functions problem solving

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(1) Keep Hydrated!

https://www.codewars.com/kata/582cb0224e56e068d800003c

Description:

Nathan loves cycling.

Because Nathan knows it is important to stay hydrated, he drinks 0.5 litres of water per hour of cycling.

You get given the time in hours and you need to return the number of litres Nathan will drink, rounded to the smallest value.

For example:

time = 3 ----> litres = 1
time = 6.7---> litres = 3
time = 11.8--> litres = 5

Solution

```
def litres(time):
    return int(time/2)
    # return time // 2
    # return time/2 - time/2 % 1

print(litres(4.5))
```

##
##

(2) Invert values

https://www.codewars.com/kata/5899dc03bc95b1bf1b0000ad

Description:

Given a set of numbers, return the additive inverse of each. Each positive becomes negatives, and the negatives become positives.

[1, 2, 3, 4, 5] --> [-1, -2, -3, -4, -5]
[1, -2, 3, -4, 5] --> [-1, 2, -3, 4, -5]
[] --> []

You can assume that all values are integers. Do not mutate the input array.

Solution

```
def invert(lst):
    # for i in range(0,len(lst)) :
    #     lst[i] = -lst[i]
    # return lst # تقوم بتغيير الدالة الاصلية

    return [-item for item in lst] # هنا نقوم بتعديل قيمة منسوخة ولكن نقوم بارجاعها

    # for item in lst :
    #   item = -item
    # return lst هذة الطريقة خاظئة لانها تقوم بتعديل القيمة المنسوخة فقط والاراى الاساسية لا تعدل

print(invert([1,2,3,4,5]))
```

##
##

(3) Century From Year

https://www.codewars.com/kata/5a3fe3dde1ce0e8ed6000097

Description:

Introduction

The first century spans from the **year 1** up to *and including* the year 100, the second century - from the year 101 up to *and including* the year 200, etc.

Task

Given a year, return the century it is in.

Examples

1705 --> 18
1900 --> 19
1601 --> 17
2000 --> 20
2742 --> 28

Solution

```
def century(year):
    return ((year-1) // 100) + 1

print(century(1705))
```

##
##

(4) Third Angle of a Triangle

https://www.codewars.com/kata/5a023c426975981341000014

Description:

You are given two interior angles (in degrees) of a triangle.

Write a function to return the 3rd.

Solution

```
def other_angle(a, b):
    return 180 - a - b

print(other_angle(30,60))
```

##
##

(5) Convert a String to a Number!

https://www.codewars.com/kata/544675c6f971f7399a000e79

Description

We need a function that can transform a string into a number. What ways of achieving this do you know?

Note: Don't worry, all inputs will be strings, and every string is a perfectly valid representation of an integral number.

Examples

"1234" --> 1234
"605" --> 605
"1405" --> 1405
"-7" --> -7

Solution

```
def string_to_number(s):
    result = 0
    p = len(s) - 1

    for item in s :
        if(item == '-') :
            p -= 1
            continue
        result += (ord(item) - 48) * (10**p)
        p -= 1
    if(s[0] == '-') : result = -result
    return result

print(string_to_number("-123"))
```

##
##

(6) L1: Set Alarm

https://www.codewars.com/kata/568dcc3c7f12767a62000038

Description:

Write a function named `setAlarm` / `set_alarm` / `set-alarm` / `setalarm` (depending on language) which receives two parameters. The first parameter, `employed`, is true whenever you are employed and the second parameter, `vacation` is true whenever you are on vacation.

The function should return true if you are employed and not on vacation (because these are the circumstances under which you need to set an alarm). It should return false otherwise. Examples:

employed | vacation
true | true => false
true | false => true
false | true => false
false | false => false

Solution

```
def set_alarm(employed, vacation):
    if(employed == vacation) : return False
    else : return employed

print(set_alarm(False, True))
```

##
##

(7) Even or Odd

https://www.codewars.com/kata/53da3dbb4a5168369a0000fe

Description:

Create a function that takes an integer as an argument and returns `"Even"` for even numbers or `"Odd"` for odd numbers.

Solution

```
def even_or_odd(number):
    if(number % 2 == 0) : return "Even"
```

```
    else : return "Odd"

print(even_or_odd(10))
```

##
##

(8) Square(n) Sum

https://www.codewars.com/kata/53da3dbb4a5168369a0000fe

Description:

Complete the square sum function so that it squares each number passed into it and then sums the results together.

For example, for `[1, 2, 2]` it should return `9` because 12+22+22=912+22+22=9.

Solution

```
def square_sum(numbers):
    return sum(item**2 for item in numbers)
    # result = 0
    # for item in numbers :
    #     result += item**2
    # return result

print(square_sum([1,2,3]))
```

##
##

(9) Will there be enough space?

https://www.codewars.com/kata/5875b200d520904a04000003

Description:

The Story:

Bob is working as a bus driver. However, he has become extremely popular amongst the city's residents. With so many passengers wanting to get aboard his bus, he sometimes has to face

the problem of not enough space left on the bus! He wants you to write a simple program telling him if he will be able to fit all the passengers.

Task Overview:

You have to write a function that accepts three parameters:

- `cap` is the amount of people the bus can hold excluding the driver.
- `on` is the number of people on the bus excluding the driver.
- `wait` is the number of people waiting to get on to the bus excluding the driver.

If there is enough space, return 0, and if there isn't, return the number of passengers he can't take.

Usage Examples:

cap = 10, on = 5, wait = 5 --> 0 # He can fit all 5 passengers
cap = 100, on = 60, wait = 50 --> 10 # He can't fit 10 of the 50 waiting

Solution

```
def enough(cap, on, wait):
    if cap - on >= wait : return 0
    else : return wait - cap + on

print(enough(100,60,50))
```

##
##

(10) Get Nth Even Number

https://www.codewars.com/kata/5933a1f8552bc2750a0000ed

Description:

Return the Nth Even Number

Example(Input --> Output)

1 --> 0 (the first even number is 0)
3 --> 4 (the 3rd even number is 4 (0, 2, 4))

100 --> 198
1298734 --> 2597466

Solution

```
def nth_even(n):
    return n*2 - 2

print(nth_even(100))
```

##
##

(11) Twice as old

https://www.codewars.com/kata/5b853229cfde412a470000d0

Description:

Your function takes two arguments:

1. current father's age (years)
2. current age of his son (years)

Calculate how many years ago the father was twice as old as his son (or in how many years he will be twice as old). The answer is always greater or equal to 0, no matter if it was in the past or it is in the future.

Solution

```
def twice_as_old(dad_years_old, son_years_old):
    return  abs(dad_years_old - son_years_old*2)

print(twice_as_old(42,21))
```

##
##

(12) Can we divide it?

https://www.codewars.com/kata/5a2b703dc5e2845c0900005a

Description:

Your task is to create the function `isDivideBy` (or `is_divide_by`) to check if an integer `number` is divisible by both integers `a` and `b`.

A few cases:

(-12, 2, -6) -> true
(-12, 2, -5) -> false

(45, 1, 6) -> false
(45, 5, 15) -> true

(4, 1, 4) -> true
(15, -5, 3) -> true

Solution

```
def is_divide_by(number, a, b):
    return (number%a == number%b == 0)

print(is_divide_by(-12,2,-6))
```

##
##

(13) Calculate Price Excluding VAT

https://www.codewars.com/kata/5890d8bc9f0f422cf200006b

Description:

Write a function that calculates the original product price, without VAT.

Example

If a product price is `200.00` and VAT is `15%`, then the final product price (with VAT) is: `200.00 + 15% = 230.00`

Thus, if your function receives `230.00` as input, it should return `200.00`

Notes:

- VAT is *always* `15%` for the purposes of this Kata.

- Round the result to 2 decimal places.
- If `null` value given then return `-1`

Solution

```
def excluding_vat_price(price):
    return (100 * price / 115) if price != None else -1

print(excluding_vat_price(230.00))
```

##
##

(14) Fuel Calculator

https://www.codewars.com/kata/57b58827d2a31c57720012e8

Description:

In this kata you will have to write a function that takes `litres` and `price_per_litre` (**in dollar**) as arguments.

Purchases of 2 or more litres get a discount of 5 cents per litre, purchases of 4 or more litres get a discount of 10 cents per litre, and so on every two litres, up to a maximum discount of 25 cents per litre. But total discount per litre cannot be more than 25 cents. Return the total cost rounded to 2 decimal places. Also you can guess that there will not be negative or non-numeric inputs.

Good Luck!

Note

1 Dollar = 100 Cents

Solution

```
def fuel_price(litres, price_per_litre):
    dis =  25 * litres if litres > 10 else int(litres * 5 /2) * litres
    return litres*price_per_litre - dis/100

print(fuel_price(7, 8.5))
```

##
##

(15) pillars

https://www.codewars.com/kata/5bb0c58f484fcd170700063d

Description:

There are pillars near the road. The distance between the pillars is the same and the width of the pillars is the same. Your function accepts three arguments:

1. number of pillars (≥ 1);
2. distance between pillars (10 - 30 meters);
3. width of the pillar (10 - 50 centimeters).

Calculate the distance between the first and the last pillar in centimeters (without the width of the first and last pillar).

Solution

```
def pillars(num_pill, dist, width):
    return 0 if num_pill < 2 else ((num_pill-1) * dist*100) + ((num_pill-2) *
width)

print(pillars(2,10,10))
```