**Assignment 06**

import java.io.\*;

import java.util.\*;

public class BankAlgorithm {

public static void main(String[] args) throws Exception {

BufferedReader b=new BufferedReader(new

FileReader("C:\\Users\\Sadia\\Desktop\\inputs.txt"));

int row=Integer.parseInt(b.readLine());

int col=Integer.parseInt(b.readLine());

String []process = new String[row];

int [][]max=new int[row][col];

int [][]allocation=new int[row][col];

int [][]need=new int[row][col];

int [][]available=new int[row+1][col];

LinkedList<Integer> track=new LinkedList<Integer>();

for(int q=0;q<row;q++) {

process[q]=""+(q+1);

}

for(int q=0;q<row;q++) {

String t=b.readLine();

StringTokenizer st = new StringTokenizer(t," ");

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

max[q][m] = Integer.parseInt(st.nextToken());

}

}

for(int q=0;q<row;q++) {

String t=b.readLine();

StringTokenizer st = new StringTokenizer(t," ");

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

allocation[q][m] = Integer.parseInt(st.nextToken());

need[q][m] = max[q][m]-allocation[q][m];

}

}

System.out.println("Require matrix");

for(int q=0;q<row;q++) {

System.out.println();

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

System.out.print(need[q][m]+" ");

}

}

System.out.println();

String t=b.readLine();

StringTokenizer st=new StringTokenizer(t," ");

int e=0;

while(st.hasMoreTokens()) {

available[0][e] = Integer.parseInt(st.nextToken());

e++;

}

e=0;

for(int q=0;;q++) {

q=q%row;

boolean flag = true;

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

if(need[q][m]<=available[e][m]) {

}

else{

flag=false;

break;

}

if(flag && m==(col-1) && !track.contains(q)){

for(int k=0;k<col;k++) {

available[e+1][k] = available[e][k] + allocation[q][k];

}

track.addLast(q);

e++;

}

}

if(track.size()==row) {

break;

}

}

int[] a= new int[5];

System.out.println();

System.out.println("safe sequences:");

for(int q=0;q<track.size();q++) {

a[q]= Integer.parseInt(process[track.get(q)]);

}

for(int q=0;q<5;q++) {

if(a[q]==1) {

System.out.print("A ");

}

else if (a[q]==2) {

System.out.print("B ");

}

else if (a[q]==3) {

System.out.print("C ");

}

else if (a[q]==4) {

System.out.print("D ");

}

}

System.out.println();

System.out.println("\nChange in available resource metrics: ");

for(int q=1;q<available.length;q++) {

System.out.println();

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

System.out.print(available[q][m]+" ");

}

}

System.out.println();

}

}