Linear Search vs Binary Search

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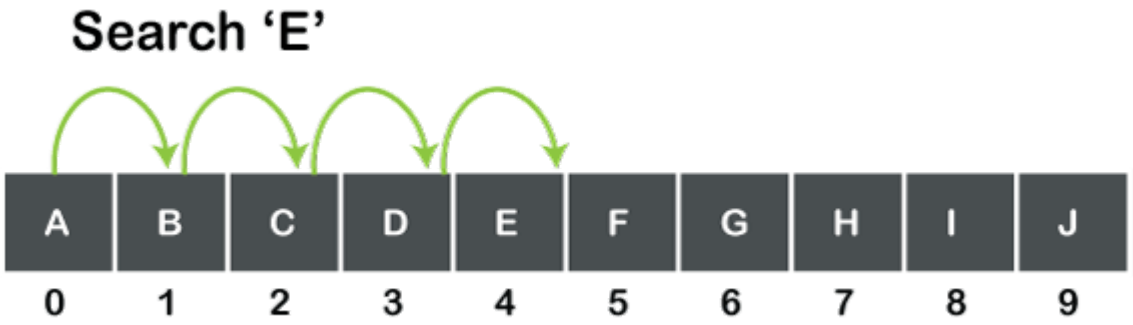
Before understanding the differences between the linear and binary search, we should first know the linear search and binary search separately.

What is a linear search?

A linear search is also known as a sequential search that simply scans each element at a time. Suppose we want to search an element in an array or list; we simply calculate its length and do not jump at any item.

Let's consider a simple example.

Suppose we have an array of 10 elements as shown in the below figure:



The above figure shows an array of character type having 10 values. If we want to search 'E', then the searching begins from the 0th element and scans each element until the element, i.e., 'E' is not found. We cannot directly jump from the 0th element to the 4th element, i.e., each element is scanned one by one till the element is not found.

Complexity of Linear search

As linear search scans each element one by one until the element is not found. If the number of elements increases, the number of elements to be scanned is also increased. We can say that the ***time taken to search the elements is proportional to the number of elements***. Therefore, the worst-case complexity is O(n)

```
using System;

namespace HelloWorld
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Hello World!");
        }
    }
}
```