Python 3 - Complementary exercises

Exercise 1

Store each word of the following sentece in a separate variable, then print it on one line.

> Special cases aren't special enough to break the rules.

Exercise 2

Add parenthesis to the expression `a = 9 * 2 - 3 + 4 / 2` to change its value from 17 to:

- 13.5
- -22.5

Exercise 3

Evaluate the following expressions:

- 7 % 23
- 11 % 10
- 14 % 12
- 12 % 14
- 2 % 2
- 0 % 11
- 11 % 0

Exercise 4

It is now 3pm and You have set an alarm to ring in 62 hours. At what time the alarm will ring?

- Second version: Ask the user for the time current hour and the number of hour to wait.

Exercise 5

Write a program that prints 100 times the following sentence.

> Now is better than never.

Exercise 6

Create a list of months, then write them using a for loop.

Exercise 7

Create a list with 10 or more integer elements.

- print each of them on a new line.
- print the square of each of them.
- print the sum of all elements.
- Print the product of all elements.

Exercise 8

Use the turtle module and the for loop to draw the following regular (all sides have the same size) polygons:

- equilateral triangle (3 sides)
- square (4 sides)
- hexagon (6 sides)
- octagon (8 sides)

Exercise 9

Write a function which given the day number (assuming the days of the week are numbered from 0 (Sunday) to 6 (Saturday)), it returns the day name.

Exercise 10

Given an exam mark list, write functions such that return:

- Average
- Sum of positive grades
- Average not considering the highest and lowest grade

Exercise 11

Write a function called Compare(arg1, arg2) with two arguments arg1 and arg2 that returns:

- -1, if arg1 < arg2
- 0, if arg1 == arg2
- 1, if arg1 > arg2

Exercise 12

Write a function that returns the number of decimal digits in a positive integer given as a parameter.

Exercise 13

Write the following functions:

- returns a string removing the symbols !\"#$%&'()*+,-./:;<=>?@[\\]^_`{|}~ from a given string parameter.
- returns a string reversed.
- returns a boolean value recognizing if the given string is a palindrome.

Exercise 14

What is the result of the following code? The lists are really swapped?

```
def Swap(x, y):
    (x, y) = (y, x)

list1 = ["one", "two", "three"]
list2 = [1, 2, 3]

print(list1, list2)
Swap(list1, list2)
print(list1, list2)
```

Exercise 15

Write one function to add vectors and another to returns the scalar multiple of a vector by a value.

Examples:

```
AddVector([1, 2, 3], [1, 2, 3]) = [2, 4, 6]
ScalarMultiple(2, [1, 2, 3]) = [2, 4, 6]
```

Exercise 16

Create a function to generate a list containing n random integer values between a lower and an upper bound.

Exercise 17

Write a function that receives a path to a file and writes out a new file with the lines in reversed order.

Exercise 18

Write a funtion that reads a positive integer from the user. Raise execeptions for each case that not meet this requirement.

Exercise 19

Write a program that returns a table of the letters (Case should be ignored) which occur in the string together with the number of times each letter occurs.

Exercise 20

Considering:

```
class Geometric2D():

    def get_area(self):
        """Return area"""
        raise NotImplementedError("Must implement this")

    def get_perimeter(self):
        """Return perimeter"""
        raise NotImplementedError("Must implement this")

class Rectangle(Geometric2D):

    def __init__(self, w, h):
        self.width = w
        self.height = h

    def __str__(self):
        return "{}x{}".format(self.width, self.height)

if __name__ == "__main__":
    r = Rectangle(15, 10)
    print(r, r.get_area(), r.get_perimeter())
```

- Complete the following code.
- Create a subclasse of Rectangle called Square, initializing the square with only one size. Example:

```
s = Square(10)
print(s, s.get_area(), s.get_perimeter())
```