Practical No: - 4 write a program for searching element form given array using binary search

```
#include <iostream>
#include <conio.h>
using namespace std;
int a[1100], n, x;
class Bin_Search
{
public:
   void getdata();
   int bin_search(int[], int, int);
   void sort();
   void display();
} s;
void Bin_Search::getdata()
{
   cout << "\nHow many elements do you want to enter: ";
   cin >> n;
   cout << "\nEnter " << n << " elements:\n";
   for (int i = 0; i < n; i++)
      cin >> a[i];
   cout << "\nEntered elements are:\n";
   display();
   cout << "\nSorted elements are:\n";
   sort();
   display();
   cout << "\nWhich element do you want to search: ";
   cin >> x;
}
void Bin_Search::display()
{
   for (int i = 0; i < n; i++)
      cout << a[i] << " ";
   cout << endl;
}
void Bin_Search::sort()
{
   int temp;
   for (int i = 0; i < n - 1; i++)
```

```
    {
        for (int j = i + 1; j < n; j++)
        {
            if (a[i] > a[j])
            {
                temp = a[i];
                a[i] = a[j];
                a[j] = temp;
            }
        }
    }
}
int Bin_Search::bin_search(int a[], int n, int x)
{
    int low = 0, high = n - 1, mid;
    while (low <= high)
    {
        mid = (low + high) / 2;
        if (a[mid] == x)
            return mid;
        else if (x < a[mid])
            high = mid - 1;
        else
            low = mid + 1;
    }
    return -1; // not found
}
int main()
{
    s.getdata();
    int pos = s.bin_search(a, n, x);
    if (pos == -1)
        cout << "\nElement not found in the sorted array.";
    else
        cout << "\nElement found at position: " << pos << endl;
    getch();
    return 0;
}
```

/*OUTPUT*/

How many elements do you want to enter: 6

Enter 6 elements:
89 25 45 12 32 75

Entered elements are:
89 25 45 12 32 75

Sorted elements are:
12 25 32 45 75 89

Which element do you want to search: 45
Element found at position: 3