

Week 8 & 9: Sorting

Aim: Implement Insertion Sort.

Program:

```
#include <bits/stdc++.h>
using namespace std;
vector<int> arr;
void print(int n) {
    for (int i = 0; i < n; i++)
        cout << arr[i] << " ";
    cout << endl;
}
void insertionSort1(int n) {
    int cnt = 0;
    for (int i = 1; i < n; i++) {
        cnt = 0;
        int tmp = arr[i];
        int j = i - 1;
        for (; j >= 0; j--) {
            if (arr[j] > tmp) {
                cnt = 1;
                arr[j + 1] = arr[j];
                print(n);
            }
            else
                break;
        }
        arr[j + 1] = tmp;
        if (cnt == 1)
            print(n);
    }
}
int main() {
    int n;
    cin >> n;
    arr.resize(n);
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }
    insertionSort1(n);
    return 0;
}
```

Output:**Insertion Sort - Part 1**

Problem	Submissions	Leaderboard	Discussions
Submitted in a few seconds • Score: 10.00			
Status: Accepted			
✓ Test Case #0	✓ Test Case #1	✓ Test Case #2	
✓ Test Case #3			

Aim: Sort Colors**Program:**

```

class Solution {
public:
    void sortColors(vector<int> &nums) {
        int red = 0, white = 0, blue = nums.size() - 1;
        while (white <= blue) {
            if (nums[white] == 0)
                swap(nums[red++], nums[white++]);
            else if (nums[white] == 1)
                white++;
            else
                swap(nums[white], nums[blue--]);
        }
    }
};

```

Output:

The screenshot shows the LeetCode interface for the 'Minimum Window Substring' problem. The status is 'Accepted'. The sidebar on the right contains navigation options: My Lists, Notebook, Submissions, Progress, Points, Session, Orders, My Playgrounds, Dark Side (Beta), Revert to old version, and Sign Out. The main area displays the problem description, a distribution chart showing 100% beats, and the C++ code for the solution. The code is the same as the one provided in the 'Program' section.

Conclusion:

Sorting algorithms are used in a variety of applications, including database management, data analysis, and computer graphics.