

# Introduction to Programming with Python

## Weekly Programming Assignment – Week 10

All solution files must be submitted at CodeGrade/Assignment enabled Link for grading.

All solutions must be uploaded on or before 24<sup>th</sup> of November 2021 at 11:59 PM

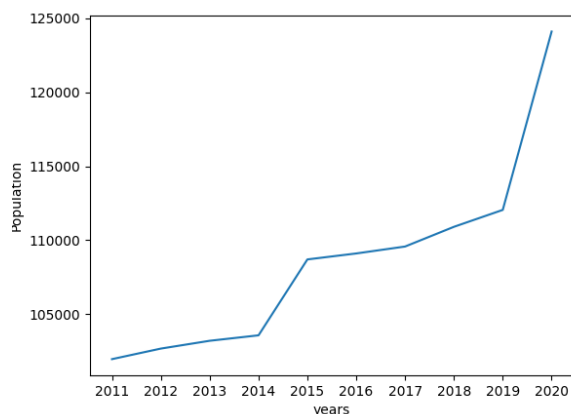
### Exercise 1

Write a program that accepts only positive *int* numbers as input from the user until user enter **0** to terminate the program. Then the accepted values must be stored in **numpy array**. However, if the user input is negative number or other data type then **ValueError Exception** (from Python's library) must be thrown with message “Give only positive int numbers” and continue asking input from the user again. Then display the lowest, highest, and average of the array. The sample output is here:

```
>>> %Run Ex1_Week10.py
Enter an int value:12
Enter an int value:34
Enter an int value:0.45
Give only positive int numbers
Enter an int value:-23sdf
Give only positive int numbers
Enter an int value:45
Enter an int value:0
Lowest: 12.0
Highest: 45.0
Average: 30.333333333333332
```

### Exercise 2

Write a procedure **cityPopulationChart()** that accepts a filename [which contains year and population over the years] as argument and display years as x-axis and corresponding values represented as line graph. [Hint: slide 4-10A]. The expected output will be; Save your python code file as text file and submit.



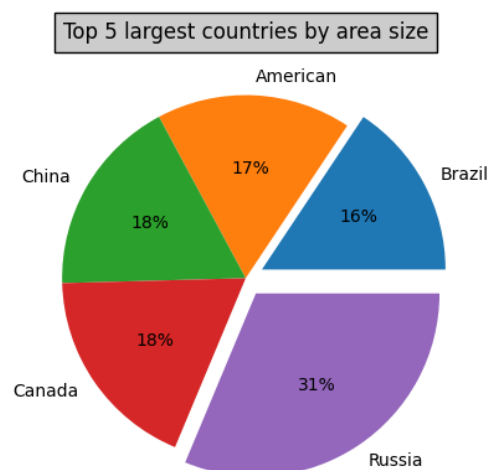
### Exercise 3

The dictionary → **dicAreas** contains country names and their land size as key and value respectively.

```
dicAreas={'Russia':1707,'Canada':997,'China':960,'American':936,'Brazil':855}
```

Write a function **sortDict()** that accepts dictionary as argument which prints the dictionary in ascending order by values with respective keys and return the sorted dictionary in the main program. Then the main program should display the returned dictionary items as pie chart where the largest and smallest area (values) of the countries must be split 0.1 distance from the pie. In addition, the largest and smallest pieces of pie must be in green and red colors respectively. [Hint: the sorted dictionary first value will be the smallest and last one will be largest]. Submit your code as txt file. The expected output will be

The sorted dictionary is: {'Brazil': 855, 'American': 936, 'China': 960, 'Canada': 997, 'Russia': 1707}



### Exercise 4 (self-study)

The file “**marks.txt**” contains student marks secured in quiz 1 – quiz 5 respectively. Each row represents one student and his/her marks secured in quiz1, quiz2, quiz3, quiz4, and quiz5. Write a procedure **Quizresults()** that takes file name as parameter and print the following: [Hint: **argmax** returns indices & **count\_nonzero** with condition return number of elements]

- (i) Highest score received by each student with quiz name
- (ii) number of students that failed in quiz 5(last column). Pass score is 50 or above.

The expected output will be:

```
>>> %Run Ex4_Week10.py

student 1 : Quiz 4 : 94
student 2 : Quiz 3 : 100
student 3 : Quiz 1 : 89
student 4 : Quiz 5 : 94
Number of students failed in Quiz 5: 3
```

Exercise / task Number	Codegrade link_Moodle for file solution files upload	Points / Marks
1	Exercise1_Week 10	10
2	Exercise2_Week 10 as text file	10
3	Exercise3_Week 10 as text file	15
4	Exercise 4_Week 10	15
5	Surprise gift from Week 9 (5 or 10 or 15 or 20)	20