Next Module Started

Searching

i) Linear Search 13) ⇒ (1:15:44)
ii) Binary Search 14) ⇒ (58:16)
iii) Binary Search Questions (4:01:46)
iv) Binary Search in 2D Arrays (58:57)

Assignment

i) Easy leetCode Questions (17) ←
ii) Medium leetCode Questions +(17)
iii) Hard leetCode Questions +(8)
42

Planning to Solve / Complete

* 3/20/2023 to 3/23/2023
Videos Completion + Notes (7 hours)

* 3/24/2023 to 3/31/2023
(8 days) (42 problems)

⇒ if (mids > 3/31/2023){
→ 6 or more problems in a day
} else {
→ complete videos + problems according to plan
}

i) Linear Search Algorithm

is one technique of that used to Search some elements.

arr = [18, 12, 9, 14, 77, 50]

Q: find whether (14) exist or not arr.

i) for-each loop

Time Complexity:

Best: O(1) //constant

Worst-Case: O(N) // if N => size of arr

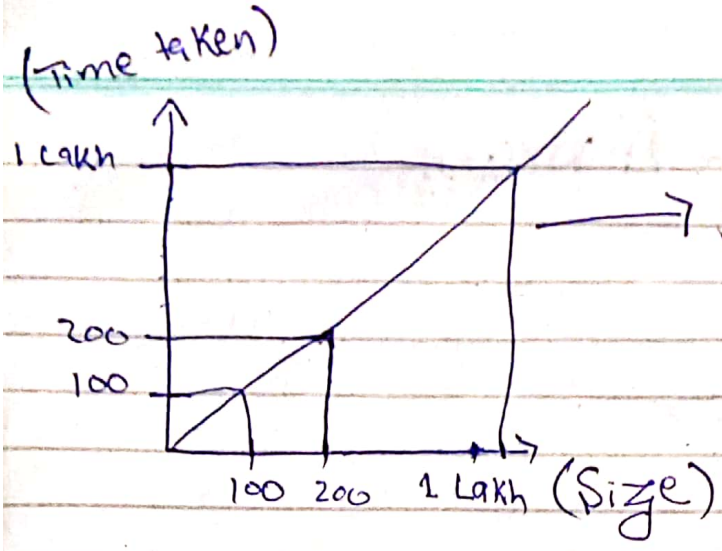
→ How your time will going to grow as the input will grow.

Note: The No of Comparisons in the **Best_case** is not depending on the size of arr, in best_case, the item would be found at the zeroth index.

Note: Worst_Case:

You do not find the target item in the Array, It means you have to iterate over whole array.

imagine
(will take 100ms) — Size of array = 100 => 100 comparis
(will take 1 Lakh ms) 1 lakh => 1 Lakh compar

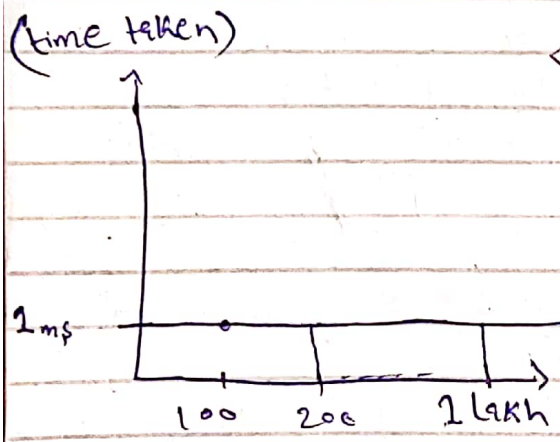


→ for Worst-Case

O(n) upper-bound

Worst Case

500 (size) ≃ 500 (milliseconds)



O(1) lower-bound.

Best Case

→ There is only 1 check/comparison that's why time taken (1 milisecond) for all sizes of array is same.

→Space Complexity:

are you taking any extra space i.e. if you search through array, are you making any other array? e.g. will take only two variables i for for loop, target for searched element.

auxiliary Space:

means extra space taken

Confusion?

i) taking another copy of array when searching is called taking auxiliary space ? {i think correct}

ii) taking some variables when searching is called taking auxiliary space or not ?

{Not yet confirm}

*) Introduction finished & Code Start

arr.length VS str.length()

i) Here length is basically a variable	ii) Here length() is basically an built-in function/method. Remember, Internally it is work like same.

for-each loop for String

```
for(char ch:str.toCharArray()){
    if(ch == target){
        return true;
    }
}
return false;
```

System.out.println(Arrays.toString(name.toCharArray()));

// ['K', 'U', 'N', 'A', 'L']

→ int[] arr = new int[]{1,2};
↳ will work perfectly fine

→ int[] arr = {1,2};
↳ will also work perfectly fine because we're initializing with type array

→ Static int[] search(){
return new int[]{1,2}
}
↳ will work perfectly fine, coz type with array.

static int[] search(){
→ return {1,2};
}
↳ will not work perfectly fine, because there is no type with this arr.

{ i) Integer.MIN_VALUE; //-2147483648
ii) Integer.MAX_VALUE;

↳ min & max values that integer have

Note:

We will learn concepts about data_types, conversion data types, ranges of data types When we we will cover binary numbers. i.e) bytes, range of bytes, bits, converting from one number system to another.

```
n = n/10;
rem = n%10;
```
} Important w.r.t logics

→ ShortCutToFindNoOfDigits

```
int num = 2345;
System.out.println(num); //2345
int digits = ((int)(Math.log10(num))+1);
System.out.println(num); //4
```

How this thing work internally? will cover this in number System lecture.

Tip by Kunal :-

Try to solve problem on leetCode because this will help in interview.