Searching Algorithms

💡 *Searching Algorithms are designed to check for an element or retrieve an element from any data structure where it is stored.*

📌 Searching algorithms can be divided into two main types: sequential and interval searching. sequential searching is the simplest form of searching, where the algorithm scans each element in the collection until it finds the target or reaches the end. interval searching is a more efficient form of searching, where the algorithm repeatedly divides the collection into smaller collections and compares the middle element with the target, discarding the divided collection that does not contain the target. However, interval searching requires that the collection is already sorted in order to work.

Characteristics of Searching

1. Target Element:

This target could be a value, a record, a key, or any other data entity of interest.

2. Search Space:

The entire collection of data within which you are looking for the target element.

3. Complexity:

Searching can have different levels of complexity depending on the data structure and the algorithm used. The complexity is often measured in terms of time and space requirements.

4. Deterministic vs Non-deterministic:

Some searching algorithms, like binary search, are deterministic, meaning they follow a clear and systematic approach. Others, such as linear search, are non-deterministic, as they may need to examine the entire search space in the worst case.

Complexity and Evaluation of Algorithms

→ Not all searching techniques are suitable for all types of data structures.

→ Evaluation of these searching techniques is done by checking the running time.

→ There are three different cases of time complexity in which a program can run.

- Best Case

- Average Case

- Worst Case

→ Some of the example search algorithms

- Linear Search

- Binary Search

- Ternary Search

- Jump Search

- Fibonacci Search

- Exponential Search

- Bread First Search

- Depth First Search

📚 References

https://www.geeksforgeeks.org/searching-algorithms/

https://www.geeksforgeeks.org/searching-algorithms/

https://www.tutorialspoint.com/data_structures_algorithms/searching_algorithms.htm

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SerhatKumas - Overview

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

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