Database Management System – 28 (Assertion, Trigger and Views in SQL)

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Outline

- CREATE ASSERTION
- TRIGGER
- VIEW

CREATE ASSERTION

- Used to specify additional types of constraints that are outside the scope of the built-in relational model constraints (primary and unique keys, entity integrity, and referential integrity)

Example

- Specify the constraint that the salary of an employee must not be greater than the salary of the manager of the department that the employee works for

  CREATE ASSERTION SALARY_CONSTRAINT
  CHECK (NOT EXISTS (SELECT *
                    FROM EMPLOYEE E, EMPLOYEE M,
                    DEPARTMENT D
          WHERE E.Salary>M.Salary
               AND E.Dno = D.Dnumber
               AND D.Mgr_ssn = M.Ssn));

Triggers in SQL

- To specify the type of action to be taken when certain events occur and when certain conditions are satisfied
- Example - A manager may want to be informed if an employee's travel expenses exceed a certain limit by receiving a message whenever this occurs
- Condition is used to **monitor** the database
- Executing a specific stored procedure or triggering other updates
- CREATE TRIGGER statement is used

Trigger example

- To check whenever an employee's salary is greater than the salary of his or her direct supervisor in the COMPANY database

```
CREATE TRIGGER SALARY_VIOLATION
BEFORE INSERT OR UPDATE OF SALARY, SUPERVISOR_SSN
                        ON EMPLOYEE
FOR EACH ROW
   WHEN ( NEW.SALARY > ( SELECT SALARY FROM EMPLOYEE
                   WHERE SSN =
                        NEW.SUPERVISOR_SSN ) )
              INFORM_SUPERVISOR(NEW.Supervisor_ssn,
                        NEW.Ssn );
```

TRIGGER

- **Event(s):**
  – Usually database update operations that are explicitly applied to the database
- **Condition**
  – determines whether the rule action should be executed
  – condition is specified in the WHEN clause
- **Action**
  – Action is usually a sequence of SQL statements
  – INFORM_SUPERVISOR

Views (Virtual Tables) in SQL

- View - a single table that is derived from other tables
- Other tables can be base tables or previously defined views
- A view does not necessarily exist in physical form
- A virtual table
- Limits the possible update operations
- Does not provide any limitations on querying a view

CREATE VIEW

CREATE VIEW WORKS_ON1
AS SELECT Fname, Lname, Pname, Hours
    FROM EMPLOYEE, PROJECT, WORKS_ON
      WHERE Ssn = Essn **AND** Pno = Pnumber;

WORKS_ON1

Fname	Lname	Pname	Hours

CREATE VIEW DEPT_INFO(Dept_name, No_of_emps,
                    Total_sal)
AS SELECT Dname, **COUNT (*), SUM** (Salary)
    FROM DEPARTMENT, EMPLOYEE
      WHERE Dnumber = Dno
      GROUP BY Dname;

DEPT_INFO

Dept_name	No_of_emps	Total_sal

Example

    SELECT Fname, Lname

    FROM WORKS_ON1

    WHERE Pname = 'ProductX';

    DROP VIEW WORKS_ON1;

Reference

- Elmasri R. and S. Navathe, Database Systems: Models, Languages, Design and Application Programming, Pearson Education 6th edition and 7th edition

Thank you