

Sumber: <http://www.databasteknik.se/webbkursen/relalg-lecture/index.html>

## Projection

Contoh: Table **E** (**EMPLOYEE**)

nr	name	Salary
1	John	100
5	Sarah	300
7	Tom	100

SQL	Hasil	Aljabar Relasional								
<pre>select salary from E</pre>	<table><tr><th>salary</th></tr><tr><td>100</td></tr><tr><td>300</td></tr></table>	salary	100	300	<b>PROJECT</b> <sub>salary</sub> (E)					
salary										
100										
300										
<pre>select nr, salary from E</pre>	<table><tr><th>nr</th><th>salary</th></tr><tr><td>1</td><td>100</td></tr><tr><td>5</td><td>300</td></tr><tr><td>7</td><td>100</td></tr></table>	nr	salary	1	100	5	300	7	100	<b>PROJECT</b> <sub>nr, salary</sub> (E)
nr	salary									
1	100									
5	300									
7	100									

Catatan: tidak ada duplikasi pada hasil..

## Selection

Table **E** (**EMPLOYEE**):

SQL	Hasil	Aljabar Relasional									
<pre>select * from E where salary &lt; 200</pre>	<table><tr><th>nr</th><th>name</th><th>salary</th></tr><tr><td>1</td><td>John</td><td>100</td></tr><tr><td>7</td><td>Tom</td><td>100</td></tr></table>	nr	name	salary	1	John	100	7	Tom	100	<b>SELECT</b> <sub>salary &lt; 200</sub> (E)
nr	name	salary									
1	John	100									
7	Tom	100									
<pre>select * from E where salary &lt; 200 and nr &gt;= 7</pre>	<table><tr><th>nr</th><th>name</th><th>salary</th></tr><tr><td>7</td><td>Tom</td><td>100</td></tr></table>	nr	name	salary	7	Tom	100	<b>SELECT</b> <sub>salary &lt; 200 and nr &gt;= 7</sub> (E)			
nr	name	salary									
7	Tom	100									

## Relational algebra expressions

SQL	Hasil	Aljabar Relasional						
<pre>select name, salary from E where salary &lt; 200</pre>	<table><tr><th>name</th><th>salary</th></tr><tr><td>John</td><td>100</td></tr><tr><td>Tom</td><td>100</td></tr></table>	name	salary	John	100	Tom	100	<p><b>PROJECT</b><sub>name, salary</sub> (<b>SELECT</b><sub>salary &lt; 200</sub>(E)) <i>or, step by step, using an intermediate result</i></p> <p>Temp &lt;- <b>SELECT</b><sub>salary &lt; 200</sub>(E) Result &lt;- <b>PROJECT</b><sub>name, salary</sub>(Temp)</p>
name	salary							
John	100							
Tom	100							

## Notasi

Operation	My HTML	Symbol
Projection	<b>PROJECT</b>	$\pi$
Selection	<b>SELECT</b>	$\sigma$
Renaming	<b>RENAME</b>	$\rho$
Union	<b>UNION</b>	$\cup$
Intersection	<b>INTERSECTION</b>	$\cap$
Assignment	<-	$\leftarrow$

Operation	My HTML	Symbol
Cartesian product	<b>X</b>	$\times$
Join	<b>JOIN</b>	$\bowtie$
Left outer join	<b>LEFT OUTER JOIN</b>	$\ltimes$
Right outer join	<b>RIGHT OUTER JOIN</b>	$\rtimes$
Full outer join	<b>FULL OUTER JOIN</b>	$\ltimes \bowtie \rtimes$
Semijoin	<b>SEMIJOIN</b>	$\ltimes$

Contoh: Ekspresi aljabar relasional spt berikut:

**PROJECT**<sub>Namn</sub> ( **SELECT**<sub>Medlemsnummer < 3</sub> ( **Medlem** ) )

Seharusnya ditulis:

$\pi_{\text{Namn}} (\sigma_{\text{Medlemsnummer} < 3} (\text{Medlem}))$

# Cartesian product

**Cartesian product** dari 2 tabel berarti menggabungkan tiap baris dalam tabel 1 dengan tiap baris dalam baris ke-2 atau lainnya.

Contoh: Table **E (EMPLOYEE)**

enr	ename	dept
1	Bill	A
2	Sarah	C
3	John	A

Contoh: Table **D (DEPARTMENT)**

dnr	dname
A	Marketing
B	Sales
C	Legal

SQL	Hasil					Aljabar Relational
select * from E, D	enr	ename	dept	dnr	dname	E X D
	1	Bill	A	A	Marketing	
	1	Bill	A	B	Sales	
	1	Bill	A	C	Legal	
	2	Sarah	C	A	Marketing	
	2	Sarah	C	B	Sales	
	2	Sarah	C	C	Legal	
	3	John	A	A	Marketing	
	3	John	A	B	Sales	
	3	John	A	C	Legal	