

Linear Search Algorithm

The linear search algorithm is defined as a sequential search algorithm that starts at one end and goes through each element of a list until the desired element is found; otherwise, the search continues till the end of the dataset.

What is Linear Search Algorithm?

Linear search is a method for searching for an element in a collection of elements. In linear search, each element of the collection is visited one by one in a sequential fashion to find the desired element. Linear search is also known as **sequential search**.

Algorithm for Linear Search Algorithm:

The algorithm for linear search can be broken down into the following steps:

- **Start:** Begin at the first element of the collection of elements.
- **Compare:** Compare the current element with the desired element.
- **Found:** If the current element is equal to the desired element, return true or index to the current element.
- **Move:** Otherwise, move to the next element in the collection.
- **Repeat:** Repeat steps 2-4 until we have reached the end of collection.
- **Not found:** If the end of the collection is reached without finding the desired element, return that the desired element is not in the array.

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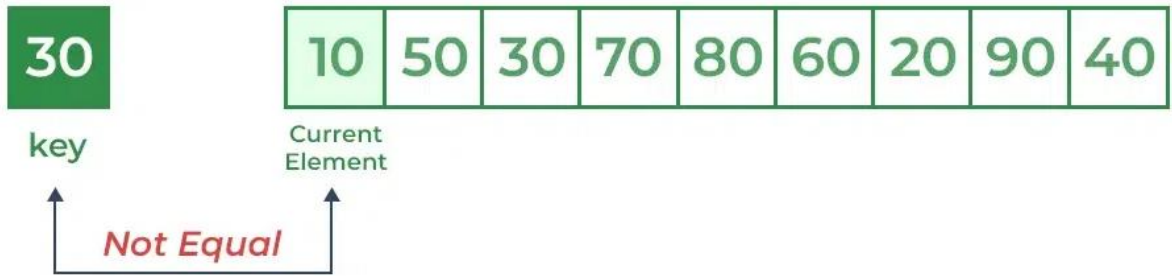
How Does Linear Search Algorithm Work?

In Linear Search Algorithm,

- Every element is considered as a potential match for the key and checked for the same.
- If any element is found equal to the key, the search is successful and the index of that element is returned.
- If no element is found equal to the key, the search yields “No match found”.

For example: Consider the array `arr[] = {10, 50, 30, 70, 80, 20, 90, 40}` and `key = 30`

*Step 1: Start from the first element (index 0) and compare **key** with each element (`arr[i]`).*



Step 2: Now when comparing arr[2] with key, the value matches. So the Linear Search Algorithm will yield a successful message and return the index of the element when key is found (here 2).

