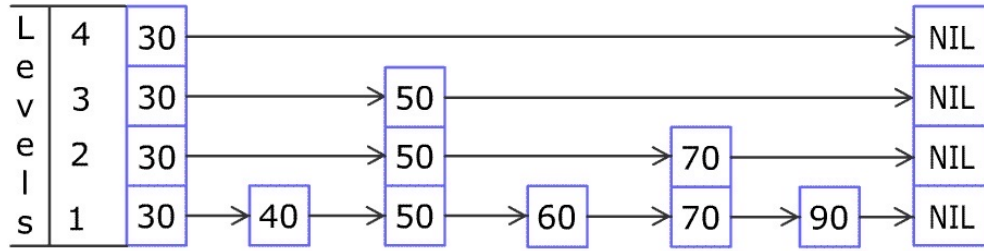


key thought.

: Time space trade off.



Time Complexity: $O(\log n)$

Space Complexity: $O(1)$ but $\sum \frac{n}{2^i} \Rightarrow$ convergence function more space

VCap: 1. Increase space to reduce time
2. Extra maintenance costs
3. redis, LRU Cache.