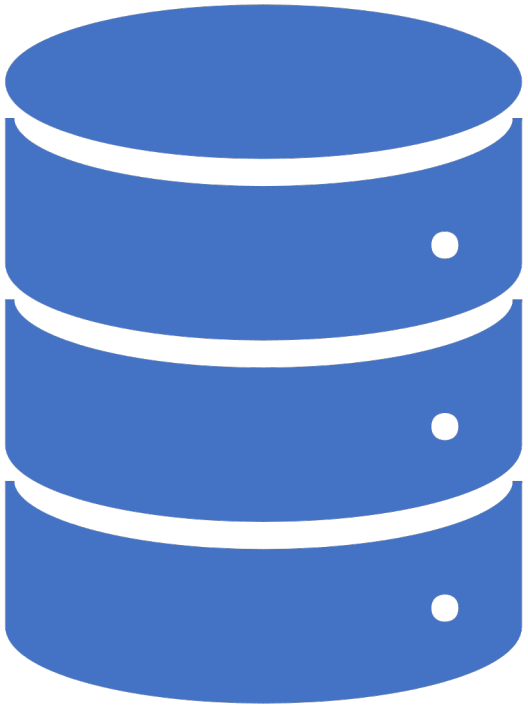


Module 7

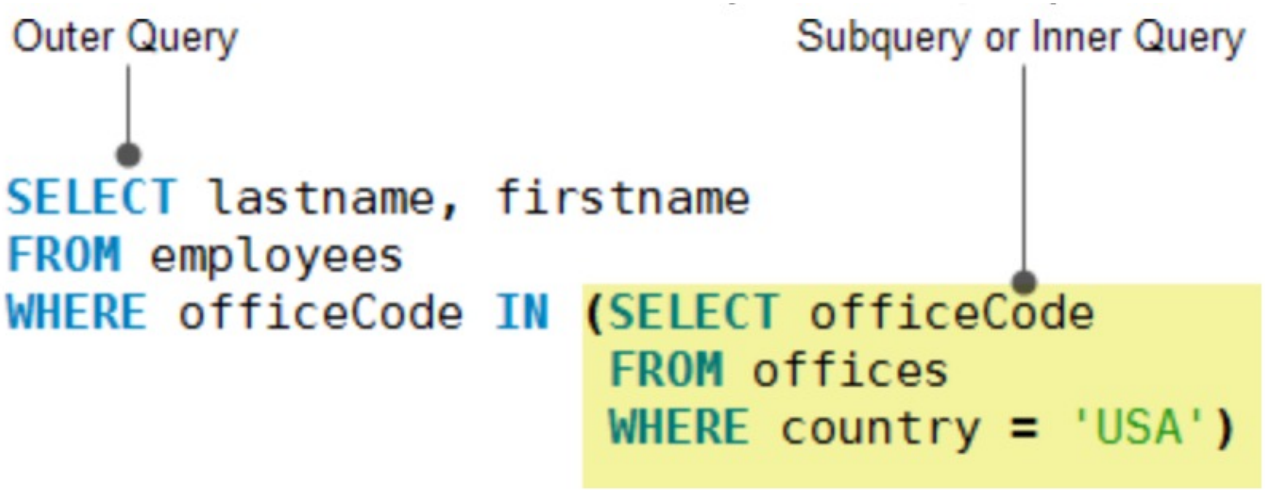
Advanced SQL - Subqueries

Subqueries

- A subquery is a type of query that is embedded—or nested—into a data manipulation language (DML) statement.
- The data returned by the subquery is passed into the DML statement and incorporated into its overall logic.
- A MySQL subquery is often used with SELECT, INSERT, UPDATE or DELETE.
- Also, a subquery can be nested within another subquery.

Subqueries – Inner and Outer code

- Multiple nested queries may have many Inner queries.

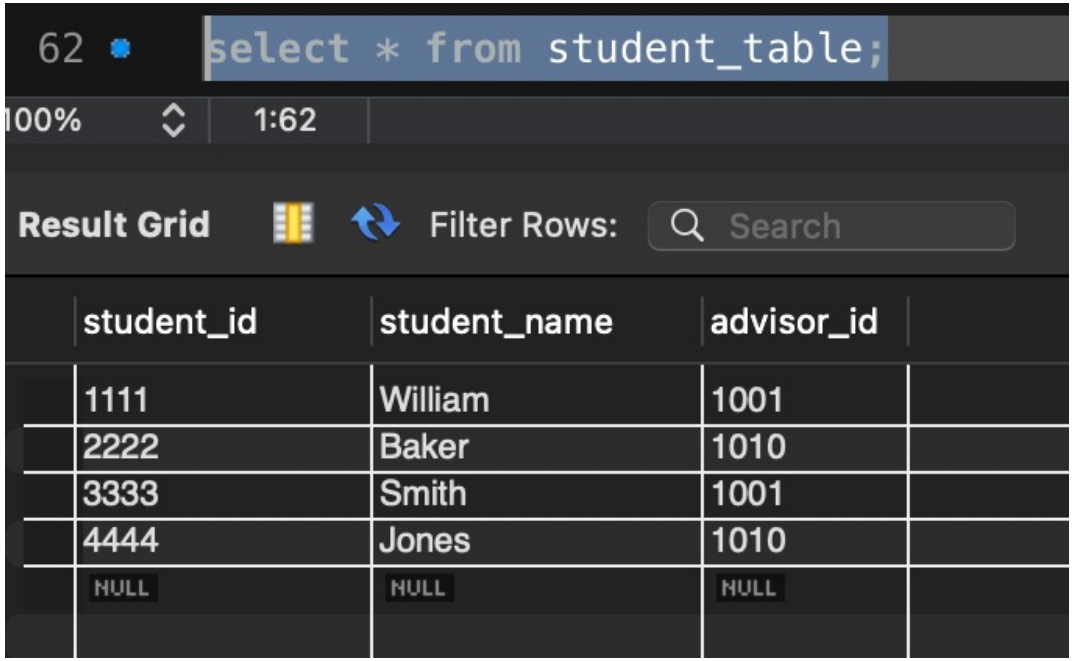


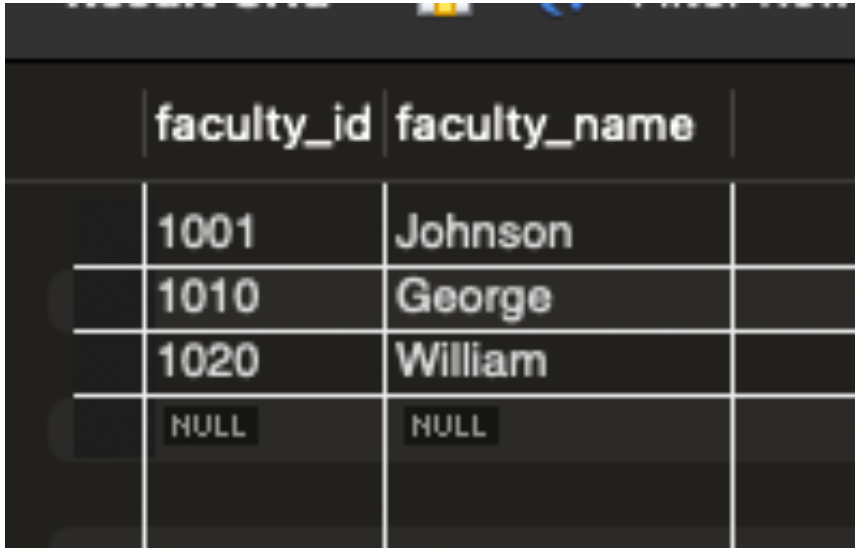
(*Let's try out some examples with our class database.)*

Let’s Look at our student table

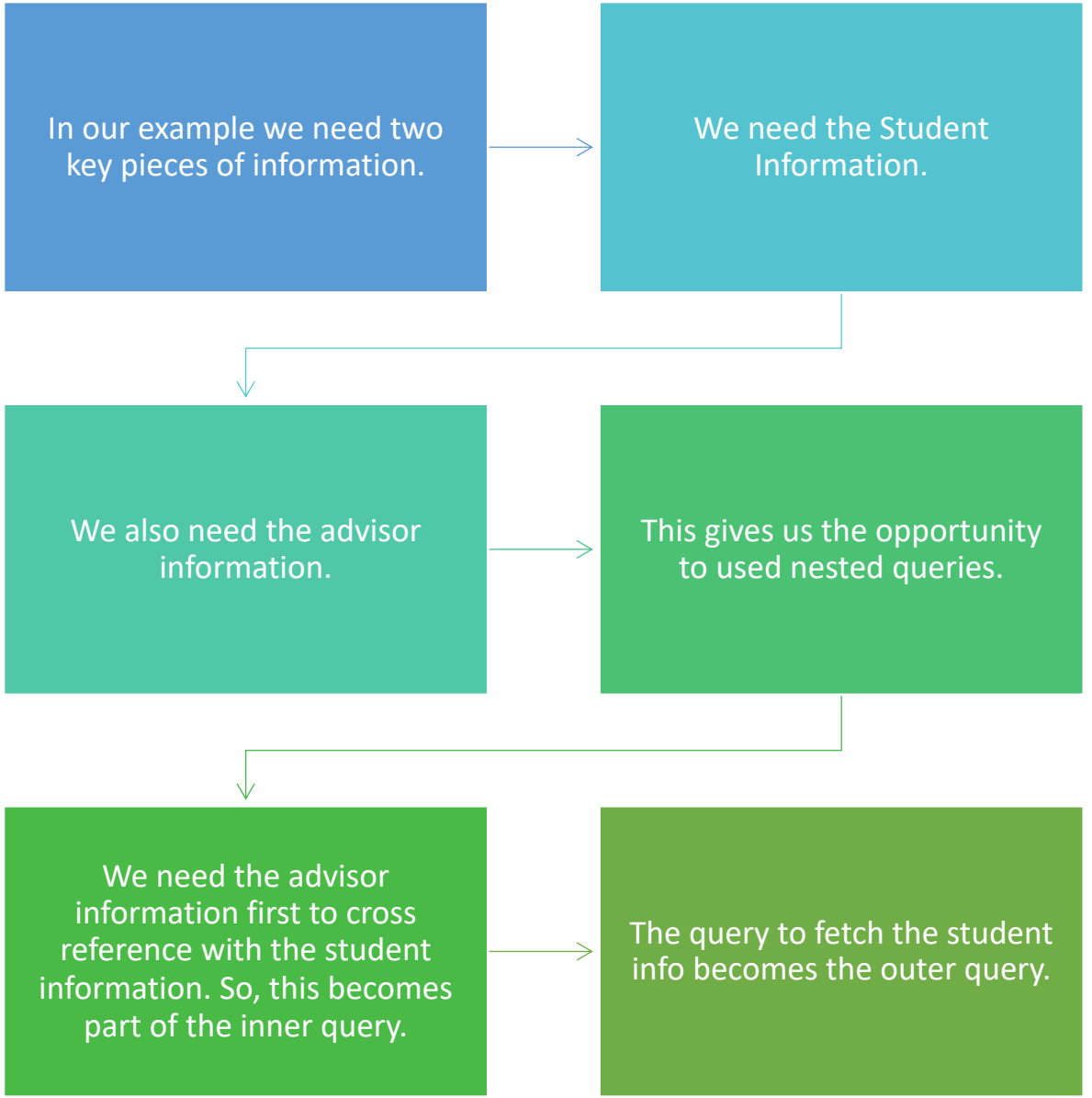
- Let’s say we wish to find out the names of all students whose Advisor Names are George.
- Looking at both the tables we can see, the students are Baker and Jones.
- Now let’s try using a subquery

- *Note: This task is too simple for the use of a subquery. But useful for learning and visualizing the code*
- *Can you guess when this would be appropriate for sub-queries?*
  - *Assume we want to select the students of all faculty with a name of George.*
  - *Since we may not have all their faculty ID information on hand, subqueries becomes very powerful.*





Subquery Logic



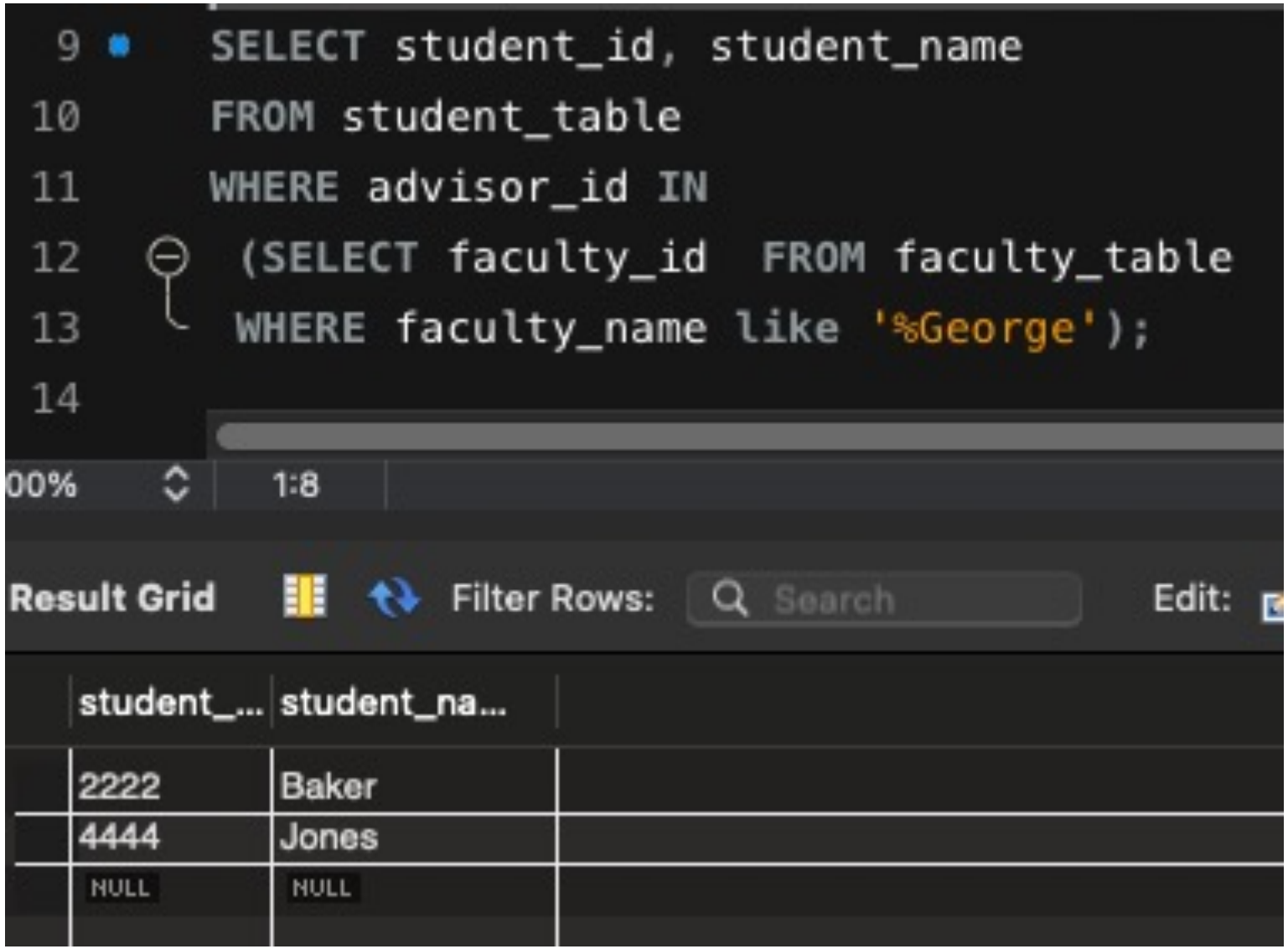
Subquery Example

```
SELECT student_id, student_name ← Outer query to select student info
FROM student_table
WHERE advisor_id IN
 (SELECT faculty_id FROM faculty_table ← Inner, nested or subquery
 WHERE faculty_name LIKE '%George');
```

- The inner or nested query gets executed first and selects the required advisor ID which serves as the input for the outer query.
- The highlighted in green are commands and do not change, yellow may be changed per use case

Subquery Example

- We have the results we were looking for
  - Baker and Jones



Subquery in an Insert Statement

```
INSERT INTO school_year (student_id,syr_id) VALUES (
(SELECT MAX(student_id) FROM student),←First value selected from student
(SELECT MAX(syr_id) FROM school_year)); ← Second value selected from
                                          school year
```

- *Ignore the potential usefulness of the output of the above code and simply read it as an example.*
- Here we are trying to insert two values student_id and syr_id into the student table.
- However, we are using two select statements to fetch the respective student ID and syr ID from the student table and the school_year table.

Why use subqueries

- In our class examples the databases are small, and we can see all the data.
- In real use cases, databases could be millions of rows in size.
- We may not be able to manually enter all the input parameters.
- In such cases we have to rely on subqueries or functions etc., to complete our query.

END