CSE 111 – DATABASE SYSTEMS
Lab 8

In this lab session, you will learn how to create indexes for a query workload by using the recommendations of a database auto-tuner. Specifically, you have to create indexes for the queries in Lab 3 based on the recommendations provided by the `SQLite Expert`. To achieve this, you have to use the `.expert` command from `SQLite`. When applied to a query, `.expert` provides index suggestions to make the query run optimally. `.expert` does not create the suggested indexes. This is the responsibility of the user.

In order to complete the lab you have to perform the following tasks:

1. Execute the queries from Lab 3, whose `SQL` statements are provided in the files `test/x.sql`, where `x` is the number of the query. In addition to the `SQL` statement, these files activate the query analyzer `.eqp`, which displays the query execution plan. Since there are no indexes in the database, all the queries require table scan and/or automatic index creation.

2. For every query going from 1 to 15, invoke the `.expert` command to get the optimal index recommendation. Then, create the first suggested index with the name pattern `table_idx_attribute1_attribute2`, e.g., `lineitem_idx_l_quantity`.

3. Execute the queries from Lab 3 again. This time, the query execution plans have to include the newly created index.

4. The important part here is that you create one index at a time and then rerun all the queries to see how their plans change and what new indexes are recommended. As long as there are still indexes recommended, you go back to step 2.

5. Add every `CREATE INDEX` statement you use to the `create-index.sql` file, in the order in which you determine them. The file has to include all the index creation statements recommended by the auto-tuner.

In order to receive credit for the lab, you have to demo your work to the TA in the lab.