

Research Week 8

1. Besides the creation and dropping of tables and columns (Data Definition Requests or DDL), what other types of requests can you make to a MySQL database? How is data retrieved from a MySQL database? What clauses exist for restricting the data that is returned to the user? Please include the syntax for this type of request, and examples.

The two main types of requests that can be made to a MySQL database are DDL (Data Definition Requests), as mentioned above, and DML (Data Manipulation Language). There are two other types of requests that are beyond the scope of this paper. These are DCL (Data Control Language) and TCL (Transaction Control Language). DCL deals with granting rights and permissions to users of the database, while TCL deals with modifications made to a database to commit or rollback the modifications.

DML, or data manipulation language, is the main tool used for inserting, deleting, updating, and retrieving (selecting) data from a database. The four main keywords for DML statements are DELETE, INSERT, SELECT, and UPDATE. Keywords and clauses are normally written in uppercase letters. Clauses are other keywords that tell the client where to retrieve the data, what data to retrieve including specific or broad requests, and how to return the data to the client. The keywords and clauses are combined into statements to manipulate the data in a database.

The keyword for retrieving data from a database is SELECT. The basic SELECT statement syntax is shown below. Options are shown within square brackets []. An asterisk (*) can be substituted for the word ALL.

```
SELECT [ALL, *, column_name_1, column_name_2, ...]  
FROM [table_name]
```

Clauses that can specify conditions and describe how the data should be returned include WHERE, ORDER BY, LIKE, and LIMIT among others.

Some examples of retrieving data from the projects database created for this week's assignment are as follows:

This query returns everything from the project table where the difficulty is less than 10 and returns the results sorted by the project name in alphabetical order.

```
SELECT *  
FROM project  
WHERE difficulty < 10  
ORDER BY project_name ASC
```

This query returns the three columns listed from the material table where the required number of a given material is greater than 25 and limits the data returned to the first 5 rows.

```
SELECT material_name, num_required, cost  
FROM material  
WHERE num_required > 25  
LIMIT 5
```

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This query returns all data from the project table where the project name starts with the letter M or N.

```
SELECT *  
FROM project  
WHERE project_name LIKE 'M%'  
OR project_name LIKE 'N%'
```

There are many other ways to describe queries, including joining tables, pulling from multiple tables, and doing subqueries within a main query. These will probably be covered in future weeks.

References

MySQL What is DDL, DML, and DCL? (n.d.). Retrieved January 14, 2023 from <https://www.w3schools.in/mysql/ddl-dml-dcl>

3.3.4 Retrieving Information from a Table (n.d.). Retrieved January 14, 2023 from <https://dev.mysql.com/doc/refman/8.0/en/retrieving-data.html>

MySQL SELECT Statement. (n.d.). Retrieved January 14, 2023 from <https://www.w3schools.in/mysql/php-mysql-select>

4. What is your favorite thing you learned this week?

The favorite thing I learned this week is how a database and a client integrate and allow any client to access the database and the different schema within the database. I had a rough understanding, but the explanations in the videos, the problems I had setting up DBeaver the way I think they should have, and finally being able to “fix” DBeaver with the help of Lisa Smith were very enjoyable to me.

When I was trying to set up DBeaver, I would set up a project with the name projects, then make a connection underneath that which would then show me both the recipes schema and the projects schema underneath Databases in Database Navigator, with the projects schema in boldface.

This didn't seem right to me, so when I was able to ask my question in Office Hours with Lisa Smith, she showed me how to set it up to connect with each schema individually, so both had their own connection. She explained that under the project projects, I was connecting to both schemas only through the projects schema.

Before, I had been setting the name of the database properly, to the schema I wanted, but was leaving the username as root and inputting my root password. To connect to each schema singularly, I had to put the proper schema name in the Database block, change the Username to projects or recipes as was appropriate, and change the Password accordingly. Now everything is working great and I have a greater understanding of how everything connects; the database, the schema, and the clients.