1. Implement the Binary search algorithm regarded as a fast search algorithm with run-time complexity of Ο(log n) in comparison to the Linear Search.

#include <iostream>

using namespace std;

int binarySearch(int arr[], int size, int key) {

int left = 0;

int right = size - 1;

while (left <= right) {

int mid = left + (right - left) / 2;

if (arr[mid] == key)

return mid;

if (arr[mid] < key)

left = mid + 1;

else

right = mid - 1;

}

return -1;

}

int main() {

int n, key;

cout << "Enter number of elements: ";

cin >> n;

int arr[n];

cout << "Enter elements in sorted order: ";

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

cin >> arr[i];

}

cout << "Enter element to search: ";

cin >> key;

int result = binarySearch(arr, n, key);

if (result != -1)

cout << "Element found at index " << result << endl;

else

cout << "Element not found!" << endl;

return 0;

}

OUTPUT :

