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CS480 – Project 4
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Report

Included in the archive is a java project containing the file which performs the code (I used Eclipse so Tomcat and the MySql connector were used for this project), a text file containing the create databases and create table statements, as well as this report. To grab only the java file, navigate to project4 > src > project4 > Userinput.java.

After building and running the code in Eclipse, you will be prompted to enter the database name (for this they are named bookstore1, bookstore2, and bookstore3) as well as the amount of tuples for each table. The orderhistory table uses the TIMESTAMP format, so I went with the 1971-01-01 00:00:00 and 2038-01-19 as my minimum and maximum dates. The reason I went with 1971 was because the compiler would constantly create dates where the year is 1969 and this fixed the issue. I also chose to include the same amount of tuples for the booksandauthors table as I did for the books table.

Once the databases were filled with queries, I ran both queries on all three databases.

Query 1 runtimes for each database were about 0 seconds for bookstore1 (since no queries showed up), 1 second for bookstore2 and about 3 seconds for bookstore3.

Query 2 runtimes for each database were similar in runtime as query 1, except that bookstore1 had a runtime of about 0.5 seconds.

I modified certain columns by using both the BTREE and HASH indices statements. These were added mostly with the primary and foreign keys. I noticed that the runtimes between BTREE and HASH varied significantly, for instance, adding indices using BTREE resulted in a faster query output than adding indices using HASH.

The time it took to execute query 1 using BTREE resulted in 1 second for bookstore2 and about 2.3 seconds for bookstore 3. With query 2, bookstore1 was relatively the same, bookstore2 had 0.5 seconds, and bookstore3 was 1.5 seconds.

The time it took to execute query 1 using HASH resulted in 1.5 seconds for bookstore 2 and about 5 seconds for bookstore3. For query 2, this took about 1.5 seconds for bookstore1, 1.5 seconds for bookstore 2, and 4.5 seconds for bookstore3.

When using the explain command on my queries, MySql gave details such as the select type (SIMPLE), the tables that were referenced, the type (ALL, ref, etc), possible keys (PRIMARY or a foreign key), the length of the key, what the keys referenced, number of rows produced, and an extra indicating whether it's Using where or Using index.