S.No: 16	Exp. Name: ***Non-recursive Binary search***	Date:2025-10-18

Aim:

Write a C program that use non-recursive functions to perform the Binary search operation for a Key value in a given list of integers.

Input Format

- The first line contains an integer n, representing the size of the array.
- The second line contains n space-separated integers, representing the elements of the array in sorted order.
- The third line contains an integer key, representing the search element.

Output Format

- If the search element is found, the program displays the message **"**found at <pos>**"**, where pos is the position of the element in the array (1-indexed).
- If the search element is not found, the program displays the message **"**not found**"**.

Note: Partial code is given fill in the remaining code.

Source Code:

recursiveBinarySearch.c

```
#include <stdio.h>

int binarysearch(int a[], int low, int high, int key) {
    int mid;
    while ( low <= high ) {

        mid = (low + high)/2;

        if ( a[mid]==key ) {


            return mid;

        } else if ( key<a[mid] ) {
         high = mid - 1;


        } else if ( key>a[mid] ){
         low = mid + 1;
      }
    }
    return -1;
}

int main() {
    int a[20], i, n, key, pos;

    printf("size: ");
    scanf("%d", & n);
    printf("elements: ");
```

```
    for (i = 0; i < n; i++) {
        scanf("%d", & a[i]);
    }
    printf("search element: ");
    scanf("%d", & key);
    pos = binarysearch(a, 0, n - 1, key);
    if (pos >= 0) {
        printf("found at %d", pos + 1);
    } else {
        printf("not found");
    }
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
size: 3
elements: 3 6 9
search element: 6
found at 2

Test Case - 2
User Output
size: 3
elements: 3 6 9
search element: 2
not found