



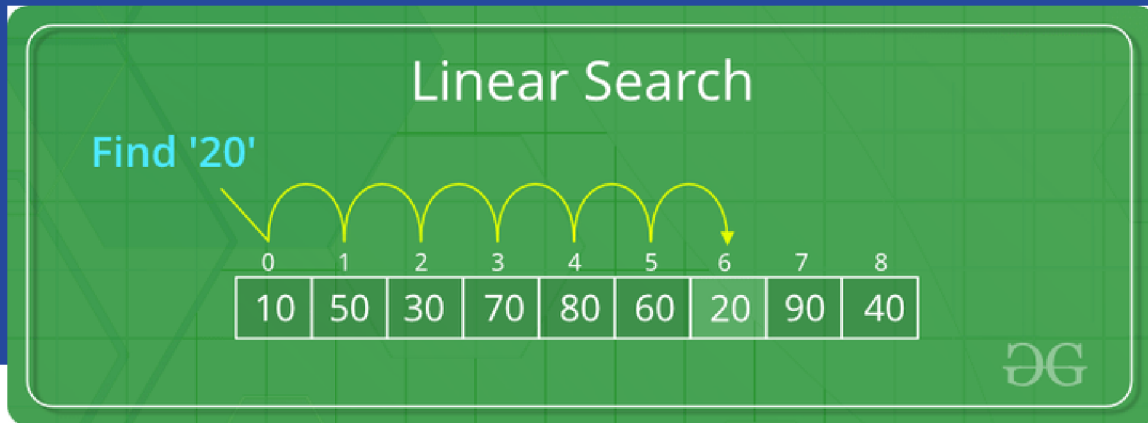
LINEAR SEARCH ALGORITHM

- 01. Introduction to Searching Algorithms
- 02. Linear Search Algorithm
- 03. Time Complexity
- 04. Space Complexity
- 05. Advantages and Disadvantages of Linear Search Algorithm
- 06. Conclusion

INTRODUCTION TO SEARCHING ALGORITHMS

Searching algorithms are fundamental to computer science as they enable efficient information retrieval, data processing and analysis, optimization, and problem-solving. They are used to retrieve information from large datasets, sort and analyze data, optimize processes, and solve complex problems.

LINEAR SEARCH ALGORITHM



Linear search, also known as sequential search, is a simple searching algorithm used to find the position of a target value in a list or array. The algorithm compares each element of the list or array sequentially, starting from the first element, until the target value is found or the end of the list is reached.

TIME COMPLEXITY

Complexity class $O(n)$ – linear time



- $O(n)$

HappyCoders.z

Time complexity: The time complexity of linear search is $O(n)$, where n is the size of the input list or array. This means that the worst-case scenario of the algorithm involves checking every element of the list or array in order to find the target value.

SPACE COMPLEXITY

The space complexity of linear search is $O(1)$, which means that the amount of memory required by the algorithm remains constant and does not depend on the size of the input. This is because the algorithm only requires a small amount of additional memory to store a few variables.

PROS AND CONS

PROS

- Simple to implement
- Works on unsorted data
- Does not require additional memory or space to operate

CONS

- Can be slow for large datasets
- Time complexity is $O(n)$, which means the search time increases linearly with the size of the dataset
- Inefficient for sorted data, where other algorithms such as binary search can be used for faster results.

CONCLUSION

In conclusion, the linear search algorithm is a basic and fundamental search algorithm in computer science.

It works by sequentially checking each element in a dataset until it finds the desired value, making it useful in some simple applications where the dataset is small and unsorted.

However, for larger datasets or when search time is critical, more efficient algorithms such as binary search or hash tables should be used.



THANK YOU !