데이터베이스 시험

SELECT: $\sigma_{predicate}(relation)$

PROJECT: $\pi_{attr1,\ attr2...}(relation)$

UNION: $relation_1 \cup relation_2$

OUTER UNION: $r \cup^{+} s$

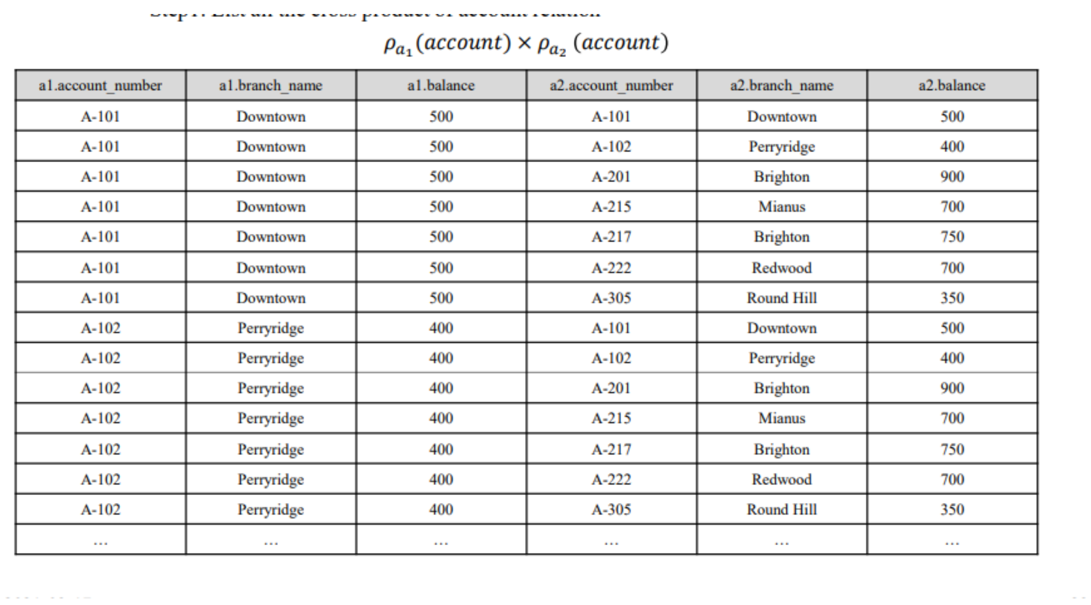
INTERSECTION: $relation_1 \cap relation_2$

DIFFERENCE: $relation_1 - \ relation_2$

CARTESIAN PRODUCT: $relation_1 \times \ relation_2$

RENAME: $\rho_{renamed\_relation}(original\_relation)$

데이터 베이스의 이름이 바뀐다



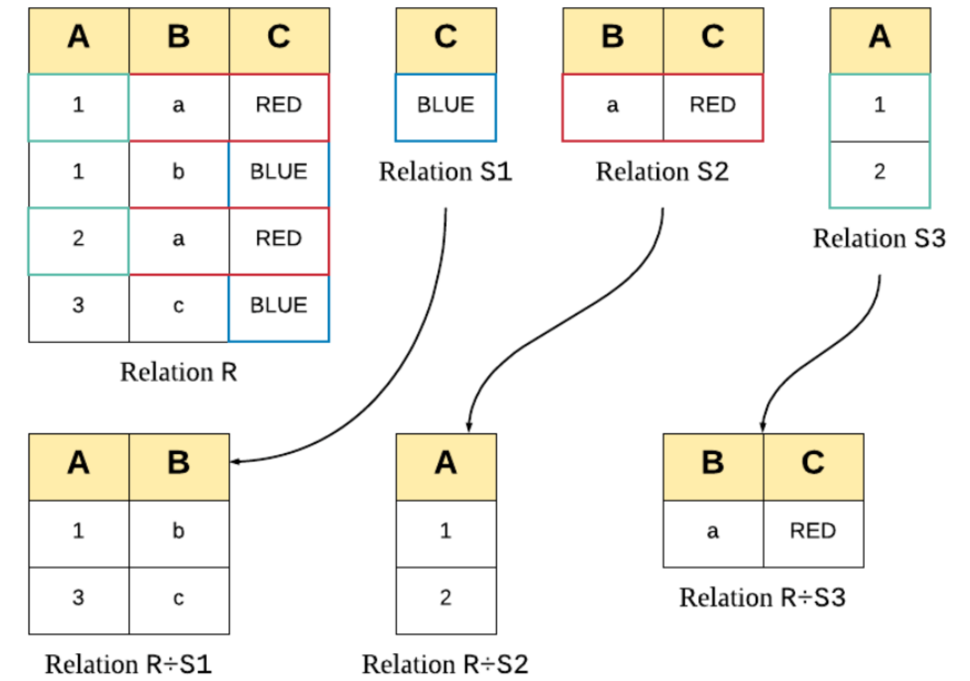
Step1: List all the cross product of account relation

$$\rho_{a_1}(account) \times \rho_{a_2}(account)$$

a1.account_number	a1.branch_name	a1.balance	a2.account_number	a2.branch_name	a2.balance
A-101	Downtown	500	A-101	Downtown	500
A-101	Downtown	500	A-102	Perryridge	400
A-101	Downtown	500	A-201	Brighton	900
A-101	Downtown	500	A-215	Mianus	700
A-101	Downtown	500	A-217	Brighton	750
A-101	Downtown	500	A-222	Redwood	700
A-101	Downtown	500	A-305	Round Hill	350
A-102	Perryridge	400	A-101	Downtown	500
A-102	Perryridge	400	A-102	Perryridge	400
A-102	Perryridge	400	A-201	Brighton	900
A-102	Perryridge	400	A-215	Mianus	700
A-102	Perryridge	400	A-217	Brighton	750
A-102	Perryridge	400	A-222	Redwood	700
A-102	Perryridge	400	A-305	Round Hill	350
…	…	…	…	…	…

DIVISION: $relation_1 \div relation_2$

- division을 풀어서 쓴 식



A	B	C
1	a	RED
1	b	BLUE
2	a	RED
3	c	BLUE

Relation R

C
BLUE

Relation S1

B	C
a	RED

Relation S2

A
1
2

Relation S3

A	B
1	b
3	c

Relation R÷S1

A
1
2

Relation R÷S2

B	C
a	RED

Relation R÷S3

Figure 8: Division R S1, S2 and S3

R÷S

릴레이션 R중에서 S와 관련되어 있는 모든 튜플을 추출 단 릴레이션의 S의 칼럼은 제외하고 릴레이션을 보여준다

ASSIGNMENT: $r_2 \leftarrow r_1$

- Example

$$\pi_{R-S}(r) - \pi_{R-S}((\pi_{R-S}(r) \times s) - \pi_{R-S,S}(r))$$

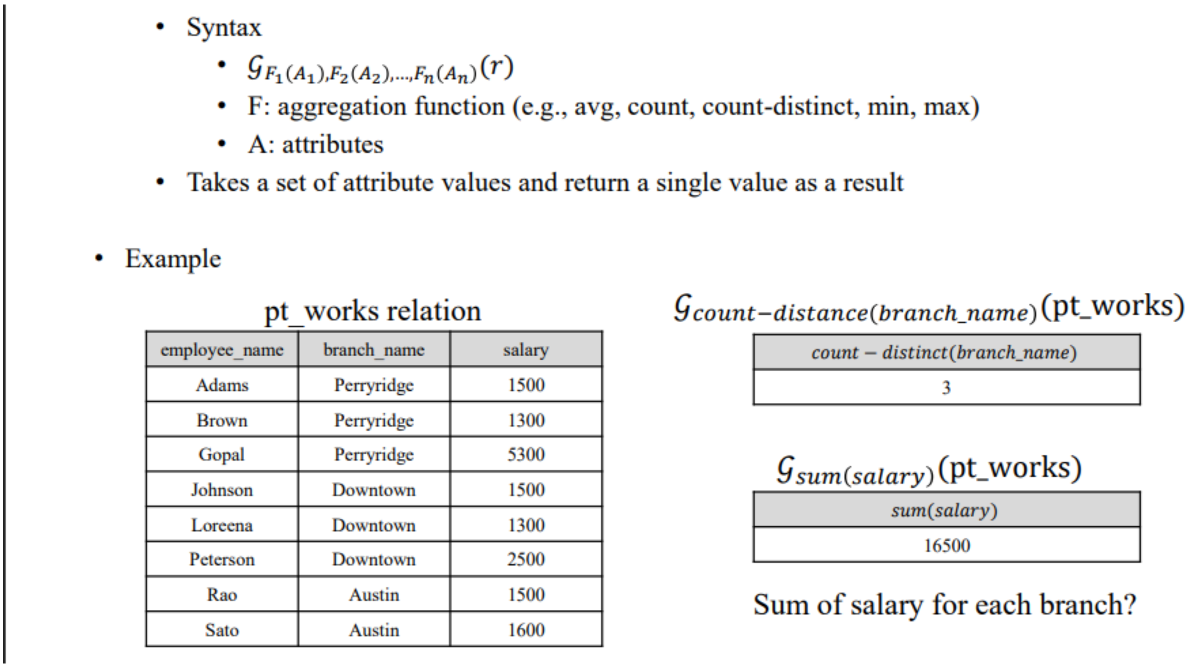
- $temp1 \leftarrow \pi_{R-S}(r)$
- $temp2 \leftarrow \pi_{R-S}\left((temp1 \times s\ ) - \pi_{R-S,S}(r)\right)$
- $result = temp1\ \ - temp2$

프로그래밍 언어의 변수같은 느낌, 복잡한 관계대수 식을 보기 편하게 해준다

AGGREGATION: ${}_{G_1,G_2,\ldots,G_m}G_{F_1(A_1),\,F_2(A_2),\,\ldots,F_n(A_n)}(r)$

SQL의 집계함수의 역할을 한다.

avg(평균), count(개수 카운트), count-distinct(종류 개수), min(최솟값), max(최댓값) 등이 있다



- Syntax
  - $\mathcal{G}_{F_1(A_1),F_2(A_2),\ldots,F_n(A_n)}(r)$
  - F: aggregation function (e.g., avg, count, count-distinct, min, max)
  - A: attributes
- Takes a set of attribute values and return a single value as a result

- Example

pt_works relation

employee_name	branch_name	salary
Adams	Perryridge	1500
Brown	Perryridge	1300
Gopal	Perryridge	5300
Johnson	Downtown	1500
Loreena	Downtown	1300
Peterson	Downtown	2500
Rao	Austin	1500
Sato	Austin	1600

$\mathcal{G}_{count-distance(branch\_name)}$(pt_works)

$count-distinct(branch\_name)$
3

$\mathcal{G}_{sum(salary)}$(pt_works)

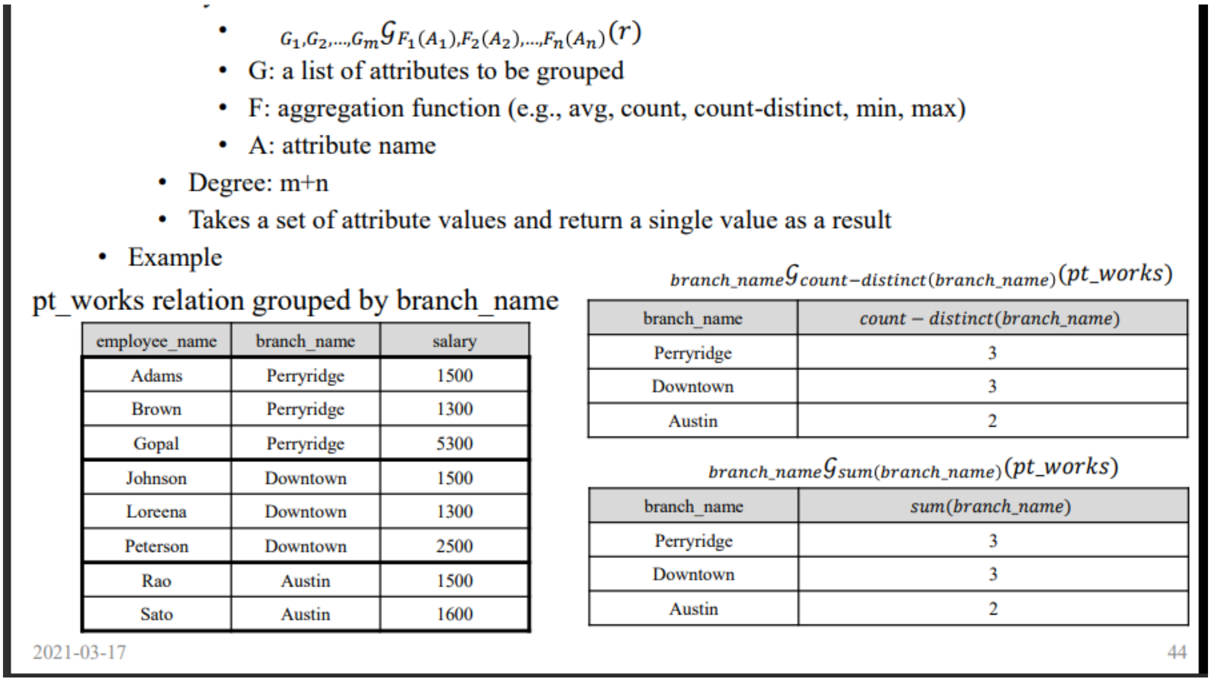
$sum(salary)$
16500

Sum of salary for each branch?

이를 통해 나오는 릴레이션의 차수는 m+n이다.

집계함수를 여러개 쓸 수 있다.

g기호 뒤에 출력할 칼럼명을 적으므로써 집계함수가 아닌 평범함 칼럼?도 출력할 수 있다.



- $_{G_1,G_2,\dots,G_m}\mathcal{G}_{F_1(A_1),F_2(A_2),\dots,F_n(A_n)}(r)$
- G: a list of attributes to be grouped
- F: aggregation function (e.g., avg, count, count-distinct, min, max)
- A: attribute name

- Degree: m+n
- Takes a set of attribute values and return a single value as a result

- Example

pt_works relation grouped by branch_name

employee_name	branch_name	salary
Adams	Perryridge	1500
Brown	Perryridge	1300
Gopal	Perryridge	5300
Johnson	Downtown	1500
Loreena	Downtown	1300
Peterson	Downtown	2500
Rao	Austin	1500
Sato	Austin	1600

$_{branch\_name}\mathcal{G}_{count-distinct(branch\_name)}(pt\_works)$

branch_name	$count - distinct(branch\_name)$
Perryridge	3
Downtown	3
Austin	2

$_{branch\_name}\mathcal{G}_{sum(branch\_name)}(pt\_works)$

branch_name	$sum(branch\_name)$
Perryridge	3
Downtown	3
Austin	2

2021-03-17

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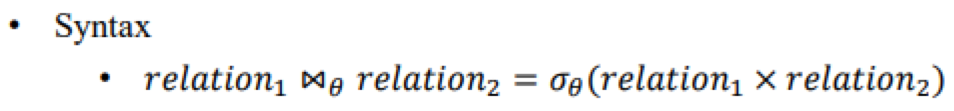
JOIN: $relation_1 \bowtie relation_2$

- 조인은 카디션 프로덕트(교차곱) + 셀릭트(select)의 연산이 합쳐진거다
- 세타조인, 동일조인, 자연조인에 대해서 알아두기

THETA JOIN: $relation_1 \bowtie_\theta relation_2$

세타조인은 자연 조인보다 조금 더 확실하게 표현해주는거



- Syntax
  - $relation_1 \bowtie_\theta relation_2 = \sigma_\theta(relation_1 \times relation_2)$

시그마의 세타 (조건 관계식) = 조인의 세타

LEFT OUTER JOIN: $r ⟕ s$

RIGHT OUTER JOIN: $r ⟖ s$

FULL OUTER JOIN: $r ⟗ s$

DDL

- USE mydb
- CREATE DATABASE mydb
- CREATE TABLE mytable (idx INT, name VARCHAR(10), ...)

  기본키 지정을 안해줘도 제대로 생성이 될까? 되네? ㅎㅎ

- DESCRIBE mytable -> 테이블 구조 보여줌
- INSERT INTO mytable VALUES (1, yunsuu, man)
- CREATE OR REPLACE DATABASE mydb

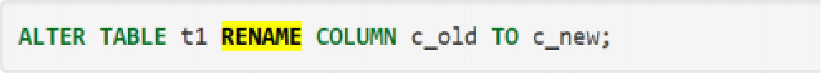
  = DROP DATABASE IF EXISTS mydb; CREATE DATABASE mydb

  db가 이미 있으면 삭제하고 다시 ㄱㄱ 없으면 그냥 평범하게 생성

- CREATE DATABASE IF NOT EXISTS mydb
- SHOW WARNINGS; -> 에러 로그를 보여준다
- CREATE OR REPLACE DATABASE mydb CHARACTER SET = latin1 COLLATE = latin1_german2_ci ;

  각 나라마다 문자언어가 다르므로 필요한 바이트 수도 각각 다르다 이를 해결하기 위해

  Character set이 존재한다

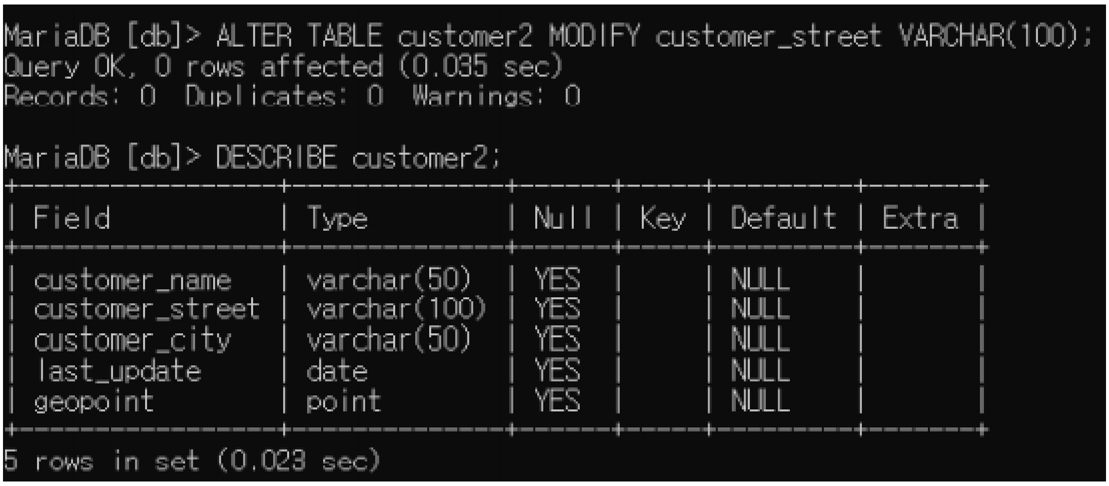
- SHOW DATABASES; -> 생성한 db의 종류를 보여준다
- DROP DATABASE mydb ;
- DROP DATABASE IF EXISTS mydb; -> db가 존재할때만 삭제
- DROP TABLE mytable; + DROP TABLE IF EXISTS customer2;
- ALTER TABLE mytable DROP COLUMN latitude, DROP COLUMN longitude;
- 

  ```
  ALTER TABLE t1 RENAME COLUMN c_old TO c_new;
  ```

  칼럼이름 다시 정의할때 (마리아 db 10.5.2 기준)

- ALTER TABLE mytable MODIFY idx VARCHAR(100)

  예시



```
MariaDB [db]> ALTER TABLE customer2 MODIFY customer_street VARCHAR(100);
Query OK, 0 rows affected (0.035 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [db]> DESCRIBE customer2;
+-----------------+--------------+------+-----+---------+-------+
| Field           | Type         | Null | Key | Default | Extra |
+-----------------+--------------+------+-----+---------+-------+
| customer_name   | varchar(50)  | YES  |     | NULL    |       |
| customer_street | varchar(100) | YES  |     | NULL    |       |
| customer_city   | varchar(50)  | YES  |     | NULL    |       |
| last_update     | date         | YES  |     | NULL    |       |
| geopoint        | point        | YES  |     | NULL    |       |
+-----------------+--------------+------+-----+---------+-------+
5 rows in set (0.023 sec)
```

DML

- SELECT * FROM mytable
- INSERT INTO mytable VALUES (615453, 'J.B.', 10,30,30,30), (123, 'J.C.', 9,27,25,23);

  여러개 insert 하는 sql 문

- DELETE FROM mytable

  테이블에 모든 정보 지우는 문

- ALTER TABLE mytable ADD COLUMN total DOUBLE ;

  테이블 업데이트 문, mytable에 total(double) 칼럼을 추가한다

- UPDATE mytable SET last_update=CURDATE();

  curdate : 현재 날짜를 출력하는 빌트인 함수

빌트인 꿀받네 ㅎㅎ;;

DQL

- SELECT 문 순서

  SELECT

  FROM

WHERE

GROUP BY

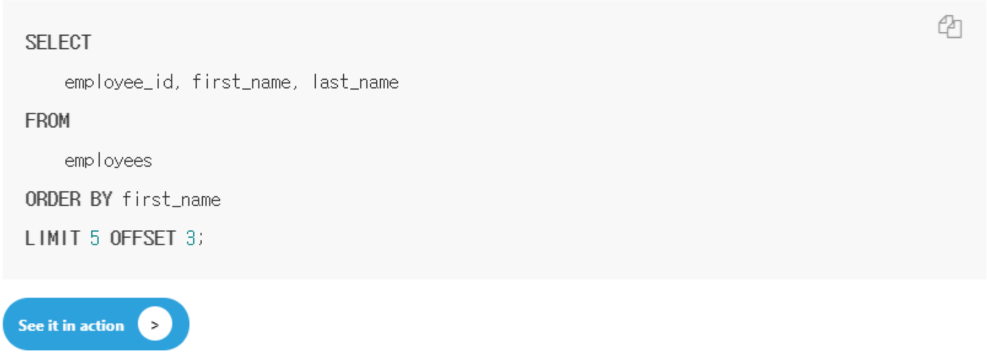
HAVING

ORDER BY

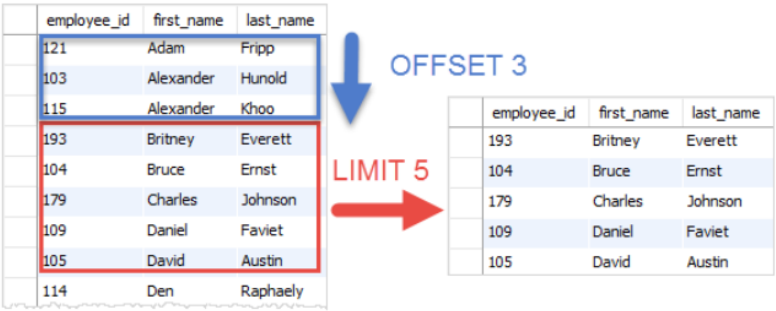
LIMIT

- LIMIT 사용법

LIMIT 4 -> 맨 위에서 부터 4개 추출



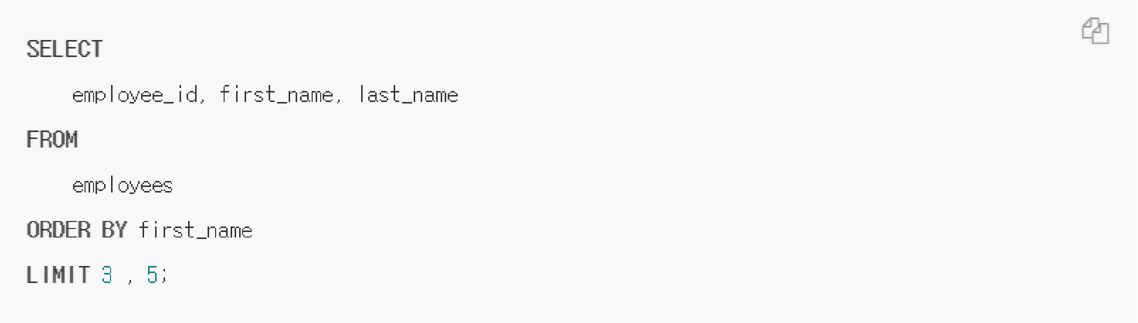
```
SELECT
    employee_id, first_name, last_name
FROM
    employees
ORDER BY first_name
LIMIT 5 OFFSET 3;
```



employee_id	first_name	last_name
121	Adam	Fripp
103	Alexander	Hunold
115	Alexander	Khoo
193	Britney	Everett
104	Bruce	Ernst
179	Charles	Johnson
109	Daniel	Faviet
105	David	Austin
114	Den	Raphaely

employee_id	first_name	last_name
193	Britney	Everett
104	Bruce	Ernst
179	Charles	Johnson
109	Daniel	Faviet
105	David	Austin

같은 표현으로는



```
SELECT
    employee_id, first_name, last_name
FROM
    employees
ORDER BY first_name
LIMIT 3 , 5;
```

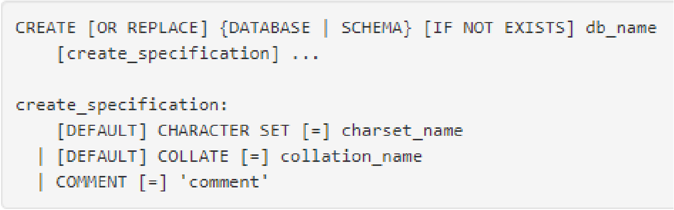
- INSERT INTO table (col_name,…) SELECT …

- JOIN

  https://pearlluck.tistory.com/46

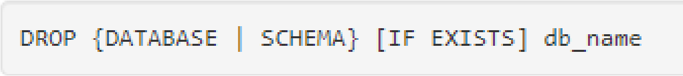
- 다른 테이블 값 기준으로 조건 넣는 법

CREATE DATABASE



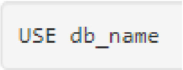
```
CREATE [OR REPLACE] {DATABASE | SCHEMA} [IF NOT EXISTS] db_name
    [create_specification] ...

create_specification:
    [DEFAULT] CHARACTER SET [=] charset_name
  | [DEFAULT] COLLATE [=] collation_name
  | COMMENT [=] 'comment'
```

DROP DATABASE



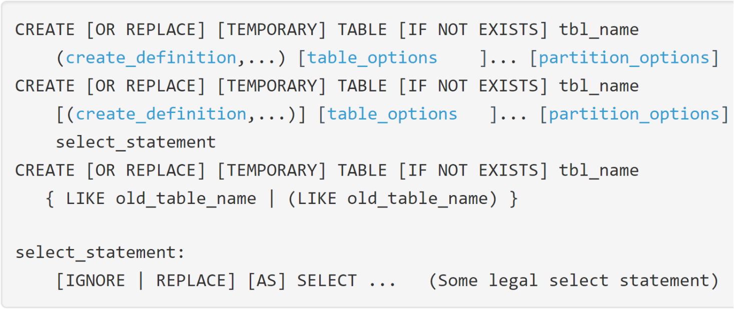
```
DROP {DATABASE | SCHEMA} [IF EXISTS] db_name
```

USE



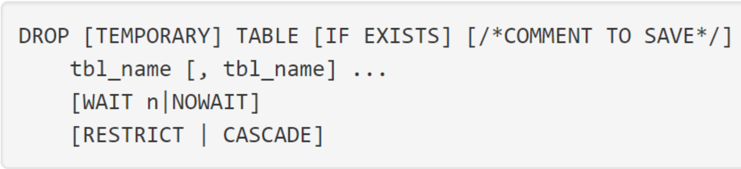
```
USE db_name
```

CREATE TABLE



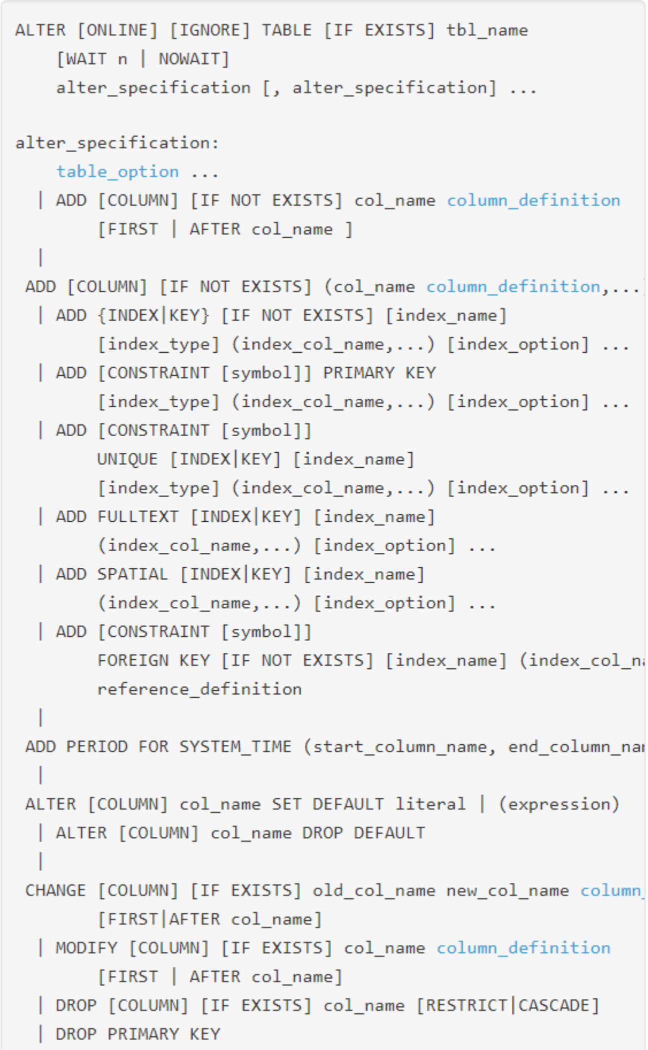
```
CREATE [OR REPLACE] [TEMPORARY] TABLE [IF NOT EXISTS] tbl_name
    (create_definition,...) [table_options    ]... [partition_options]
CREATE [OR REPLACE] [TEMPORARY] TABLE [IF NOT EXISTS] tbl_name
    [(create_definition,...)] [table_options   ]... [partition_options]
    select_statement
CREATE [OR REPLACE] [TEMPORARY] TABLE [IF NOT EXISTS] tbl_name
   { LIKE old_table_name | (LIKE old_table_name) }

select_statement:
    [IGNORE | REPLACE] [AS] SELECT ...   (Some legal select statement)
```

DROP TABLE

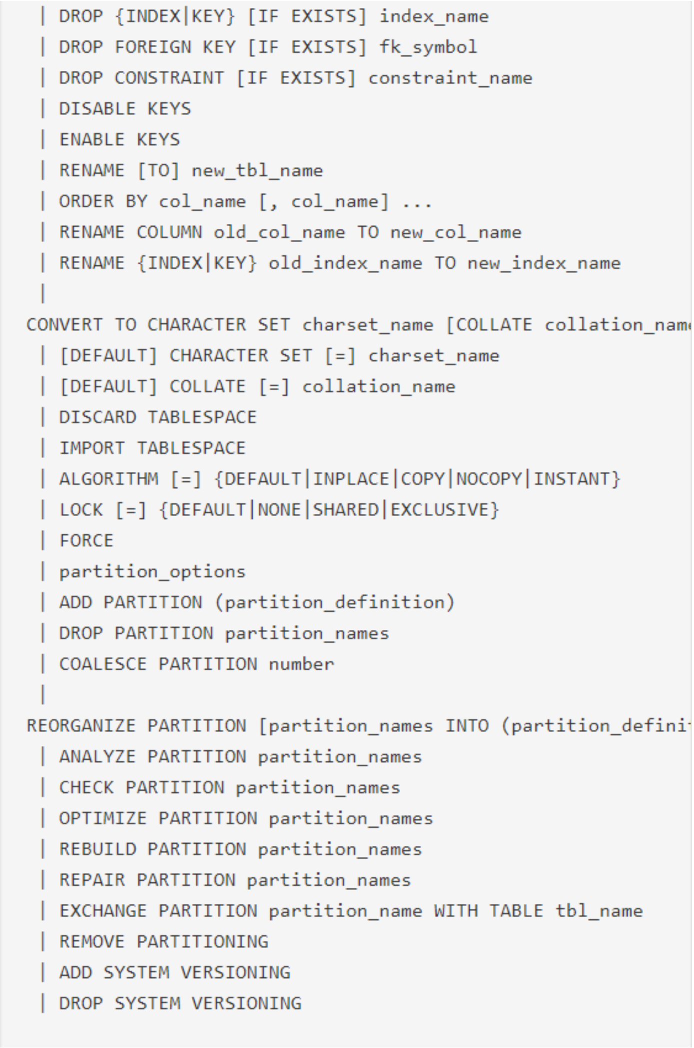


```
DROP [TEMPORARY] TABLE [IF EXISTS] [/*COMMENT TO SAVE*/]
    tbl_name [, tbl_name] ...
    [WAIT n|NOWAIT]
    [RESTRICT | CASCADE]
```

ALTER TABLE

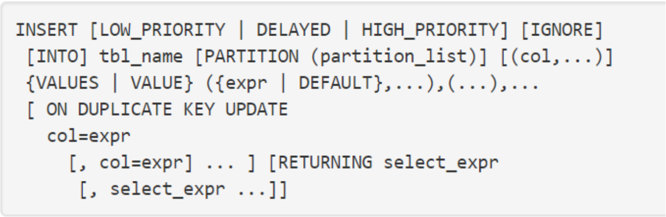


```
ALTER [ONLINE] [IGNORE] TABLE [IF EXISTS] tbl_name
    [WAIT n | NOWAIT]
    alter_specification [, alter_specification] ...

alter_specification:
    table_option ...
  | ADD [COLUMN] [IF NOT EXISTS] col_name column_definition
        [FIRST | AFTER col_name ]
  |
 ADD [COLUMN] [IF NOT EXISTS] (col_name column_definition,...
  | ADD {INDEX|KEY} [IF NOT EXISTS] [index_name]
        [index_type] (index_col_name,...) [index_option] ...
  | ADD [CONSTRAINT [symbol]] PRIMARY KEY
        [index_type] (index_col_name,...) [index_option] ...
  | ADD [CONSTRAINT [symbol]]
        UNIQUE [INDEX|KEY] [index_name]
        [index_type] (index_col_name,...) [index_option] ...
  | ADD FULLTEXT [INDEX|KEY] [index_name]
        (index_col_name,...) [index_option] ...
  | ADD SPATIAL [INDEX|KEY] [index_name]
        (index_col_name,...) [index_option] ...
  | ADD [CONSTRAINT [symbol]]
        FOREIGN KEY [IF NOT EXISTS] [index_name] (index_col_n
        reference_definition
  |
 ADD PERIOD FOR SYSTEM_TIME (start_column_name, end_column_na
  |
 ALTER [COLUMN] col_name SET DEFAULT literal | (expression)
  | ALTER [COLUMN] col_name DROP DEFAULT
  |
 CHANGE [COLUMN] [IF EXISTS] old_col_name new_col_name column_
        [FIRST|AFTER col_name]
  | MODIFY [COLUMN] [IF EXISTS] col_name column_definition
        [FIRST | AFTER col_name]
  | DROP [COLUMN] [IF EXISTS] col_name [RESTRICT|CASCADE]
  | DROP PRIMARY KEY
```



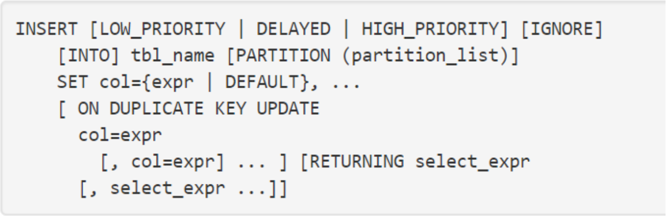
```
  | DROP {INDEX|KEY} [IF EXISTS] index_name
  | DROP FOREIGN KEY [IF EXISTS] fk_symbol
  | DROP CONSTRAINT [IF EXISTS] constraint_name
  | DISABLE KEYS
  | ENABLE KEYS
  | RENAME [TO] new_tbl_name
  | ORDER BY col_name [, col_name] ...
  | RENAME COLUMN old_col_name TO new_col_name
  | RENAME {INDEX|KEY} old_index_name TO new_index_name
  |
CONVERT TO CHARACTER SET charset_name [COLLATE collation_nam
  | [DEFAULT] CHARACTER SET [=] charset_name
  | [DEFAULT] COLLATE [=] collation_name
  | DISCARD TABLESPACE
  | IMPORT TABLESPACE
  | ALGORITHM [=] {DEFAULT|INPLACE|COPY|NOCOPY|INSTANT}
  | LOCK [=] {DEFAULT|NONE|SHARED|EXCLUSIVE}
  | FORCE
  | partition_options
  | ADD PARTITION (partition_definition)
  | DROP PARTITION partition_names
  | COALESCE PARTITION number
  |
REORGANIZE PARTITION [partition_names INTO (partition_defini
  | ANALYZE PARTITION partition_names
  | CHECK PARTITION partition_names
  | OPTIMIZE PARTITION partition_names
  | REBUILD PARTITION partition_names
  | REPAIR PARTITION partition_names
  | EXCHANGE PARTITION partition_name WITH TABLE tbl_name
  | REMOVE PARTITIONING
  | ADD SYSTEM VERSIONING
  | DROP SYSTEM VERSIONING
```

INSERT INTO



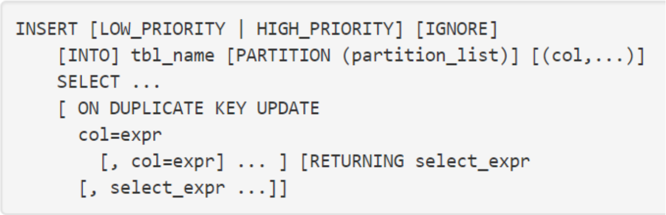
```
INSERT [LOW_PRIORITY | DELAYED | HIGH_PRIORITY] [IGNORE]
 [INTO] tbl_name [PARTITION (partition_list)] [(col,...)]
 {VALUES | VALUE} ({expr | DEFAULT},...),(...),...
 [ ON DUPLICATE KEY UPDATE
   col=expr
     [, col=expr] ... ] [RETURNING select_expr
      [, select_expr ...]]
```

Or:



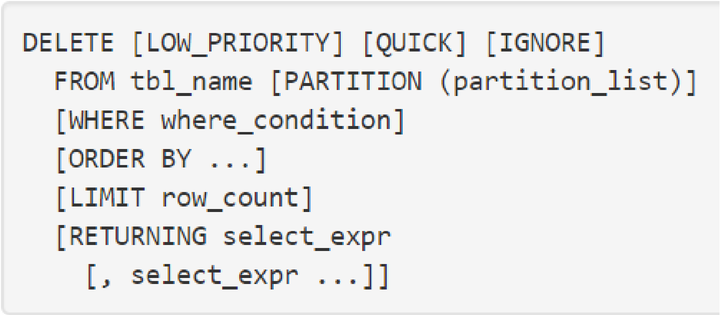
```
INSERT [LOW_PRIORITY | DELAYED | HIGH_PRIORITY] [IGNORE]
    [INTO] tbl_name [PARTITION (partition_list)]
    SET col={expr | DEFAULT}, ...
    [ ON DUPLICATE KEY UPDATE
      col=expr
        [, col=expr] ... ] [RETURNING select_expr
      [, select_expr ...]]
```

Or:



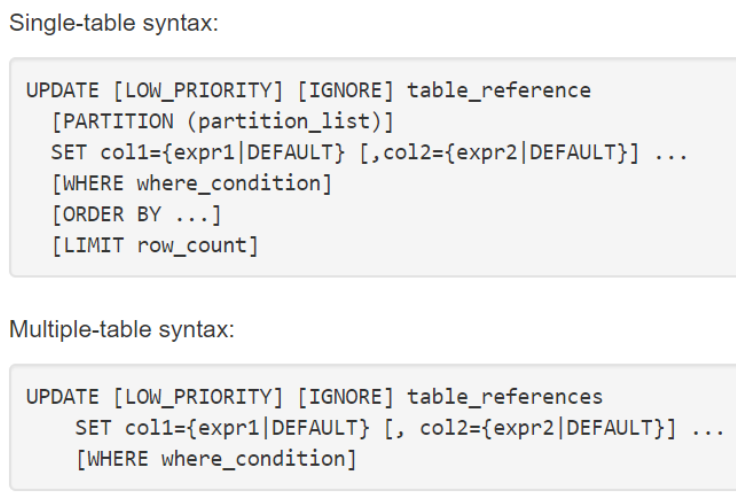
```
INSERT [LOW_PRIORITY | HIGH_PRIORITY] [IGNORE]
    [INTO] tbl_name [PARTITION (partition_list)] [(col,...)]
    SELECT ...
    [ ON DUPLICATE KEY UPDATE
      col=expr
        [, col=expr] ... ] [RETURNING select_expr
      [, select_expr ...]]
```

DELETE FROM



```
DELETE [LOW_PRIORITY] [QUICK] [IGNORE]
  FROM tbl_name [PARTITION (partition_list)]
  [WHERE where_condition]
  [ORDER BY ...]
  [LIMIT row_count]
  [RETURNING select_expr
    [, select_expr ...]]
```

UPDATE TABLE



Single-table syntax:

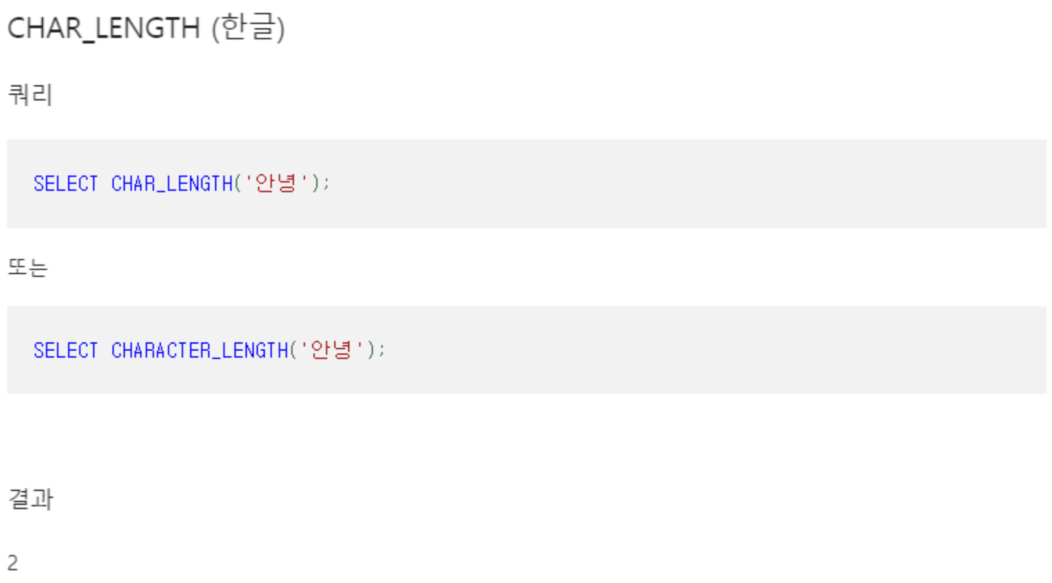
```
UPDATE [LOW_PRIORITY] [IGNORE] table_reference
  [PARTITION (partition_list)]
  SET col1={expr1|DEFAULT} [,col2={expr2|DEFAULT}] ...
  [WHERE where_condition]
  [ORDER BY ...]
  [LIMIT row_count]
```

Multiple-table syntax:

```
UPDATE [LOW_PRIORITY] [IGNORE] table_references
    SET col1={expr1|DEFAULT} [, col2={expr2|DEFAULT}] ...
    [WHERE where_condition]
```

Built-in Functions

CHARACTER_LENGTH(str) or CHAR_LENGTH() -> 문자 길이 추출함수



CHAR_LENGTH (한글)

쿼리

```
SELECT CHAR_LENGTH('안녕');
```

또는

```
SELECT CHARACTER_LENGTH('안녕');
```

결과

2

CONCAT(str1, str2, ...) -> 문자열 합치기 함수

기본 사용

쿼리

```
SELECT CONCAT('안녕하세요.', '감사해요.', '잘있어요.', '다시만나요.') AS hello;
```

결과

hello
안녕하세요.감사해요.잘있어요.다시만나요.

예제 테이블 : hero_collection

idx	type	name
1	1	안중근
2	1	윤봉길
3	2	김유신
4	2	이순신
5	3	이성계
6	3	왕건
7	4	반갑수

쿼리

```
SELECT CONCAT(type, '::', name) as hero_name FROM hero_collection;
```

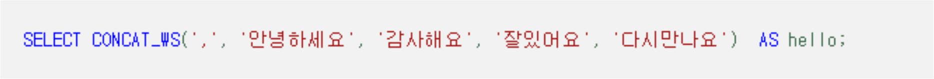
결과

hero_name
1::안중근
1::윤봉길
2::김유신
2::이순신
3::이성계
3::왕건
4::반갑수

CONCAT_WS(separator, str1, str2, ...) -> 문자열 구분자 넣어서 합치기

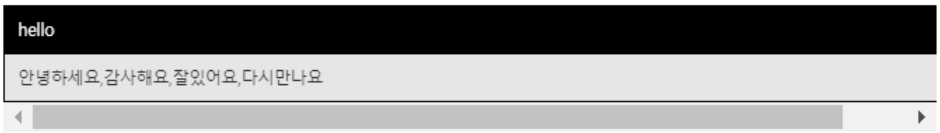
기본 사용

쿼리



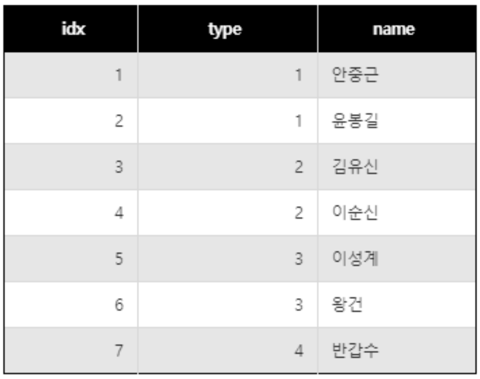
```
SELECT CONCAT_WS(',', '안녕하세요', '감사해요', '잘있어요', '다시만나요') AS hello;
```

결과



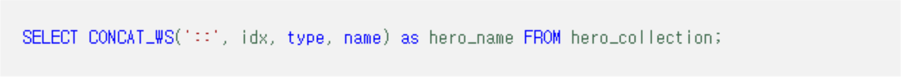
hello
안녕하세요,감사해요,잘있어요,다시만나요

예제 테이블 : hero_collection



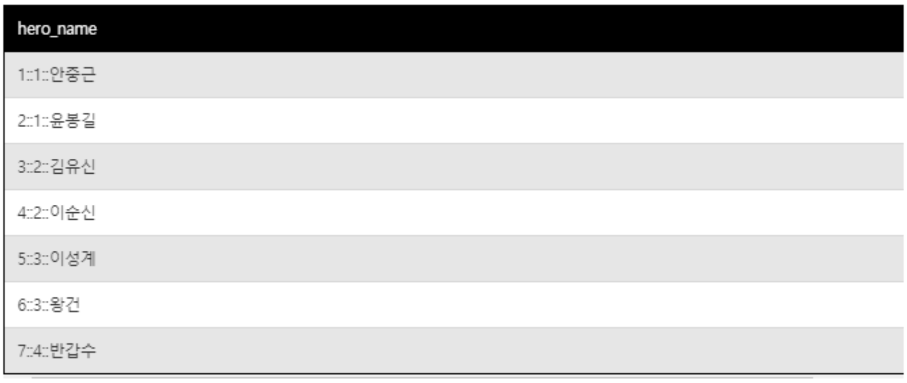
idx	type	name
1	1	안중근
2	1	윤봉길
3	2	김유신
4	2	이순신
5	3	이성계
6	3	왕건
7	4	반갑수

쿼리

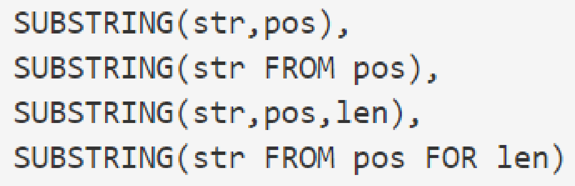


```
SELECT CONCAT_WS('::', idx, type, name) as hero_name FROM hero_collection;
```

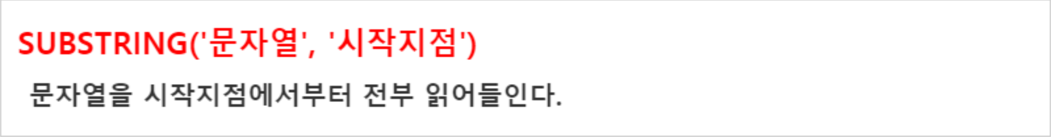
결과



hero_name
1::1::안중근
2::1::윤봉길
3::2::김유신
4::2::이순신
5::3::이성계
6::3::왕건
7::4::반갑수

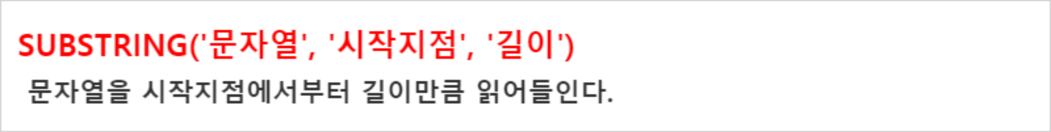


```
SUBSTRING(str,pos),
SUBSTRING(str FROM pos),
SUBSTRING(str,pos,len),
SUBSTRING(str FROM pos FOR len)
```



SUBSTRING('문자열', '시작지점')

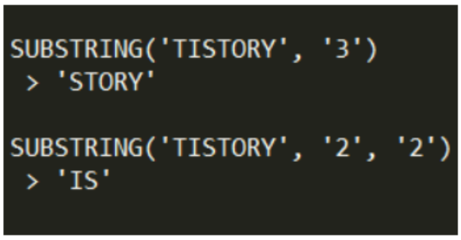
문자열을 시작지점에서부터 전부 읽어들인다.



SUBSTRING('문자열', '시작지점', '길이')

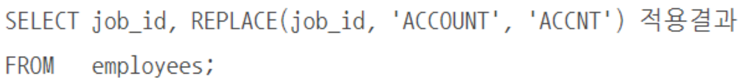
문자열을 시작지점에서부터 길이만큼 읽어들인다.

위와 같이 두가지 방법으로 사용할 수 있다.

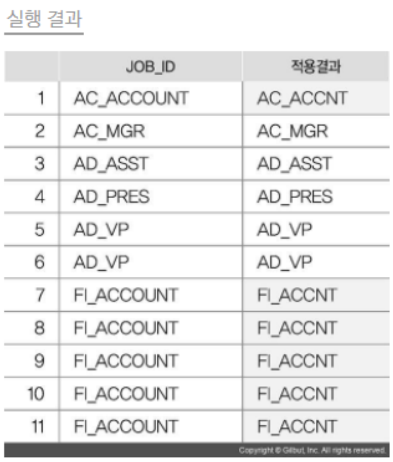


```
SUBSTRING('TISTORY', '3')
 > 'STORY'

SUBSTRING('TISTORY', '2', '2')
 > 'IS'
```

REPLACE(str, from_str, to_str) -> 문자열 교체하기



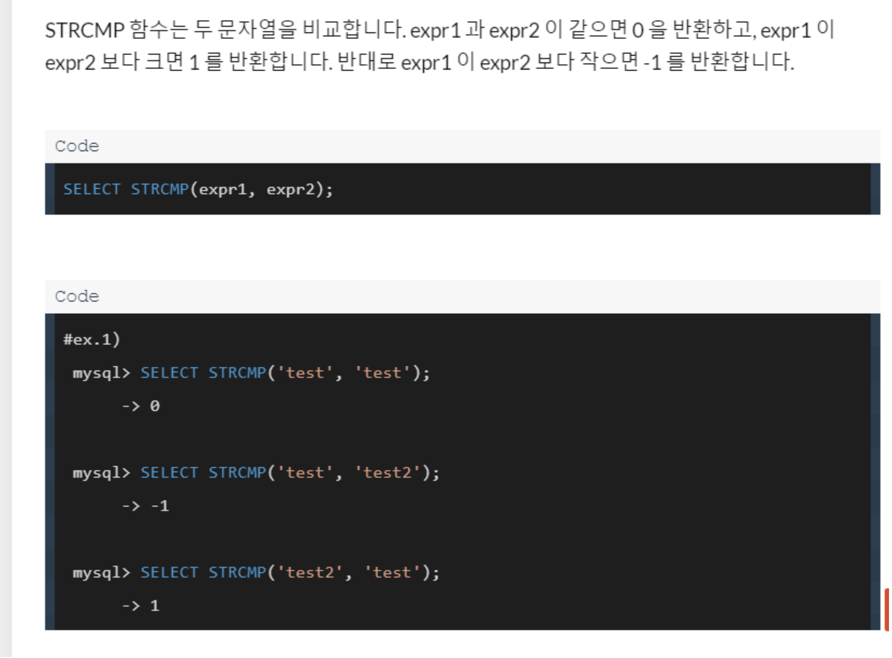
```
SELECT job_id, REPLACE(job_id, 'ACCOUNT', 'ACCNT') 적용결과
FROM   employees;
```



실행 결과

	JOB_ID	적용결과
1	AC_ACCOUNT	AC_ACCNT
2	AC_MGR	AC_MGR
3	AD_ASST	AD_ASST
4	AD_PRES	AD_PRES
5	AD_VP	AD_VP
6	AD_VP	AD_VP
7	FI_ACCOUNT	FI_ACCNT
8	FI_ACCOUNT	FI_ACCNT
9	FI_ACCOUNT	FI_ACCNT
10	FI_ACCOUNT	FI_ACCNT
11	FI_ACCOUNT	FI_ACCNT

STRCMP(expr1, expr2) -> 문자열 비교하기 **(1,0,-1)**



STRCMP 함수는 두 문자열을 비교합니다. expr1 과 expr2 이 같으면 0 을 반환하고, expr1 이 expr2 보다 크면 1 를 반환합니다. 반대로 expr1 이 expr2 보다 작으면 -1 를 반환합니다.

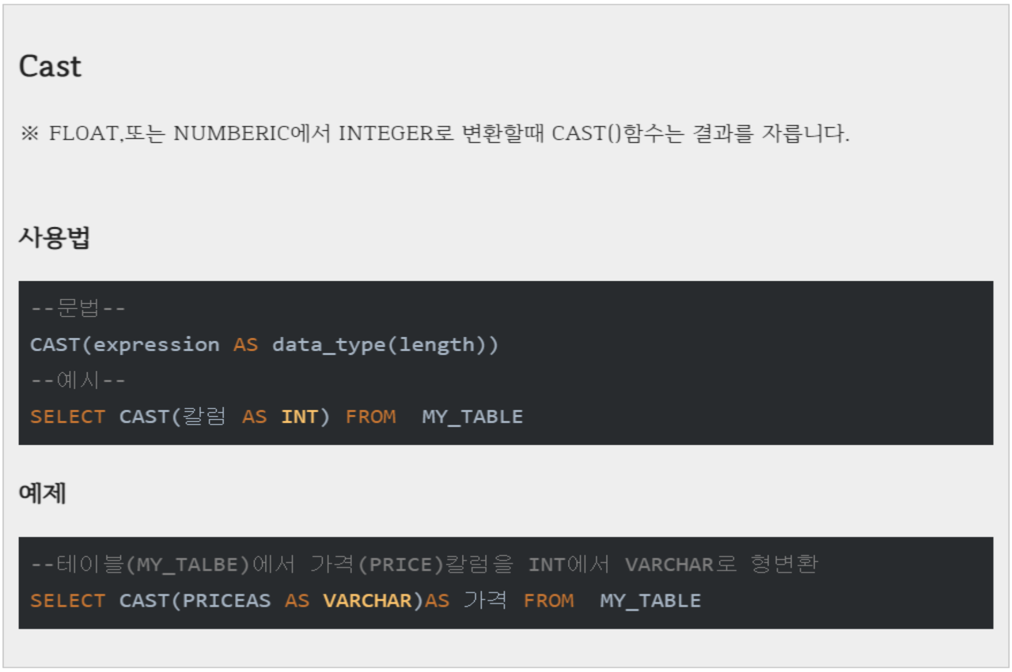
Code

```
SELECT STRCMP(expr1, expr2);
```

Code

```
#ex.1)
 mysql> SELECT STRCMP('test', 'test');
      -> 0

 mysql> SELECT STRCMP('test', 'test2');
      -> -1

 mysql> SELECT STRCMP('test2', 'test');
      -> 1
```

CAST(expr AS type) -> 형 바꾸기



Cast

※ FLOAT,또는 NUMBERIC에서 INTEGER로 변환할때 CAST()함수는 결과를 자릅니다.

사용법

```
--문법--
CAST(expression AS data_type(length))
--예시--
SELECT CAST(칼럼 AS INT) FROM  MY_TABLE
```

예제

```
--테이블(MY_TALBE)에서 가격(PRICE)칼럼을 INT에서 VARCHAR로 형변환
SELECT CAST(PRICEAS AS VARCHAR)AS 가격 FROM  MY_TABLE
```

CURDATE & CURTIME

UNIX_TIMESTAMP

FROM_UNIXTIME(unix_timestamp)

YEAR

MONTH

DAYOFMONTH DAYOFWEEK

HOUR

MINUTE

SECOND

STR_TO_DATE(str,format)

DATE_FORMAT(date, format[, locale])

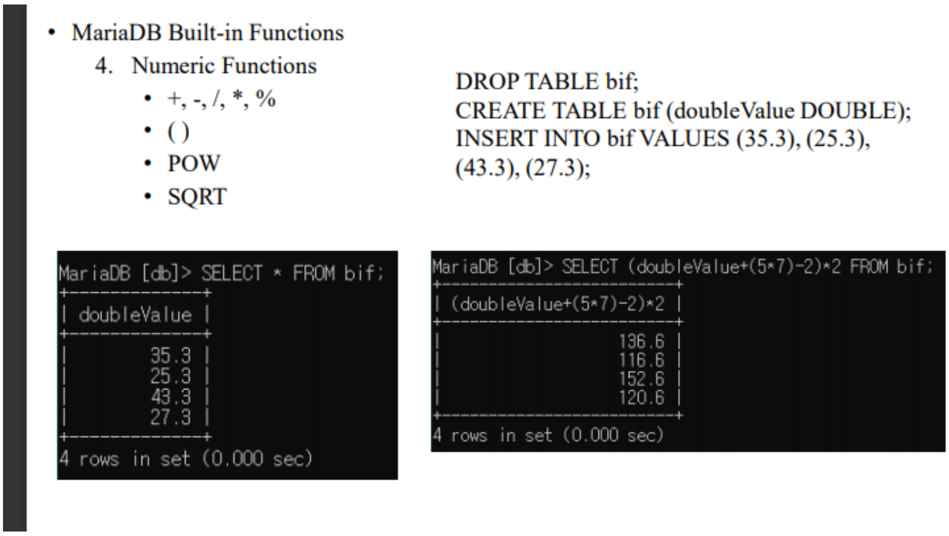
AVG, MAX, MIN, STD, SUM

VARIANCE

COUNT

COUNT_DISTINCT

+, -, /, *, %, ( ) -> select할때 계산할 수 있는 함수



- MariaDB Built-in Functions
  4. Numeric Functions
     - +, -, /, *, %
     - ( )
     - POW
     - SQRT

```
DROP TABLE bif;
CREATE TABLE bif (doubleValue DOUBLE);
INSERT INTO bif VALUES (35.3), (25.3),
(43.3), (27.3);
```

```
MariaDB [db]> SELECT * FROM bif;
+-------------+
| doubleValue |
+-------------+
|        35.3 |
|        25.3 |
|        43.3 |
|        27.3 |
+-------------+
4 rows in set (0.000 sec)
```

```
MariaDB [db]> SELECT (doubleValue+(5*7)-2)*2 FROM bif;
+-------------------------+
| (doubleValue+(5*7)-2)*2 |
+-------------------------+
|                   136.6 |
|                   116.6 |
|                   152.6 |
|                   120.6 |
+-------------------------+
4 rows in set (0.000 sec)
```

POW

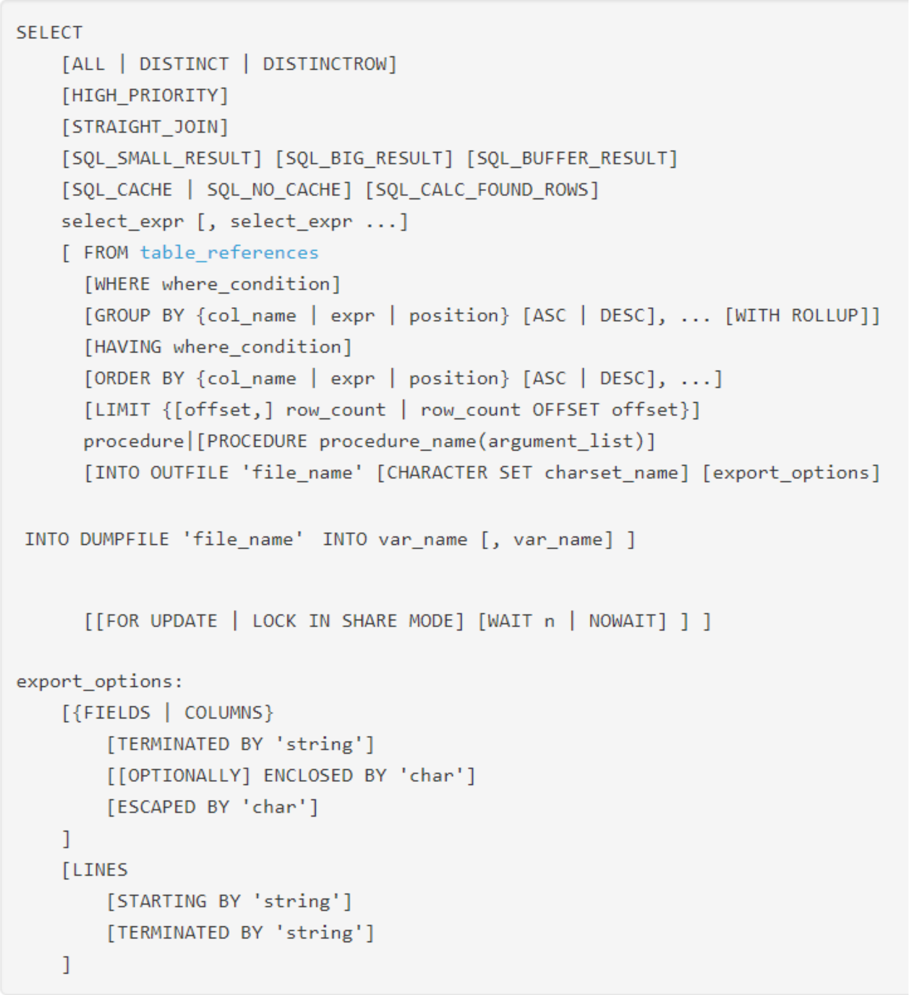
SQRT

FLOOR

CEILING

RAND

SELECT



```
SELECT
    [ALL | DISTINCT | DISTINCTROW]
    [HIGH_PRIORITY]
    [STRAIGHT_JOIN]
    [SQL_SMALL_RESULT] [SQL_BIG_RESULT] [SQL_BUFFER_RESULT]
    [SQL_CACHE | SQL_NO_CACHE] [SQL_CALC_FOUND_ROWS]
    select_expr [, select_expr ...]
    [ FROM table_references
      [WHERE where_condition]
      [GROUP BY {col_name | expr | position} [ASC | DESC], ... [WITH ROLLUP]]
      [HAVING where_condition]
      [ORDER BY {col_name | expr | position} [ASC | DESC], ...]
      [LIMIT {[offset,] row_count | row_count OFFSET offset}]
      procedure|[PROCEDURE procedure_name(argument_list)]
      [INTO OUTFILE 'file_name' [CHARACTER SET charset_name] [export_options]

 INTO DUMPFILE 'file_name'  INTO var_name [, var_name] ]


      [[FOR UPDATE | LOCK IN SHARE MODE] [WAIT n | NOWAIT] ] ]

export_options:
    [{FIELDS | COLUMNS}
        [TERMINATED BY 'string']
        [[OPTIONALLY] ENCLOSED BY 'char']
        [ESCAPED BY 'char']
    ]
    [LINES
        [STARTING BY 'string']
        [TERMINATED BY 'string']
    ]
```