Joins : A Join enables you to retrieve records from two (or more) logically related tables in a single result set.

1 .Inner Join

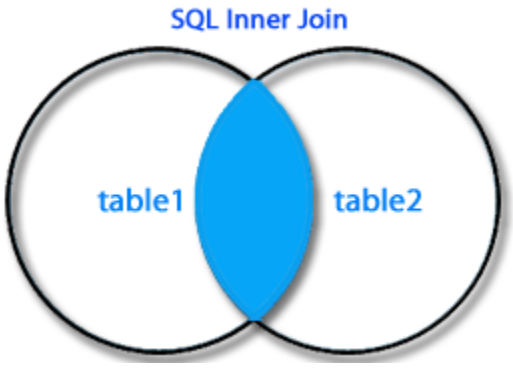

Table : employee1

id	name
1	rohit
2	aman
3	harshit
4	kaya
5	maya
6	amit
7	sumit

Table : employee2

id	email
1	rohit@gmail.com
2	aman@gmail.com
3	harshit@gmail.com
4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	name	email
1	rohit	rohit@gmail.com
2	aman	aman@gmail.com
3	harshit	harshit@gmail.com
4	kaya	kaya@gmail.com
5	maya	maya@gmail.com
6	amit	amit@gmail.com

Select employee1.id, employee1.name, employee2.email from employee1 inner join employee2 on employee1.id = employee2.id;

Select employee1.id, employee1.name, employee2.email from employee1 inner join employee2 using(id);

Select e1.id, e1.name, e2.email from employee1 e1 inner join employee2 e2 on e1.id = e2.id;

Select e1.id, e1.name, e2.email from employee1 e1 inner join employee2 e2 using(id);

2. Left Join (all records of left table and common record of right table)

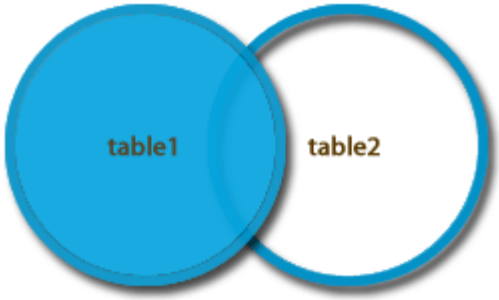

Table : employee1

id	name
1	rohit
2	aman
3	harshit
4	kaya
5	maya
6	amit
7	sumit

Table : employee2

id	email
1	rohit@gmail.com
2	aman@gmail.com
3	harshit@gmail.com
4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	name	email
1	rohit	rohit@gmail.com
2	aman	aman@gmail.com
3	harshit	harshit@gmail.com
4	kaya	kaya@gmail.com
5	maya	maya@gmail.com
6	amit	amit@gmail.com
7	sumit	NULL

Select e1.id, e1.name, e2.email from employee1 e1 left join employee2 e2 on e1.id = e2.id;

3 Left Join(all records that is only in left table)

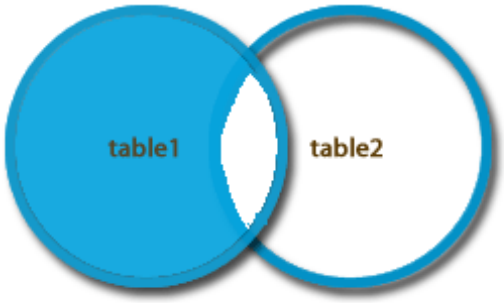

Table : employee1

id	name
1	rohit
2	aman
3	harshit
4	kaya
5	maya
6	amit
7	sumit

Table : employee2

id	email
1	rohit@gmail.com
2	aman@gmail.com
3	harshit@gmail.com
4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	name
7	sumit

Select e1.id, e1.name from employee1 e1 left join employee2 e2 on e1.id = e2.id
where e2.email is null;

4 Right Join (all records of Right table and common record of Left table)

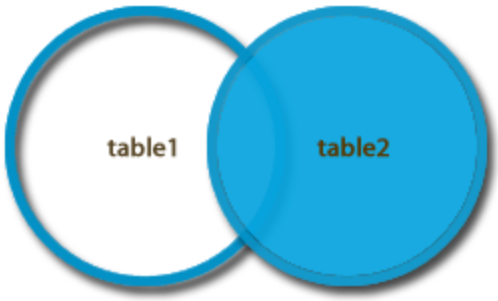

Table : employee1

id	name
1	rohit
2	aman
3	harshit
4	kaya
5	maya
6	amit
7	sumit

Table : employee2

id	email
1	rohit@gmail.com
2	aman@gmail.com
3	harshit@gmail.com
4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	name	email
2	aman	aman@gmail.com
6	amit	amit@gmail.com
3	harshit	harshit@gmail.com
4	kaya	kaya@gmail.com
5	maya	maya@gmail.com
1	rohit	rohit@gmail.com
NULL	NULL	sudhir@gmail.com

Select e1.id, e1.name, e2.email from employee1 e1 right join employee2 e2 on e1.id = e2.id;

5 Right Join (all records that is only in Right table)

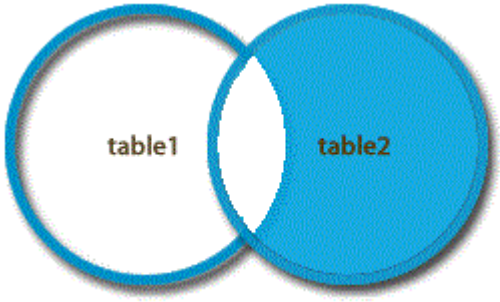

Table : employee1

id	name
1	rohit
2	aman
3	harshit
4	kaya
5	maya
6	amit
7	sumit

Table : employee2

id	email
1	rohit@gmail.com
2	aman@gmail.com
3	harshit@gmail.com
4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	email
8	sudhir@gmail.com

Select e2.id, e2.email from employee1 e1 right join employee2 e2 on e1.id = e2.id where e2.name is null;

6 Outer Join (Show all record of both tables except common records)

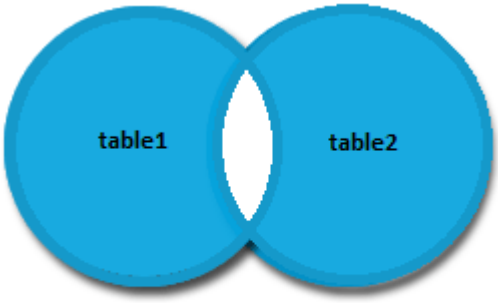

Table : employee1

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4	kaya
5	maya
6	amit
7	sumit

Table : employee2

id	email
1	rohit@gmail.com
2	aman@gmail.com
3	harshit@gmail.com
4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	name	email
7	sumit	NULL
8	NULL	sudhir@gmail.com

Select e1.id, e1.name, e2.email from employee1 e1 left join employee2 e2 on e1.id = e2.id where e2.id is null union Select e2.id, e1.name, e2.email from employee1 e1 right join employee2 e2 on e1.id = e2.id where e1.id is null;

7 Full Outer Join (Show All Record of Both Tables)

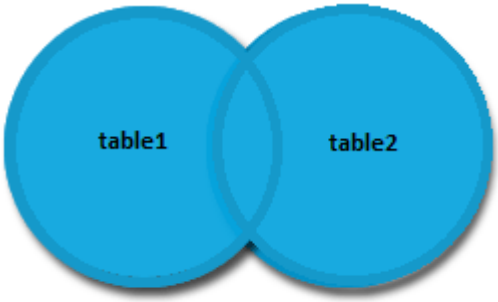

Table : employee1

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Table : employee2

id	email
1	rohit@gmail.com
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4	kaya@gmail.com
5	maya@gmail.com
6	amit@gmail.com
8	sudhir@gmail.com

id	name	email
1	rohit	rohit@gmail.com
2	aman	aman@gmail.com
3	harshit	harshit@gmail.com
4	kaya	kaya@gmail.com
5	maya	maya@gmail.com
6	amit	amit@gmail.com
7	sumit	NULL
8	NULL	sudhir@gmail.com

Select e1.id, e1.name, e2.email from employee1 e1 left join employee2 e2 on e1.id = e2.id union select e2.id, e1.name, e2.email from employee1 e1 right join employee2 e2 on e1.id = e2.id ;

UNION

Table : HR

id	name
1	A
2	B
3	C

Table : ACC

id	name	city
3	C	delhi
4	D	noida
5	E	Delhi
6	F	Delhi
7	G	Noida

id	name
1	A
2	B
3	C
4	D
5	E
6	F
7	G

Select id, name from hr union select id, name from acc;

UNION ALL

Table : HR

id	name
1	A
2	B
3	C

Table : ACC

id	name	city
3	C	delhi
4	D	noida
5	E	Delhi
6	F	Delhi
7	G	Noida

id	name
1	A
2	B
3	C
4	D
5	E
6	F
7	G

Select id, name from hr union all select id, name from acc;

Distinct (Remove Duplicacy)

```
select * from acc;
```

id	name	city
3	C	delhi
4	D	noida
5	E	Delhi
6	F	Delhi
7	G	Noida

```
select city from acc;
```

city
delhi
noida
Delhi
Delhi
Noida

```
select distinct city from acc;
```

city
delhi
noida

Highest Salary and subquery

```
select * from user;
```

id	name	salary
1	A	35000
2	B	45000
3	C	28000
4	D	35000
5	E	55000
6	F	28000

```
select max(salary) from user;
```

max(salary)
55000

Aliases

```
select max(salary) as highest_salary from user;
```

highest_salary
55000

Sub Query

```
select * from user where salary = (select max(salary) from user);
```

id	name	salary
5	E	55000

```
select * from user;
```

id	name	salary
1	A	35000
2	B	45000
3	C	28000
4	D	35000
5	E	55000
6	F	28000

select max(salary) as 2nd_highest_salary from user where salary < (select max(salary) from user);

2nd_highest_salary
45000

```
MariaDB [2pm]> select * from user limit 2;
```

id	name	salary
1	A	35000
2	B	45000

```
MariaDB [2pm]> select * from user limit 2,1;
```

id	name	salary
3	C	28000

```
MariaDB [2pm]> select salary from user order by salary desc;
```

salary
55000
45000
35000
35000
28000
28000

```
MariaDB [2pm]> select distinct salary from user order by salary desc;
```

salary
55000
45000
35000
28000

select distinct salary as 4th_highest_salary from user order by salary desc limit 3,1;

4th_highest_salary
28000

Group By and Having Clause

```
MariaDB [2pm]> select * from emp;
+----+------+------+
| id | name | dept |
+----+------+------+
|  1 | a    | it   |
|  2 | b    | it   |
|  3 | c    | acc  |
|  4 | d    | it   |
|  5 | e    | acc  |
|  6 | f    | hr   |
|  7 | g    | acc  |
+----+------+------+
```

```
+------+----------------+
| dept | total_employee |
+------+----------------+
| acc  |              3 |
| hr   |              1 |
| it   |              3 |
+------+----------------+
```

select dept, count(name) as total_employee from emp group by dept having count(name) > 1;

```
+------+----------------+
| dept | total_employee |
+------+----------------+
| acc  |              3 |
| it   |              3 |
+------+----------------+
```