**PYTHON EXCERCISES**

1. Given two integers a and b , which can be positive or negative, find the sum of all the numbers between including them too and return it. If the two numbers are equal return a or b.

Note: a and b are not ordered!

Examples

get\_sum(1, 0) == 1 // 1 + 0 = 1

get\_sum(1, 2) == 3 // 1 + 2 = 3

get\_sum(0, 1) == 1 // 0 + 1 = 1

get\_sum(1, 1) == 1 // 1 Since both are same

get\_sum(-1, 0) == -1 // -1 + 0 = -1

get\_sum(-1, 2) == 2 // -1 + 0 + 1 + 2 = 2

1. You might know some pretty large perfect squares. But what about the NEXT one?

Complete the findNextSquare method that finds the next integral perfect square after the one passed as a parameter. Recall that an integral perfect square is an integer n such that sqrt(n) is also an integer.

If the parameter is itself not a perfect square, than -1 should be returned. You may assume the parameter is positive.

Examples:

findNextSquare(121) --> returns 144

findNextSquare(625) --> returns 676

findNextSquare(114) --> returns -1 since 114 is not a perfect

1. ATM machines allow 4 or 6 digit PIN codes and PIN codes cannot contain anything but exactly

4 digits or exactly 6 digits.

If the function is passed a valid PIN string, return true, else return false.

eg:

validate\_pin("1234") == True

validate\_pin("12345") == False

validate\_pin("a234") == False

1. You are going to be given a word. Your job is to return the middle character of the word. If the word's length is odd, return the middle character. If the word's length is even, return the middle 2 characters.

Examples:

runBF("test\0") should return "es"

runBF("testing\0") should return "t"

runBF("middle\0") should return "dd"

runBF("A\0") should return "A"

Input

A word (string) of length 0 < str < 200 For BF, all the input strings end with "\0". You do not need to test for this. This is only here to tell you that you do not need to worry about your

solution timing out.

Output

The middle character(s) of the word represented as a string

1. Y ou have to write a simple Morse code decoder. While the Morse code is now mostly superceded by voice and digital data communication channels, it still has its use in some applications around the world.The Morse code encodes every character as a sequence of "dots" and "dashes".

For example, the letter A is coded as ·− , letter Q is coded as −−·− , and digit 1 is coded as ·−−− . The Morse code is case-insensitive, traditionally capital letters are used. When the message is written in Morse code, a single space is used to separate the character codes and 3 spaces are used to separate words.

For example, the message HEY JUDE in Morse code is ···· · −·−− ·−−− ··−

−·· · .

NOTE: Extra spaces before or after the code have no meaning and should be ignored.

In addition to letters, digits and some punctuation, there are some special service codes, the most notorious of those is the international distress signal SOS (that was first issued by Titanic), that is coded as ···−−−··· . These special codes are treated as single special characters, and usually are transmitted as separate words.

Your task is to implement a function decodeMorse(morseCode) , that would take the morse code as input and return a decoded human-readable string.

For example:

decodeMorse('.... . -.-- .--- ..- -.. .')

#should return "HEY JUDE"

The Morse code table is preloaded for you as a dictionary, feel free to use it. In CoffeeScript, C++, Go, JavaScript, PHP, Python, Ruby and TypeScript, the table can be accessed like this: MORSE\_CODE['.--'] , in Java it is MorseCode.get('.--') , in C# it is MorseCode.Get('.--') , in Haskell the codes are in a Map String String and can be accessed like this: morseCodes ! ".--" , in Elixir it is morse\_codes variable.

All the test strings would contain valid Morse code, so you may skip checking for errors and exceptions. In C#, tests will fail if the solution code throws an exception, please keep that in mind. This is mostly because otherwise the engine would simply ignore the tests, resulting in a "valid" solution.

1. Count the number of Duplicates Write a function that will return the count of distinct case-insensitive alphabetic characters and numeric digits that occur more than once in the input string. The input string can be assumed to contain only alphabets (both uppercase and lowercase) and numeric digits.

Example

"abcde" -> 0 # No character repeats more than once

"aabbcde" -> 2 # ‘a’ and ‘b’

"aabBcde" -> 2 # ‘a’ occurs twice and ‘b’ twice (b and B)

"indivisibility" -> 2 # ‘i’ occurs six times

"Indivisibilities" -> 2 # ‘i’ occurs seven times and ‘s’ occurs twice

"aA11" -> 2 # ‘a’ and ‘1’

"ABBA" -> 2 # 'A' and 'B' each occur twice

1. Write a method that takes an array of consecutive (increasing) letters as input and that returns the missing letter in the array. You will always get an valid array. And it will be always exactly one letter be missing. The length of the array will always be at least 2. The array will always contain letters in only one case.

Example:

['a','b','c','d','f'] -> 'e'

['O','Q','R','S'] -> 'P'

(Use the English alphabet with 26 letters!)

1. Your task is to sort a given string. Each word in the String will contain a single number. This number is the position the word should have in the result.

Note: Numbers can be from 1 to 9. So 1 will be the first word (not 0).

If the input String is empty, return an empty String. The words in the input String will only contain valid consecutive numbers.

For an input: "is2 Thi1s T4est 3a" the function should return "Thi1s is2 3a T4est"

1. Your task is to construct a building which will be a pile of n cubes. The cube at the bottom will have a volume of n^3, the cube above will have volume of (n-1)^3 and so on until the top which will have a volume of 1^3.

You are given the total volume m of the building. Being given m can you find the number n of cubes you will have to build?

The parameter of the function findNb(find\_nb, find-nb, findNb) will be an integer m and you have to return the integer n such as n^3 + (n-1)^3 + ... + 1^3 = m if such a n exists or -1 if there is no such n.

Examples:

findNb(1071225) --> 45

findNb(91716553919377) --> -1

1. In a factory a printer prints labels for boxes. For one kind of boxes the printer has to use colors which, for the sake of simplicity, are named with letters from a to m.

The colors used by the printer are recorded in a control string. For example a "good" control string would be aaabbbbhaijjjm meaning that the printer used three times color a, four times color b, one time color h then one time color a...

Sometimes there are problems: lack of colors, technical malfunction and a "bad" control string is produced e.g. aaaxbbbbyyhwawiwjjjwwm.

You have to write a function printer\_error which given a string will output the error rate of the printer as a string representing a rational whose numerator is the number of errors and the denominator the length of the control string. Don't reduce this fraction to a simpler expression.

The string has a length greater or equal to one and contains only letters from a to z.

Examples:

s="aaabbbbhaijjjm"

error\_printer(s) => "0/14"

s="aaaxbbbbyyhwawiwjjjwwm"

error\_printer(s) => "8/22"