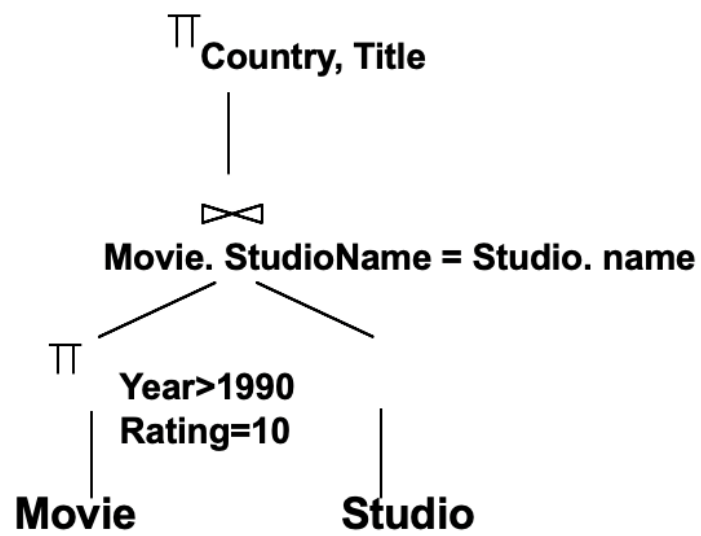


1.



After selection

$$N1 = 24\,000 / 3 * 10 = 800$$

After join

$$N2 = 800 * 1\,000 / 1\,000 = 800$$

2.

	U	W	S
R	⋈	⋈	⋈
S	X	⋈	
W	⋈		
U			

Query	Size	Cost	Plan
RS	2×10^2	0	RS
RU	4×10^4	0	RU
RW	4×10^4	0	RW
SU	/	/	/
SW	6×10^6	0	SW
WU	2×10^4	0	WU
RSW	4×10^3	2×10^2	(RS)W
RUW	4×10^3	2×10^4	(UW)R
RUS	2×10^3	2×10^2	(RS)U
SWU	6×10^5	2×10^4	(WU)S
RSUW	4×10^2	2200	(RSU)W

3.

a.

It is a serializability, and it is not 2PL

Xact T1	Xact T2	Xact T3
R(X)		
	R(Y)	
		W(X)
	R(X)	
R(Y)		

The X: $T_1 \rightarrow T_3 \rightarrow T_2$. And the if I lock $T_1:R(X)$, it cannot unlock, the $T_3:W(X)$ cannot using.

b. it is not a serializability, and it is not 2PL

Xact T1	Xact T2	Xact T3
R(X)		
R(Y)		
W(X)	R(Y)	
		W(Y)
W(X)	R(Y)	

The Y: $T_2 \rightarrow T_3 \rightarrow T_2$. If it is not serializability, it is not 2PL

c.

it is not a serializability, and it is not 2PL

Xact T1	Xact T2
W(X)	R(X)
W(X)	
	Commit
Commit	

The X: $T_1 \rightarrow T_2 \rightarrow T_1$

d.

it is not a serializability, and it is not 2PL

<u>Xact T1</u>	<u>Xact T2</u>	<u>Xact T3</u>
R(X)		
	W(X)	
W(X)		
		R (X)
Commit		
	Commit	
		Commit

The X: $T_1 \rightarrow T_2 \rightarrow T_1 \rightarrow T_3$