

| NULL | NULL | diploma |

+-------+---------+------------+

25 rows in set (0.00 sec)

mysql> select empId, empName, deptName from employee FULL JOIN department ON department.deptName IN ('bca', 'bfd');

+-------+---------+----------+

| empId | empName | deptName |

+-------+---------+----------+

| 1 | Amit | bfd |

| 1 | Amit | bca |

| 2 | Rohan | bfd |

| 2 | Rohan | bca |

| 3 | Sham | bfd |

| 3 | Sham | bca |

| 4 | Riya | bfd |

| 4 | Riya | bca |

| 5 | Harman | bfd |

| 5 | Harman | bca |

| 6 | Parth | bfd |

| 6 | Parth | bca |

| 7 | Naveen | bfd |

| 7 | Naveen | bca |

| 8 | Adarsh | bfd |

| 8 | Adarsh | bca |

| 9 | Teena | bfd |

| 9 | Teena | bca |

+-------+---------+----------+

18 rows in set (0.00 sec)

mysql> select empId, empName, deptName, deptLocation from employee FULL JOIN department ON department.deptName IN ('bca', 'bfd', 'btech');

+-------+---------+----------+--------------+

| empId | empName | deptName | deptLocation |

+-------+---------+----------+--------------+

| 1 | Amit | btech | SixthFloor |

| 1 | Amit | bfd | ThirdFloor |

| 1 | Amit | bca | SecondFloor |

| 2 | Rohan | btech | SixthFloor |

| 2 | Rohan | bfd | ThirdFloor |

| 2 | Rohan | bca | SecondFloor |

| 3 | Sham | btech | SixthFloor |

| 3 | Sham | bfd | ThirdFloor |

| 3 | Sham | bca | SecondFloor |

| 4 | Riya | btech | SixthFloor |

| 4 | Riya | bfd | ThirdFloor |

| 4 | Riya | bca | SecondFloor |

| 5 | Harman | btech | SixthFloor |

| 5 | Harman | bfd | ThirdFloor |

| 5 | Harman | bca | SecondFloor |

| 6 | Parth | btech | SixthFloor |

| 6 | Parth | bfd | ThirdFloor |

| 6 | Parth | bca | SecondFloor |

| 7 | Naveen | btech | SixthFloor |

| 7 | Naveen | bfd | ThirdFloor |

| 7 | Naveen | bca | SecondFloor |

| 8 | Adarsh | btech | SixthFloor |

| 8 | Adarsh | bfd | ThirdFloor |

| 8 | Adarsh | bca | SecondFloor |

| 9 | Teena | btech | SixthFloor |

| 9 | Teena | bfd | ThirdFloor |

| 9 | Teena | bca | SecondFloor |

+-------+---------+----------+--------------+

27 rows in set (0.00 sec)

mysql>