

2) (10 pts) ANL (Algorithm Analysis)

(a) (5 pts) An algorithm to process an array of size n takes $O(n^2)$ time. If the algorithm takes 113 ms to process an array of size 10,000 how long will it take to process an array of size 100,000, in seconds?

(b) (5 pts) A search algorithm on an array of size n runs in $O(\lg n)$ time. If 200,000 searches on an array of size 2^{18} takes 20 ms, how long will 540,000 searches take on an array of size 2^{20} take, in milliseconds?