DSA_DAY 3

https://www.geeksforgeeks.org/problems/kth-smallest-element5635/1

```
class Solution {
  public:
    // arr : given array
    // k : find kth smallest element and return using this fu
    int kthSmallest(vector<int> &arr, int k) {
        // code here
        priority_queue<int> q;
        for(int i: arr)q.push(i);
        k=arr.size()-k;
        while(k--) q.pop();
        return q.top();


    }
};
```

https://www.geeksforgeeks.org/problems/minimize-the-heights3351/1

```
// User function template for C++

class Solution {
  public:

    int getMinDiff(vector<int> &arr, int k) {
        // code her
        int m=arr.size();
        sort(arr.begin(),arr.end());
        int ans = arr[m-1]-arr[0];
        int sm = arr[0]+k;
        int lg= arr[m-1]-k;
        for(int i=0;i<m-1;i++){
            int minh = min(sm,arr[i+1]-k);
```

```
            int maxh = max(lg,arr[i]+k);
            if(minh < 0) continue;
            ans = min(ans,maxh-minh);

        }
        return ans;


    }
};
```

https://www.geeksforgeeks.org/problems/parenthesis-checker2744/1

```
class Solution {
  public:
    bool isParenthesisBalanced(string& s) {
        // code here
        stack<char> st;
        int i=0;
        while(i<s.length()){
            if(s[i]=='{' || s[i]=='[' || s[i]=='('){
                st.push(s[i]);
            }
            else{
                if(st.empty()) return false;
                else if((s[i]=='}' && st.top()=='{') ||
                (s[i]==']' && st.top()=='[') ||
                (s[i]==')' && st.top()=='(')) st.pop();
                else return false;
            }
            i++;
        }
        if(!st.empty()) return false;
        return true;
```

```
    }
};
```

https://www.geeksforgeeks.org/problems/equilibrium-point-1587115620/1

```
class Solution {
  public:
    // Function to find equilibrium point in the array.
    int equilibriumPoint(vector<int> &arr) {
        // code here
        int sume =0,p=0;
        for(int i : arr){
            sume+=i;
        }
        for(int i=0;i<arr.size();i++){
         p+=arr[i];
         if(p==sume-p+arr[i]) return i+1;

        }
        return -1;
    }


};
```

https://www.geeksforgeeks.org/problems/binary-search-1587115620/1

```
// User function template for C++

class Solution {
  public:
    int binarysearch(vector<int> &arr, int k) {
        // code here
        int l=0,h=arr.size()-1,ans=-1;
        while(l<=h){
            int mid =(l+h)/2;
```

```
            if(arr[mid]>k){
                ans = mid;
                h=mid-1;
            }
            else if(arr[mid]<k) {
                l=mid+1;
            }
            else return mid;
        }

        return -1;
    }
};
```

https://www.geeksforgeeks.org/problems/next-larger-element-1587115620/1

```
class Solution {
  public:
    // Function to find the next greater element for each ele
    vector<int> nextLargerElement(vector<int>& arr) {
        // code here
        stack<int> st;
        vector<int> ans;
        int n = arr.size();
        for(int i=n-1;i>=0;i--){
            while(!st.empty() && st.top()<=arr[i]) st.pop();
            if(st.empty()) ans.push_back(-1);
            else ans.push_back(st.top());
            st.push(arr[i]);

        }
        reverse(ans.begin(),ans.end());
        return ans;
    }
};
```

https://www.geeksforgeeks.org/problems/union-of-two-arrays3538/1

```
// User function template in C++

class Solution {
  public:
    // Function to return the count of number of elements in
    // union of two arrays.
    int findUnion(vector<int>& a, vector<int>& b) {
        // code here
        unordered_map<int,int> mp;
        for(int i:a) mp[i]++;
        for(int i:b) mp[i]++;
        return mp.size();
    }
};
```