**1.BANGLE PROBLEM**

Vel bought 2 bangles for his elder sister Priya, as a birthday gift. Before presenting the gift, Vel challenges his sister to answer his question blindfolded. He places both the bangles on the table and asks Priya to answer two questions:  
1) Are the two bangles intersecting or touching or not touching?  
2) What is the distance between the centers of the bangles?  
To answer these questions, Vel gives the centers C1(x1, y1) and C2(x2, y2) and radius R1 and R2 of the bangles.  
Now write a program to help Priya to answer her brother's questions.  
  
**Input format:**  
First line of the input consists of two integers separated by a space which corresponds to x1 and y1 values, respectively.  
Second line of the input consists of two integers separated by a space which corresponds to x2 and y2 values, respectively.  
Third line of the input consists of two integers separated by a space which corresponds to R1 and R2 values, respectively.  
  
**Output Format:**  
First line of the Output is a string ,"Intersects" or "Touches" or "Do not Touch".  
Second line of the output is a float value which corresponds to the distance between the two centers of the bangles, Rounded-off to 2 decimal points.  
  
**Sample Input 1:**  
3 4  
14 18  
5 8  
**Sample Output 1:**  
Do not Touch  
17.80  
 **Sample Input 2:**  
3 4  
4 6  
4 5  
**Sample Output 2:**  
Intersects  
2.24  
  
**Sample Input 3:**  
1 1  
3 1  
1 1  
**Sample Output 3:**  
Touches  
2.00  
  
**Hints:**  
**Distance between two points formula:**  
D = √((x2-x1)2+(y2-y1)2)

ANSWER:

import java.text.DecimalFormat;

import java.util.Scanner;

public class BanglesGift {

public static void main(String[] args) {

Scanner input=new Scanner(System.in);

int x1=input.nextInt();

int y1=input.nextInt();

int x2=input.nextInt();

int y2=input.nextInt();

int r1=input.nextInt();

int r2=input.nextInt();

double distance=Math.sqrt((Math.pow((x2-x1),2))+

(Math.pow((y2-y1),2)));

if(distance==(r1+r2)) {

System.out.println("Touches");

}

else if(distance>(r1+r2)) {

System.out.println("Do not Touch");

}

else {

System.out.println("Intersects");

}

DecimalFormat df=new DecimalFormat("#.00");

System.out.println(df.format(distance));

}

}

**2.Sliding Number**

Priya's son Sai is doing his 2nd grade. He started learning about number. To test his intelligence, Priya asks him to solve a problem. The problem is to find the number of sliding numbers within a given range. A number is called sliding number if all adjacent digits have an absolute difference of 1.   
For e.g.,  '432' is a Sliding Number while 542 is not.  
Write a program to help Sai to find the number of sliding numbers in range [M, N]. (both M and N inclusive)  
  
**Input format:**  
First input is an integer that denotes the M value.  
Second input is an integer that denotes the N value.  
**Assume**: N>M>=10.  
  
**Output format:**  
Output is an integer that denotes the number of sliding numbers.  
  
**Sample Input 1:**  
10  
25  
**Sample Output 1:**  
4  
  
**Explanation:**  
Sliding numbers are 10 12 21 23.  
  
**Sample Input 2:**  
10  
15  
**Sample Output 2:**  
2

ANSWER:

import java.util.Scanner;

public class SlidingNumber {

public static void main(String[] args) {

Scanner input=new Scanner(System.in);

int M=input.nextInt();

int N=input.nextInt();

int count=0;

for(int i=M;i<=N;i++) {

boolean isValid=true;

String str=String.valueOf(i);

for(int j=0;j<str.length()-1;j++) {

int a=Integer.parseInt(String.valueOf(str.charAt(j)));

int b=Integer.parseInt(String.valueOf(str.charAt(j+1)));

if(Math.abs(a-b)!=1) {

isValid=false;

break;

}

}

if(isValid) {

count++;

}

}

System.out.println(count);

}

}

**3.CHOCOLATE BOX**

Priya returned to India from the onsite trip to Singapore. She bought lots of chocolates for his son Sai and younger brother Vel. The chocolate box is square shaped and contains identical compartments. Each compartment contains several number of chocolates. Now comes the fight between Sai and Vel for the chocolates. To stop the fight, Priya gives a condition to both of them that, the compartments in the upper triangular part of the box are for Sai and that of the lower triangular part is for Vel, and the compartments in the main diagonal will be shared by Priya and her husband.  
Now help Sai and Vel to find how many chocolates did each get, by witing a program.  
  
**Note**: In this problem, Upper Triangle consists of elements above the main diagonal, and the Lower triangle consists of elements below the main diagonal.  
  
**Input Format:**  
First input is an integer that denotes the N value, size of the box. The range of N is [1 - 15], both inclusive.  
Next N lines of the input consists of N integers separated by space in each line, that denotes the number of chocolates in each compartment.  
  
**Output Format:**  
Output is two integers separated by a space that denotes the number of chocolates for Sai and number of chocolates for Vel, respectively.  
**Note:**If N = 1, there is no upper triangle and lower triangle. The single element present corresponds to the main diagonal.  
  
**Sample Input 1:**  
4  
1 2 3 4  
8 5 9 6  
1 2 3 15  
 5 7 1 6  
**Sample Output 1:**  
39 24

ANSWER:

import java.util.Scanner;

public class ChocolateBox {

public static void main(String[] args) {

Scanner input=new Scanner(System.in);

int n=input.nextInt();

int a[][]=new int[n][n];

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

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

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

}

}

int sum1=0,sum2=0;

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

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

if(i>j&&i!=j) {

sum1+=a[i][j];

}

}

}

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

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

if(i<j&&i!=j) {

sum2+=a[i][j];

}

}

}

System.out.println(sum2+" "+sum1);

}

}

**4.SAI'S PROGRAMMING SKILLS**

Sai is doing his 5th grade in VIBGYOR International School. He has already started to do programming. Priya, being a programming geeks, tests her son's knowledge by asking him to code for her requirement. The requirement is as follows:  
Given two arrays A and B each containing N numbers, choose exactly one number from A and exactly one number from B such that the index of the two chosen numbers is not same and the sum of the 2 chosen values is minimum. Formally, if you choose ith element from A whose value is x and jth element from B whose value is y, you need to minimize the value of (x+y) such that i is not equal to j.  
Help Sai in writing the program.  
  
**Input format:**  
First line of the input is an integer that denotes the N value,size of the array.  
Second line of the input is a series of n integers separated by a space that denotes the array values of A.  
Third line of the input is a series of n integers separated by a space that denotes the array values of B.  
**Assume**: All the elements in each array are distinct.  
  
**Output format:**  
Output is an integer that denotes the minimum value as per the requirement.  
  
**Sample Input 1:**  
5  
1 2 3 4 5  
5 4 3 2 1  
**Sample Output 1:**  
2  
**Explanation:**  
Here x is 1 (the first element of A) and y is also 1 (the last element of B). Their sum is **2**.  
  
**Sample Input 2:**  
6   
2 5 4 8 9 6  
4 5 6 9 8 10  
**Sample Output 2:**  
7  
**Explanation:**  
In this sample, 2 and 4 forms the minimum sum. Since both are having the same indices, the next solution is found.  
Here x is 2 (the first element of A) and y is 5 (the second element of B). Their sum is **7**.

ANSWER:

import java.util.Arrays;

import java.util.Scanner;

public class SaisProgrammingSkills {

public static void main(String[] args) {

Scanner input=new Scanner(System.in);

int N=input.nextInt();

int[] A=new int[N];

int[] B=new int[N];

int[] A1=new int[N];

int[] B1=new int[N];

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

A[i]=input.nextInt();

A1[i]=A[i];

}

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

B[i]=input.nextInt();

B1[i]=B[i];

}

Arrays.sort(A1);

Arrays.sort(B1);

int min=A1[A1.length-1]+B1[B1.length-1];

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

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

int sum=(A[i]+B[j]);

if(min>sum&&i!=j) {

min=sum;

}

}

}

System.out.println(min);

}

}

**5.REORDER THE STUDENTS**

Sai is doing his 5th grade in VIBGYOR International School. He is the most intelligent student in his class, and his class teacher has made him the representative for his class. Now its play time. There are n students in his class and each student is given a card that has a number written in it. Sai, being the representative, has to reorder those kids as per the order given to him.  
Help Sai in reordering the kids, by writing a program.  
  
**Input format:**  
First input is an integer that denotes the n value, the number of students.  
Second input is a series of n integers separated by a space that denotes the numbers given to each student.  
Third input is a series of n integers separated by a space that denotes the array which contains the order in which the students have to be reordered.  
**Assume:** The elements of the 2nd array are unique and always greater than or equal to 0 and less than n.  
  
**Output format:**  
Output is a series of n integers separated by a space that denotes the reordered array.  
  
**Sample Input 1:**  
3  
14 15 16  
1 2 0  
**Sample Output 1:**  
16 14 15  
**Explanation**:  
The first array : 16 14 15  
The order array : 1 2 0  
Here the first element 16 should be moved to index 1.  
The second element 14 should be moved to index 2.  
The Third element 15 should be moved to index 0.  
So, after moving, the final order is **16 14 15**.  
  
**Sample Input 2:**  
5  
1 2 3 4 5  
1 2 0 3 4  
**Sample Output 2:**  
3 1 2 4 5

ANSWER:

import java.util.Scanner;

public class ReorderTheStudents {

public static void main(String[] args) {

Scanner input=new Scanner(System.in);

int n=input.nextInt();

int arr[]=new int[n];

int ind[]=new int[n];

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

arr[i]=input.nextInt();

}

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

ind[i]=input.nextInt();

}

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

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

if(i==ind[j]) {

System.out.print(arr[j]+" ");

}

}

}

}

}

**6.PRACTICAL EXAM PREPARATION**

Vel is a first year Computer Science student. The next day he is having his practicals lab exam. His sister(Priya) is working in a top IT firm. To test Vel, she gives him a problem to solve. The problem is to find the N-th Special Number, given the value of N. She also defines a number to be special, if it’s units place digit only consist of 0, 1, 2, 3, 4 or 5.  
Write a program to help Vel.  
  
**Input format:**  
First input is an integer that denotes the N value.  
  
**Output Format:**  
Output is an integer that denotes the N-th special number.  
  
**Sample Input 1:**  
5  
**Sample Output 1:**  
4  
**Explanation:**  
Here N = 5.  
The first 5 special numbers are 0, 1, 2, 3 and 4. So the output is **4**.  
  
**Sample Input 2:**  
60  
**Sample Output 2:**  
95  
**Explanation:**  
Here N = 60.  
The first 60 special numbers are as follows:  
0, 1, 2, 3, 4, 5,  
10, 11, 12, 13, 14, 15,  
20, 21, 22, 23, 24, 25,  
30, 31, 32, 33, 34, 35,  
40, 41, 42, 43, 44, 45,  
50, 51, 52, 53, 54, 55,  
60, 61, 62, 63, 64, 65,  
70, 71, 72, 73, 74, 75,  
80, 81, 82, 83, 84, 85,  
90, 91, 92, 93, 94 and 95.  
So the output is **95**.

ANSWER:

**import** java.util.Scanner;

**public** **class** PracticalExamPreparation {

**public** **static** **void** main(String[] args) {

Scanner input=**new** Scanner(System.***in***);

**int** n=input.nextInt();

**int** i=0,count=0;

String temp="012345";

**while**(count!=n) {

String s=String.*valueOf*(i);

**if**(temp.indexOf(s.charAt(s.length()-1))>=0) {

count++;

}

i++;

}

System.***out***.println(i-1);

}

}