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 `2021-12-01`. Insert into `orders` all the orders from `December 1996`, paying close attention on how the `o_orderkey` attribute is set. Write a query that returns the number of orders from `2021`. 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 `AMERICA`. Write a query that returns the number of customers with negative balance from `CANADA`. 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 `UNITED STATES`. Write a query that returns the number of customers with negative balance from `AMERICA`. 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 `December 1995`. Write a query that returns the number of `HIGH` priority orders in the fourth trimester of `1995`. 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 `UNITED STATES` or `CANADA`. Write a query that returns the number of parts supplied by every supplier in `AMERICA` 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. Implement the lab requirements in the files under the `test` folder.

2. 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`.

3. The submission consists of a compressed `zip` file that contains the files in the `test` folder. The name of the file has to be `lab-10.zip`. When you create the file, include the folder `test` into the compression, not every file `test/x.sql` separately.