CSE 111 – DATABASE SYSTEMS

Lab 10 (15 points)

In this lab, you will learn how to work with triggers in SQLite. In order to complete the requirements, you have to implement the following tasks:

1. Create a trigger `t1` that for every new `order` entry automatically fills the `o_orderdate` attribute with the date `2020-12-01`. Insert into `orders` all the orders from `November 1995`, paying close attention on how the `o_orderkey` attribute is set. Write a query that returns the number of orders from `2020`. Put all the three SQL statements in file `test/1.sql`. (**3 points**)

2. Create a trigger `t2` that sets a warning `Negative balance!!!` in the comment attribute of the `customer` table every time `c_acctbal` is updated to a negative value from a positive one. Write a SQL statement that sets the balance to `-100` for all the customers in `EUROPE`. Write a query that returns the number of customers with negative balance from `FRANCE`. Put all the SQL statements in file `test/2.sql`. (**3 points**)

3. Create a trigger `t3` that resets the comment to `Positive balance` if the balance goes back positive from negative. Write a SQL statement that sets the balance to `100` for all the customers in `ROMANIA`. Write a query that returns the number of customers with negative balance from `EUROPE`. Put all the SQL statements in file `test/3.sql`. (**3 points**)

4. Create triggers that update the attribute `o_orderpriority` to `HIGH` every time a new `lineitem` tuple is added to or deleted from that order. Delete all the line items corresponding to orders from `November 1996`. Write a query that returns the number of `HIGH` priority orders in the fourth trimester of `1996`. Put all the SQL statements in file `test/4.sql`. (**3 points**)

5. Create a trigger `t5` that removes all the tuples from `partsupp` and `lineitem` corresponding to a part being deleted. Delete all the parts supplied by suppliers from `FRANCE` or `GERMANY`. Write a query that returns the number of parts supplied by every supplier in `EUROPE` grouped by their country in increasing order. Put all the SQL statements in file `test/5.sql`. (**3 points**)

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

1. Log in to your GitLab account.

2. Explore the folders and files in the Lab 10 repo.

3. Create a merge request for the `Instructions` issue. This is done from the `Issues` tab. The result of the merge request is a new branch that copies the files from `master`.

4. Clone the repo to your local machine or the remote lab machine. You can choose to directly clone the branch for the merge request, or the `master` and then checkout the merge request branch.

5. Implement the lab requirements in the files under the `test` folder.

6. You can check the correctness of your implementations by executing the command `make run` in the terminal. You have to be in the main lab folder. The expected output is available in `results/x.res`, where `x` is the number of the query. The output produced by your code is available in `output/x.out`. They have to match exactly for every query, e.g., `1.res` has to match with `1.out`.

7. Commit the changes to the `create-index.sql` file and then push to the `GitLab` server.

8. Check the output of the pipeline under the `CI / CD` tab to see if your push has passed all the tests.

The score for the lab is assigned based on passing the test cases and the commit/push history. The instructor and the TAs have access to the `GitLab` repos.