Sum of Digits

```
#include<iostream>
using namespace std;

int sumOfDigits(int);

int main(){
    int num, n;
    cout<<"Enter number: ";
    cin>>num;
    n=sumOfDigits(num);
    cout<<"Sum of the digits of given number: "<<n<<endl;
    return 0;
}

int sumOfDigits(int num){
    int n, sum=0, rem;
    while(num!=0){
        rem=num%10;
        sum=sum+rem;
        num=num/10;
    }
    return sum;
}
```

Reverse a Number

```
#include<iostream>
using namespace std;

int main(){
    int num, rev=0, rem, base=1;
    cout<<"Enter number: ";
    cin>>num;
    while(num>0){
        rem=num%10;
        rev=rev*10+rem;
        num/=10;
```

```
    }
    cout<<"Reverse of the given number: "<<rev<<endl;
}
```

Sum of Digits of a Given Number until a Single Digit

```
#include<iostream>
using namespace std;

int sumofDigits(int n){
    int rem, sum=0;
    while(n>0){
        rem=n%10;
        sum=sum+rem;
        n=n/10;
    }
    return sum;
}

int main(){
    int num, rem;
    cout<<"Enter the number: ";
    cin>>num;
    while(num>10){
        num=sumofDigits(num);
    }
    cout<<num<<endl;
    return 0;
}
```

Largest Number out of Four Given Numbers

```
#include<iostream>
using namespace std;

int main(){
    int numbers[4], large;
    for(int i=0; i<4; i++){
```

```
        cin>>numbers[i];
    }
    cout<<"Given numbers: ";
    for(int i=0; i<4; i++){
        cout<<numbers[i]<<" ";
    }
    large = numbers[0];
    for(int i=0; i<4; i++){
        if(numbers[i]>large){
            large=numbers[i];
        }
    }
    cout<<endl<<"Largest = "<<large<<endl;
    return 0;
}
```

Small Factorials

```
#include <boost/multiprecision/cpp_int.hpp>
#include <iostream>
using namespace std;
using namespace boost::multiprecision;

int main() {
        int t;
        cin>>t;
        while(t--)
        {
           int n;
           cin>>n;
           cpp_int fact=1;
           for(int i=n;i>0;i--)
            fact=fact*i;
           cout<<fact<<endl;
```

```
    }


    return 0;
}
```

Red Light, Green Light

```
#include <iostream>
using namespace std;


int main() {
    int t;
    cin>>t;
    while(t--){
       int n, k;
       cin>>n>>k;
       int player_heights[n];
       for(int i=0; i<n; i++){
          cin>>player_heights[i];
       }
       int count=0;
       for(int i=0; i<n; i++){
          if(player_heights[i]>k)
             count++;
       }
       cout<<count<<endl;
    }
    return 0;
}
```

Coronavirus Spread

```
#include <iostream>
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int n;
	   cin>>n;
	   int list[n];
	   for(int i=0; i<n; i++)
	      cin>>list[i];

	   int count=1, min=n, max=0;
	   for(int i=0; i<n; i++){
	      if(((list[i+1] - list[i])>=0) && (list[i+1] - list[i])<=2){
	         count++;
	      }
	      else{
	         if(min > count)
	            min = count;
	         count = 1;
	      }
	      if(max < count)
	         max = count;
	   }
	   cout<<min<<" "<<max<<endl;
	}
	return 0;
```

```
}
```

Broken Telephone

```
#include <iostream>
using namespace std;

int main()
{
   int t;
   cin>>t;
   while(t--){
      int n;
      cin>>n;
      int msg[n];
      for(int i=0; i<n; i++){
         cin>>msg[i];
      }

      int count=0;
      for(int i=0; i<n; i++){
         if(i>0 && i<n-1){
            if(msg[i] != msg[i-1] || msg[i] != msg[i+1]){
               count++;
            }
         }
      }
      if(msg[n-1] != msg[n-2]){
         count++;
      }
      if(msg[0] != msg[1]){
```

```
        count++;
      }
      cout<<count<<endl;
   }
   return 0;
}
```

Box Of Chocolates

```
#include <iostream>
using namespace std;

int main() {
        int j, n, t, i, s=0, p, max=-1, res=0, temp=0;
        cin>>j;
        while(j--){
           cin>>n;
           int a[n];
           for(i=0;i<n;i++)
              cin>>a[i];
           for(i=0;i<n;i++){
              if(max<a[i])
                 max=a[i];
           }
           for(i=0;i<n;i++){
              if(a[i]!=max){
                s++;
           }
              else{
                 temp++;
                 if(temp==1){
```

```
                    p=s;
                    s=0;
                }
                else{
                    t=s-(n/2)+1;
                    if(t>0)
                    res+=t;
                    s=0;
                }
            }
        }
        s+=p;
        t=s-(n/2)+1;
        if(t>0)
            res+=t;
        cout<<res<<endl;
        res=0;s=0;
        max=-1;
        temp=0;
    }
}
```

Chef and Time Machine

```
#include <iostream>
#include <algorithm>
using namespace std;

int main() {
    int t;
    cin>>t;
```

```
while(t--){
    int n,k,m;
    cin>>n>>k>>m;
    int A[n];
    int B[n];
    int C[k+m];
    for(int i = 0 ; i < n ; i++)
        cin>>A[i];
    for(int i = 0 ; i < n ; i++){
        cin>>B[i];
        A[i]-=B[i];
    }
    for(int i = 0 ; i < k+m ; i++)
        cin>>C[i];
    sort(A , A+n);
    sort(C , C+k+m);

    int p1 = n-1;
    int p2 = k+m-1;
    while(p1>=0 && p2>=0){
        if(A[p1]>=C[p2]){
            A[p1]-=C[p2];
            p1--;
            p2--;
        }
        else{
            p2--;
        }
    }
    int res=0;
    for(int i = 0 ; i < n ; i++){
```

```
            res+=A[i];
        }

        cout<<res<<endl;

    }
    return 0;
}
```

Making A Meal

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

int main() {
    int t;
    cin>>t;
    while(t--){
        int n;
        cin>>n;
    map<char,int>m;
        for(int i=0;i<n;i++){
            string s;
            cin>>s;
            for(char a:s){
            m[a]++;
            }
        }
    cout<<min({m['c']/2,m['o'],m['d'],m['e']/2,m['f'],m['h'],m['f']})<<endl;
    }
    return 0;
```

```
}
```

Minions and Voting

```
#include<bits/stdc++.h>
using namespace std;
int a[100005], m[100005];

int main () {
	int n, s1, s2, t;
	cin >> t;
   while (t--) {
	cin >> n;
	for (int i = 0; i < n; i++) {
		cin >> a[i];
		m[i] = 0;
	}
	for (int i = 0; i < n; i++) {
		s1 = 0;
	   for (int j = i + 1; j < n; j++) {
		if (a[i] >= s1) {
			m[j]++;
			s1 += a[j];
		}
		else break;
	   }
	   s2 = 0;
	   for (int k = i - 1; k >= 0; k--) {
		if (a[i] >= s2) {
			m[k]++;
			s2 += a[k];
```

```
                }
                else break;
            }
        }
        for (int i = 0; i < n; i++) cout << m[i] << " ";
        cout << endl;
        }
}
```

Testing Robot

```
#include<bits/stdc++.h>
using namespace std;
int main(){
   int t;
   cin>>t;
   while(t--){
      int n,x;
      cin>>n>>x;
      string s;
      cin>>s;
      int a[100];
      a[0]=x;
      int u=1,c=1;
      for(int i=0;i<n;i++){
         if(s[i]=='R'){
            x=x+1;
         }
         else
            x=x-1;
         int p=0;
         for(int j=0;j<u;j++){
```

```
            if(x==a[j])
            p++;
        }
        if(p==0){
            a[u]=x;
            u++;
        }
    }
    cout<<u<<endl;
  }
}
```

Wordle

```
#include <iostream>
using namespace std;

int main() {
        int t;
        cin>>t;
        while(t--){
            string s, t;
            cin>>s;
            cin>>t;
            for(int i=0; i<5; i++){
                if(s[i] == t[i])
                    t[i] = 'G';
                else
                    t[i] = 'B';
```

```
            }
            cout<<t<<endl;
}
        return 0;
}
```

Compress the Video

```
#include <iostream>
using namespace std;

int main() {
        int t;
   cin>>t;
   while(t--)
   {
      int n,frames;
      cin>>n;
      frames=n;
      int a[n];
      for(int i=0;i<n;i++)
      {
         cin>>a[i];;
      }
      for(int i=0;i<n-1;i++)
      {
         if(a[i]==a[i+1])
         {
            frames--;
         }
      }
```

```
        cout<<frames<<endl;
    }
            return 0;
}
```

Sort the String

```
#include <iostream>
using namespace std;

int main() {
    int t;
    cin>>t;
    while(t--){
        int n, ans = 0;
        cin>>n;
        string str;
        cin>>str;
        for(int i=0; i<n; i++){
            if(str[i]=='1' && str[i+1]=='0')
                ans++;
        }
        cout<<ans<<endl;
    }
            return 0;
}
```

Substring of a Substring

```
 #include <iostream>
using namespace std;
```

```
int main() {
	int t;
	cin>>t;
	while(t--){
	   string s;
	   cin>>s;
	   if(s.length()<=2)
	      cout<<-1;
	   else{
	      int c=0, p=0;
	      for(int i=1;i<s.length()-1;i++) {
	         if(s[i]!=s[0]&&s[i]!=s[s.length()-1]){
	            c++;
	            p=max(p,c);
	         }
	         else{
	            p=max(p,c);
	            c=0;
	         }
	      }
	      if(p==0)
	         cout<<-1;
	      else
	         cout<<p;
	   }
	   cout<<endl;
	}
	return 0;
}
```

Daily Train

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

int comb(int, int);
int fact(int);

int main() {
   int X,N;
   cin>>X>>N;
   int tics=0;
   while(N--){
      string s;
      cin>>s;
      int i=0;
      int j=0;
      int n=1;
      while(n<10){
         string str;
         for(;i<4*n;i++){
            str+=s[i];
         }
         for(;j<2*n;j++){
            str+=s[53-j];
         }
         int cnt=0;
         for(int k=0;k<6;k++){
            if(str[k]=='0')
               cnt++;
         }
```

```
        if(cnt>=X)
            tics+=comb(cnt,X);
        n++;
      }
   }
   cout<<tics<<endl;
         return 0;
}

int comb(int a, int b){
   int c;
   c=fact(a)/(fact(b)*fact(a-b));
   return c;
}

int fact(int a){
   int f=1;
   while(a>=1){
      f*=a;
      a--;
   }
   return f;
}
```

First and Last Digit

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

int main()
```

```
{
  int t;
  cin>>t;
  while(t--)
  {
     int n;
     cin>>n;
     int rem = n%10;
     while(n>9)
     {
        n = n/10;
     }
     cout<<n+rem<<endl;
  }
return 0;
}
```

Odd Sum Pair

```
#include <iostream>
using namespace std;

int main() {
        int t;
        cin>>t;
        while(t--){
           int a, b, c;
           cin>>a>>b>>c;
           int rem1 = a%2;
           int rem2 = b%2;
           int rem3 = c%2;
```

```
        if((rem1==1 && rem2==1 && rem3==1) || (rem1==0 && rem2==0 && rem3==0))
            cout<<"NO"<<endl;
        else
            cout<<"YES"<<endl;
    }
    return 0;
}
```

Police and Thief

```
#include <iostream>
using namespace std;

int main() {
    int t;
    cin>>t;
    while(t--){
        int x, y;
        cin>>x>>y;
        if(x>=y)
            cout<<x-y<<endl;
        else
            cout<<y-x<<endl;
    }
    return 0;
}
```

Reach the Target

```
#include <iostream>
```

```
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int x, y;
	   cin>>y>>x;
	   cout<<y-x<<endl;
	}
	return 0;
}
```

Car Trip

```
#include <iostream>
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int x;
	   cin>>x;
	   if(x<=300)
	      cout<<3000<<endl;
	   else
	      cout<<x*10<<endl;
	}
	return 0;
}
```

Waiting Time

```
#include <iostream>
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int k, x;
	   cin>>k>>x;
	   cout<<k*7-x<<endl;
	}
	return 0;
}
```

Flip the Cards

```
#include <iostream>
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int n, x;
	   cin>>n>>x;
	   int y = n - x;

	   if(x<y)
```

```
            cout<<x<<endl;
        else
            cout<<y<<endl;
    }
    return 0;
}
```

Prime Generator

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

bool prime(int n){
   for(int i=2; i<=sqrt(n); i++){
      if(n%i == 0)
         return false;
   }
   return true;
}

int main() {
    int t;
    cin>>t;
    while(t--){
       int m, n;
       cin>>m>>n;
       for(int i=m; i<=n; i++){
          if(i == 1)
             continue;
          if(prime(i))
             cout<<i<<endl;
```

```
        }
    }
    return 0;
}
```

Two Different Palindromes

```
#include <iostream>
using namespace std;

int main() {
    int t;
    cin>>t;
    while(t--){
        int a, b;
        cin>>a>>b;
        if(a == 1 || b == 1)
            cout<<"No"<<endl;

        else if(a%2 == 0 || b%2 == 0)
            cout<<"Yes"<<endl;

        else
            cout<<"No"<<endl;
    }
    return 0;
}
```

Vaccine Distribution

```
#include <iostream>
```

```
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int n, d, count=0;
	   cin>>n>>d;
	   int a[n];
	   for(int i=0; i<n; i++){
	      cin>>a[i];
	      if(a[i] >= 80 || a[i] <= 9)
	         count++;
	   }
	   cout<<(count+d-1)/d + (n-count+d-1)/d<<endl;
	}
	return 0;
}
```

From Heaven to Earth

```
#include <iostream>
#include<math.h>
using namespace std;

int main() {
	int t;
	cin>>t;
	while(t--){
	   int n, v1, v2;
	   cin>>n>>v1>>v2;
```

```
        double stairs = (n*sqrt(2)) / v1;
        double ele = (n*2.0) / v2;
        if(stairs > ele)
            cout<<"Elevator"<<endl;
        else
            cout<<"Stairs"<<endl;
    }
    return 0;
}
```