//Tur 1 zad A

#include <fstream>

using namespace std;

ifstream cin("equation.in");

ofstream cout("equation.out");

int main()

{

int a, b, c;

cin>>a>>b>>c;

if(a+b==c)

{

cout<<a<<"+"<<b<<"="<<c;

return 0;

}

if(a-b==c)

{

cout<<a<<"-"<<b<<"="<<c;

return 0;

}

if(a\*b==c)

{

cout<<a<<"\*"<<b<<"="<<c;

return 0;

}

if( b!=0 && a/b==c)

{

cout<<a<<"/"<<b<<"="<<c;

return 0;

}

if(a==b+c)

{

cout<<a<<"="<<b<<"+"<<c;

return 0;

}

if(a==b-c)

{

cout<<a<<"="<<b<<"-"<<c;

return 0;

}

if(a==b\*c)

{

cout<<a<<"="<<b<<"\*"<<c;

return 0;

}

if(c!=0 && a==b/c)

{

cout<<a<<"="<<b<<"/"<<c;

return 0;

}

return 0;

}

Tur 1 zad b

#include <fstream>

#include <set>

using namespace std;

ifstream cin("boxes.in");

ofstream cout("boxes.out");

#define ll long long

multiset <ll> s;

int main()

{

ll n, m, i, j, a, b, res = 0;

cin>>n>>m;

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

{

cin>>a;

s.insert(a);

}

while(!s.empty()&& \*s.begin()<=n)

{

res++;

n-= (\*s.begin());

s.erase(s.begin());

}

cout<<res;

return 0;

}

Tur 1 zad c

#include <fstream>

#include <set>

#include <algorithm>

#include <vector>

using namespace std;

ifstream cin("magic.in");

ofstream cout("magic.out");

#define ll long long

set<int> used;

vector <pair <pair<int, int> , int> > v;

int main()

{

int n, l, r, i, j, a, b, k = 0;

cin>>n;

n++;

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

{

cin>>l>>r;

v.push\_back(make\_pair(make\_pair(l, 1), i+1));

v.push\_back(make\_pair(make\_pair(r, 2), i+1));

}

sort(v.begin(), v.end());

for(i = 0; i<v.size();i++)

{

if(v[i].first.second==1)

{

k++;

used.insert(v[i].second);

if(k==n-1)

{

a = 1;

set<int>::iterator it = used.begin();

while(it!=used.end() && \*it==a)

{

a++;

it++;

}

cout<<a<<"\n";

return 0;

}

}else

{

k--;

used.erase(v[i].second);

}

}

}

Tur 1 zad d

#include <fstream>

#include <vector>

using namespace std;

ifstream cin("football.in");

ofstream cout("football.out");

//ofstream coutt("output.txt");

#define MAXN 1005

#define MAXM 1005

struct p

{

int x;

int y;

};

vector<pair<p, p> > vv;

long long dp[MAXN][MAXM];

int main()

{

long long n, m, q, i, j, k, l;

long long ress = 0;

cin >> n >> m >> q;

p a, b;

for (i = 0; i < q; i++)

{

cin >> a.x >> a.y >> b.x >> b.y;

vv.push\_back({ a, b });

}

for (i = 1; i <= n; i++)//st

{

for (j = 1; j <= m; j++)

{

dp[i][j] = 0;

}

}

for (i = 0; i < q; i++)

{

dp[vv[i].first.x][vv[i].first.y]++;

}

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

{

for (j = 1; j <= m; j++)

{

dp[i][j] += dp[i - 1][j] + dp[i][j - 1] - dp[i - 1][j - 1];

}

}

for (i = 0; i < q; i++)

{

ress += dp[vv[i].second.x][vv[i].second.y];

}

for (i = 1; i <= n; i++)//end

{

for (j = 1; j <= m; j++)

{

dp[i][j] = 0;

}

}

for (i = 0; i < q; i++)

{

dp[vv[i].second.x][vv[i].second.y]++;

}

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

{

for (j = 1; j <= m; j++)

{

dp[i][j] += dp[i - 1][j] + dp[i][j - 1] - dp[i - 1][j - 1];

}

}

for (i = 0; i < q; i++)

{

ress += (-1\*dp[vv[i].second.x][vv[i].first.y - 1] - dp[vv[i].first.x - 1][vv[i].second.y] + dp[vv[i].first.x - 1][vv[i].first.y - 1]);

}

for (i = 1; i <= n+1; i++)//hpref

{

for (j = 1; j <= m+1; j++)

{

dp[i][j] = 0;

}

}

for (i = 0; i < q; i++)

{

dp[vv[i].second.x + 1][vv[i].second.y]++;

dp[vv[i].second.x + 1][vv[i].first.y]--;

}

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

{

for (j = m+1; j >= 1; j--)

{

dp[i][j] += dp[i][j + 1];

}

}

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

{

for (j = 1; j <= m+1; j++)

{

dp[i][j] += dp[i - 1][j];

}

}

for (i = 0; i < q; i++)

{

ress += (-1\*dp[vv[i].first.x][vv[i].second.y + 1]);

}

for (i = 1; i <= n+1; i++)//vpref

{

for (j = 1; j <= m+1; j++)

{

dp[i][j] = 0;

}

}

for (i = 0; i < q; i++)

{

dp[vv[i].second.x][vv[i].second.y + 1]++;

dp[vv[i].first.x][vv[i].second.y + 1]--;

}

for (i = 1; i <= m+1; i++)

{

for (j = n+1; j >= 1; j--)

{

dp[j][i] += dp[j + 1][i];

}

}

for (i = 1; i <= m+1; i++)

{

for (j = 1; j <= n+1; j++)

{

dp[j][i] += dp[j][i - 1];

}

}

for (i = 0; i < q; i++)

{

ress += (-1\*dp[vv[i].second.x + 1][vv[i].first.y]);

}

ress -= q;

ress /= 2;

cout << ress;

return 0;

}

Tur 1 zad e

#include <fstream>

#include <map>

#include <unordered\_map>

#include <vector>

using namespace std;

using namespace std;

typedef long long ll;

typedef unsigned long long ull;

typedef pair<int, int> pii;

typedef vector<int> vi;

typedef long double ld;

#define pb push\_back

const int arr = 2e5 + 10;

const int ar = 2e3 + 10;

const ll md = 1e9 + 7;

ifstream cin("radioactive.in");

ofstream cout("radioactive.out");

void add(int& a, int b)

{

a += b;

if (a>md) {

a -= md;

}

}

ll n, c;

int rem[ar];

int dp[ar][202];

unordered\_map<ll, int> remm;

int get(ll n)

{

if (n<ar) {

return rem[n];

}

if (remm.count(n)) {

return remm[n];

}

vi pref\_sum(0);

ll l = n / 2;

vi vals(c + 1);

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

vals[i] = get(l - i - 1);

pref\_sum.pb((pref\_sum.empty() ? 0 : pref\_sum.back()));

add(pref\_sum.back(), vals[i]);

}

if (n % 2 == 1) {

int ans = 0;

/// set 1

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

add(ans, 1ll \* vals[i] \* pref\_sum[c - i - 1] % md);

}

/// set 0

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

add(ans, 1ll \* vals[i] \* pref\_sum[c] % md);

}

return remm[n] = ans;

}

else {

int ans = 0;

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

add(ans, 1ll \* vals[i] \* pref\_sum[c - i] % md);

}

return remm[n] = ans;

}

}

int main()

{

cin >> n >> c;

dp[0][0] = 1;

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

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

if (j != c) {

add(dp[i + 1][j + 1], dp[i][j]);

}

add(dp[i + 1][0], dp[i][j]);

}

}

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

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

add(rem[i], dp[i][j]);

}

}

cout << get(n) << "\n";

}

Tur 2 zad A

#include <fstream>

#include <algorithm>

#include <string.h>

using namespace std;

int main()

{

ifstream cin("dog.in");

ofstream cout("dog.out");

long long a,b,c,d,l,m,p,l1=0,m1=0,p1=0,a1=0,c1=0,j;

cin>>a>>b>>c>>d>>l>>m>>p;

a1=a+b;

c1=c+d;

if(l%a1<=a && l%a1!=0)l1++;

if(l%c1<=c && l%c1!=0)l1++;

if(m%c1<=c && m%c1!=0)m1++;

if(m%a1<=a && m%a1!=0)m1++;

if(p%a1<=a && p%a1!=0)p1++;

if(p%c1<=c && p%c1!=0)p1++;

cout<<l1<<endl<<m1<<endl<<p1;

}

Tur 2 zad b

#include <fstream>

using namespace std;

ifstream cin("calculation.in");

ofstream cout("calculation.out");

int main()

{

long long a, b, c, d, s;

long long ai, bi, ci, di, ki, n, m, k, l, sum, ts;

long long resa, resb, resc, resd, resk = 1000000ll\*100000ll;

cin>>a>>b>>c>>d>>s;

if(a\*5+b\*10+c\*20+d\*50<s || s%5!=0)

{

cout<<-1;

return 0;

}

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

{

ts = s;

if(i\*50>ts)

{

di = ts/50;

ts-=di\*50;

}else

{

di = i;

ts-=di\*50;

}

ci = min(c, ts/20);

ts-=ci\*20;

bi = min(b, ts/10);

ts-=bi\*10;

ai = min(a, ts/5);

ts-=ai\*5;

if(ts>0)

{

continue;

}

ki = ai+bi+ci+di;

if(ki<resk)

{

resk = ki;

resa = ai;

resb = bi;

resc = ci;

resd = di;

}

}

if(resk==1000000ll\*100000ll)

{

cout<<-1;

}else {

cout<<resa<<" "<<resb<<" "<<resc<<" "<<resd<<" "<<resk;

}

return 0;}

Tur 2 zad c

#include<fstream>

#include <math.h>

#include <string>

using namespace std;

ifstream cin("strings.in");

ofstream cout("strings.out");

long long dp[1000005];

string s;

long long inf[30][30];

long long infi[30][30];

int main()

{

long long a, b, c, i, j, k, l;

long long mini, maxi;

cin>>a;

cin>>s;

for(i = 0; i<26;i++)

{

for(j = 0; j<26; j++)

{

infi[i][j] = -1;

}

}

for(i = 0; i<26;i++)

{

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

}

if(1)

{

for(i = 1; i<a;i++)

{

long long best = 0;

while(infi[best][best]==-1){best++;}

for(j = best + 1; j<26;j++)

{

if(infi[s[i]-'a'][j]!=-1)

{

if(inf[s[i]-'a'][best]+(i - infi[s[i] - 'a'][best])\*abs((int)(s[i]-'a' - best)) < inf[s[i]-'a'][j]+(i - infi[s[i] - 'a'][j])\*abs((int)(s[i]-'a' - j)))

{

best = j;

}

}

}

dp[i] = inf[s[i]-'a'][best]+(i - infi[s[i] - 'a'][best])\*abs((int)(s[i]-'a' - best));

for(j = 0; j<26;j++)

{

if(infi[j][s[i] - 'a']==-1)

{

inf[j][s[i] - 'a']= dp[i];

infi[j][s[i] - 'a']= i;

}else

{

if(dp[i]>inf[j][s[i] - 'a'] + (i - infi[j][s[i] - 'a'])\*abs((int)(s[i] - 'a' - j)) )

{

infi[j][s[i] - 'a']= i;

inf[j][s[i] - 'a'] = dp[i];

}

}

}

}

/\*for(i = 0; i<a;i++)

{

cout<<dp[i]<<" ";

}\*/

cout<<dp[a-1];

}else

{

for(i = 1; i<a;i++)

{

for(j = 0; j<i; j++)

{

dp[i] = max(dp[i], dp[j] + (i-j)\*abs(s[i] - s[j]));

}

}

for(i = 0; i<a;i++)

{

cout<<dp[i]<<" ";

}

//cout<<dp[i-1];

}

}

/\*

16

abccbaeedbaddbad

\*/

Tur 2 zad d

#include <fstream>

#include <vector>

using namespace std;

ifstream cin("robot.in");

ofstream cout("robot.out");

vector<int> v;

vector<int> vv;

vector<int> pos;

vector<int> dp;

int lb(int a, int l, int r)

{

if (l == r)

{

return l;

}

else

{

int mid = (l + r) / 2;

if (a <= dp[mid])

{

}

else

return lb(a, mid + 1, r);

{

return lb(a, l, mid);

}

}

}

int main()

{

int n, k, i, j, a;

cin >> n >> k;

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

{

cin >> a;

vv.push\_back(a);

}

for (i = 0; i < k; i++)

{

if (i % 2 == 0)

{

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

{

v.push\_back(vv[j]);

}

}

else

{

for (j = n - 1; j >= 0; j--)

{

v.push\_back(vv[j]);

}

}

}

dp.push\_back(v[0]);

pos.push\_back(0);

for (i = 1; i < v.size(); i++)

{

if (v[i] <= dp[0])

{

dp[0] = v[i];

pos.push\_back(0);

}

else if (v[i]>dp.back())

{

pos.push\_back(dp.size());

dp.push\_back(v[i]);

}

else

{

int poss = lb(v[i], 0, dp.size() - 1);

pos.push\_back(poss);

dp[poss] = v[i];

}

}

int result = dp.size();

cout << result << "\n";

}

Tur 2 zad e

#include <fstream>

#include <algorithm>

#include <string>

using namespace std;

ifstream cin("lanterns.in");

ofstream cout("lanterns.out");

string s;

long long dat[300005];

long long res, n;

void getRes()

{

long long tRes=0, i, tm=0;

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

{

tm = max(tm - 1, 0ll);

if (tm < dat[i])

{

tRes += (dat[i] \* (dat[i] + 1)) / 2;

tRes -= (tm \* (tm + 1)) / 2;

tm = dat[i];

}

}

res = max(res, tRes);

}

int main()

{

long long q, i, j, a, b, c;

cin >> n >> q;

cin >> s;

a = s[0]-'0';

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

{

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

{

dat[i - a] = max(dat[i-a], a);

a = 0;

}

else

{

a++;

}

}

dat[i - a] = max(dat[i - a], a);

getRes();

cout << res<<"\n";

for (j = 0; j < q; j++)

{

cin >> a >> b >> c;

a--;

b--;

if (c == 0)

{

for (;a <= b;a++)

{

s[a] = '0';

}

cout << res<<"\n";

}

else

{

c = b - a + 1;

i = b+1;

while (i < n&&s[i] == '1')

{

i++;

}

c += i - b - 1;

i = a - 1;

while (i >= 0&&s[i] == '1')

{

i--;

}

c += a - i - 1;

i++;

dat[i] = max(dat[i], c);

getRes();

cout << res << "\n";

for (; a <= b; a++)

{

s[a] = '1';

}

}

}

}