Construction of bad access sequence

6.897
L 7.2
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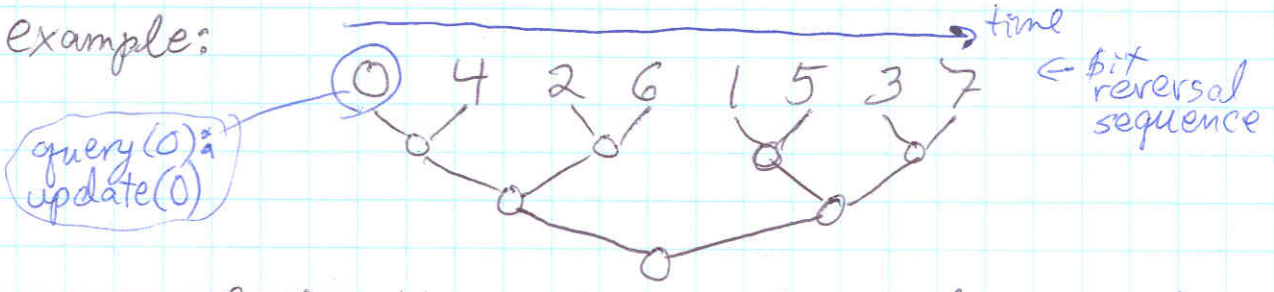
- permutation π in each update(i, π) is chosen uniformly at random
- permutation π in each verify-sum(i, π) is the correct sum (but DS doesn't know)
- example:



  - left subtree of node (interval of time) interleaves with right subtree of node

- Claim: for every node v in tree, say with ℓ leaves in its subtree, during right subtree of v must execute $\Omega(\ell\sqrt{n})$ cell probes on average (expectation) that read cells written during left subtree.

→ sum over all levels & linearity of expectation
⇒ $\Omega(n \lg n)$ lower bound overall

(because write w read by read r is counted at only one tree node: $\text{lca}(r, w)$)