Lab Assignment No: 05

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CLASS: C BRANCH: ENTC BATCH: 3

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**Problem statement: -**

Write a database trigger on the library. The system should keep track of records that are updated or deleted. The old values of the updated or deleted record should be added in library audit table.

**Objective: -**

The main objective is to create a stored function which will keep track of records whenever they are updated or deleted.

**Theory/Algorithm/Methodology: -**

A trigger is a stored procedure in database which automatically invokes whenever a special event in the database occurs. For example, a trigger can be invoked when a row is inserted into a specified table or when certain table columns are being updated.

**Input/Dataset: -**

create database library;

use library;

create table library(book\_id int primary key, title varchar(20), author varchar(20), edition int,

no\_of\_copies int);

desc library;

create table library\_audit(book\_id int, title varchar(20), author varchar(20), edition int,no\_of\_copy

int, date\_of\_mod date, type\_of\_operation varchar(30), user\_of\_operation varchar(30));

desc library\_audit;

create table transaction(trans\_id int, book\_id int, issue\_return varchar(10), no\_of\_copy int);

desc transaction;

insert into library values(1,"TOC","vvRichard",4,5);

insert into library values(2,"CN","Foruzan",2,6);

insert into library values(3,"ISEE","Rahul De",6,10);

insert into library values(4,"DBMS","Silberchatz",6,8);

insert into library values(5,"SEPM","Pressman",7,4);

insert into library values(6,"DS","Horitzsahani",9,6);

insert into library values(7,"Java","Powell",8,7);

insert into library values(8,"Learning Scala","Swartz",7,4);

insert into library values(9,"Cpp","Bjarne",7,2);

insert into library values(10,"python","Thoma",5,9);

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| book\_id | title | author | edition | no\_of\_copies |
| 1 | TOC | vvRichard | 4 | 5 |
| 2 | CN | Foruzan | 2 | 6 |
| 3 | ISEE | Rahul De | 6 | 10 |
| 4 | DBMS | Silberchatz | 6 | 8 |
| 5 | SEPM | Pressman | 7 | 4 |
| 6 | DS | Horitzsahani | 9 | 6 |
| 7 | Java | Powell | 8 | 7 |
| 8 | Learning Scala | Swartz | 7 | 4 |
| 9 | Cpp | Bjarne | 7 | 2 |
| 10 | python | Thoma | 5 | 9 |

**Code/OUTPUT: -**

**Created Database and tables:-**

create database library;

use library;

create table library(book\_id int primary key, title varchar(20), author varchar(20), edition int, no\_of\_copies int);

desc library;

create table library\_audit(book\_id int, title varchar(20), author varchar(20), edition int,no\_of\_copy int, date\_of\_mod date, type\_of\_operation varchar(30), user\_of\_operation varchar(30));

desc library\_audit;

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insert into library values(9,"Cpp","Bjarne",7,2);

insert into library values(10,"python","Thoma",5,9);

**Created trigger : -**

MySQL [library]> DELIMITER $

MySQL [library]> create trigger t after update on library for each row begin declare a varchar(10);

-> set a="updated";

-> insert into library\_audit

-> values(old.book\_id,old.title,old.author,old.edition,old.no\_of\_copies,curdate(),a,current\_user());

-> end $

Query OK, 0 rows affected (0.025 sec)

**Verifying trigger: -**

MySQL [library]> Update library set author="Mishra" where book\_id=1;

-> select \* from library\_audit;

-> update library set no\_of\_copies=10 where book\_id=3;

-> update library set no\_of\_copies=18 where book\_id=3

->

-> end $

Query OK, 1 row affected (0.029 sec)

Rows matched: 1 Changed: 1 Warnings: 0

+---------+-------+-----------+---------+------------+-------------+-------------------+-------------------+

| book\_id | title | author | edition | no\_of\_copy | date\_of\_mod | type\_of\_operation | user\_of\_operation |

+---------+-------+-----------+---------+------------+-------------+-------------------+-------------------+

| 1 | TOC | vvRichard | 4 | 5 | 2021-12-31 | updated | root@localhost |

+---------+-------+-----------+---------+------------+-------------+-------------------+-------------------+

1 row in set (0.030 sec)

create a trigger to check the number of copies available before issuing a book if number

of

copies issuing > the number of books available then issue the number of books which are

available

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available

**Created a trigger to check the number of copies available and create copies: -**

MySQL [library]> DELIMITER $

MySQL [library]> create trigger t2 before insert on transaction for each row

-> begin

-> declare no int;

-> if new.issue\_return="I" then

-> select no\_of\_copy into no from library where book\_id=new.book\_id;

-> if new.no\_of\_copy > no then set new.no\_of\_copy=no;

-> end if;

-> end if;

-> end $

QueryOK, 0 rows affected (0.031 sec)

**Created a trigger to update the number of copies available: -**

MySQL [library]> DELIMITER $

MySQL [library]> create trigger t3 after insert on transaction for each row

-> begin

-> if new.issue\_return="I" then

-> update library set no\_of\_copies=no\_of\_copies-new.no\_of\_copy where

-> book\_id=new.book\_id;

-> else

-> update library set no\_of\_copies=no\_of\_copies+new.no\_of\_copy where

-> book\_id=new.book\_id;

-> end if;

-> end $

Query OK, 0 rows affected (0.020 sec)

MySQL [library]> Select \* from library;

-> $

+---------+----------------+--------------+---------+--------------+

| book\_id | title | author | edition | no\_of\_copies |

+---------+----------------+--------------+---------+--------------+

| 1 | TOC | Mishra | 4 | 2 |

| 2 | CN | Foruzan | 2 | 4 |

| 3 | ISEE | Rahul De | 6 | 9 |

| 4 | DBMS | Silberchatz | 6 | 8 |

| 5 | SEPM | Pressman | 7 | 4 |

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| 10 | python | Thoma | 5 | 9 |

+---------+----------------+--------------+---------+--------------+

DELIMITER $

create trigger t after update on library for each row

BEGIN

declare a varchar(10);

set a="updated";

insert into library\_audit

values(old.book\_id,old.title,old.author,old.edition,old.no\_of\_copies,curdate(),a,current\_user());

END $

DELIMITER $

create trigger t after update on library for each row

BEGIN

declare a varchar(10);

set a="updated";

insert into library\_audit

values(old.book\_id,old.title,old.author,old.edition,old.no\_of\_copies,curdate(),a,current\_user());

END $

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BEGIN

declare a varchar(10);

set a="updated";

insert into library\_audit

values(old.book\_id,old.title,old.author,old.edition,old.no\_of\_copies,curdate(),a,current\_user());

END $

**CONCLUSION: -** By using the triggers we can automate the task such as after adding number of copies in data the data is updated using triggers we can use this triggers in many ways to automate the things and they are a kind of procedures which are called automatically after or before the query is executed.