LAB III

In Lab 2 and Lab 3, we will work with a relational database of a book exchange system in XYZ University. The database records information about students, books they own and books they borrow from other students.

Create the tables using the file Schema.sql. Populate the tables using the files Student.sql, Book.sql, Copy.sql and Loan.sql. Understand the database schema. If you use Microsoft SQL Server, you can create a graph (right click Database Diagram and then New Database Diagram) to visualize the database schema.

1. Find the total number of copies.
2. Print the number of copies for each book. (Output the primary key of the book and the number of copies.)
3. Find the books with the largest number of available copies.
4. Find the names of the students who have borrowed some book by 'Charles Dickens'.
5. Find the number of books written by 'Charles Dickens'.
6. Find the names of students who have borrowed all the books by 'Charles Dickens'. Use aggregate functions.
7. Find the names of students who have borrowed all the books by 'Charles Dickens'. Use NOT EXISTS only. (You may also try NOT EXISTS with NOT IN or EXCEPT.)
8. Replace 'Charles Dickens' with 'C. J. Date'. Try again query 6 and 7. Describe and explain your findings.
9. Create views for the copies and loans for which the owner is a Computer Science student. Output the number of tuples in the views and compare it with the original tables.
10. We did not specify loan.borrower is a foreign key that references student table. Create a trigger that propagates the update of a student's email to the loan.borrower. (Write according to the SQL Standard)