CS3020 Database and Management Systems
Dr. Koninika Pal
Aniket Kumar,N Navya,Haripriya Chandra
IIT Palakkad
Exercise Sheet 3 : Hand out 02.03.23, Due 09.03.23 - 23 :59

Assignment 1: Assignment 1 : Views and Transactions

(a) Consider the following relation :
Sales (id : integer, region : string, product : string, amount : real)
(i) Suppose you have a view called "HighValueSales" defined as follows :

CREATE VIEW HighValueSales AS

SELECT region, product, amount

FROM sales

WHERE amount > 1000 ;

Explain what the system will do to process the following query :

SELECT H.region, SUM(H.amount) AS total_sales

FROM HighValueSales H

WHERE H.region = 'East' ;

(ii) Suppose you have a view called "avg_sales_by_region" that shows the average sales by region, based on the "Sales" table. The view has the following definition :

CREATE VIEW avg_sales_by_region AS

SELECT region, AVG(amount) AS avg_sales

FROM sales

GROUP BY region ;

Explain what happens when you try to execute the following update query on the "avg_sales_by_region" view :

UPDATE avg_sales_by_region

SET avg_sales = avg_sales + 100

WHERE region = 'North' ;

(b) Suppose a user is updating their email address in the application and the application needs to ensure that the new email address is unique before committing the changes to the database, how can transactions be useful ?

Assignment 2: Roles and Authorizations

(a) Suppose there is a database with the following relations :

employees(id : integer , name : string, salary : real , age : integer)

salaries (id : integer, employee_id : integer, salary : real)

i) The following command is executed :

GRANT INSERT (name, age) ON employees TO John ;

if John inserts a new row with the following command :

INSERT INTO employees (name, age) VALUES ('Smith', 30) ;

Does the insertion is successful or not ? Justify your answer.

ii) The authorization to access the relations has been granted to different users :

User "U1" has been granted authorization to access both the "employees" and "salaries" relations.

User "U4" has been granted authorization by "U1" to access the "salaries" relation.

User "U5" has been granted authorization by both "U1" and "U2" to access the "employees" relation.

Suppose the database administrator decides to revoke the authorization of user "U1" to access the "employees" relation. Which authorizations would be revoked as a result of this action ?

(b) Suppose we have a database that holds the information of all products in a manufacturing company, and there exist different sets of users like engineers and production managers. The engineers need access to product design specifications and testing data, while the production managers need access to inventory levels and production schedules. How can the database handle this scenario ?

Assignment 3: Triggers

(a) Consider the student relation containing the attributes 'ID', 'Dept_name', 'Credits'. Write a trigger statement in sql that doesn't allow inserting students data having 'Credits' more than 10.0

(b) What kind of trigger will you use in the following scenarios and why ? Please mention the trigger structure, no need to write the entire trigger statement.
(i) You don't want to allow inserting students data who were born before 2000.
(ii) You want to count the number of rows deleted using the DELETE command.
(iii) You want to move all deleted rows from a table to another table for tracking historical data.

(c) Which type of trigger is used if we want the triggering statement to complete before executing the trigger action ?

(d) How many times a before update row level trigger will execute if the update statement is affecting 10 rows ?