**Program**

import java.util.\*;

public class social\_distancing{

public static void main(String args[]){

Scanner sc = new Scanner(System.in);

int n = sc.nextInt();

char[] Queue = new char[n];

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

Queue[i] = sc.next().charAt(0);

String queue = new String(Queue);

// If between 2 t's there are 5 f then social = true;

boolean social = false;

int distance = 1;

for(int i = queue.indexOf("t"); i < queue.length(); i++){

if (queue.charAt(i) != 't'){

distance++;

}

if(queue.charAt(i) == 't' && distance >= 6){

social = true;

distance = 1;

}

}

if(social){

System.out.println("Social distancing has been followed");

}

else{

System.out.println("Social distancing has not been followed");

}

sc.close();

}

}

**Program**

import java.util.\*;

/\*\*

\* Magic Number: A number is said to be a magic number, if the sum of its digits are

\* calculated till a single digit recursively by adding the sum of the digits after every

\* addition. If the single digit comes out to be 1,then the number is a magic number.

\*/

public class magic\_number\_recursive {

public static boolean is\_magic\_number(int num) {

if (sum\_of\_digits(num) == 1) {

return true;

} else if (num > 9) {

num = sum\_of\_digits(num);

return is\_magic\_number(num);

} else {

return false;

}

}

public static int sum\_of\_digits(int num) {

int sum = 0;

while (num != 0) {

sum += num % 10;

num /= 10;

}

return sum;

}

public static void main(String args[]) {

Scanner sc = new Scanner(System.in);

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

int num = sc.nextInt();

if (is\_magic\_number(num))

System.out.println(num + " is a magic number");

else

System.out.println(num + " is not a magic number");

sc.close();

}

}

**Program**

import java.io.\*;

class BaseProgram {

static int baseNtoDecimal(String num, int baseN) {

num=num.toUpperCase();

int answer=0;

int length=num.length();

int digit, multiplier;

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

multiplier=(int)Math.pow(baseN,length-i-1);

if(Character.isDigit(num.charAt(i))){

digit=(num.charAt(i)-48);

}else{

digit=(num.charAt(i)-55);

}

answer=answer+digit\*multiplier;

}

return answer;

}

static int digitValue(char c){

int result=0;

if (Character.isDigit(c))

result= c-48;

else if(Character.isLetter(c))

result= c-'A'+10;

return result;

}

static int maximumDigit(String strnum){

int i=0,result=0,l=strnum.length();

int digit;

for(i=0;i<=l-1;i++)

{

digit= digitValue(strnum.charAt(i)) ;

if(digit>result)

result=digit;

}

return result;

}

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

{

BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

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

String X = br.readLine();

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

String Y = br.readLine();

int value1, value2;

boolean found = false;

int initial\_i=maximumDigit(X)+1;

int initial\_x=maximumDigit(Y)+1;

for(int i=initial\_i;i<= 20;i++) {

value1 = baseNtoDecimal(X, i);

for(int x=initial\_x;x <=20;x++) {

value2 = baseNtoDecimal(Y, x);

if (value1==value2) {

System.out.println(X + "(base " + i + ")=" + Y + "(base "

+ x + ") ");

found = true;

break;

}

}

if(found)

break;

}

if (!found) {

System.out.println(X + " is not equal to " + Y

+ " in any base between 2 to 20.");

}

}

}

**Program**

import java.util.\*;

/\*\*

\* A smith number is a composite number whose sum of digits equals sum of prime factors of the number

\*/

public class smith\_number {

public static boolean is\_composite(int number) {

if (Math.pow(2, number - 1) % number == 1 || number == 2)

return false;

else

return true;

}

public static int sum\_prime\_factors(int number) {

int sum = 0;

for(int i = 2; i <= number; i++) {

while(number % i == 0 && !is\_composite(i)){

sum += i;

number /= i;

}

}

return sum;

}

public static int sum\_digits(int number) {

int sum = 0;

while (number != 0) {

int d = number % 10;

sum += d;

number /= 10;

}

return sum;

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int number = sc.nextInt();

if (is\_composite(number) && sum\_digits(number) == sum\_prime\_factors(number)) {

System.out.println(number + " is a smith Number");

} else {

System.out.println(number + " is not a smith Number");

}

sc.close();

}

}

Program

import java.util.\*;

public class how\_many\_letters

{

public static int count\_space(String str){

int c = 0;

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

char ch = str.charAt(i);

if(ch == ' ')

c++;

}

return c;

}

public static String[] split\_into\_array(String str){

//I have a pen

str += " ";

String word = "";

String arr[] = new String[count\_space(str)];

int k = 0;

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

char ch = str.charAt(i);

if(ch != ' ')

word += ch;

else{

arr[k] = word;

word = "";

k++;

}

}

return arr;

}

public static void main(String args[]){

Scanner sc = new Scanner(System.in);

System.out.print("Enter the string :: ");

String str = sc.nextLine();

int[] letters = {0, 0, 0};

String[] ar = split\_into\_array(str);

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

if(ar[i].length() == 2) letters[0]++;

else if(ar[i].length() == 3) letters[1]++;

else if (ar[i].length() == 4) letters[2]++;

else continue;

}

System.out.println("Number of 2 letter words :: " + letters[0]);

System.out.println("Number of 3 letter words :: " + letters[1]);

System.out.println("Number of 4 letter words :: " + letters[2]);

sc.close();

}

}