

Aim:

Write a program to **search** the given element from a list of elements with **linear search** technique using **recursion**.

At the time of execution, the program should print the message on the console as:

Enter value of n :

For example, if the user gives the **input** as:

Enter value of n : 6

Next, the program should print the message on the console as:

Enter 5 elements :

if the user gives the **input** as:

Enter 5 elements : 12 54 32 9 26

Next, the program should print the message on the console as:

Enter a key element :

if the user gives the **input** as:

Enter a key element : 9

then the program should **print** the result as:

The key element 9 is found at position : 3

Similarly, if the key element is given as **18** for the above example then the program should print the output as:

The key element 18 is not found

Note: Write the functions **read()** and **linearSearch()** in **Program911a.c**

Source Code:

Program911.c

```
#include <stdio.h>
#include "Program911a.c"
void main() {
    int a[20], n, pos, key;
    printf("Enter n value : ");
    scanf("%d", &n);
    read(a, n);
    printf("Enter a key element : ");
    scanf("%d", &key);
    pos = linearSearch(a, 0, n - 1, key);
    if (pos == -1) {
        printf("The key element %d is not found\n", key);
    }
}
```

```

    } else {
        printf("The key element %d is found at position : %d\n", key, pos);
    }
}

```

Program911a.c

```

int read(int ar[],int x)
{
    int i;
    printf("Enter %d elements : ",x);
    for(i=0;i<x;i++)
    {
        scanf("%d",&ar[i]);
    }
    return ar;
}
int linearSearch(int a[],int index,int n,int key)
{
    int pos=0;
    if(index>=n)
    {
        return -1;
    }
    else if(a[index]==key)
    {
        pos=index;
        return pos;
    }
    else
    {
        return linearSearch(a,index+1,n,key);
    }
    return pos;
}

```

Execution Results - All test cases have succeeded!

| Test Case - 1 |
|---|
| User Output |
| Enter n value : 4 |
| Enter 4 elements : 10 20 15 12 |
| Enter a key element : 15 |
| The key element 15 is found at position : 2 |

| Test Case - 2 |
|--------------------------------|
| User Output |
| Enter n value : 6 |
| Enter 6 elements : 2 6 4 1 3 7 |
| Enter a key element : 5 |
| The key element 5 is not found |

| Test Case - 3 |
|---|
| User Output |
| Enter n value : 5 |
| Enter 5 elements : 11 44 33 55 22 |
| Enter a key element : 11 |
| The key element 11 is found at position : 0 |

| Test Case - 4 |
|-----------------------------------|
| User Output |
| Enter n value : 5 |
| Enter 5 elements : 99 65 78 34 27 |
| Enter a key element : 26 |
| The key element 26 is not found |