THE UNIVERSITY OF AZAD JAMMU AND KASHMIR

Name: M. Amir

Roll No: 23

Subject: DSA

Instructor: Sir Zeeshan

Complete C++ Solution

```cpp
/*
        THE UNIVERSITY OF AZAD JAMMU AND KASHMIR
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*/

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

int binarySearchAsc(const vector<int>& a, int key) {
    int low = 0, high = (int)a.size() - 1;
    while (low <= high) {
        int mid = low + (high - low) / 2;
        if (a[mid] == key) return mid;
        if (a[mid] < key) low = mid + 1;
        else high = mid - 1;
    }
    return -1;
}

int binarySearchDesc(const vector<int>& a, int key) {
    int low = 0, high = (int)a.size() - 1;
    while (low <= high) {
        int mid = low + (high - low) / 2;
        if (a[mid] == key) return mid;
        if (a[mid] < key) high = mid - 1;
        else low = mid + 1;
    }
    return -1;
}

int main() {
    ios::sync_with_stdio(false);
    cin.tie(nullptr);

    int n;
    cout << "Enter number of roll numbers: ";
    cin >> n;

    vector<int> a(n);
```

```cpp
        cout << "Enter " << n << " roll numbers:\n";
        for (int i = 0; i < n; ++i) cin >> a[i];

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

        if (key % 2 == 0) {
            sort(a.begin(), a.end());
            int pos = binarySearchAsc(a, key);
            if (pos != -1) {
                cout << "Found at position (1-based): " << pos + 1 << '\n';
            } else {
                cout << "Roll number not found.\n";
            }
        } else {
            sort(a.begin(), a.end(), greater<int>());
            int pos = binarySearchDesc(a, key);
            if (pos != -1) {
                cout << "Found at position (1-based): " << pos + 1 << '\n';
            } else {
                cout << "Roll number not found.\n";
            }
        }

        return 0;
}
```