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Practica 1

```
mysql> CREATE DATABASE base_ejemplo;
Query OK, 1 row affected (0.08 sec)

mysql> USE base_ejemplo;
Database changed
mysql> CREATE TABLE productos (
    ->     id INT NOT NULL AUTO_INCREMENT,
    ->     nombre VARCHAR(20) NOT NULL,
    ->     coste FLOAT NOT NULL DEFAULT 0.0,
    ->     precio FLOAT NOT NULL DEFAULT 0.0,
    ->     PRIMARY KEY(id)
    -> );
Query OK, 0 rows affected (0.39 sec)

mysql> INSERT INTO productos (nombre, coste, precio) VALUES ('Producto A', 4, 8), ('Producto B', 2, 4),('Produc
to C', 40, 80);
Query OK, 3 rows affected (0.16 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql>
```

```
mysql> use base_ejemplo;
Database changed
mysql> DELIMITER $$
mysql> SHOW TABLES
    -> $$
+------------------------+
| Tables_in_base_ejemplo |
+------------------------+
| productos              |
+------------------------+
1 row in set (0.00 sec)

mysql> CREATE TRIGGER actualizarPrecioProducto BEFORE UPDATE ON productos FOR EACH ROW
    -> BEGIN  IF NEW.coste <> OLD.coste    THEN      SET NEW.precio = NEW.coste * 2;  END IF ;
    -> END $$
Query OK, 0 rows affected (0.10 sec)

mysql> DELIMITER ;
```

```
mysql> CREATE TRIGGER actualizarPrecioProducto BEFORE UPDATE ON productos FOR EACH ROW
    -> BEGIN  IF NEW.coste <> OLD.coste    THEN      SET NEW.precio = NEW.coste * 2;  END IF ;
    -> END $$
Query OK, 0 rows affected (0.10 sec)

mysql> DELIMITER ;
mysql> SELECT*FROM productos;
+----+------------+-------+--------+
| id | nombre     | coste | precio |
+----+------------+-------+--------+
|  1 | Producto A |     4 |      8 |
|  2 | Producto B |     2 |      4 |
|  3 | Producto C |    40 |     80 |
+----+------------+-------+--------+
3 rows in set (0.00 sec)

mysql> UPDATE productos SET coste = 5 WHERE id = 1;
Query OK, 1 row affected (0.18 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT*FROM productos;
+----+------------+-------+--------+
| id | nombre     | coste | precio |
+----+------------+-------+--------+
|  1 | Producto A |     5 |     10 |
|  2 | Producto B |     2 |      4 |
|  3 | Producto C |    40 |     80 |
+----+------------+-------+--------+
3 rows in set (0.00 sec)
```

Practica 2

```
mysql> CREATE DATABASE bd_ejemplo2;
Query OK, 1 row affected (0.07 sec)

mysql> USE BD_EJEMPLO2;
Database changed
mysql> CREATE TABLE  Author (id int, name varchar(45), post_count int);
Query OK, 0 rows affected (0.22 sec)

mysql> CREATE TABLE author_audit (     id INT AUTO_INCREMENT PRIMARY KEY,     authorId INT NOT NULL,     name VARC
HAR(50) NOT NULL,     changedate DATETIME DEFAULT NULL,     action VARCHAR(50) DEFAULT NULL);
Query OK, 0 rows affected (0.25 sec)

mysql> DELIMITER $$
mysql> CREATE TRIGGER after_author_added
    ->  AFTER INSERT ON Author FOR EACH ROW
    -> BEGIN
    -> INSERT INTO author_audit SET action = 'insert', authorId = NEW.id, name = NEW.name, changedate = NOW();
    -> END$$
```

```
mysql> use bd_ejemplo2;
Database changed
mysql> show triggers;
+--------------------+--------+--------+------------------------------------------------------------------------------
-----------------------------------------+--------+------------------------+------------------------------------------
------------+----------------------+--------------------+----------------------+-------------------------+
| Trigger            | Event  | Table  | Statement
                                          | Timing | Created                | sql_mode
            | Definer              | character_set_client | collation_connection | Database Collation |
+--------------------+--------+--------+------------------------------------------------------------------------------
-----------------------------------------+--------+------------------------+------------------------------------------
------------+----------------------+--------------------+----------------------+-------------------------+
| after_author_added | INSERT | author | BEGIN
INSERT INTO author_audit SET action = 'insert', authorId = NEW.id, name = NEW.name, changedate = NOW();
END | AFTER  | 2019-11-15 15:53:17.50 | STRICT_TRANS_TABLES,NO_ENGINE_SUBSTITUTION | Abraham@localhost | cp850
                  | cp850_general_ci     | utf8mb4_0900_ai_ci |
+--------------------+--------+--------+------------------------------------------------------------------------------
-----------------------------------------+--------+------------------------+------------------------------------------
------------+----------------------+--------------------+----------------------+-------------------------+
1 row in set (0.05 sec)

mysql>
```

```
mysql> use bd_ejemplo2;
Database changed
mysql>
mysql> SELECT * FROM author_audit;
Empty set (0.00 sec)

mysql> INSERT INTO Author (id, name, post_count) VALUES (7, 'Vyom', 27);
Query OK, 1 row affected (0.13 sec)

mysql> SELECT * FROM author_audit;
+----+----------+------+---------------------+--------+
| id | authorId | name | changedate          | action |
+----+----------+------+---------------------+--------+
|  1 |        7 | Vyom | 2019-11-15 16:04:11 | insert |
+----+----------+------+---------------------+--------+
1 row in set (0.00 sec)

mysql> _
```

Practica 3

Before Update Trigger:

```
mysql> create database Before_Update_Trigger;
Query OK, 1 row affected (0.07 sec)

mysql> use Before_Update_Trigger;
Database changed
mysql> create table customer (acc_no integer primary key,                                cust_name varchar(20
),                                avail_balance decimal);create table mini_statement (acc_no integer,
                        avail_balance decimal,                        foreign key(acc_no) references customer(acc
_no) on delete cascade);
Query OK, 0 rows affected (0.31 sec)

Query OK, 0 rows affected (0.30 sec)

mysql> insert into customer values (1000, "Fanny", 7000);insert into customer values (1001, "Peter", 12000);
Query OK, 1 row affected (0.11 sec)

Query OK, 1 row affected (0.10 sec)

mysql> DELIMITER $$
mysql> create trigger update_cus      before update on customer      for each row      begin      insert into m
```

```
mysql> DELIMITER $$
mysql> create trigger update_cus      before update on customer      for each row      begin      insert into m
ini_statement values (old.acc_no, old.avail_balance);      end $$
Query OK, 0 rows affected (0.03 sec)

mysql> delimiter ;
mysql> update customer set avail_balance = avail_balance + 3000 where acc_no = 1001;update customer set avail_b
alance = avail_balance + 3000 where acc_no = 1000;
Query OK, 1 row affected (0.08 sec)
Rows matched: 1  Changed: 1  Warnings: 0

Query OK, 1 row affected (0.14 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select *from mini_statement;
+--------+---------------+
| acc_no | avail_balance |
+--------+---------------+
|   1001 |         12000 |
|   1000 |          7000 |
+--------+---------------+
2 rows in set (0.00 sec)

mysql>
```

After Update Trigger:

```
mysql> CREATE DATABASE After_Update_Trigger;
Query OK, 1 row affected (0.08 sec)

mysql> create table customer (acc_no integer primary key,                                    cust_name varchar(20
),                            avail_balance decimal);create table mini_statement (acc_no integer,
                      avail_balance decimal,                      foreign key(acc_no) references customer(acc
_no) on delete cascade);
ERROR 1046 (3D000): No database selected
ERROR 1046 (3D000): No database selected
mysql> USE After_Update_Trigger;
Database changed
mysql> create table customer (acc_no integer primary key,                                    cust_name varchar(20
),                            avail_balance decimal);create table mini_statement (acc_no integer,
                      avail_balance decimal,                      foreign key(acc_no) references customer(acc
_no) on delete cascade);
Query OK, 0 rows affected (0.23 sec)

Query OK, 0 rows affected (0.24 sec)

mysql> create table micro_statement (acc_no integer,                                  avail_balance decimal,
```

```
mysql> create table micro_statement (acc_no integer,                                  avail_balance decimal,
          foreign key(acc_no) references customer(acc_no) on delete cascade);
Query OK, 0 rows affected (0.27 sec)

mysql> insert into customer values (1002, "Janitor", 4500);
Query OK, 1 row affected (0.06 sec)

mysql> delimiter //
mysql> create trigger update_after        after update on customer        for each row       begin       insert
 into micro_statement values(new.acc_no, new.avail_balance);       end //
Query OK, 0 rows affected (0.11 sec)

mysql> delimiter ;
mysql> update customer set avail_balance = avail_balance + 1500 where acc_no = 1002;
Query OK, 1 row affected (0.08 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select *from micro_statement;
+--------+---------------+
| acc_no | avail_balance |
+--------+---------------+
|   1002 |          6000 |
+--------+---------------+
1 row in set (0.00 sec)

mysql>
```

Before Insert Trigger

```
mysql> CREATE DATABASE Before_Insert_Trigger;
Query OK, 1 row affected (0.06 sec)

mysql> USE Before_Insert_Trigger;
Database changed
mysql> create table contacts (contact_id INT (11) NOT NULL AUTO_INCREMENT,                                last_n
ame VARCHAR (30) NOT NULL, first_name VARCHAR (25),                              birthday DATE, created_date DA
TE,                        created_by VARCHAR(30),                                 CONSTRAINT contacts_pk PRIM
ARY KEY (contact_id));
Query OK, 0 rows affected (0.70 sec)

mysql> DELIMITER //
mysql> create trigger contacts_before_insert           before insert           on contacts for each row
      begin                  DECLARE vUser varchar(50);            select USER() into vUser;               SET N
EW.created_date = SYSDATE();                SET NEW.created_by = vUser;            end //
Query OK, 0 rows affected (0.23 sec)

mysql> DELIMITER ;
mysql> insert into contacts values (1, "Newton", "Enigma",                             str_to_date ("19-08-199
```

After Insert Trigger:

```
mysql> CREATE DATABASE After_Insert_Trigger;
Query OK, 1 row affected (0.07 sec)

mysql> USE After_Insert_Trigger;
Database changed
mysql> create table contacts (contact_id int (11) NOT NULL AUTO_INCREMENT,                              last_n
ame VARCHAR(30) NOT NULL,                    first_name VARCHAR(25), birthday DATE,
            CONSTRAINT contacts_pk PRIMARY KEY (contact_id));create table contacts_audit (contact_id integer,
                          created_date date,                              created_by varchar (30));
Query OK, 0 rows affected (0.30 sec)

Query OK, 0 rows affected (0.31 sec)

mysql> DELIMITER //
mysql> create trigger contacts_after_insert after insert on contacts for each row  begin   DECLARE vUser varcha
r(50);              SELECT USER() into vUser;              INSERT into contacts_audit( contact_id,created_dat
e,created_by) VALUES(NEW.contact_id, curdate(),vUser );           END //
Query OK, 0 rows affected (0.14 sec)
```

1Before Delete Trigger:

```
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use Before_Delete_Trigger;
Database changed
mysql> show tables;
+---------------------------------+
| Tables_in_before_delete_trigger |
+---------------------------------+
| contacts                        |
| contacts_audit                  |
+---------------------------------+
2 rows in set (0.00 sec)

mysql> delimiter //
mysql> create trigger contacts_before_delete           before delete on contacts for each row begin DECLARE vUs
er varchar(50); SELECT USER() into vUser; INSERT into contacts_audit( contact_id,deleted_date,deleted_by)VALUES(
 OLD.contact_id,SYSDATE(),vUser );           end //
Query OK, 0 rows affected (0.10 sec)
```

2After Delete Trigger:

```
mysql> create table micro_statement (acc_no integer,                                    avail_balance decimal,
        foreign key(acc_no) references customer(acc_no) on delete cascade);
Query OK, 0 rows affected (0.27 sec)

mysql> insert into customer values (1002, "Janitor", 4500);
Query OK, 1 row affected (0.06 sec)

mysql> delimiter //
mysql> create trigger update_after        after update on customer        for each row       begin       insert
 into micro_statement values(new.acc_no, new.avail_balance);       end //
Query OK, 0 rows affected (0.11 sec)

mysql> delimiter ;
mysql> update customer set avail_balance = avail_balance + 1500 where acc_no = 1002;
Query OK, 1 row affected (0.08 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select *from micro_statement;
+--------+--------------+
| acc_no | avail_balance |
+--------+--------------+
|   1002 |          6000 |
+--------+--------------+
1 row in set (0.00 sec)
```

3 Before Insert Trigger:

```
mysql> CREATE DATABASE Before_Insert_Trigger;
Query OK, 1 row affected (0.06 sec)

mysql> USE Before_Insert_Trigger;
Database changed
mysql> create table contacts (contact_id INT (11) NOT NULL AUTO_INCREMENT,                                last_n
ame VARCHAR (30) NOT NULL, first_name VARCHAR (25),                                birthday DATE, created_date DA
TE,                        created_by VARCHAR(30),                                   CONSTRAINT contacts_pk PRIM
ARY KEY (contact_id));
Query OK, 0 rows affected (0.70 sec)

mysql> DELIMITER //
mysql> create trigger contacts_before_insert           before insert           on contacts for each row
      begin              DECLARE vUser varchar(50);           select USER() into vUser;              SET N
EW.created_date = SYSDATE();              SET NEW.created_by = vUser;           end //
Query OK, 0 rows affected (0.23 sec)

mysql> DELIMITER ;
mysql> insert into contacts values (1, "Newton", "Enigma",                           str_to_date ("19-08-199
```

```
mysql> CREATE DATABASE Before_Insert_Trigger;
Query OK, 1 row affected (0.06 sec)

mysql> USE Before_Insert_Trigger;
Database changed
mysql> create table contacts (contact_id INT (11) NOT NULL AUTO_INCREMENT,                                last_n
ame VARCHAR (30) NOT NULL, first_name VARCHAR (25),                                birthday DATE, created_date DA
TE,                        created_by VARCHAR(30),                                   CONSTRAINT contacts_pk PRIM
ARY KEY (contact_id));
Query OK, 0 rows affected (0.70 sec)

mysql> DELIMITER //
mysql> create trigger contacts_before_insert           before insert           on contacts for each row
      begin              DECLARE vUser varchar(50);           select USER() into vUser;              SET N
EW.created_date = SYSDATE();              SET NEW.created_by = vUser;           end //
Query OK, 0 rows affected (0.23 sec)

mysql> DELIMITER ;
mysql> insert into contacts values (1, "Newton", "Enigma",                           str_to_date ("19-08-199
9", "%d-%m-%Y"),                     str_to_date ("17-03-2018", "%d-%m-%Y"), "xyz");
Query OK, 1 row affected (0.05 sec)

mysql> select *from contacts;
```

4After Insert Trigger:

```
mysql> CREATE DATABASE After_Insert_Trigger;
Query OK, 1 row affected (0.07 sec)

mysql> USE After_Insert_Trigger;
Database changed
mysql> create table contacts (contact_id int (11) NOT NULL AUTO_INCREMENT,                                last_n
ame VARCHAR(30) NOT NULL,                                first_name VARCHAR(25), birthday DATE,
            CONSTRAINT contacts_pk PRIMARY KEY (contact_id));create table contacts_audit (contact_id integer,
                        created_date date,                                created_by varchar (30));
Query OK, 0 rows affected (0.30 sec)

Query OK, 0 rows affected (0.31 sec)

mysql> DELIMITER //
mysql> create trigger contacts_after_insert after insert on contacts for each row  begin   DECLARE vUser varcha
r(50);                SELECT USER() into vUser;              INSERT into contacts_audit( contact_id,created_dat
e,created_by) VALUES(NEW.contact_id, curdate(),vUser );           END //
Query OK, 0 rows affected (0.14 sec)
```

```
mysql> DELIMITER //
mysql> create trigger contacts_after_insert after insert on contacts for each row  begin   DECLARE vUser varcha
r(50);                SELECT USER() into vUser;              INSERT into contacts_audit( contact_id,created_dat
e,created_by) VALUES(NEW.contact_id, curdate(),vUser );           END //
Query OK, 0 rows affected (0.14 sec)

mysql> DELIMITER ;
mysql> insert into contacts values (1, "Kumar", "Rupesh",                           str_to_date("20-06-1999", "%
d-%m-%Y"));
Query OK, 1 row affected (0.07 sec)

mysql> select *from contacts_audit;
```

6 After Delete Trigger

```
mysql> USE After_Delete_Trigger;
Database changed
mysql> create table contacts (contact_id int (11) NOT NULL AUTO_INCREMENT,                                last_name
 VARCHAR (30) NOT NULL, first_name VARCHAR (25),                                birthday DATE, created_date DATE, c
reated_by VARCHAR (30),                        CONSTRAINT contacts_pk PRIMARY KEY (contact_id));create tabl
e contacts_audit (contact_id integer, deleted_date date, deleted_by varchar(20));
Query OK, 0 rows affected (0.34 sec)

Query OK, 0 rows affected (0.28 sec)

mysql> delimiter //
mysql> create trigger contacts_after_delete after delete on contacts for each row begin DECLARE vUser varchar(50
); SELECT USER() into vUser; INSERT into contacts_audit(contact_id,deleted_date,deleted_by)VALUES( OLD.contact_i
d,SYSDATE(),vUser );end //
Query OK, 0 rows affected (0.10 sec)

mysql> delimiter ;
mysql> insert into contacts values (1, "Newton", "Isaac",                                str_to_date ("19-08-1985"
, "%d-%m-%Y"),                           str_to_date ("23-07-2018", "%d-%m-%Y"), "xyz");
Query OK, 1 row affected (0.05 sec)
```

```
Query OK, 0 rows affected (0.28 sec)

mysql> delimiter //
mysql> create trigger contacts_after_delete after delete on contacts for each row begin DECLARE vUser varchar(50
); SELECT USER() into vUser; INSERT into contacts_audit(contact_id,deleted_date,deleted_by)VALUES( OLD.contact_i
d,SYSDATE(),vUser );end //
Query OK, 0 rows affected (0.10 sec)

mysql> delimiter ;
mysql> insert into contacts values (1, "Newton", "Isaac",                                str_to_date ("19-08-1985"
, "%d-%m-%Y"),                           str_to_date ("23-07-2018", "%d-%m-%Y"), "xyz");
Query OK, 1 row affected (0.05 sec)

mysql> delete from contacts where first_name="Isaac";
Query OK, 1 row affected (0.16 sec)

mysql> select *from contacts_audit;
```