**Objective -** Write a program to implement Binary search in array.

**Description-**

* Linear search is a very basic and simple search algorithm. In Linear search, we search an element or value in a given array by traversing the array from the starting, till the desired element or value is found.
* As we learned in the [previous tutorial](https://www.studytonight.com/data-structures/search-algorithms) that the time complexity of Linear search algorithm is **O(n)**, we will analyse the same and see why it is **O(n)** after implementing it.
* A linear search, also known as a sequential search, is a method of finding an element within a list. It checks each element of the list sequentially until a match is found or the whole list has been searched.
* The time required to search an element using a linear search algorithm depends on the size of the list. In the best-case scenario, the element is present at the beginning of the list and in the worst-case, it is present at the end.
* The time complexity of a **linear search is O(n)**.

Algorithm

1. Traverse the array using a for loop.
2. In every iteration, compare the target value with the current value of the array.
   * If the values match, return the current index of the array.
   * If the values do not match, move on to the next array element.
3. If no match is found, return -1.

Program –

#include<stdio.h>

#include<conio.h> //header files

/\* utility function to search element linearly \*/

int linear\_search(int x[],int n,int ele)

{

int i;

for(i=0;i<n;i++)

if(x[i] == ele) // if statement

return 1;

return 0;

}

/\* starting point of the program \*/

int main(void)

{

int arr[25],i,x,n;

clrscr();

printf("\n\t Enter the number of elements= ");

scanf("%d", &n);

printf("\n\t Enter array elements=");

for(i=0;i<n;i++) /// for loop

scanf("%d", &arr[i]);

printf("\n\t Enter the element to be searched = ");

scanf("%d", &x);

if(linear\_search(arr,n,x)) //function calling

printf("\n\t %d element found ! ", x);

else // else statement

printf("\n\t %d element not found! ", x);

getch();

}

Output –

