|  |  |  |
| --- | --- | --- |
| **절** | **설명** | **필수여부** |
| **Select** | **반환할 열이나 식** | **반드시 필요** |
| **From** | **데이터를 가져올 테이블** | **테이블에서 선택시 필요** |
| **Where** | **행 수준의 필터링** | **필요하지 않음** |
| **Group by** | **그룹 지정** | **그룹별로 집계시 필요** |
| **Having** | **그룹 수준의 필터링** | **필요하지 않음** |
| **Oreder by** | **결과를 정렬** | **필요하지 않음** |

**[SELECT 쿼리순서 where group by having order by ]**

MariaDB [zabbix]> **desc** history;

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

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

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

| itemid | bigint(20) unsigned | NO | MUL | NULL | |

| clock | int(11) | NO | | 0 | |

| value | double(16,4) | NO | | 0.0000 | |

| ns | int(11) | NO | | 0 | |

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

4 rows in set (0.00 sec)

MariaDB [zabbix]> select itemid from history limit 3;

+--------+

| itemid |

+--------+

| 23252 |

| 23252 |

| 23252 |

+--------+

3 rows in set (0.00 sec)

**[SELECT 정렬 ]**

MariaDB [zabbix]> select itemid from history **order by** **itemid;**

MariaDB [zabbix]> select itemid from history **order by clock**;

MariaDB [zabbix]> select itemid,clock from history **order by 2**;

MariaDB [zabbix]> select itemid,clock from history **order by 2 desc**;

MariaDB [zabbix]> select itemid,clock from history **order by 1 desc, 2 desc**;

**[SELECT 필터 ]**

MariaDB [zabbix]> select itemid,value from history **where value >50**;

MariaDB [zabbix]> select itemid,value from history **where value between 25 and 50**;

MariaDB [zabbix]> select itemid,value from history **where itemid is NULL**;

MariaDB [zabbix]> select itemid,value from history **where value > 50 and itemid > 23255**;

MariaDB [zabbix]> select itemid,value from history **where value > 50 or itemid > 23255**;

MariaDB [zabbix]> select itemid,value from history **where value in (50,100);**

MariaDB [zabbix]> select itemid,value from history **where value in (50,100) order by itemid desc**;

MariaDB [zabbix]> select itemid,value from history **where not value = 100**;

MariaDB [zabbix]> select itemid,value from history **where value != 100**;

MariaDB [zabbix]> select itemid,value from history **where value <> 100**;

MariaDB [zabbix]> select name from groups **where name like '%server%'**;

MariaDB [zabbix]> select name from groups **where name like '%server\_'**;

**[SELECT 함수사용 계산필드 ]**

MariaDB [zabbix]> select **concat ( groupid, '(', name ,')' )** from groups order by groupid;

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

| concat ( groupid, '(', name ,')' ) |

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

| 1(Templates) |

| 2(Linux servers) |

| 4(Zabbix servers) |

| 5(Discovered hosts) |

| 6(Virtual machines) |

| 7(Hypervisors) |

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

6 rows in set (0.00 sec)

MariaDB [zabbix]> select **value\*2 as 2\_value** from history;

MariaDB [zabbix]> select **upper(name) as upper\_name** from groups;

MariaDB [zabbix]> select **lower(name) as lower\_name** from groups;

MariaDB [zabbix]> select **length(name) as length\_name** from groups;

MariaDB [zabbix]> select order\_num from orders **where year(order\_date) =2004**; => 날짜에서 연도부분

MariaDB [zabbix]> select **avg(value) as avg\_value** from history; => NULL값은 avg함수의 모수에서 제외

MariaDB [zabbix]> select **max(value) as max\_value** from history;

MariaDB [zabbix]> select **min(value) as min\_value** from history;

MariaDB [zabbix]> select **sum(value) as sum\_value** from history;

MariaDB [zabbix]> select **count(\*)** from history; => NULL 값을 포함한 모든 갯수

MariaDB [zabbix]> select **count(itemid)** from history; => 해당 열의 NULL값을 제외한 갯수

MariaDB [zabbix]> select **count(distinct itemid)** from history; => 중복을 제거한 고유의 갯수

**[SELECT 그룹화 ]**

MariaDB [zabbix]> select itemid ,count(\*) as count\_itemid from history **group by itemid**;

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

| itemid | count\_itemid |

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

| 23252 | 962 |

| 23253 | 962 |

| 23254 | 962 |

MariaDB [zabbix]> select itemid ,count(\*) as count\_itemid from history **group by itemid having count(\*) > 900**;

MariaDB [zabbix]> select itemid ,count(\*) as count\_itemid from history **where value > 50 group by itemid having count(\*) > 900**;

MariaDB [zabbix]> select itemid ,count(\*) as count\_itemid from history **group by itemid having count(\*) > 900 order by count\_itemid**;

MariaDB [zabbix]> select itemid ,count(\*) as count\_itemid from history **where value > 50 group by itemid having count(\*) > 900 order by count\_itemid**;

**[SELECT 하위쿼리 ]**

MariaDB [zabbix]> select itemid from history where **value=( select max(value) from history);**

MariaDB [zabbix]> select itemid from history where **value in ( select min(value) from history);**

**[SELECT 조인쿼리 ] => where절이 반드시 필요**

**가.동등조인(equijoin)**

MariaDB [zabbix]> select usrgrp.usrgrpid,usrgrp.name,users\_groups.userid from usrgrp,users\_groups **where usrgrp.usrgrpid=users\_groups.usrgrpid;**

* where를 통해 첫번째 테이블과 두번째 테이블의 조건을 맞추게 됨
* 가능하면 테이블.열필드 형식으로 완벽하게 적는게 좋음

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

| usrgrpid | name | userid |

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

| 7 | Zabbix administrators | 1 |

| 7 | Zabbix administrators | 3 |

| 8 | Guests | 2 |

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

3 rows in set (0.01 sec)

**나.이너조인(inner join)**

MariaDB [zabbix]> select usrgrp.usrgrpid,usrgrp.name,users\_groups.userid from usrgrp **inner join** users\_groups **on** usrgrp.usrgrpid=users\_groups.usrgrpid;

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

| usrgrpid | name | userid |

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

| 7 | Zabbix administrators | 1 |

| 7 | Zabbix administrators | 3 |

| 8 | Guests | 2 |

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

3 rows in set (0.00 sec)

**다.자체조인=> 하위쿼리 사용하는 대신 같은 테이블을 조인하여 사용,**

MariaDB [zabbix]> select c1.usrgrpid,c1.name,c1.users\_status **from usrgrp as c1 , usrgrp as c2** where c1.name=c2.name and c2.name='Guests';

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

| usrgrpid | name | users\_status |

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

| 8 | Guests | 0 |

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

1 row in set (0.00 sec)

**나.외부조인(left join=>from절 왼쪽 테이블 모든행 출력, right join=>from절 오른쪽 테이블 모든행 출력)**

MariaDB [zabbix]> select usrgrp.usrgrpid,usrgrp.name,users\_groups.userid from **usrgrp left outer join**  users\_groups on usrgrp.usrgrpid=users\_groups.usrgrpid;

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

| usrgrpid | name | userid |

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

| 9 | Disabled | NULL |

| 11 | Enabled debug mode | NULL |

| 8 | Guests | 2 |

| 12 | No access to the frontend | NULL |

| 7 | Zabbix administrators | 1 |

| 7 | Zabbix administrators | 3 |

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

6 rows in set (0.00 sec)

MariaDB [zabbix]> select usrgrp.usrgrpid,usrgrp.name,users\_groups.userid from usrgrp **right outer join users\_groups** on usrgrp.usrgrpid=users\_groups.usrgrpid;

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

| usrgrpid | name | userid |

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

| 7 | Zabbix administrators | 1 |

| 7 | Zabbix administrators | 3 |

| 8 | Guests | 2 |

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

3 rows in set (0.00 sec)

**[SELECT UNION쿼리 ] => union은 중복행 제거, union all은 중복포함**

MariaDB [zabbix]> select groupid,name from groups where name like '%servers%' **union** select groupid,name from groups where groupid=2;

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

| groupid | name |

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

| 2 | Linux servers |

| 4 | Zabbix servers |

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

2 rows in set (0.00 sec)

MariaDB [zabbix]> select groupid,name from groups where name like '%servers%' **union all** select groupid,name from groups where groupid=2;

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

| groupid | name |

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

| 2 | Linux servers |

| 4 | Zabbix servers |

| 2 | Linux servers |

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

3 rows in set (0.00 sec)

MariaDB [zabbix]> select groupid,name from groups where name like '%servers%' **union** all select groupid,name from groups where groupid=2 **order by** groupid;

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

| groupid | name |

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

| 2 | Linux servers |

| 2 | Linux servers |

| 4 | Zabbix servers |

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

3 rows in set (0.01 sec)

**[INSERT SELECT]=> select한 내용을 다른 table에 insert할때**

MariaDB [test]> **create table Persons like Persons\_M2;**

ERROR 1146 (42S02): Table 'test.Persons\_M2' doesn't exist

MariaDB [test]> create table Persons\_M2 like Persons;

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> **insert into Persons\_M2(PersonID,LastName,FirstName) select \* from Persons; => 내용만 복사**

Query OK, 4 rows affected (0.01 sec)

Records: 4 Duplicates: 0 Warnings: 0

MariaDB [test]> select \* from Persons\_M2;

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

| 1 | choi | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **create table Persons\_M3 as select \* from Persons; => table과 내용까지 복사**

Query OK, 4 rows affected (0.01 sec)

Records: 4 Duplicates: 0 Warnings: 0

MariaDB [test]> select \* from Persons\_M3;

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

| 1 | choi | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

4 rows in set (0.00 sec)

**[UPDATE] => 항상 where를 함께 써야 하며 그렇지 않으면 행전체의 값이 변경되므로 주의**

MariaDB [test]> **update Customers set cust\_email='choga88@sk.com' where cust\_id='1000000005';**

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0

**[DELETE] => 항상 where를 함께 써야 하며 그렇지 않으면 행전체의 값이 삭제되므로 주의**

MariaDB [test]> **delete from Persons\_M3 where LastName='cho1';**

Query OK, 1 row affected (0.00 sec)

MariaDB [test]> **truncate from Persons\_M3; => table형식은 그대로 두고 내용만 지울때는 truncate 사용**

**[실행계획 - 비용 기반 최적화(Cost-based optimizer, CBO)기법을 사용**

**type이 ALL인 경우 fullsearch 검색이 발생함을 의미**

MariaDB [zabbix]> **explain** select itemid from history where value=( select max(value) from history);

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

| id | select\_type | table | **type** | possible\_keys | key | key\_len | ref | rows | Extra |

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

| 1 | PRIMARY | history | **ALL** | NULL | NULL | NULL | NULL | 29185 | Using where |

| 2 | SUBQUERY | history | ALL | NULL | NULL | NULL | NULL | 29185 | |

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

2 rows in set (0.01 sec)

**[KEY의 종류]**

**가. PKI (Primary Key)**

**- 기본키로써 테이블에 하나만 설정가능하며(조합하여 설정가능) NOT NULL인 UKI**

**나. UKI(Unique Key)**

**- PKI와 함께 유일한 키값으로 PKI와 달리 여러개 설정가능하고 NULL값도 사용가능**

**다. MUL(Multiple Occurences Column)**

**- FK를 설정한 경우 MUL로 표시됨**

**[KEY 생성방법]**

MariaDB [test]> CREATE TABLE tb\_unique (

-> id INTEGER NOT NULL,

-> nick\_name VARCHAR(100),

-> **PRIMARY KEY** (id),

-> **UNIQUE INDEX** ux\_nickname (nick\_name)

-> );

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> **show index from tb\_unique;**

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

| Table | Non\_unique | Key\_name | Seq\_in\_index | Column\_name | Collation | Cardinality | Sub\_part | Packed | Null | Index\_type | Comment | Index\_comment |

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

| tb\_unique | 0 | **PRIMARY**  | 1 | id | A | 0 | NULL | NULL | | BTREE | | |

| tb\_unique | 0 | **ux\_nickname** | 1 | nick\_name | A | 0 | NULL | NULL | YES | BTREE | | |

+-----------+------------+-------------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+------------rows in set (0.00 sec)

MariaDB [test]> **desc tb\_unique;**

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

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

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

| id | int(11) | NO | **PRI** | NULL | |

| nick\_name | varchar(100) | YES | **UNI** | NULL | |

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

2 rows in set (0.00 sec)

MariaDB [test]> **insert into tb\_unique values( 1, 'cho');**

Query OK, 1 row affected (0.00 sec)

MariaDB [test]> **insert into tb\_unique values( 2, NULL );**

Query OK, 1 row affected (0.00 sec)

MariaDB [test]> **insert into tb\_unique values( NULL, 'cho2' );**

ERROR 1048 (23000): Column 'id' cannot be null

MariaDB [test]> CREATE TABLE tb\_parent (

-> id INT NOT NULL,

-> fd VARCHAR(100) NOT NULL,

-> **PRIMARY KEY** (id)

-> ) ENGINE=INNODB;

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> CREATE TABLE tb\_child (

-> id INT NOT NULL,

-> pid INT DEFAULT NULL,

-> fd VARCHAR(100) DEFAULT NULL,

-> **PRIMARY KEY** (id),

-> **KEY** ix\_parentid (pid),

-> **CONSTRAINT** child\_ibfk\_1 **FOREIGN KEY** (pid) **REFERENCES** tb\_parent (id) ON DELETE CASCADE

-> ) ENGINE=INNODB;

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> **INSERT INTO tb\_parent VALUES (1, 'parent-1'), (2, 'parent-2');**

Query OK, 2 rows affected (0.00 sec)

Records: 2 Duplicates: 0 Warnings: 0

MariaDB [test]> **INSERT INTO tb\_child VALUES (100, 3, 'child-100'); => fk가 참조하는 값을 벗아나면 입력불가능**

ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`test`.`tb\_child`, CONSTRAINT `child\_ibfk\_1` FOREIGN KEY (`pid`) REFERENCES `tb\_parent` (`id`) ON DELETE CASCADE)

MariaDB [test]> **INSERT INTO tb\_child VALUES (100, 1, 'child-100');**

Query OK, 1 row affected (0.00 sec)

MariaDB [test]> **show index from tb\_parent;**

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

| Table | Non\_unique | Key\_name | Seq\_in\_index | Column\_name | Collation | Cardinality | Sub\_part | Packed | Null | Index\_type | Comment | Index\_comment |

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

| tb\_parent | 0 | PRIMARY | 1 | id | A | 2 | NULL | NULL | | BTREE | | |

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

1 row in set (0.00 sec)

MariaDB [test]> **show index from tb\_child;**

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

| Table | Non\_unique | Key\_name | Seq\_in\_index | Column\_name | Collation | Cardinality | Sub\_part | Packed | Null | Index\_type | Comment | Index\_comment |

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

| tb\_child | 0 | PRIMARY | 1 | id | A | 1 | NULL | NULL | | BTREE | | |

| tb\_child | 1 | ix\_parentid | 1 | pid | A | 1 | NULL | NULL | YES | BTREE | | |

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

2 rows in set (0.01 sec)

MariaDB [test]> **desc tb\_parent;**

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

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

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

| id | int(11) | NO **| PRI** | NULL | |

| fd | varchar(100) | NO | | NULL | |

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

2 rows in set (0.01 sec)

MariaDB [test]> **desc tb\_child;**

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

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

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

| id | int(11) | NO **| PRI** | NULL | |

| pid | int(11) | YES | **MUL** | NULL | |

| fd | varchar(100) | YES | | NULL | |

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

3 rows in set (0.01 sec)

MariaDB [test]> **delete from tb\_parent where id=2;**

Query OK, 1 row affected (0.01 sec)

MariaDB [test]> **select \* from tb\_parent;**

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

| id | fd |

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

| 1 | parent-1 |

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

1 row in set (0.00 sec)

MariaDB [test]> **select \* from tb\_child;**

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

| id | pid | fd |

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

| 100 | 1 | child-100 |

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

1 row in set (0.01 sec)

MariaDB [test]> **delete from tb\_parent where id=1; => fk가 있는 테이블의 데이터까지 같이 삭제됨**

Query OK, 1 row affected (0.01 sec)

MariaDB [test]> **select \* from tb\_parent;**

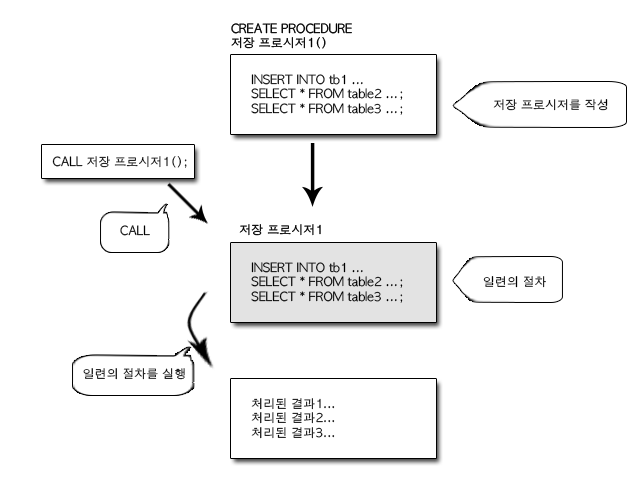
Empty set (0.00 sec)

MariaDB [test]> **select \* from tb\_child;**

Empty set (0.00 sec)

**[procedure란]**

여러 SQL 문을 하나의 SQL 문처럼 정리하여 'CALL ✕ ✕'라는 명령으로 실행할 수 있게 만든 것을 저장 프로시저(Stored Procedure)라고 합니다. Stored는 '저장하다', Procedur는 '절차'라는 의미입니다. 즉, 저장 프로시저는 일련의 절차를 정리해서 저장한 것입니다.



**[procedure, function ,trigger,view 확인방법]**

MariaDB [(none)]> **show procedure status;**

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

| Db | Name | Type | Definer | Modified | Created | Security\_type | Comment | character\_set\_client | collation\_connection | Database Collation |

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

| nfvo | SIS\_P\_AGGR\_PERF | PROCEDURE | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_P\_DELETE\_PERF | PROCEDURE | nfvo@localhost | 2017-11-20 18:25:12 | 2017-11-20 18:25:12 | DEFINER | | utf8mb4 | utf8mb4\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_P\_GET\_NSR\_PERF | PROCEDURE | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_P\_NSR\_PERF\_RAW | PROCEDURE | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_P\_PERF\_RAW | PROCEDURE | nfvo@localhost | 2017-11-20 14:40:47 | 2017-11-20 14:40:47 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

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

MariaDB [(none)]> **show function status;**

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

| Db | Name | Type | Definer | Modified | Created | Security\_type | Comment | character\_set\_client | collation\_connection | Database Collation |

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

| nfvo | FF\_FN\_GET\_NSR\_FLAVOR | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | FF\_FN\_GET\_VNFR\_FLAVOR | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | getCodeId | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | getCodeValue | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | getNsVnfrHealthState | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | GET\_LATEST\_EVENT\_ID | FUNCTION | nfvo@localhost | 2017-11-20 14:40:47 | 2017-11-20 14:40:47 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | GET\_PARENT\_INSTANCE\_ID | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_FN\_GET\_DT\_14DIGIT | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | getWeightedValueForEvent | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_FN\_GET\_GROUP | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_FN\_GET\_ID | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | GET\_INSTANCE\_FULL\_NAME | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | GET\_RELATED\_EVENT\_IDS | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_FN\_GET\_NSR\_CALC | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_FN\_GET\_PORT\_ID | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

| nfvo | SIS\_FN\_GET\_RESOURCE\_CATEGORY | FUNCTION | nfvo@localhost | 2017-11-20 14:39:51 | 2017-11-20 14:39:51 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_general\_ci |

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

16 rows in set (0.01 sec)

MariaDB [nfvo]> **show triggers;**

MariaDB [nfvo]> **view는 한번에 보는 명령어가 없음**

MariaDB [(none)]> **SELECT db, name, type, definer FROM mysql.proc WHERE db = 'nfvo';**

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

| db | name | type | definer |

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

| nfvo | FF\_FN\_GET\_NSR\_FLAVOR | FUNCTION | nfvo@localhost |

| nfvo | FF\_FN\_GET\_VNFR\_FLAVOR | FUNCTION | nfvo@localhost |

| nfvo | getCodeId | FUNCTION | nfvo@localhost |

| nfvo | getCodeValue | FUNCTION | nfvo@localhost |

| nfvo | getNsVnfrHealthState | FUNCTION | nfvo@localhost |

| nfvo | getWeightedValueForEvent | FUNCTION | nfvo@localhost |

| nfvo | GET\_INSTANCE\_FULL\_NAME | FUNCTION | nfvo@localhost |

| nfvo | GET\_LATEST\_EVENT\_ID | FUNCTION | nfvo@localhost |

| nfvo | GET\_PARENT\_INSTANCE\_ID | FUNCTION | nfvo@localhost |

| nfvo | GET\_RELATED\_EVENT\_IDS | FUNCTION | nfvo@localhost |

| nfvo | SIS\_FN\_GET\_DT\_14DIGIT | FUNCTION | nfvo@localhost |

| nfvo | SIS\_FN\_GET\_GROUP | FUNCTION | nfvo@localhost |

| nfvo | SIS\_FN\_GET\_ID | FUNCTION | nfvo@localhost |

| nfvo | SIS\_FN\_GET\_NSR\_CALC | FUNCTION | nfvo@localhost |

| nfvo | SIS\_FN\_GET\_PORT\_ID | FUNCTION | nfvo@localhost |

| nfvo | SIS\_FN\_GET\_RESOURCE\_CATEGORY | FUNCTION | nfvo@localhost |

| nfvo | SIS\_P\_AGGR\_PERF | PROCEDURE | nfvo@localhost |

| nfvo | SIS\_P\_DELETE\_PERF | PROCEDURE | nfvo@localhost |

| nfvo | SIS\_P\_GET\_NSR\_PERF | PROCEDURE | nfvo@localhost |

| nfvo | SIS\_P\_NSR\_PERF\_RAW | PROCEDURE | nfvo@localhost |

| nfvo | SIS\_P\_PERF\_RAW | PROCEDURE | nfvo@localhost |

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

21 rows in set (0.01 sec)

MariaDB [information\_schema]> **SELECT TRIGGER\_SCHEMA, trigger\_name, EVENT\_OBJECT\_TABLE, EVENT\_MANIPULATION FROM information\_schema.triggers**

-> ;

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

| TRIGGER\_SCHEMA | trigger\_name | EVENT\_OBJECT\_TABLE | EVENT\_MANIPULATION |

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

| nfvo | ADD\_VDC\_RELATED\_VIM\_CLUSTER\_FROM\_VIM\_CLUSTER | vim\_cluster | INSERT |

| nfvo | DELETE\_VDC\_RELATED\_VIM\_CLUSTER\_FROM\_VIM\_CLUSTER | vim\_cluster | UPDATE |

| nfvo | ADD\_VDC\_RELATED\_VIM\_TENANT\_FROM\_VIM\_TENANT | vim\_tenant | INSERT |

| nfvo | UPDATE\_VDC\_RELATED\_VIM\_TENANT\_FROM\_VIM\_TENANT | vim\_tenant | UPDATE |

| nfvo | ADD\_VM\_HISTORY\_FROM\_VM | vm | UPDATE |

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

5 rows in set (0.02 sec)

MariaDB [nfvo]> **SELECT TABLE\_SCHEMA, TABLE\_NAME, DEFINER from information\_schema.VIEWS;**

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

| TABLE\_SCHEMA | TABLE\_NAME | DEFINER |

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

| nfvo | assurance\_noti\_system\_view | nfvo@localhost |

| nfvo | auth\_system\_view | nfvo@localhost |

| nfvo | code\_group\_view | nfvo@localhost |

| nfvo | code\_view | nfvo@localhost |

| nfvo | host\_last\_perf\_view | nfvo@localhost |

| nfvo | clear\_correlation\_rule\_view | nfvo@localhost |

| nfvo | correlation\_instances\_view | nfvo@localhost |

| nfvo | correlation\_rule\_view | nfvo@localhost |

| nfvo | host\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | host\_port\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | host\_perf\_list\_view | nfvo@localhost |

| nfvo | host\_port\_last\_perf\_view | nfvo@localhost |

| nfvo | host\_port\_perf\_list\_view | nfvo@localhost |

| nfvo | instance\_fullname\_view | nfvo@localhost |

| nfvo | nfvo\_perf\_list\_view | nfvo@localhost |

| nfvo | nfvo\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | nfvo\_port\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | nsd\_category | nfvo@localhost |

| nfvo | nsr\_last\_perf\_view | nfvo@localhost |

| nfvo | instances\_view | nfvo@localhost |

| nfvo | nfvo\_last\_perf\_view | nfvo@localhost |

| nfvo | nsr\_perf\_list\_view | nfvo@localhost |

| nfvo | nsr\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | vm\_last\_perf\_view | nfvo@localhost |

| nfvo | nfvo\_port\_last\_perf\_view | nfvo@localhost |

| nfvo | nfvo\_port\_perf\_list\_view | nfvo@localhost |

| nfvo | vm\_perf\_list\_view | nfvo@localhost |

| nfvo | vm\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | vm\_port\_last\_perf\_view | nfvo@localhost |

| nfvo | vm\_port\_perf\_list\_view | nfvo@localhost |

| nfvo | vm\_port\_perf\_list\_view\_group | nfvo@localhost |

| nfvo | vnfd\_category | nfvo@localhost |

| nfvo | vnfr\_last\_perf\_view | nfvo@localhost |

| nfvo | vnfr\_perf\_list\_view | nfvo@localhost |

| nfvo | vnfr\_perf\_list\_view\_group | nfvo@localhost |

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

35 rows in set (0.13 sec)

**[procedure, function,trigger,view 세부내용 확인방법]**

MariaDB [nfvo]> **show create procedure SIS\_P\_AGGR\_PERF\G;**

MariaDB [nfvo]> **show create function FF\_FN\_GET\_NSR\_FLAVOR\G;**

MariaDB [nfvo]> **show create trigger ADD\_VDC\_RELATED\_VIM\_CLUSTER\_FROM\_VIM\_CLUSTER;**

MariaDB [nfvo]> **show create view vnfd\_category;**

**[procedure 실습]**

MariaDB [zabbix]> **use zabbix**

Database changed

MariaDB [zabbix]> **delimiter //**

MariaDB [zabbix]> **create procedure pr1()**

**-> begin**

**-> select \* from users;**

**-> select \* from usrgrp;**

**-> end**

**-> //**

Query OK, 0 rows affected (0.00 sec)

MariaDB [zabbix]> **delimiter ;**

MariaDB [zabbix]> **call pr1;**

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

| userid | alias | name | surname | passwd | url | autologin | autologout | lang | refresh | type | theme | attempt\_failed | attempt\_ip | attempt\_clock | rows\_per\_page |

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

| 1 | Admin | Zabbix | Administrator | 5fce1b3e34b520afeffb37ce08c7cd66 | | 1 | 0 | en\_GB | 30 | 3 | default | 0 | 192.168.17.1 | 1496718403 | 50 |

| 2 | guest | | | d41d8cd98f00b204e9800998ecf8427e | | 0 | 900 | en\_GB | 30 | 1 | default | 0 | | 0 | 50 |

| 3 | choga88 | choga88 | | a9e09a27007f8e8bad58d68c3f2fa4de | | 0 | 900 | en\_GB | 30 | 1 | default | 0 | | 0 | 50 |

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

3 rows in set (0.00 sec)

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

| usrgrpid | name | gui\_access | users\_status | debug\_mode |

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

| 7 | Zabbix administrators | 0 | 0 | 0 |

| 8 | Guests | 0 | 0 | 0 |

| 9 | Disabled | 0 | 1 | 0 |

| 11 | Enabled debug mode | 0 | 0 | 1 |

| 12 | No access to the frontend | 2 | 0 | 0 |

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

5 rows in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

MariaDB [zabbix]> **delimiter //**

MariaDB [zabbix]> **create procedure pr2(d int)**

**-> begin**

**-> select \* from usrgrp where usrgrpid>=d;**

**-> end**

**-> //**

Query OK, 0 rows affected (0.00 sec)

MariaDB [zabbix]> **delimiter ;**

MariaDB [zabbix]> **call pr2(10);**

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

| usrgrpid | name | gui\_access | users\_status | debug\_mode |

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

| 11 | Enabled debug mode | 0 | 0 | 1 |

| 12 | No access to the frontend | 2 | 0 | 0 |

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

2 rows in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

MariaDB [zabbix]> **show procedure status;**

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

| Db | Name | Type | Definer | Modified | Created | Security\_type | Comment | character\_set\_client | collation\_connection | Database Collation |

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

| zabbix | pr1 | PROCEDURE | root@localhost | 2017-12-21 00:31:26 | 2017-12-21 00:31:26 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_bin |

| zabbix | pr2 | PROCEDURE | root@localhost | 2017-12-21 00:41:45 | 2017-12-21 00:41:45 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_bin |

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

2 rows in set (0.00 sec)

MariaDB [zabbix]> **drop procedure pr1;**

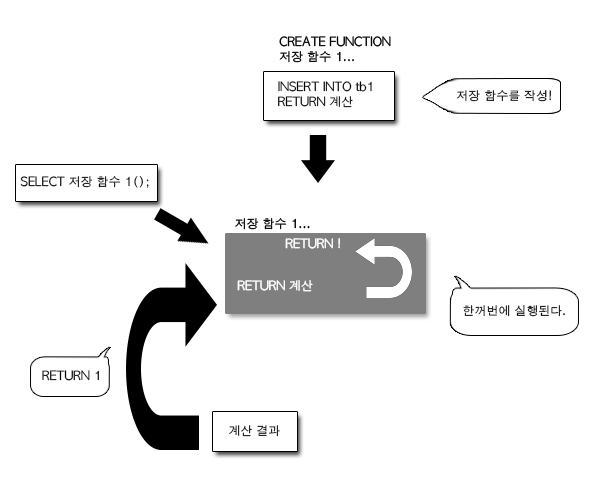
Query OK, 0 rows affected (0.00 sec)

MariaDB [zabbix]> **drop procedure pr2;**

Query OK, 0 rows affected (0.00 sec)

**[fuction란]**

저장 함수는 저장 프로시저와 거의 흡사합니다. 저장 프로시저와 유일하게 다른 점은 실행 했을 때 값을 반환한다는 점입니다.



**[fuction 실습]**

MariaDB [zabbix]> **delimiter //**

MariaDB [zabbix]> **create function fc1(height int) returns double**

**-> begin**

**-> return height\*height\*22/10000;**

**-> end**

**-> //**

Query OK, 0 rows affected (0.01 sec)

MariaDB [zabbix]> **delimiter ;**

MariaDB [zabbix]> **select fc1(173);**

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

| fc1(173) |

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

| 65.8438 |

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

1 row in set (0.01 sec)

MariaDB [zabbix]> **select \* from interface;**

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

| interfaceid | hostid | main | type | useip | ip | dns | port | bulk |

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

| 1 | 10084 | 1 | 1 | 1 | 127.0.0.1 | | 10050 | 1 |

| 3 | 10105 | 1 | 2 | 1 | 192.168.17.194 | | 161 | 1 |

| 5 | 10105 | 1 | 1 | 1 | 192.168.17.194 | | 10050 | 1 |

| 6 | 10108 | 1 | 1 | 1 | 192.168.17.194 | | 10050 | 1 |

| 7 | 10108 | 0 | 1 | 1 | 127.0.0.1 | | 10050 | 1 |

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

5 rows in set (0.00 sec)

MariaDB [zabbix]> **delimiter //**

MariaDB [zabbix**]> create function fc2() returns double**

**-> begin**

**-> declare r double;**

**-> select sum(useip) into r from interface;**

**-> return r;**

**-> end**

**-> //**

Query OK, 0 rows affected (0.01 sec)

MariaDB [zabbix]> **delimiter ;**

MariaDB [zabbix]> **select fc2();**

+-------+

| fc2() |

+-------+

| 5 |

+-------+

1 row in set (0.00 sec)

MariaDB [zabbix]> **show function status;**

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

| Db | Name | Type | Definer | Modified | Created | Security\_type | Comment | character\_set\_client | collation\_connection | Database Collation |

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

| zabbix | fc1 | FUNCTION | root@localhost | 2017-12-21 00:54:57 | 2017-12-21 00:54:57 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_bin |

| zabbix | fc2 | FUNCTION | root@localhost | 2017-12-21 00:57:21 | 2017-12-21 00:57:21 | DEFINER | | utf8 | utf8\_general\_ci | utf8\_bin |

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

2 rows in set (0.00 sec)

MariaDB [zabbix]> **drop function fc1;**

Query OK, 0 rows affected (0.00 sec)

MariaDB [zabbix]> **drop function fc2;**

Query OK, 0 rows affected (0.00 sec)

**[trigger란]**

INSERT나 UPDATE,DELETE 등의 명령이 실행될 때, 사전에 트리거로 설정해 놓은 기능도 함께 실행할 수가 있습니다. 예를 들어, 테이블의 레코드를 변경하면 그것을 계기로 변경한 내용을 다른 테이블에 기록하도록 트리거를 작성할 수 있습니다.

▶ 트리거가 호출되는 시점

ㅇ BEFORE: 테이블에 어떠한 처리를 하기 직전에 호출된다.

ㅇ AFTER: 테이블에 어떠한 처리를 한 직후에 호출된다.

또한, 이 테이블에서 어떠한 처리를 하기 직전과 직후의 값은 다음과 같이 'OLD.칼럼\_이름'과 'NEW.칼럼\_이름'으로 얻을 수 있습니다.

▶ 칼럼의 값

ㅇ OLD.칼럼\_이름: 테이블에 어떠한 처리가 이루어 지기 직전의 칼럼값

ㅇ NEW.칼럼\_이름: 테이블에 어떠한 처리가 이루어 진 직후의 칼럼 값

|  |  |  |
| --- | --- | --- |
| 명령 | 실행전(old.칼럼\_이름) - before사용 | 실행후(new.칼럼\_이름) - after사용 |
| Insert | X | O |
| Delete | O | X |
| Update | O | O |

**[trigger 실습]**

MariaDB [test]> **select \* from Persons;**

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

| PersonID | LastName | FirstName |

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

| 1 | cho | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

| 4 | cho3 | youngjun3 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **create table Persons\_M like Persons;**

MariaDB [test]> **select \* from Persons;**

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

| PersonID | LastName | FirstName |

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

| 1 | cho | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

| 4 | cho3 | youngjun3 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **select \* from Persons\_M;**

Empty set (0.00 sec)

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> **delimiter //**

MariaDB [test]> **create trigger Persons before delete on Persons for each row**

**-> begin**

**-> insert into Persons\_M values(old.PersonID, old.LastName , old.FirstName);**

**-> end**

**-> //**

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> **delimiter ;**

MariaDB [test]> **delete from Persons where LastName='cho3';**

Query OK, 1 row affected (0.00 sec)

MariaDB [test]> **select \* from Persons;**

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

| PersonID | LastName | FirstName |

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

| 1 | cho | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

3 rows in set (0.00 sec)

MariaDB [test]> **select \* from Persons\_M;**

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

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

1 row in set (0.00 sec)

MariaDB [test]> **delete from Persons;**

Query OK, 3 rows affected (0.00 sec)

MariaDB [test]> **select \* from Persons;**

Empty set (0.00 sec)

MariaDB [test]> **select \* from Persons\_M;**

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

| 1 | cho | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **insert into Persons select \* from Persons\_M;**

Query OK, 4 rows affected (0.00 sec)

Records: 4 Duplicates: 0 Warnings: 0

MariaDB [test]> **select \* from Persons;**

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

| 1 | cho | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **select \* from Persons\_M;**

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

| 1 | cho | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **show triggers;**

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

| Trigger | Event | Table | Statement | Timing | Created | sql\_mode | Definer | character\_set\_client | collation\_connection | Database Collation |

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

| Persons | DELETE | Persons | begin

insert into Persons\_M values(old.PersonID, old.LastName , old.FirstName);

end | BEFORE | NULL | | root@localhost | utf8 | utf8\_general\_ci | latin1\_swedish\_ci |

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

1 row in set (0.00 sec)

MariaDB [test]> **drop trigger Persons;**

Query OK, 0 rows affected (0.00 sec)

**[view란]**

SELECT한 결과를 가상 테이블에 저장한 것을 뷰라고 합니다.

뷰는 테이블이 아닙니다. 그러므로 뷰의 레코드와 칼럼에는 데이터가 존재하지 않습니다. 뷰란 '◯ ◯ 테이블의 ✕ ✕ 칼럼과 ~~을 △ △의 조건으로 한데 모아 놓은 것'으로, 데이터를 추출하기 위한 정보일 뿐입니다.

**[view 실습]**

MariaDB [test]> **create view v1 as select PersonID,LastName from Persons;**

Query OK, 0 rows affected (0.01 sec)

MariaDB [test]> **select \* from v1;**

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

| PersonID | LastName |

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

| 4 | cho3 |

| 1 | cho |

| 2 | cho1 |

| 3 | cho2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **update v1 set LastName='choi' where PersonID=1;**

Query OK, 1 row affected (0.01 sec)

Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [test]> **select \* from v1;**

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

| PersonID | LastName |

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

| 4 | cho3 |

| 1 | choi |

| 2 | cho1 |

| 3 | cho2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **select \* from Persons;**

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

| PersonID | LastName | FirstName |

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

| 4 | cho3 | youngjun3 |

| 1 | choi | youngjun |

| 2 | cho1 | youngjun1 |

| 3 | cho2 | youngjun2 |

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

4 rows in set (0.00 sec)

MariaDB [test]> **show tables;**

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

| Tables\_in\_test |

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

| Persons |

| Persons\_M |

| v1 |

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

3 rows in set (0.00 sec)

MariaDB [test]> **desc v1;**

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

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

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

| PersonID | int(11) | YES | | NULL | |

| LastName | varchar(255) | YES | | NULL | |

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

2 rows in set (0.00 sec)

MariaDB [test]> **show create view v1;**

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

| View | Create View | character\_set\_client | collation\_connection |

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

| v1 | CREATE ALGORITHM=UNDEFINED DEFINER=`root`@`localhost` SQL SECURITY DEFINER VIEW `v1` AS select `Persons`.`PersonID` AS `PersonID`,`Persons`.`LastName` AS `LastName` from `Persons` | utf8 | utf8\_general\_ci |

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

1 row in set (0.01 sec)

MariaDB [test**]> drop view v1;**

Query OK, 0 rows affected (0.00 sec)