BINARY SEARCH

Write a C++ program to search an element in Linear Array using Binary Search Algorithm.

Instruction: -

1. Enter the all elements in Linear array in sorted form for Binary Search.
2. Create a binary search function **binarySearch().**
3. Create left variable for **LB** index and right variable for **UB** index.

Code: -

```
#include <iostream>
using namespace std;

int binarySearch(int arr[], int left, int right, int item) // Function to perform binary search
{
    while (left <= right)
 {
  int mid = (left + right) / 2;
   if (arr[mid] == item)       // Check if target is present at mid
    return mid;
     if (arr[mid] < item)      // If target is greater, ignore the left half
      left = mid + 1;
    else                    // If target is smaller, ignore the right half
      right = mid - 1;
    }
    return -1;                    // Element not found
}
int main()
{
 int n, item;
   cout << "Enter the number of elements in the array: ";
    cin >> n;
    int arr[n];
    cout << "Enter " << n << " sorted elements: ";
    for (int i = 0; i < n; i++)
 {
        cin >> arr[i];
    }
    cout << "Enter the element to search: ";
    cin >> item;
    int result = binarySearch(arr, 0, n - 1, item);
    if (result != -1)
        cout << "Element found at index: " << result << endl;
```

```
34.     else
35.         cout << "Element not found in the array." << endl;
36.     return 0;
37. }
38.
```