1) • $T_1 \longrightarrow T_2$, $T_1 \longrightarrow T_3$, $T_2 \longrightarrow T_3$ $\Rightarrow$ acyclic $\Rightarrow$ conflict serializable

• $sl_1(A)\, r_1(A)\, sl_1(C)\, r_1(C)\, sl_1(B)\, u_1(A)\, xl_2(A)\, w_2(A)\, sl_2(B)\, r_2(B)\, r_1(B)\, u_2(A)\, u_1(B)\, xl_3(A)\, xl_3(B)\, w_3(A)\, w_3(B)$ $\longrightarrow$ 2PL

2) Update loss anomaly occurs when a transaction overwrite a values written by an other without taking into account the value before

• false: $w_1(x) r_1(x)\, r_2(x)\, w_1(x)\, w_2(x)$ $\longrightarrow$ view-serializable but suffer from update loss

• true: because 2PL assure transactions to work in complete atomicity on values

• false: $r_1(x) r_2(x) w_1(x) w_2(x)$ $\longrightarrow$ ACR but suffer from update loss

4) All 3 algorithms can always be applied.

• Cost: $600 + 600 \cdot 5000 = 3000600$ (nested loop)

• Cost: $600 + 5000\left(1 + \frac{600}{150}\right) = 25600$ (Block Nested loop)

• Cost: $600 + 3 \cdot T(R)$ (Index Nested loop - 1 frame)