Problem Statement

A doctor has a clinic where he serves his patients. The doctor’s consultation fees are different for different groups of patients depending on their age. If the patient’s age is below 17, fees is 200 INR. If the patient’s age is between 17 and 40, fees is 400 INR. If patient’s age is above 40, fees is 300 INR. Write a code to calculate earnings in a day for which one array/List of values representing age of patients visited on that day is passed as input.

Note:

Age should not be zero or less than zero or above 120

Doctor consults a maximum of 20 patients a day

Enter age value (press Enter without a value to stop):

Example 1:

Input

20

30

40

50

2

3

14

Output

Total Income 2000 INR

Note: Input and Output Format should be same as given in the above example.

For any wrong input display INVALID INPUT

Output Format

Total Income 2000 INR

def total\_amount(ages):

    amount = 0

    for age in ages:

        if age < 17:

            amount += 200

        elif 17 <= age < 40:

            amount += 400

        else:

            amount += 300

    return amount

ages = []

while True:

    i = input("Enter the age : ")

    if i == "":

        print("Invalid input")

        break

    age = int(i)

    if age <= 0 or age > 120:

        print("Invalid input")

        continue

    if len(ages) < 20:

        ages.append(age)

    else:

        print("Exceed the limit")

        break

print("Total Amount:", total\_amount(ages))

2.There is a JAR full of candies for sale at a mall counter. JAR has the capacity N, that is JAR can contain maximum N candies when JAR is full. At any point of time. JAR can have M number of Candies where M<=N. Candies are served to the customers. JAR is never remain empty as when last k candies are left. JAR if refilled with new candies in such a way that JAR get full.

Write a code to implement above scenario. Display JAR at counter with available number of candies. Input should be the number of candies one customer can order at point of time. Update the JAR after each purchase and display JAR at Counter.

Output should give number of Candies sold and updated number of Candies in JAR.

If Input is more than candies in JAR, return: “INVALID INPUT”

Given,

N=10, where N is NUMBER OF CANDIES AVAILABLE

K =< 5, where k is number of minimum candies that must be inside JAR ever.

Example 1:(N = 10, k =< 5)

Input Value

3

Output Value

NUMBER OF CANDIES SOLD : 3

NUMBER OF CANDIES LEFT : 7

Example : (N=10, k<=5)

Input Value

0

Output Value

INVALID INPUT

NUMBER OF CANDIES LEFT : 10

n=int(input("enter the maximum capacity of jar"))

k=int(input("Enter the minimum candles should be in the jar"))

i=int(input("enter the number of candles:"))

if i == 0:

    print("invalid input")

elif(i<=k):

    print("NUMBER OF CANDIES SOLD : ",i)

    print("NUMBER OF CANDIES LEFT :",n-i)

elif i>k:

    print("No sufficient candles")

    print("NUMBER OF CANDIES LEFT :",n)

3.Problem Statement

A washing machine works on the principle of Fuzzy System, the weight of clothes put inside it for washing is uncertain But based on weight measured by sensors, it decides time and water level which can be changed by menus given on the machine control area.

For low level water, the time estimate is 25 minutes, where approximately weight is between 2000 grams or any nonzero positive number below that.

For medium level water, the time estimate is 35 minutes, where approximately weight is between 2001 grams and 4000 grams.

For high level water, the time estimate is 45 minutes, where approximately weight is above 4000 grams.

Assume the capacity of machine is maximum 7000 grams

Where approximately weight is zero, time estimate is 0 minutes.

Write a function which takes a numeric weight in the range [0,7000] as input and produces estimated time as output is: “OVERLOADED”, and for all other inputs, the output statement is

“INVALID INPUT”.

Input should be in the form of integer value –

Output must have the following format –

Time Estimated: Minutes

Example:

Input value

2000

Output value

Time Estimated: 25 minutes

def total\_min(weight):

    min = 0

    if weight ==0:

        print("invalid input")

    elif weight>0 and weight<=2000:

        min=25

    elif weight >=2001 and weight <=4000:

        min= 35

    elif weight >4000 and weight<=7000:

        min=45

    else:

        print("overloaded")

    return (min)

weight=int(input("enter the weightof the clothes:"))

print(total\_min(weight),"minutes")

4.Airport security officials have confiscated several item of the passengers at the security check point. All the items have been dumped into a huge box (array). Each item possesses a certain amount of risk[0,1,2]. Here, the risk severity of the items represent an array[] of N number of integer values. The task here is to sort the items based on their levels of risk in the array. The risk values range from 0 to 2.

Example :

Input :

7 -> Value of N

[1,0,2,0,1,0,2]-> Element of arr[0] to arr[N-1], while input each element is separated by new line.

Output :

0 0 0 1 1 2 2 -> Element after sorting based on risk severity

Example 2:

inpt : 10 -> Value of N

[2,1,0,2,1,0,0,1,2,0] -> Element of arr[0] to arr[N-1], while input each element is separated by a new line.

Output :

0 0 0 0 1 1 1 2 2 2 ->Elements after sorting based on risk severity.

n=int(input("enter the value of N"))

arr=[]

print("enter the items")

for i in range(n):

    item=int(input())

    arr.append(item)

print(sorted(arr))

5. supermarket maintains a pricing format for all its products. A value N is printed on each product. When the scanner reads the value N on the item, the product of all the digits in the value N is the price of the item. The task here is to design the software such that given the code of any item N the product (multiplication) of all the digits of value should be computed(price).

Example 1:

Input :

5244 -> Value of N

Output :

160 -> Price

Explanation:

From the input above

Product of the digits 5,2,4,4

5\*2\*4\*4= 160

Hence, output is 160.

def price(n):

    product=1

    while n!=0:

        rem=n%10

        product=product\*rem

        n=n//10

    return product

n=int(input('Enter the code'))

print(price(n))

1. Problem Statement

An intelligence agency has received reports about some threats. The reports consist of numbers in a mysterious method. There is a number “N” and another number “R”. Those numbers are studied thoroughly and it is concluded that all digits of the number ‘N’ are summed up and this action is performed ‘R’ number of times. The resultant is also a single digit that is yet to be deciphered. The task here is to find the single-digit sum of the given number ‘N’ by repeating the action ‘R’ number of times.

If the value of ‘R’ is 0, print the output as ‘0’.

Example 1:

Input :

99 -> Value of N

3 -> Value of R

Output :

9 -> Possible ways to fill the cistern.

Example 2:

Input :

1234 -> Value of N

2 -> Value of R

Output :

2 -> Possible ways to fill the cistern

1. Marsexploration

Letters in some of the SOS messages are altered by cosmic radiation during transmission. Given the signal received by Earth as a string, , determine how many letters of the SOS message have been changed by radiation.

Example

The original message was SOSSOS. Two of the message's characters were changed in transit.

Function Description

Complete the marsExploration function in the editor below.

marsExploration has the following parameter(s):

string s: the string as received on Earth

Returns

int: the number of letters changed during transmission

Input Format

There is one line of input: a single string, .

Constraints

will contain only uppercase English letters, ascii[A-Z].

Sample Input 0

SOSSPSSQSSOR

Sample Output 0

3

Explanation 0

= SOSSPSSQSSOR, and signal length . They sent SOS messages (i.e.: ).

Expected signal: SOSSOSSOSSOS

Recieved signal: SOSSPSSQSSOR

def marsExploration(s):

    if len(s)% 3!=0:

        return -1

    else:

        count=0

        for i in range(0,len(s),3):

            if s[i]!='S':

                count+=1

            if s[i+1]!='O':

                count+=1

            if s[i+2]!='S':

                count+=1

        return count

s=str(input("enter the string message")).upper()

result=marsExploration(s)

print(result)

1. **Jumpingonccloud**

A child is playing a cloud hopping game. In this game, there are sequentially numbered clouds that can be thunderheads or cumulus clouds. The character must jump from cloud to cloud until it reaches the start again.There is an array of clouds, and an energy level . The character starts from and uses unit of energy to make a jump of size to cloud . If it lands on a thundercloud, , its energy () decreases by additional units. The game ends when the character lands back on cloud .Given the values of , , and the configuration of the clouds as an array , determine the final value of after the game ends.

Example.

The indices of the path are . The energy level reduces by for each jump to . The character landed on one thunderhead at an additional cost of energy units. The final energy level is .

Note: Recall that refers to the modulo operation. In this case, it serves to make the route circular. If the character is at and jumps , it will arrive at .

Function Description

Complete the jumpingOnClouds function in the editor below.

jumpingOnClouds has the following parameter(s):

int c[n]: the cloud types along the path

int k: the length of one jump

Returnsint: the energy level remaining.

Input Format

The first line contains two space-separated integers, and , the number of clouds and the jump distance.The second line contains space-separated integers where . Each cloud is described as follows:

If , then cloud is a cumulus cloud.

If , then cloud is a thunderhead.

Constraints

Sample Input

STDIN Function

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8 2 n = 8, k = 2

0 0 1 0 0 1 1 0 c = [0, 0, 1, 0, 0, 1, 1, 0]

Sample Output

92

1. FINDING DIGITS

An integer is a divisor of an integer if the remainder of .Given an integer, for each digit that makes up the integer determine whether it is a divisor. Count the number of divisors occurring within the integer.

Example

Check whether , and are divisors of . All 3 numbers divide evenly into so return .

Check whether , , and are divisors of . All 3 numbers divide evenly into so return .

Check whether and are divisors of . is, but is not. Return .

Function Description

Complete the findDigits function in the editor below.

findDigits has the following parameter(s):

int n: the value to analyze

Returns

int: the number of digits in that are divisors of

Input Format

The first line is an integer, , the number of test cases.The subsequent lines each contain an integer, .

10 .APPEND AND DELETE

You have two strings of lowercase English letters. You can perform two types of operations on the first string:Append a lowercase English letter to the end of the string.

Delete the last character of the string. Performing this operation on an empty string results in an empty string.

Given an integer, , and two strings, and , determine whether or not you can convert to by performing exactly of the above operations on . If it's possible, print Yes. Otherwise, print No.

Example.

To convert to , we first delete all of the characters in moves. Next we add each of the characters of in order. On the move, you will have the matching string. Return Yes.

If there were more moves available, they could have been eliminated by performing multiple deletions on an empty string. If there were fewer than moves, we would not have succeeded in creating the new string.

Function Description

Complete the appendAndDelete function in the editor below. It should return a string, either Yes or No.

appendAndDelete has the following parameter(s):

string s: the initial string

string t: the desired string

int k: the exact number of operations that must be performed

Returns string: either Yes or No

Input Format

The first line contains a string , the initial string.

The second line contains a string , the desired final string.

The third line contains an integer , the number of operations.

Constraints

and consist of lowercase English letters, .

Sample Input 0

hackerhappy

hackerrank

9

Sample Output 0

Yes

1. SHERLOCK AND SQUARES

Watson likes to challenge Sherlock's math ability. He will provide a starting and ending value that describe a range of integers, inclusive of the endpoints. Sherlock must determine the number of square integers within that range.

Note: A square integer is an integer which is the square of an integer, e.g. .

Example

There are three square integers in the range: and . Return .

Function Description

Complete the squares function in the editor below. It should return an integer representing the number of square integers in the inclusive range from to .

squares has the following parameter(s):

int a: the lower range boundary

int b: the upper range boundary

Returns

int: the number of square integers in the range

1. LIBRARY FINE

Your local library needs your help! Given the expected and actual return dates for a library book, create a program that calculates the fine (if any). The fee structure is as follows:

If the book is returned on or before the expected return date, no fine will be charged (i.e.: .

If the book is returned after the expected return day but still within the same calendar month and year as the expected return date, .

If the book is returned after the expected return month but still within the same calendar year as the expected return date, the .

If the book is returned after the calendar year in which it was expected, there is a fixed fine of .

Charges are based only on the least precise measure of lateness. For example, whether a book is due January 1, 2017 or December 31, 2017, if it is returned January 1, 2018, that is a year late and the fine would be .

Example

The first values are the return date and the second are the due date. The years are the same and the months are the same. The book is days late. Return .

12.CUT THE STICKS

You are given a number of sticks of varying lengths. You will iteratively cut the sticks into smaller sticks, discarding the shortest pieces until there are none left. At each iteration you will determine the length of the shortest stick remaining, cut that length from each of the longer sticks and then discard all the pieces of that shortest length. When all the remaining sticks are the same length, they cannot be shortened so discard them.

Given the lengths of sticks, print the number of sticks that are left before each iteration until there are none left

Example

The shortest stick length is , so cut that length from the longer two and discard the pieces of length . Now the lengths are . Again, the shortest stick is of length , so cut that amount from the longer stick and discard those pieces. There is only one stick left, , so discard that stick. The number of sticks at each iteration are .

Function Description

Complete the cutTheSticks function in the editor below. It should return an array of integers representing the number of sticks before each cut operation is performed.

cutTheSticks has the following parameter(s):

int arr[n]: the lengths of each stick

Returns

int[]: the number of sticks after each iteration

13.NON-DIVISIBLE SUBSET

Given a set of distinct integers, print the size of a maximal subset of where the sum of any numbers in is not evenly divisible by .

ExamplOne of the arrays that can be created is . Another is . After testing all permutations, the maximum length solution array has elements.

Function Description

Complete the nonDivisibleSubset function in the editor below.

nonDivisibleSubset has the following parameter(s):

int S[n]: an array of integers

int k: the divisor

Returns

int: the length of the longest subset of meeting the criteria

Input Format

The first line contains space-separated integers, and , the number of values in and the non factor.The second line contains space-separated integers, each an , the unique values of the set.

1. REPEATED STRINGS

There is a string, , of lowercase English letters that is repeated infinitely many times. Given an integer, , find and print the number of letter a's in the first letters of the infinite string.

Example

The substring we consider is , the first characters of the infinite string. There are occurrences of a in the substring.

Function Description

Complete the repeatedString function in the editor below.

repeatedString has the following parameter(s):

s: a string to repeat

n: the number of characters to consider

Returns int: the frequency of a in the substring

1. JUMPING ON CLOUD ||

There is a new mobile game that starts with consecutively numbered clouds. Some of the clouds are thunderheads and others are cumulus. The player can jump on any cumulus cloud having a number that is equal to the number of the current cloud plus or . The player must avoid the thunderheads. Determine the minimum number of jumps it will take to jump from the starting postion to the last cloud. It i It is always possible to win the game.for each game, you will get an array of clouds numbered if they are safe or if they must be avoided.

C=[0,0,1,0,0,1,0]

Return 4

1. EQUALIZE THE ARRAY

Given an array of integers, determine the minimum number of elements to delete to leave only elements of equal value.

Example: arr=[1,2,3,2]

Delete the 2 elements 1 and3 leaving arr=[2,2]. If both twos plus either the 1 or the 3 are deleted, it takes deletions to leave either or . The minimum number of deletions is 2

17

There are a number of people who will be attending ACM-ICPC World Finals. Each of them may be well versed in a number of topics. Given a list of topics known by each attendee, presented as binary strings, determine the maximum number of topics a 2-person team can know. Each subject has a column in the binary string, and a '1' means the subject is known while '0' means it is not. Also determine the number of teams that know the maximum number of topics. Return an integer array with two elements. The first is the maximum number of topics known, and the second is the number of teams that know that number of topics.

topic=['10101','11110','00010']

The attendee data is aligned for clarity below:

10101

11110

00010

These are all possible teams that can be formed:

Members Subjects

(1,2) [1,2,3,4,5]

(1,3) [1,3,4,5]

(2,3) [1,2,3,4]

In this case, the first team will know all 5 subjects. They are the only team that can be created that knows that many subjects, so[5,1] is returned..

1. ORGANIZING CONTAINER OF BALL

David has several containers, each with a number of balls in it. He has just enough containers to sort each type of ball he has into its own container. David wants to sort the balls using his sort method.

David wants to perform some number of swap operations such that:

Each container contains only balls of the same type.

No two balls of the same type are located in different containers.

Example

David has containers and different types of balls, both of which are numbered from to . The distribution of ball types per container are shown in the following diagram.

image

In a single operation, David can swap two balls located in different containers.

The diagram below depicts a single swap operation:

image

In this case, there is no way to have all green balls in one container and all red in the other using only swap operations. Return Impossible.

You must perform queries where each query is in the form of a matrix, . For each query, print Possible on a new line if David can satisfy the conditions above for the given matrix. Otherwise, print Impossible.

Function Description

Complete the organizingContainers function in the editor below.

organizingContainers has the following parameter(s):

int containter[n][m]: a two dimensional array of integers that represent the number of balls of each color in each container

Returns

string: either Possible or Impossible

1. ENCRYPTION

An English text needs to be encrypted using the following encryption scheme.

First, the spaces are removed from the text. Let be the length of this text.

Then, characters are written into a grid, whose rows and columns have the following constraints:

Example

After removing spaces, the string is characters long. is between and , so it is written in the form of a grid with 7 rows and 8 columns.

ifmanwas

meanttos

tayonthe

groundgo

dwouldha

vegivenu

sroots

Ensure that

If multiple grids satisfy the above conditions, choose the one with the minimum area, i.e. .

The encoded message is obtained by displaying the characters of each column, with a space between column texts. The encoded message for the grid above is:

imtgdvs fearwer mayoogo anouuio ntnnlvt wttddes aohghn sseoau

Create a function to encode a message.

Function Description

Complete the encryption function in the editor below.

encryption has the following parameter(s):

string s: a string to encryptReturns

string: the encrypted string