**Creating the Library table**

MariaDB [te31265\_db]>CREATE TABLE Library(

stu\_roll\_no INT PRIMARY KEY,

stu\_name VARCHAR(20),

book\_name VARCHAR(20),

date\_of\_issue DATE,

price INT

);

Query OK, 0 rows affected (0.172 sec)

**Creating the Library\_Audit table**

MariaDB [te31265\_db]>CREATE TABLE Library\_Audit(

Action\_Performed VARCHAR(20),

DateAndTime DATETIME,

stu\_roll\_no INT REFERENCES Library(stu\_roll\_no),

stu\_name VARCHAR(20),

book\_name VARCHAR(20),

date\_of\_issue DATE,

price INT);

Query OK, 0 rows affected (0.172 sec)

**Inserting data into the Library table**

MariaDB [te31265\_db]>INSERT INTO Library VALUES

(1, 'Ananya', 'DBMS', '2024-07-21', 300),

(2, 'Karan', 'CNS', '2024-05-21', 500),

(3, 'Sneha', 'SPOS', '2024-07-10', 400),

(4, 'Rohan', 'OOP', '2024-08-16', 250),

(5, 'Nikita', 'DSA', '2024-06-26', 650),

(6, 'Aarav', 'OOP', '2024-01-01', 330),

(7, 'Vani', 'SPOS', '2024-02-18', 540),

(8, 'Pooja', 'CNS', '2024-01-31', 540),

(9, 'Ravi', 'DBMS', '2024-04-04', 820),

(10, 'Tara', 'PPL', '2024-03-07', 430);

Query OK, 10 rows affected (0.048 sec)

Records: 10 Duplicates: 0 Warnings: 0

**Creating a trigger for insert operation on Library**

MariaDB [te31265\_db]>DELIMITER $$

CREATE TRIGGER trig\_library\_insert

AFTER INSERT ON Library

FOR EACH ROW

BEGIN

INSERT INTO Library\_Audit

VALUES ("INSERT", NOW(), NEW.stu\_roll\_no, NEW.stu\_name, NEW.book\_name,

NEW.date\_of\_issue, NEW.price);

END $$

MariaDB [te31265\_db]>DELIMITER $$

CREATE TRIGGER trig\_library\_update

AFTER UPDATE ON Library

FOR EACH ROW

BEGIN

INSERT INTO Library\_Audit

VALUES ("UPDATE", NOW(), OLD.stu\_roll\_no, OLD.stu\_name, OLD.book\_name,

OLD.date\_of\_issue, OLD.price);

END $$

Query OK, 0 rows affected (0.080 sec)

MariaDB [te31265\_db]>DELIMITER ;

**Creating a trigger for delete operation on Library**

MariaDB [te31265\_db]>DELIMITER $$

CREATE TRIGGER trig\_library\_delete

BEFORE DELETE ON Library

FOR EACH ROW

BEGIN

INSERT INTO Library\_Audit

VALUES ("DELETE", NOW(), OLD.stu\_roll\_no, OLD.stu\_name, OLD.book\_name,

OLD.date\_of\_issue, OLD.price);

END $$

Query OK, 0 rows affected (0.066 sec)

MariaDB [te31265\_db]>DELIMITER ;

**Select all records from Library table**

MariaDB [te31265\_db]> select \* from Library;

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

| stu\_roll\_no | stu\_name  | book\_name | date\_of\_issue | price |

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

|  1  | Ananya | DBMS  | 2024-07-21 |  300  |

|  2  | Karan | CNS   | 2024-05-21 |  500  |

|  3  | Sneha | SPOS  | 2024-07-10 |  400  |

|  4  | Rohan | OOP   | 2024-08-16 |  250  |

|  5  | Nikita | DSA   | 2024-06-26 |  650  |

|  6  | Aarav | OOP   | 2024-01-01 |  330  |

|  7  | Vani  | SPOS  | 2024-02-18 |  540  |

|  8  | Pooja | CNS   | 2024-01-31 |  540  |

|  9  | Ravi  | DBMS  | 2024-04-04 |  820  |

| 10  | Tara  | PPL   | 2024-03-07 |  430  |

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

**Updating stu\_name in the Library table**

UPDATE Library SET stu\_name = 'Sweety' WHERE stu\_name = 'Pornima';

Query OK, 1 row affected (0.044 sec)

Rows matched: 1 Changed: 1 Warnings: 0

**Deleting a record from Library table**

DELETE FROM Library WHERE stu\_name = 'Raghav';

Query OK, 1 row affected (0.035 sec)

**Inserting a new record into Library table**

INSERT INTO Library VALUES (20, 'Riya', 'PPS', '2024-08-26', 700);

Query OK, 1 row affected (0.029 sec)

**Select all records from Library\_Audit table after the new insertion**

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

| Action\_Performed | DateAndTime     | stu\_roll\_no | stu\_name | book\_name | date\_of\_issue | price |

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

| UPDATE       | 2024-09-11 12:28:34 | 8       | Sweety   | CNS   | 2024-01-31 | 540   |

| DELETE       | 2024-09-11 12:29:09 | 5       | Raghav   | DSA   | 2024-06-26 | 650   |

| INSERT       | 2024-09-11 12:29:47 | 20      | Riya | PPS   | 2024-08-26 | 700   |

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

CREATE TABLE Library (

    id INT PRIMARY KEY,

    title VARCHAR(255),

    author VARCHAR(255),

    published\_date DATE,

    copies INT

);

CREATE TABLE Library\_Audit (

    audit\_id INT AUTO\_INCREMENT PRIMARY KEY,

    library\_id INT,

    old\_title VARCHAR(255),

    old\_author VARCHAR(255),

    old\_published\_date DATE,

    old\_copies INT,

    change\_type ENUM('UPDATE', 'DELETE'),

    change\_timestamp TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

**BEFORE UPDATE**

DELIMITER //

CREATE TRIGGER before\_library\_update

BEFORE UPDATE ON Library

FOR EACH ROW

BEGIN

    INSERT INTO Library\_Audit (library\_id, old\_title, old\_author, old\_published\_date, old\_copies, change\_type)

    VALUES (OLD.id, OLD.title, OLD.author, OLD.published\_date, OLD.copies, 'UPDATE');

END; //

DELIMITER ;

**BEFORE DELETE**

DELIMITER //

CREATE TRIGGER before\_library\_delete

BEFORE DELETE ON Library

FOR EACH ROW

BEGIN

    INSERT INTO Library\_Audit (library\_id, old\_title, old\_author, old\_published\_date, old\_copies, change\_type)

    VALUES (OLD.id, OLD.title, OLD.author, OLD.published\_date, OLD.copies, 'DELETE');

END; //

DELIMITER ;

**TEST**

-- Insert a sample record into the Library table

INSERT INTO Library (id, title, author, published\_date, copies)

VALUES (1, '1984', 'George Orwell', '1949-06-08', 5);

-- Update the record

UPDATE Library

SET copies = 3

WHERE id = 1;

-- Delete the record

DELETE FROM Library

WHERE id = 1;

-- Check the Library\_Audit table

SELECT \* FROM Library\_Audit;

**BEFORE INSERT**

DELIMITER //

CREATE TRIGGER before\_library\_insert

BEFORE INSERT ON Library

FOR EACH ROW

BEGIN

    INSERT INTO Library\_Audit (library\_id, old\_title, old\_author, old\_published\_date, old\_copies, change\_type)

    VALUES (NEW.id, NEW.title, NEW.author, NEW.published\_date, NEW.copies, 'INSERT');

END; //

DELIMITER ;