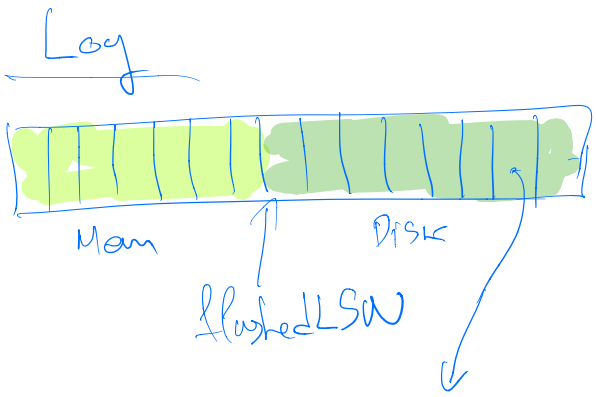
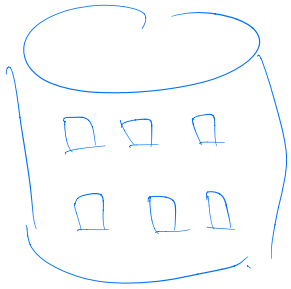
Class 25: Recovery Examples



LSN
prevLSN
XID
type → update, commit/abort, CLR, end, checkpoint

pageID
offset
length
before-image
after-image

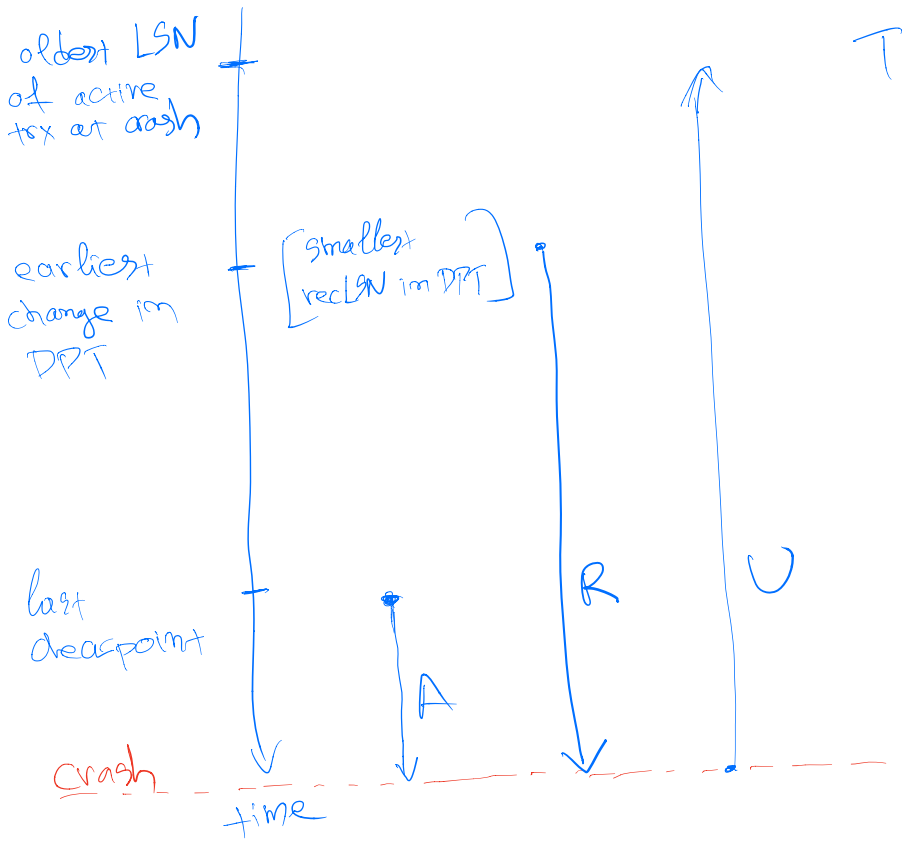


Data pages
→ pageLSN ∀page

Master Record
→ LSN of the most checkpoint

Memory

- Active Xact Table
  - → XID, lastLSN, status
    - ↳ running / committing / aborting
- Dirty Page Table
  - → pageID, recLSN
- flushedLSN [flushedLSN ≥ pageLSN$_i$ to write page i to the disk]



To Undo { last LSN of all active ~~xact~~ }

LSN	
00	begin checkpoint
05	end checkpoint
10	update : T1 on P5
20	update : T2 on P3
30	T1 abort : 10
40	CLR : undo T1 LSN 10 , undo next = NULL
45	T1 end : 30
50	update : T3 on P1
60	update : T2 on P5 (20)
X	crash
70	CLR undo T2 LSN 60 (next 20)
80	CLR undo T3 LSN 50 (null)
85	T3 end
X	crash
90	CLR undo T2 LSN 20 (null)
95	T2 end

prevLSN

ATT	DPT
~~T1, 10, aborting~~ 30 ~~running~~	P5, ~~10~~ 60
T2, ~~20~~ 60, running	P3, 20
~~T3, 50, running~~	P1, 50

After Analysis → Redo starts from earliest recLSN from DPT → 20

After Redo → Undo

To Undo { 50, ~~60~~ 20 }

After the 2nd crash I recreate ATT, DPT

To Undo { ~~70~~ 20 }