**Basic Programming(week-1)**

**2. Basics of Implementation**

**1.Modulo Strength**

**#include <stdio.h>**

**int main(){**

**long n,k,t,strength = 0;**

**scanf("%ld", &n);**

**scanf("%ld",&k);**

**long a[n],b[k];**

**for(long i= 0;i<n;i++){**

**scanf("%ld",&a[i]);**

**}**

**for(long i =0;i<k;i++){**

**b[i] = 0;**

**}**

**for(long i=0;i<n;i++){**

**t = a[i]%k;**

**b[t] = b[t] + 1;**

**}**

**for(long i=0;i<k;i++){**

**strength = strength + b[i] \*(b[i]-1);**

**}**

**printf("%ld",strength);**

**}**

**2. Excursion**

**#include <stdio.h>**

**int main(){**

**int testcase,boys,girls,seat,count1=0,count2=0;**

**scanf("%d", &testcase);**

**for(int i = 0;i<testcase;i++){**

**scanf("%d",&boys);**

**scanf("%d",&girls);**

**scanf("%d",&seat);**

**if(boys%seat == 0){**

**count1 = boys/seat;**

**}else{**

**count1 = (boys/seat) + 1;**

**}**

**if(girls%seat == 0){**

**count2 = girls/seat;**

**}else{**

**count2 = (girls/seat) + 1;**

**}**

**printf("%d\n",count1+count2);**

**}**

**}**

**3. Lunch boxes**

**#include <iostream>**

**#include <bits/stdc++.h>**

**using namespace std;**

**int main() {**

**int testcase,count=0;**

**cin >> testcase;**

**while(testcase > 0){**

**int lunchbox,school;**

**cin >> lunchbox >> school;**

**int arr[school];**

**for(int i=0;i<school;i++){**

**scanf("%d",&arr[i]);**

**}**

**int len = sizeof(arr) / sizeof(arr[0]);**

**sort(arr, arr + len);**

**for(int i=0;i<school;i++){**

**if(lunchbox >= arr[i]){**

**lunchbox -= arr[i];**

**count++;**

**}**

**}**

**cout << count << endl;**

**count = 0;**

**testcase--;**

**}**

**}**

**4.Erasing an array**

**#include<stdio.h>**

**int main()**

**{**

**int testcase;**

**scanf("%d",&testcase);**

**while(testcase--){**

**int n;**

**int count=1;**

**scanf("%d",&n);**

**int arr[n];**

**for(int i=0;i<n;i++){**

**scanf("%d",&arr[i]);**

**}**

**for(int i=0;i<n-1;i++){**

**if(arr[i]==1 && arr[i+1]==0)**

**count++;**

**}**

**printf("%d\n",count);**

**}**

**}**

**5. Simon cannot sleep**

**#include <stdio.h>**

**int main(){**

**char time[100];**

**fgets(time, 100, stdin); //to read the string**

**int hour, min, totalMin, overlap;**

**sscanf(time , "%d:%d" , &hour, &min); //sscanf() extracts int values from formatted string**

**totalMin = (hour\*60) + min;**

**overlap = (totalMin\*11/720) + 1;**

**printf("%d", overlap);**

**}**

**6.Robotic move**

**#include <stdio.h>**

**int main(){**

**long int testcase,n,moves;**

**scanf("%ld", &testcase);**

**while(testcase --){**

**scanf("%ld",&n);**

**moves = n\*(n+1);**

**printf("%ld\n",moves);**

**}**

**}**

**7.A beauty factor**

**#include<bits/stdc++.h>**

**using namespace std;**

**bool isZero(string str )**

**{**

**if((str.find('0') != std::string::npos))**

**return true;**

**else**

**return false;**

**}**

**long long int sumofdigits(int n)**

**{**

**long long int sum=0;**

**while(n>0)**

**{**

**sum+=n%10;**

**n=n/10;**

**}**

**return sum;**

**}**

**long long int beautyfactor(long long int n)**

**{**

**if(n<10)**

**return n;**

**else**

**return beautyfactor(sumofdigits(n)) ;**

**}**

**bool anyDigitRepeated(int n )**

**{**

**long long int arr[10]={0};**

**while(n!=0)**

**{**

**long long int rem=n%10;**

**arr[rem]++;**

**n=n/10;**

**}**

**bool repeated=false;**

**for(long long int i=0;i<10;i++)**

**{**

**if(arr[i]>1)**

**{**

**repeated=true;**

**break;**

**}**

**}**

**return repeated;**

**}**

**int main()**

**{**

**long long int b,k;**

**cin>>b>>k;**

**if( ((b>0)&&(b<10))&&(k==9) )**

**{**

**cout<<-1<<endl;**

**return 0;**

**}**

**bool flag=true;**

**for(long long int i=pow(10,k-1);i<=pow(10,k)-1;i++)**

**{**

**if( (beautyfactor(i)==b )&&(isZero(to\_string(i))==false)&&(anyDigitRepeated(i)==false) )**

**{**

**cout<<i<<endl;**

**flag=false;**

**break;**

**}**

**}**

**if(flag==true)**

**cout<<-1<<endl;**

**return 0;**

**}**

**8. Anti palindrome string**

**#include<iostream>**

**#include<algorithm>**

**#include<string>**

**using namespace std;**

**int main()**

**{**

**string str,s;**

**int testcase;**

**cin>>testcase;**

**while(testcase--)**

**{**

**cin>>str;**

**s=str;**

**reverse(s.begin(),s.end());**

**if(str==s)**

**cout<<-1<<endl;**

**else**

**{**

**sort(str.begin(),str.end());**

**cout<<str<<endl;**

**}**

**}**

**return 0;**

**}**

**9. Number of cycles**

**#include <stdio.h>**

**int main(){**

**int testcase;**

**scanf("%d", &testcase);**

**while(testcase--){**

**long n;**

**scanf("%ld", &n);**

**long ans=0;**

**ans=(n\*(n-1))+1;**

**printf("%ld\n", ans);**

**}**

**return 0;**

**}**

**10.Rain Sound**

**#include<stdio.h>**

**int main()**

**{**

**long long int testcase,i,j,l,r,s,max,min;**

**scanf("%lld",&testcase);**

**while(testcase--)**

**{**

**scanf("%lld%lld%lld",&l,&r,&s);**

**min=l/s;**

**if(l%s!=0){**

**min=min+1;**

**}**

**max=r/s;**

**if(min<=max){**

**printf("%lld %lld\n",min,max);**

**}**

**else{**

**printf("-1 -1\n");**

**}**

**}**

**return 0;**

**}**