

Day - 13

Linear Search

Sequential search, Compare Target value with other elements
In the list.

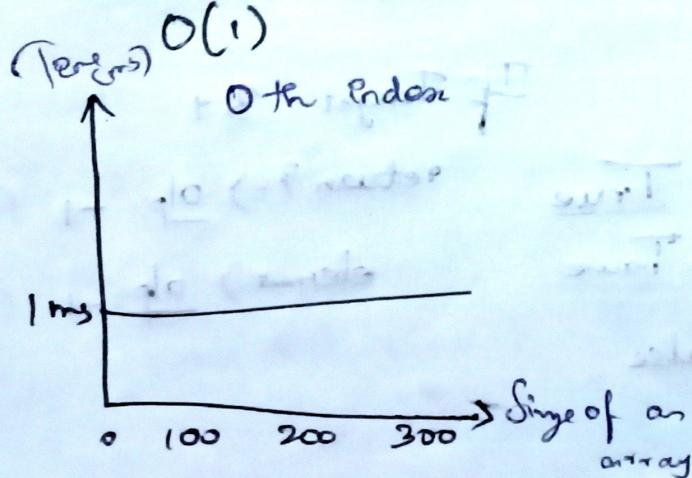
Eg: arr = [18, 12, 9, 14, 77, 89] Size = 6

Find 14 exist or not.

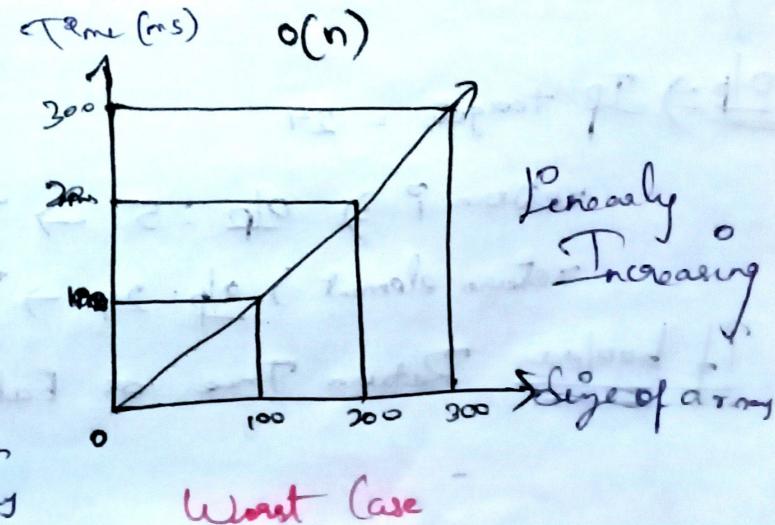
If no value found, return -1

Time complexity: Best : $O(1)$ Constant Worst : $\frac{O(n)}{\text{Size of array}}$

How many checks will the loop find in best case & 0th index



Best Case



Eg Linear Program

```
public class Linear{
```

```
    public static void main (String [] args) {
```

```
        int [] num = {3, 4, 7, 9, 48, 29};
```

Boolean \rightarrow For true or

```
        int target = 29;
```

false as

boolean

```
        int ans = linearsearch (num, target);
```

o/p

System.out

```
        System.out.println (ans);
```

```
}
```

boolean

```
static int linearsearch (int [] arr, int target) {
```

```
    if (arr.length == 0) {
```

```
        return -1; False
```

```
}
```

```
for (int i = 0; i < arr.length; i++) {
```

variable

```
    int element = arr[i];
```

```
    if (element == target) {
```

```
        return P; True
```

```
}
```

```
return -1; False
```

```
}
```

O/P \Rightarrow If target = 29

```
return P  $\Rightarrow$  O/P : 5  $\rightarrow$  True
```

```
return element  $\Rightarrow$  O/P: 29  $\rightarrow$  True
```

If Target = 39

```
return 9  $\Rightarrow$  O/P: -1 False
```

```
element  $\Rightarrow$  O/P: -1 False
```

If boolean Return True or False

String:

```
public class Stringarr {
    public static void main (String [] args) {
        String name = "Priya";
        char target = 'e';
        S.o.p (search (name, target)); s.o.p (Arrays.toString
            (name.toCharArray));
    }
}
```

Static boolean search (String str, Char target){

Function

if (str.length() == 0) {

return false;

}

for (int i=0; i < str.length(); i++) {

if (target == str.charAt(i)) {

return true;

}

return false;

}

Search in range:

arr = [18, 12, 7, 3, 19, 29]
 0 1 2 3 4 5

s.o.p (Linearsrch (arr, target, start: 1, end: 4));

In static int we need to assign int start & end.

In for loop it doesn't start with 0. Starts with start value

Eg. static int Linearsrch (int [] arr, int target, int start,
int end)

if (arr.length == 0) {

return -1;

}

for (int i=start; i <= end; i++) {

}

For each array

for (char ch: str.toCharArray) {

if (ch == target) {

return true;

}

O/p: [P, r, i, y,]

Search for 3. In range of
Index [1,4]

Change int to
range

Min & Max en Range

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

check next &
Min 18 → 12 → -7
update

Q

public class Min {

public static void main (String [] args) {

int [] arr = {18, 12, -7, 3, 14, 28};

olp:

{ S-o-p (min (arr)); max (arr) }

Minimum

static int min (int [] arr) {

-7

int ans = arr[0];

olp:

for (int i = 1; i < arr.length; i++) {

Maximum

if (arr[i] < ans) {

28

ans = arr[i];

}

}

return ans;

2D array en range:

arr = [[1, 2, 3],
[4, 5, 9],
[9, 18, 5]]

```
for (row = 0; row < len(arr); row++) {  
    for (col = 0; col < len[row]; col++) {  
        if (arr[row][col] == target) {  
            // find ans  
        }  
    }  
}
```