

Basic Queries

```
-- filter your columns
SELECT col1, col2, col3, ... FROM table1
-- filter the rows
WHERE col4 = 1 AND col5 = 2
-- aggregate the data
GROUP by ...
-- limit aggregated data
HAVING count(*) > 1
-- order of the results
ORDER BY col2
```

Useful keywords for **SELECTS**:

DISTINCT - return unique results
BETWEEN a **AND** b - limit the range, the values can be numbers, text, or dates
LIKE - pattern search within the column text
IN (a, b, c) - check if the value is contained among given.

Data Modification

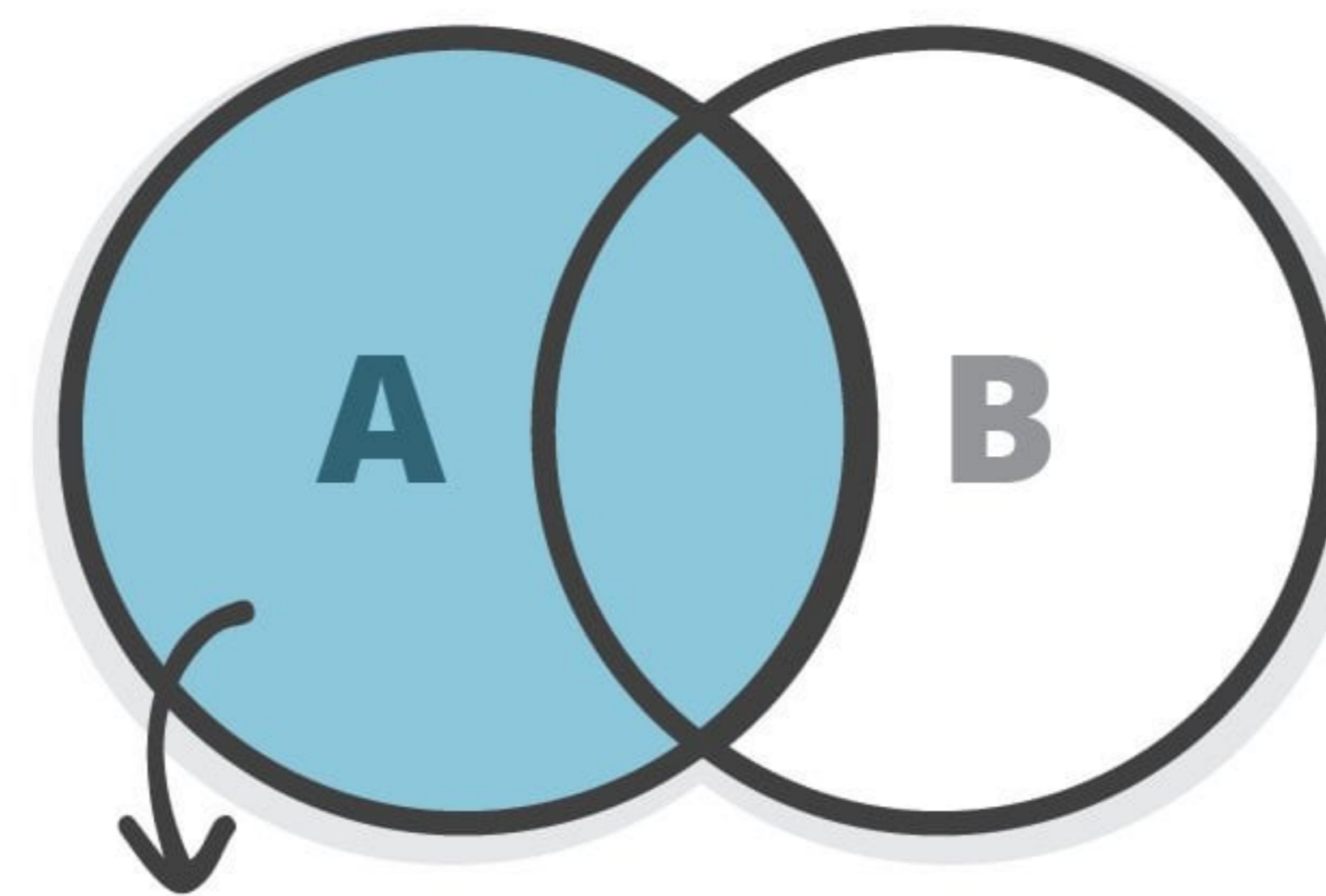
```
-- update specific data with the WHERE clause
UPDATE table1 SET col1 = 1 WHERE col2 = 2
-- insert values manually
INSERT INTO table1 (ID, FIRST_NAME, LAST_NAME)
VALUES (1, 'Rebel', 'Labs');
-- or by using the results of a query
INSERT INTO table1 (ID, FIRST_NAME, LAST_NAME)
SELECT id, last_name, first_name FROM table2
```

Views

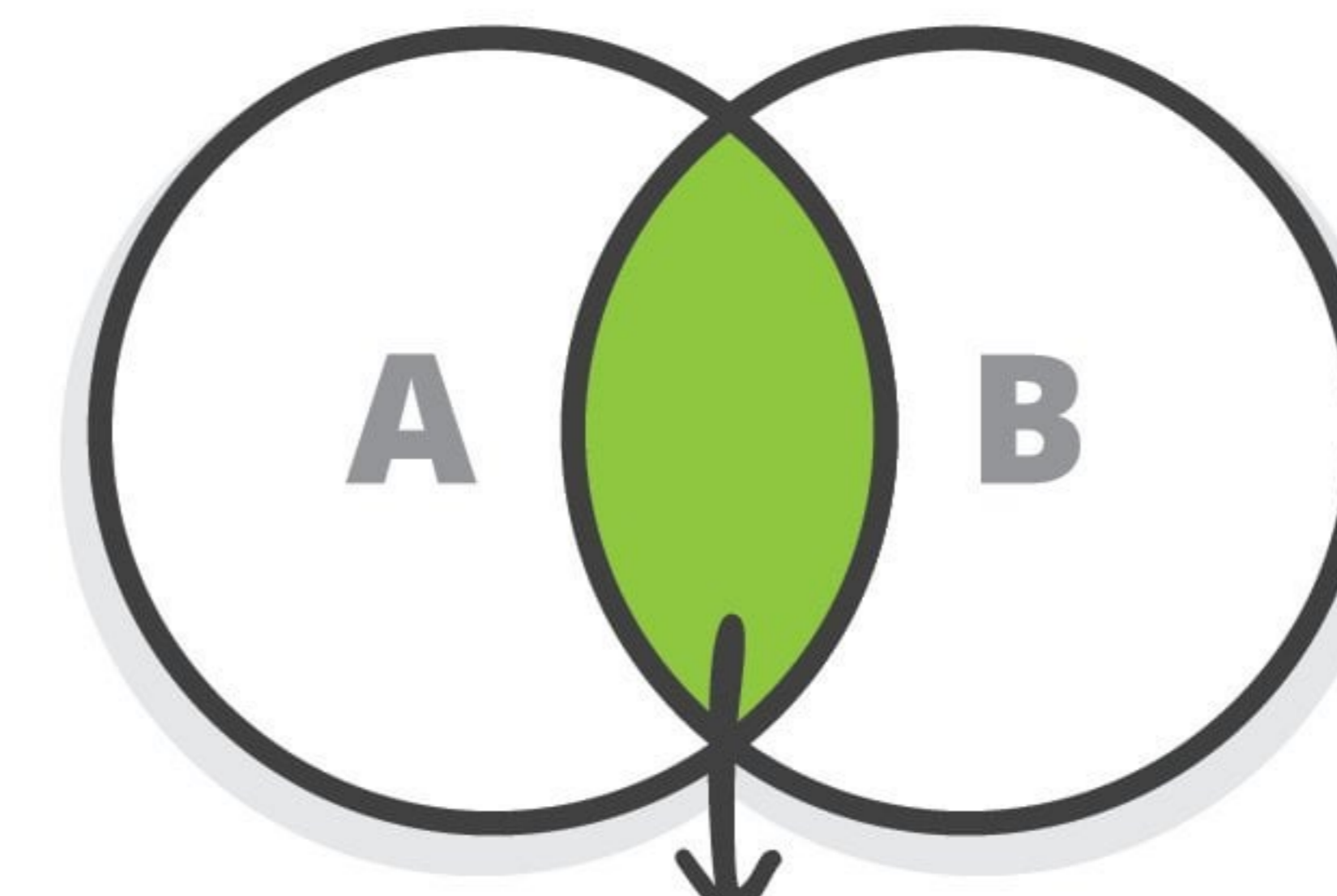
A **VIEW** is a virtual table, which is a result of a query. They can be used to create virtual tables of complex queries.

```
CREATE VIEW view1 AS
SELECT col1, col2
FROM table1
WHERE ...
```

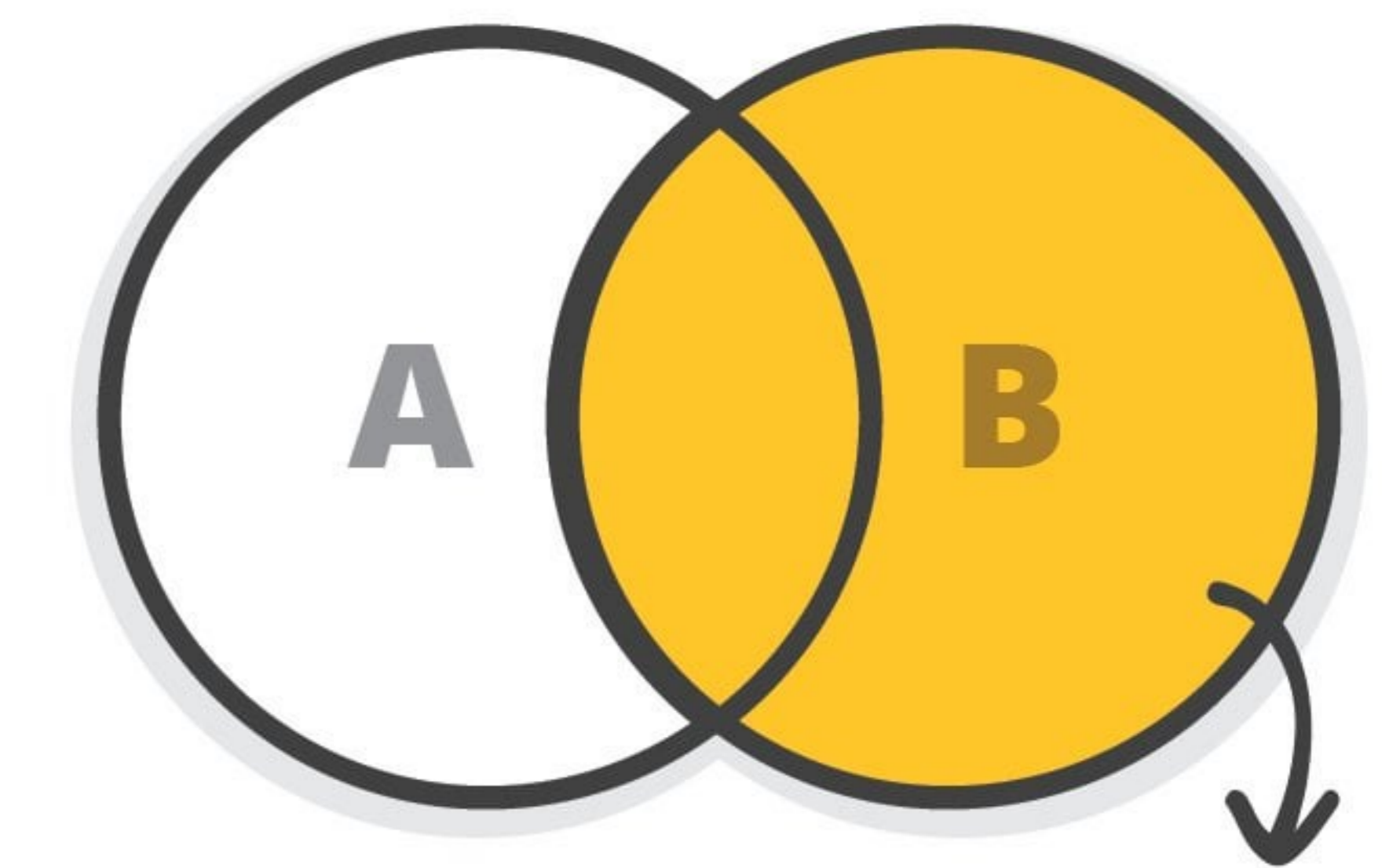
The Joy of JOINS



LEFT OUTER JOIN - all rows from table A, even if they do not exist in table B



INNER JOIN - fetch the results that exist in both tables



RIGHT OUTER JOIN - all rows from table B, even if they do not exist in table A

Updates on JOINed Queries

You can use **JOINS** in your **UPDATES**

```
UPDATE t1 SET a = 1
FROM table1 t1 JOIN table2 t2 ON t1.id = t2.t1_id
WHERE t1.col1 = 0 AND t2.col2 IS NULL;
```

NB! Use database specific syntax, it might be faster!

Semi JOINS

You can use subqueries instead of **JOINS**:

```
SELECT col1, col2 FROM table1 WHERE id IN
(SELECT t1_id FROM table2 WHERE date >
CURRENT_TIMESTAMP)
```

Indexes

If you query by a column, index it!

```
CREATE INDEX index1 ON table1 (col1)
```

Don't forget:

Avoid overlapping indexes

Avoid indexing on too many columns

Indexes can speed up **DELETE** and **UPDATE** operations

Useful Utility Functions

```
-- convert strings to dates:
TO_DATE (Oracle, PostgreSQL), STR_TO_DATE (MySQL)
-- return the first non-NULL argument:
COALESCE (col1, col2, "default value")
-- return current time:
CURRENT_TIMESTAMP
-- compute set operations on two result sets
SELECT col1, col2 FROM table1
UNION / EXCEPT / INTERSECT
SELECT col3, col4 FROM table2;
```

Union - returns data from both queries

Except - rows from the first query that are not present in the second query

Intersect - rows that are returned from both queries

Reporting

Use aggregation functions

COUNT - return the number of rows

SUM - cumulate the values

AVG - return the average for the group

MIN / MAX - smallest / largest value