14/02/2023

Day 8

Array :-

An array is a data structure that stores a collection of values of the same data type stored in continuous memory location

```
int arr[50]; =
char grade[10];
double num[20];
```

Initialization array of integers

```
int marks[] = { 30, 95, 67, 79, 82, 91 }
```

Access element of array using index
index always starts from 0-

```
int marks[5];
```

=> 91

Taking array input

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

Q. Reverse an array

```
#include <bits/stdc++.h>
using namespace std;
int main(){
    int n;
    cin>>n;
    int arr[n];
    for(int i=0; i<n; i++){
        cin>>arr[i];
    }
    int start=0, end=n-1;
    while(start<end){
        swap(arr[start], arr[end]);
        start++;
        end--;
    }
    for(int i=0; i<n; i++){
        cout<<arr[i]<<" ";
    }

    return 0;
}
```

Q Minimum and maximum value in array

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

int main (){
    int n;
    cin >>n;

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

    for(int i=0; i<n; i++){
        if(arr[i] > curr_max){
            curr_max = arr[i];
        }
        if (arr[i] < curr_min){
            curr_min = arr[i];
        }
    }
    cout << "maximum value is " << curr_max << endl
    cout << "minimum value is " << curr_min << endl

    return 0;
}
```

Q. k^{th} max / min element in array.

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

int main(){
    int n;
    cin >> n;

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

    sort(arr, arr+n);

    cout << arr[k-1] << endl;

}
return 0;
}
```

Q Union and intersection of two sorted array.

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

int main(){
    int n,m;
    cin >> n >>m;
    int a[n], b[m];
    for(int i=0;i<n;i++){
        cin >> a[i];
    }
    for(int i=0;i<m;i++){
        cin >> b[i];
    }
    set <int> ans;
    for(int i=0; i<n; i++){
        ans.insert(a[i]);
    }
    for(int i=0;i<m;i++){
        ans.insert(b[i]);
    }

    cout<<ans.size()<<endl;

    return 0;
}
```

Q Cyclically rotate an array by one

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

int main (){
    int n;
    cin >>n;
    int arr[n];
    for (int i=0; i<n; i++){
        cin >> arr[i];
    }
    int last = arr[n-1];

    for (int i = n-1; i>0; i--){
        arr[i] = arr[i-1];
    }
    arr[0] = last;

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

    return 0;
}
```