**Day-42 of the #101 days of coding challenge-------**

**Problem:-** Write a C++ program to separate 0s and 1s from a given array of values 0 and 1.

1st Solution:- By sorting elements

#include<iostream>

using namespace std;

void swapping(int \*a, int \*b)

{

int temp;

temp = \*a;

\*a = \*b;

\*b = temp;

}

void sorting(int \*arr, int n)

{

int i, j;

for(i = 0; i<n; i++)

{

for(j = 0; j<n-i-1; j++)

{

if(arr[j]>arr[j+1])

{

swapping(&arr[j], &arr[j+1]);

}

}

}

}

void arrangingZeroOnes(int \*arr, int n)

{

sorting(arr, n);

}

int main()

{

int n,i;

cout<<"Enter the Size array"<<endl;

cin>>n;

int arr[n];

cout<<"Enter the elements"<<endl;

for(i = 0; i<n; i++)

{

cin>>arr[i];

}

arrangingZeroOnes(arr,n);

cout<<"Solved"<<endl;

for(i = 0; i<n; i++)

{

cout<<arr[i]<<" ";

}

return 0;

}

2nd Solution:- Without Sorting-

#include<iostream>

using namespace std;

void arrangingZeroOnes(int \*arr, int n)

{

int i, countZero = 0;

// counting the number of zeroes

for(i = 0; i<n; i++)

{

if(arr[i] == 0)

countZero++;

}

// after counting, looping it till numberofzero's available giving value 0

for(i = 0; i<countZero; i++)

arr[i] = 0;

// in remaining setting the value 1 (n - currentZero = remaining space)

for(i = countZero; i<n; i++)

arr[i] = 1;

}

int main()

{

int n,i;

cout<<"Enter the Size array"<<endl;

cin>>n;

int arr[n];

cout<<"Enter the elements"<<endl;

for(i = 0; i<n; i++)

{

cin>>arr[i];

}

arrangingZeroOnes(arr,n);

cout<<"Solved"<<endl;

for(i = 0; i<n; i++)

{

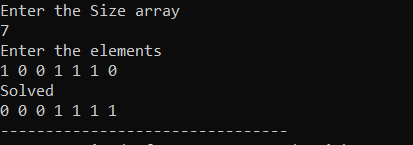
cout<<arr[i]<<" ";

}

return 0;

}

Output:-



2-Problem:-

Write a C++ program to rearrange a given sorted array of positive integers.  
Note: In final array, first element should be maximum value, second minimum value, third second maximum value, fourth second minimum value, fifth third maximum and so on.

Code:-

//Original array: 0 1 3 4 5 6 7 8 10

//Array elements after rearranging: 10 0 8 1 7 3 6 4 5

#include<iostream>

using namespace std;

void arrangingMaxMin(int \*arr, int n)

{

int i, j = 0, val = 1;

int \*arrCollection = new int[n]; // allocating the memory for the array size of n

// in this loop shifting the last elements into the begining after one elements gap

for(i = 0; i<n / 2; i++)

{

arrCollection[j] = arr[n-val]; // last element to the first

j++;

arrCollection[j] = arr[i]; // then firstElement after last element of the array

j++;

val++;

}

if(n%2!=0)

arrCollection[j] = arr[n / 2];

// coping the elements from one array to another array

for(i = 0; i<n; i++)

{

arr[i] = arrCollection[i]; // if odd then middle element will be remaining so this is setting into the last position

}

delete[] arrCollection; // after successfully completion of the code deleting the created memeory

}

int main()

{

int n,i;

cout<<"Enter the Size array"<<endl;

cin>>n;

int arr[n];

cout<<"Enter the elements"<<endl;

for(i = 0; i<n; i++)

{

cin>>arr[i];

}

arrangingMaxMin(arr,n);

cout<<"Solved"<<endl;

for(i = 0; i<n; i++)

{

cout<<arr[i]<<" ";

}

return 0;

}

Output:-

