



빅쿼리를 활용한 빅데이터 분석 (20)

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자료 다운로드: <https://www.github.com/synabreu/BigQuery>

제 20 강 목표

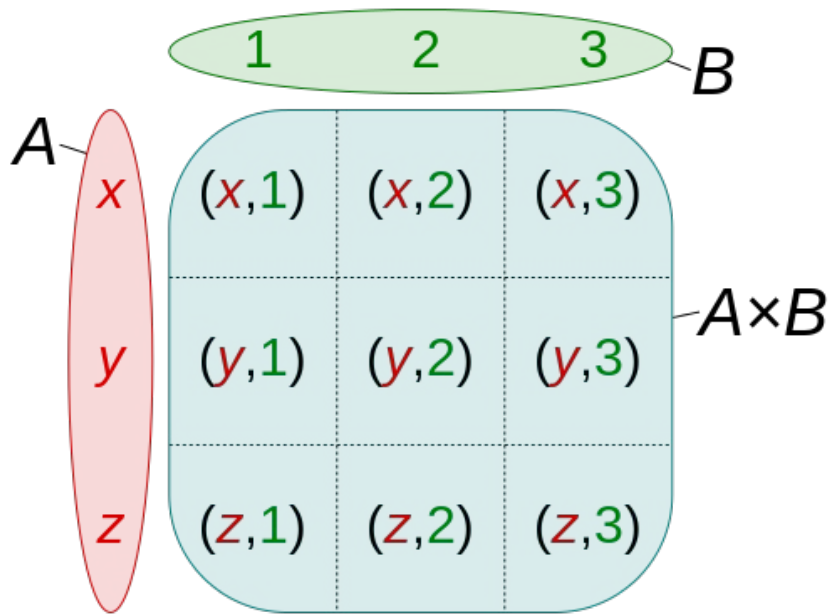


1. 빅쿼리에서의 TABLE JOINS
지원 형식
2. INNER JOIN
3. CROSS JOIN
4. FULL (OUTER) JOIN
5. LEFT (OUTER) JOIN
6. RIGHT (OUTER) JOIN

빅쿼리에서 TABLE JOINS 지원 형식

INNER JOIN	<div>1</div> <div>2</div> <div>3</div>	INNER JOIN	<div>A</div> <div>B</div> <div>C</div>	=	<div>1</div> <div>2</div>	<div>B</div> <div>A</div>	Only returns rows that meet the join condition
RIGHT OUTER JOIN	<div>1</div> <div>2</div> <div>3</div>	RIGHT OUTER JOIN	<div>A</div> <div>B</div> <div>C</div>	=	<div>1</div> <div>2</div>	<div>B</div> <div>A</div> <div>C</div>	Returns all rows from the table on the right side of JOIN and matched rows from the left side of the JOIN
LEFT OUTER JOIN	<div>1</div> <div>2</div> <div>3</div>	LEFT OUTER JOIN	<div>A</div> <div>B</div> <div>C</div>	=	<div>1</div> <div>2</div> <div>3</div>	<div>B</div> <div>A</div>	Returns all rows from the table on the left side of JOIN and matched rows from the right side of the JOIN
FULL OUTER JOIN	<div>1</div> <div>2</div> <div>3</div>	FULL OUTER JOIN	<div>A</div> <div>B</div> <div>C</div>	=	<div>1</div> <div>2</div> <div>3</div>	<div>B</div> <div>A</div> <div>C</div>	Returns all rows from both sides even if join condition is not met
CROSS JOIN	<div>1</div> <div>2</div> <div>3</div>	CROSS JOIN	<div>A</div> <div>B</div> <div>C</div>	=	<div>1</div> <div>1</div> <div>1</div> <div>2</div> <div>2</div> <div>2</div> <div>3</div> <div>3</div> <div>3</div>	<div>A</div> <div>B</div> <div>C</div> <div>A</div> <div>B</div> <div>C</div> <div>A</div> <div>B</div> <div>C</div>	Cartesian product between the two sides is a join but without a join condition. Returns all rows joined from both sides

곱집합 - 카티지언 프로덕트



$$A \times B = \{(a, b) | a \in A, b \in B\}$$

집합 $A = \{x, y, z\}$ 와 $B = \{1, 2, 3\}$ 의
곱집합 $A \times B$.

빅쿼리 - TABLE JOIN 연산

join_operation:

{ cross_join_operation | condition_join_operation }

cross_join_operation:

from_item cross_join_operator from_item

condition_join_operation:

from_item condition_join_operator from_item join_condition

cross_join_operator:

{ CROSS JOIN | . }

condition_join_operator:

{
 [INNER] JOIN
 | FULL [OUTER] JOIN
 | LEFT [OUTER] JOIN
 | RIGHT [OUTER] JOIN
}

join_condition:

{ on_clause | using_clause }

on_clause:

ON bool_expression

using_clause:

USING (join_column [, ...])

[INNER] JOIN

```
FROM A INNER JOIN B ON A.w = B.y
```

Table A

+	-----	+
	w x	
+	-----	+
	1 a	
	2 b	
	3 c	
	3 d	
+	-----	+

Table B

+	-----	+
	y z	
+	-----	+
	2 k	
	3 m	
	3 n	
	4 p	
+	-----	+

Result

+	-----	+
	w x y z	
+	-----	+
	2 b 2 k	
	3 c 3 m	
	3 c 3 n	
	3 d 3 m	
	3 d 3 n	
+	-----	+



[INNER] JOIN 잘못 사용한 예

```
FROM A INNER JOIN B USING (x)
```

Table A

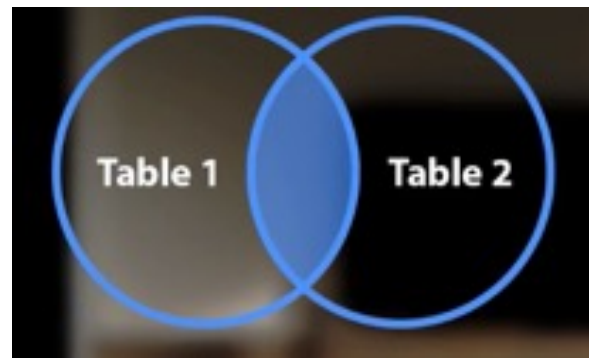
x	y
1	a
2	b
3	c
3	d

Table B

x	z
2	k
3	m
3	n
4	p

Result

x	y	z
2	b	k
3	c	m
3	c	n
3	d	m
3	d	n



CROSS JOIN

FROM A CROSS JOIN B

Table A

+-----+		
w	x	
1	a	
2	b	
+-----+		

Table B

+-----+		
y	z	
2	c	
3	d	
+-----+		

Result

+-----+			
w	x	y	z
1	a	2	c
1	a	3	d
2	b	2	c
2	b	3	d
+-----+			

심표 교차 조인 (,)

FROM A, B

Table A

+	-----	+
	w x	
+	-----	+
	1 a	
	2 b	
+	-----	+

*

Table B

+	-----	+
	y z	
+	-----	+
	2 c	
	3 d	
+	-----	+

=

Result

+	-----	+
	w x y z	
+	-----	+
	1 a 2 c	
	1 a 3 d	
	2 b 2 c	
	2 b 3 d	
+	-----	+

FROM (A, B) // INVALID

FULL [OUTER] JOIN

FROM A FULL OUTER JOIN B ON A.w = B.y

Table A

w	x
1	a
2	b
3	c
3	d

Table B

y	z
2	k
3	m
3	n
4	p

Result

w	x	y	z
1	a	NULL	NULL
2	b	2	k
3	c	3	m
3	c	3	n
3	d	3	m
3	d	3	n
NULL	NULL	4	p



FULL [OUTER] JOIN 잘못 사용한 예

FROM A FULL OUTER JOIN B USING (x)

Table A

x	y
1	a
2	b
3	c
3	d

Table B

x	z
2	k
3	m
3	n
4	p

Result

x	y	z
1	a	NULL
2	b	k
3	c	m
3	c	n
3	d	m
3	d	n
4	NULL	p



LEFT [OUTER] JOIN

```
FROM A LEFT OUTER JOIN B ON A.w = B.y
```

Table A

w	x
1	a
2	b
3	c
3	d

Table B

y	z
2	k
3	m
3	n
4	p

Result

w	x	y	z
1	a	NULL	NULL
2	b	2	k
3	c	3	m
3	c	3	n
3	d	3	m
3	d	3	n



LEFT [OUTER] JOIN 잘못 사용한 예

FROM A LEFT OUTER JOIN B USING (x)

Table A

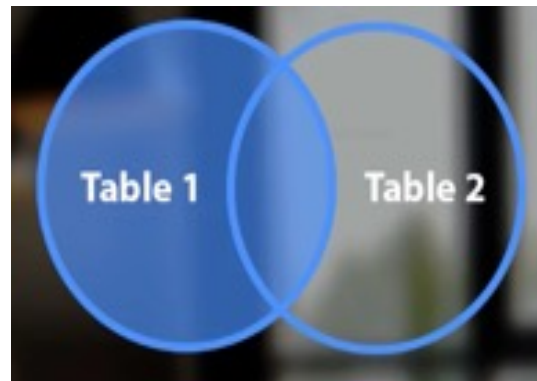
x	y
1	a
2	b
3	c
3	d

Table B

x	z
2	k
3	m
3	n
4	p

Result

x	y	z
1	a	NUL
2	b	k
3	c	m
3	c	n
3	d	m
3	d	n



RIGHT [OUTER] JOIN

FROM A RIGHT OUTER JOIN B ON A.w = B.y

Table A

w	x
1	a
2	b
3	c
3	d

Table B

y	z
2	k
3	m
3	n
4	p

Result

w	x	y	z
2	b	2	k
3	c	3	m
3	c	3	n
3	d	3	m
3	d	3	n
NULL	NULL	4	p



RIGHT [OUTER] JOIN 잘못 사용한 예

FROM A RIGHT OUTER JOIN B USING (x)

Table A

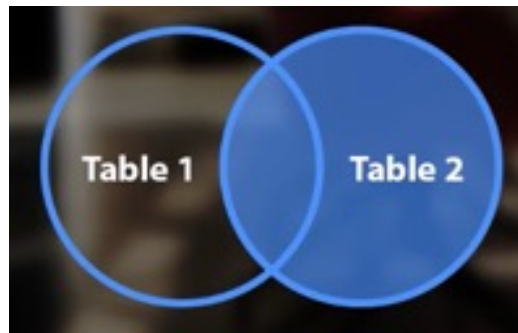
x	y
1	a
2	b
3	c
3	d

Table B

x	z
2	k
3	m
3	n
4	p

Result

x	y	z
2	b	k
3	c	m
3	c	n
3	d	m
3	d	n
4	NULL	p



ON 절

```
FROM A JOIN B ON A.x = B.x
```

Table A Table B Result (A.x, B.x)

+---+	+---+	+-----+
x	x	x x
+---+	+---+	+-----+
1	2	2 2
2	3	3 3
3	4	+-----+
+---+	+---+	

USING 절

```
FROM A JOIN B USING (x)
```

Table A		Table B		Result
+---+		+---+		+---+
x	*	x	=	x
+---+		+---+		+---+
1		2		2
2		3		3
3		4		+---+
+---+		+---+		

실습1 – 테이블 조인 사용법 (JOIN, INNER JOIN, CROSS JOIN, OUTER JOIN)

