CSE 6331 Cloud Computing
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Programming Assignment 3
Measuring and Improving Performance Relational DB, SQL (Cloud), NoSQL

Task: You will get world earthquake data, import into SQL and with a web interface allow users to find out (query) interesting information about those earthquakes. You will measure performance, and then improve performance.

Your assignment is to measure performance on SQL tables: creating, querying, modifying data (tuples).

Starting with (fairly) large, well structured data at:
https://earthquake.usgs.gov/earthquakes/feed/v1.0/csv.php
(all earthquakes for the last 30 days)
If earthquakes make you nervous, equally large (or larger) data exists on:
https://www2.census.gov/programs-surveys/popest/datasets/
descriptions on: https://www2.census.gov/
Or weather data at:
https://www.ncdc.noaa.gov/data-access/quick-links#loc-clim

Create a SQL table, calculate time to create the table (and indexes).
Allow a user to specify on a web interface:

1. A number of random queries, inserts, deletes (up to 1000 queries/commands of random tuples in the dataset)
2. A restricted set of queries, similar to previous (1.) but where selection is restricted (ie only occurring in CA, or within N<100 km of a specified lat,long location.
   Or: a time range, or a magnitude range.
3. Measure time expended to perform these queries.
4. Show results.

Users of this service will interact with your performance service through web page interfaces, all processing and web service hosting is (of course) cloud based.

You will use some type of RDB SQL to store and retrieve earthquake information. And (of course) a friendly web UI.

You should handle conditions such as: missing data (fields, attributes), and similar.

5. Then, installing and using either memcache or Redis repeat steps 1 through 4.

Part 2
Using any NoSQL database (MongoDB, Couchbase, DynamoDB, many others), repeat previous assignment.

Please, submit in Canvas. Work must be individualized, but may be done in a group. (Like all the previous.)