

Strong Completeness:

Show $M \models N \rightarrow$

$\text{CDCL}(M \models N) \rightarrow (M', N, \emptyset, k, T)$

M', M make same literals true

Proof applying Decide, Propagate
inductia on $|M|$

Base Case Propagate $(\epsilon, -) \rightarrow (L, -)$

show $L \in M \checkmark$

Ind Case Propagate $(M', -) \rightarrow (M', L \vee C, -)$

$M \models \neg C \rightarrow M \models L \checkmark$

Decide: pick literal from M

Proof Termination:

(i) measure μ well-founded and
 $\mu((M, \alpha, \nu, k, D)) > \mu((M', N, \nu', k', D'))$

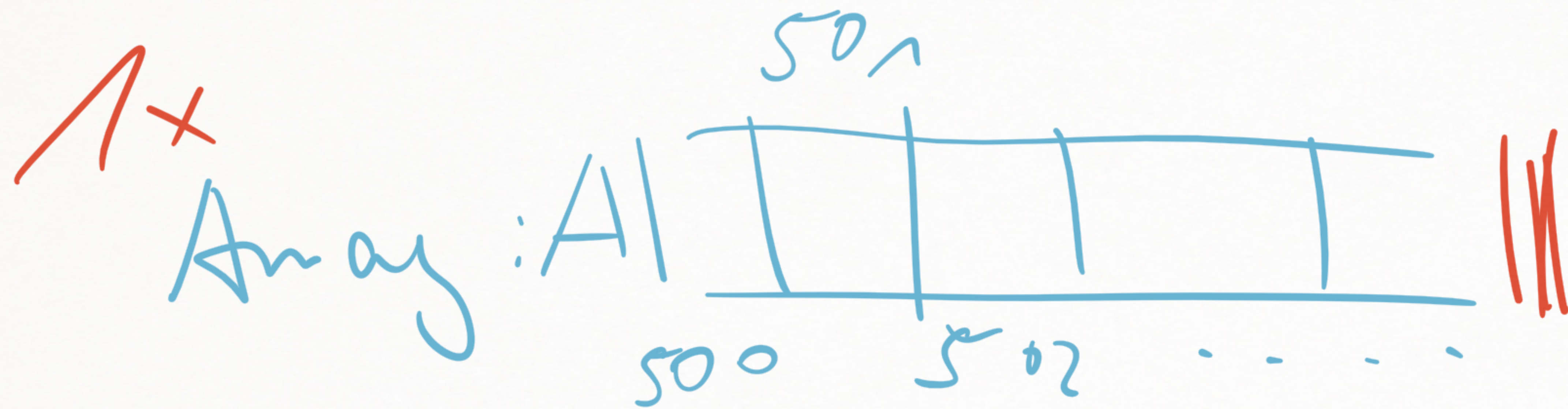
when $(M, \alpha, \nu, k, D) \Rightarrow (M', N, \nu', k', D')$

(ii) (i) only finitely many ^{CDCL} clauses
(no fan-folios, no duplicate literals)

(ii) CDCL does not generate the
same clause twice $\}^h$

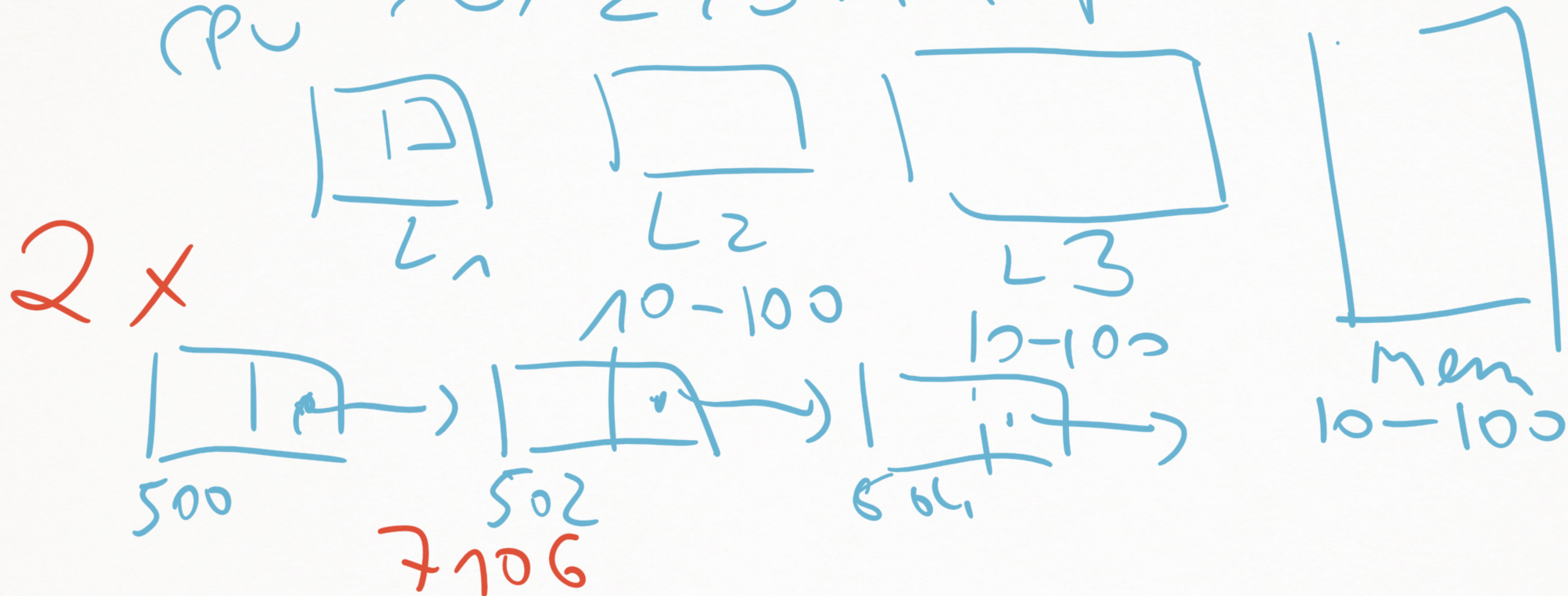
$h = \# \text{ no. variables}$

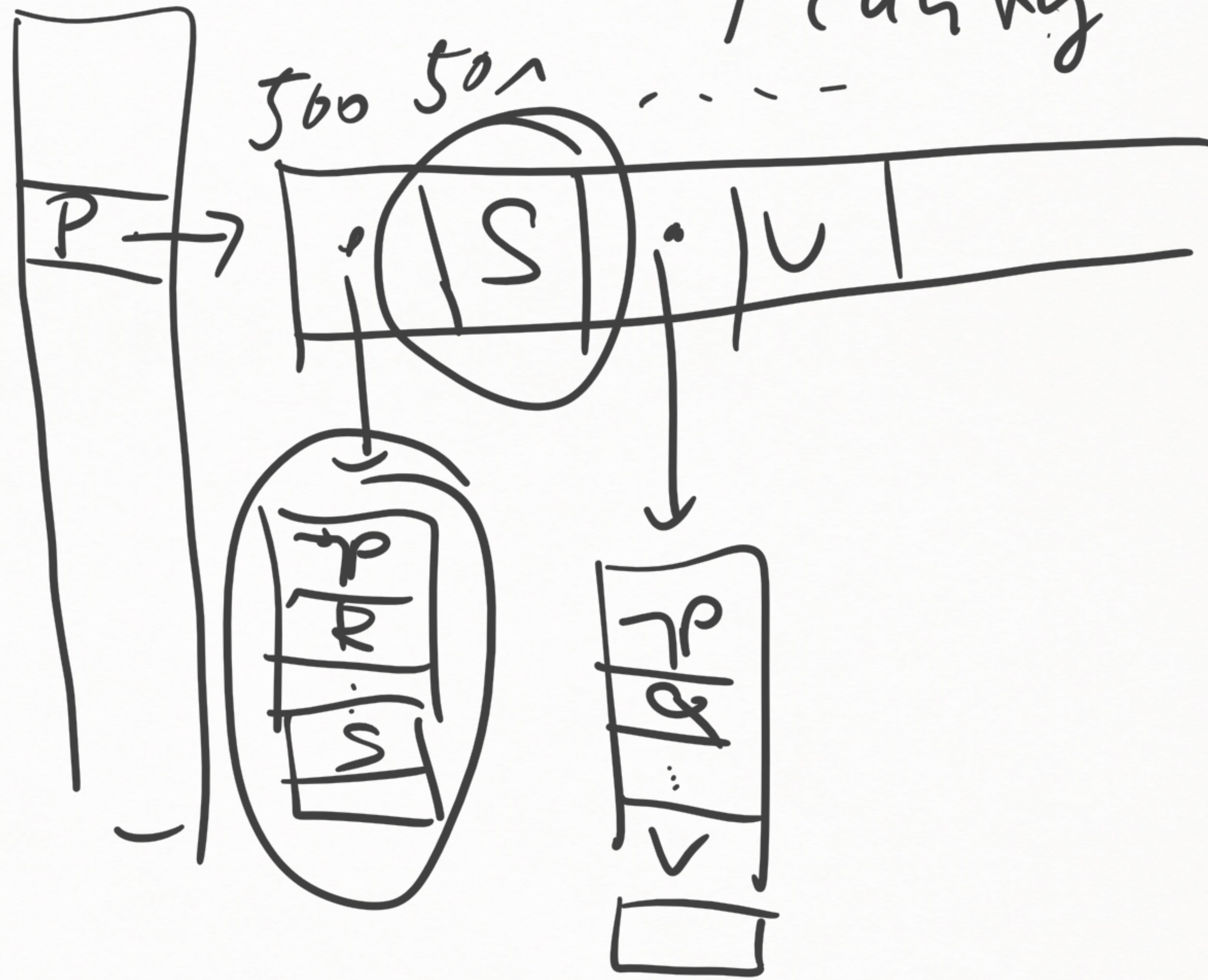
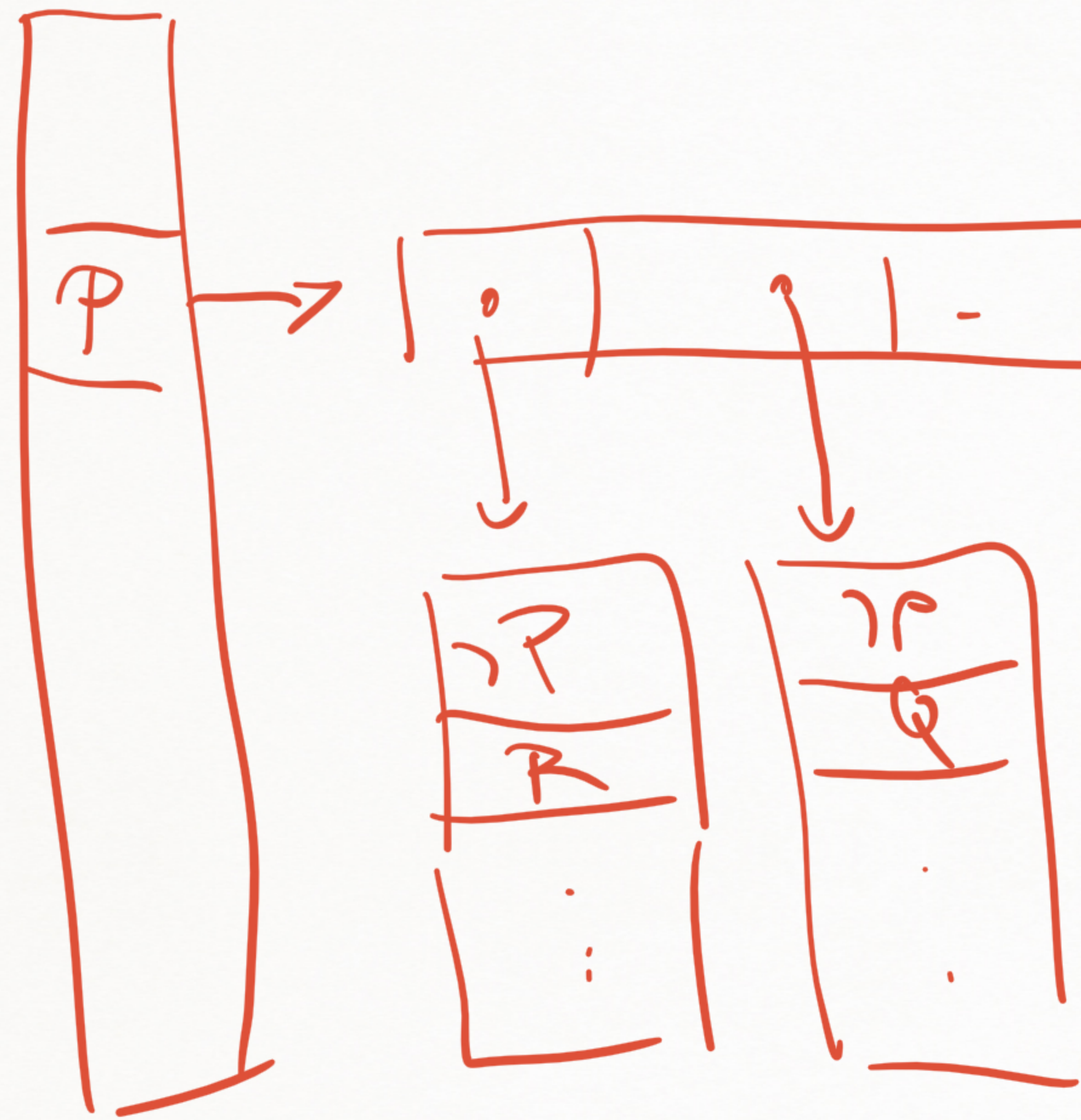
in general complexity: $n \cdot 4 \dots^n$



$A[0] \sim$ fetch 500

pc \sim 26B mem from 500



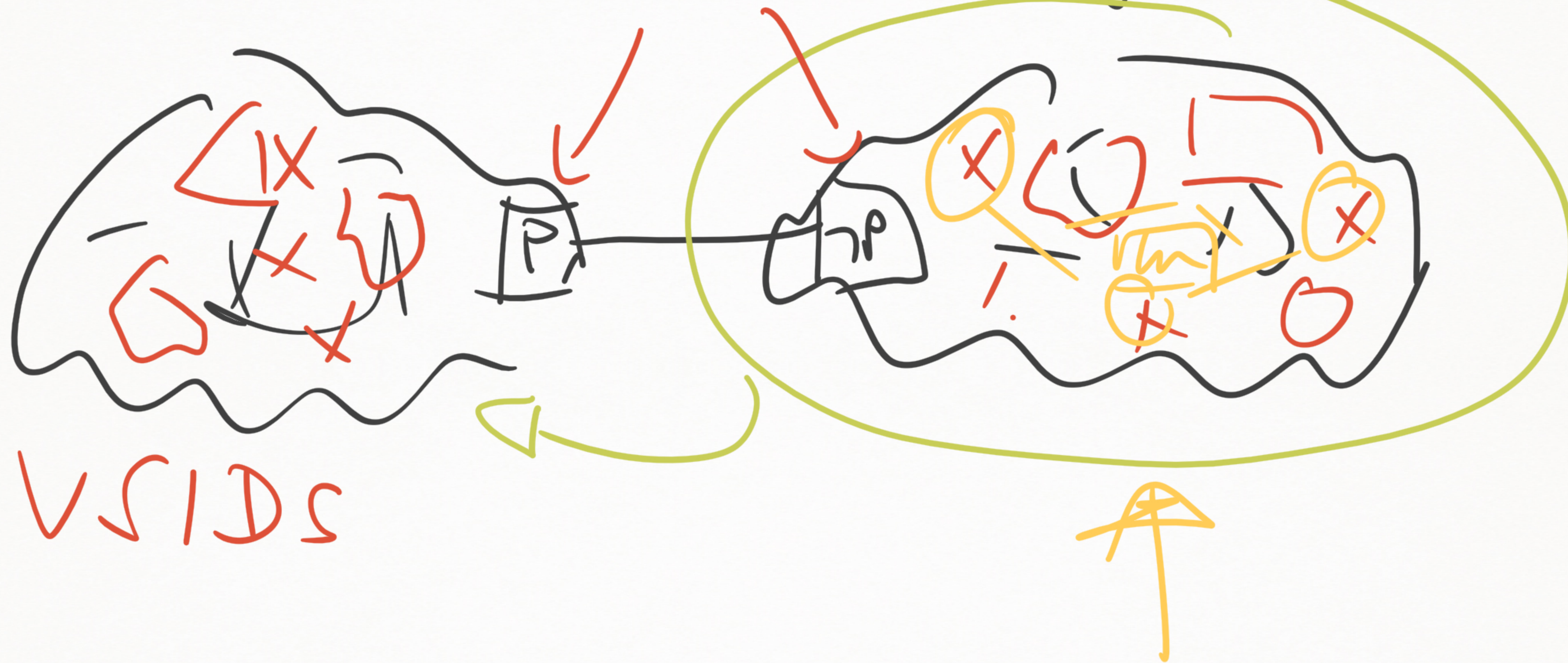


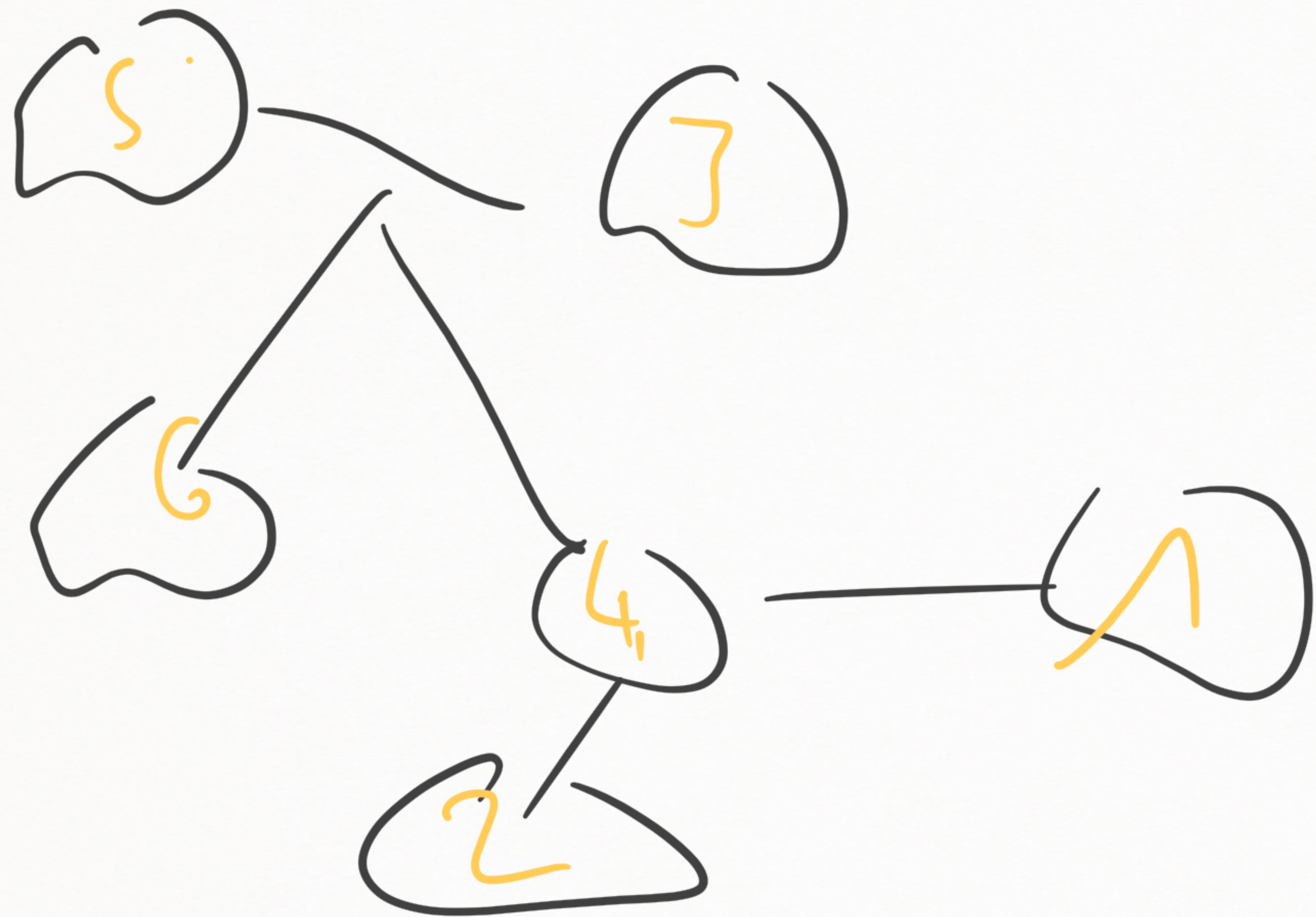
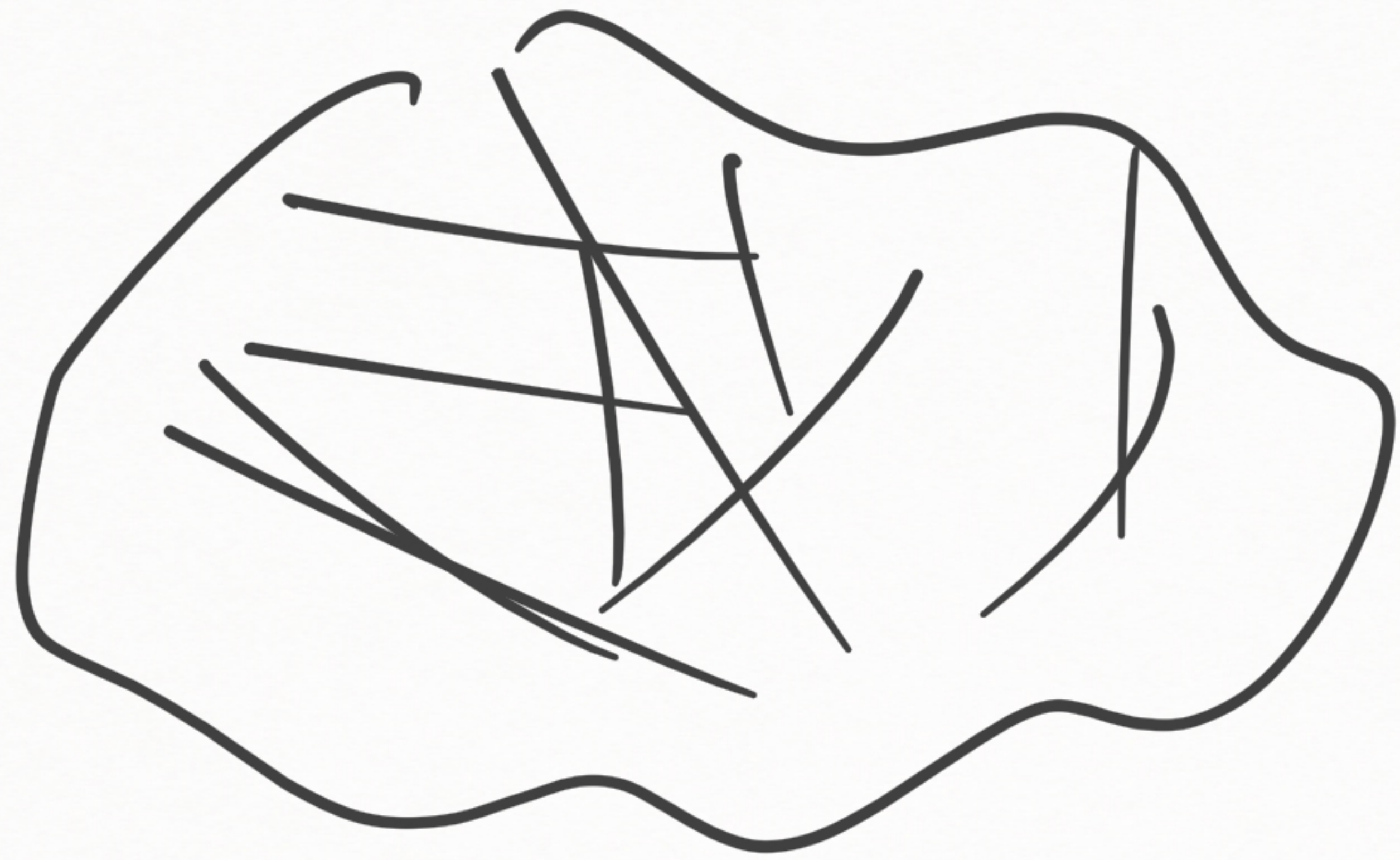
Speedup 30%

Swap
out
locality

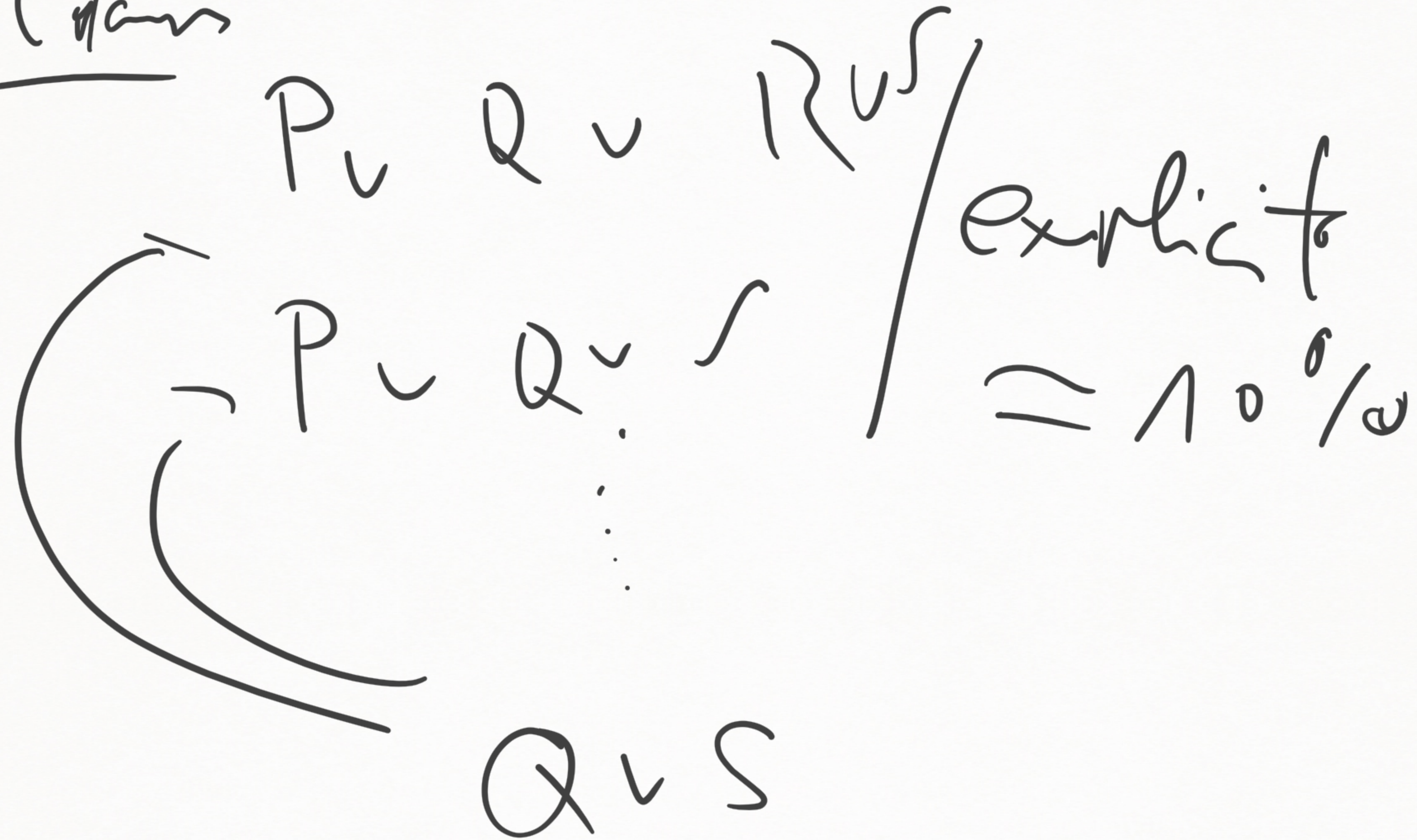
500 500

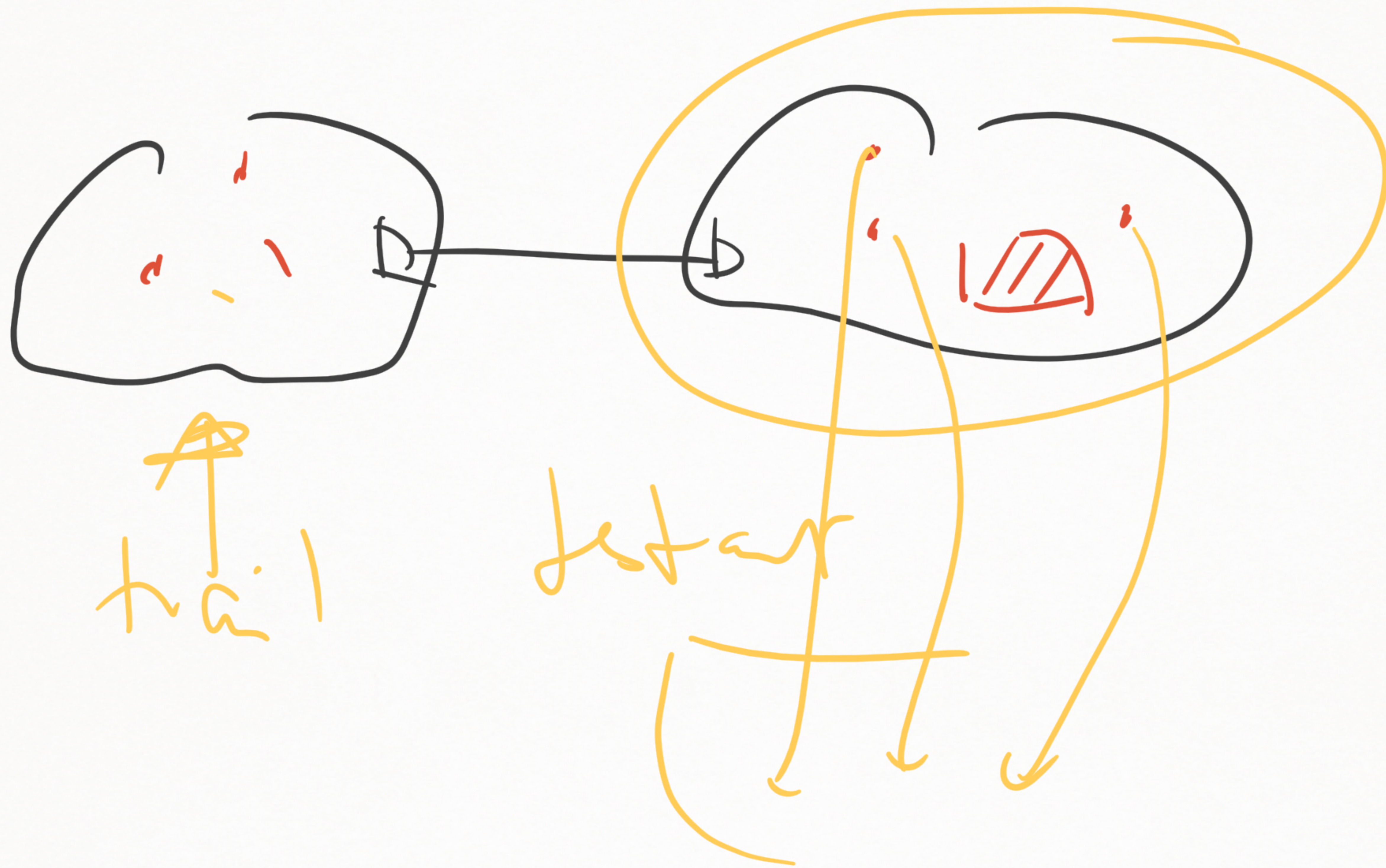
N Graph Literals Nodes
connected Edges





Lean Columns





$\left[P \rightarrow Q \dots \dots \right]$

Conflicts + VSIDS

VSIDS Score (Q) > VSIDS (P)

$\left[Q \right]$ Restant

Learned Clause: learn Decision Literals