

CS 431 Basic transactions (HW 5)

1. What value does Transaction 1's Read(B) get?
 - a. The value of Transactions 1's Read(B) would be 8 because there were no Writes were performed in Transaction 2
2. What value does Transaction 2's Read(A) get?
 - a. The value of Transaction 2's Read(A) would be the new updated value of A from Transaction 1 because a write on A was performed in Transaction 1 before it was read from Transaction 2
3. Would the answers to #1 AND #2 change if T1 was executed serially before T2?

Transaction 1	Transaction 2
Read(A)	
Write(A)	
Read(B)	
	Read(B)
	Read(A)
	Write(B)

- a. If T1 was executed serially before T2, it would not change the answers to #1 and #2 because T1's object B would be the original value and a write on object A gets performed in T1 before it is read in T2
4. Same as previous question, but if T2 was executed serially before T1.

Transaction 1	Transaction 2
	Read(B)
	Read(A)
	Write(B)
Read(A)	
Write(A)	
Read(B)	

- a. If T1 was executed serially before T2, it would change the answers to #1 and #2. For #1, T2's write on B gets performed before T1's read on B, for now the read(T1, B) would return the new updated value of B from T2. For #2, since read(T2, A) is called before write(T1, A), the value of object A in T2 would be "none"
5. Is the schedule serializable?
 - a. No because if T2 runs before T1 then the Reads on the objects will change

Transaction 1	Transaction 2
Read(B)	
	Write(B)
Write(B)	
	Write(A)
	commit
Read(A)	
commit	

6. What should be done if the system crashes after T1's Read(B)? Explain your answer (at most 1 sentence)
 - a. The system should abort or exit from T1, since the operation was a read there should be additional changes that needs to be done
7. What should be done if the system crashes after T2's Write(B)? Explain.
 - a. The system should rollback because the data of B was changed due to the write operation, so when the system crashed the original value of the B must be restored
8. What should be done if the system crashes right after T2's commit? Explain.
 - a. The system should not do anything additional because the transaction was completed due to the commit and the crash happened after finishing T2
9. What should be done if the system crashes right after T1's Read(A), but before T1's commit? Explain
 - a. The system should restore the original value of object B, since the transaction did not complete when the write operation in T1
10. Is the schedule recoverable? Explain
 - a. This schedule is not recoverable because the write of object B in T2 happens first and then object B gets updated again in T1 before it gets committed by T2