

## Linear Search

**Problem Description:** You are given with a random integer array A with its size and an element x. You need to search this element x in the given array, using linear search. Return the index of element in the input. If the element is not found in the array, return -1.

For example: Size: 7

arr[]=2 13 4 1 3 6 28

Element x: 3

For this input, output should be 4, as 3 is located at index 4.

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### How to approach?

Linear search means, we need to compare each element from the array A one by one with the element x starting with the leftmost element, till we find the match or we reach the end of array. If match found, return its index, and if not return -1.

Time complexity of linear search is:  $O(n)$

### Pseudo Code for this problem:

*Function linearsearch:*

*For i =0 to i less than n:*

*If arr[i] is equal to x:*

*Return i*

*Return -1*

❑ Let us dry run the code for N= 7

→ Take the array as input =7

arr[]= 2 13 4 1 3 6 28

Element x: 3

→ i=0

arr[0] is not equal to 3.

→ i=1

arr[1] is not equal to 3.

→ i=2

arr[2] is not equal to 3.

→ i=3

arr[3] is not equal to 3.

→ i=4

arr[4] is equal to 3.

So, return 4.

Final Output:

4