//Task 1

import java.util.Scanner;

public class Task1{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.println("Enter N: ");

int N = sc.nextInt();

int [] arr = new int[N];

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

System.out.println("Enter a number: ");

int a = sc.nextInt();

arr[i]=a;

}

System.out.println("The elements of the array are: ");

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

{

System.out.println(i+": "+arr[i]);

}

System.out.println("Enter another number: ");

int b = sc.nextInt();

int [] new\_array = new int [N+1];

new\_array [N] = b;

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

{

new\_array[i] = arr[i];

}

System.out.println("After resizing the array: ");

for(int i = 0; i<N+1 ; i++)

{

System.out.print(new\_array[i]+" ");

}

}

}

// Task 2

public class Task2{

public static void main(String[] args){

int arr [] = {9, -5, 7, 9, -5, 5, 7};

System.out.println("Before removing duplicates: ");

for ( int i=0;i<arr.length;i++)

{

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

}

for(int i=0;i< arr.length;i++)

{

int a = arr [i];

for(int j=i+1;j<arr.length;j++)

{

int b = arr [j];

if ( a==b )

{

arr [j] = 0;

}

}

}

System.out.println();

System.out.println("After replacing duplicates with 0: ");

for ( int i=0;i<arr.length;i++)

{

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

}

}

}

// Task 3a

import java.util.Scanner;

public class Task3a{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.println("Enter the length of the array: ");

int n = sc.nextInt();

int [] array1 = new int [n];

int [] array2 = new int [n];

int index=0;

for(int i=0; i<array1.length; i++)

{

System.out.println("Enter a number: ");

int a = sc.nextInt();

array1 [i] = a;

}

for(int i=array1.length-1; i>=0; i--)

{

array2 [index]=array1[i] ;

index++;

}

System.out.println("Reversed using a new array:");

for(int i=0; i<array1.length; i++)

{

System.out.print(array2[i]+" ");

}

}

}

// Task 3b

import java.util.Scanner;

public class Task3b{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.println("Enter the length of the array: ");

int n = sc.nextInt();

int [] array1 = new int [n];

int index=0;

for(int i=0; i<array1.length; i++)

{

System.out.println("Enter a number: ");

int a = sc.nextInt();

array1 [i] = a;

}

for(int i=array1.length-1; i>=((array1.length-1)/2); i--)

{ int a = array1 [i];

array1 [i] = array1 [index];

array1 [index] = a;

a=0;

index++;

}

System.out.println("Reversed the original array: ");

for(int i=0; i<array1.length; i++)

{

System.out.print(array1[i]+" ");

}

}

}

// Task 4

import java.util.Scanner;

public class Task4

{

public static void main(String[] args)

{

Scanner sc = new Scanner(System.in);

System.out.println("Enter length: ");

int n = sc.nextInt();

int []array=new int[n];

for(int i=0;i<array.length;i++)

{

System.out.println("Enter a number");

int a = sc.nextInt();

array[i]=a;

}

System.out.println("Original array: ");

for(int i=0;i<array.length;i++)

{

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

}

for(int i=0;i<array.length;i++)

{

int b = array[i];

if(b>0)

{

array[i]=1;

}

else

{

array[i]=0;

}

}

System.out.println();

System.out.println("After modifying: ");

for(int i=0;i<array.length;i++)

{

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

}

}

}

// Task 5

import java.util.Scanner;

public class Task5

{

public static void main(String[] args)

{

Scanner sc = new Scanner(System.in);

System.out.println("Enter length: ");

int n1 = sc.nextInt();

int []array=new int[n1];

boolean flag = false;

for(int i=0;i<array.length;i++)

{

System.out.println("Enter a number:");

int a = sc.nextInt();

array[i]=a;

}

int n2 = sc.nextInt();

for(int i=0;i<array.length;i++)

{

int n3 = array[i];

if (n3==n2)

{

flag=true;

System.out.println(n2+" is at index "+i);

break;

}

}

if(flag==false)

{

System.out.println("Element not found");

}

}

}

// Task 6

import java.util.Scanner;

public class Task6

{

public static void main(String[] args)

{

Scanner sc = new Scanner(System.in);

System.out.println("Enter the length of the array: ");

int n1 = sc.nextInt();

double []array=new double[n1];

double max=0;

double min=0;

double sum = 0;

for(int i=0;i<array.length;i++)

{

System.out.println("Enter a number:");

double a = sc.nextDouble();

array[i]=a;

+ sum+=a;

if(i==0)

{max=a;

min=a;

}

else

{

if(a>max)

{

max=a;

}

else if (a<min)

{

min=a;

}

}

}

for(int i=0;i<array.length;i++)

{

double b=array[i];

if (max==b)

{

System.out.println("Maximum element "+max+" found at index "+i);

}

}

for(int i=0;i<array.length;i++)

{

double c=array[i];

if (min==c)

{

System.out.println("Minimum element "+min+" found at index "+i);

}

}

double average = sum/n1;

System.out.println("Summation: "+sum);

System.out.println("Average: "+average);

}

}

// Task 7

public class Task7

{

public static void main(String[] args)

{

int arr [] = {-5,10,-7,-5};

int count=0;

for(int i=0;i< arr.length;i++)

{

boolean flag=false;

int a = arr [i];

for(int j=i+1;j<arr.length;j++)

{

int b = arr [j];

if ( a==b )

{

flag=true;

break;

}

}

if(flag==false)

{

count++;

}

}

int arr2[] = new int [count];

int count2=0;

for(int i=0;i< arr.length;i++)

{

boolean flag2=false;

int a = arr [i];

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

{

int b = arr[j];

if ( a==b )

{

flag2=true;

break;

}

}

if(flag2==false)

{

arr2 [count2] =a;

count2++;

}

}

System.out.println("Input array: ");

for(int i=0; i<arr.length; i++)

{

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

}

System.out.println();

System.out.println("New array: ");

for(int i=0; i<arr2.length; i++)

{

System.out.print(arr2[i]+" ");

}

}

}

// Task 8

import java.util.Scanner;

public class Task8

{

public static void main(String[] args)

{

Scanner sc = new Scanner(System.in);

System.out.println("Please enter the length of array 1: ");

int a1= sc.nextInt();

int []array1 = new int[a1];

System.out.println("Please enter the elements of the arr1: ");

for(int i=0;i<a1;i++)

{

int n = sc.nextInt();

array1[i]=n;

}

System.out.println("Please enter the length of array 2: ");

int a2= sc.nextInt();

int []array2 = new int[a2];

System.out.println("Please enter the elements of the arr2: ");

for(int i=0;i<a2;i++)

{

int n2 = sc.nextInt();

array2[i]=n2;

}

int count=0;

for(int i=0;i<array2.length;i++)

{

for(int j=0;j<array1.length;j++)

{

if (array1[j]==array2[i])

{

count++;

break;

}

}

}

if(count==a2)

{

System.out.println("Array 2 is a subset of Array 1.");

}

else

{

System.out.println("Array 2 is not a subset of Array 1.");

}

}

}