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Batch: A3 Roll No.: 1911034

Experiment / assignment / tutorial No. 6

Grade: AA / AB / BB / BC / CC / CD /DD

Title: Queries based on Triggers

Objective: To be able to use trigger on table.

Expected Outcome of Experiment:

CO 3 : Use SQL for Relational database creation, maintenance and query processing

Books/ Journals/ Websites referred:

1. Dr. P.S. Deshpande, SQL and PL/SQL for Oracle 10g.Black book, Dreamtech Press
2. www.db-book.com
3. Korth, Slberchatz, Sudarshan : "Database Systems Concept", 5th Edition , McGraw Hill
4. Elmasri and Navathe,"Fundamentals of database Systems", 4th Edition,PEARSON Education.

Resources used: Postgresql

Theory

Triggers are database call-back functions, which are automatically performed/invoked when a specified database event occurs.

Triggers can be specified to fire

- Before the operation is attempted on a row (before constraints are checked and the INSERT, UPDATE or DELETE is attempted)
- After the operation has completed (after constraints are checked and the INSERT, UPDATE, or DELETE has completed)

- Instead of the operation (in the case of inserts, updates or deletes on a view)

The basic syntax of creating a trigger is as follows −

```
CREATE  TRIGGER trigger_name [BEFORE|AFTER|INSTEAD OF] event_name
ON table_name
[
 -- Trigger logic goes here....
];
```

event_name could be INSERT, DELETE, UPDATE, and TRUNCATE database operation on the mentioned table table_name. You can optionally specify FOR EACH ROW after table name.

The following is the syntax of creating a trigger on an UPDATE operation on one or more specified columns of a table as follows −

```
CREATE  TRIGGER trigger_name [BEFORE|AFTER] UPDATE OF column_name
ON table_name
[
 -- Trigger logic goes here....
];
```

Implementation Screenshots (Problem Statement, Query and Screenshots of Results):

When a new Customer is inserted into the Employee table , the trigger checks if the budget of the customer is above 1000. If not , it does not insert that value and displays an error message:

```
delimiter $$
CREATE TRIGGER  Check_budget  BEFORE INSERT ON customer
FOR EACH ROW
```

```
BEGIN
IF NEW.budget < 1000 THEN
SIGNAL SQLSTATE '45000'
SET MESSAGE_TEXT = 'ERROR:
    budget MUST BE ATLEAST 1000 !';
END IF;
END; $$
```

name_c	age_c	id_no	budget	type_p	no_of_emi	asc_bank
Ashwini	48	1122	5000	ownership	12	HDFC Bank
Aditi	19	1210	9000	rental	7	ICPC Bank
Dhruvi	19	1998	10000	rental	9	HDFC Bank
Samiksha	19	2133	4500	ownership	8	Canara
Pinky	21	9987	2300	rental	9	Baroda
Siddhi	22	9989	3000	ownership	10	Canara
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Query:

```
insert into customer values ("Arvind",45,2511,900,"rental",13,"ICPC Bank")
```

As 900<1000 , the value will not be inserted and an error message will be displayed

```
13  22:57:32  insert into customer values ("Arvind",45,2511,900,"rental",13,"ICPC Bank")  Error Code: 1644. ERROR:  budget MUST BE ATLEAST 1000
```

After performing Insert Query resultant table will not be changed:
Resultant table:

name_c	age_c	id_no	budget	type_p	no_of_emi	asc_bank
Ashwini	48	1122	5000	ownership	12	HDFC Bank
Aditi	19	1210	9000	rental	7	ICPC Bank
Dhruvi	19	1998	10000	rental	9	HDFC Bank
Samiksha	19	2133	4500	ownership	8	Canara
Pinky	21	9987	2300	rental	9	Baroda
Siddhi	22	9989	3000	ownership	10	Canara
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Conclusion:

In this experiment , the concept of triggers was well understood and implemented.

Post Lab Questions:

1. **Write a trigger to count number of new tuples inserted using each insert statement.**

Declare c

Set c=0

CREATE TRIGGER c_tuples

AFTER INSERT ON table_name

FOR EACH ROW

BEGIN

SET C=C+1

END;

2. **Trigger is special type of _____ procedure.**

   a) Stored
   b) Function
   c) View
   d) Table
   Ans) a) stored

3. **Triggers can be enabled or disabled with the _____ statement.**

   a) ALTER TABLE statement
   b) DROP TABLE statement

c) DELETE TABLE statement
d) None of the mentioned

Ans) a) ALTER TABLE