# Worksheet #4

***Higher order functions***

***Lambda functions***

***Comprehension***

***Generators***

1. Create a lambda function that squares a number
2. Considering the list l1 = [74, 19, 105, 20, -2, 67, 77, 124, -45, 38] ,
   1. Construct a list with values from list l1 that are between 0 and 100 using:
      1. higher order functions
      2. List comprehension
      3. Generator
   2. Construct a list with negative values from list l1 using:
      1. higher order functions
      2. List comprehension
      3. Generator
   3. Construct a list with the squares of the values in list l1 using:
      1. Higher order function + lambda function from exercise 1
      2. Higher order function + square(x) function
      3. List comprehension
      4. Generator
   4. Obtain the average of the values in the list using:
      1. Cycle
      2. Higher order function + media(list) function
3. Considering the code snippet

numbers = []

for i in range(1,1001):

numbers.append(i)

* 1. Rewrite the code using:
     1. List comprehension
     2. Generator
  2. Construct a list with multiple values of 8 from the list using:
     1. higher order functions
     2. List comprehension
     3. Generator
  3. Construct a list with 20% of the even values in the list using:
     1. Higher order functions + functions
     2. List comprehension
     3. Generator

1. Considering the string [[1]](#footnote-1):

phrase = "The quick brown fox jumps over the lazy dog"

Using the methods covered in this sheet

* 1. Count the number of spaces in the string
  2. Count the consonants in the string, using the result from the previous point
  3. Build a list of words in the sentence that contain less than 5 characters

1. Considering the dictionary with the notes of 20 students and using dictionary comprehension:

grades = {

38549: 13, 37205: 14, 37343: 8, 34550: 8, 31132: 20,

33116: 17, 34794: 16, 35443: 16, 39820: 15, 32908: 18,

34117: 12, 30463: 7, 30404: 17, 32912: 17, 33200: 18,

36861:19, 33017:16, 31966:10, 34307:16, 32255:15

}

* 1. Obtain a dictionary with the elements that correspond to the approved students
  2. Get the number of failed students
  3. Obtain a dictionary with the elements that correspond to students with higher than average grades
  4. Get the number of students with grades below average
  5. Students with grades between 8 and 10 are entitled to take an oral test. Get a dictionary with the elements that correspond to these students.

1. Taking into account the fruit list and using list comprehension:

fruits = ['mango', 'kiwi', 'strawberry', 'guava', 'pineapple', 'clementine']

* 1. Get the list ['MANGO', 'KIWI', 'STRAWBERRY', 'GUAVA', 'ANANAS', 'CLEMENTINE'][[2]](#footnote-2)
  2. Get the list ['Mango', 'Kiwi', 'Strawberry', 'Guava', 'Ananas', 'Clementina'][[3]](#footnote-3)
  3. Get the list of fruits with more than two vowels
  4. Get the number of fruits with exactly two vowels
  5. Get the list of fruits with more than 5 letters
  6. Get list of fruit name lengths
  7. Get the list of fruits that contain the letter 'a' in their name

1. **Fun fact** : The sentence presented in English is a *pangram* , because it contains all the letters of the alphabet. An example in Portuguese is “Futile banks paid him cheese, whiskey and chess.” [↑](#footnote-ref-1)
2. upper() function : <https://www.w3schools.com/python/ref_string_upper.asp> [↑](#footnote-ref-2)
3. capitalize() function : <https://www.w3schools.com/python/ref_string_capitalize.asp> [↑](#footnote-ref-3)