

Basetable A

rk	c1	c2
k1	x1	20
k2	x1	30
k3	x2	10
k4	x2	35
k5	x3	80

Basetable B

rk	c1	c2
l1	x1	10
l2	x2	40
l3	x2	55
l4	x2	10
l5	x3	25

Delta A

rk	c1	c2
k1	$\emptyset \rightarrow x1$	$\emptyset \rightarrow 20$
k2	$\emptyset \rightarrow x1$	$\emptyset \rightarrow 30$
k3	$\emptyset \rightarrow x2$	$50 \rightarrow 10$
k4	$x3 \rightarrow x2$	$15 \rightarrow 35$
k5	$\emptyset \rightarrow x3$	$55 \rightarrow 80$

Delta B

rk	c1	c2
f1	$\emptyset \rightarrow x1$	$\emptyset \rightarrow 10$
f2	$\emptyset \rightarrow x2$	$\emptyset \rightarrow 40$
f3	$x4 \rightarrow x2$	$50 \rightarrow 55$
f4	$x3 \rightarrow x2$	$35 \rightarrow 10$
f5	$\emptyset \rightarrow x3$	$\emptyset \rightarrow 25$

Sum A (key c<sub>1</sub>)

rk	csum
x1	50
x2	45
x3	80

Min A (key c<sub>1</sub>)

rk	cmin
x1	20
x2	10
x3	80

Join (on A.c<sub>1</sub> = B.c<sub>1</sub>)

rk	jk	A.c2	B.c2
k1_l1	x1	20	10
k2_l1	x1	30	10
k3_l2	x2	10	40
k3_l3	x2	10	55
k3_l4	x2	10	10
k4_l2	x2	35	40
k4_l3	x2	35	55
k4_l4	x2	35	10
k5_l5	x3	80	25

①

②

③

④

⑤

rk	{c1,...,cn} <sub>A</sub>	{c1,...,cn} <sub>B</sub>
x1	(k1,20),(k2,30)	(l1,10)
x2	(k3,10),(k4,35)	(l2,40),(l3,55),(l4,10)
x3	(k5,80)	(l5,25)

Pre-Agg A (key c<sub>1</sub>)      Pre-Agg B (key c<sub>1</sub>)

Reverse join (on A.c<sub>1</sub> = B.c<sub>1</sub>)