

# CSE 4125: Distributed Database Systems

## Chapter – 6

### (Part – E)

Optimization of Access Strategies.

# Full Reducer

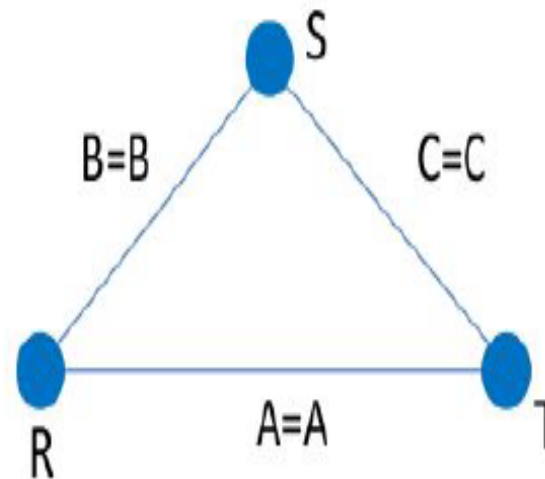
# Task

b) Apply full reducer program on optimization graph.

**R** relations ( $R$ ,  $S$  and  $T$ ) with given

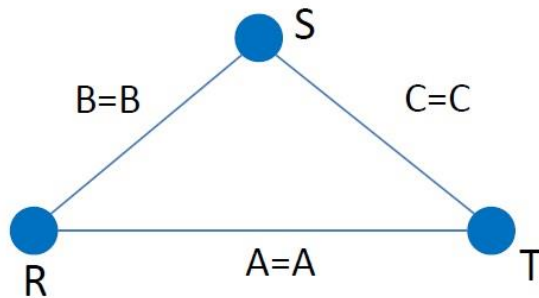
[8]

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



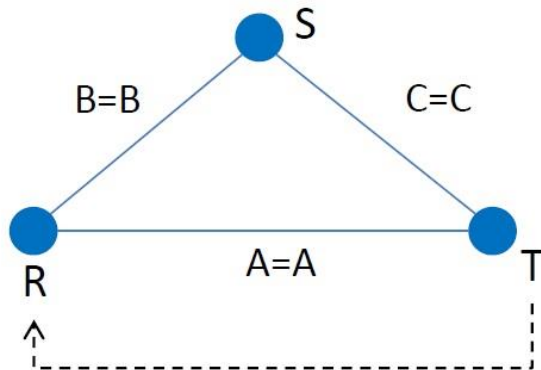
# Full Reducer

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4

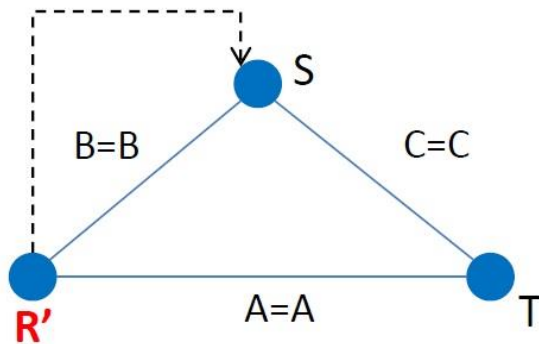


$$R' = R S J_{A=A} T$$

A	B
2	b
3	c

# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



$$R' = R S J_{A=A} T$$

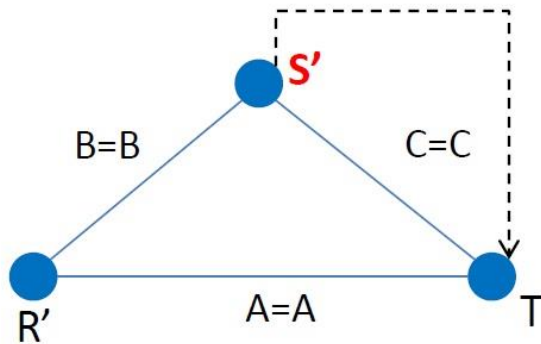
A	B
2	b
3	c

$$S' = S S J_{B=B} R'$$

B	C
b	y
c	z

# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



$$R' = R \text{ SJ}_{A=A} T$$

A	B
2	b
3	c

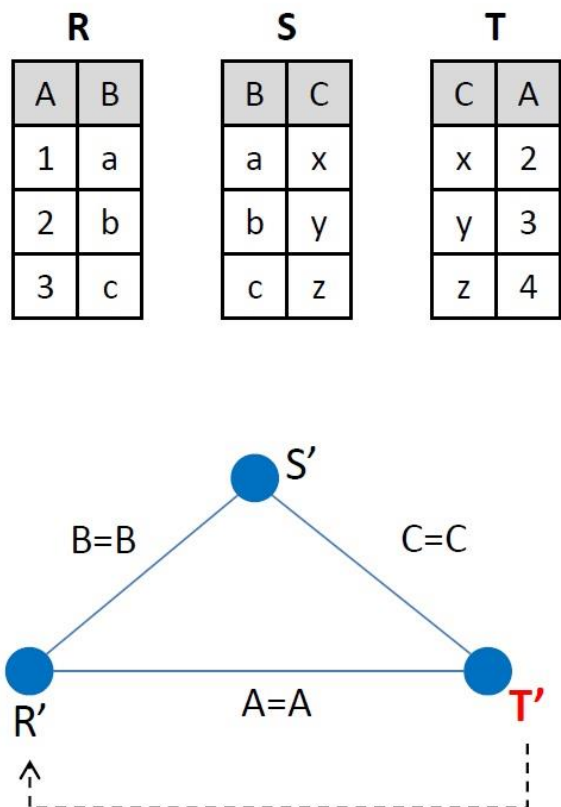
$$S' = S \text{ SJ}_{B=B} R'$$

B	C
b	y
c	z

$$T' = T \text{ SJ}_{C=C} S'$$

C	A
y	3
z	4

# Full Reducer(cont.)



$$R' = R \text{ SJ}_{A=A} T$$

A	B
2	b
3	c

$$S' = S \text{ SJ}_{B=B} R'$$

B	C
b	y
c	z

$$T' = T \text{ SJ}_{C=C} S'$$

C	A
y	3
z	4

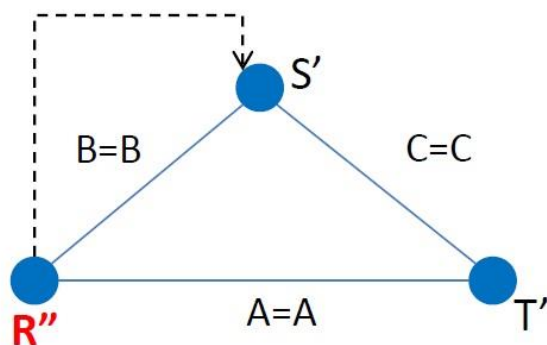
$$R'' = R' \text{ SJ}_{A=A} T'$$

A	B
3	c



# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



$$R' = R \text{ SJ}_{A=A} T$$

A	B
2	b
3	c

$$S' = S \text{ SJ}_{B=B} R'$$

B	C
b	y
c	z

$$T' = T \text{ SJ}_{C=C} S'$$

C	A
y	3
z	4

$$R'' = R' \text{ SJ}_{A=A} T'$$

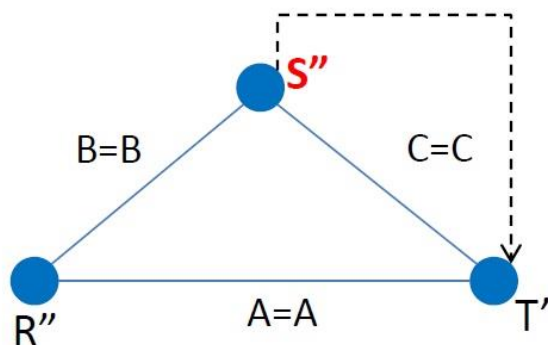
A	B
3	c

$$S'' = S' \text{ SJ}_{B=B} R''$$

B	C
c	z

# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



$$R' = R \text{ SJ}_{A=A} T$$

A	B
2	b
3	c

$$S' = S \text{ SJ}_{B=B} R'$$

B	C
b	y
c	z

$$T' = T \text{ SJ}_{C=C} S'$$

C	A
y	3
z	4

$$R'' = R' \text{ SJ}_{A=A} T'$$

A	B
3	c

$$S'' = S' \text{ SJ}_{B=B} R''$$

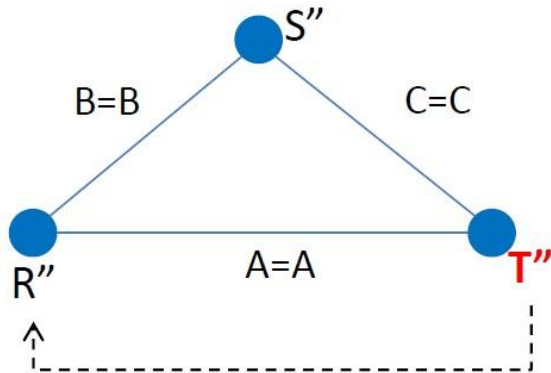
B	C
c	z

$$T'' = T' \text{ SJ}_{C=C} S''$$

C	A
z	4

# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



$$R' = R \text{ SJ}_{A=A} T$$

A	B
2	b
3	c

$$S' = S \text{ SJ}_{B=B} R'$$

B	C
b	y
c	z

$$T' = T \text{ SJ}_{C=C} S'$$

C	A
y	3
z	4

$$R'' = R' \text{ SJ}_{A=A} T'$$

A	B
3	c

$$S'' = S' \text{ SJ}_{B=B} R''$$

B	C
c	z

$$T'' = T' \text{ SJ}_{C=C} S''$$

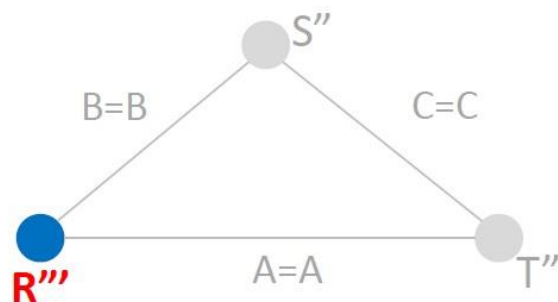
C	A
z	4

$$R''' = R'' \text{ SJ}_{A=A} T''$$

$\Phi$

# Full Reducer(cont.)

R		S		T	
A	B	B	C	C	A
1	a	a	x	x	2
2	b	b	y	y	3
3	c	c	z	z	4



$$R' = R \text{ SJ}_{A=A} T$$

A	B
2	b
3	c

$$S' = S \text{ SJ}_{B=B} R'$$

B	C
b	y
c	z

$$T' = T \text{ SJ}_{C=C} S'$$

C	A
y	3
z	4

$$R'' = R' \text{ SJ}_{A=A} T'$$

A	B
3	c

$$S'' = S' \text{ SJ}_{B=B} R''$$

B	C
c	z

$$T'' = T' \text{ SJ}_{C=C} S''$$

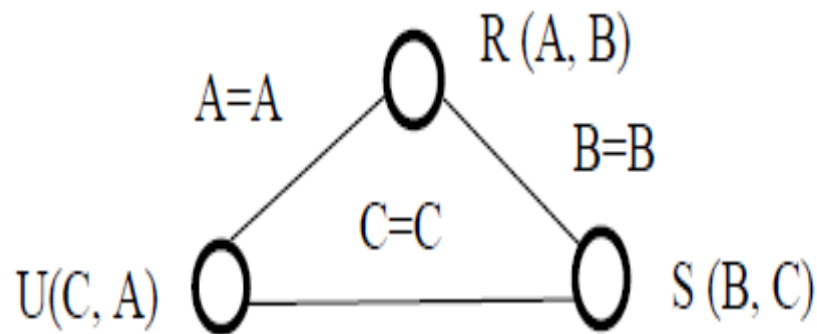
C	A
z	4

$$R''' = R'' \text{ SJ}_{A=A} T''$$

$\Phi$

# Exercise

- a) Construct a *full reducer* for **R** using semi-join programs having the join graph in the figure:



with:

$R = (0, 1), (3, 4), (6, 7), (7, 7)$

$S = (1, 2), (4, 5), (6, 6), (7, 7)$

$U = (2, 3), (6, 0), (6, 6), (7, 7)$

Discuss the good or bad properties of your reducer program.

[5]

**THANK YOU  
FROM  
CHAPTER 6**