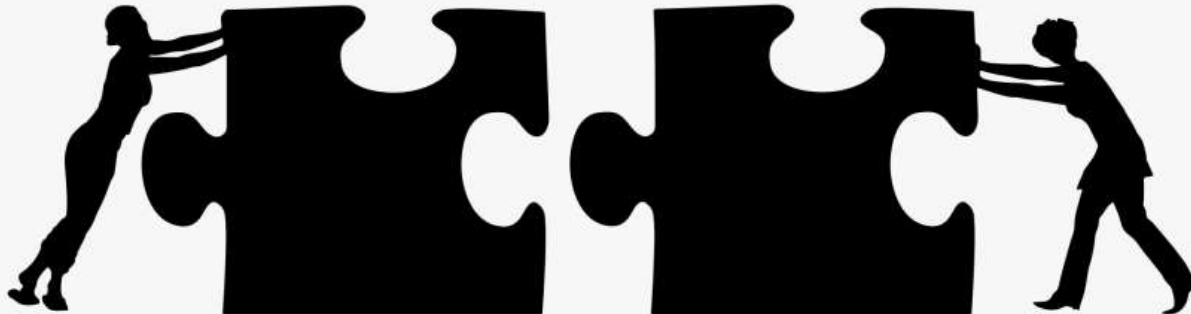# TOPICS IN JOIN

- **WHAT IS JOIN?**
- **USE OF JOIN**
- **JOIN TYPES**
- **WHICH JOIN TO USE**
- **JOIN SYNTAX**
- **EXAMPLES IN SQL**

SQL JOIN

- **JOIN** means to combine something.
- A **JOIN** clause is used to combine data from two or more tables, based on a related column between them
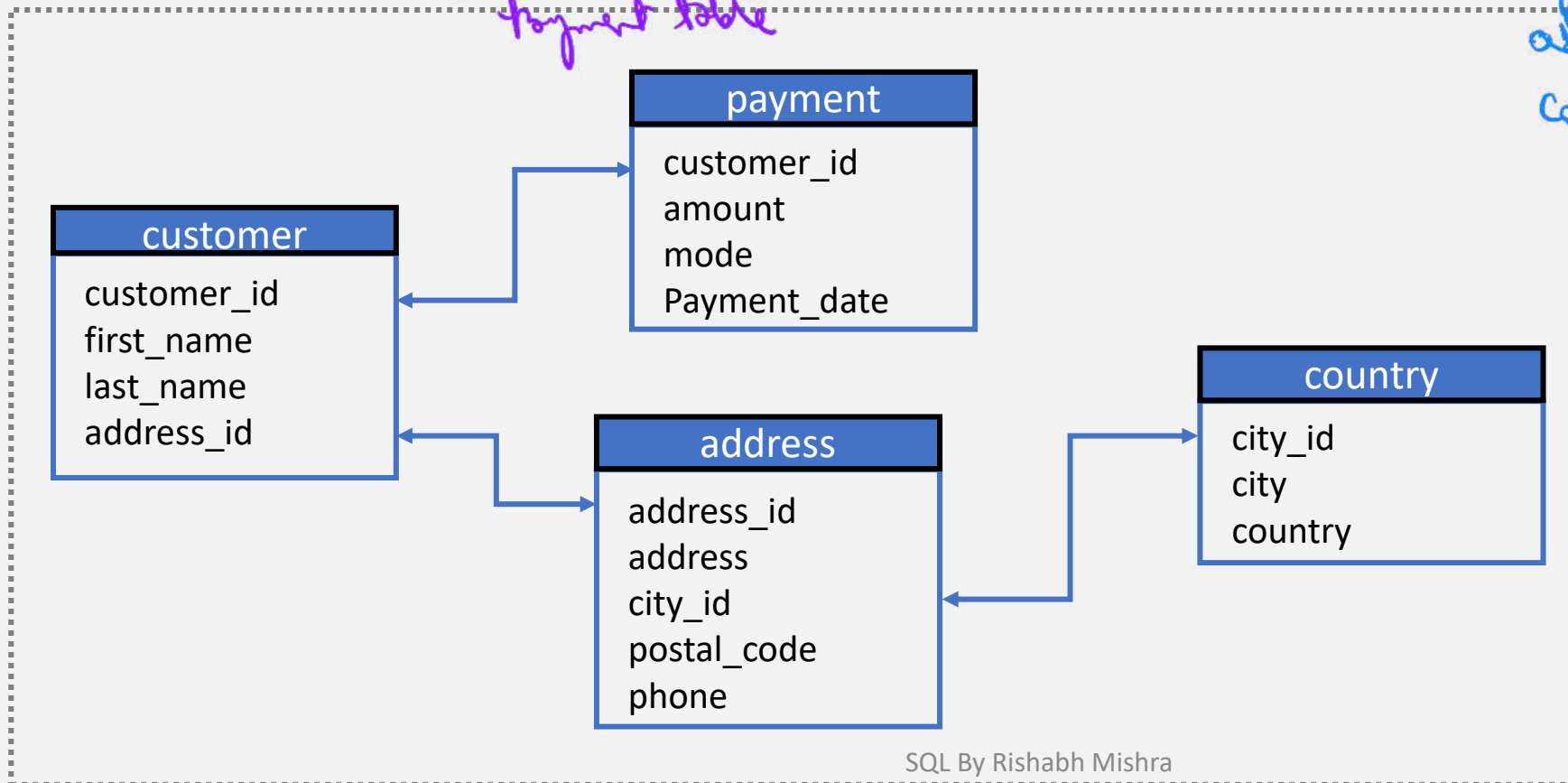- Let's understand the joins through an example:

JOIN Example

Question: How much amount was paid by customer 'Madan', what was mode and payment date?

(handwritten annotations: "from customer table", "payment table", "Here there are 4 tables : Customer table, Payment, address, Country", "Connected to each other through Common Column")

payment
- customer_id
- amount
- mode
- Payment_date

customer
- customer_id
- first_name
- last_name
- address_id

address
- address_id
- address
- city_id
- postal_code
- phone

country
- city_id
- city
- country

Database

JOIN Example

→ Customer table

customer_id [PK] bigint	first_name character varying (50)	last_name character varying (50)	address_id bigint
1	Mary	Smith	5
2	Madan	Mohan	6
3	Linda	Williams	7
4	Barbara	Jones	8
5	Elizabeth	Brown	9

→ Payment table

customer_id [PK] bigint	amount bigint	mode character varying (50)	payment_date date
1	60	Cash	2020-09-24
2	30	Credit Card	2020-04-27
3	90	Credit Card	2020-07-07
4	50	Debit Crad	2020-02-12
5	40	Mobile Payment	2020-11-20

Question: How much amount was paid by customer 'Madan', what was mode and payment date?

→ So, from first table, from name 'Madan' we get the ID, then record table, from id, we got amount, mode, date.
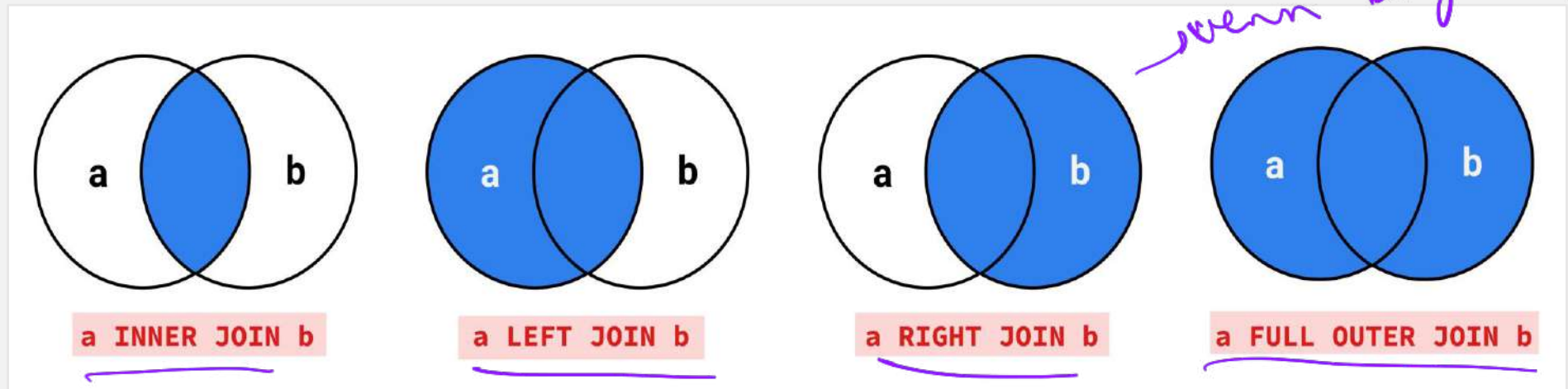
Answer: Amount = 30,
Mode = Credit Card,
Date = 2020-04-27

Here to join, both the tables, we so do it through customer - id

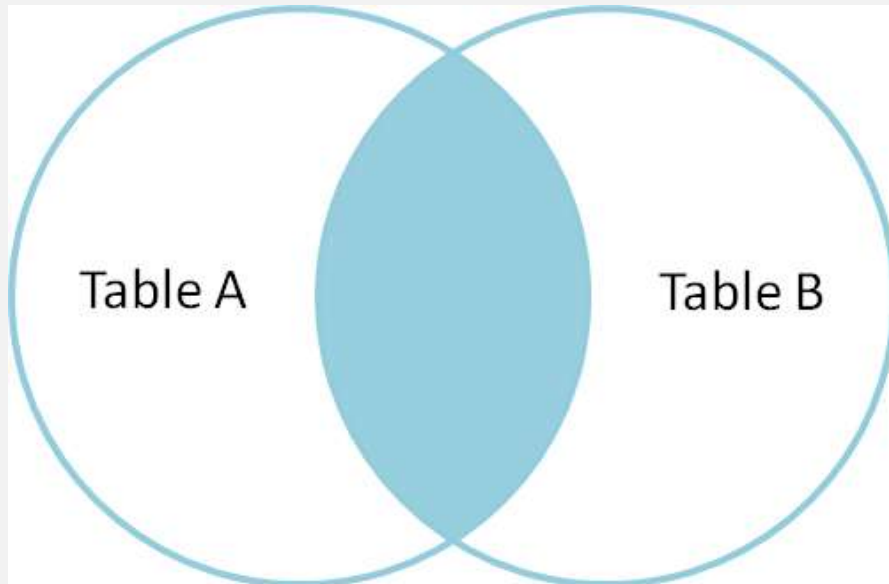# TYPES OF JOINS

- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- FULL JOIN

or Left outer Join
or Right outer Join
or Full Outer join

venn diagram

INNER JOIN

helps us to give common values in both the tables

- Returns records that have matching values in both tables
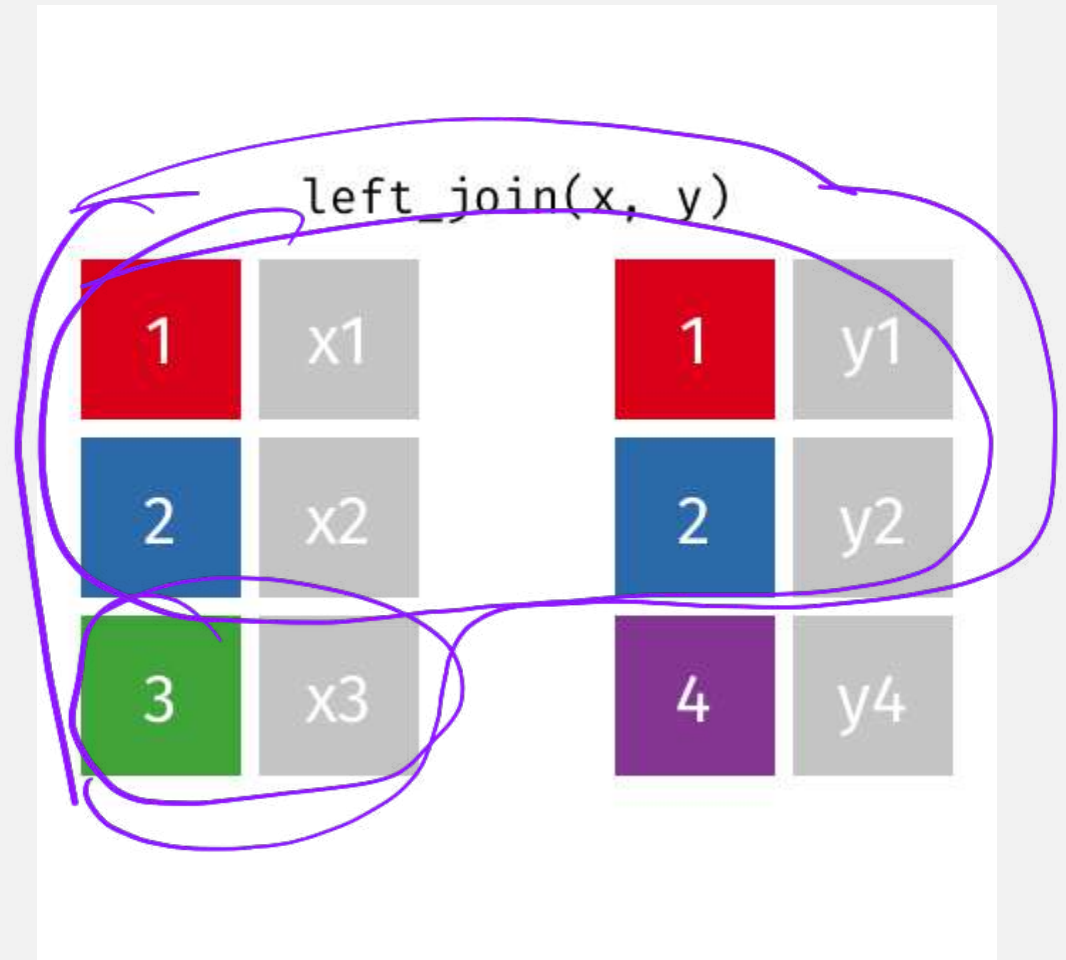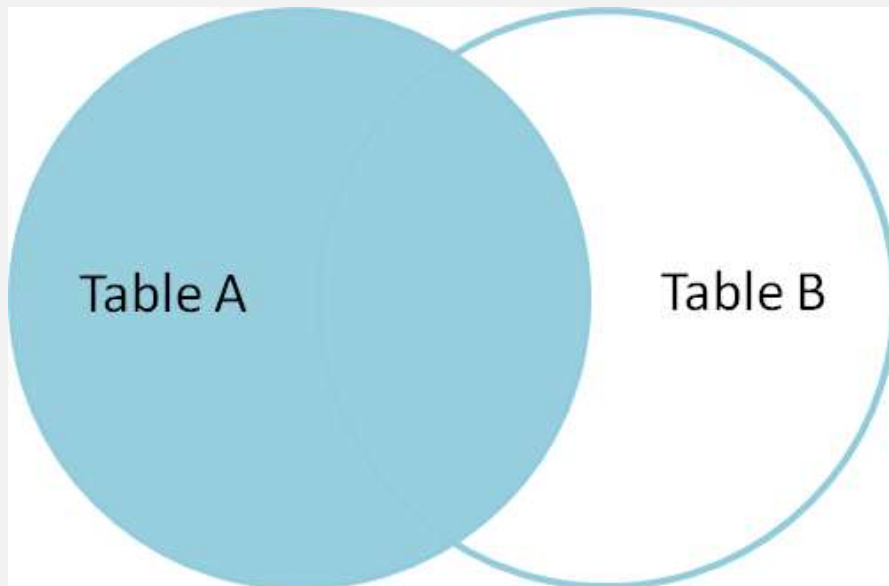

Table A

inner_join(x, y)

Table B

1	x1		1	y1
2	x2		2	y2
3	x3		4	y4

So, output will be 1,2 (since it is their in both the tables)

LEFT JOIN

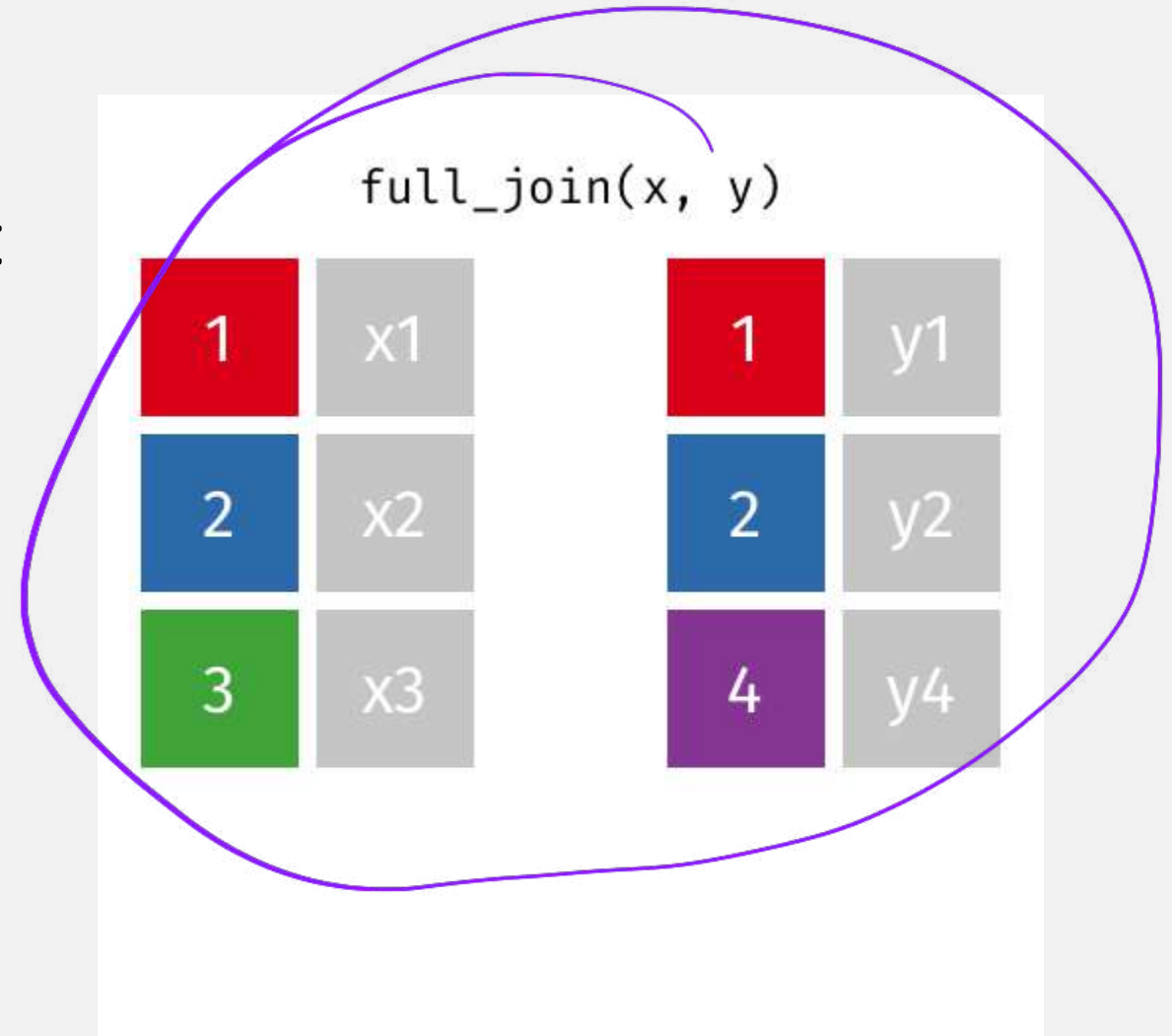- Returns all records from the left table, and the matched records from the right table
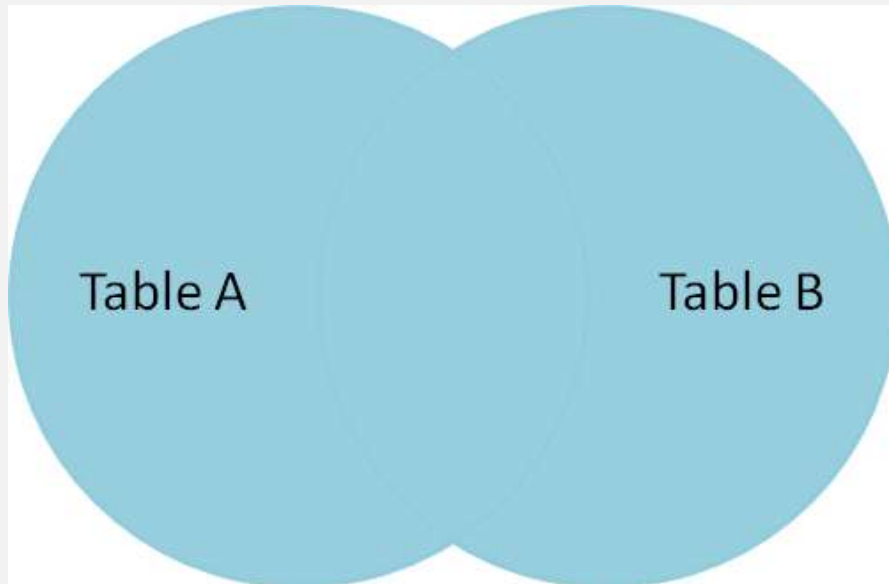
RIGHT JOIN

- Returns all records from the right table, and the matched records from the left table

FULL JOIN

- Returns all records when there is a match in either left or right table

Table A   Table B

full_join(x, y)

| 1 | x1 |
| 2 | x2 |
| 3 | x3 |

1	y1
2	y2
4	y4
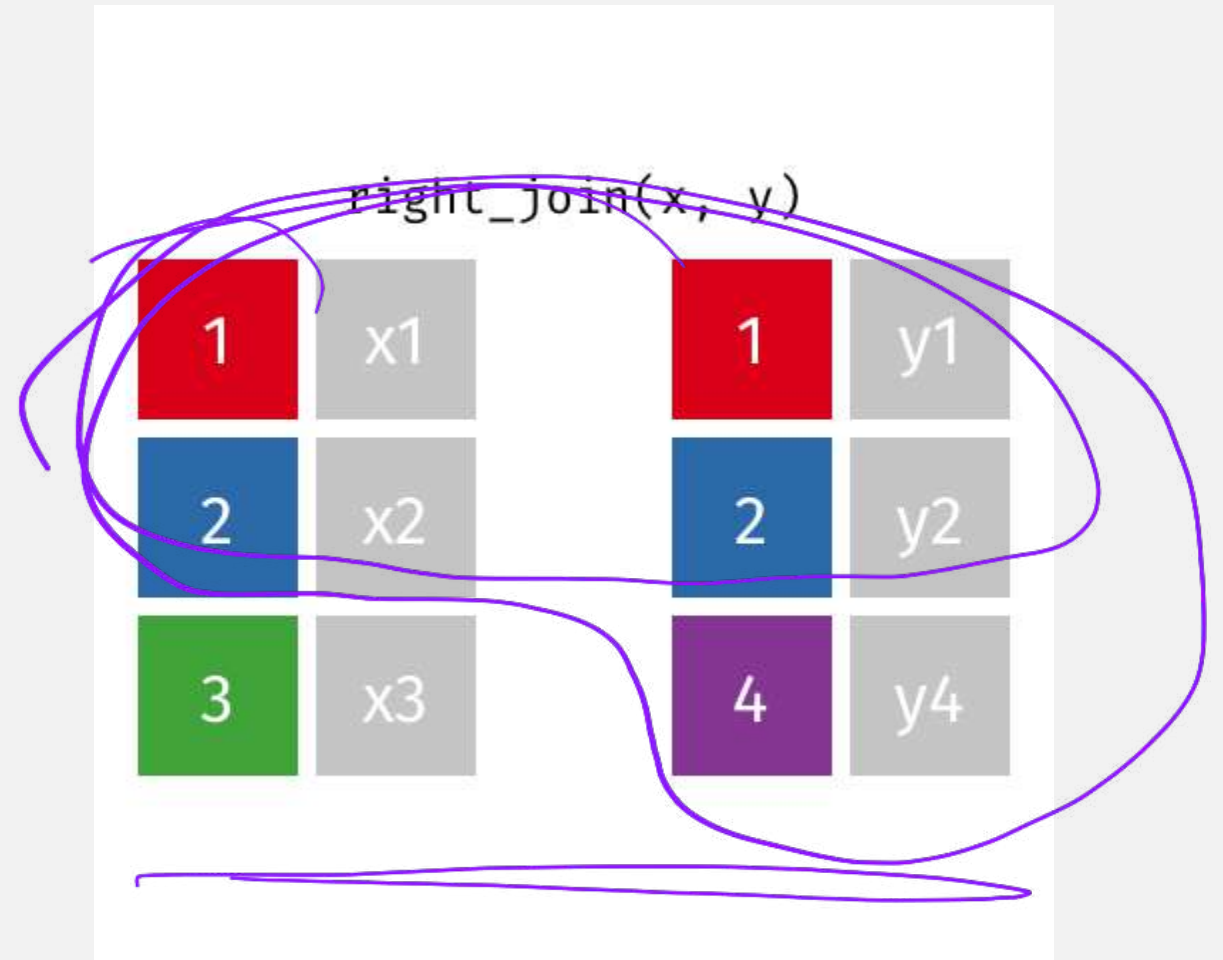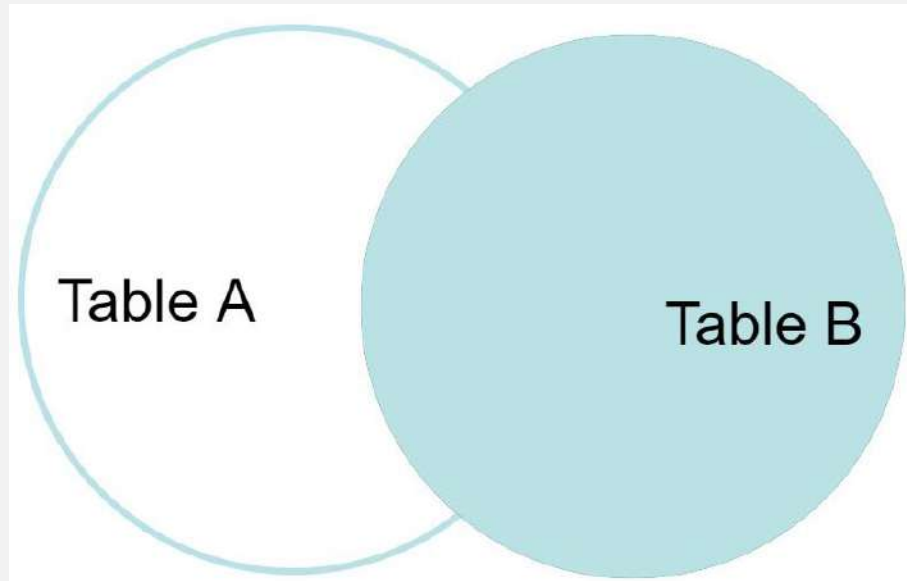
Which JOIN To Use

- **INNER JOIN:** Returns records that have matching values in both tables
- **LEFT JOIN:** Returns all records from the left table, and the matched records from the right table
- **RIGHT JOIN:** Returns all records from the right table, and the matched records from the left table
- **FULL JOIN:** Returns all records when there is a match in either left or right table
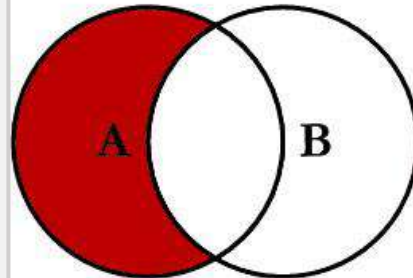

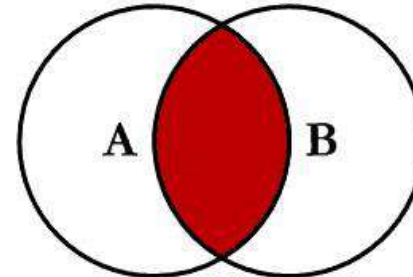a INNER JOIN b   a LEFT JOIN b   a RIGHT JOIN b   a FULL OUTER JOIN b
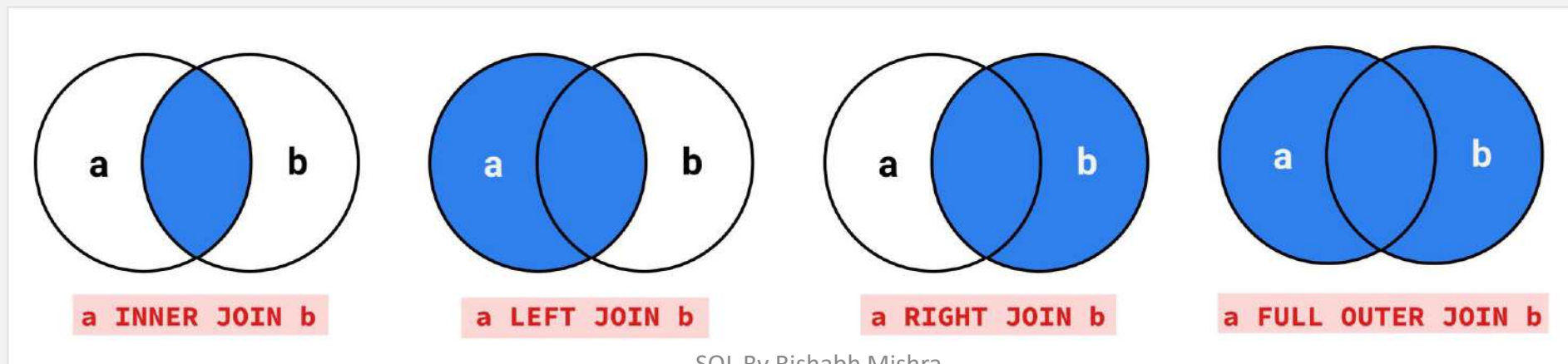
JOIN CHEAT SHEET

SQL JOINS
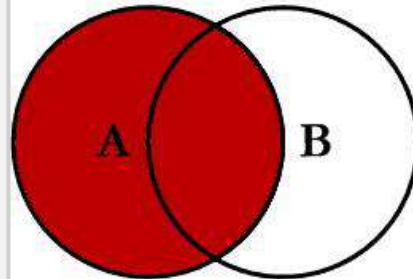
SELECT <select_list>
FROM TableA A
LEFT JOIN TableB B
ON A.Key = B.Key

SELECT <select_list>
FROM TableA A
RIGHT JOIN TableB B
ON A.Key = B.Key
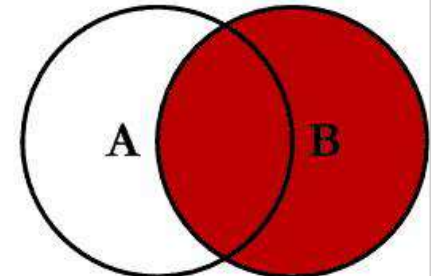
SELECT <select_list>
FROM TableA A
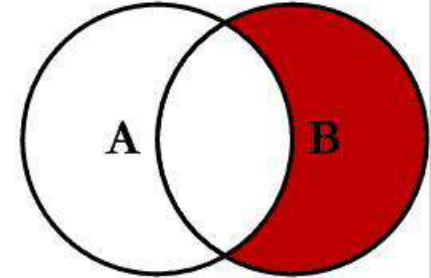INNER JOIN TableB B
ON A.Key = B.Key

SELECT <select_list>
FROM TableA A
LEFT JOIN TableB B
ON A.Key = B.Key
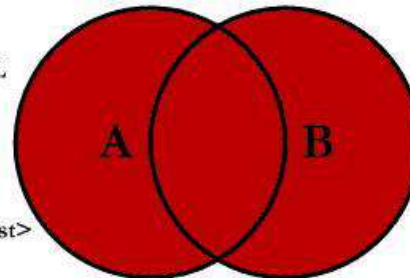WHERE B.Key IS NULL

SELECT <select_list>
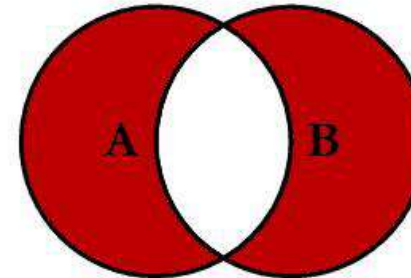FROM TableA A
RIGHT JOIN TableB B
ON A.Key = B.Key
WHERE A.Key IS NULL

SELECT <select_list>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.Key = B.Key

SELECT <select_list>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.Key = B.Key
WHERE A.Key IS NULL
OR B.Key IS NULL