

Assignment No. : 4

Assignment Name : Write a program to perform binary search algorithm on students data base.

Name of student : vedant khond

Roll No./Gr No. : 54/ 22311476

Division : A

Batch : A-3

Semister : 2

Academic Year : 1st year

Course Code :SE12234

Course Name :Fundamental of Data Structure

Signature :

Date: 06/02/2024

Aim : Write a program to perform linear search algorithm on students data base.

```
Code : #include <iostream>
```

```
#include <string>
```

```
#include <algorithm>
```

```
using namespace std;
```

```
struct Student {
```

```
    int rollNumber;
```

```
    string name;
```

```
};
```

```
bool compareStudents(const Student& s1, const Student& s2) {
```

```
    return s1.rollNumber < s2.rollNumber;
```

```
}
```

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

```
    int left = 0;
```

```
    int right = size - 1;
```

```
    while (left <= right) {
```

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

```
        if (arr[mid].rollNumber == key) {  
            return mid;  
        }  
  
        if (arr[mid].rollNumber < key) {  
            left = mid + 1;  
        } else {  
            right = mid - 1;  
        }  
    }  
  
    return -1;  
}  
  
int main() {  
    const int size = 5;  
    Student students[size] = {{1, "Pranav"}, {2, "Pratik"}, {3, "Jay"}, {4, "Suraj"}, {5, "Onkar"}};  
  
    sort(students, students + size, compareStudents);  
  
    int key;  
  
    cout << "Enter the roll number to search: ";  
  
    cin >> key;
```

```
int index = binarySearch(students, size, key);

if (index != -1) {
    cout << "Student found at index " << index << ": " << students[index].name << endl;
} else {
    cout << "Student not found." << endl;
}

return 0;
}
```

OUTPUT:

```
Enter the roll number to search: 2
Student found at index 1: Pratik

...Program finished with exit code 0
Press ENTER to exit console.□
```