

LINEAR SEARCH

Linear search, the simplest search algorithm, is mainly used to find the element from an unordered list. It is also known by another name called sequential search algorithm. In linear search, the list is simply traversed, and each element in the list is matched with the element whose location needs to be found. When the searching process is done, it returns the location of the element, else the algorithm returns NULL.

Working on Linear Search

Let's understand the working of linear search with an example of an unsorted array:

Here we have an array of elements

0	1	2	3	4	5	6	7	8
29	87	89	21	23	17	11	10	14

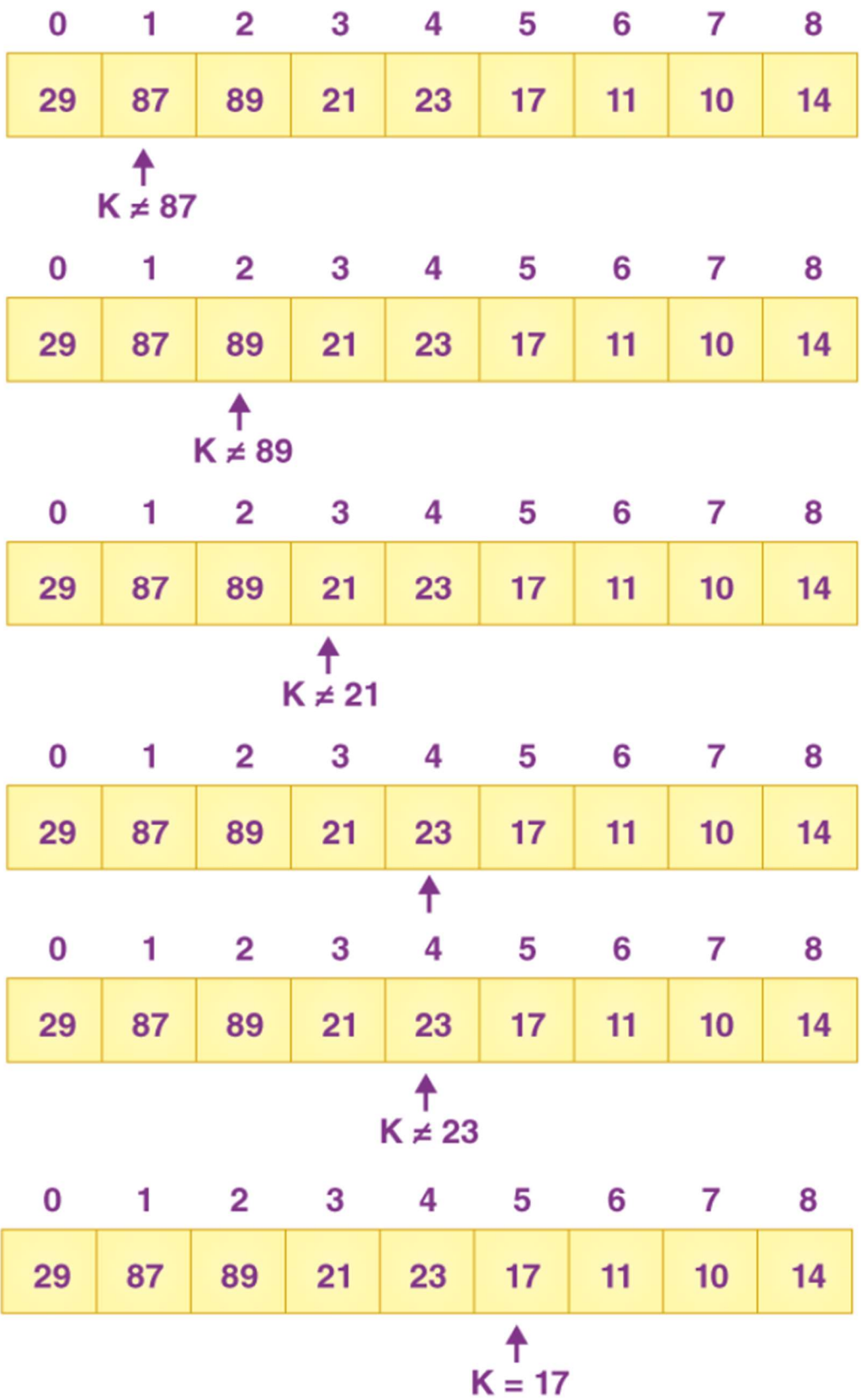
Let $K = 17$ be the element to be searched

Now, we will compare K with each of the elements until we find $K=17$

0	1	2	3	4	5	6	7	8
29	87	89	21	23	17	11	10	14

↑
 $K \neq 17$

The value of K is not matched with the first element of the array. So, we will switch to the next element and keep repeating the same step until $K=17$.



Now, as the element to be searched, i.e., K=17 is found, it will return the index of the matched element.

ALGORITHM

```
int linear_fsearch(int arr[], int N, int x)
```

```
{
```

```
    for (int i = 0; i < N; i++)
```

```
        if (arr[i] == x)
```

```
            return i;
```

```
    return -1;
```

```
}
```