ROLL NO: 2043

Group C-ASSIGNMENT NO. 8

TITLE: Write and execute suitable database triggers.

Write trigger to take backup of each account before updating it (useful for rollback operation in recovery)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

......................<<create schemas and display it>>...............

mysql> CREATE DATABASE bank;

Query OK, 1 row affected (0.06 sec)

mysql> USE bank;

Database changed

mysql> USE bank;

Database changed

mysql> CREATE TABLE account(acc\_id INT PRIMARY KEY, type VARCHAR(10), balance INT );

Query OK, 0 rows affected (0.16 sec)

mysql> CREATE TABLE audit(acc\_id INT, balance INT, dou DATE);

Query OK, 0 rows affected (0.08 sec)

mysql> desc account;

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

| Field | Type | Null | Key | Default | Extra |

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

| acc\_id | int | NO | PRI | NULL | |

| type | varchar(10) | YES | | NULL | |

| balance | int | YES | | NULL | |

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

3 rows in set (0.03 sec)

mysql> desc audit;

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

| Field | Type | Null | Key | Default | Extra |

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

| acc\_id | int | YES | | NULL | |

| balance | int | YES | | NULL | |

| dou | date | YES | | NULL | |

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

3 rows in set (0.01 sec)

.................<<insert data and display all>>.........................

mysql> INSERT INTO account(acc\_id, type , balance)VALUES(101, "SAVINGS", 2000),(102, "JOINT", 4500),(103, "CURRENT", 6700),(104, "SAVINGS", 3500),(105, "JOINT", 8200);

Query OK, 5 rows affected (0.02 sec)

Records: 5 Duplicates: 0 Warnings: 0

mysql> SELECT \* FROM account;

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

| acc\_id | type | balance |

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

| 101 | SAVINGS | 2000 |

| 102 | JOINT | 4500 |

| 103 | CURRENT | 6700 |

| 104 | SAVINGS | 3500 |

| 105 | JOINT | 8200 |

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

5 rows in set (0.00 sec)

......................<<trigger definition>>.........................

**TRIGGER** 1

mysql> DELIMITER //

mysql> CREATE TRIGGER t1 BEFORE UPDATE ON account FOR EACH ROW

-> BEGIN

-> INSERT INTO audit VALUES(old.acc\_id, old.balance, curdate());

-> END//

Query OK, 0 rows affected (0.03 sec)

**TRIGGER** 2

mysql> DELIMITER //

mysql> CREATE TRIGGER t2 BEFORE DELETE ON account FOR EACH ROW

-> BEGIN

-> INSERT INTO audit VALUES(old.acc\_id, old.balance, curdate());

-> END//

Query OK, 0 rows affected (0.02 sec)

**TRIGGER** 3

mysql> DELIMITER //

mysql> CREATE TRIGGER t3 AFTER INSERT ON account FOR EACH ROW

-> BEGIN

-> INSERT INTO audit VALUES(new.acc\_id, new.balance, now());

-> END//

Query OK, 0 rows affected (0.02 sec)

......................<<Display trigger definition>>..................

mysql> SHOW TRIGGERS \G

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Trigger: t3

Event: INSERT

Table: account

Statement: BEGIN

INSERT INTO audit VALUES(new.acc\_id, new.balance, now());

END

Timing: AFTER

Created: 2024-02-28 14:17:14.73

sql\_mode: ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES,NO\_ZERO\_IN\_DATE,NO\_ZERO\_DATE,ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_ENGINE\_SUBSTITUTION

Definer: root@localhost

character\_set\_client: cp850

collation\_connection: cp850\_general\_ci

Database Collation: utf8mb4\_0900\_ai\_ci

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 2. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Trigger: t1

Event: UPDATE

Table: account

Statement: BEGIN

INSERT INTO audit VALUES(old.acc\_id, old.balance, curdate());

END

Timing: BEFORE

Created: 2024-02-28 13:48:57.59

sql\_mode: ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES,NO\_ZERO\_IN\_DATE,NO\_ZERO\_DATE,ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_ENGINE\_SUBSTITUTION

Definer: root@localhost

character\_set\_client: cp850

collation\_connection: cp850\_general\_ci

Database Collation: utf8mb4\_0900\_ai\_ci

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 3. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Trigger: t2

Event: DELETE

Table: account

Statement: BEGIN

INSERT INTO audit VALUES(old.acc\_id, old.balance, curdate());

END

Timing: BEFORE

Created: 2024-02-28 14:05:07.11

sql\_mode: ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES,NO\_ZERO\_IN\_DATE,NO\_ZERO\_DATE,ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_ENGINE\_SUBSTITUTION

Definer: root@localhost

character\_set\_client: cp850

collation\_connection: cp850\_general\_ci

Database Collation: utf8mb4\_0900\_ai\_ci

3 rows in set (0.00 sec)

mysql>

.........................<<Display data of both tables>>.................

mysql> SELECT \* FROM account;

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

| acc\_id | type | balance |

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

| 101 | SAVINGS | 2000 |

| 102 | JOINT | 6500 |

| 103 | CURRENT | 6700 |

| 104 | SAVINGS | 3500 |

| 105 | JOINT | 8200 |

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

5 rows in set (0.00 sec)

mysql> SELECT \* FROM audit;

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

| acc\_id | balance | dou |

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

| 102 | 4500 | 2024-02-28 |

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

1 row in set (0.00 sec)

mysql> SELECT \* FROM audit;//

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

| acc\_id | balance | dou |

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

| 102 | 4500 | 2024-02-28 |

| 103 | 6700 | 2024-02-28 |

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

2 rows in set (0.00 sec)

mysql> SELECT \* FROM account;

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

| acc\_id | type | balance |

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

| 101 | SAVINGS | 2000 |

| 102 | JOINT | 6500 |

| 104 | SAVINGS | 3500 |

| 105 | JOINT | 8200 |

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

4 rows in set (0.00 sec)

mysql> SELECT \* FROM account;

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

| acc\_id | type | balance |

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

| 101 | SAVINGS | 2000 |

| 102 | JOINT | 6500 |

| 104 | SAVINGS | 3500 |

| 105 | JOINT | 8200 |

| 106 | SAVINGS | 4500 |

| 107 | JOINT | 9234 |

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

6 rows in set (0.00 sec)

mysql> SELECT \* FROM audit;

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

| acc\_id | balance | dou |

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

| 102 | 4500 | 2024-02-28 |

| 103 | 6700 | 2024-02-28 |

| 106 | 4500 | 2024-02-28 |

| 107 | 9234 | 2024-02-28 |

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

4 rows in set (0.00 sec)