**Labiec11: In hinh chu nhat**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int w,h;

scanf("%d %d",&w,&h);

for (int i=0;i<h;i++){

for (int j=0;j<w;j++){

if ( i == 0 || i == h - 1 || j == 0 || j == w-1 )

printf("\*");

else

printf(" ");

}

printf("\n");

}

return 0;

}

**Labiec11: In hinh chu nhat theo cach xep hinh**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int w,h;

scanf("%d %d",&w,&h);

for (int j=0;j<w;j++){

printf("\*");

}

printf("\n");

for (int i=0;i<h-2;i++){

printf("\*");

for (int j=0;j<w-2;j++){

printf(" ");

}

printf("\*");

printf("\n");

}

for (int j=0;j<w;j++){

printf("\*");

}

printf("\n");

return 0;

}

**Check so nguyen to:**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int checkSNT(int x){

// return 1 neu ma x la snt;

// return 0 neu ma x ko phai

if (x<2)

return 0;

for (int i=2;i<=sqrt(x);i++){

if ( x%i == 0 )

return 0;

}

return 1;

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int tong = 0;

int a,b;

scanf("%d %d",&a,&b);

for (int i=a;i<=b;i++){

if (checkSNT(i) == 1 )

tong = tong+i;

}

printf("%d\n",tong);

return 0;

}

**Labiec26 ( kiem tra dan dau ):**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

void solve(){

int n;

int a;

scanf("%d",&n);

scanf("%d",&a);

int tmp = a;

int kq = 1;

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

scanf("%d",&a);

if (tmp \* a >= 0 )

kq = 0;

tmp = a;

}

printf("%d\n",kq);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

solve();

}

return 0;

}

**Labiec25 ( kiem tra csc ):**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

void solve(){

int n;

int a,b,c;

scanf("%d",&n);

scanf("%d",&a);

scanf("%d",&b);

int cs = b-a;

int kq = 1;

for (int i=2;i<n;i++){

scanf("%d",&c);

int temp = c-b;

if ( temp != cs )

kq = 0;

a = b;

b = c;

}

if (kq > 0 )

printf("%d\n",kq);

else

printf("khong phai day cap so cong\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

solve();

}

return 0;

}

**Labiec27: ve chu T**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

void doPrint(char c,int n){

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

printf("%c",c);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int nhang,ncot;

scanf("%d %d",&nhang,&ncot);

doPrint('\*',ncot);

printf("\n");

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

doPrint(' ',ncot/2);

printf("\*");

printf("\n");

}

}

**Labiec36( lap theo chieu doc ):**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

void doPrint(char c,int n){

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

printf("%c",c);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int n,sz;

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

for (int j=0;j<n;j++){

doPrint('\*',sz);

printf("\n");

for (int i=2;sz-i > 0;i++){

doPrint(' ',sz-i);

printf("\*");

printf("\n");

}

}

doPrint('\*',sz);

printf("\n");

}

**Tieuhoc2:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int n;

int a[111];

int ntest;

void input(){

scanf("%d",&n);

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

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

}

}

void solve(){

int tong = 0;

int tich = 1;

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

tong = tong + a[i];

tich = tich \* a[i];

}

float tbc = 1.0\*tong/n;

printf("%.2f %d\n",tbc,tich);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Dem so lan xuat hien cua 1 phan tu trong mang:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int n;

int a[111];

int dem[111];

int ntest;

void input(){

scanf("%d",&n);

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

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

}

}

void solve(){

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

dem[ a[i] ]++;

for (int i=0;i<100;i++)

if ( dem[i] > 0 )

printf("%d co %d lan xuat hien\n",i,dem[i]);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Nhap xuat ma tran:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int nhang,ncot;

int a[111][111];

int ntest;

void input(){

scanf("%d %d",&nhang,&ncot);

for (int i=0;i<nhang;i++)

for (int j=0;j<ncot;j++)

scanf("%d",&a[i][j]);

}

void solve(){

for (int i=0;i<nhang;i++){

for (int j=0;j<ncot;j++)

printf("%d ",a[i][j]);

printf("\n");

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Nhap xuat mang:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int n;

int a[111];

int ntest;

void input(){

scanf("%d",&n);

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

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

}

void solve(){

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

printf("%d ",a[i]);

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Check nam nhuan:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int isLeapYear(int year){

if ( year%4 != 0)

return 0;

if ( year%400 == 0 )

return 1;

if ( year%100 == 0)

return 0;

return 1;

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int dem = 0;

for (int i=0;i<=2017;i++){

int t = isLeapYear(i);

if ( t == 1 ){

dem++;

}

}

printf("%d\n",dem);

}

**Labiec25 check cap so cong:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int n,s[111];

void input(){

scanf("%d",&n);

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

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

}

int checkCSC(int a[],int n){

int congsai = a[1] - a[0];

for (int i=2;i<n;i++){

if ( a[i] - a[i-1] != congsai )

return 0;

}

return 1;

}

int checkCSC(){

int congsai = s[1] - s[0];

for (int i=2;i<n;i++){

if ( s[i] - s[i-1] != congsai )

return 0;

}

return 1;

}

void solve(){

int kq = checkCSC();

if ( kq == 1 )

printf("%d\n",kq);

else

printf("khong phai day cap so cong\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Trunghoc5:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int s[111][111];

int nhang,ncot;

void input(){

scanf("%d %d",&nhang,&ncot);

for (int i=0;i<nhang;i++)

for (int j=0;j<ncot;j++)

scanf("%d",&s[i][j]);

}

int checkSNT(int num){

return 1;

}

void solve2(){

int maxx = 0;

int dem = 0;

for (int i=0;i<nhang;i++){

for (int j=0;j<ncot;j++){

if ( checkSNT(s[i][j]) == 1 ){

if ( s[i][j] > maxx ){

maxx = s[i][j];

dem = 0;

}

if ( s[i][j] == maxx )

dem++;

}

}

}

printf("%d %d\n",maxx,dem);

}

void solve(){

int maxx = 0;

for (int i=0;i<nhang;i++){

for (int j=0;j<ncot;j++){

if ( checkSNT(s[i][j]) == 1 ){

if ( s[i][j] > maxx )

maxx = s[i][j];

}

}

}

int dem = 0;

for (int i=0;i<nhang;i++){

for (int j=0;j<ncot;j++){

if ( s[i][j] == maxx )

dem++;

}

}

printf("%d %d\n",maxx,dem);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

//solve();

solve2();

}

}

**Tong hang ma tran:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int s[111][111];

int nhang,ncot;

void input(){

scanf("%d %d",&nhang,&ncot);

for (int i=0;i<nhang;i++)

for (int j=0;j<ncot;j++)

scanf("%d",&s[i][j]);

}

void solve(){

for (int i=0;i<nhang;i++){

int tong = 0;

for (int j=0;j<ncot;j++){

tong = tong + s[i][j];

}

printf("%d ",tong);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Tong cot ma tran:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int s[111][111];

int nhang,ncot;

void input(){

scanf("%d %d",&nhang,&ncot);

for (int i=0;i<nhang;i++)

for (int j=0;j<ncot;j++)

scanf("%d",&s[i][j]);

}

void solve(){

for (int j=0;j<ncot;j++){

int tong = 0;

for (int i=0;i<nhang;i++)

tong = tong + s[i][j];

printf("%d ",tong);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Tieuhoc3 doi tien:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int s[5] = {1,5,10,20,50};

int kq[5];

int money;

int n = 5;

void input(){

scanf("%d",&money);

}

void solve(){

for (int i=n-1;i>=0;i--){

kq[i] = money / s[i];

money = money % s[i];

}

}

void output(){

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

printf("(%d) %d ",s[i],kq[i]);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Tieuhoc5 so lon thu k:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int n,k;

int s[111];

int doCount(int x){

int dem = 0;

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

if (s[i] > x )

dem++;

return dem;

}

void solve(){

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

int dem = doCount(s[i]); // dem xem co bn phan tu lon hon s[i]

if ( dem == k-1 ){

printf("So lon thu %d la %d\n",k,s[i]);

return;

}

}

}

void input(){

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

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

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

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

//output();

}

}

**Tieuhoc11:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int n;

int s[111];

int isSNT(int x){

return 1;

}

void solve(){

int dem = 0;

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

for (int j=0;j<n;j++){

if ( i < j ){

int tong = s[i] + s[j];

if ( isSNT(tong)) {

dem++;

}

}

}

}

printf("%d\n",dem);

}

void solve2(){

int dem = 0;

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

for (int j=i+1;j<n;j++){

int tong = s[i] + s[j];

if ( isSNT(tong)) {

dem++;

}

}

}

printf("%d\n",dem);

}

void input(){

scanf("%d",&n);

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

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

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

solve2();

}

}

**Trunghoc6:**

**int checkHV(){**

for (int i=0;i<nhang;i++){

for (int j=0;j<ncot;j++){

if ( i == j && s[i][j] != 0 )

return 0;

if ( i < j && s[i][j] <= 0 )

return 0;

if ( i > j && s[i][j] >= 0 )

return 0;

}

}

return 1;

}

**Trunghoc7 dem hinh vuong:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int nhang,ncot,sz;

int s[111][111];

void input(){

scanf("%d %d %d",&nhang,&ncot,&sz);

for (int i=0;i<nhang;i++)

for (int j=0;j<ncot;j++)

scanf("%d",&s[i][j]);

}

int isHV(int hang,int cot,int sz){

for (int i = hang;i<hang+sz;i++){

for (int j=cot;j<cot+sz;j++){

if (s[i][j] == 0)

return 0;

}

}

return 1;

}

void solve(){

int dem = 0;

for (int i=0;i<=nhang-sz;i++){

for (int j=0;j<=ncot-sz;j++){

if ( isHV(i,j,sz) == 1 )

dem++;

}

}

printf("%d\n",dem);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Trunghoc8:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int a,b;

int tinhChuKy(int x){

int dem = 1;

while ( x > 1 ){

dem++;

if (x%2 == 0)

x=x/2;

else

x=3\*x+1;

}

return dem;

}

void input(){

scanf("%d %d",&a,&b);

}

void solve(){

int maxx = 0;

for (int i=a;i<=b;i++){

int chuky = tinhChuKy(i);

if ( chuky > maxx )

maxx = chuky;

}

printf("%d %d %d\n",a,b,maxx);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Nhapxuat string:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

char ch[111];

int n;

scanf("%d\n",&n); // nho \n de tranh loi nhap dong

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

//scanf("%s",&ch); // nhap tu

gets(ch); // nhap dong

// in cach 1

printf("%s\n",ch);

// in cach 2

int len = strlen(ch);

for (int i=0;i<len;i++)

printf("%c",ch[i]);

printf("\n");

}

}

**Bien doi hoa thuong:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char ch[111];

int n;

void solve(){

int len = strlen(ch);

for (int i=0;i<len;i++){

// neu ki tu thuong --> Hoa

if ( ch[i] >='A' && ch[i] <= 'Z' ){

ch[i] = ch[i] + 32;

}

printf("%c",ch[i]);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

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

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

gets(ch);

solve();

}

}

**Dao nguoc chuoi:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char ch[111];

int n;

void solve(){

int len = strlen(ch);

for (int i=0;i<len/2;i++){

swap(ch[i],ch[len-i-1]);

}

printf("%s\n",ch);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

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

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

gets(ch);

solve();

}

}

**Dem ki tu xuat hien:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

int len;

char ch[111];

int dem[256];

int ntest;

void input(){

gets(ch);

len = strlen(ch);

}

void solve(){

memset(dem,0,sizeof(dem));

for (int i=0;i<len;i++)

dem[ ch[i] ]++;

for (int i=0;i<256;i++)

if ( dem[i] > 0 )

printf("%c co %d lan xuat hien\n",i,dem[i]);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Capba0:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111],b[111];

int ntest;

void input(){

scanf("%s %s",&a,&b);

}

int isEqual(char s1[],char s2[]){

int len1 = strlen(s1);

int len2 = strlen(s2);

if (len1 != len2)

return 0;

for (int i=0;i<len1;i++){

if ( s1[i] != s2[i] )

return 0;

}

return 1;

}

void solve(){

printf("%d\n",isEqual(a,b));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Capba1:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111],b[111];

int ntest;

void input(){

scanf("%s",&a);

}

int isEqual(char s1[],char s2[]){

int len1 = strlen(s1);

int len2 = strlen(s2);

if (len1 != len2)

return 0;

for (int i=0;i<len1;i++){

if ( s1[i] != s2[i] )

return 0;

}

return 1;

}

void daochuoi(char c[]){

int len = strlen(c);

for (int i=0;i<len/2;i++)

swap(c[i],c[len-i-1]);

}

void solve(){

strcpy(b,a);

daochuoi(b);

printf("%d\n",isEqual(a,b));

}

int checkDoiGuong(char s[]){

int len = strlen(s);

for (int i=0;i<len/2;i++)

if ( s[i] != s[len-i-1] )

return 0;

return 1;

}

void solve2(){

printf("%d\n",checkDoiGuong(a));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

//solve();

solve2();

}

}

**Chuoi tuong duong dung getIndex:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111],b[111];

int dem1[333],dem2[333];

int ntest;

int visited[111];

void input(){

scanf("%s %s",&a,&b);

}

int checkSimilar(char s1[],char s2[]){

int len1 = strlen(s1);

int len2 = strlen(s2);

if ( len1 != len2 )

return 0;

for (int i=0;i<len1;i++){

dem1[ s1[i] ]++;

dem2[ s2[i] ]++;

}

for (int i=0;i<256;i++)

if ( dem1[i] != dem2[i] )

return 0;

return 1;

}

int getIndex(char c){

int len = strlen(b);

for (int i=0;i<len;i++)

if ( visited[i] == 0 && b[i] == c )

return i;

return -1;

}

int checkSimilar2(char s1[],char s2[]){

int len1 = strlen(s1);

int len2 = strlen(s2);

if ( len1 != len2 )

return 0;

for (int i=0;i<len1;i++){

int idx = getIndex( s1[i] );

if ( idx == -1 )

return 0;

visited[idx] = 1;

}

for (int i=0;i<len1;i++)

if ( visited[i] == 0 )

return 0;

return 1;

}

void solve(){

// c1

memset(dem1,0,sizeof(dem1));

memset(dem2,0,sizeof(dem2));

// c2

memset(visited,0,sizeof(visited));

printf("%d\n",checkSimilar2(a,b));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Cong big number:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111111],b[111111];

char kq[111111];

int ntest;

void input(){

scanf("%s %s",&a,&b);

}

void daochuoi(char s[]){

int len = strlen(s);

for (int i=0;i<len/2;i++)

swap(s[i],s[len-i-1]);

}

void themSo0(char s[],int num){

int len = strlen(s);

for (int i=len;i<len+num;i++){

s[i] = '0';

}

}

int max(int a,int b){

if (a>b)

return a;

return b;

}

void convertCharToInt(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

s[i] = s[i] - '0';

}

void outputArray(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

printf("%d",s[i]);

printf("\n");

}

void clean0(char s[]){

int len = strlen(s);

for (int i=len-1;i>0;i--){

if ( s[i] == '0' )

s[i] = 0;

else

return;

}

}

void solve(){

daochuoi(a);

daochuoi(b);

int len1 = strlen(a);

int len2 = strlen(b);

if ( len1 > len2 ){

themSo0(b,len1-len2);

}

if ( len2 > len1 ){

themSo0(a,len2-len1);

}

int len = max(len1,len2);

int nho = 0;

for (int i=0;i<len;i++){

kq[i] = (a[i]-'0') + (b[i]-'0') + nho; // cong so

nho = kq[i] / 10; // lay nho

kq[i] = kq[i] % 10; // lay ket qua

kq[i] = kq[i] + '0'; // bien so thanh chu

}

if ( nho > 0 ){

kq[len] = '1';

}

clean0(kq);

daochuoi(kq);

printf("%s\n",kq);

}

void reset(){

memset(a,0,sizeof(a));

memset(b,0,sizeof(b));

memset(kq,0,sizeof(kq));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

}

**Check password dung:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111111];

int ntest;

void input(){

scanf("%s",&a);

}

int checkPasswordStrength(char s[]){

int len = strlen(s);

int demThg = 0;

int demHoa = 0;

int demSo = 0;

int demKhac = 0;

if ( len < 6)

return -1;

for (int i=0;i<len;i++){

if ( s[i] >= 'a' && s[i] <= 'z' )

demThg = 1;

else if ( s[i] >= 'A' && s[i] <= 'Z' )

demHoa = 1;

else if ( s[i] >= '0' && s[i] <= '9' )

demSo = 1;

else

demKhac = 1;

}

int demLoai = demThg + demHoa + demSo + demKhac;

if ( demLoai == 1)

return 0;

if ( demLoai == 2 )

return 1;

if ( demLoai == 3){

if ( len >= 10 )

return 2;

return 1;

}

if ( demLoai == 4){

if ( len >= 12 )

return 3;

if ( len >= 10 )

return 2;

return 1;

}

return 0;

}

void solve(){

printf("%d\n",checkPasswordStrength(a));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Dung map dem float:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

int n;

float a[111];

map<float,int> demMap;

map<float,int>::iterator ite;

int ntest;

void input(){

scanf("%d",&n);

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

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

}

}

void solve(){

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

demMap[ a[i] ]++;

}

for (ite = demMap.begin();ite!=demMap.end();ite++){

if ( ite -> second > 0)

printf("%.2f co %d lan xuat hien\n",ite -> first,ite -> second);

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Dung map dem int:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

int n;

int a[111];

int dem[111];

map<int,int> demMap;

map<int,int>::iterator ite;

int ntest;

void input(){

scanf("%d",&n);

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

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

}

}

void solve(){

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

demMap[ a[i] ]++;

}

for (ite = demMap.begin();ite!=demMap.end();ite++){

if ( ite->second > 0)

printf("%d co %d lan xuat hien\n",ite->first,ite->second);

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Dung map dem string:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

char s[111];

map<string,int> demString;

map<string,int>::iterator ite;

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

while (scanf("%s",&s) > 0 ){

demString[ s ]++;

}

for(ite=demString.begin();ite!=demString.end();ite++){

printf("%s %d\n",ite->first.c\_str(),ite->second);

//cout << ite->first << " " << ite->second << endl;

}

}

**Dang nhap user pass dung map:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

map<string,string> db;

int n,m;

char username[1111],password[1111];

char userRequest[1111],passRequest[1111];

void input(){

scanf("%d",&n);

// nhap co so du lieu

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

scanf("%s %s",&username,&password);

db[username] = password;

}

}

void solve(){

scanf("%d",&m);

// nhap danh sach request

for (int i=0;i<m;i++){

scanf("%s %s",&userRequest,&passRequest);

// db[username] --> password o? input ( password trong co so du lieu )

// passRequest --> password nhap o? solve ( password vua nhap )

// so sanh 2 thang

if (db[userRequest] == passRequest){

printf("1\n");

}else{

printf("0\n");

}

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

input();

solve();

}

**Lay ten mien tu link:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

int ntest;

char url[2222];

char domain[2222];

void input(){

scanf("%s",&url);

}

void getSubString(char sub[],char string[],int bd,int kt){

int idx = 0;

for (int i=bd;i<=kt;i++){

sub[idx] = string[i];

idx++;

}

}

int getIndexOfChar(char c,char s[],int num){

int dem = 0;

int len = strlen(s);

for (int i=0;i<len;i++){

if ( s[i] == c ){

dem++;

if ( dem == num )

return i;

}

}

return -1;

}

void solve(){

int startIdx = getIndexOfChar('/',url,2) + 1;

int endIdx = getIndexOfChar('/',url,3) - 1;

getSubString(domain,url,startIdx,endIdx);

if ( domain[0] == 'w' && domain[1] == 'w' && domain[2] == 'w' && domain[3] == '.'){

getSubString(domain,domain,4,strlen(domain));

}

printf("%s\n",domain);

}

void reset(){

memset(domain,0,sizeof(domain));

memset(url,0,sizeof(url));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

}

**Kiem tra email dung:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

int ntest;

char s[11111];

char sub[1111];

void input(){

scanf("%s",&s);

}

void getSubString(char sub[],char string[],int bd,int kt){

int idx = 0;

for (int i=bd;i<=kt;i++){

sub[idx] = string[i];

idx++;

}

}

int getIndexOfChar(char c,char s[],int num){

int dem = 0;

int len = strlen(s);

for (int i=0;i<len;i++){

if ( s[i] == c ){

dem++;

if ( dem == num )

return i;

}

}

return -1;

}

int isValidCharacter(char c){

if ( c >= 'a' && c <= 'z' )

return 1;

if ( c >= 'A' && c <= 'Z' )

return 1;

if ( c >= '0' && c <= '9' )

return 1;

if ( c == '.' || c == '\_' )

return 1;

return 0;

}

int checkValidEmail(char s[]){

int len = strlen(s);

int idx = getIndexOfChar('@', s, 2);

if ( idx != -1) // co hon 1 dau @

return 0;

idx = getIndexOfChar('@', s, 1);

if ( idx == -1 ) // ko co dau @

return 0;

getSubString(sub, s, idx+1, len); // lay phan domain

idx = getIndexOfChar('.', sub, 1); // kiem tra phan domain co it nhat 1 dau cham

if ( idx == -1 )

return 0; // ko co dau cham thi ko hop le

// kiem tra ki tu hop le

len = strlen(sub);

for (int i=0;i<len;i++)

if ( !isValidCharacter(sub[i]) )

return 0;

return 1;

}

void solve(){

printf("%d\n",checkValidEmail(s));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Dem cay tinh %:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

map<string,int> dem;

map<string,int>::iterator ite;

char str[1111];

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

//input

while (gets(str) > 0 ){

dem[str]++;

}

// tinh tong cac value cua map

int tongSoCay = 0;

for (ite=dem.begin();ite!=dem.end();ite++){

tongSoCay = tongSoCay + ite->second;

}

// tinh phan tram cua tung loai cay

for (ite=dem.begin();ite!=dem.end();ite++){

float percent = 100.0\*ite->second/tongSoCay;

printf("%s %.4f\n",ite->first.c\_str(),percent);

}

}

**Struct quan li sinh vien:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

using namespace std;

struct sinhvien{

char name[111];

int diem[3];

};

int n;

sinhvien s[1111];

int idx,maxx;

void input(){

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

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

gets(s[i].name);

for (int j=0;j<3;j++)

scanf("%d",&s[i].diem[j]);

scanf("\n");

}

}

void solve(){

idx = 0;

maxx = 0;

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

int tongdiem = 0;

for (int j=0;j<3;j++)

tongdiem += s[i].diem[j];

if ( tongdiem > maxx ){

maxx = tongdiem;

idx = i;

}

}

}

void output(){

printf("Name : %s\n",s[idx].name);

printf("Total Point : %d\n",maxx);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Stack demo:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

#include <stack>

using namespace std;

stack<int> st;

void solve(){

for (int i=5;i<=15;i++)

st.push(i); // day phan tu vao stack

while (!st.empty()){

int top = st.top(); // lay phan tu tren cung cua stack

int num = st.size(); // lay size cua stack

st.pop(); // xoa phan tu tren cung cua stack

printf("phan tu thu %d co gia tri la %d\n",num,top);

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

solve();

}

**Bracket dung stack: ngoac tron**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

#include <stack>

using namespace std;

stack<char> st;

char s[11111];

int checkValidBracket(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++){

if ( s[i] == '(' )

st.push(s[i]); // mo ngoac thi push vao stack

else{

// dong ngoac

if ( st.empty() )

return 0; // dong ngoac ma ko co mo ngoac

// neu co mo ngoac thi vut ra

st.pop();

}

}

// check dau mo ngoac thua

// if ( st.size() == 0 )

if ( st.empty() )

return 1;

return 0;

}

void solve(){

printf("%d\n",checkValidBracket(s));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

while (scanf("%s",&s) > 0 ) {

solve();

}

}

**Tru bignumber:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111111],b[111111];

char temp[11111];

char kq[111111];

int ntest;

void input(){

scanf("%s %s",&a,&b);

}

void daochuoi(char s[]){

int len = strlen(s);

for (int i=0;i<len/2;i++)

swap(s[i],s[len-i-1]);

}

void themSo0(char s[],int num){

int len = strlen(s);

for (int i=len;i<len+num;i++){

s[i] = '0';

}

}

int max(int a,int b){

if (a>b)

return a;

return b;

}

void convertCharToInt(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

s[i] = s[i] - '0';

}

void outputArray(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

printf("%d",s[i]);

printf("\n");

}

void clean0(char s[]){

int len = strlen(s);

for (int i=len-1;i>0;i--){

if ( s[i] == '0' )

s[i] = 0;

else

return;

}

}

int sosanh(char s1[],char s2[]){

int len1,len2;

len1 = strlen(s1);

len2 = strlen(s2);

if ( len1 > len2 )

return 1;

if ( len1 < len2 )

return -1;

for (int i=0;i<len1;i++){

if ( s1[i] > s2[i] )

return 1;

if ( s1[i] < s2[i] )

return -1;

}

return 0;

}

void solve(){

if ( sosanh(a,b) < 0 ) {

// neu a < b

// doi cho 2 so va in dau - dang truoc

strcpy(temp,a);

strcpy(a,b);

strcpy(b,temp);

printf("-");

}

daochuoi(a);

daochuoi(b);

int len1 = strlen(a);

int len2 = strlen(b);

themSo0(b,len1-len2);

int nho = 0;

for (int i=0;i<len1;i++){

kq[i] = (a[i]-'0') - (b[i]-'0') - nho; // tinh so

nho = 0; // reset nho sau khi dung

if ( kq[i] < 0 ){

kq[i] = kq[i] + 10;

nho = 1;

// neu thieu thi vay

}

kq[i] = kq[i] + '0'; // convert tu so ra character

}

clean0(kq);

daochuoi(kq);

printf("%s\n",kq);

}

void reset(){

memset(a,0,sizeof(a));

memset(b,0,sizeof(b));

memset(kq,0,sizeof(kq));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

}

**Nhan bignumber:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111111],b[111111];

char temp[11111];

char kq[111111];

int ntest;

void input(){

scanf("%s %s",&a,&b);

}

void daochuoi(char s[]){

int len = strlen(s);

for (int i=0;i<len/2;i++)

swap(s[i],s[len-i-1]);

}

void themSo0(char s[],int num){

int len = strlen(s);

for (int i=len;i<len+num;i++){

s[i] = '0';

}

}

int max(int a,int b){

if (a>b)

return a;

return b;

}

void convertCharToInt(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

s[i] = s[i] - '0';

}

void outputArray(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

printf("%d",s[i]);

printf("\n");

}

void clean0(char s[]){

int len = strlen(s);

for (int i=len-1;i>0;i--){

if ( s[i] == '0' )

s[i] = 0;

else

return;

}

}

int sosanh(char s1[],char s2[]){

int len1,len2;

len1 = strlen(s1);

len2 = strlen(s2);

if ( len1 > len2 )

return 1;

if ( len1 < len2 )

return -1;

for (int i=0;i<len1;i++){

if ( s1[i] > s2[i] )

return 1;

if ( s1[i] < s2[i] )

return -1;

}

return 0;

}

void solve(){

int len1 = strlen(a);

int len2 = strlen(b);

daochuoi(a);

daochuoi(b);

for (int i=0;i<len1;i++){

for (int j=0;j<len2;j++){

kq[i+j] = kq[i+j] + (a[i]-'0')\*(b[j]-'0');

kq[i+j+1] = kq[i+j+1] + kq[i+j]/10;

kq[i+j] = kq[i+j]%10;

}

}

for (int i=0;i<len1+len2;i++)

kq[i] = kq[i] + '0';

clean0(kq);

daochuoi(kq);

printf("%s\n",kq);

}

void reset(){

memset(a,0,sizeof(a));

memset(b,0,sizeof(b));

memset(kq,0,sizeof(kq));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

}

**Thay string:**

**#include <iostream>**

#include <fstream>

#include <string.h>

#include <stdio.h>

#include <stdlib.h>

#include <math.h>

using namespace std;

char str[111111];

char kq[111111];

char a[111111],b[111111];

void input(){

scanf("%s %s %s",&str,&a,&b);

}

void getSubString(char sub[],char string[],int bd,int kt){

int idx = 0;

memset(sub,0,sizeof(sub));

for (int i=bd;i<=kt;i++){

sub[idx] = string[i];

idx++;

}

}

void addCharacter(char str[],char c){

int len = strlen(str);

str[len] = c;

}

void solve(){

int len = strlen(str);

int lena = strlen(a);

char sub[11111];

for (int i=0;i<len;i++){

if ( str[i] != a[0] ){

addCharacter(kq,str[i]);

continue;

}

if ( i+lena-1 >= len ){

addCharacter(kq,str[i]);

continue;

}

getSubString(sub,str,i,i+lena-1);

if ( strcmp(sub,a) != 0 ){

addCharacter(kq,str[i]);

continue;

}

strcat(kq,b);

i = i+strlen(a)-1;

}

printf("%s\n",kq);

}

void reset(){

memset(a,0,sizeof(a));

memset(b,0,sizeof(b));

memset(str,0,sizeof(str));

memset(kq,0,sizeof(kq));

}

int main()

{

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

return 0;

}

**Bracket dung array+stack:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <map>

#include <stack>

using namespace std;

char s[11111];

char st[11111];

int checkValidBracket(char s[]){

int top = 0;

int len = strlen(s);

for (int i=0;i<len;i++){

if ( s[i] == '(' ){

// push

top++;

st[top-1] = s[i];

}else{

if ( top == 0 ) // check stack rong

return 0;

// pop

st[top-1] = 0;

top--;

}

}

// check stack rong

if ( top == 0 )

return 1;

return 0;

}

void solve(){

printf("%d\n",checkValidBracket(s));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

while (scanf("%s",&s) > 0 ) {

solve();

}

}

**Capba4 ( thay string + comment ):**

**#include <iostream>**

#include <fstream>

#include <string.h>

#include <stdio.h>

#include <stdlib.h>

#include <math.h>

using namespace std;

char str[111111];

char kq[111111];

char a[111111],b[111111];

void input(){

scanf("%s %s %s",&str,&a,&b);

}

void getSubString(char sub[],char string[],int bd,int kt){

int idx = 0;

memset(sub,0,sizeof(sub));

for (int i=bd;i<=kt;i++){

sub[idx] = string[i];

idx++;

}

}

void addCharacter(char str[],char c){

int len = strlen(str);

str[len] = c;

}

void solve(){

int len = strlen(str);

int lena = strlen(a);

char sub[11111];

for (int i=0;i<len;i++){

// kiem tra ki tu dau

if ( str[i] != a[0] ){

addCharacter(kq,str[i]);

continue;

}

// kiem tra pham vi substring co bi vuot gioi han ko

if ( i+lena-1 >= len ){

addCharacter(kq,str[i]);

continue;

}

// lay sub string

getSubString(sub,str,i,i+lena-1);

// kiem tra 2 string bang nhau

if ( strcmp(sub,a) != 0 ){

// khac nhau day ne

addCharacter(kq,str[i]);

continue;

}

// day moi la truong hop giong nhau

// noi chuoi b vao chuoi ket qua

strcat(kq,b);

// chuyen con tro toi phan ngoai substring

i = i+strlen(a)-1;

}

printf("%s\n",kq);

}

void reset(){

memset(a,0,sizeof(a));

memset(b,0,sizeof(b));

memset(str,0,sizeof(str));

memset(kq,0,sizeof(kq));

}

int main()

{

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

return 0;

}

**Nhan big number ( them comment ):**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

using namespace std;

char a[111111],b[111111];

char temp[11111];

char kq[111111];

int ntest;

void input(){

scanf("%s %s",&a,&b);

}

void daochuoi(char s[]){

int len = strlen(s);

for (int i=0;i<len/2;i++)

swap(s[i],s[len-i-1]);

}

void themSo0(char s[],int num){

int len = strlen(s);

for (int i=len;i<len+num;i++){

s[i] = '0';

}

}

int max(int a,int b){

if (a>b)

return a;

return b;

}

void convertCharToInt(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

s[i] = s[i] - '0';

}

void outputArray(char s[]){

int len = strlen(s);

for (int i=0;i<len;i++)

printf("%d",s[i]);

printf("\n");

}

void clean0(char s[]){

int len = strlen(s);

for (int i=len-1;i>0;i--){

if ( s[i] == '0' )

s[i] = 0;

else

return;

}

}

int sosanh(char s1[],char s2[]){

int len1,len2;

len1 = strlen(s1);

len2 = strlen(s2);

if ( len1 > len2 )

return 1;

if ( len1 < len2 )

return -1;

for (int i=0;i<len1;i++){

if ( s1[i] > s2[i] )

return 1;

if ( s1[i] < s2[i] )

return -1;

}

return 0;

}

void solve(){

int len1 = strlen(a);

int len2 = strlen(b);

daochuoi(a);

daochuoi(b);

for (int i=0;i<len1;i++){

for (int j=0;j<len2;j++){

kq[i+j] = kq[i+j] + (a[i]-'0')\*(b[j]-'0'); // tinh cong

kq[i+j+1] = kq[i+j+1] + kq[i+j]/10; // tinh du roi don sang ben canh

kq[i+j] = kq[i+j]%10; // ghi ket qua

}

}

// bien so thanh chuoi

for (int i=0;i<len1+len2;i++)

kq[i] = kq[i] + '0';

clean0(kq);

daochuoi(kq);

printf("%s\n",kq);

}

void reset(){

memset(a,0,sizeof(a));

memset(b,0,sizeof(b));

memset(kq,0,sizeof(kq));

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

scanf("%d\n",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

reset();

}

}

**Discard dung queue:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <queue>

using namespace std;

int n;

void solve(){

queue<int> qu;

for (int i=1;i<=n;i++)

qu.push(i); // push phan tu vao cuoi queue

// qu.empty(); // check queue rong

// qu.front(); // tro den phan tu dau cua queue

// qu.back(); // tro den phan tu cuoi cua queue

// qu.pop(); // bo phan tu o dau queue

while (qu.size() > 1){

qu.pop();

int a = qu.front();

qu.pop();

qu.push(a);

}

printf("%d\n",qu.front());

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

while (scanf("%d",&n) > 0 ){

if ( n == 0 )

continue;

solve();

}

}

**Discard dung queue+array:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <queue>

using namespace std;

int n;

void solve(){

queue<int> qu;

for (int i=1;i<=n;i++)

qu.push(i); // push phan tu vao cuoi queue

// qu.empty(); // check queue rong

// qu.front(); // tro den phan tu dau cua queue

// qu.back(); // tro den phan tu cuoi cua queue

// qu.pop(); // bo phan tu o dau queue

while (qu.size() > 1){

qu.pop();

int a = qu.front();

qu.pop();

qu.push(a);

}

printf("%d\n",qu.front());

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

while (scanf("%d",&n) > 0 ){

if ( n == 0 )

continue;

solve();

}

}

**Sort dung ham:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

int n;

int a[1111];

void input(){

scanf("%d",&n);

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

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

}

// ham so sanh giua 2 phan tu

// s1 dung truoc , s2 dung sau

// xac dinh cach sap xep giua 2 phan tu

bool cmp(int s1,int s2){

if ( s1 > s2 )

return 1;

return 0;

}

void solve(){

// cach 1 : sort tu be den lon

// bien the 1

//sort(a,a+n);

// dao thu tu array

//reverse(a,a+n);

// cach 2 : sort voi ham compare tham so

sort(a,a+n,cmp);

}

void output(){

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

printf("%d ",a[i]);

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Sorting2:**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

int n;

int a[1111];

void input(){

scanf("%d",&n);

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

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

}

bool cmp(int s1,int s2){

// chan truoc le sau

if ( s1%2 == 0 && s2%2 == 1 )

return 1;

// le truoc chan sau

if ( s1%2 == 1 && s2%2 == 0 )

return 0;

// cung chan

if ( s1%2 == 0 && s2%2 == 0 ){

// so sanh tang dan

if ( s1 < s2 )

return 1;

return 0;

}

// cung le

// so sanh giam dan

if ( s1 > s2)

return 1;

return 0;

}

void solve(){

sort(a,a+n,cmp);

}

void output(){

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

printf("%d ",a[i]);

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Sorting4:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct boso{

int so1;

int so2;

int so3;

};

boso s[1111];

int n;

void input(){

scanf("%d",&n);

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

scanf("%d %d %d",&s[i].so1,&s[i].so2,&s[i].so3);

}

}

void output(){

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

printf("%d %d %d\n",s[i].so1,s[i].so2,s[i].so3);

}

printf("\n");

}

bool cmp(boso b1,boso b2){

// kiem tra so nguyen dau tien

if (b1.so1 < b2.so1)

return 1;

if (b1.so1 > b2.so1)

return 0;

// so nguyen dau tien bang nhau

// so sanh so nguyen so 2

if (b1.so2 < b2.so2)

return 1;

if (b1.so2 > b2.so2)

return 0;

// 2 so nguyen dau tien bang nhau

// so sanh so nguyen so 3

if (b1.so3 < b2.so3)

return 1;

if (b1.so3 > b2.so3)

return 0;

// 3 cap bang nhau tat

return 0;

}

void solve(){

sort(s,s+n,cmp);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Sorting4 hay:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct boso{

int so[3];

};

boso s[1111];

int n;

void input(){

scanf("%d",&n);

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

for (int j=0;j<3;j++)

scanf("%d",&s[i].so[j]);

}

}

void output(){

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

for (int j=0;j<3;j++)

printf("%d ",s[i].so[j]);

printf("\n");

}

printf("\n");

}

bool cmp(boso b1,boso b2){

for (int i=0;i<3;i++){

if (b1.so[i] < b2.so[i])

return 1;

if (b1.so[i] > b2.so[i])

return 0;

}

return 0;

}

void solve(){

sort(s,s+n,cmp);

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Ntsort:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct dayso{

int arr[111];

int soPhanTu;

int countSNT;

int ucln;

int tong;

};

int n;

dayso s[1111];

void input(){

scanf("%d",&n);

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

scanf("%d",&s[i].soPhanTu);

for (int j=0;j<s[i].soPhanTu;j++)

scanf("%d",&s[i].arr[j]);

s[i].countSNT = 0;

s[i].tong = 0;

s[i].ucln = s[i].arr[0];

}

}

bool laSNT(int so){

if ( so < 2 )

return 0;

for (int i=2;i<=sqrt(so);i++)

if ( so%i == 0 )

return 0;

return 1;

}

int timUCLN(int a,int b){

int c;

while(b>0)

{

c=a%b;

a=b;

b=c;

}

return a;

}

bool cmp(dayso day1,dayso day2){

// check SNT lon hon

if (day1.countSNT > day2.countSNT)

return 1;

if (day1.countSNT < day2.countSNT)

return 0;

// check UNLN lon hon

if (day1.ucln > day2.ucln)

return 1;

if (day1.ucln < day2.ucln)

return 0;

// check tong nho hon

if (day1.tong < day2.tong)

return 1;

if (day1.tong > day2.tong)

return 0;

return 0;

}

void solve(){

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

// tinh SNT

for (int j=0;j<s[i].soPhanTu;j++)

if ( laSNT(s[i].arr[j]) == 1 )

s[i].countSNT++;

// tinh ucln

for (int j=0;j<s[i].soPhanTu;j++)

s[i].ucln = timUCLN(s[i].ucln,s[i].arr[j]);

// tinh tong

for (int j=0;j<s[i].soPhanTu;j++)

s[i].tong = s[i].tong + s[i].arr[j];

}

// sort

sort(s,s+n,cmp);

}

void output(){

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

printf("%d %d %d\n",s[i].countSNT,s[i].ucln,s[i].tong);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

}

**Xuanoc:**

#include <iostream>

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

int n;

int s[111][111];

int arr[111111];

void input(){

scanf("%d",&n);

int idx = 0;

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

for (int j=0;j<n;j++){

// nhap ma tran

scanf("%d",&s[i][j]);

// gan ma tran vao mang

arr[idx] = s[i][j];

idx++;

}

}

}

void solve(){

int nn = n\*n;

sort(arr,arr+nn);

int idx = 0;

int hang = n/2;

int cot = n/2;

// nem vao xoan oc

int n1 = 1; // so buoc tu phai sang trai

int n2 = 1; // so buoc tu tren xuong duoi

int n3 = 2; // so buoc tu trai sang phai

int n4 = 2; // so buoc tu duoi len tren

s[hang][cot] = arr[idx]; // gan so 1 vao

idx++; // next sang so tiep theo

for (int j=0;j<n/2;j++ ){ // so vong xoay

// for tu phai sang trai

for (int i=0;i<n1;i++){

cot--;

s[hang][cot] = arr[idx];

idx++;

}

// for tu tren xuong duoi

for (int i=0;i<n2;i++){

hang++;

s[hang][cot] = arr[idx];

idx++;

}

// for tu trai qua phai

for (int i=0;i<n3;i++){

cot++;

s[hang][cot] = arr[idx];

idx++;

}

// for tu duoi len tren

for (int i=0;i<n4;i++){

hang--;

s[hang][cot] = arr[idx];

idx++;

}

n1 += 2;

n2 += 2;

n3 += 2;

n4 += 2;

}

// vi lo cong 2 o trong vong lap roi --> tru di 1 don vi

// de thoa man n1 sau cung = n1 truoc + 1

n1--;

// for tu phai sang trai

for (int i=0;i<n1;i++){

cot--;

s[hang][cot] = arr[idx];

idx++;

}

}

void output(){

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

for (int j=0;j<n;j++){

printf("%2d ",s[i][j]);

}

printf("\n");

}

printf("\n");

printf("\n");

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

output();

}

**}**

**Search1:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

int n;

int s[1111];

void input(){

scanf("%d",&n);

for (int i=1;i<=n;i++)

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

}

int timViTri(int num){

for (int i=1;i<=n;i++)

if ( s[i] == num )

return i;

return -1;

}

int timViTriBinary\_Search(int x){

int dau = 1; // index min

int cuoi = n; // index max

while ( dau <= cuoi ){ // dam bao la cai sub array ton tai

int mid = (dau+cuoi)/2;

int key = s[mid];

if ( key > x ){

// re trai

cuoi = mid-1;

}else if ( key < x ){

// re phai

dau = mid+1;

}else{

// deo re nua

return mid;

}

}

return -1;

}

void solve(){

int m,x;

scanf("%d",&m);

for (int i=0;i<m;i++){

scanf("%d",&x);

int idx = timViTriBinary\_Search(x);

printf("%d ",idx);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Searching2:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct NewNumber{

int idx;

int val;

};

int n;

NewNumber s[1111];

void input(){

scanf("%d",&n);

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

scanf("%d",&s[i].val); // nhap value cua mang

s[i].idx = i+1; // nhap index cho tung phan tu, dam bao khi sort ko bi lung tung

}

}

int bin\_search(int x){

int dau = 0; // index min

int cuoi = n-1; // index max

while ( dau <= cuoi ){ // dam bao la cai sub array ton tai

int mid = (dau+cuoi)/2;

int key = s[mid].val;

if ( key > x ){

// re trai

cuoi = mid-1;

}else if ( key < x ){

// re phai

dau = mid+1;

}else{

// deo re nua

return s[mid].idx; // vi tri nay la vi tri cu

}

}

return -1;

}

bool cmp(NewNumber so1,NewNumber so2){

if ( so1.val < so2.val )

return 1;

return 0;

}

void solve(){

int m,x;

// sort truoc khi search

sort(s,s+n,cmp);

// search sau khi sort

scanf("%d",&m);

for (int i=0;i<m;i++){

scanf("%d",&x);

int idx = bin\_search(x);

printf("%d ",idx);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Searching3:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct NewNumber{

int idx;

int val;

};

int n,x;

NewNumber s[1111];

void input(){

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

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

scanf("%d",&s[i].val); // nhap value cua mang

s[i].idx = i+1; // nhap index cho tung phan tu, dam bao khi sort ko bi lung tung

}

}

// tim so co index nho nhat co gia tri = x

int bin\_search\_trai(int x){

int dau = 0; // index min

int cuoi = n-1; // index max

int result = -1;

while ( dau <= cuoi ){ // dam bao la cai sub array ton tai

int mid = (dau+cuoi)/2;

int key = s[mid].val;

if ( key > x ){

// re trai

cuoi = mid-1;

}else if ( key < x ){

// re phai

dau = mid+1;

}else{

// re trai de tim result nho hon result cu ( tot hon )

result = mid; // luu kq tot hon

cuoi = mid-1; // re trai

}

}

return result;

}

// tim so co index lon nhat co gia tri = x

int bin\_search\_phai(int x){

int dau = 0; // index min

int cuoi = n-1; // index max

int result = -1;

while ( dau <= cuoi ){ // dam bao la cai sub array ton tai

int mid = (dau+cuoi)/2;

int key = s[mid].val;

if ( key > x ){

// re trai

cuoi = mid-1;

}else if ( key < x ){

// re phai

dau = mid+1;

}else{

// re phai de tim result lo\*n hon result cu ( tot hon )

result = mid; // luu kq tot hon

dau = mid+1; // re phai

}

}

return result;

}

bool cmp(NewNumber so1,NewNumber so2){

// sort gia tri truoc

if ( so1.val < so2.val )

return 1;

if ( so1.val > so2.val )

return 0;

// gia tri bang nhau thi sort index

if ( so1.idx < so2.idx )

return 1;

return 0;

}

void solve(){

// sort truoc khi search

sort(s,s+n,cmp);

// search sau khi sort

int l = bin\_search\_trai(x);

int r = bin\_search\_phai(x);

if ( l == -1 || r == -1 )

printf("-1");

else{

for (int i=l;i<=r;i++)

printf("%d ",s[i].idx);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Rprice1:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

int n;

int s[1111];

void input(){

scanf("%d",&n);

for (int i=1;i<=n;i++)

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

}

int timViTri(int num){

for (int i=1;i<=n;i++)

if ( s[i] >= num )

return i;

return -1;

}

int timViTriBinary\_Search(int x){

int dau = 1; // index min

int cuoi = n; // index max

int result = -1;

while ( dau <= cuoi ){ // dam bao la cai sub array ton tai

int mid = (dau+cuoi)/2;

int key = s[mid];

if ( key > x ){

result = mid; // luu ket qua tam thoi

cuoi = mid-1; // re trai

}else if ( key < x ){

// re phai

dau = mid+1;

}else{

// deo re nua

return mid;

}

}

return result;

}

void solve(){

int m,x;

scanf("%d",&m);

for (int i=0;i<m;i++){

scanf("%d",&x);

int idx = timViTriBinary\_Search(x);

printf("%d ",idx);

}

printf("\n");

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Bonus:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct nhanvien{

int idxcu;

int value;

};

int n,a,b;

nhanvien s[111];

int kq[1111],m;

void input(){

scanf("%d",&n);

scanf("%d %d",&a,&b);

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

scanf("%d",&s[i].value);

s[i].idxcu = i+1;

}

}

bool cmp(nhanvien so1,nhanvien so2){

if ( so1.value < so2.value )

return 1;

if ( so1.value > so2.value )

return 0;

if ( so1.idxcu < so2.idxcu )

return 1;

return 0;

}

int timIndexNhoNhatLonHonHoacBangA(){

int dau = 0;

int cuoi = n-1;

int result = -1;

while ( dau <= cuoi ){

int mid = (dau+cuoi)/2;

int key = s[mid].value;

if ( key > a ){

result = mid;

cuoi = mid-1; // re trai

} else if ( key < a ){

dau = mid+1; // re phai

} else {

result = mid;

cuoi = mid-1; // re trai

}

}

return result;

}

int timIndexLonNhatNhoHonHoacBangB(){

int dau = 0;

int cuoi = n-1;

int result = -1;

while ( dau <= cuoi ){

int mid = (dau+cuoi)/2;

int key = s[mid].value;

if ( key > b ){

cuoi = mid-1; // re trai

} else if ( key < b ){

result = mid;

dau = mid+1; // re phai

} else {

result = mid;

dau = mid+1; // re phai

}

}

return result;

}

void solve(){

sort(s,s+n,cmp);

int l = timIndexNhoNhatLonHonHoacBangA();

int r = timIndexLonNhatNhoHonHoacBangB();

if ( l == -1 || r == -1 )

printf("-1\n");

else{

m = 0;

for (int i=l;i<=r;i++){

kq[m] = s[i].idxcu; // don ket qua vao 1 mang tam

m++;

}

sort(kq,kq+m); // sap xep ket qua

for (int i=0;i<m;i++) // in ket qua

printf("%d ",kq[i]);

printf("\n");

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}

**Dem cow:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

int nchuong,nbo;

int s[100002];

void input(){

scanf("%d %d",&nchuong,&nbo);

for (int i=0;i<nchuong;i++)

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

}

bool laKetQua(int num){

// num la khoang cach toi thieu giua 2 con bo lien tiep

int lastCow = s[0]; // toa do tha? con bo dau tien

int dem = 1; // dem so bo duoc nem vao chuong

for (int i=1;i<nchuong;i++){

int khoangCach = s[i] - lastCow;

// tinh khoang cach tu chuong dang xet den cai chuong duoc chon moi nhat

if ( khoangCach >= num ){

// neu khoang cach giua 2 chuong ma >= khoang cach toi thieu

lastCow = s[i]; // nem con bo vao cai chuong nay

dem++; // dem so bo duoc nem vao chuong

if ( dem == nbo ) // khi ma nem duoc du so bo duoc giao thi la ket qua

return 1;

}

}

return 0;

}

void linear\_search(){

for (int i=s[nchuong-1] - s[0];i>0;i--){

// tim kiem tat ca cac ket qua tu to nhat den be nhat

if ( laKetQua(i) ){

printf("%d\n",i);

break;

}

}

}

void quick\_search(){

int dau = 1;

int cuoi = s[nchuong-1] - s[0];

int result = -1;

while ( dau <= cuoi ){

int x = (dau+cuoi)/2; // ket qua minh xet

if ( laKetQua(x) ){ // kiem tra ket qua hop le

result = x;

dau = x+1;

} else {

cuoi = x-1;

}

}

printf("%d\n",result);

}

void solve(){

sort(s,s+nchuong); // sort toa do cac chuong

//linear\_search();

quick\_search();

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

// printf("100000\n");

// int x = 1;

// for (int i=0;i<100000;i++){

// printf("%d ",x);

// x = x+(rand()%3+1);

// }

}

**Dichuyen ma tran demo:**

**#include <iostream>**

#include <fstream>

#include <math.h>

#include <string.h>

#include <stdio.h>

#include <algorithm>

using namespace std;

struct toado{

int hang;

int cot;

};

toado hg[4]={-1,0 // hg[0]

,0,1 // hg[1]

,1,0 // hg[2]

,0,-1}; // hg[3]

toado s1,s2;

int n;

void input(){

scanf("%d %d",&s1.hang,&s1.cot);

}

void solve(){

int idx;

scanf("%d",&n);

printf("%d %d\n",s1.hang,s1.cot);

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

scanf("%d",&idx); // nhap danh sach huong can di

s2.hang = s1.hang + hg[idx].hang; // tinh toa do hang moi

s2.cot = s1.cot + hg[idx].cot; // tinh toa do cot moi

printf("%d %d\n",s2.hang,s2.cot); // in ra check hang

s1 = s2; // dich chuyen diem cu sang diem moi

}

}

int main(int argc, const char \* argv[]) {

freopen("input.txt","r",stdin);

int ntest;

scanf("%d",&ntest);

for (int itest=0;itest<ntest;itest++){

input();

solve();

}

}