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PRACTICAL NO: 7

ROLL NO: TCOD01

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

Problem Statement: Write a database trigger on Library table. The System should keep track of the records that are being updated or deleted. The old value of updated or deleted records should be added in Library_Audit table.

TABLES

```
mysql> SELECT * FROM Library;
```

book_id	title	author	published_year
1	Database Systems	Elmasri & Navathe	2015
2	Operating System Concepts	Silberschatz	2018
3	Artificial Intelligence	Russell & Norvig	2020
4	Alchemist	Paulo Coelho	1988
5	TCP/IP Book	Fourozan	1988

5 rows in set (0.00 sec)

```
mysql> SELECT * FROM Library_Audit;
```

Empty set (0.00 sec)

TRIGGER

```
mysql> CREATE TRIGGER after_library_update
→ AFTER UPDATE ON Library
→ FOR EACH ROW
→ BEGIN
→   INSERT INTO Library_Audit (book_id,title,author,published_year,operation_type,operation_date)
→   VALUES (OLD.book_id,OLD.title,OLD.author,OLD.publisher_year,'UPDATE',NOW());
→
→ END$$
```

```
mysql> DELIMITER $$
```

```
mysql>
```

```
mysql> CREATE TRIGGER after_library_delete
```

```
→ AFTER DELETE ON Library
→ FOR EACH ROW
→ BEGIN
→   INSERT INTO Library_Audit(book_id, title, author, published_year, operation_type, operation_date)
→   VALUES (OLD.book_id, OLD.title, OLD.author, OLD.published_year, 'DELETE', NOW());
→
→ END$$
```

Query OK, 0 rows affected (0.02 sec)

```
mysql> DELIMITER ;
```

UPDATE

```
mysql> UPDATE Library SET author = 'Jensen Huang' where book_id = 1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> SELECT * FROM Library;
+-----+-----+-----+
| book_id | title           | author        | published_year |
+-----+-----+-----+
| 1 | Database Systems | Jensen Huang | 2015          |
| 2 | Operating System Concepts | Silberschatz | 2018          |
| 3 | Artificial Intelligence | Russell & Norvig | 2020          |
| 4 | Alchemist         | Paulo Coelho | 1988          |
| 5 | TCP/IP Book       | Fourozon     | 1988          |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM Library_Audit;
+-----+-----+-----+-----+-----+-----+
| audit_id | book_id | title           | author        | published_year | operation_type | operation_date   |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Database Systems | Elmasri & Navathe | 2015 | UPDATE | 2025-09-03 12:15:27 |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

DELETE

```
mysql> DELETE FROM Library WHERE title = 'Alchemist';
Query OK, 1 row affected (0.01 sec)
```

```
mysql> SELECT * FROM Library;
+-----+-----+-----+
| book_id | title           | author        | published_year |
+-----+-----+-----+
| 1 | Database Systems | Jensen Huang | 2015          |
| 2 | Operating System Concepts | Silberschatz | 2018          |
| 3 | Artificial Intelligence | Russell & Norvig | 2020          |
| 5 | TCP/IP Book       | Fourozon     | 1988          |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM Library_Audit;
+-----+-----+-----+-----+-----+-----+
| audit_id | book_id | title           | author        | published_year | operation_type | operation_date   |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Database Systems | Elmasri & Navathe | 2015 | UPDATE | 2025-09-03 12:15:27 |
| 2 | 4 | Alchemist         | Paulo Coelho | 1988 | DELETE | 2025-09-03 12:20:06 |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```