Data Structure and Algorithms

(HackerEarth solved Quiz) 2022

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Q 1) Monk and Rotation

<https://www.hackerearth.com/practice/codemonk/>

Java source code:

import java.io.BufferedReader;

import java.io.InputStreamReader;

import java.util.\*;

class TestClass {

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

Scanner scanner = new Scanner(System.in);

int test = scanner.nextInt();

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

int size = scanner.nextInt();

int rotations = scanner.nextInt();

rotations = rotations % size;

scanner.nextLine();

String str = scanner.nextLine();

String[] strarray = str.split(" ");

StringBuffer sb = new StringBuffer();

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

sb.append(strarray[(size + j - rotations) % size] + " ");

}

System.out.print(sb);

System.out.println("");

}

}

}

Q 2) Monk and Inversions

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.util.\*;

class TestClass {

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

Scanner s = new Scanner(System.in);

int test = Integer.parseInt(s.nextLine());

while (test !=0){

int matrixSize = s.nextInt();

int [][]a=new int[matrixSize][matrixSize];

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

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

a[i][j]=s.nextInt();

}

}

int counter=0;

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

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

for(int p=i;p<matrixSize;p++){

for(int q=j;q<matrixSize;q++){

if(a[i][j]>a[p][q]){

counter++;

}

}

}

}

}

System.out.println(counter);

test -=1;

}

}

}

Q 3) Cyclic shift

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.io.\*;

import java.util.\*;

class TestClass

{

static int compare(LinkedList<Character> A, LinkedList<Character> B){

Iterator<Character> i = A.iterator();

Iterator<Character> j = B.iterator();

if(A.size() == 0)

{

return -1;

}

while (i.hasNext())

{

char c = i.next();

char d = j.next();

if (c < d)

{

return -1;

}

else if (c > d)

{

return 1;

}

}

return 0;

}

public static void main(String[] args)

{

Scanner sc = new Scanner(System.in);

int T = sc.nextInt();

while(T-- > 0)

{

int N =sc.nextInt();

int K = sc.nextInt();

String input = sc.next();

LinkedList<Character> B = new LinkedList<>();

LinkedList<Character> inter = new LinkedList<>();

int d = 0;

int period = -1;

for(char c: input.toCharArray())

{

inter.add(c);

}

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

{

if (compare(B, inter) < 0)

{

B = new LinkedList<>(inter);

d = i;

}

else if (compare(B, inter) == 0)

{

period = i - d;

break;

}

inter.add(inter.removeFirst());

}

if(period == -1)

{

System.out.println(d + (K - 1L) \* N);

}

else

{

System.out.println(d + ((K - 1L) \* period));

}

}

}

}

Q 4) Minimum AND xor OR

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.util.\*;

import java.lang.\*;

class TestClass {

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

Scanner s = new Scanner(System.in);

int test = s.nextInt();

while(test-->0){

int size= s.nextInt();

int []a=new int[size];

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

a[i]=s.nextInt();

}

Arrays.sort(a);

int min=a[0]^a[1];

int temp;

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

temp=a[i]^a[i+1];

if(temp<min){

min=temp;

}

}

System.out.println(min);

}

}

}

Q 5) Monk and Nice Strings

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.io.BufferedReader;

import java.io.InputStreamReader;

import java.util.\*;

class TestClass {

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

Scanner s = new Scanner(System.in);

int size = s.nextInt();

int counter=0;

String a[]= new String [size+1];

s.nextLine();

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

a[i]=s.nextLine();

}

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

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

if((a[i].compareTo(a[j]))>0){

counter++;

}

}

System.out.println(counter);

counter=0;

}

}

}

Q 6) Monk and Suffix Sort

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.util.\*;

import java.lang.\*;

class TestClass {

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

Scanner s = new Scanner(System.in);

char c='\uffff';

String input = s.next();

int index=s.nextInt();

String []a=new String[input.length()];

a[0]=input;

for(int i=1;i<input.length();i++){

a[i]=input.substring(i);

}

Arrays.sort(a);

System.out.println(a[index-1]);

}

}

Q 7) Monk being monitor

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.util.\*;

import java.lang.\*;

class TestClass {

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

{

Scanner s = new Scanner(System.in);

int test = s.nextInt();

while(test --> 0){

int size= s.nextInt();

int []a=new int[size];

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

a[i]=s.nextInt();

}

int cur\_freq = 0;

int min = 2147483647;

int ans=0;

Arrays.sort(a);

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

if(i!=size-1 && a[i]==a[i+1]){

cur\_freq++;

}

else{

cur\_freq++;

if(min>cur\_freq){

min=cur\_freq;

}

else{

ans=Math.max(ans,cur\_freq-min);

}

cur\_freq=0;

}

}

if(ans>0){

System.out.println(ans);

}

else{

System.out.println(-1);

}

}

}

}

Q 7) Monk and Sorting Algorithm

<https://www.hackerearth.com/practice/codemonk/>

Java Souce Code:

import java.util.\*;

class TestClass {

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

Scanner s = new Scanner(System.in);

int size = s.nextInt();

int a[]=new int[size];

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

a[i]=s.nextInt();

}

int maxar[] = new int[size];

int r=100000;

int temp=0;

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

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

if((a[i] %r) > (a[j]%r)){

temp = a[i];

a[i]=a[j];

a[j]=temp;

}

}

System.out.print(a[i]+" ");

}

System.out.print();

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

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

if(((a[i]/r)) > ((a[j]/r))){

temp = a[i];

a[i]=a[j];

a[j]=temp;

}

}

System.out.print(a[i]+" ");

}

}

}