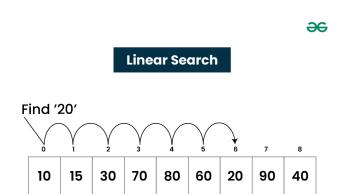


# **Linear Search**



Linear search is a type of sequential searching algorithm. In this method, every element within the input array is traversed and compared with the key element to be found.



# **Pseudocode**

```
procedure linear_search (list, value)

for each item in the list

if match item == value

return the item's location

end if

end for

end procedure
```

Linear Search 1



Linear search method may take key value that you are looking for and collection to it's method. According to what you want to accomplish you may decide on return type.

# **Analysis**

- $\rightarrow$  Linear search traverses through every element sequentially therefore, the best case is when the element is found in the very first iteration. The best-case time complexity would be **O(1)**.
- → However, the worst case of the linear search method would be an unsuccessful search that does not find the key value in the array, it performs n iterations. Therefore, the worst-case time complexity of the linear search algorithm would be **O(n)**.

### When to use Linear Search:

- → When there is small collection of data.
- → When data is unordered.

### **Advantages of Linear Search Algorithm:**

- → Linear search can be used irrespective of whether the array is sorted or not. It can be used on arrays of any data type.
- → Does not require any additional memory.
- → It is a well-suited algorithm for small datasets.

# **Disadvantages of Linear Search Algorithm:**

- → Linear search has a time complexity of O(N), which in turn makes it slow for large datasets.
- → Not suitable for large arrays.



Java implementation can be found under Implementation\_Java folder



#### Linear Search Algorithm - GeeksforGeeks

Learn the fundamentals of Linear Search Algorithm: its working, implementation, complexity analysis, applications, advantages and disadvantages.

⇒ https://www.geeksforgeeks.org/linear-search/



Linear Search 2

#### Binary Search Algorithm

Binary Search Algorithm - Binary search is a fast search algorithm with run-time complexity of O(log n). This search algorithm works on the principle of divide and conquer, since it divides the array into half before searching. For this algorithm to

https://www.tutorialspoint.com/data\_structures\_algorithms/binary\_search\_algo rithm.htm



#### Introduction to Searching - Data Structure and Algorithm Tutorial - GeeksforGeeks

A Computer Science portal for geeks. It contains well written, well thought and well explained computer science and programming articles, quizzes and practice/competitive programming/company interview Questions.

https://www.geeksforgeeks.org/introduction-to-searching-algorithms-2/





### ▲ Author → Serhat Kumas

https://www.linkedin.com/in/serhatkumas/

#### SerhatKumas - Overview

Computer engineering student who loves coding in different fields instead of focusing on a one spesific area. - SerhatKumas





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