## **Types of Search Algorithms**

In this post, we are going to discuss two important types of search algorithms:

1. **Linear or Sequential Search**
2. **Binary Search**

## **Linear or Sequential Search**

is algorithm works by sequentially iterating through the whole array or list from one end until the target element is found. If the element is found, it returns its index, else -1.

Now let's look at an example and try to understand how it works:

arr = [2, 12, 15, 11, 7, 19, 45]

Suppose the target element we want to search is  7.

### Approach for Linear or Sequential Search

* Start with index 0 and compare each element with the target
* If the target is found to be equal to the element, return its index
* If the target is not found, return -1

## **Binary Search**

This type of searching algorithm is used to find the position of a specific value contained **in a sorted array**. The binary search algorithm works on the principle of divide and conquer and it is considered the best searching algorithm because it's faster to run.

Now let's take a sorted array as an example and try to understand how it works:

arr = [2, 12, 15, 17, 27, 29, 45]

Suppose the target element to be searched is  17.

### **Approach for Binary Search**

* Compare the target element with the middle element of the array.
* If the target element is greater than the middle element, then the search continues in the right half.
* Else if the target element is less than the middle value, the search continues in the left half.
* This process is repeated until the middle element is equal to the target element, or the target element is not in the array
* If the target element is found, its index is returned, else -1 is returned.