Linear Search

Linear Search – algorithm, which finds element in the data structures (arrays, lists and others).

Find an element – return its index from array (or others) or show, that required element is absent.

Let’s visualize process of finding element using Linear Search!

1. For example, we have the array. Length of this array = 8. Our array will store following elements: 12 , 23 , 1 , 43 , 43 , 2 , 89 , 55.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| 12 | 23 | 1 | 43 | 43 | 2 | 89 | 55 |

1. We want to find number 2. What we must to do?

I suggest comparing the numbers one by one till we will find 2:

12 not equals to 2 -

23 not equals to 2 -

1 not equals to 2 -

43 not equals to 2 -

43 not equals to 2 -

2 is 2 –

1. Linear Search implemented with the following code:

Pseudocode:

linearSearch(key , array[])

for(i = 0; i < length(array); i++):

if(array[i] == key):

return i

return -1 (Returning -1 shows that required element is absent).

Java (For (int)):

public int linearSearch(int key , int[] array){

for(int i = 0; i < array.length; i++){

if(array[i] == key){

return I;

}

return -1;

}

1. I think , that in the end of my article , we need to consider pluses and minuses.

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| 1. Linear Search is clear. You may have implemented something similar and did not know that linear search is a separate and full-fledged algorithm. | 1. Speed of this algorithm – O(n). It’s slow and if required element is in the end of array, Linear Search will pass through the entire array. |