Eric Kuo HW5 Part3: Two-Phase Locking

A)

T1	T2	T3
L(A); L(B); R(A)		
W(A); U(A)		
		L(A); R(A)
		L(B); DENIED…
	L(A); DENIED…	
R(B)		
W(B) U(B)		
		…GRANTED L(B);
		W(A); U(A)
	…GRANTED L(A); R(A)	
	L(B); DENIED…	
		R(B)
		W(B); U(B)
	…GRANTED L(B); R(B)	
	U(A); U(B)	
	COMMIT	
COMMIT		
		COMMIT

B)

Consider this schedule, with 2PL, we can guarantee conflict-serializability. However, we cannot guarantee recoverability. This is because all transactions in this schedule ends with COMMIT. Nevertheless, if we modify T1's or T3's COMMIT to ROLLBACK, this will break T2's COMMIT promise. Moreover, if a schedule face a locking condition and needs a ROLLBACK on a txn, 2PL cannot guarantee recoverability. That is the reason why we need strict 2PL to ensure schedule's conflict-serializability and recoverability.