MSPaintr: MySQL Report

Github: https://github.com/mysql, https://github.com/mysql/mysql-server
Documentation: https://dev.mysql.com/doc/refman/8.0/en/

1. What does this technology (library/framework/service) accomplish for you?

MySQL is used as a server for our database which stores essential information for MSPaintr. It helps us keep track of user account information, posts and comments. Our server utilizes a Users table, which associates a user's username with his or her password, biography (for the profile) and number of followers. Additionally, we have a Posts table which associates a specific post with a post ID, username, number of upvotes and image name (which will be used to retrieve the actual image). Lastly, a Comments table helps us associate comments with the post they belong to, the user who posted the comment, and a comment ID. Our bottle server interacts with these tables to serve the proper content to the current user.

2. How does this technology accomplish what it does?

INSERT

Link: https://github.com/mysql/mysql-server/blob/8.0/sql/sql_insert.cc

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_insert.cc#L989

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_insert.cc#L444

Write_record
https://github.com/mysql/mysql-server/blob/8.0/sql/sql_insert.cc#L1740

Because the sql_insert.cc file is quite lengthy, we will focus on these main function: Sql_cmd_insert_base::prepare_inner(), which prepares the items in an INSERT statement, and Sql_cmd_insert_values::execute_inner. For these functions, we will explain only the important parts since they are very long.

Prepare_inner first checks “insertibility”, such as if the column names specified match those of the table. Any aliases for values will also be accounted for. We use the INSERT VALUES command, so we will only be concerned with the code for this. If the command is INSERT VALUES, prepare_inner will try to resolve the fields placed in VALUES.

Execute_inner handles the insertion action. It calls write_record. Write_record, as the name implies, will write a record to a table. It takes in the name of the table, what to update, and info on how duplicates should be handled.

SELECT

Link: https://github.com/mysql/mysql-server/blob/8.0/sql/sql_select.cc

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_select.cc#L545

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_select.cc#L631

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_select.cc#L895

Likewise, the code for this command is very long, so we will list the main points:

Sql_cmd_select::prepare_inner prepares a SELECT statement. Sql_cmd_dml::execute handles the execution of the query. It first checks that the statement is prepared. Then it will check the authorization of opening the tables needed. It then performs the execution using execute_inner() (Line 895) and calls cleanup tasks after the execution has been completed.

UPDATE

Link: https://github.com/mysql/mysql-server/blob/8.0/sql/sql_update.cc

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_update.cc#L272

https://github.com/mysql/mysql-server/blob/8.0/sql/sql_update.cc#L1618

Again, the code for this command is very long, so here are the main points:

Sql_cmd_update::execute_inner calls Sql_cmd_update::update_single_table which performs the update to a single table if updates to be made only involve a single table. Otherwise, it calls Sql_cmd_dml::execute_inner as mentioned in the SELECT part.

3. What license(s) or terms of service apply to this technology?

The license for MySQL-server can be found at:

https://github.com/mysql/mysql-server/blob/8.0/LICENSE

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For our project, this means that we are free to use and study the code provided in MySQL-server. Because we do not need to copy or modify the existing source code (we are simply running it), we are not too concerned with the conditions stated above.