

Problem Statement:- Write a program to store roll numbers of student array who attended training programs in sorted order. Write a function for searching whether a particular student attended a training program or not, using Binary search.

Binary Search

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

// Binary search function
int binarySearch(int arr[], int n, int key) {
    int low = 0, high = n - 1, mid;

    while (low <= high) {
        mid = (low + high) / 2;

        if (arr[mid] == key)
            return mid; // found at index mid
        else if (arr[mid] < key)
            low = mid + 1;
        else
            high = mid - 1;
    }

    return -1; // not found
}

int main(){
```

```

int n, key;

cout << "Enter number of students who attended training program: ";
cin >> n;

int arr[n];
cout << "Enter roll numbers of students (in sorted order):\n";
for (int i = 0; i < n; i++) {
    cin >> arr[i];
}

cout << "Enter roll number to search: ";
cin >> key;

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

if (pos != -1)
    cout << "Roll number " << key << " attended the training program (found at position " <<
pos + 1 << ").\n";
else
    cout << "Roll number " << key << " did NOT attend the training program.\n";

return 0;
}

```

Output

```
PS E:\New folder (2)\output> cd 'e:\New folder (2)\output'
PS E:\New folder (2)\output> & .\prg 1 b.exe
> Enter number of students who attended training program: 5
> Enter roll numbers of students (in sorted order):
10
12
15
16
18
> Enter roll number to search: 16
> Roll number 16 attended the training program (found at position 4).
> PS E:\New folder (2)\output> █
```