// Write a Java program that reads a positive integer from command line  
// and count the number of digits the number (less than ten billion) has.  
  
import java.util.Scanner;  
  
public class PracticeProgram1 {  
 public static void main(String args[]){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Program to count the number of digits");  
 System.*out*.println("Enter a positive number : ");  
 long number = sc.nextInt();  
 int count = 0;  
 while(number != 0){  
 number = number / 10;  
 count++;  
 }  
 System.*out*.println("The digits in the given number is " + count);  
 }  
}

// WAP to find roots of a Quadratic equation. Take care of imaginary values.  
  
import java.util.\*;  
  
public class PracticeProgram2{  
 public static void main(String args[]){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Quadratic Roots");  
 System.*out*.println("Enter tha values for a,b,c");  
 double a = sc.nextDouble();  
 double b = sc.nextDouble();  
 double c = sc.nextDouble();  
 double delta = b\*b - 4\*a\*c;  
 double root1, root2, real, imaginery;  
 if(delta > 0){  
 root1 = (-b + Math.*sqrt*(delta))/2\*a;  
 root2 = (-b - Math.*sqrt*(delta))/2\*a;  
 System.*out*.println(root1);  
 System.*out*.println(root2);  
 }  
 else if(delta == 0){  
 root1 = root2 = -b/2\*a;  
 System.*out*.println(root1);  
 System.*out*.println(root2);  
 }  
 else{  
 real = -b/2\*a;  
 imaginery = (Math.*sqrt*(-delta))/2\*a;  
 System.*out*.println(real + " + i" +imaginery);  
 System.*out*.println(real + " - i" +imaginery);  
  
 }  
 }  
}

// WAP to display odd numbers from given range/ prime numbers from given range  
  
import java.util.\*;  
  
public class PracticeProgram3{  
 public static void main(String args[]){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the number to start : ");  
 int begin = sc.nextInt();  
 System.*out*.println("Enter the number to end : ");  
 int end = sc.nextInt();  
 // odd number  
 System.*out*.println("Odd numbers are : ");  
 for(int i = begin;i<=end;i++){  
 if(i%2!=0){  
 System.*out*.println(i);  
 }  
 }  
 // Prime number  
 System.*out*.println("Prime numbers are : ");  
 for(int i = begin;i<=end;i++){  
 int count = 0;  
 for(int j = i;j>0;j--){ // loop to find whether the numbers are divisible  
 if(i%j==0){  
 count++;  
 }  
 }  
 if(count == 2){  
 System.*out*.println(i);  
 }  
 }  
 }  
}

// Display the following pattern  
// \*  
// \*\*  
// \*\*\*  
// \*\*\*\*  
// \*\*\*\*\*  
  
import java.util.\*;  
  
public class PracticeProgram4 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("The star pattern is as follows : ");  
 System.*out*.println("Enter the height of the pattern :");  
 int n = sc.nextInt();  
 for(int i = 1;i<=n;i++){  
 for(int j = 1; j <= i ; j++){  
 System.*out*.print("\* ");  
 }  
 System.*out*.println();  
 }  
 }  
}

// Display the pattern  
// \*  
// \*\*  
// \*\*\*  
// \*\*\*\*  
// \*\*\*\*\*  
import java.util.\*;  
  
public class PracticeProgram5{  
 public static void main(String args[]){  
 Scanner sc = new Scanner (System.*in*);  
 System.*out*.println("Enter the height of the tree : ");  
 int height = sc.nextInt();  
 System.*out*.println("The patter below shows : ");  
 for(int i = 1; i<=height;i++){  
 for(int j = height - 1;j>=i;j--){  
 System.*out*.print(" ");  
 }  
 for(int j = 1; j<=i;j++){  
 System.*out*.print("\* ");  
 }  
 System.*out*.println("");  
 }  
 }  
}

// Display the given pattern  
// \*  
// \*\*\*  
// \*\*\*\*\*  
//\*\*\*\*\*\*\*  
  
import java.util.Scanner;  
  
public class PracticeProgram6 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner (System.*in*);  
 System.*out*.println("Enter the height of the tree : ");  
 int height = sc.nextInt();  
 System.*out*.println("The patter below shows : ");  
 for(int i = 1;i<=height;i++){  
 for(int j = height - 1; j>= i; j--){  
 System.*out*.print(" ");  
 }  
 for(int j = 1;j<=i;j++){  
 System.*out*.print("\* ");  
 }  
 for(int j = 2; j<=i;j++){  
 System.*out*.print("\* ");  
 }  
 System.*out*.println("");  
 }  
 }  
}

// WAP using arrays to sort the elements in ascending order.  
  
public class PracticeProgram7 {  
 public static void main(String[] args) {  
 System.*out*.println("Sort the given Array in Ascending Order");  
 // int[] arr = new int[10];  
 int[] a = {5,3,7,3,8,4};  
 for(int i = 0; i<a.length-1;i++){  
 int min = i;  
 for(int j = i + 1;j<a.length;j++){  
 if(a[j]<a[min]){  
 min = j;  
 }  
  
 }  
 if(min != i){  
 int swap = a[i];  
 a[i] = a[min];  
 a[min] = swap;  
 }  
 }  
 for(int i = 0; i<a.length;i++){  
 System.*out*.print(" "+a[i]);  
  
 }  
  
 }  
}

// WAP using arrays to sort the elements in descending order.  
  
import java.util.\*;  
  
public class PracticeProgram8{  
 public static void main(String args[]){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the size of the array : ");  
 int size = sc.nextInt();  
 int [] arr = new int[size];  
 System.*out*.println("Enter the elements of the array : ");  
 for(int i = 0;i<size;i++){  
 arr[i] = sc.nextInt();  
 }  
 for(int i = 0; i < size-1;i++){  
 int min = i;  
 for(int j = i+1;j<size;j++){  
 if(arr[j] < arr[min]){  
 min = j;  
 }  
 }  
 if(min != i){  
 int swap = arr[i];  
 arr[i] = arr[min];  
 arr[min] = swap;  
 }  
 }  
  
 System.*out*.println("The array in descending array is: ");  
 for(int i = 0; i<size;i++){  
 System.*out*.println(arr[i]);  
 }  
 }  
}

// WAP to check whether the given string is palindrome or not.  
  
import java.util.Scanner;  
  
public class PracticeProgram9 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter a Number : ");  
 int number = sc.nextInt();  
 int temp = number;  
 int reverse = 0,remainder;  
 while(temp != 0)  
 {  
 remainder = temp%10;  
 reverse = reverse\*10 + remainder;  
 temp = temp/10;  
 }  
 if(number == reverse){  
 System.*out*.println("The given number is a Palindrome Numnber");  
 }  
 else {  
 System.*out*.println("It is not a Palindrome Number");  
 }  
 }  
}

package Demo;  
  
public class User {  
 public void add(int a, int b){ // Here we create a method for addition of two numbers  
 int c = a+b;  
 System.*out*.println("The addition of two numbers is : "+c);  
 }  
}

---------------------------------------------------------------------------

import Demo.User;  
import java.util.Scanner;  
public class PracticeProgram10 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter two numbers : ");  
 int a = sc.nextInt();  
 int b = sc.nextInt();  
 User shashwat = new User();  
 shashwat.add(a,b);  
 }  
}

// WAP find area of square and rectangle using overloaded constructor.  
  
class Shape{  
 int a;  
 int b;  
 public Shape(int length){  
 a = length;  
 int area = a\*a;  
 System.*out*.println("The area of the Square is : " + area);  
 }  
 public Shape(int length,int breadth){  
 a = length;  
 b = breadth;  
 int area = a \* b;  
 System.*out*.println("The area of the Rectangle is : " + area);  
 }  
}  
  
public class PracticeProgram11 {  
 public static void main(String[] args) {  
 System.*out*.println("Overloaded Constructor");  
 Shape s = new Shape(5,6);  
 }  
}

// Write a java program to count number of alphabets, digits, special symbols, blank spaces and  
// words from the given sentence. Also count number of vowels and consonants.  
  
import java.util.Scanner;  
  
public class PracticeProgram12 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter a String : ");  
 String line = sc.nextLine();  
 line = line.toLowerCase();  
 int vowel = 0,consonenet = 0,digit = 0, special\_symbol = 0,blak\_space = 0,word = 0;  
 for(int i = 0;i<line.length();i++){  
 char ch = line.charAt(i);  
 if(ch == 'a' || ch == 'e' || ch == 'i' ||ch == 'o' ||ch == 'u'){  
 vowel++;  
 }  
 else if(ch >= 'a' && ch <='z'){  
 consonenet++;  
 }  
 else if(ch >= '0' && ch <='9'){  
 digit++;  
 } else if (ch == ' ') {  
 blak\_space++;  
 }  
 else {  
 special\_symbol++;  
 }  
 }  
 System.*out*.println("Total Size : " +line.length());  
 System.*out*.println("Vowels are : "+vowel);  
 System.*out*.println("Consonents are : " +consonenet);  
 System.*out*.println("Digits are : " +digit);  
 System.*out*.println("Blank Spaces are : "+blak\_space);  
 System.*out*.println("Special Symbols are : "+special\_symbol);  
 word = blak\_space + 1;  
 System.*out*.println("Words are : "+word);  
  
 }  
}

// Write a java programs to find frequency of an element in the given Vector array  
  
import java.util.\*;  
  
public class PracticeProgram13 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Vector Array");  
 Vector v = new Vector();  
 System.*out*.println("Enter the size of the vector array : ");  
 int size = sc.nextInt();  
 for(int i = 0;i<size;i++){  
 String element = sc.next();  
 v.addElement(element);  
 }  
 System.*out*.println(" Vector array is : " + v);  
 System.*out*.println("Find Frequency of which element : ");  
 String s = sc.next();  
 int count = Collections.*frequency*(v,s); // Tells us the number of times that particular values has come  
 System.*out*.println("The frequency is : "+count);  
 // System.out.println(v.capacity());  
 // System.out.println(v.firstElement());  
 }  
}

// Vampire Number  
  
import java.util.Scanner;  
  
public class PracticeProgram14 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 int flag = 0;  
 System.*out*.println("Enter a 4 digit number: ");  
 int n = sc.nextInt();  
 for(int i = 10 ; i < 100;i++){  
 if(n%i==0){  
 int j = n/i;  
 if(!(j>=10 && j<100)){  
 flag = 0;  
 }  
 else{  
 if(i\*j != n){  
 flag = 0;  
 }  
 else{  
 System.*out*.println("Vampire Number");  
 flag = 1;  
 break;  
 }  
 }  
 }  
 }  
 if(!(flag == 1)){  
 System.*out*.println("Not a Vampire Number ");  
 }  
 }  
}

// WAP to arrange the names of students in descending order of their total marks, input data  
// consists of students details such as names, ID.no, marks of maths, physics, chemistry.  
  
import java.util.\*;  
  
class Student{  
 int ID,maths,physics,chemistry,total;  
 String name;  
 void input(){  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter the Student name : ");  
 name = sc.nextLine();  
 System.*out*.println("Enter the student ID : ");  
 ID = sc.nextInt();  
 System.*out*.println("Enter the Marks in Maths : ");  
 maths = sc.nextInt();  
 System.*out*.println("Enter the Marks in Physics : ");  
 physics = sc.nextInt();  
 System.*out*.println("Enter the Marks in Chemistry : ");  
 chemistry = sc.nextInt();  
 total = maths + physics + chemistry;  
 }  
 void output(){  
 System.*out*.println("Student Name : " + name);  
 System.*out*.println("Student ID : " + ID);  
 System.*out*.println("Marks in Maths " + maths);  
 System.*out*.println("Marks in Physics : " + physics);  
 System.*out*.println("Marks in Chemistry : " + chemistry);  
 System.*out*.println("Total Marks are : " + total);  
 }  
}  
  
public class PracticeProgram15 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Array of Objects");  
 System.*out*.println("Enter the number of students : ");  
 int number = sc.nextInt();  
 Student s[] = new Student[number];  
 for(int i = 0;i<number;i++){  
 s[i] = new Student(); // create 3 objects  
 }  
 for(int i = 0;i<number;i++){  
 s[i].input(); // Input data for the 3 objects  
 }  
 for(int i = 0;i<number;i++){  
 s[i].output(); // Shows the output for these objects  
 }  
 Student temp;  
 for(int i = 0; i<number -1 ; i++){  
 for(int j = 0;j<(number-1)-i;j++){  
 if(s[j].total < s[j+1].total){  
 temp = s[j+1];  
 s[j+1] = s[j];  
 s[j] = temp;  
 }  
 }  
  
 }  
 System.*out*.println("The marks are : ");  
 for(int i = 0; i < number ; i++){  
 System.*out*.println("Name : " + s[i].name);  
 System.*out*.println("Marks : " + s[i].total);  
 }  
 }  
}

// Abstract Class  
  
abstract class AreaofShapes{  
 double area;  
 abstract void Area();  
}  
class Square extends AreaofShapes{  
 double a = 10;  
 void Area(){  
 area = a \* a;  
 System.*out*.println("The area of the square is : "+area);  
 }  
}  
  
class Rectangle extends AreaofShapes{  
 double b = 10;  
 double l = 20;  
 void Area(){  
 area = l\*b;  
 System.*out*.println("The area of the rectangle is : " + area);  
  
 }  
  
}  
class Circle extends AreaofShapes{  
 double r = 10;  
 void Area(){  
 area = 3.14 \* r \* r;  
 System.*out*.println("The area of the Circle is : " + area);  
  
 }  
  
}  
class Triangle extends AreaofShapes{  
 double h = 10;  
 double l = 20;  
 void Area(){  
 area = (l\*h)/2;  
 System.*out*.println("The area of the rectangle is : " + area);  
  
 }  
  
}  
  
public class PracticeProgram16 {  
 public static void main(String[] args) {  
 System.*out*.println("Abstract Classes");  
 Square s = new Square();  
 Rectangle r = new Rectangle();  
 Circle c = new Circle();  
 Triangle t = new Triangle();  
 s.Area();  
 r.Area();  
 c.Area();  
 t.Area();  
 }  
}

// Interface and Inheritance  
  
import java.util.\*;  
  
interface Sports{  
 int *score* = 100;  
 void Score();  
}  
class Students{  
 int roll\_no;  
 void rollno(int n){  
 roll\_no = n;  
 System.*out*.println(roll\_no);  
 }  
}  
  
class Test extends Students{  
 int sem1\_marks,sem2\_marks;  
 void marks(int a,int b){  
 sem1\_marks = a;  
 sem2\_marks = b;  
 System.*out*.println(sem1\_marks);  
 System.*out*.println(sem2\_marks);  
 }  
}  
  
class Result extends Test implements Sports{  
 public void Score(){  
 int total = sem1\_marks + sem2\_marks + *score*;  
 System.*out*.println("Total is : " + total);  
 }  
}  
  
public class PracticeProgram17 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Interfaces and Inheritance");  
 Result r = new Result();  
 System.*out*.println("Enter the Roll No.");  
 int n = sc.nextInt();  
 System.*out*.println("Enter marks for Sem 1 : ");  
 int a = sc.nextInt();  
 System.*out*.println("Enter Marks for Sem 2 : ");  
 int b =sc.nextInt();  
 r.rollno(n);  
 r.marks(a,b);  
 r.Score();  
  
 }  
}

// Given an integer, n, perform the following conditional actions  
  
import java.util.\*;  
  
public class PracticeProgram18 {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
 System.*out*.println("Enter an integer value : ");  
 int n = sc.nextInt();  
 if(n%2!=0){  
 System.*out*.println("Weird");  
 }  
 else{  
 if(n>=2 && n<=5){  
 System.*out*.println("Not Weird");  
 }  
 else if(n>=6 && n <=20){  
 System.*out*.println("Wierd");  
 } else if (n>20) {  
 System.*out*.println("Not Weird");  
 }  
 }  
 }  
}