DSA_DAY 4

https://www.geeksforgeeks.org/problems/stock-buy-and-sell-1587115621/1

```
class Solution{
public:
    //Function to find the days of buying and selling stock f
    vector<vector<int>> ans;

    vector<vector<int> > stockBuySell(vector<int> A, int n){
        for(int i=0;i<n-1;i++){
            if(A[i]<A[i+1]) ans.push_back({i,i+1});
        }
        return ans;
    }
};
```

https://www.geeksforgeeks.org/problems/coin-change2448/1

```
class Solution {
  public:
    int f(int i,int j,vector<int>& c,vector<vector<int>>& dp)
        if(i==c.size()){
            if (j==0) return 1;
            return 0;
        }
        if(j==0) return 1;
        if(dp[i][j]!=-1) return dp[i][j];
        int np = f(i+1,j,c,dp);
        int p=0;
        if(c[i]<=j){
            p= f(i,j-c[i],c,dp);
        }
        dp[i][j] = p+np;
        return dp[i][j];
    }
```

```
    int count(vector<int>& coins, int sum) {
        // code here.
        int n  = coins.size();
        vector<vector<int>> dp(n,vector<int>(sum+1,-1));

        return f(0,sum,coins,dp);

     }
};
```

https://www.geeksforgeeks.org/problems/first-and-last-occurrences-of-x3116/1

```
class Solution {
  public:
    void f(vector<int>& ans,vector<int>& arr,int x){
        int l=0,h=arr.size()-1,t=arr.size();
        while(l<=h){
            int mid = (l+h)/2;
            if (arr[mid]>=x){
                t=mid;
                h=mid-1;
            }
            else{
                l=mid+1;

            }
        }
        if( arr[t]==x) ans[0] = t;
    }
    void g(vector<int>& ans,vector<int>& arr,int x){
        int l=0,h=arr.size()-1,t=arr.size();
        while(l<=h){
            int mid = (l+h)/2;
            if (arr[mid]>x){
                t=mid;
```

```
                h=mid-1;
            }
            else{
                l=mid+1;

            }
        }
        if(arr[t-1]==x) ans[1] = t-1;
    }


    vector<int> find(vector<int>& arr, int x) {
        // code here
        vector<int> ans ={-1,-1};
        f(ans, arr,x);
        g(ans,arr,x);

        // if (ans[1] == -1) ans[0] = -1;
        // if(ans[0] == -1 ) ans[1] = -1;
        return ans;

    }
};
```

https://www.geeksforgeeks.org/problems/find-transition-point-1587115620/0

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

```
            else{
                l=mid+1;
            }
        }
        return ans;
    }
};
```

https://www.geeksforgeeks.org/problems/first-repeating-element4018/1

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

class Solution {
  public:
    // Function to return the position of the first repeating
    int firstRepeated(vector<int> &arr) {

        unordered_map<int,int>mp;
        for(int i=0;i<arr.size();i++) mp[arr[i]]++;
        for(int i=0;i<arr.size();i++) {
            if(mp[arr[i]]>1) return i+1;
        }
        return -1;
    }

};
```

https://www.geeksforgeeks.org/problems/remove-duplicate-elements-from-sorted-array/1

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

class Solution {
  public:
    int remove_duplicate(vector<int> &arr) {
        // code here
```

```
        int n = arr.size(),i=0,cnt=0;
        while(i<n){
            int j =i;
            arr[cnt]=arr[i];
            cnt++;
            while(j<n && arr[i]==arr[j]) j++;
            i=j;
        }
        return cnt;

    }
};
```

https://www.geeksforgeeks.org/problems/maximum-index-1587115620/1

```
class Solution {
  public:
    // arr[]: input array
    // Function to find the maximum index difference.
    int maxIndexDiff(vector<int>& arr) {

        stack<int> st;
        int n= arr.size();
        for(int i=n-1;i>=0;i--){
            if(st.empty() || arr[st.top()]<arr[i]) st.push(i)
        }
        // Bro I am using Monotonic Decreasing Stack for this
        int ans = 0;
        for(int i=0;i<n;i++){
            while(!st.empty() && arr[i]<=arr[st.top()]){
                ans = max(ans,st.top() - i);
                st.pop();
            }
        }
        return ans;
```

```
    }
};
```

https://www.geeksforgeeks.org/problems/wave-array-1587115621/1

```
class Solution {
  public:
    // arr: input array
    // Function to sort the array into a wave-like array.
    void convertToWave(vector<int>& arr) {
        // code here
        int n = arr.size();
        for(int i=0;i<n-n%2;i+=2) swap(arr[i],arr[i+1]);

    }
};
```