

```

#include <bits/stdc++.h>
using namespace std;

class assign3
{
    int n;
    int *p;
    int num;
    int pos;
    bool find = false;

public:
    // constructor function to take values
    assign3()
    {
        cout << "Enter the size of array to input :" << endl;
        cin >> n;
        p = new int[n + 1];
        for (int i = 0; i < n; i++)
        {
            cout << "Enter the " << i + 1 << " element of Array :" << endl;
            cin >> *(p + i);
        }
        sort(p, p + n);
        cout << "Enter the number which you want to search or insert in
array :" << endl;
        cin >> num;
    }

    // Binary Search Function
    void binarySearch()
    {
        int start = 0, end = n;
        while (start < end)
        {
            int k = (start + end) / 2;
            if (p[k] == num)
            {
                cout << "Congrats number found!!" << endl;
                // cout << "Index value in sorted array is " << k << endl;
            }
        }
    }
};

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        pos = k;
        find = true;
        deleteNum();
        break;
    }
    else if (p[k] > num)
    {
        end--;
    }
    else if (p[k] < num)
    {
        start++;
    }
}

if (find == false)
{
    addNum();
}
}

// To remove the number from array
void deleteNum()
{
    for (int i = pos; i < n - 1; i++)
    {
        p[i] = p[i + 1];
    }
    cout << "The new array after removing that number is :" << endl;
    for (int i = 0; i < n - 1; i++)
    {
        cout << p[i] << endl;
    }
}

// To add number at new position
void addNum()
{
    cout << "Enter the position in sorted array where you want to
insert new no. :" << endl;

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        cin >> pos;
        for (int i = n; i >= pos; i--)
        {
            p[i] = p[i - 1];
        }

        p[pos - 1] = num;

        cout << "Array after adding new Number is :" << endl;
        for (int i = 0; i <= n; i++)
        {
            cout << p[i] << endl;
        }
    }

    // Destructor function to delete dynamically made array
    ~assign3()
    {
        delete[] p;
    }
};

int main()
{
    assign3 obj;
    obj.binarySearch();
    return 0;
}

```

**BELOW IS THE SCREENSHOTS OF OUTPUT OF THE PROGRAM**



sitaram@sitaram: ~/DS-La

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sitaram@sitaram:~/DS-Lab/Assign3$ g++ -o labAssign3-195567 labAssign3-195567.cpp
sitaram@sitaram:~/DS-Lab/Assign3$
sitaram@sitaram:~/DS-Lab/Assign3$ ./labAssign3-195567
Enter the size of array to input :
5
Enter the 1 element of Array :
12
Enter the 2 element of Array :
65
Enter the 3 element of Array :
34
Enter the 4 element of Array :
90
Enter the 5 element of Array :
23
Enter the number which you want to search or insert in array :
12
Congrats number found!!
The new array after removing that number is :
23
34
65
90
```



```
sitaram@sitaram:~/DS-Lab/Assign3$ g++ -o labAssign3-195567 labAssign3-195567.cpp
```

```
sitaram@sitaram:~/DS-Lab/Assign3$ ./labAssign3-195567
```

```
Enter the size of array to input :
```

```
6
```

```
Enter the 1 element of Array :
```

```
11
```

```
Enter the 2 element of Array :
```

```
99
```

```
Enter the 3 element of Array :
```

```
45
```

```
Enter the 4 element of Array :
```

```
23
```

```
Enter the 5 element of Array :
```

```
89
```

```
Enter the 6 element of Array :
```

```
3
```

```
Enter the number which you want to search or insert in array :
```

```
50
```

```
Enter the position in sorted array where you want to insert new no. :
```

```
3
```

```
Array after adding new Number is :
```

```
3
```

```
11
```

```
50
```

```
23
```

```
45
```

```
89
```

```
99
```

```
sitaram@sitaram:~/DS-Lab/Assign3$
```