DBMSL

31147

Assignment 8.

Date of completion: 25/9/20. Date of Submission: 12/11/20.

Title : Triggers

Problem statement:
Database Triggers (All Types: Row level and Statement level triggers, Before & after triggers).
Write a database trigger on student table. The system should keep track of records that are being updated or deleted. The old value of updated or deleted records through should be added in auxiliary table.

Learning Objectives:
1) Have an idea about maintaing track of operations using Triggers.
2) Avoid accident operation and check previous operations done.

Learning Outcome:
1) Learn to setup triggers in database for row wise as well as statement triggers.

Software & Hardware Requirements:
Windows / Ubuntu / Fedora.
MYSQL client installed.

Theory:
What is trigger?
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 specific table or when certain table columns are being updated.

Syntax:

```
CREATE TRIGGER trigger_name [BEFORE|AFTER] [INSERT|UPDATE|DELETE]
 ON table_name [FOR EACH ROW]
BEGIN
    // code goes here.
END
```

Before & After of trigger:
Before triggers run the trigger action before the trigering statement is run.
AFTER triggers runs the trigger action after triggering statement is run.

Program Listing:

1) TRIGGER BEFORE DELETE.

```
CREATE TRIGGER insert_into_alumini_2 BEFORE DELETE
ON STUDENT FOR EACH ROW.
BEGIN
INSERT INTO alumini VALUES(OLD.roll_no, OLD.name,
   OLD.date_of_admission, OLD.branch, OLD.percent, OLD.status);
END //
```

2) TRIGGER BEFORE UPDATE.

```
CREATE TRIGGER insert_into_alumini_BEFORE UPDATE
ON STUDENT FOR EACH ROW
BEGIN
INSERT INTO alumini
VALUES (OLD.roll_no, OLD.name, OLD.date_of_admission, OLD.branch
, OLD.percent, OLD.status);
END //
```

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Test Cases:

1) SELET * FROM student;

roll_no	name	date_of_admission	branch	percent	status
3	Pradyumna	2000-11-12	IT	46.5	Studying
4	Shubham	2000-10-12	Comp	45.5	Studying
5	Sahil	2000-10-12	Comp	45.5	Studying
10	John	2000-11-12	Comp	95.5	Studying
11	None	2001-11-12	Comp	96.5	Studying

```
DELETE FROM student
WHERE roll_no = 3;
```

```
SELECT * FROM student;
```

Alumini Table.

roll_no	name	date_of_admission	branch	percent	status
3	Pradyumna	2000-11-12	IT	46.5	Studying.

```
UPDATE student
SET name = "New Person".
WHERE roll_no = 4;
```

Alumini Table

roll_no	name	date_of_admission	branch	percent
3	Pradyumna	2000-11-12	IT	46.5
4	Shubham	2000-10-12	Comp	45.5

Conclusion:

Learnt to implement triggers in MySQL database for updation & deletion.

MySQL 8.0 Command Line Client

```
mysql> SELECT * FROM alumini;
Empty set (0.00 sec)

mysql> SELECT * FROM student;
+---------+-----------+-------------------+--------+---------+----------+
| roll_no | name      | date_of_admission | branch | percent | status   |
+---------+-----------+-------------------+--------+---------+----------+
|       3 | Pradyumna | 2000-11-12        | IT     |    46.5 | Studying |
|       4 | Shubham   | 2000-10-12        | dsdf   |    45.5 | Studying |
|       5 | sdfsfd    | 2000-10-12        | dsdf   |    45.5 | Studying |
|      10 | John      | 2000-11-12        | Comp   |    95.5 | Studying |
|      11 | No One    | 2001-11-12        | Comp   |    96.5 | Studying |
+---------+-----------+-------------------+--------+---------+----------+
5 rows in set (0.00 sec)

mysql> DELIMITER //
mysql> CREATE TRIGGER insert_into_alumini_2 BEFORE DELETE
    -> ON student FOR EACH ROW
    -> BEGIN
    -> INSERT INTO alumini
    -> VALUES (OLD.roll_no,OLD.name,OLD.date_of_admission,OLD.branch,OLD.percent,OLD.status);
    -> END //
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql> DELETE FROM student
    -> WHERE roll_no=3;
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM alumini;
+---------+-----------+-------------------+--------+---------+----------+
| roll_no | name      | date_of_admission | branch | percent | status   |
+---------+-----------+-------------------+--------+---------+----------+
|       3 | Pradyumna | 2000-11-12        | IT     |    46.5 | Studying |
+---------+-----------+-------------------+--------+---------+----------+
1 row in set (0.00 sec)

mysql> SELECT * FROM student;
+---------+---------+-------------------+--------+---------+----------+
| roll_no | name    | date_of_admission | branch | percent | status   |
+---------+---------+-------------------+--------+---------+----------+
|       4 | Shubham | 2000-10-12        | dsdf   |    45.5 | Studying |
|       5 | sdfsfd  | 2000-10-12        | dsdf   |    45.5 | Studying |
|      10 | John    | 2000-11-12        | Comp   |    95.5 | Studying |
|      11 | No One  | 2001-11-12        | Comp   |    96.5 | Studying |
+---------+---------+-------------------+--------+---------+----------+
4 rows in set (0.00 sec)

mysql> DELIMITER //
mysql> CREATE TRIGGER insert_into_alumini_2 BEFORE UPDATE
    -> ON student FOR EACH ROW
```

MySQL 8.0 Command Line Client

```
mysql> CREATE TRIGGER insert_into_alumini BEFORE UPDATE
    -> ON student FOR EACH ROW
    -> BEGIN
    -> INSERT INTO alumini
    -> VALUES (OLD.roll_no,OLD.name,OLD.date_of_admission,OLD.branch,OLD.percent,OLD.status);
    -> END //
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql>
mysql> SELECT * FROM student;
+---------+---------+-------------------+--------+---------+----------+
| roll_no | name    | date_of_admission | branch | percent | status   |
+---------+---------+-------------------+--------+---------+----------+
|       4 | Shubham | 2000-10-12        | dsdf   |    45.5 | Studying |
|       5 | sdfsfd  | 2000-10-12        | dsdf   |    45.5 | Studying |
|      10 | John    | 2000-11-12        | Comp   |    95.5 | Studying |
|      11 | No One  | 2001-11-12        | Comp   |    96.5 | Studying |
+---------+---------+-------------------+--------+---------+----------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM alumini;
+---------+-----------+-------------------+--------+---------+----------+
| roll_no | name      | date_of_admission | branch | percent | status   |
+---------+-----------+-------------------+--------+---------+----------+
|       3 | Pradyumna | 2000-11-12        | IT     |    46.5 | Studying |
+---------+-----------+-------------------+--------+---------+----------+
1 row in set (0.00 sec)

mysql> UPDATE student
    -> SET name="New Person"
    -> WHERE roll_no=4;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM student;
+---------+------------+-------------------+--------+---------+----------+
| roll_no | name       | date_of_admission | branch | percent | status   |
+---------+------------+-------------------+--------+---------+----------+
|       4 | New Person | 2000-10-12        | dsdf   |    45.5 | Studying |
|       5 | sdfsfd     | 2000-10-12        | dsdf   |    45.5 | Studying |
|      10 | John       | 2000-11-12        | Comp   |    95.5 | Studying |
|      11 | No One     | 2001-11-12        | Comp   |    96.5 | Studying |
+---------+------------+-------------------+--------+---------+----------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM alumini;
+---------+-----------+-------------------+--------+---------+----------+
| roll_no | name      | date_of_admission | branch | percent | status   |
+---------+-----------+-------------------+--------+---------+----------+
|       3 | Pradyumna | 2000-11-12        | IT     |    46.5 | Studying |
|       4 | Shubham   | 2000-10-12        | dsdf   |    45.5 | Studying |
```