



ΠΑΝΕΠΙΣΤΗΜΙΟ  
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ΤΜΗΜΑ ΜΗΧΑΝΙΚΩΝ ΠΛΗΡΟΦΟΡΙΚΗΣ ΚΑΙ  
ΥΠΟΛΟΓΙΣΤΩΝ

4<sup>η</sup> ΕΡΓΑΣΤΗΡΙΑΚΗ ΑΣΚΗΣΗ  
ΕΝΑΥΣΜΑ (TRIGGER)

**ΣΤΟΙΧΕΙΑ ΕΡΓΑΣΙΑΣ**

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ΤΜΗΜΑ ΕΡΓΑΣΤΗΡΙΟΥ: [06] ΤΕΤΑΡΤΗ 13:00-14:00  
ΥΠΕΥΘΥΝΗ ΕΡΓΑΣΤΗΡΙΟΥ : ΓΑΡΟΦΑΛΑΚΗ ΡΑΝΙΑ  
ΗΜΕΡΟΜΗΝΙΑ ΠΑΡΑΔΟΣΗΣ : 27/12/2024  
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# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## ΣΤΟΙΧΕΙΑ ΦΟΙΤΗΤΗ

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### ΦΩΤΟΓΡΑΦΙΑ ΦΟΙΤΗΤΗ:



**ΟΝΟΜΑΤΕΠΩΝΥΜΟ :** ΑΘΑΝΑΣΙΟΥ ΒΑΣΙΛΕΙΟΣ ΕΥΑΓΓΕΛΟΣ

**ΑΡΙΘΜΟΣ ΜΗΤΡΩΟΥ :** 19390005

**ΕΞΑΜΗΝΟ ΦΟΙΤΗΤΗ :** 9<sup>ο</sup>

**ΚΑΤΑΣΤΑΣΗ ΦΟΙΤΗΤΗ :** ΠΡΟΠΤΥΧΙΑΚΟ

**ΠΡΟΓΡΑΜΜΑ ΣΠΟΥΔΩΝ :** ΠΑΔΑ

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

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# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## ΒΔ personnel

### personnel.sql

```
drop database if exists personnel;
```

```
create database personnel;
```

```
use personnel;
```

```
create table
```

```
DEPT(
```

```
DEPTNO numeric(2),
```

```
DNAME varchar(24),
```

```
LOC char(23)
```

```
);
```

```
insert into
```

```
DEPT
```

```
(DEPTNO, DNAME, LOC)
```

```
values
```

```
(50, 'SALES', 'ATHENS'),
```

```
(60, 'ACCOUNTING', 'ATHENS'),
```

```
(70, 'PAYROL', 'VOLOS');
```

```
create table
```

```
JOB(
```

```
JOB_CODE numeric(3),
```

```
JOB_DESCR varchar(24),
```

```
SAL numeric(10,2)
```

```
);
```

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

```
insert into
```

```
JOB
```

```
(JOB_CODE, JOB_DESCR, SAL)
```

```
values
```

```
(100, 'SALESMAN', 2000),
```

```
(200, 'ANALYST', 2000),
```

```
(300, 'DBA', 3000);
```

```
create table
```

```
EMP(
```

```
EMPNO numeric(4),
```

```
NAME varchar(255),
```

```
JOBNO numeric(3),
```

```
DEPTNO numeric(2),
```

```
COMM numeric(10,2)
```

```
);
```

```
insert into
```

```
EMP
```

```
(EMPNO, NAME, JOBNO, DEPTNO, COMM)
```

```
values
```

```
(10, 'Codd', 100, 50, NULL),
```

```
(20, 'Navathe', 200, 50, 450),
```

```
(30, 'Elmasri', 300, 60, NULL),
```

```
(40, 'Date', 100, 50, NULL);
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

personnel.png

Στήλες	Τύπος δεδομένων
DEPT.DEPTNO, EMP.DEPTNO	numeric(2)
DNAME, JOB_DESCR	varchar(24)
LOC	char(23)
JOBCODE, JOBNO	numeric(3)
SAL, COMM	numeric(10,2)
EMPNO	numeric(4)
PROJECT.P_ID	int
PROJECT.P_NAME	varchar(255)

Πίνακας 1. Τύποι δεδομένων πινάκων EMP, JOB, DEPT

## EMP

EMPNO	NAME	JOBNO	DEPTNO	COMM
10	CODD	100	50	
20	NAVATHE	200	50	450
30	ELMASRI	300	60	
40	DATE	100	50	

## JOB

JOBCODE	JOB_DESCR	SAL
100	SALESMAN	2000
200	ANALYST	2000
300	DBA	3000

## DEPT

DEPTNO	DNAME	LOC
50	SALES	ATHENS
60	ACCOUNTING	ATHENS
70	PAYROL	VOLOS

Εικόνα 1. Δεδομένα πινάκων EMP, JOB, DEPT

## Δραστηριότητες

1. Συνδεθείτε στην MySQL του συστήματος σας με όποιον από τους προαναφερόμενους τρόπους επιθυμείτε

### 1.1. Δήλωση

```
"C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --default-character-set=utf8mb4 -u root -p
```

Enter password: \*\*\*\*\*



# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 1.2. Αποτέλεσμα

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 8

Server version: 8.0.35 MySQL Community Server - GPL

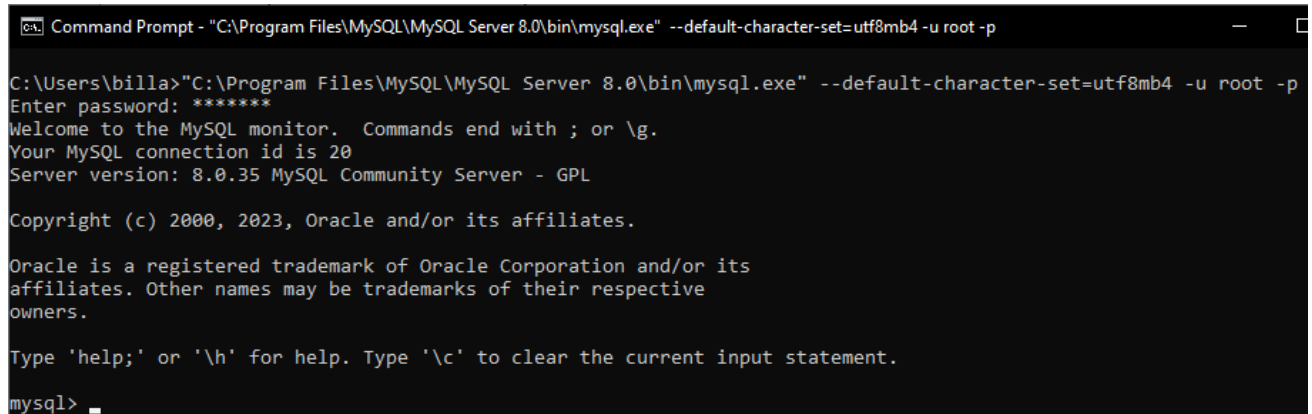
Copyright (c) 2000, 2023, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

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

mysql>

## 1.3. Στιγμιότυπο



```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --default-character-set=utf8mb4 -u root -p

C:\Users\billa>"C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --default-character-set=utf8mb4 -u root -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 8.0.35 MySQL Community Server - GPL

Copyright (c) 2000, 2023, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

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

mysql> _
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 2. Ελέγξτε αν υπάρχει ΒΔ με την ονομασία personnel

### 2.1. Δήλωση

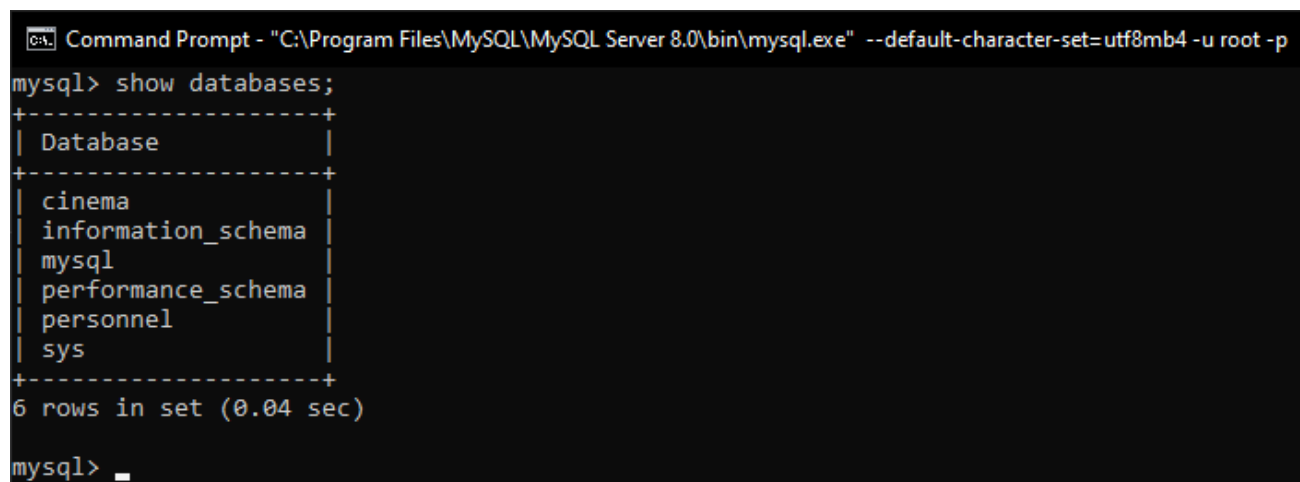
```
show databases;
```

### 2.2. Αποτέλεσμα

```
+-----+
| Database      |
+-----+
| cinema        |
| information_schema |
| mysql         |
| performance_schema |
| personnel     |
| sys           |
+-----+

6 rows in set (0.04 sec)
```

### 2.3. Στιγμιότυπο



```
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql.exe --default-character-set=utf8mb4 -u root -p
mysql> show databases;
+-----+
| Database      |
+-----+
| cinema        |
| information_schema |
| mysql         |
| performance_schema |
| personnel     |
| sys           |
+-----+
6 rows in set (0.04 sec)

mysql> _
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 3. Επιλέξτε την ΒΔ personnel για χρήση

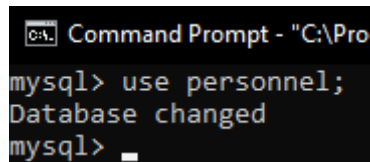
### 3.1. Δήλωση

```
use personnel;
```

### 3.2. Αποτέλεσμα

Database changed

### 3.3. Στιγμιότυπο



```
C:\Pro
mysql> use personnel;
Database changed
mysql> _
```

## 4. Δημιουργήστε τον trigger με όνομα dept\_update που αφυπνίζεται από το γεγονός “BEFORE UPDATE ON”

### 4.1. Δήλωση

```
delimiter //

...

CREATE TRIGGER

    dept_update

    BEFORE UPDATE ON

    dept

    FOR EACH ROW

    BEGIN

    SET NEW.dname = UPPER(NEW.dname);

    END;

//
```

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

```
...
delimiter ;
...
UPDATE
    dept
SET
    dname = 'Operations'
WHERE
    deptno = 70;
//
...
SELECT * FROM dept;
```

### 4.2. Αποτέλεσμα

```
...
Query OK, 0 rows affected (0.01 sec)
...

...
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
...
+-----+-----+-----+
| DEPTNO | DNAME      | LOC      |
+-----+-----+-----+
|      50 | SALES      | ATHENS   |
|      60 | ACCOUNTING | ATHENS   |
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

| 70 | OPERATIONS | VOLOS |

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

3 rows in set (0.00 sec)

## 4.3. Στιγμιότυπο

```
Command Prompt - "C:\Program Files\MySQL\MySQL Se
mysql> delimiter //
mysql> CREATE TRIGGER
-> dept_update
-> BEFORE UPDATE ON
-> dept
-> FOR EACH ROW
-> BEGIN
-> SET NEW.dname = UPPER(NEW.dname);
-> END;
-> //
Query OK, 0 rows affected (0.01 sec)

mysql> _
```

...

```
Command Prompt - "C:\Program Files\MySQL\MySQL S
mysql> delimiter ;
mysql> UPDATE
-> dept
-> SET
-> dname = 'Operations'
-> WHERE
-> deptno = 70
-> ;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> SELECT * FROM dept;
+-----+-----+-----+
| DEPTNO | DNAME      | LOC      |
+-----+-----+-----+
| 50     | SALES      | ATHENS   |
| 60     | ACCOUNTING | ATHENS   |
| 70     | OPERATIONS | VOLOS    |
+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

**5. Στον πίνακα Department θα προσθέσουμε τη στήλη no\_of\_employees (αριθμός υπαλλήλων που έχει το τμήμα)**

## 5.1. Δήλωση

```
ALTER TABLE
    dept
    ADD
    (no_of_employees INT)
;

...

DESCRIBE dept;
```

## 5.2. Αποτέλεσμα

Query OK, 0 rows affected (0.01 sec)

Records: 0 Duplicates: 0 Warnings: 0

...

Field	Type	Null	Key	Default	Extra	
DEPTNO	decimal(2,0)	YES		NULL		
DNAME	varchar(24)	YES		NULL		
LOC	char(23)	YES		NULL		
no_of_employees	int	YES		NULL		

4 rows in set (0.00 sec)

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 5.3. Στιγμιότυπο

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --default-cha
mysql> ALTER TABLE
-> dept
-> ADD
-> (no_of_employees INT)
-> ;
Query OK, 0 rows affected (0.01 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> DESCRIBE dept;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DEPTNO         | decimal(2,0)  | YES  |     | NULL    |       |
| DNAME          | varchar(24)   | YES  |     | NULL    |       |
| LOC            | char(23)      | YES  |     | NULL    |       |
| no_of_employees | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> _
```

**6. Στον πίνακα Department θα προσθέσουμε τη στήλη no\_of\_employees (αριθμός υπαλλήλων που έχει το τμήμα)**

## 6.1. Δήλωση

UPDATE

dept

SET

no\_of\_employees =

(

SELECT

COUNT(\*)

FROM

emp

WHERE

emp.deptno = dept.deptno

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

);

...

SELECT \* FROM dept;

### 6.2. Αποτέλεσμα

Query OK, 3 rows affected (0.00 sec)

Rows matched: 3 Changed: 3 Warnings: 0

...

DEPTNO	DNAME	LOC	no_of_employees
50	SALES	ATHENS	3
60	ACCOUNTING	ATHENS	1
70	OPERATIONS	VOLOS	0

3 rows in set (0.00 sec)

### 6.3. Στιγμιότυπο

```
C:\Program Files\MySQL\MySQL Server 8.0\bin\mys
mysql> UPDATE
-> dept
-> SET
-> no_of_employees =
-> (
-> SELECT
-> COUNT(*)
-> FROM
-> emp
-> WHERE
-> emp.deptno = dept.deptno
-> );
Query OK, 3 rows affected (0.00 sec)
Rows matched: 3 Changed: 3 Warnings: 0

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS   | 3               |
| 60     | ACCOUNTING | ATHENS   | 1               |
| 70     | OPERATIONS | VOLOS    | 0               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql>
```



# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 7. Στον πίνακα Trigger που αφυπνίζεται από το γεγονός AFTER INSERT ON

### 7.1. Δήλωση

```
delimiter //  
  
...  
  
CREATE TRIGGER  
    emp_insert  
    AFTER INSERT ON  
    emp  
    FOR EACH ROW  
    BEGIN  
    UPDATE  
    dept  
    SET  
    no_of_employees = IFNULL(no_of_employees, 0) + 1  
    WHERE deptno = NEW.deptno;  
    END;  
    //  
  
...  
  
delimiter ;
```

### 7.2. Αποτέλεσμα

```
...  
  
Query OK, 0 rows affected (0.00 sec)  
  
...
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 7.3. Στιγμιότυπο

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"
mysql> delimiter //
mysql> CREATE TRIGGER
-> emp_insert
-> AFTER INSERT ON
-> emp
-> FOR EACH ROW
-> BEGIN
-> UPDATE
-> dept
-> SET
-> no_of_employees = IFNULL(no_of_employees, 0) + 1
-> WHERE deptno = NEW.deptno;
-> END;
-> //
Query OK, 0 rows affected (0.00 sec)

mysql> delimiter ;
mysql> _
```

## 8. Δοκιμή

### 8.1. Δήλωση

INSERT INTO

emp

(empno, name, deptno)

VALUES

(7895, 'CLARKE', 70)

;

...

SELECT \* FROM emp;

...

SELECT \* FROM dept;

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

### 8.2. Αποτέλεσμα

Query OK, 1 row affected (0.00 sec)

...

EMPNO	NAME	JOBNO	DEPTNO	COMM
10	CODD	100	50	NULL
20	NAVATHE	200	50	450.00
30	ELMASRI	300	60	NULL
40	DATE	100	50	NULL
7895	CLARKE	NULL	70	NULL

5 rows in set (0.00 sec)

...

DEPTNO	DNAME	LOC	no_of_employees
50	SALES	ATHENS	3
60	ACCOUNTING	ATHENS	1
70	OPERATIONS	VOLOS	1

3 rows in set (0.00 sec)

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 8.3. Στιγμιότυπο

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql"
mysql> INSERT INTO
-> emp
-> (empno, name, deptno)
-> VALUES
-> (7895, 'CLARKE', 70)
-> ;
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM emp;
+-----+-----+-----+-----+-----+
| EMPNO | NAME   | JOBNO | DEPTNO | COMM   |
+-----+-----+-----+-----+-----+
| 10    | CODD   | 100   | 50     | NULL   |
| 20    | NAVATHE | 200   | 50     | 450.00 |
| 30    | ELMASRI | 300   | 60     | NULL   |
| 40    | DATE   | 100   | 50     | NULL   |
| 7895  | CLARKE | NULL  | 70     | NULL   |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC   | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS | 3               |
| 60     | ACCOUNTING | ATHENS | 1               |
| 70     | OPERATIONS | VOLOS  | 1               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

## 9. Επεξήγηση

### 9.1. Δήλωση

UPDATE

dept

SET

no\_of\_employees = IFNULL(no\_of\_employees, 0) + 1

WHERE

deptno = 70

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

;

...

```
SELECT * FROM dept;
```

### 9.2. Αποτέλεσμα

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0

...

DEPTNO	DNAME	LOC	no_of_employees
50	SALES	ATHENS	3
60	ACCOUNTING	ATHENS	1
70	OPERATIONS	VOLOS	2

3 rows in set (0.00 sec)

### 9.3. Στιγμιότυπο

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --
mysql> UPDATE
-> dept
-> SET
-> no_of_employees = IFNULL(no_of_employees, 0) + 1
-> WHERE
-> deptno = 70
-> ;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC    | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS | 3               |
| 60     | ACCOUNTING | ATHENS | 1               |
| 70     | OPERATIONS | VOLOS  | 2               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 10. Δημιουργήστε, δοκιμάστε και εξηγήστε τον trigger που αφυπνίζεται από το γεγονός AFTER DELETE ON

### 10.1. Δήλωση

#### Δημιουργία

---

```
delimiter //  
  
...  
  
CREATE TRIGGER  
    emp_delete  
    AFTER DELETE ON  
    emp  
    FOR EACH ROW  
    BEGIN  
        UPDATE  
        dept  
        SET  
        no_of_employees = IFNULL(no_of_employees, 0) - 1  
        WHERE  
        deptno = OLD.deptno;  
    END;  
//  
  
...  
  
delimiter ;
```

#### Δοκιμή

---

```
SELECT * FROM emp;
```

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

...

```
SELECT * FROM dept;
```

...

```
DELETE
```

```
    FROM
```

```
    emp
```

```
    WHERE
```

```
    empno = 7895
```

```
    ;
```

...

```
SELECT * FROM emp;
```

...

```
SELECT * FROM dept;
```

### Επεξήγηση

---

```
SELECT * FROM dept;
```

...

```
UPDATE
```

```
    dept
```

```
    SET
```

```
    no_of_employees = IFNULL(no_of_employees, 0) - 1
```

```
    WHERE
```

```
    deptno = 70
```

```
    ;
```

...

```
SELECT * FROM dept;
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 10.2. Αποτέλεσμα

### Δημιουργία

...

Query OK, 0 rows affected (0.01 sec)

...

### Δοκιμή

```
+-----+-----+-----+-----+-----+
| EMPNO | NAME      | JOBNO | DEPTNO | COMM  |
+-----+-----+-----+-----+-----+
| 10    | CODD      | 100   | 50     | NULL  |
| 20    | NAVATHE   | 200   | 50     | 450.00 |
| 30    | ELMASRI   | 300   | 60     | NULL  |
| 40    | DATE      | 100   | 50     | NULL  |
| 7895  | CLARKE    | NULL  | 70     | NULL  |
+-----+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

...

```
+-----+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC    | no_of_employees |
+-----+-----+-----+-----+-----+
| 50     | SALES      | ATHENS | 3               |
| 60     | ACCOUNTING | ATHENS | 1               |
| 70     | OPERATIONS | VOLOS  | 2               |
+-----+-----+-----+-----+-----+
```



## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

3 rows in set (0.00 sec)

...

Query OK, 1 row affected (0.01 sec)

...

EMPNO	NAME	JOBNO	DEPTNO	COMM
10	CODD	100	50	NULL
20	NAVATHE	200	50	450.00
30	ELMASRI	300	60	NULL
40	DATE	100	50	NULL

4 rows in set (0.00 sec)

...

DEPTNO	DNAME	LOC	no_of_employees
50	SALES	ATHENS	3
60	ACCOUNTING	ATHENS	1
70	OPERATIONS	VOLOS	1

3 rows in set (0.00 sec)

### Επεξήγηση

---

DEPTNO	DNAME	LOC	no_of_employees
50	SALES	ATHENS	3

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

	60	ACCOUNTING	ATHENS		1	
	70	OPERATIONS	VOLOS		1	

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

3 rows in set (0.00 sec)

...

Query OK, 1 row affected (0.02 sec)

Rows matched: 1 Changed: 1 Warnings: 0

...

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

	DEPTNO		DNAME		LOC		no_of_employees	
--	--------	--	-------	--	-----	--	-----------------	--

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

	50		SALES		ATHENS		3	
--	----	--	-------	--	--------	--	---	--

	60		ACCOUNTING		ATHENS		1	
--	----	--	------------	--	--------	--	---	--

	70		OPERATIONS		VOLOS		0	
--	----	--	------------	--	-------	--	---	--

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

3 rows in set (0.00 sec)

### 10.3. Στιγμιότυπο

#### Δημιουργία

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"
mysql> delimiter //
mysql> CREATE TRIGGER
-> emp_delete
-> AFTER DELETE ON
-> emp
-> FOR EACH ROW
-> BEGIN
-> UPDATE
-> dept
-> SET
-> no_of_employees = IFNULL(no_of_employees, 0) - 1
-> WHERE
-> deptno = OLD.deptno;
-> END;
-> //
Query OK, 0 rows affected (0.01 sec)

mysql> delimiter ;
mysql>
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## Δοκιμή

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"

mysql> SELECT * FROM emp;
+-----+-----+-----+-----+-----+
| EMPNO | NAME   | JOBNO | DEPTNO | COMM   |
+-----+-----+-----+-----+-----+
| 10    | CODD   | 100   | 50     | NULL   |
| 20    | NAVATHE | 200   | 50     | 450.00 |
| 30    | ELMASRI | 300   | 60     | NULL   |
| 40    | DATE   | 100   | 50     | NULL   |
| 7895  | CLARKE | NULL  | 70     | NULL   |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS   | 3               |
| 60     | ACCOUNTING | ATHENS   | 1               |
| 70     | OPERATIONS | VOLOS    | 2               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> DELETE
-> FROM
-> emp
-> WHERE
-> empno = 7895
-> ;
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM emp;
+-----+-----+-----+-----+-----+
| EMPNO | NAME   | JOBNO | DEPTNO | COMM   |
+-----+-----+-----+-----+-----+
| 10    | CODD   | 100   | 50     | NULL   |
| 20    | NAVATHE | 200   | 50     | 450.00 |
| 30    | ELMASRI | 300   | 60     | NULL   |
| 40    | DATE   | 100   | 50     | NULL   |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS   | 3               |
| 60     | ACCOUNTING | ATHENS   | 1               |
| 70     | OPERATIONS | VOLOS    | 1               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## Επεξήγηση

```
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql.exe

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME          | LOC    | no_of_employees |
+-----+-----+-----+-----+
|      50 | SALES           | ATHENS |          3       |
|      60 | ACCOUNTING      | ATHENS |          1       |
|      70 | OPERATIONS      | VOLOS  |          1       |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> UPDATE
-> dept
-> SET
-> no_of_employees = IFNULL(no_of_employees, 0) - 1
-> WHERE
-> deptno = 70
-> ;
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME          | LOC    | no_of_employees |
+-----+-----+-----+-----+
|      50 | SALES           | ATHENS |          3       |
|      60 | ACCOUNTING      | ATHENS |          1       |
|      70 | OPERATIONS      | VOLOS  |          0       |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

## 10.4. Επεξήγηση

Ο [trigger](#) «emp\_delete» αφυπνίζεται λόγω της συνθήκης AFTER DELETE ON emp. Συγκεκριμένα, δίνεται η [δήλωση](#) «DELETE FROM emp WHERE empno = 7895;» που είναι η αφορμή για να αφυπνίσει ο trigger.

Επειδή, δόθηκε δήλωση DELETE και ο trigger είναι FOR EACH ROW, τα ζεύγη των global μεταβλητών που αντιστοιχούν στις στήλες του πίνακα emp έχουν τις παρακάτω τιμές:

- i) OLD.empno 7895  
OLD.name ← 'CLARKE'  
OLD.jobno ← NULL  
OLD.deptno ← 10  
OLD.comm ← NULL
- ii) NEW.empno ← NULL  
NEW.name ← NULL  
NEW.jobno ← NULL

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

NEW.deptno ← NULL

NEW.comm ← NULL

Λόγω της εντολής «UPDATE dept SET no\_of\_employees = IFNULL(no\_of\_employees, 0) – 1 WHERE deptno = OLD.deptno;», ο trigger αφαιρεί από τον πίνακα «DEPT» το «no\_of\_employees» κατά 1 μονάδα και συγκεκριμένα από την εγγραφή με «OLD.deptno» για «deptno».

## 11. Δημιουργήστε, δοκιμάστε και εξηγήστε τον trigger που αφυπνίζεται από το γεγονός AFTER UPDATE ON

### 11.1. Δήλωση

#### Δημιουργία

```
delimiter //
```

```
...
```

```
CREATE TRIGGER
```

```
    emp_update1
```

```
    AFTER UPDATE ON
```

```
    emp
```

```
    FOR EACH ROW
```

```
    BEGIN
```

```
        UPDATE
```

```
        dept
```

```
        SET no_of_employees = IFNULL(no_of_employees, 0) - 1
```

```
        WHERE
```

```
        deptno = OLD.deptno;
```

```
    END;
```

```
    //
```

```
...
```

```
delimiter ;
```

```
...
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

```
delimiter //
```

```
...
```

```
CREATE TRIGGER
```

```
    emp_update2
```

```
    AFTER UPDATE ON
```

```
    emp
```

```
    FOR EACH ROW
```

```
    BEGIN
```

```
    UPDATE
```

```
    dept
```

```
    SET no_of_employees = IFNULL(no_of_employees, 0) + 1
```

```
    WHERE
```

```
    deptno = NEW.deptno;
```

```
    END;
```

```
    //
```

```
...
```

```
delimiter ;
```

## Δοκιμή

---

```
SELECT * FROM emp;
```

```
...
```

```
SELECT * FROM dept;
```

```
...
```

```
UPDATE
```

```
    emp
```

```
    SET
```

```
    deptno = 70
```

```
    WHERE
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

```
name = 'Codd'
;
...
SELECT * FROM emp;
...
SELECT * FROM dept;
```

## Επεξήγηση

---

```
SELECT * FROM dept;
...
UPDATE
    dept
SET
    no_of_employees = IFNULL(no_of_employees, 0) - 1
WHERE
    deptno = 70
;
...
UPDATE
    dept
SET
    no_of_employees = IFNULL(no_of_employees, 0) + 1
WHERE
    deptno = 50
;
...
SELECT * FROM dept;
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 11.2. Αποτέλεσμα

### Δημιουργία

...

Query OK, 0 rows affected (0.01 sec)

...

...

...

Query OK, 0 rows affected (0.01 sec)

...

### Δοκιμή

EMPNO	NAME	JOBNO	DEPTNO	COMM
10	CODD	100	50	NULL
20	NAVATHE	200	50	450.00
30	ELMASRI	300	60	NULL
40	DATE	100	50	NULL

4 rows in set (0.00 sec)

...

DEPTNO	DNAME	LOC	no_of_employees
--------	-------	-----	-----------------



## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

```
+-----+-----+-----+-----+
|      50 | SALES      | ATHENS |      3 |
|      60 | ACCOUNTING  | ATHENS |      1 |
|      70 | OPERATIONS  | VOLOS  |      0 |
+-----+-----+-----+-----+
```

3 rows in set (0.00 sec)

...

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0

...

```
+-----+-----+-----+-----+-----+
| EMPNO | NAME      | JOBNO | DEPTNO | COMM  |
+-----+-----+-----+-----+-----+
|      10 | CODD      | 100   | 70     | NULL  |
|      20 | NAVATHE   | 200   | 50     | 450.00 |
|      30 | ELMASRI   | 300   | 60     | NULL  |
|      40 | DATE      | 100   | 50     | NULL  |
+-----+-----+-----+-----+-----+
```

4 rows in set (0.00 sec)

...

```
+-----+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC    | no_of_employees |
+-----+-----+-----+-----+-----+
|      50 | SALES      | ATHENS |      2 |
|      60 | ACCOUNTING | ATHENS |      1 |
|      70 | OPERATIONS | VOLOS  |      1 |
+-----+-----+-----+-----+-----+
```

3 rows in set (0.00 sec)

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## Επεξήγηση

---

```
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
|      50 | SALES      | ATHENS   |                2 |
|      60 | ACCOUNTING | ATHENS   |                1 |
|      70 | OPERATIONS | VOLOS    |                1 |
+-----+-----+-----+-----+
```

3 rows in set (0.00 sec)

...

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0

...

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0

...

```
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
|      50 | SALES      | ATHENS   |                3 |
|      60 | ACCOUNTING | ATHENS   |                1 |
|      70 | OPERATIONS | VOLOS    |                0 |
+-----+-----+-----+-----+
```

3 rows in set (0.00 sec)

### 11.3. Στιγμιότυπο

## Δημιουργία

---

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --defa
mysql> CREATE TRIGGER
-> emp_update1
-> AFTER UPDATE ON
-> emp
-> FOR EACH ROW
-> BEGIN
-> UPDATE
-> dept
-> SET no_of_employees = IFNULL(no_of_employees, 0) - 1
-> WHERE
-> deptno = OLD.deptno;
-> END;
-> //
Query OK, 0 rows affected (0.01 sec)

mysql> delimiter ;
mysql>
```

...

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --de
mysql> delimiter //
mysql> CREATE TRIGGER
-> emp_update2
-> AFTER UPDATE ON
-> emp
-> FOR EACH ROW
-> BEGIN
-> UPDATE
-> dept
-> SET no_of_employees = IFNULL(no_of_employees, 0) + 1
-> WHERE
-> deptno = NEW.deptno;
-> END;
-> //
Query OK, 0 rows affected (0.01 sec)

mysql> delimiter ;
mysql>
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## Δοκιμή

```
C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"
mysql> SELECT * FROM emp;
+-----+-----+-----+-----+-----+
| EMPNO | NAME   | JOBNO | DEPTNO | COMM   |
+-----+-----+-----+-----+-----+
| 10    | CODD   | 100   | 50     | NULL   |
| 20    | NAVATHE | 200   | 50     | 450.00 |
| 30    | ELMASRI | 300   | 60     | NULL   |
| 40    | DATE   | 100   | 50     | NULL   |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS   | 3               |
| 60     | ACCOUNTING | ATHENS   | 1               |
| 70     | OPERATIONS | VOLOS    | 0               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> UPDATE
-> emp
-> SET
-> deptno = 70
-> WHERE
-> name = 'CODD'
-> ;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM emp;
+-----+-----+-----+-----+-----+
| EMPNO | NAME   | JOBNO | DEPTNO | COMM   |
+-----+-----+-----+-----+-----+
| 10    | CODD   | 100   | 70     | NULL   |
| 20    | NAVATHE | 200   | 50     | 450.00 |
| 30    | ELMASRI | 300   | 60     | NULL   |
| 40    | DATE   | 100   | 50     | NULL   |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME      | LOC      | no_of_employees |
+-----+-----+-----+-----+
| 50     | SALES      | ATHENS   | 2               |
| 60     | ACCOUNTING | ATHENS   | 1               |
| 70     | OPERATIONS | VOLOS    | 1               |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## Επεξήγηση

```
C:\> Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME          | LOC    | no_of_employees |
+-----+-----+-----+-----+
|      50 | SALES           | ATHENS |                2 |
|      60 | ACCOUNTING      | ATHENS |                1 |
|      70 | OPERATIONS      | VOLOS  |                1 |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> UPDATE
-> dept
-> SET
-> no_of_employees = IFNULL(no_of_employees, 0) - 1
-> WHERE
-> deptno = 70
-> ;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE
-> dept
-> SET
-> no_of_employees = IFNULL(no_of_employees, 0) + 1
-> WHERE
-> deptno = 50
-> ;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM dept;
+-----+-----+-----+-----+
| DEPTNO | DNAME          | LOC    | no_of_employees |
+-----+-----+-----+-----+
|      50 | SALES           | ATHENS |                3 |
|      60 | ACCOUNTING      | ATHENS |                1 |
|      70 | OPERATIONS      | VOLOS  |                0 |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

## 11.4. Επεξήγηση

### emp\_update1

Ο [trigger](#) «emp\_update1» αφυπνίζεται λόγω της συνθήκης AFTER UPDATE ON emp. Συγκεκριμένα, δίνεται η [δήλωση](#) «UPDATE emp SET deptno = 70 WHERE name = 'CODD';» που είναι η αφορμή για να αφυπνίσει ο trigger.

Επειδή, δόθηκε δήλωση UPDATE και ο trigger είναι FOR EACH ROW, τα ζεύγη των global μεταβλητών που αντιστοιχούν στις στήλες του πίνακα emp έχουν τις παρακάτω τιμές:

- i) OLD.empno 10  
OLD.name ← 'CODD'  
OLD.jobno ← 100  
OLD.deptno ← 50  
OLD.comm ← NULL
- ii) NEW.empno ← 10  
NEW.name ← 'CODD'  
NEW.jobno ← 100  
NEW.deptno ← 70  
NEW.comm ← NULL

Λόγω της εντολής «UPDATE dept SET no\_of\_employees = IFNULL(no\_of\_employees, 0) – 1 WHERE deptno = OLD.deptno;», ο trigger αφαιρεί από τον πίνακα «DEPT» το «no\_of\_employees» κατά 1 μονάδα και συγκεκριμένα από την εγγραφή με «OLD.deptno» για «deptno».

### emp\_update2

Ο [trigger](#) «emp\_update2» αφυπνίζεται λόγω της συνθήκης AFTER UPDATE ON emp. Συγκεκριμένα, δίνεται η [δήλωση](#) «UPDATE emp SET deptno = 70 WHERE name = 'CODD';» που είναι η αφορμή για να αφυπνίσει ο trigger.

Επειδή, δόθηκε δήλωση UPDATE και ο trigger είναι FOR EACH ROW, τα ζεύγη των global μεταβλητών που αντιστοιχούν στις στήλες του πίνακα emp έχουν τις παρακάτω τιμές:

- i) OLD.empno 10  
OLD.name ← 'CODD'  
OLD.jobno ← 100  
OLD.deptno ← 50  
OLD.comm ← NULL
- ii) NEW.empno ← 10  
NEW.name ← 'CODD'  
NEW.jobno ← 100

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

NEW.deptno ← 70  
NEW.comm ← NULL

Λόγω της εντολής «UPDATE dept SET no\_of\_employees = IFNULL(no\_of\_employees, 0) + 1 WHERE deptno = NEW.deptno;», ο trigger προσθέτει από τον πίνακα «DEPT» το «no\_of\_employees» κατά 1 μονάδα και συγκεκριμένα από την εγγραφή με «NEW.deptno» για «deptno».

## 12. Παρουσίαση πληροφοριών για τους Triggers

### 12.1. Δήλωση

```
DESCRIBE Information_schema.TRIGGERS;  
  
...  
  
SELECT  
    TRIGGER_NAME, EVENT_MANIPULATION, TRIGGER_SCHEMA  
FROM  
    INFORMATION_SCHEMA.TRIGGERS  
WHERE  
    TRIGGER_SCHEMA = 'personnel'  
ORDER BY  
    TRIGGER_NAME  
;
```

### 12.2. Αποτέλεσμα

Field	Type		
Null	Key	Default	Extra
----- -----			
----- -----			
----- ----- ----- -----			
TRIGGER_CATALOG			varchar(64)
YES		NULL	

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

	TRIGGER_SCHEMA		varchar(64)
	YES		NULL
	TRIGGER_NAME		varchar(64)
	NO		NULL
	EVENT_MANIPULATION		enum('INSERT','UPDATE','DELETE')
	NO		NULL
	EVENT_OBJECT_CATALOG		varchar(64)
	YES		NULL
	EVENT_OBJECT_SCHEMA		varchar(64)
	YES		NULL
	EVENT_OBJECT_TABLE		varchar(64)
	YES		NULL
	ACTION_ORDER		int unsigned
	NO		NULL
	ACTION_CONDITION		binary(0)
	YES		NULL
	ACTION_STATEMENT		longtext
	NO		NULL
	ACTION_ORIENTATION		varchar(3)
	NO		
	ACTION_TIMING		enum('BEFORE','AFTER')
	NO		NULL
	ACTION_REFERENCE_OLD_TABLE		binary(0)
	YES		NULL
	ACTION_REFERENCE_NEW_TABLE		binary(0)
	YES		NULL
	ACTION_REFERENCE_OLD_ROW		varchar(3)
	NO		
	ACTION_REFERENCE_NEW_ROW		varchar(3)
	NO		
	CREATED		timestamp(2)
	NO		NULL
	SQL_MODE		
	set('REAL_AS_FLOAT','PIPES_AS_CONCAT','ANSI_QUOTES','IGNORE_SPACE',...,'TIME_TRUNCATE_FRACTIONAL')		
	NO		NULL



## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

	DEFINER		varchar(288)
	NO		NULL
	CHARACTER_SET_CLIENT		varchar(64)
	NO		NULL
	COLLATION_CONNECTION		varchar(64)
	NO		NULL
	DATABASE_COLLATION		varchar(64)
	NO		NULL

22 rows in set (0.01 sec)

...

+	-----+	-----+	-----+
	TRIGGER_NAME		EVENT_MANIPULATION
			TRIGGER_SCHEMA
+	-----+	-----+	-----+
	dept_update		UPDATE
			personnel
	emp_delete		DELETE
			personnel
	emp_insert		INSERT
			personnel
	emp_update1		UPDATE
			personnel
	emp_update2		UPDATE
			personnel
+	-----+	-----+	-----+

5 rows in set (0.00 sec)

# ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

## 12.3. Στιγμιότυπο

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" --default-character-set=utf8mb4 -u root -p
mysql> DESCRIBE Information_schema.TRIGGERS;
```

Field	Type	Null	Key	Default	Extra
TRIGGER_CATALOG	varchar(64)				
TRIGGER_SCHEMA	varchar(64)	YES		NULL	
TRIGGER_NAME	varchar(64)	YES		NULL	
EVENT_MANIPULATION	enum('INSERT','UPDATE','DELETE')	NO		NULL	
EVENT_OBJECT_CATALOG	varchar(64)	NO		NULL	
EVENT_OBJECT_SCHEMA	varchar(64)	YES		NULL	
EVENT_OBJECT_TABLE	varchar(64)	YES		NULL	
ACTION_ORDER	int unsigned	YES		NULL	
ACTION_CONDITION	binary(0)	NO		NULL	
ACTION_STATEMENT	longtext	YES		NULL	
ACTION_ORIENTATION	varchar(3)	NO		NULL	
ACTION_TIMING	enum('BEFORE','AFTER')	NO			
ACTION_REFERENCE_OLD_TABLE	binary(0)	NO		NULL	
ACTION_REFERENCE_NEW_TABLE	binary(0)	YES		NULL	
ACTION_REFERENCE_OLD_ROW	varchar(3)	YES		NULL	
ACTION_REFERENCE_NEW_ROW	varchar(3)	NO			
CREATED	timestamp(2)	NO			
SQL_MODE	set('REAL_AS_FLOAT','PIPES_AS_CONCAT','ANSI_QUOTES','IGNORE_SPACE','NOT_USED','ONLY_FULL_GROUP_BY','NO_UNSIGNED_SUBTRACTION','NO_DIR_IN_CREATE','NOT_USED_9','NOT_USED_10','NOT_USED_11','NOT_USED_12','NOT_USED_13','NOT_USED_14','NOT_USED_15','NOT_USED_16','NOT_USED_17','NOT_USED_18','ANSI','NO_AUTO_VALUE_ON_ZERO','NO_BACKSLASH_ESCAPES','STRICT_TRANS_TABLES','STRICT_ALL_TABLES','NO_ZERO_IN_DATE','NO_ZERO_DATE','ALLOW_INVALID_DATES','ERROR_FOR_DIVISION_BY_ZERO','NO_DIVISION_BY_ZERO','STRICT_1064','NO_ENGINE_SUBSTITUTION')				
DEFINER	varchar(288)	NO		NULL	
CHARACTER_SET_CLIENT	varchar(64)	NO		NULL	
COLLATION_CONNECTION	varchar(64)	NO		NULL	
DATABASE_COLLATION	varchar(64)	NO		NULL	

```
22 rows in set (0.00 sec)

mysql>
```

...

```
Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"

mysql> SELECT
-> TRIGGER_NAME, EVENT_MANIPULATION, TRIGGER_SCHEMA
-> FROM
-> INFORMATION_SCHEMA.TRIGGERS
-> WHERE
-> TRIGGER_SCHEMA = 'personnel'
-> ORDER BY
-> TRIGGER_NAME
-> ;
```

TRIGGER_NAME	EVENT_MANIPULATION	TRIGGER_SCHEMA
dept_update	UPDATE	personnel
emp_delete	DELETE	personnel
emp_insert	INSERT	personnel
emp_update1	UPDATE	personnel
emp_update2	UPDATE	personnel

```
5 rows in set (0.00 sec)

mysql>
```

## 13. Διαγραφή των Triggers

### 13.1. Δήλωση

```
DROP TRIGGER dept_update;

...

DROP TRIGGER emp_insert;

...

DROP TRIGGER emp_delete;

...

DROP TRIGGER emp_update1;

...

DROP TRIGGER emp_update2;

...

SELECT
    TRIGGER_NAME, EVENT_MANIPULATION, TRIGGER_SCHEMA
FROM
    INFORMATION_SCHEMA.TRIGGERS
WHERE
    TRIGGER_SCHEMA = 'personnel'
ORDER BY
    TRIGGER_NAME
;
```

### 13.2. Αποτέλεσμα

```
Query OK, 0 rows affected (0.01 sec)

...

Query OK, 0 rows affected (0.01 sec)

...
```

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II

Query OK, 0 rows affected (0.01 sec)

...

Query OK, 0 rows affected (0.01 sec)

...

Query OK, 0 rows affected (0.01 sec)

...

Empty set (0.00 sec)

### 13.3. Στιγμιότυπο

```
C:\> Command Prompt - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe"

mysql> DROP TRIGGER dept_update;
Query OK, 0 rows affected (0.01 sec)

mysql> DROP TRIGGER emp_insert;
Query OK, 0 rows affected (0.01 sec)

mysql> DROP TRIGGER emp_delete;
Query OK, 0 rows affected (0.01 sec)

mysql> DROP TRIGGER emp_update1;
Query OK, 0 rows affected (0.01 sec)

mysql> DROP TRIGGER emp_update2;
Query OK, 0 rows affected (0.01 sec)

mysql> SELECT
-> TRIGGER_NAME, EVENT_MANIPULATION, TRIGGER_SCHEMA
-> FROM
-> INFORMATION_SCHEMA.TRIGGERS
-> WHERE
-> TRIGGER_SCHEMA = 'personnel'
-> ORDER BY
-> TRIGGER_NAME
-> ;
Empty set (0.00 sec)

mysql> _
```

## ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ II



Σας ευχαριστώ για την προσοχή σας.

