

Tutorial 6: June 29

1. Suppose we have an array \mathcal{A} of numbers such that $\mathcal{A}[i] = ai + b$ with $a > 0$ and b as real numbers. Show that interpolation search always achieves a runtime of $O(1)$ with \mathcal{A} , regardless of whether the target is in the array or not.
2. Suppose we have an array \mathcal{A} of numbers such that $\mathcal{A}[i] = t\sqrt{i}$ for $0 \leq i \leq n - 1$ and some positive number t . Show that, using interpolation search, searching for t in \mathcal{A} takes $O(\log \log n)$ time.
3. Draw the compressed trie containing the following keys: 10, 101, 1001, 10010, 10011, 1110, 1111, 11100, 111110, 111101.