Introduction to Programming W10

Exercises

2022/06/10

Exercise 10.1

Download "numbers.txt" from the assignment page. It is a text file with 30 floating point numbers, one per line. Put the file into the same folder as your Python file.
Create a function called `make_array` that takes one argument, a file to read in.

1. Read in the file to a list, where every line from the text file is an element of the list.
2. Convert the string elements to floating point numbers using float(). Tip: you can use a list comprehension or create a new empty list and populate it within a for loop.
3. Convert the list to a NumPy array, and return it with the function.

Next, perform a sequence of array operations based on the instructional comments.

```
import numpy as np

#complete make_array
def make_array(filename):
"""docstring"""
    with open(filename,'r',encoding = 'utf-8') as f:


read_arr = make_array("numbers.txt")
print("Array created from the numbers of the text file:", read_arr)
print("Type of read_arr:", type(read_arr))

#create a 1-D numpy array with 30 values spaced linearly from 5 to 100
arr_1 =
#redefine arr_1, so it is arr_1 and read_arr added together element-wise
arr_1 =
#create a 1-D number random array with 30 floating point numbers
arr_2 =
#join the arrays arr_1 and arr_2 along axis 0 using np.stack()
#check the documentation how to use stack!
#don't be surprised of the scientific number notation (e+/e-) when printed, it is normal
stacked_array =
#next line should print a 2-D array where stacked_array[1] will be the random array
print("The stacked array:", stacked_array)

#print the average/mean value of the first 1-D array from stacked_array
#use np.mean(), check numpy documentation
average =
print("Average of stacked_array[0]:", average)
#print the sum of the first 5 elements of the second 1-D array from stacked_array
#use indexing and np.sum()
summa =
print("Sum of the first 5 elements of stacked_array[1]:", summa)
```

Do not forget to write the function docstring as well, not just the program description in the header. Do not submit the .txt file, only the Python file. Name it the following way:
ip_ex101_<student id number>.py, for example: ip_ex101_012345678-9.py