

# 03. Multi Table

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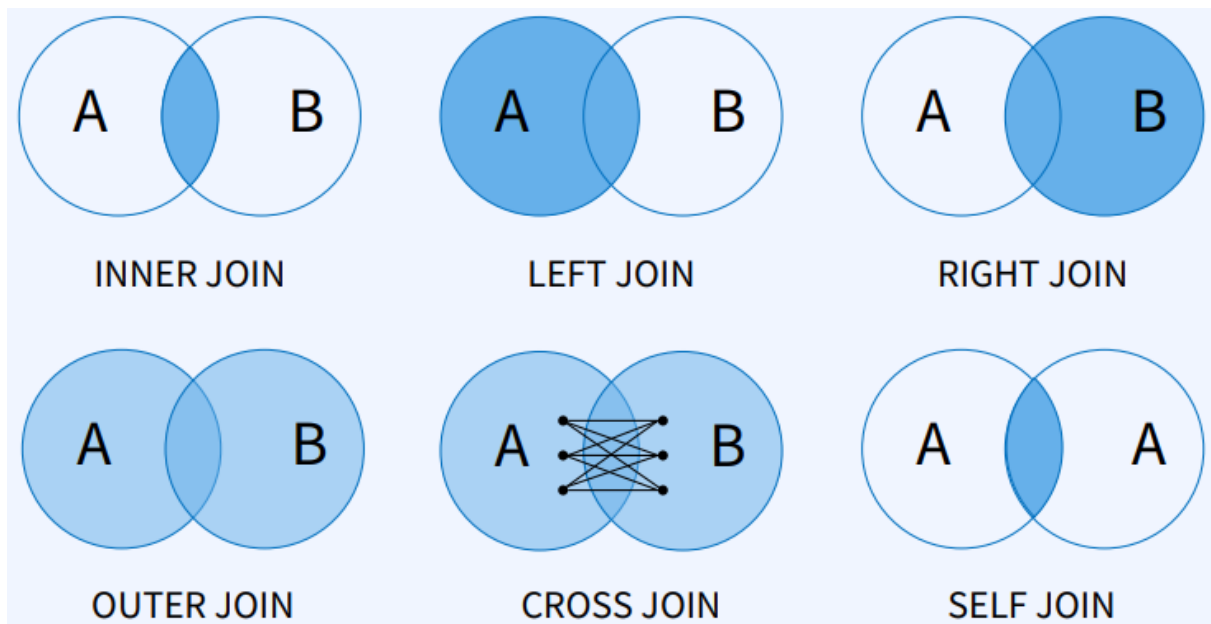
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## [Join]



### ▼ Example

```
DROP DATABASE IF EXISTS pokemon;  
CREATE DATABASE pokemon;  
USE pokemon;  
CREATE TABLE mypokemon (
```

```

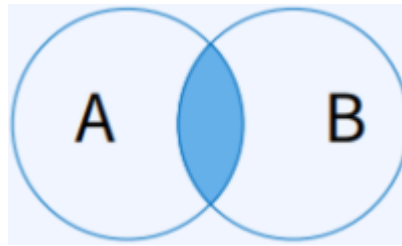
        number INT,
        name VARCHAR(20),
        type VARCHAR(10)
    );
INSERT INTO mypokemon (number, name, type)
VALUES (10, 'caterpie', 'bug'),
       (25, 'pikachu', 'electric'),
       (26, 'raichu', 'electric'),
       (133, 'eevee', 'normal'),
       (152, 'chikoirita', 'grass');
CREATE TABLE ability (
    number INT,
    height FLOAT,
    weight FLOAT,
    attack INT,
    defense INT,
    speed int
);
INSERT INTO ability (number, height, weight, attack, defense, speed)
VALUES (10, 0.3, 2.9, 30, 35, 45),
       (25, 0.4, 6, 55, 40, 90),
       (125, 1.1, 30, 83, 57, 105),
       (133, 0.3, 6.5, 55, 50, 55),
       (137, 0.8, 36.5, 60, 70, 40),
       (152, 0.9, 6.4, 49, 65, 45),
       (153, 1.2, 15.8, 62, 80, 60),
       (172, 0.3, 2, 40, 15, 60),
       (470, 1, 25.5, 110, 130, 95);

```

	number	name	type		number	height	weight	attack	defense	speed
▶	10	caterpie	bug	→	10	0.3	2.9	30	35	45
	25	pikachu	electric	→	25	0.4	6	55	40	90
	26	raichu	electric		125	1.1	30	83	57	105
	133	eevee	normal	→	133	0.3	6.5	55	50	55
	152	chikoirita	grass	→	137	0.8	36.5	60	70	40
					152	0.9	6.4	49	65	45
					153	1.2	15.8	62	80	60
					172	0.3	2	40	15	60
					470	1	25.5	110	130	95

## 01. Inner Join

### ▼ Grammar



```
SELECT [컬럼명]
FROM [테이블 A명]
INNER JOIN [테이블 B명]
ON [테이블A명].[컬럼명] = [테이블B명].[컬럼명]
WHERE 조건식;
```

### ▼ Example

	number	name	type
▶	10	caterpie	bug
	25	pikachu	electric
	26	raichu	electric
	133	eevee	normal
	152	chikoirita	grass

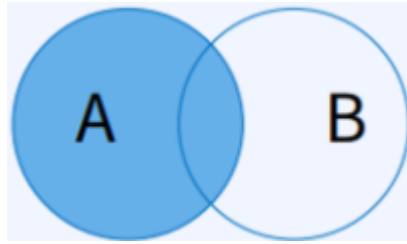
```
SELECT *
FROM pokemon.mypokemon
INNER JOIN pokemon.ability
ON pokemon.mypokemon.number = pokemon.ability.number;
```

	number	name	type	number	height	weight	attack	defense	speed
▶	10	caterpie	bug	10	0.3	2.9	30	35	45
	25	pikachu	electric	25	0.4	6	55	40	90
	133	eevee	normal	133	0.3	6.5	55	50	55
	152	chikoirita	grass	152	0.9	6.4	49	65	45

## 02. Left & Right Join

### ▼ Left Join

#### ▼ Grammar



```
SELECT [컬럼명]
FROM [테이블 A명]
LEFT JOIN [테이블 B명]
ON [테이블A명].[컬럼명] = [테이블B명].[컬럼명]
WHERE 조건식;
```

#### ▼ Example

```
SELECT *
FROM pokemon.mypokemon
LEFT JOIN pokemon.ability
ON pokemon.mypokemon.number = pokemon.ability.number;
```

	number	name	type	number	height	weight	attack	defense	speed
▶	10	caterpie	bug	10	0.3	2.9	30	35	45
	25	pikachu	electric	25	0.4	6	55	40	90
	26	raichu	electric	NULL	NULL	NULL	NULL	NULL	NULL
	133	eevee	normal	133	0.3	6.5	55	50	55
	152	chikoirita	grass	152	0.9	6.4	49	65	45

#### ▼ Right Join

##### ▼ Grammer



```
SELECT [컬럼명]
FROM [테이블 A명]
RIGHTA JOIN [테이블 B명]
```

```
ON [테이블A명].[컬럼명] = [테이블B명].[컬럼명]
WHERE 조건식;
```

#### ▼ Example

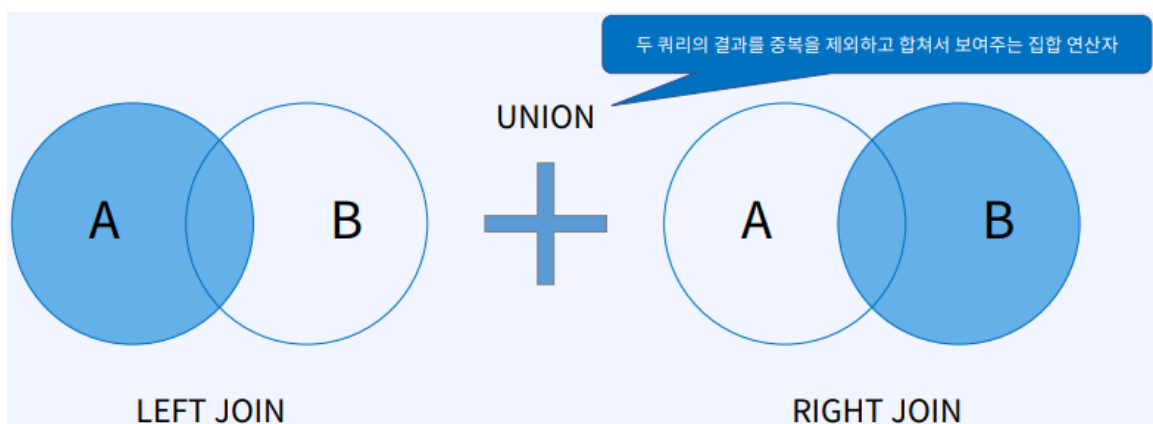
```
SELECT *
FROM pokemon.mypokemon
RIGHT JOIN pokemon.ability
ON pokemon.mypokemon.number = pokemon.ability.number;
```

	number	name	type	number	height	weight	attack	defense	speed
▶	10	caterpie	bug	10	0.3	2.9	30	35	45
	25	pikachu	electric	25	0.4	6	55	40	90
	NULL	NULL	NULL	125	1.1	30	83	57	105
	133	eevee	normal	133	0.3	6.5	55	50	55
	NULL	NULL	NULL	137	0.8	36.5	60	70	40
	152	chikoirita	grass	152	0.9	6.4	49	65	45
	NULL	NULL	NULL	153	1.2	15.8	62	80	60
	NULL	NULL	NULL	172	0.3	2	40	15	60
	NULL	NULL	NULL	470	1	25.5	110	130	95

### 03. Outer Join

| MySQL에는 Outer Join 키워드가 없다.

#### ▼ Grammer



```
SELECT [컬럼명]
FROM [테이블 A명]
LEFT JOIN [테이블 B명]
```

```

ON [테이블A명].[컬럼명] = [테이블B명].[컬럼명]
UNION
SELECT [컬럼명]
FROM [테이블 A명]
RIGHT JOIN [테이블 B명]
ON [테이블A명].[컬럼명] = [테이블B명].[컬럼명];

```

#### ▼ Example

```

SELECT *
FROM pokemon.mypokemon
LEFT JOIN pokemon.ability
ON pokemon.mypokemon.number = pokemon.ability.number
UNION
SELECT *
FROM pokemon.mypokemon
RIGHT JOIN pokemon.ability
ON pokemon.mypokemon.number = pokemon.ability.number;

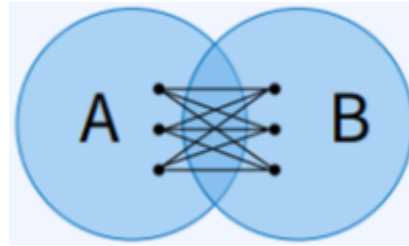
```

	number	name	type	number	height	weight	attack	defense	speed
▶	10	caterpie	bug	10	0.3	2.9	30	35	45
	25	pikachu	electric	25	0.4	6	55	40	90
	26	raichu	electric	NULL	NULL	NULL	NULL	NULL	NULL
	133	eevee	normal	133	0.3	6.5	55	50	55
	152	chikoirita	grass	152	0.9	6.4	49	65	45
	NULL	NULL	NULL	125	1.1	30	83	57	105
	NULL	NULL	NULL	137	0.8	36.5	60	70	40
	NULL	NULL	NULL	153	1.2	15.8	62	80	60
	NULL	NULL	NULL	172	0.3	2	40	15	60
	NULL	NULL	NULL	470	1	25.5	110	130	95

## 04. Cross Join

| On 키워드 생략, 모든 경우의 수 생성

#### ▼ Grammer



```
SELECT [컬럼명]
FROM [테이블 A명]
CROSS JOIN [테이블 B명]
WHERE 조건식;
```

#### ▼ Example

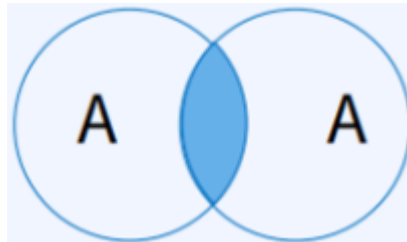
```
SELECT *
FROM pokemon.mypokemon
CROSS JOIN pokemon.ability;
```

	number	name	type	number	height	weight	attack	defense	speed
▶	10	caterpie	bug	10	0.3	2.9	30	35	45
	10	caterpie	bug	25	0.4	6	55	40	90
	10	caterpie	bug	125	1.1	30	83	57	105
	10	caterpie	bug	133	0.3	6.5	55	50	55
	10	caterpie	bug	137	0.8	36.5	60	70	40
	10	caterpie	bug	152	0.9	6.4	49	65	45
	10	caterpie	bug	153	1.2	15.8	62	80	60
	10	caterpie	bug	172	0.3	2	40	15	60
	10	caterpie	bug	470	1	25.5	110	130	95
	25	pikachu	electric	10	0.3	2.9	30	35	45
	25	pikachu	electric	25	0.4	6	55	40	90
	25	pikachu	electric	125	1.1	30	83	57	105
	25	pikachu	electric	133	0.3	6.5	55	50	55
	25	pikachu	electric	137	0.8	36.5	60	70	40
	25	pikachu	electric	152	0.9	6.4	49	65	45
	25	pikachu	electric	153	1.2	15.8	62	80	60
	25	pikachu	electric	172	0.3	2	40	15	60
	25	pikachu	electric	470	1	25.5	110	130	95
	26	raichu	electric	10	0.3	2.9	30	35	45
	26	raichu	electric	25	0.4	6	55	40	90
	26	raichu	electric	125	1.1	30	83	57	105
	26	raichu	electric	133	0.3	6.5	55	50	55
	26	raichu	electric	137	0.8	36.5	60	70	40
	26	raichu	electric	152	0.9	6.4	49	65	45
	26	raichu	electric	153	1.2	15.8	62	80	60
	26	raichu	electric	172	0.3	2	40	15	60
	26	raichu	electric	470	1	25.5	110	130	95

## 05. Self Join

### | 동일한 테이블끼리 조인

#### ▼ Grammer



```
SELECT [컬럼명]
FROM [테이블 A명] AS T1
INNER JOIN [테이블 A명] AS T2
ON T1.[컬럼 A명] = t2.[컬럼 B명]
WHERE 조건식;
```

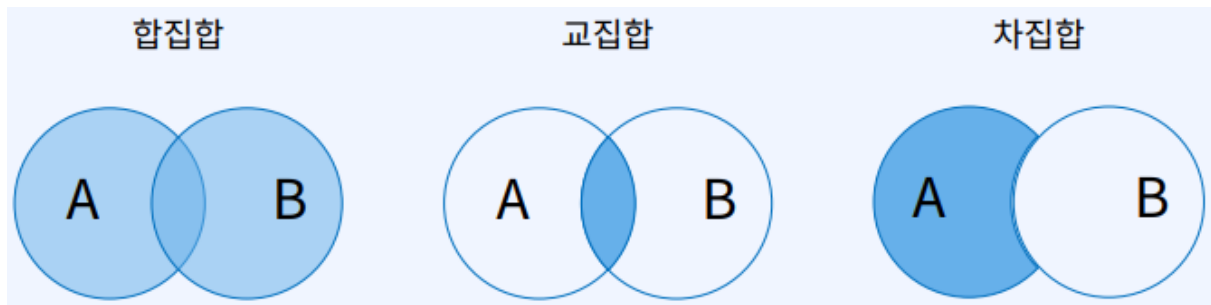
#### ▼ Example

```
SELECT *
FROM pokemon.mypokemon as T1
INNER JOIN pokemon.mypokemon as T2
on T1.number = t2.number;
```

	number	name	type	number	name	type
▶	10	caterpie	bug	10	caterpie	bug
	25	pikachu	electric	25	pikachu	electric
	26	raichu	electric	26	raichu	electric
	133	eevee	normal	133	eevee	normal
	152	chikoirita	grass	152	chikoirita	grass

## [Set]





▼ Example

```
# 실습 데이터
DROP DATABASE IF EXISTS pokemon;
CREATE DATABASE pokemon;
USE pokemon;
CREATE TABLE mypokemon (
    number int,
    name varchar(20),
    type varchar(10),
    attack int,
    defense int
);
CREATE TABLE friendpokemon (
    number int,
    name varchar(20),
    type varchar(10),
    attack int,
    defense int
);
INSERT INTO mypokemon (number, name, type, attack, defense)
VALUES (10, 'caterpie', 'bug', 30, 35),
      (25, 'pikachu', 'electric', 55, 40),
      (26, 'raichu', 'electric', 90, 55),
      (133, 'eevee', 'normal', 55, 50),
      (152, 'chikoirita', 'grass', 49, 65);

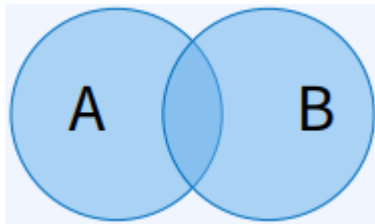
INSERT INTO friendpokemon (number, name, type, attack, defense)
VALUES (26, 'raichu', 'electric', 80, 60),
      (125, 'electabuzz', 'electric', 83, 57),
      (137, 'porygon', 'normal', 60, 70),
```

```
(153, 'bayleef', 'grass', 62, 80),
(172, 'pichu', 'electric', 40, 15),
(470, 'leafeon', 'grass', 110, 130);
```

	number	name	type	attack	defense
▶	10	caterpie	bug	30	35
	25	pikachu	electric	55	40
	26	raichu	electric	90	55
	133	eevee	normal	55	50
	152	chikoirita	grass	49	65

	number	name	type	attack	defense
▶	26	raichu	electric	80	60
	125	electabuzz	electric	83	57
	137	porygon	normal	60	70
	153	bayleef	grass	62	80
	172	pichu	electric	40	15
	470	leafeon	grass	110	130

## 01. Union & Union All



- Description
  - Union : 동일한 값 제외
    - Query UNION Query
  - Union All : 동일한 값 포함
    - Query UNION All Query

### ▼ Grammer

```
SELECT [컬럼명]
FROM [테이블 A명]
UNION or UNION ALL
SELECT [컬럼명]
FROM [테이블 B명]
```

### ▼ Example

```
SELECT name
FROM pokemon.mypokemon
UNION
SELECT name
FROM pokemon.friendpokemon
order by name;
```

	name
►	bayleef
	caterpie
	chikoirita
	eevee
	electabuzz
	leafeon
	pichu
	pikachu
	porygon
	raichu

```
SELECT name, attack + defense as ability
FROM pokemon.mypokemon
UNION
SELECT name, attack + defense as ability
FROM pokemon.friendpokemon
order by name;
```

	name	ability
►	bayleef	142
	caterpie	65
	chikoirita	114
	eevee	105
	electabuzz	140
	leafeon	240
	pichu	55
	pikachu	95
	porygon	130
	raichu	145
	raichu	140

```

SELECT name
FROM pokemon.mypokemon
UNION ALL
SELECT name
FROM pokemon.friendpokemon;

```

	name
►	bayleef
	caterpie
	chikoirita
	eevee
	electabuzz
	leafreon
	pichu
	pikachu
	porygon
	raichu
	raichu

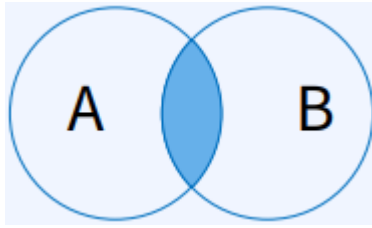
```

SELECT name, attack + defense as ability
FROM pokemon.mypokemon
UNION
SELECT name, attack + defense as ability
FROM pokemon.friendpokemon
order by name;

```

	name	ability
►	bayleef	142
	caterpie	65
	chikoirita	114
	eevee	105
	electabuzz	140
	leafreon	240
	pichu	55
	pikachu	95
	porygon	130
	raichu	145
	raichu	140

## 02. Intersection



#### ▼ Grammer

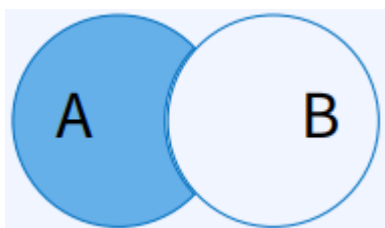
```
SELECT [컬럼명]
FROM [테이블 A명] AS T1
INNER JOIN [테이블 B명] AS T2
ON T1.[컬럼 1명] = T2.[컬럼 1명]
   AND T1.[컬럼 2명] = T2.[컬럼 2명]
   ...;
# 교집합 컬럼 전체 적용 필요
```

#### ▼ Example

```
SELECT T1.name
FROM pokemon.mypokemon as T1
INNER JOIN pokemon.friendpokemon as T2
ON T1.number = T2.number
   AND T1.name = T2.name;
```

	name
▶	raichu

### 03. Difference



#### ▼ Grammer

```
SELECT [컬럼명]
FROM [테이블 A명] AS T1
```

```

LEFT JOIN [테이블 B명] AS T2
ON T1.[컬럼 1명] = T2.[컬럼 1명]
   AND T1.[컬럼 2명] = T2.[컬럼 2명]
   ...
WHERE T2.[컬럼명] IS NULL
# T2가 Null인 경우가 T1에만 있는 데이터이다!

```

#### ▼ Example

```

SELECT *
FROM pokemon.mypokemon as T1
LEFT JOIN pokemon.friendpokemon as T2
ON T1.number = T2.number
   AND T1.name = T2.name
WHERE T2.name IS NULL;

```

	number	name	type	attack	defense	number	name	type	attack	defense
▶	10	caterpie	bug	30	35	NULL	NULL	NULL	NULL	NULL
	25	pikachu	electric	55	40	NULL	NULL	NULL	NULL	NULL
	133	eevee	normal	55	50	NULL	NULL	NULL	NULL	NULL
	152	chikorita	grass	49	65	NULL	NULL	NULL	NULL	NULL

#### ▼ WHERE 조건 제거 : 단순 LEFT JOIN

```

SELECT *
FROM pokemon.mypokemon as T1
LEFT JOIN pokemon.friendpokemon as T2
ON T1.number = T2.number
   AND T1.name = T2.name
;#WHERE T2.name IS NULL;

```

	number	name	type	attack	defense	number	name	type	attack	defense
▶	10	caterpie	bug	30	35	NULL	NULL	NULL	NULL	NULL
	25	pikachu	electric	55	40	NULL	NULL	NULL	NULL	NULL
	26	raichu	electric	90	55	26	raichu	electric	80	60
	133	eevee	normal	55	50	NULL	NULL	NULL	NULL	NULL
	152	chikorita	grass	49	65	NULL	NULL	NULL	NULL	NULL