PostgreSQL术语简明指南

xiongcc 2025/06

About me

Hi , I'm xiongcc.

PostgreSQL expert, open-source enthusiast, and software engineer.

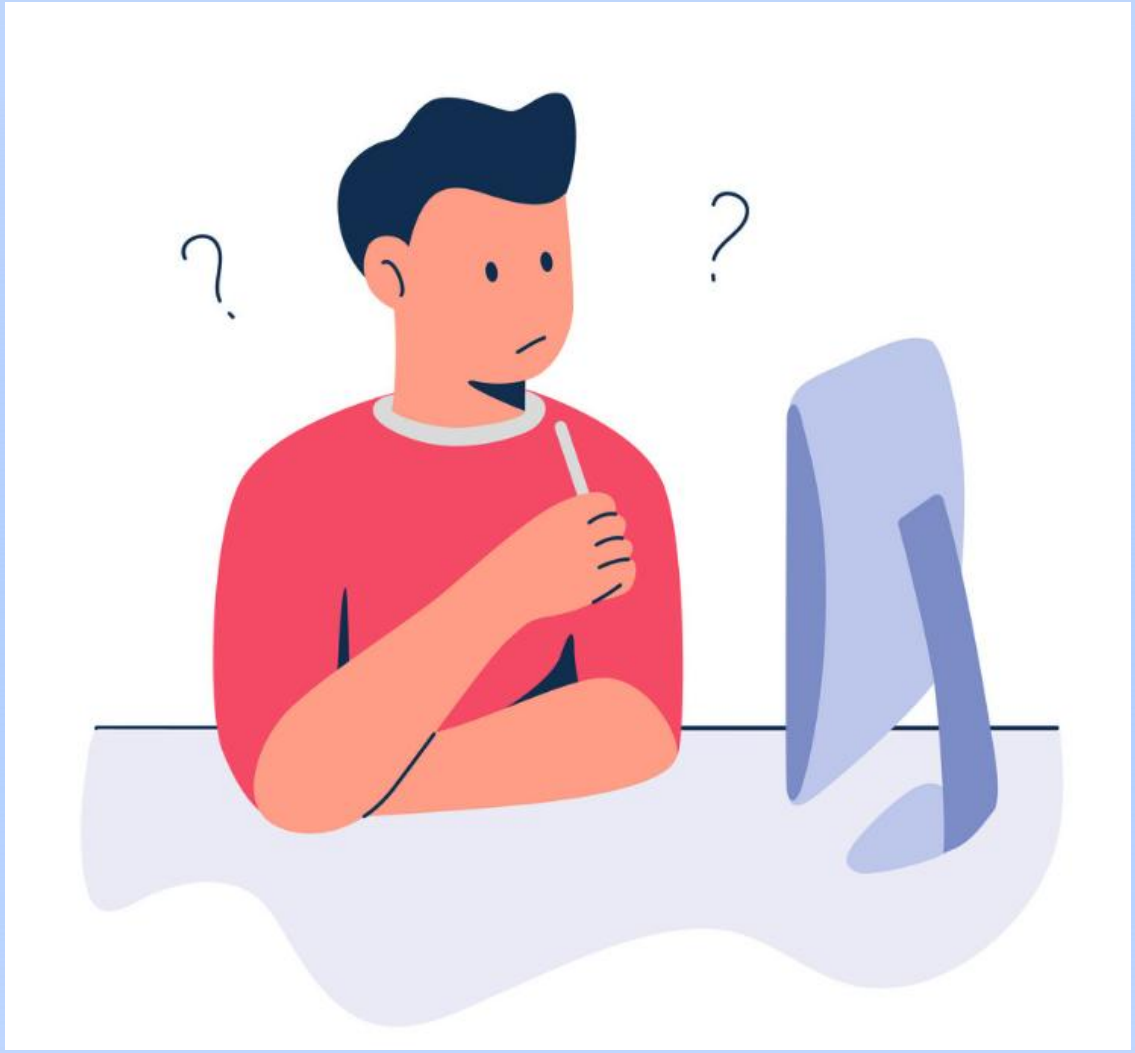
- Founder of PostgreSQL-howto in chinese project
- Translator of PostgreSQL 14 Internals
- PostgreSQL 14 Internals in chinese：https://postgres-internals.
- Personal Homepage：https://xiongcc.cn

Feel free to Connect with Me：

GitHub | 微信公众号：PostgreSQL学徒

xiongcc_1994@126.com / xiongcc_1994@outlook.com

晦涩的术语



冻结？

tuple、row、元组？

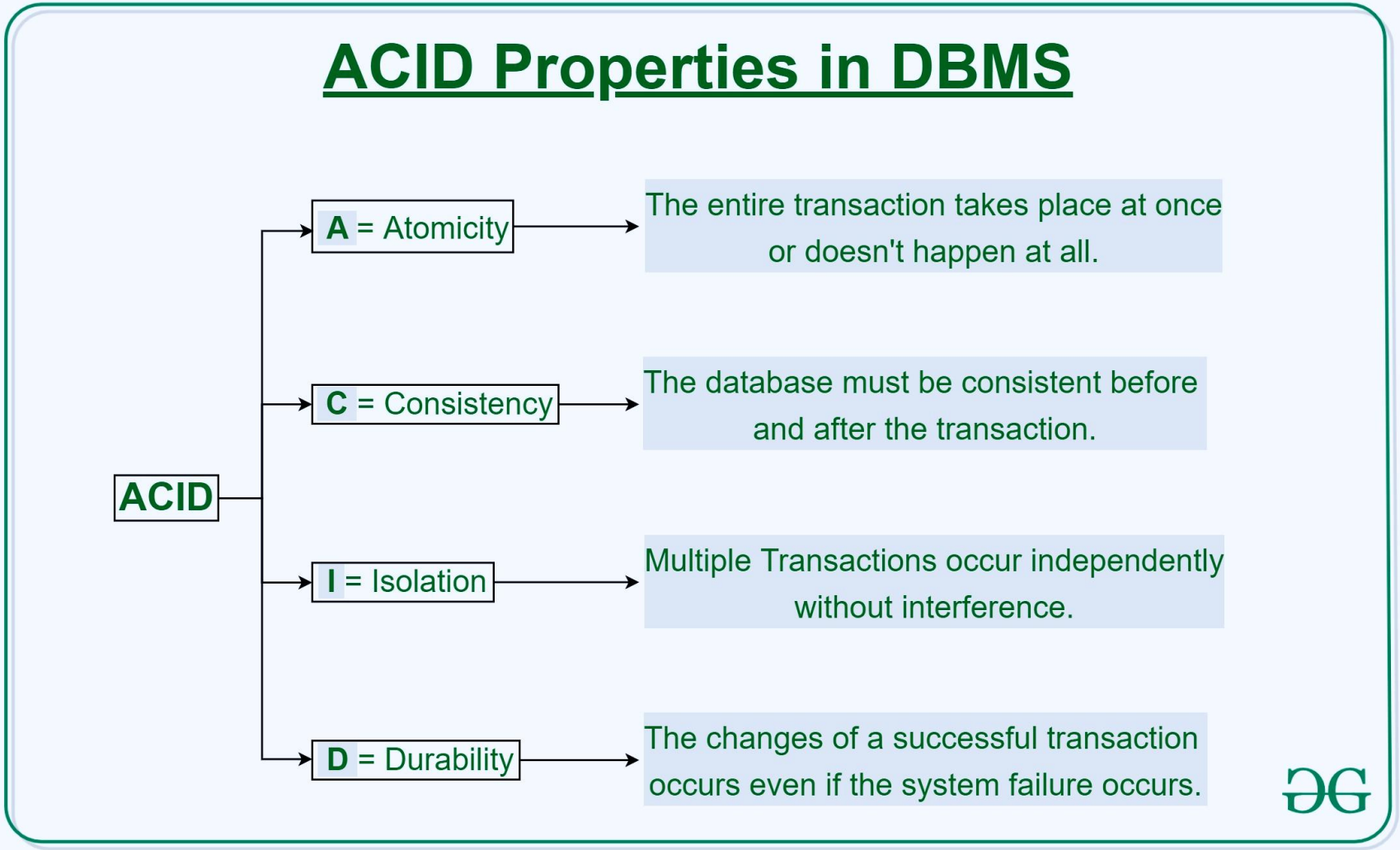
吸尘 or 真空？

xact or txid？

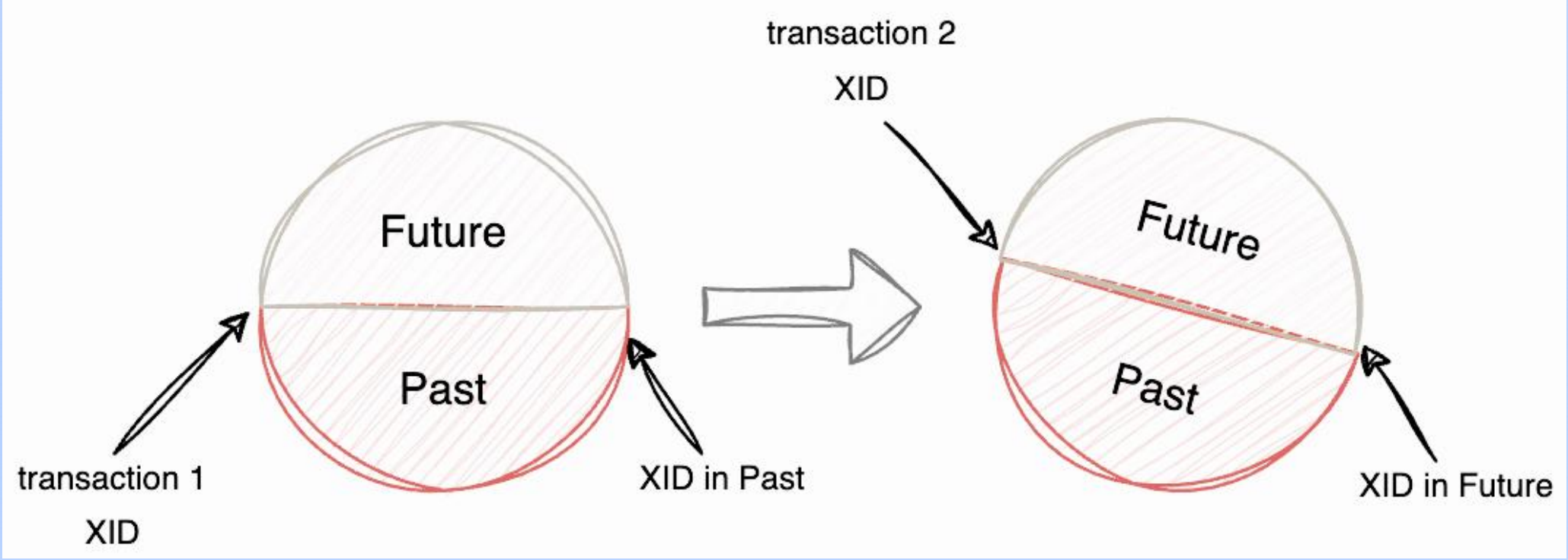
Multixact？

xmin？

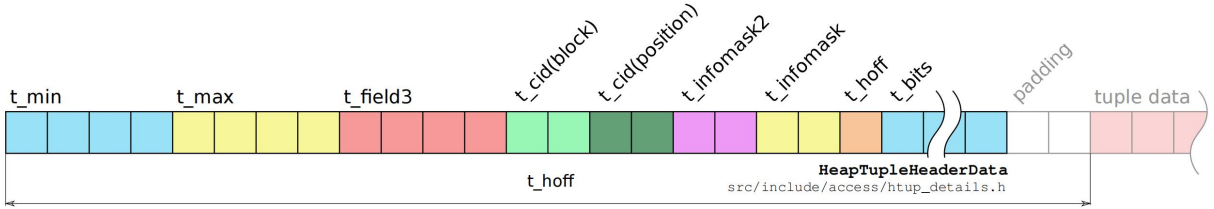
...


ACID Properties in DBMS
ACID
A = Atomicity
The entire transaction takes place at once or doesn't happen at all.
C = Consistency
The database must be consistent before and after the transaction.
I = Isolation
Multiple Transactions occur independently without interference.
D = Durability
The changes of a successful transaction occurs even if the system failure occurs.

wraparound，“回卷”



xmin、xmax & cmin、cmax



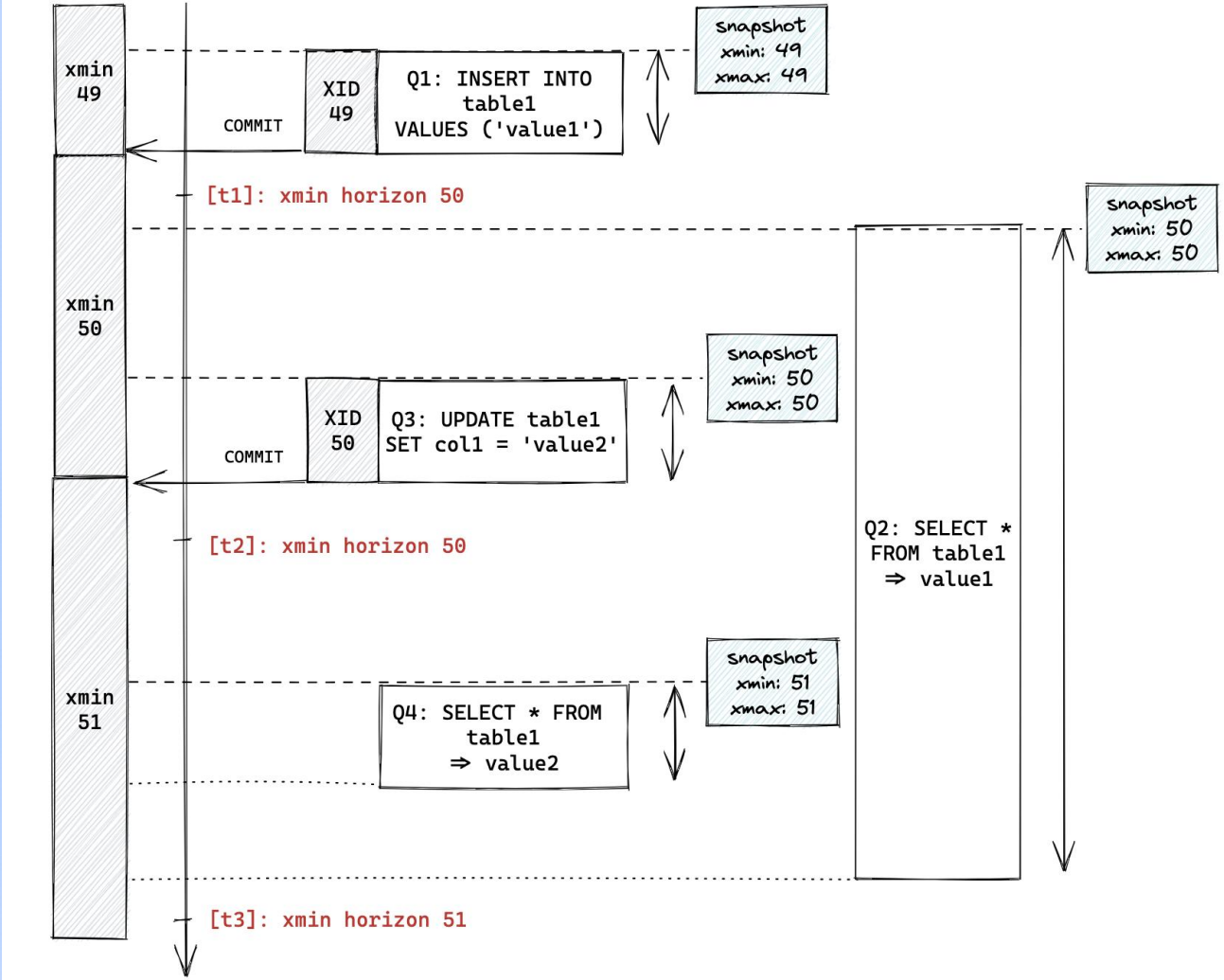

```
txid_current = 12

BEGIN; INSERT INTO t VALUES ('A'); COMMIT;
```

Tuple ID	xmin	xmax	cid	ctid	data
1	**12**	**0**	**0**	**(0,1)**	**A**

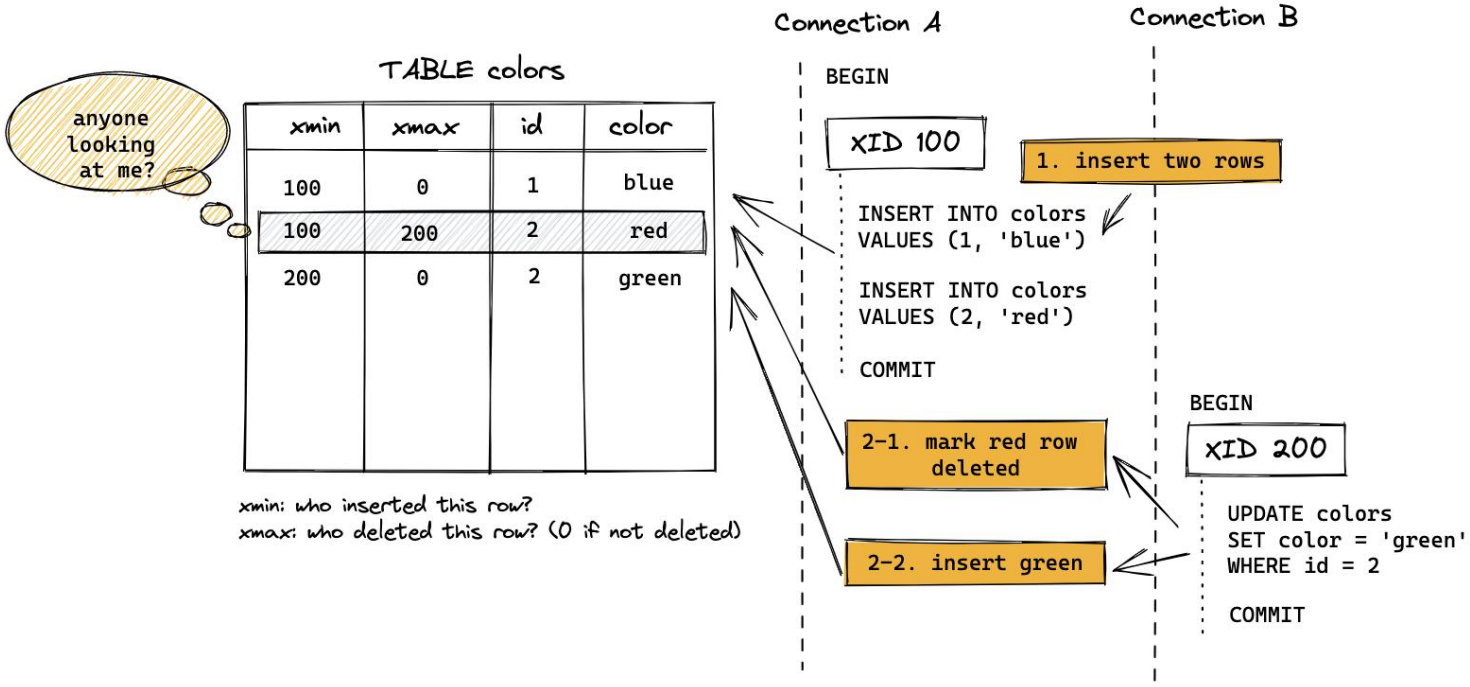
```
txid_current = 13

BEGIN; UPDATE t SET data = 'B' WHERE data = 'A'; COMMIT;
```

Tuple ID	xmin	xmax	cid	ctid	data
1	12	**13**	0	**(0,2)**	A
2	**13**	**0**	**0**	**(0,2)**	**B**

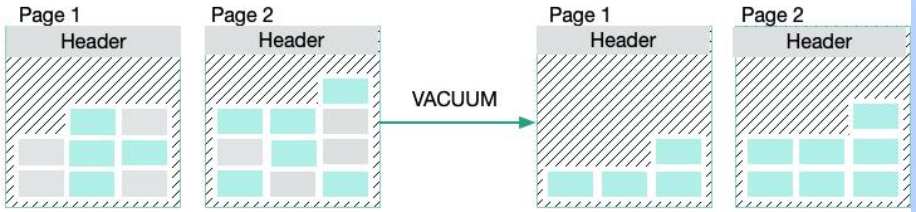
xmin、xmax & cmin、cmax



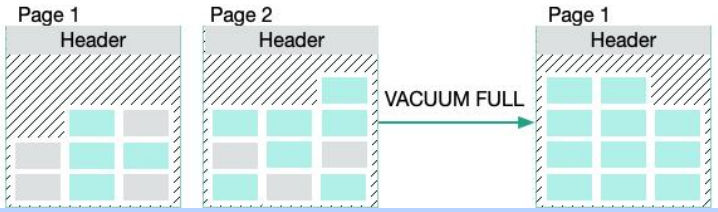
vacuum，真空！



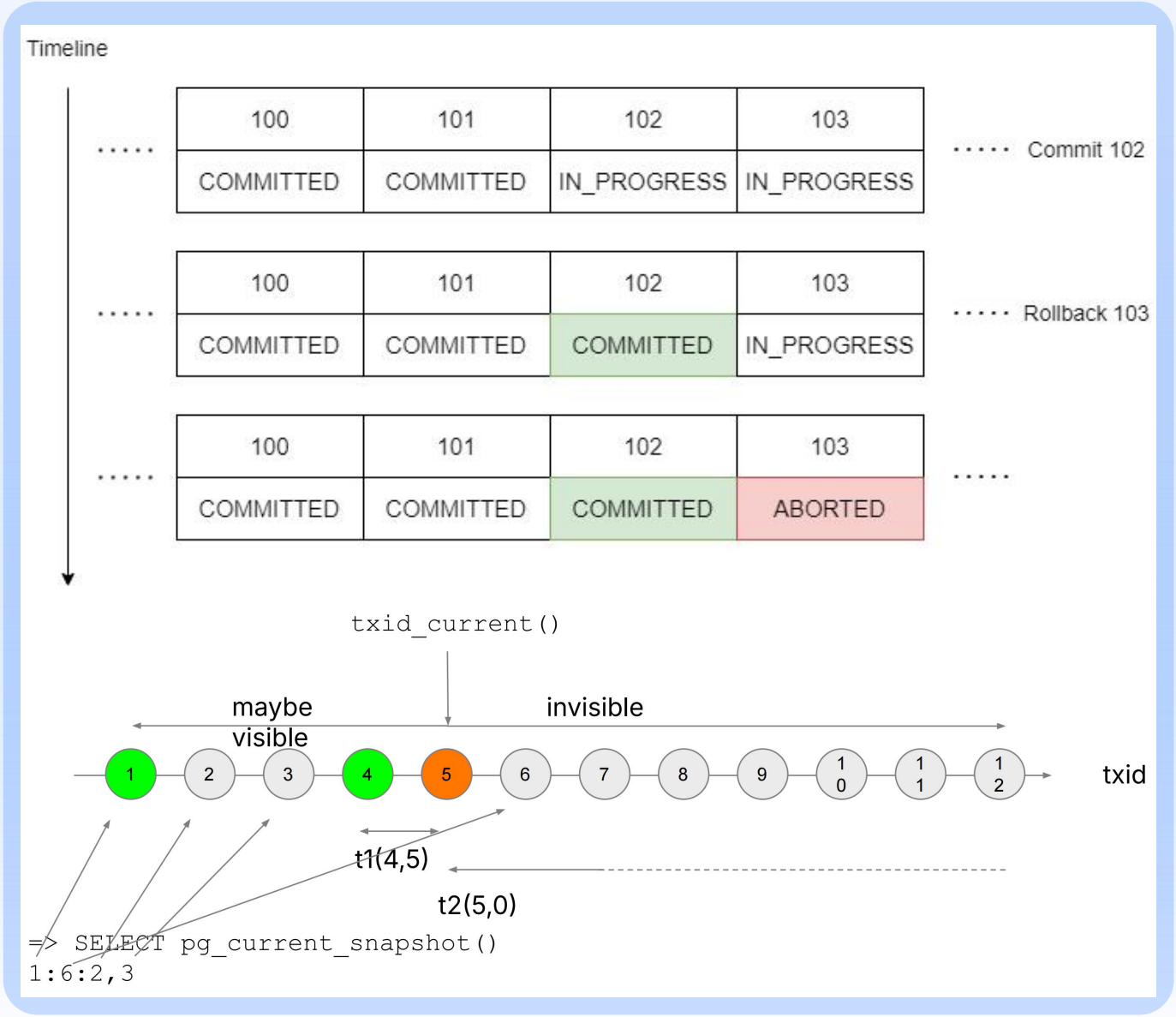
VACUUM removes dead tuples, increasing unused space on the page. When Command Center recommends VACUUM, **Bloat Space** is the amount of space used by dead tuples.



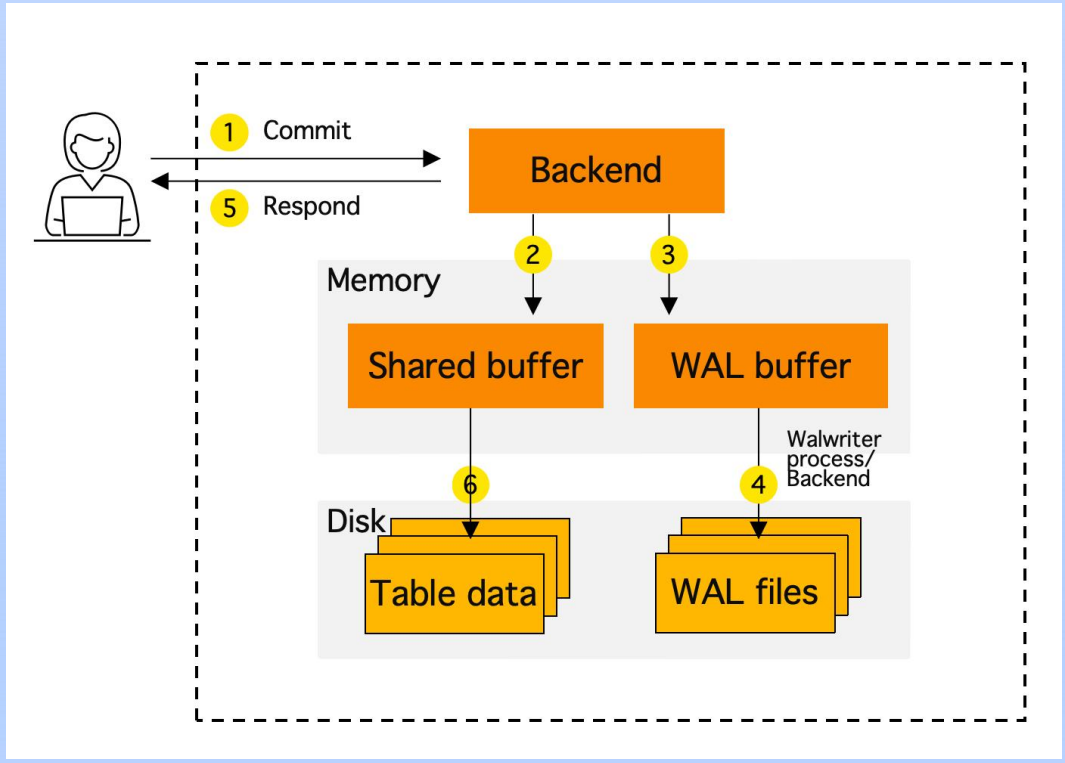
VACUUM FULL removes dead tuples and combines live tuples on pages to decrease file size. When Command Center recommends VACUUM FULL, **Bloat Space** is the total of unused space and space used by dead tuples.

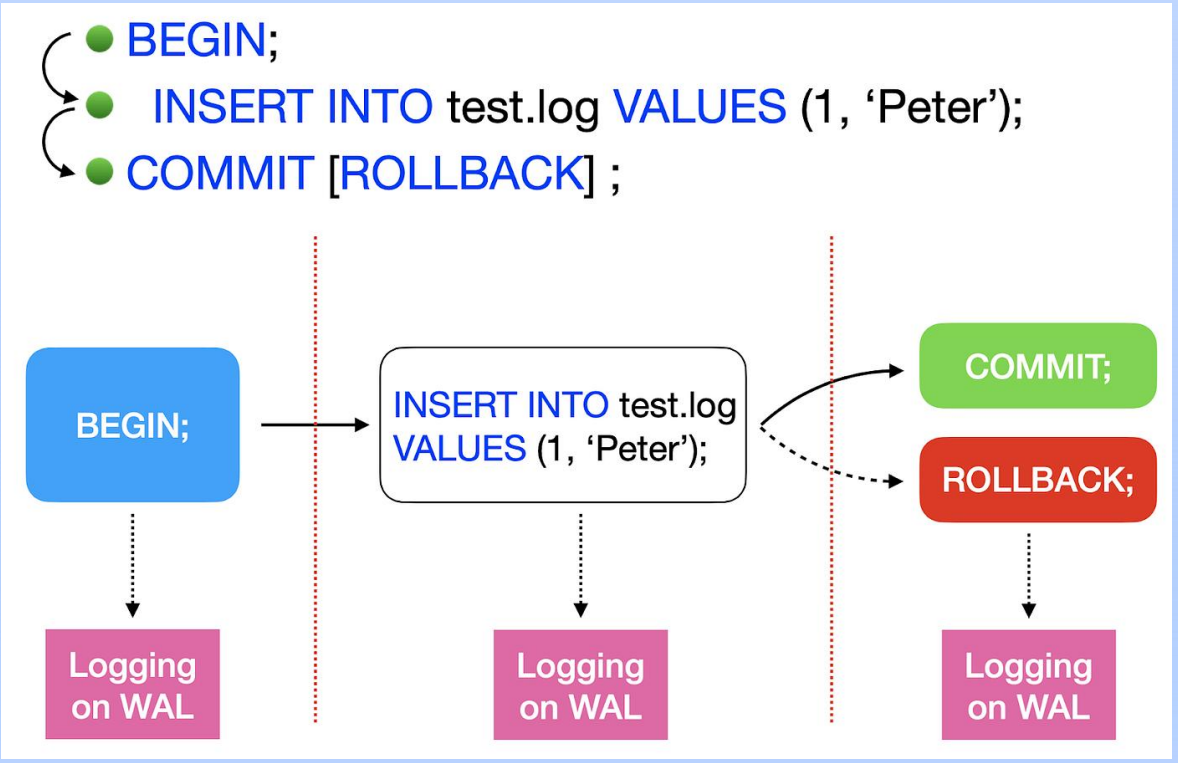


clog, commit log

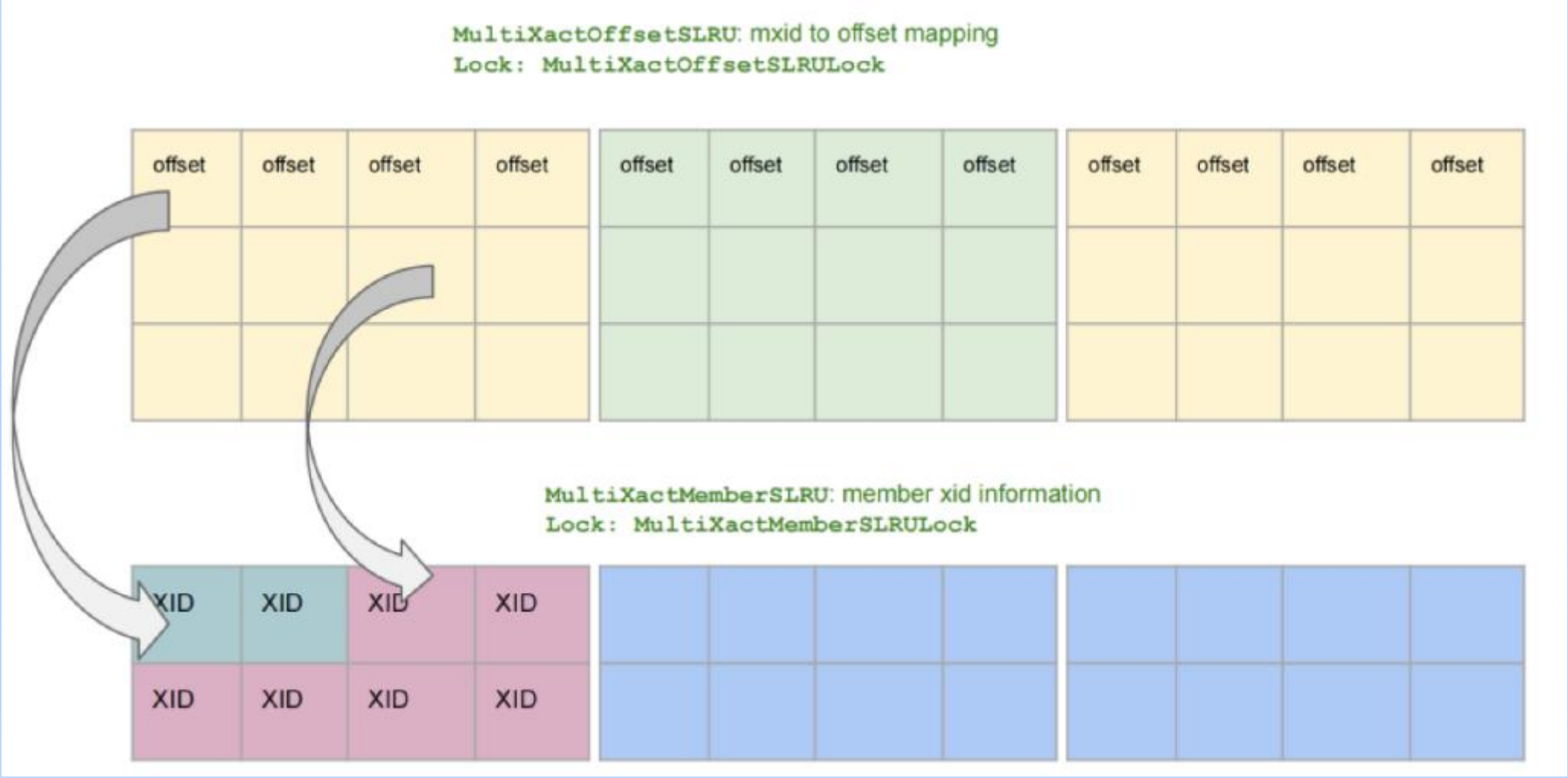


WAL，write ahead log

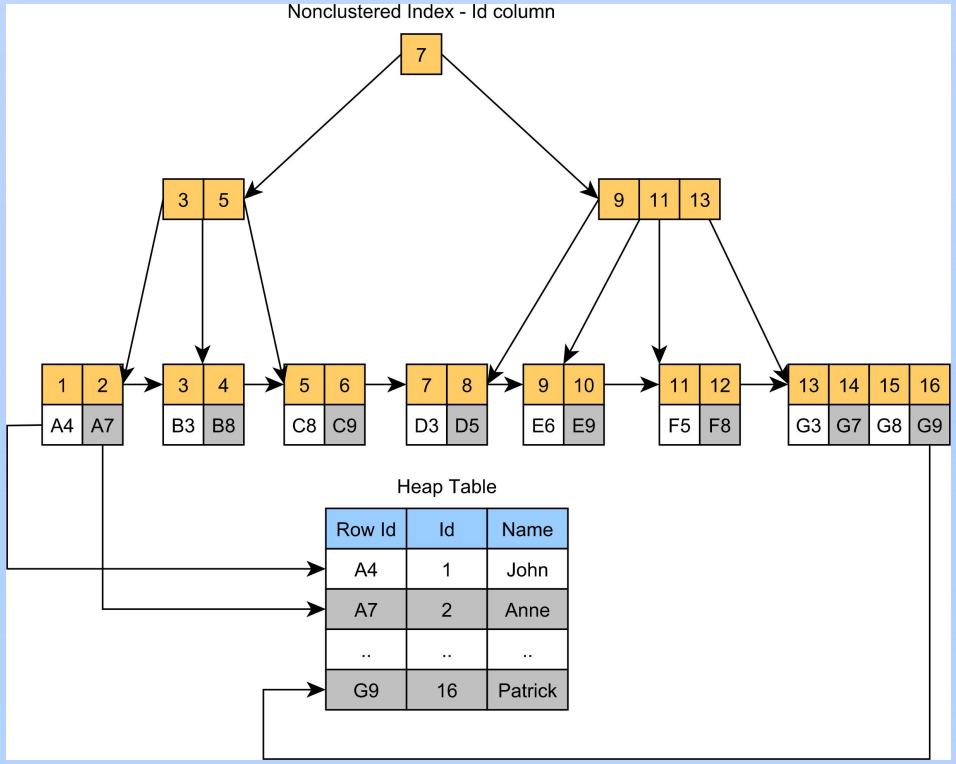


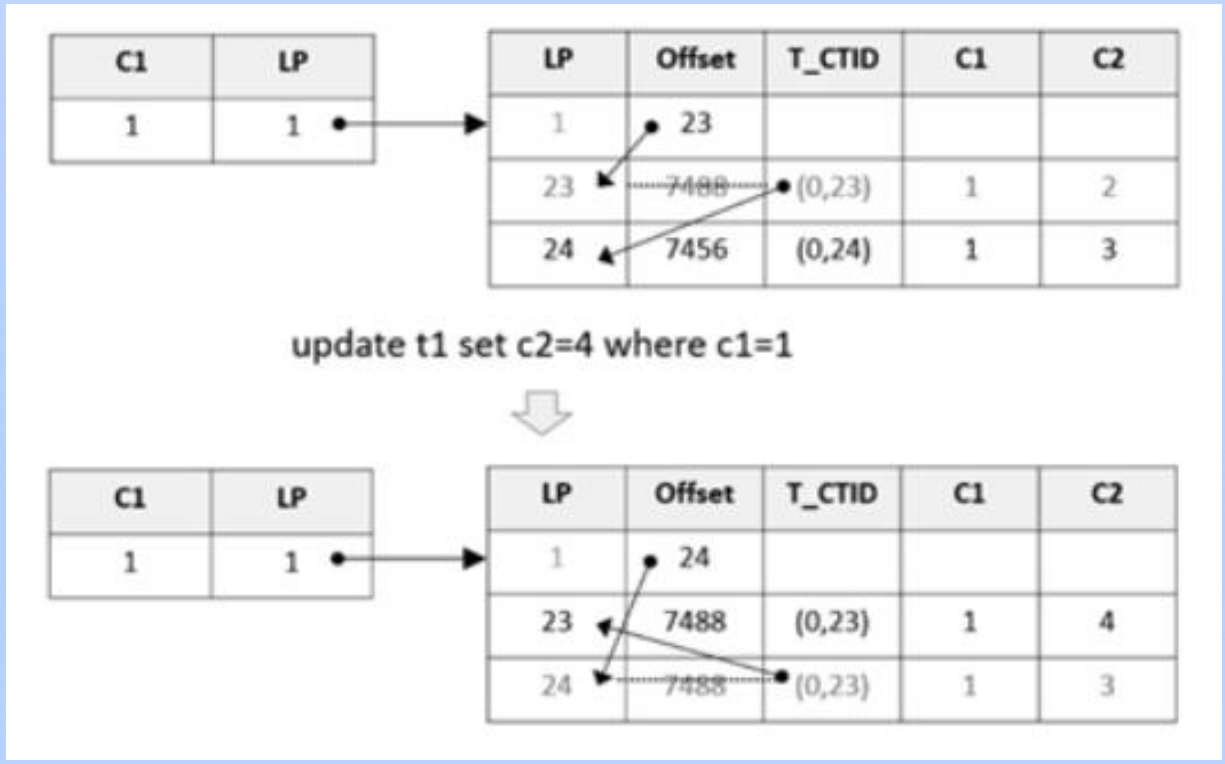


MultixactID



HOT


Nonclustered Index - Id column
7
3 5
9 11 13
1 2 | 3 4 | 5 6 | 7 8 | 9 10 | 11 12 | 13 14 15 16
A4 A7 | B3 B8 | C8 C9 | D3 D5 | E6 E9 | F5 F8 | G3 G7 G8 G9
Heap Table
Row Id | Id | Name
A4 | 1 | John
A7 | 2 | Anne
.. | .. | ..
G9 | 16 | Patrick


C1 | LP
1 | 1
LP | Offset | T_CTID | C1 | C2
1 | 23
23 | 7488 | (0,23) | 1 | 2
24 | 7456 | (0,24) | 1 | 3
update t1 set c2=4 where c1=1
C1 | LP
1 | 1
LP | Offset | T_CTID | C1 | C2
1 | 24
23 | 7488 | (0,23) | 1 | 4
24 | 7488 | (0,23) | 1 | 3

谢谢聆听

www.ifclub.com.cn