ASSIGNMENT No 5 : PLSQL(Triggers)

Shreya Pawaskar Cno - C22018881961 Roll no - 3947 Division - C

Database Trigger

(All Types: Row level and Statement level triggers, Before and After Triggers).

Write a database trigger (Before and After Triggers) on the Employee table.

The System should keep track of the records that are being inserted, updated or deleted. The old value of updated or deleted records should be added in the Employee Audit table.

mysql> use employee_database;
Database changed

mysql> select * from employee;

+				+			<u> </u>	+	+	+
	E_id	Ename	Post	Address	Phno	Date_of_Joining	Annual_income	Gender	Did	
	1	Vedika	analyst	Delhi	8756998756	2010-07-09	500000	F	1	
	2	John	analyst	Delhi	8234997656	2000-09-01	700000	M	4	1
	3	Rajas	Manager	Mumbai	8009781256	2005-02-12	900000	M	3	
	4	Ritika	Finance head	Mumbai	7559081256	2020-02-12	1000000	F	1	
	5	Neha	clerk	banglore	8638739922	2020-04-04	200000	F	13	
	6	Sam	clerk	banglore	8638712322	2020-09-08	200000	M	1	
	7	Anne	clerk	Hyderabad	6738712300	2000-01-12	600000	F	8	
	8	Anita	engineer	Hyderabad	9990012300	2007-01-12	900000	F	10	
	9	Asmita	clerk	Pune	9988712300	2000-11-12	600000	F	8	
	10	Manish	Cashier	Pune	9988714670	2019-01-19	700000	M	9	
	11	Rohit	Tech Lead	Pune	9983976670	2019-08-19	900000	M	10	
	12	Ritesh	Manager	Pune	9983112270	2005-07-11	900000	l M	15	
	13	Soha	Manager	Nashik	7783112270	2003-07-11	1000000	F	2	
- 1	14	Saniya	Manager	Nashik	7783118760	2003-07-11	900000	F	7	1
İ	15	anisha	Manager	Nashik	9879875656	2008-07-12	900000	F	11	
i	18	Girija	Manager	Mumbai	8239780056	2000-02-12	200000	F	6	
+			- +	+			<u> </u>	+	+	+

16 rows in set (1.75 sec)

```
mysql> create table employee_audit(
   -> ea_id integer primary key,
   -> e_id integer not null,
   -> ename varchar(255) not null,
   -> post varchar(255) not null,
   -> address varchar(255) not null,
   -> phno varchar(10) not null,
   -> date_of_joining date not null,
   -> annual_income integer not null,
   -> gender varchar(255) not null,
   -> did integer not null,
   -> status varchar(10) not null);
Query OK, O rows affected (4.83 sec)
```

//AFTER INSERT TRIGGER

```
mysql> create trigger after_insert after insert on employee
    -> for each row
    -> begin
    -> declare ptr integer;
    -> select count(*) into ptr from employee_audit;
    -> set ptr=ptr+1;
    -> insert into employee_audit values

(ptr,new.e_id,new.ename,new.post,new.address,new.phno,new.date_of_joining,new.annual_income,new.gender,new.did,"Insert new");
    -> end
    -> //
Query OK, 0 rows affected (0.82 sec)

mysql> insert into employee(ename,post,address,phno,date_of_joining,annual_income,gender,did)
    -> values
```

```
-> ('neha', 'manager', 'pune', '9511268305', '2021-07-02', 500000, 'F', 1);
  -> //
Query OK, 1 row affected (0.82 sec)
mysql> select * from employee audit;
+----+
| ea id | e id | ename | post | address | phno
                                     | date of joining | annual income | gender | did | status
| 1 | 19 | neha | manager | pune | 9511268305 | 2021-07-02 | 500000 | F | 1 | Insert
1 row in set (0.00 sec)
//AFTER DELETE TRIGGER
mysql> create trigger after delete
  -> after delete
  -> on employee
  -> for each row
  -> begin
  -> declare ptr integer;
  -> select count(*) into ptr
  -> from employee_audit;
  -> set ptr=ptr+1;
  -> insert into employee audit
  -> values
(ptr,old.e_id,old.ename,old.post,old.address,old.phno,old.date_of_joining,old.annual_income,old.gender,old.did,"D
eleted value");
  -> end
  -> //
Query OK, 0 rows affected (0.35 sec)
mysql> delete from employee where e id=18;
  -> //
Query OK, 1 row affected (0.23 sec)
mysql> select * from employee_audit;
| ea_id | e_id | Name | post | address | phno | date_of_joining | annual_income | gender | did |
| 1 | 19 | neha | manager | pune | 9511268305 | 2021-07-02 | 500000 | F | 1 |
        Insert new
| 2 | 5 | Neha | clerk | banglore | 8638739922 | 2020-04-04 |
                                                            200000 | F | 13 |
| 3 | 18 | Girija | Manager | Mumbai | 8239780056 | 2000-02-12 |
                                                            2000000 | F | 6 |
Deleted value |
3 rows in set (0.00 sec)
//AFTER UPDATE TRIGGER
mysql> create trigger after update
  -> after update
  -> on employee
  -> for each row
  -> begin
  -> declare ptr integer;
  -> select count(*) into ptr from employee_audit;
  -> set ptr=ptr+1;
  -> insert into employee audit
  -> values
(ptr,new.e_id,new.ename,new.post,new.address,new.phno,new.date_of_joining,new.annual_income,new.gender,new.did,"u
pdated");
  -> end
  -> //
Query OK, 0 rows affected (0.76 sec)
mysql> update employee set annual income=200000 where e id=5;
  -> //
```

```
Query OK, 0 rows affected (0.36 sec)
Rows matched: 1 Changed: 0 Warnings: 0
mysql> select * from employee audit;
 -> //
                    | ea_id | e_id | ename | post | address | phno | date_of_joining | annual_income | gender | did |
+----+
| 1 | 19 | neha | manager | pune | 9511268305 | 2021-07-02 |
                                                        500000 | F
                                                                 | 1 |
Insert new |
2 |
         5 | Neha | clerk | banglore | 8638739922 | 2020-04-04 | 200000 | F
                                                                 | 13 |
updated |
            2 rows in set (0.00 sec)
// BEFORE INSERT TRIGGER
mysql> delimiter //
mysql> create trigger before insert
  -> before insert
  -> on employee
  -> for each row
  -> begin
  -> if new.ename="Shreya" then
  -> signal sqlstate '45000'
  -> set message_text = 'Invalid Ename';
  -> end if;
  -> end
  -> //
Query OK, 0 rows affected (0.39 sec)
mysql> insert into employee (ename, post, address, phno, date of joining, annual income, gender, did) values
  -> ('Shreya','CEO','Nashik','9877456712','1998-09-12',9000000,'F',8);
   -> //
ERROR 1644 (45000): Invalid Ename
mysql> select * from employee;
+----+
| E id | Ename | Post | Address | Phno | Date of Joining | Annual income | Gender | Did |
16 rows in set (0.10 sec)
// BEFORE UPDATE TRIGGER
mysql> select * from employee;
+----+
| E id | Ename | Post | Address | Phno | Date of Joining | Annual_income | Gender | Did |
   1 | Vedika | analyst | Delhi | 8756998756 | 2010-07-09 |
                                                     500000 | F
                 2 | John | analyst
                                                     700000 | M
                                                              900000 | M
                                                                3 |
   3 | Rajas | Manager
                                                  1000000 | F
   4 | Ritika | Test engineer | Mumbai | 7559081256 | 2020-02-12 |
                                                                 1 1
                                                   200000 | F
   5 | Neha | clerk | banglore | 8638739922 | 2020-04-04 |
   6 | Sam | clerk
                                                    200000 | M
                   | banglore | 8638712322 | 2020-09-08 |
                                                                1 |
```

| Hyderabad | 6738712300 | 2000-01-12

| Pune | 9988712300 | 2000-11-12 |

| Hyderabad | 9990012300 | 2007-01-12

| 10 | Manish | Cashier | Pune | 9988714670 | 2019-01-19

| 11 | Rohit | Tech Lead | Pune | 9983976670 | 2019-08-19 |

7 | Anne | clerk

8 | Anita | engineer

9 | Asmita | clerk

600000 | F

900000 | F

600000 | F 700000 | M 900000 | M

700000 | M

900000 | M | 10 |

10 I

8 1

9 1

```
| 12 | Ritesh | Manager
| 13 | Soha | Manager
| 14 | Saniya | Manager
| 15 | anisha | Manager
| 19 | neha | manager
 | 12 | Ritesh | Manager
                                                                                                                                                - 1
                                                                                                                                                         2 |
                                                                                                                                                       7 |
                                             900000 | F
                                                                                                                                                | 11 |
                                             | 1 |
 +----+
16 rows in set (0.00 sec)
mysql> delimiter //
mysql> create trigger before update
      -> before
      -> update on employee
      -> for each row
      -> begin
      -> if new.post="Finance head" then
      -> signal sqlstate '45000'
      -> set message text = 'Cannot update the post';
      -> end if;
      -> end
      -> //
Query OK, 0 rows affected (0.16 sec)
mysql> update employee set post="Finance head" where post="Test engineer";
      -> //
ERROR 1644 (45000): Cannot update the post
mysql> select * from employee;
  -> //
 | E_id | Ename | Post | Address | Phno | Date_of_Joining | Annual_income | Gender | Did |
| 1 | Vedika | analyst | Delhi | 8756998756 | 2010-07-09 | 500000 | F | 2 | John | analyst | Delhi | 8234997656 | 2000-09-01 | 700000 | M | 3 | Rajas | Manager | Mumbai | 8009781256 | 2005-02-12 | 900000 | M | 4 | Ritika | Test engineer | Mumbai | 7559081256 | 2020-02-12 | 1000000 | F | 5 | Neha | clerk | banglore | 8638739922 | 2020-04-04 | 200000 | F | 6 | Sam | clerk | banglore | 8638712322 | 2020-09-08 | 200000 | M | 7 | Anne | clerk | Hyderabad | 6738712300 | 2000-01-12 | 600000 | F | 8 | Anita | engineer | Hyderabad | 9990012300 | 2007-01-12 | 900000 | F | 9 | Asmita | clerk | Pune | 9988712300 | 2000-11-12 | 600000 | F | 10 | Manish | Cashier | Pune | 9988714670 | 2019-01-19 | 700000 | M | 11 | Rohit | Tech Lead | Pune | 9988714670 | 2019-01-19 | 900000 | M | 12 | Ritesh | Manager | Pune | 9988112270 | 2005-07-11 | 900000 | M | 13 | Soha | Manager | Nashik | 778311270 | 2003-07-11 | 900000 | F | 14 | Saniya | Manager | Nashik | 778311270 | 2003-07-12 | 900000 | F | 15 | anisha | Manager | Nashik | 9879875656 | 2008-07-12 | 900000 | F | 19 | neha | manager | pune | 9511268305 | 2021-07-02 | 500000 | F |
 +----+
                                                                                                                                                | 13 |
                                                                                                                                                | 1 |
                                                                                                                                                | 10 |
                                                                                                                                                 8 |
                                                                                                                                                 9 |
                                                                                                                                                | 10 |
                                                                                                                                             | 15 |
                                                                                                                                                11 |
                                                                                                                                                  16 rows in set (0.00 sec)
// BEFORE Delete TRIGGER
      -> BEFORE
      -> DELETE ON EMPLOYEE
      -> FOR EACH ROW
      -> BEGIN
```

mysql> CREATE TRIGGER before delete

-> IF old.Ename="Vedika" THEN

-> SIGNAL SQLSTATE '45000'

-> SET MESSAGE TEXT = 'Cannot delete Vedika';

-> END IF;

-> END -> //

Query OK, 0 rows affected (0.20 sec)

mysql> delete from employee where ename="Vedika";

-> //

ERROR 1644 (45000): Cannot delete Vedika

mysql> select * from employee; -> //

	_/	/ /			1											
	E_id			Post	Address		Phno		Date_of_Joining	.	Annual_income		Gender	D	Did	l
- ا		•	Vedika	analyst	Delhi		8756998756		2010-07-09		500000				1	T
	2	:	John	analyst	Delhi		8234997656		2000-09-01	1	700000		M		4	
	3	F	Rajas	Manager	Mumbai		8009781256		2005-02-12		900000		M		3	
	4	F	Ritika	Test engineer	Mumbai		7559081256		2020-02-12		1000000		F		1	
	5	1	Neha	clerk	banglore		8638739922		2020-04-04		200000		F		13	
	6	5	Sam	clerk	banglore		8638712322		2020-09-08		200000		M		1	
	7	<i>I</i>	Anne	clerk	Hyderabad		6738712300		2000-01-12		600000		F		8	
	8	<i>I</i>	Anita	engineer	Hyderabad		9990012300		2007-01-12		900000		F		10	
	9	<i>I</i>	Asmita	clerk	Pune		9988712300		2000-11-12		600000		F		8	

1	10 Manish Cashier	Pune	99887146	70 2019-01-19	700000 M	1	9
1	11 Rohit Tech Lead	Pune	99839766	70 2019-08-19	900000 M	1	10
	12 Ritesh Manager	Pune	99831122	70 2005-07-11	900000 M	- 1	15
	13 Soha Manager	Nashik	77831122	70 2003-07-11	1000000 F		2
	14 Saniya Manager	Nashik	77831187	60 2003-07-11	900000 F	- 1	7
	15 anisha Manager	Nashik	98798756	56 2008-07-12	900000 F	- 1	11
	19 neha manager	pune	95112683	05 2021-07-02	500000 F		1
4					 		

16 rows in set (0.00 sec)