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// Chuong trinh nhap, xuat va tinh tong dong hay cot nguoi dung yeu cau and tim kiem

#include <iostream>

#include <time.h>

using namespace std;

const int maxr = 5;

const int maxc = 6;

void NhapMang ( int a[][maxc],int m, int n);

void XuatMang ( int a[][maxc],int m, int n);

bool SearchX ( int a[][maxc], int m, int n , int x);

void TimKiem ( int a[][maxc], int m, int n, int x );

int DemSLXH( int a[][maxc], int m, int n, int x );

int main ()

{

int a[maxr][maxc] = {0};

int m,n,x;

int chon, dong, cot;

int Tong = 0;

// Kiem tra dieu kien cua dong

do {cout <<" Nhap vao so dong ban can: "; cin >> m; cout << endl;

if ( m <= 0 || m > maxr)

cout <<" Nhap sai. Nhap lai!!!\n";

} while (m <= 0 || m > maxr);

// Kiem tra dieu kien cua cot

do {cout <<" Nhap vao so cot ban can: "; cin >> n; cout << endl;

if ( n <= 0 || n > maxc)

cout <<" Nhap sai. Nhap lai!!!\n";

} while (n <= 0 || n > maxc);

// Nhap mang a

NhapMang ( a, m, n );

// Xuat mang A

XuatMang ( a, m, n );

cout <<" Ban can tinh tong tren dong/cot :\n1. Dong\n2. Cot\n";

cout <<" Ban chon: ";

cin >> chon;

switch ( chon )

{

// Duyet dong

case 1: {do {cout <<" Nhap so dong can tinh: "; cin >> dong;

if ( dong <= 0 || dong > m )

cout <<" Nhap sai. Nhap lai\n";

} while ( dong <= 0 || dong > m );

for ( int k = 0; k < n; k++) // k duyet cot, dong co dinh

Tong += a[dong - 1][k];

cout <<" Tong dong " << dong <<" la: " << Tong << endl;}

break;

// Duyet cot

case 2: {do {cout <<" Nhap so cot can tinh: "; cin >> cot;

if ( cot <=0 || cot > n )

cout <<" Nhap sai. Nhap lai\n";

} while ( cot <=0 || cot > n );

for ( int k = 0; k < m; k++) // k duyet hang, cot co dinh

Tong += a[k][cot - 1];

cout <<" Tong cot " << cot <<" la: " << Tong << endl;}

break;

default: cout <<" Lua chon khong hop le.\nChao tam biet\n";

}

// Tim kiem va dem tan so xuat hien con x

cout <<" Ban can tim gia tri: ";

cin >> x;

TimKiem ( a, m, n ,x);

system ("pause");

return 0;

}

// Ham nhap mang

void NhapMang ( int a[][maxc],int m, int n)

{

cout <<" Moi ban nhap vao cac gia tri cua mang: \n";

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

{

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

{/\*

cout <<" Nhap phan tu thu a[" << i <<"][" << j <<"]: ";

cin >> a[i][j];\*/ a[i][j] = 1 + rand() % ( 10 - 1 + 1);

}

cout << endl;

}

}

// Ham xuat mang

void XuatMang ( int a[][maxc],int m, int n)

{

cout <<" Mang da luu la: \n";

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

{

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

{

cout << a[i][j] <<"\t";

}

cout << endl;

}

}

// Ham tim kiem con X

//bool TimKiem ( int a[][maxc], int m, int n , int x)

//{

// /\*bool flag = false;

// int dem = 0;

// int vtd, vtc;

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

// {

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

// {

// if ( a[i][j] == x )

// {

// flag = true;

// dem += 1;

// vtd = i;

// vtc = j;

// }

// }

// }

// if ( flag == true)

// cout << x <<" Co ton tai trong mang\n";

// else

// cout << x <<" khong co ton tai trong mang\n";

// if ( dem > 0)

// cout << x <<" Xuat hien " << dem <<" lan tai cac vi tri: a[" << vtd <<"][" << vtc <<" ], " << "\t";\*/

//}

bool SearchX ( int a[][maxc], int m, int n , int x)

{

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

{

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

{

if ( a[i][j] == x )

{

return true;// co xuat hien trong mang

}

}

}

return false; // không xuat hien trong mang

}

int DemSLXH( int a[][maxc], int m, int n, int x )

{

int dem = 0;

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

{

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

{

if ( a[i][j] == x )

dem += 1;

}

}

return dem;

}

void TimKiem ( int a[][maxc], int m, int n , int x)

{

int vtd, vtc;

if(SearchX(a, m, n, x) == true)

{

cout << x << " co ton tai trong mang va xuat hien " << DemSLXH(a, m, n, x) <<" lan " << " tai cac vi tri: " ;

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

{

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

{

if ( a[i][j] == x )

{

vtd = i;

vtc = j;

cout << "a[" << vtd <<"][" << vtc <<" ], " << "\t";

}

}

}

}

else

cout << x <<" khong co ton tai trong mang\n";

cout << endl;

}