

## **DSA (LAB)**

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**Q1. Write a program to store 10 marks in an array and show 1st and 2nd highest marks on screen.**

**Answer:**

```
#include <iostream>

using namespace std;

int main() {
    int marks[10];
    cout << "Enter 10 marks: ";
    for (int i = 0; i < 10; i++) {
        cin >> marks[i];
    }
    int first = -1, second = -1;

    for (int i = 0; i < 10; i++) {
        if (marks[i] > first) {
            second = first;
            first = marks[i];
        }
        else if (marks[i] > second && marks[i] != first) {
            second = marks[i];
        }
    }

    cout << "Highest Mark: " << first << endl;
    cout << "Second Highest Mark: " << second << endl;

    return 0;
```

```
}
```

**Q2. Write a program to take size of an array from user and store elements in an array. Take any element from user and search either entered number exist in an array or not using binary search.**

**Answer:**

```
#include <iostream>
```

```
using namespace std;
```

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

```
    int low = 0, high = size - 1;
```

```
    while (low <= high) {
```

```
        int mid = (low + high) / 2;
```

```
        if (arr[mid] == key)
```

```
            return mid;
```

```
        else if (arr[mid] < key)
```

```
            low = mid + 1;
```

```
        else
```

```
            high = mid - 1;
```

```
    }
```

```
    return -1; // not found
```

```
}
```

```
int main() {
```

```
    int size;
```

```
    cout << "Enter size of array: ";
```

```
    cin >> size;
```

```
    int arr[size];
```

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

```
    for (int i = 0; i < size; i++) {
```

```
        cin >> arr[i];
```

```
    }
```

```

int key;

cout << "Enter element to search: ";

cin >> key;


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


if (result != -1)

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

else

    cout << "Element not found in array." << endl;


return 0;

}

```

**Q3. Write a program to take marks of 6 subjects of students and calculate the average of his/her marks and show grades according to his/her average. E.g if the average is more than 90 show A+, more than 80 show A, more than 70 show B, more than 60 show C, more than 50 shows D otherwise show F.**

**Answer:**

```

#include <iostream>

using namespace std;

int main() {

    int marks[6];

    int sum = 0;

    cout << "Enter marks of 6 subjects: ";

    for (int i = 0; i < 6; i++) {

        cin >> marks[i];

        sum += marks[i];

    }


    double average = sum / 6.0;

```

```
cout << "Average Marks: " << average << endl;
if (average > 90)
    cout << "Grade: A+" << endl;
else if (average > 80)
    cout << "Grade: A" << endl;
else if (average > 70)
    cout << "Grade: B" << endl;
else if (average > 60)
    cout << "Grade: C" << endl;
else if (average > 50)
    cout << "Grade: D" << endl;
else
    cout << "Grade: F" << endl;

return 0;
}
```