

Day – 39 of the #101days of coding Challenge-----

Question:- Write a C++ program to sort a given unsorted array of integers, in wave form.

Note: An array is in wave form when $\text{array}[0] \geq \text{array}[1] \leq \text{array}[2] \geq \text{array}[3] \leq \text{array}[4] \geq \dots$

Solution format—

Original array: 4 5 9 12 9 22 45 7

Wave form of the said array: 5 4 9 7 12 9 45 22

Code:-

```
#include<iostream>
```

```
using namespace std;
```

```
void swap(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])
            {
                swap(&arr[j], &arr[j+1]);
            }
        }
    }
}

void waveFormArray(int *arr, int n)
{
    sorting(arr, n);

    for(int i = 0; i<n-1; i+=2)
    {
        swap(&arr[i], &arr[i+1]);
    }

}

int main()
{
    int n;

    cout<<"Enter the size of the array"<<endl;
    cin>>n;

```

```

int arr[n];

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

for(int i = 0; i<n; i++)
{
    cin>>arr[i];
}

waveFormArray(arr, n);

cout<<"After the solution"<<endl;

for(int i = 0; i<n; i++)
{
    cout<<arr[i]<<" ";
}

return 0;
}

```

Output:-

```

Enter the size of the array
8
Enter the elements of the array
4 5 9 12 9 22 45 7
After the solution
5 4 9 7 12 9 45 22
-----

```