Linear Search

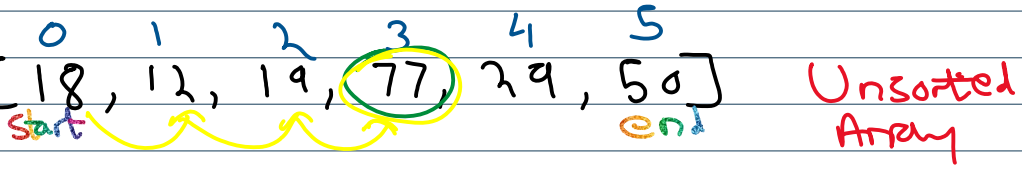
08 July 2024 17:53

Searching

→ It is a process of finding a given value at a position in a list of values

01 Linear Search

→ Basic / Simple Search Algorithm
→ Sequential search where we compare the value we have targeted with the other values of the array from start to end



Target = 77

→ Sequential Comparision is done with all the elements till we get our target element.
→ If no value is found, return −1 OR false.

Time Complexity:

Best Case: $O(1)$

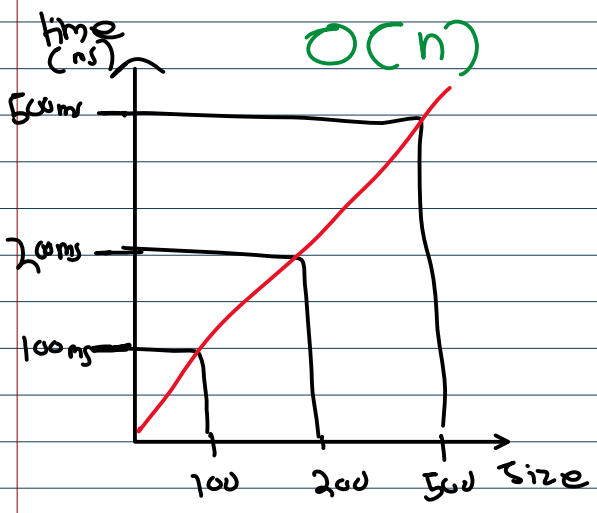
→ Here, the loop will make only 1 check irrespective of its size of the array.
→ That is, only 1 comparision will be taken at max.
→ This means that item is found at the 0th index.

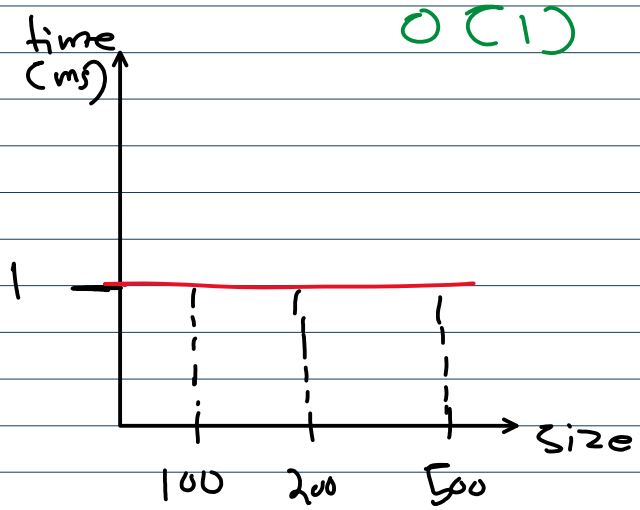
Worst Case: $O(n)$

→ In worst case, it goes through entire array & at the end, the element won't be found in the array.

Size of Array	No of comparisions	Time

Size of Array	No of comparisions	Time
100	100	100 ms
200	200	200 ms
1lakh	100000	100000 ms
n	n	n





Q : Search for '3' in the range of [1,4]

arr: [18, 13, 17, 3, 14, 28]

Range

Search '3' in this range.

Q. Find min element in the array

arr = [18, 12, -7, 3, 14, 28]

min

Q Find the no. of nos that have even number of digits in Array

Nums = [18, 124, 9, 1768, 98, 1]

Ans = 3

2 methods to check for even digits

1] Count no. of digits
2] Convert 1764 to String & then take the length

1st way

eg 1764

176

17

1

0

while (n>0){
Count ++
n = n/10
}

Count = 1
Count = 2
Count = 3
Count = 4