

AP Assignment 5

Name : Abhishek Kumar

UID : 22BCS16396

Section : 608-B

1) Merge Sorted Array

```
#include <iostream>
#include <vector>
using namespace std;

class Solution {
public:
    void merge(vector<int>& nums1, int m, vector<int>& nums2, int n) {
        int i = m - 1;
        int j = n - 1;
        int k = m + n - 1;

        while (i >= 0 && j >= 0) {
            if (nums1[i] > nums2[j]) {
                nums1[k--] = nums1[i--];
            } else {
                nums1[k--] = nums2[j--];
            }
        }

        while (j >= 0) {
            nums1[k--] = nums2[j--];
        }
    };
};

int main() {
    Solution sol;
    vector<int> nums1 = {1, 2, 3, 0, 0, 0};
    vector<int> nums2 = {2, 5, 6};
    int m = 3, n = 3;
```

```

        sol.merge(nums1, m, nums2, n);

        cout << "Merged Array: ";
        for (int num : nums1) {
            cout << num << " ";
        }

        return 0;
    }
}

```

Description Editorial Solutions Submissions					
Status ▾	Language ▾	Runtime	Memory	Notes	
4 Accepted Sep 25, 2024	C++	0 ms	11.4 MB		

2) Sort Colors

```

class Solution {
public:
    void sortColors(vector<int>& nums) {
        int n = nums.size();
        int j = 0, k = 0, l = 0;
        for (int i = 0; i < n; i++) {
            if (nums[i] == 0) {
                j++;
            } else if (nums[i] == 1) {
                k++;
            } else {
                l++;
            }
        }
        int index = 0;

        while (j-- > 0) {

```

```

        nums[index++] = 0;
    }
    while (k--) {
        nums[index++] = 1;
    }
    while (l--) {
        nums[index++] = 2;
    }
}
};

```

	Description	Editorial	Solutions	Submissions	
	Status ▾	Language ▾	Runtime	Memory	Notes
3	Accepted Mar 06, 2025	C++	0 ms	11.6 MB	
2	Accepted Jan 27, 2025	C++	0 ms	11.4 MB	
1	Accepted Jan 27, 2025	C++	0 ms	11.6 MB	

3) Find Peak Element

```

class Solution {
public:
    int findPeakElement(vector<int>& nums) {
        int n = nums.size();
        int low = 0, high = n - 1;

        while (low < high) {
            int mid = low + (high - low) / 2;
            if (nums[mid] > nums[mid + 1]) {
                high = mid;
            }
        }
    }
};

```

```

        } else {
            low = mid + 1;
        }
    }
    return low;
}
};

```

Description Editorial Solutions Submissions					
Status	Language	Runtime	Memory	Notes	
6 Accepted Mar 05, 2025	C++	0 ms	12.4 MB		

4) Median of two sorted Array

```

class Solution {
public:
    double findMedianSortedArrays(vector<int>& nums1, vector<int>& nums2) {
        if (nums1.size() > nums2.size()) {
            return findMedianSortedArrays(nums2, nums1);
        }

        int m = nums1.size();
        int n = nums2.size();
        int low = 0, high = m;

        while (low <= high) {
            int partition1 = low + (high - low) / 2;
            int partition2 = (m + n + 1) / 2 - partition1;

            int maxLeft1 = (partition1 == 0) ? INT_MIN : nums1[partition1 - 1];

```

```

int minRight1 = (partition1 == m) ? INT_MAX : nums1[partition1];

int maxLeft2 = (partition2 == 0) ? INT_MIN : nums2[partition2 - 1];
int minRight2 = (partition2 == n) ? INT_MAX : nums2[partition2];

if (maxLeft1 <= minRight2 && maxLeft2 <= minRight1) {
    if ((m + n) % 2 == 0) {
        return (max(maxLeft1, maxLeft2) + min(minRight1, minRight2)) / 2.0;
    } else {
        return max(maxLeft1, maxLeft2);
    }
} else if (maxLeft1 > minRight2) {
    high = partition1 - 1;
} else {
    low = partition1 + 1;
}
}

throw invalid_argument("Input arrays are not sorted.");
}
};

```

Description Accepted × Editorial Solutions Submissions					
Status ▾	Language ▾	Runtime	Memory	Notes	⚙
1 Accepted a few seconds ago	C++	⌚ 0 ms	⚙ 95.1 MB		

5) First Bad Version

```
bool isBadVersion(int version);
```

```
class Solution {  
public:  
    int firstBadVersion(int n) {  
        int low = 1, high = n;  
        while (low < high) {  
            int mid = low + (high - low) / 2;  
            if (isBadVersion(mid)) {  
                high = mid;  
            } else {  
                low = mid + 1;  
            }  
        }  
        return low  
    }  
};
```

Description Accepted Editorial Solutions Submissions					
Status	Language	Runtime	Memory	Notes	
1 Accepted a few seconds ago	C++	0 ms	8 MB		