

605.741.31
Module 8 Quiz

Assume that transactions containing the following operations are executed on a database:

Transaction Log		
LSN	Transaction	Operation
10	T1	Update P20
20	T3	Update P30
30	T2	Update P40
40	T1	Update P30
50	T2	Commit
60	T3	Update P40

CRASH!

- a) Using the ARIES recovery algorithm, create the Transaction Log, Dirty Page Table, and Transaction Table.

Dirty Page Table

Page	RecLSN
P20	10
P30	20
P40	30

Transaction Log

LSN	prevLSN	transaction	type	page
10	Null	T1	Update	P20
20	Null	T3	Update	P30
30	Null	T2	Update	P40
40	10	T1	Update	P30
50	30	T2	Commit	
60	20	T3	Update	P40

Transaction Table

transaction	lastLSN
T1	40
T3	60

- b) Assume the Analysis phase uses the rebuilt dirty page table. Which entry of the Transaction Log does the Redo phase start with?

Assuming there is nothing had been written to disk, the redo point will start at LSN 10, because before the crash, p20 is the earliest log that may not have been written to disk.

- c) Which transactions are undone in the Undo phase?

Transactions T1 and T3 are undone in Undo phase.

- d) In what order are the transaction operations are undone during the Undo phase?

T3, LSN60
=> T1, LSN40
=> T3, LSN20
=> T1, LSN10