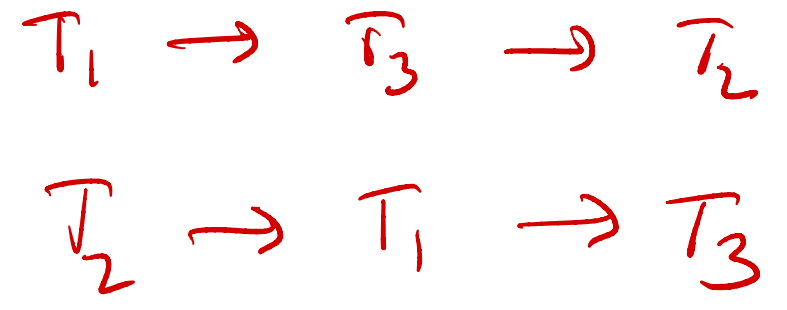


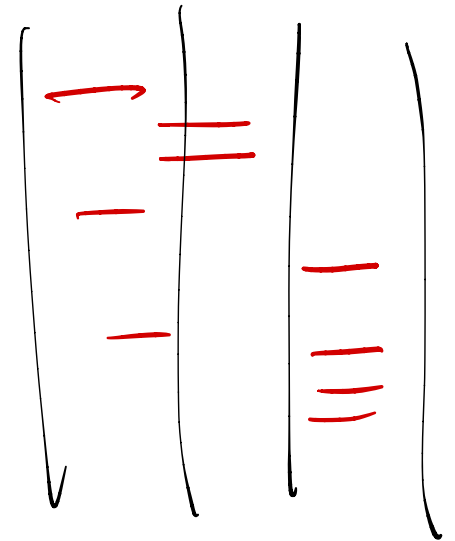
ISOLATION
= I in ACID

Not "equivalent" to any
serial execution



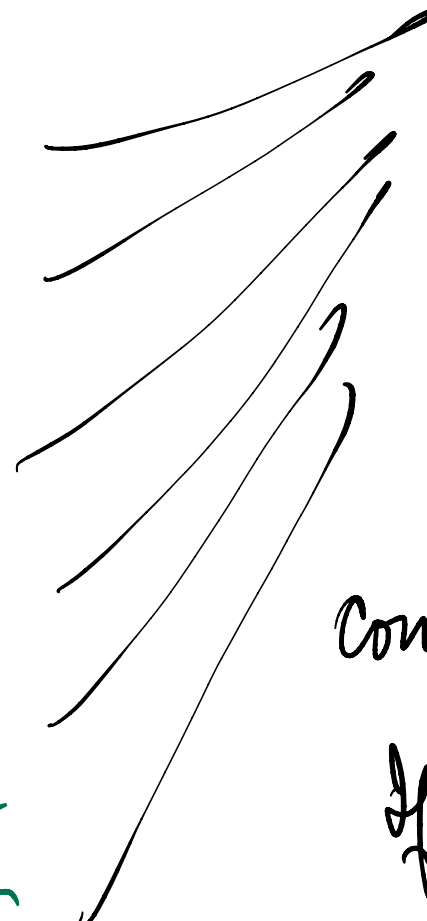
Strategy 1

Given a concurrent schedule CS



Try

- $T_1 T_2 T_3$
- $T_1 T_3 T_2$
- $T_2 T_1 T_3$
- $T_2 T_3 T_1$
- $T_3 T_1 T_2$
- $T_3 T_2 T_1$



Compare outcome

if any of them match,

CS is serializable

$$3! = 6$$

T_1, \dots, T_k — $k!$ different serial orders

Cannot exhaustively check all

Hence look for more efficient ways to check

Serializability

— Conflict serializability — swap non-conflicting
active

— Checked efficiently using conflict graph

Merge Sort

1 2 3 4 | 5 6 7 8
1 3 7 8 | 6 2 5 4

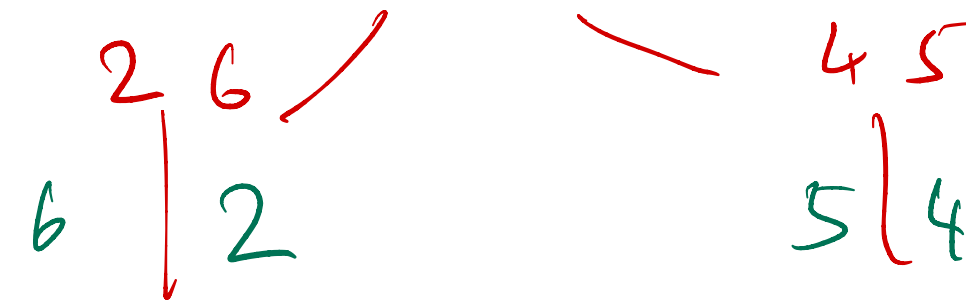
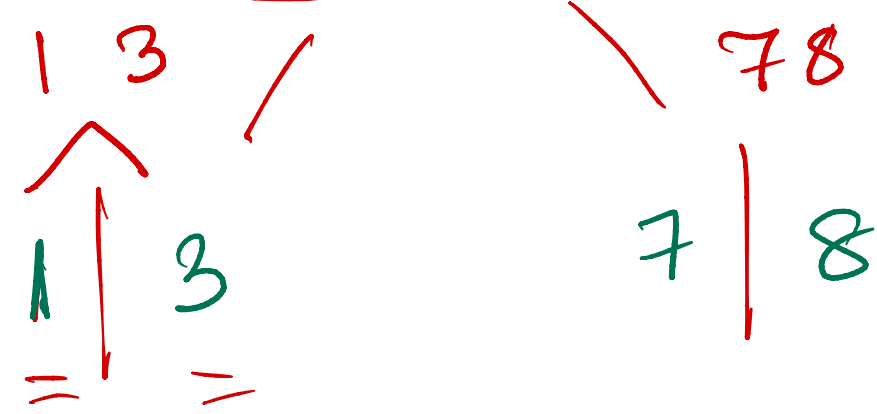
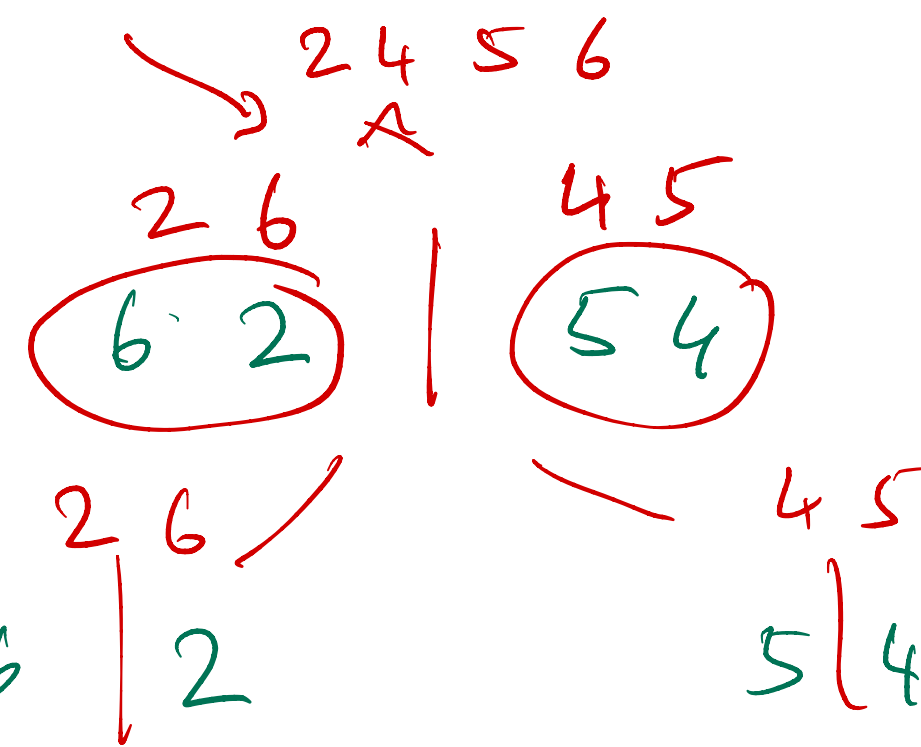
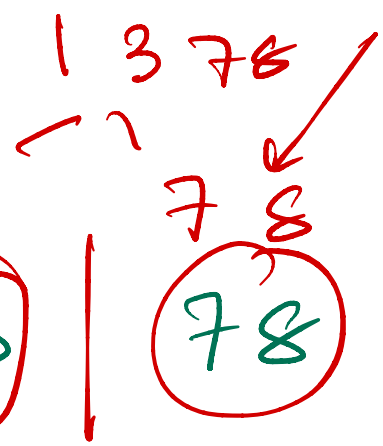
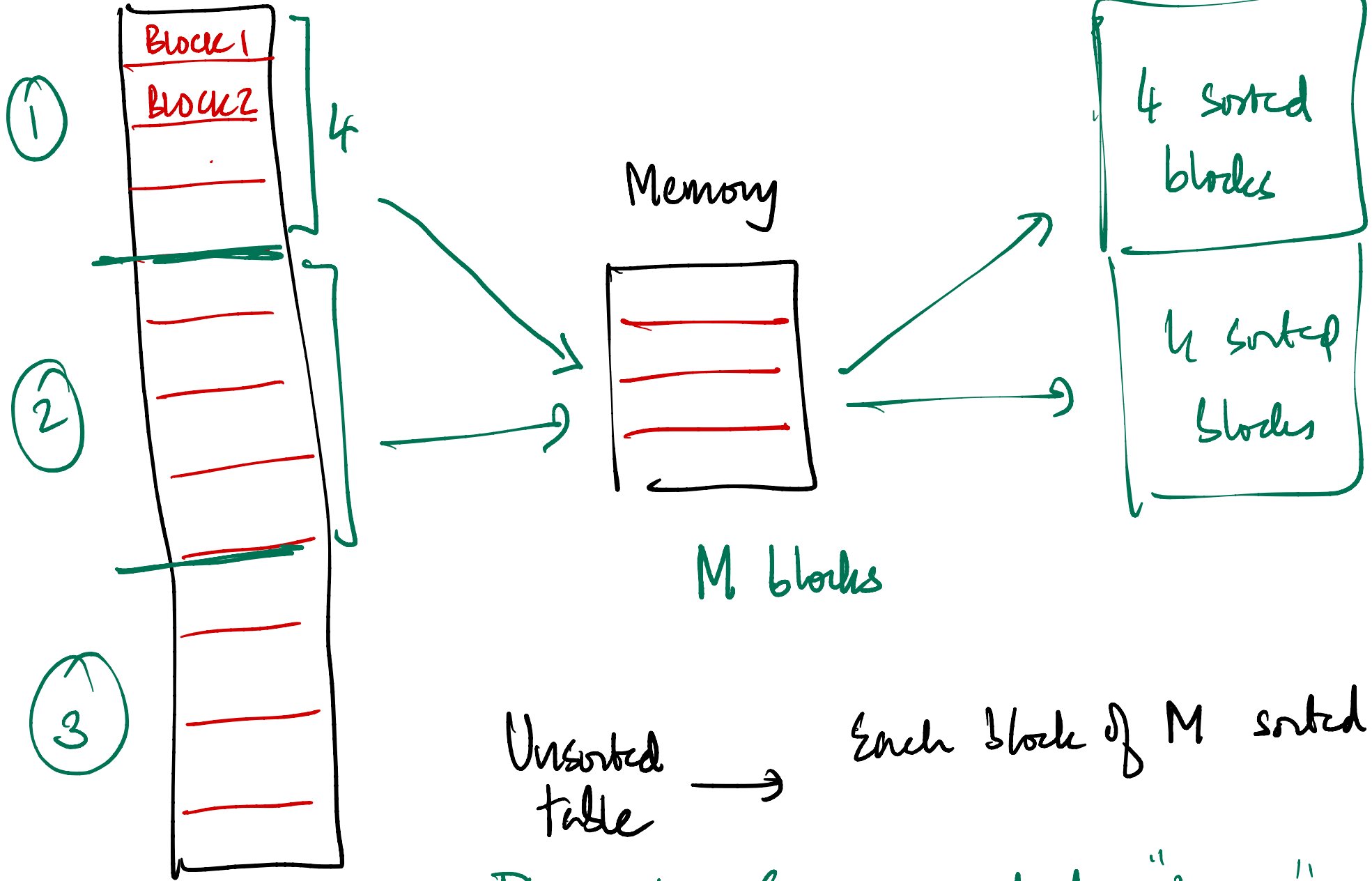
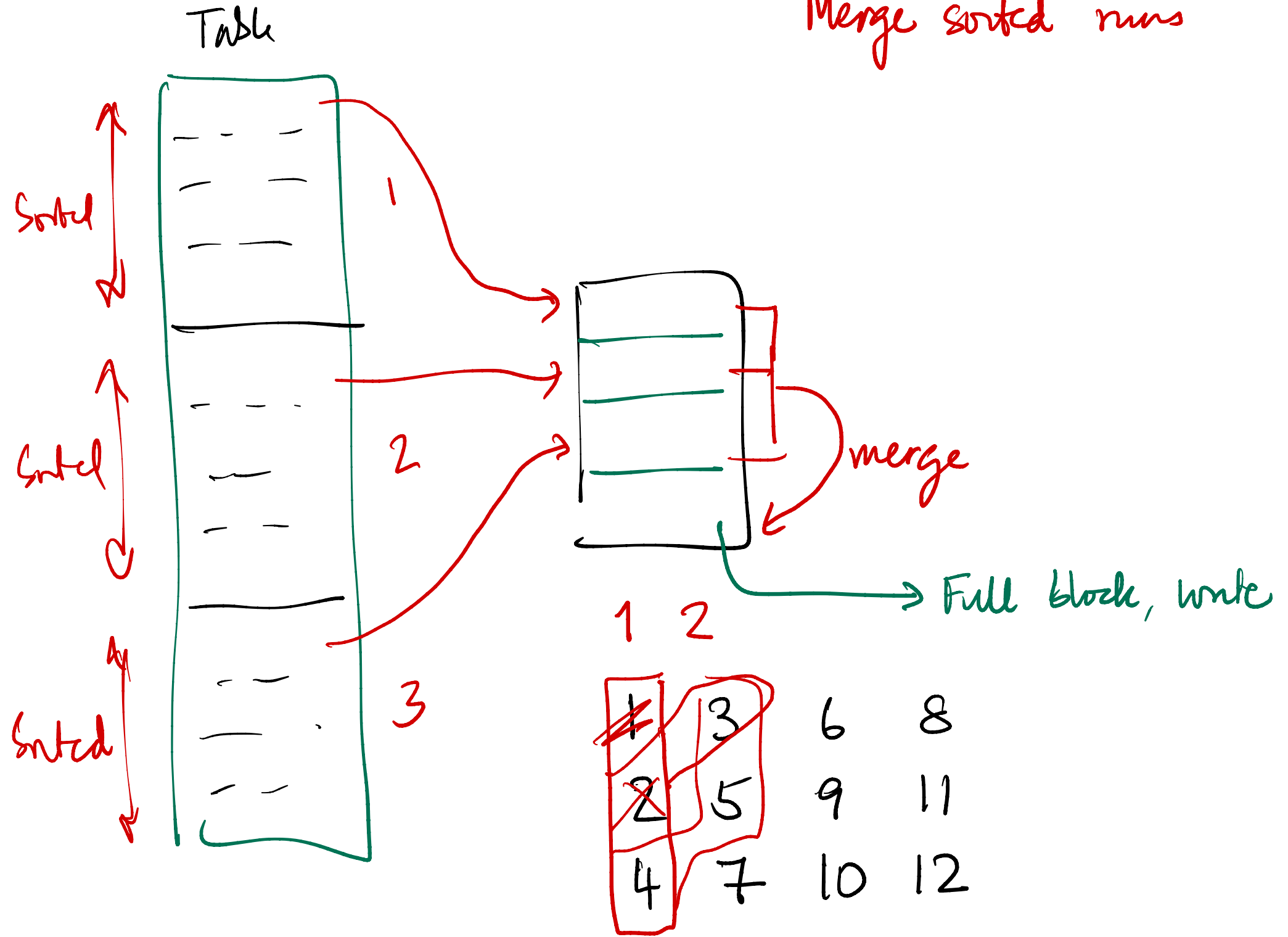


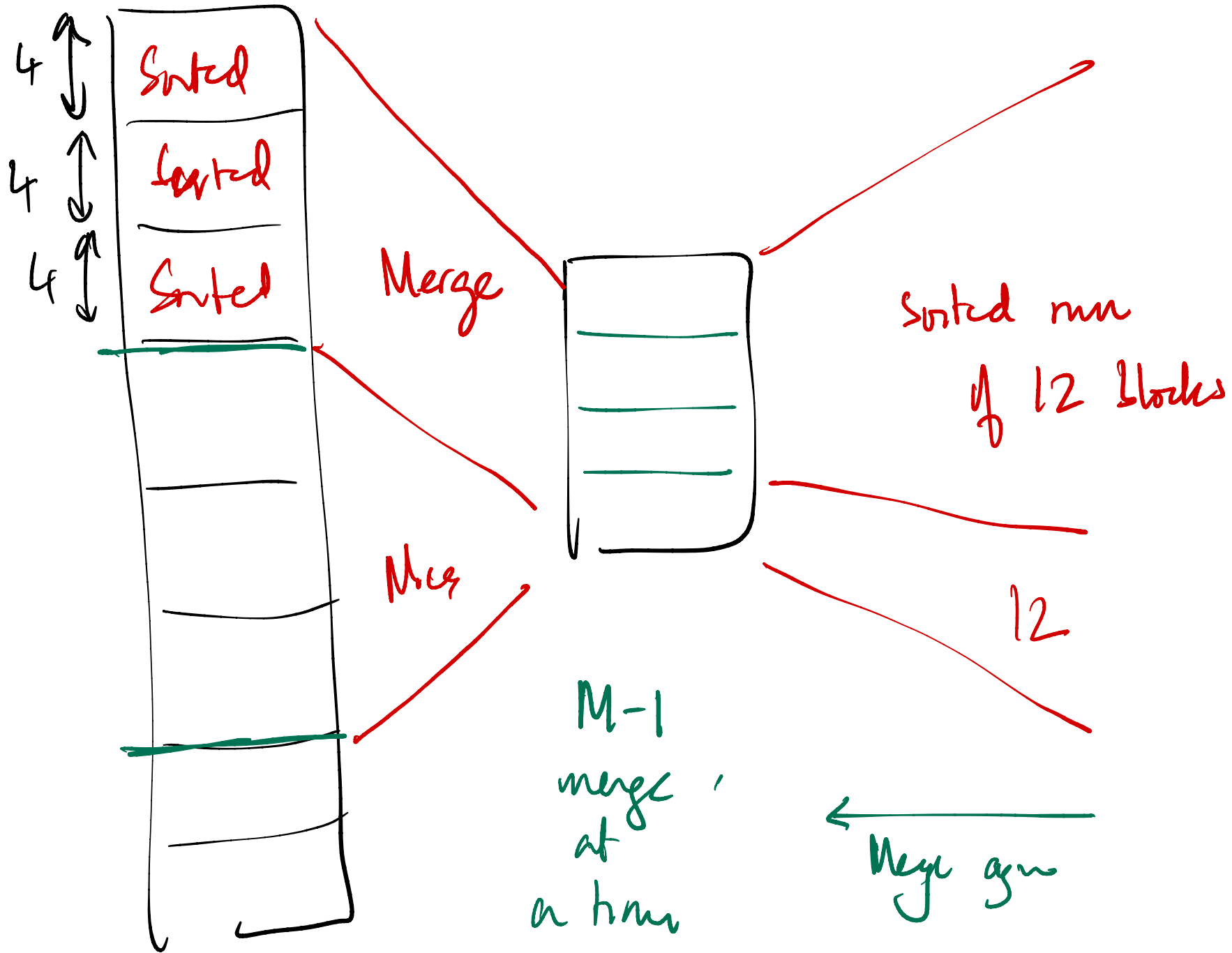
Table on Disk



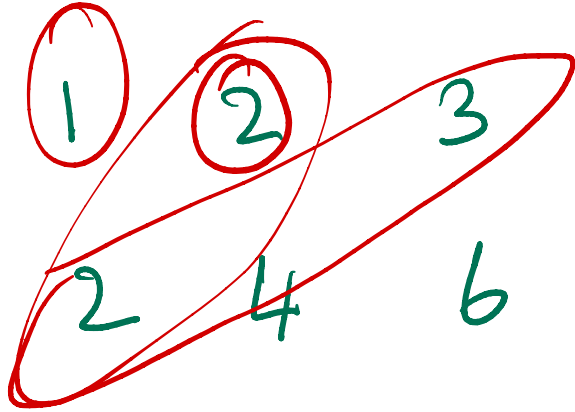
Unsorted table → Each block of M sorted
Phase 1 Create sorted "runs"

Merge sorted runs





Merge



1 2 2 3 4 6

Hash Join

