Practice 2

Databases

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SQL Tutorial

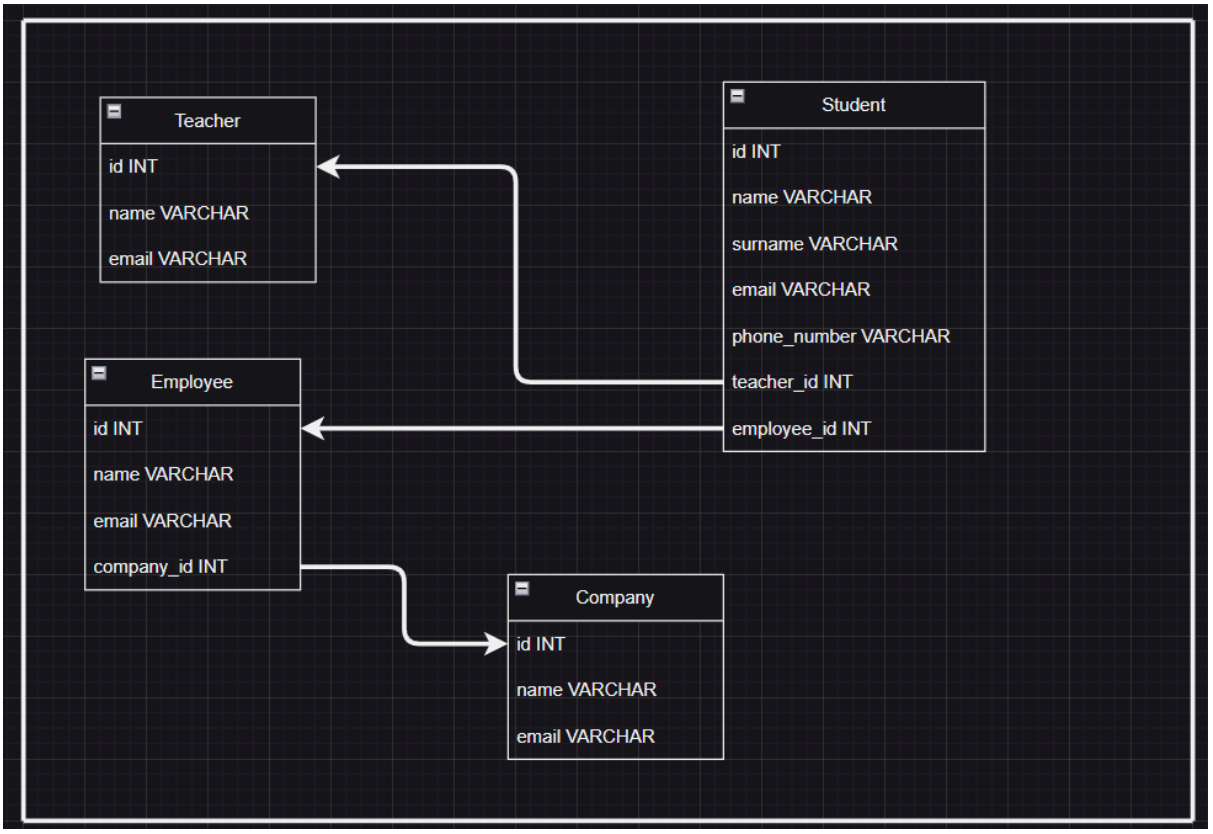
I have followed the W3Schools tutorial as well as a small basic course on SQL statements from Khan Academy. I have mainly learned to handle the following SQL concepts:

- ➔ **SELECT:** Extracts data from one or more tables. It is the basis for performing queries in SQL.
- ➔ **WHERE:** Filters the results of a query based on a specific condition.
- ➔ **ORDER BY:** Sorts the results in ascending or descending order by one or more columns.
- ➔ **AND, OR, NOT:** Logical operators that combine or exclude conditions in a query.
- ➔ **INSERT:** Adds new records to a table.
- ➔ **NULL:** Represents an unknown or empty value in a column.
- ➔ **UPDATE:** Modifies existing records in a table.
- ➔ **DELETE:** Delete specific records from a table.
- ➔ **Features:** They perform calculations or manipulate data (e.g. COUNT, AVG).
- ➔ **LIKE:** Look for patterns in column values.
- ➔ **Wildcards:** Used with LIKE, they represent unknown characters in patterns (% for many, _ for one).
- ➔ **IN:** Checks if a value is in a specified list.
- ➔ **BETWEEN:** Filters values within a defined range.
- ➔ **ALIAS:** Assigns temporary names to columns or tables to make queries easier to read.

Database creation

For this I have used the template provided and I have put 3 teachers, 5 companies, 8 employees and 15 students. I have used **foreign keys** to ensure that the data in the tables is correctly connected. This helps, for example, to ensure that a student is always linked to an existing teacher or employee, avoiding errors or incorrect data in the database.

I have also made a database schema with the tool *drawio* from Visual Studio Code:



Finally, to create the database I used the following SQL concepts:

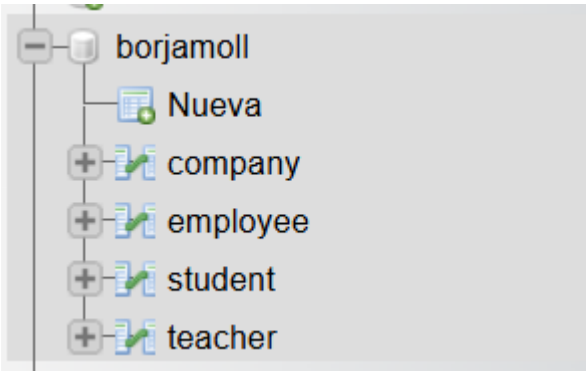
- ➔ **CREATE DATABASE:** Create a new database to store our tables and data.
- ➔ **USE:** Select the database to be worked on.
- ➔ **CREATE TABLE:** Create a table with specific columns to store different types of information.
- ➔ **PRIMARY KEY:** Defines a column as unique to identify each record (such as a student ID).
- ➔ **FOREIGN KEY:** Connects a column in one table to another table to maintain relationships between data (for example, a student linked to a teacher).
- ➔ **INSERT INTO:** Adds new records to a table, such as adding students, teachers, or employees.

Database queries

I have used the concepts learned in the W3Schools and Khan Academy tutorial on basic queries in SQL. In the attached Queries.sql file you will find all the commented queries explaining what they use and what they do.

I did the queries using phpMyAdmin and Beekeeper Studio:

I imported the SQL to create the *borjamoll* database.



Then I started doing queries. I will put a few examples here, but the rest of the queries are on the SQL file:

```sql
-- Query with SELECT
-- Selects all records from the 'Student' table
SELECT * FROM Student;
```

Save Ru

	id	name	surname	email	phone_number	teacher
1	1	Maria	Garcia	maria_updated@cifpfbmoll.eu	123456789	1
2	2	Joan	Martinez	joan@cifpfbmoll.eu	987654321	2
3	3	Ana	Perez	ana@cifpfbmoll.eu	123123123	1
4	4	Miguel	Lopez	miguel@cifpfbmoll.eu	321321321	3
5	5	Sara	Jimenez	sara@cifpfbmoll.eu	456456456	2

```sql
-- Query with INSERT
-- Inserts a new record into the 'Student' table
INSERT INTO Student (id, name, surname, email, phone_number, teacher_
VALUES (16, 'Antonio', 'Blanco', 'antonio@cifpfbmoll.eu', '987654321'
```

Save Run

Query 1/1: No Results. 1 rows affected. See the select box in the bottom left ↙ for more query results.

```sql
SELECT * FROM Student WHERE name LIKE 'M%';
```

Save Run

id	name	surname	email	phone_number	teacher_i
1	Maria	Garcia	maria_updated@cifpfbmoll.eu	123456789	1
4	Miguel	Lopez	miguel@cifpfbmoll.eu	321321321	3

```sql
SELECT
    Student.id AS StudentID,
    Student.name AS StudentName,
    Teacher.name AS TeacherName,
    Company.name AS CompanyName
FROM
    Student
JOIN
    Teacher ON Student.teacher_id = Teacher.id
```

	Student...	StudentName	TeacherName	CompanyName
1	1	Maria	Antonia	Barcelo
2	3	Ana	Antonia	Melia Hotels
3	6	Carlos	Antonia	Barcelo
4	9	Lucia	Antonia	AirEuropa
5	12	Alberto	Antonia	NH Hotels
6	15	Laura	Antonia	AirEuropa
7	2	Joan	Josep	AirEuropa
8	5	Sara	Josep	NH Hotels
9	8	Jorge	Josep	Barcelo

Information sources

W3Schools: https://www.w3schools.com/sql/
Khan Academy: https://es.khanacademy.org/computing/computer-programming/sql
Beekeeper Studio Tutorial: https://youtu.be/id37-ZRZNkQ