# Assignments – Set 3

## Instruction:

* Write pseudo-code/comments before each codes. Use ‘#’ to convert the sentence in to comments.

E.g.:- #1st step …

#2nd Step...

* If stuck or in doubt, feel free to Google the concept. ☺
* Whatsapp/call me anytime if you have any doubts.
* If using jupyter notebook, the notebook is saved in .ipnyb format. Submit that file or if using python editor, consolidate all answers in one file and submit.

## Topics Covered:

* List
* String
* Tuple
* Set
* Dictionary
* Function

## Questions:

1. Implement a function product, to compute product of a list of numbers.
2. Write a function factorial to compute factorial of a number. Can you use the product function defined in the previous example to compute factorial?
3. Write a function reverse to reverse a list. Can you do this without using list slicing?
4. Write a function unique to find all the unique elements of a list.

E.g.: unique([1, 2, 1, 3, 2, 5])

Result: [1, 2, 3, 5]

1. Write a function dups to find all duplicates in the list.

E.g.: dups([1, 2, 1, 3, 2, 5])

Result: [1, 2]

1. Write a function count\_digits to find number of digits in the given number.

Eg: count\_digits(12345)

Result: 5

1. Write a program which accepts a sequence of comma-separated numbers from console and generate a list and a tuple which contains every number.

Suppose the following input is supplied to the program:

34,67,55,33,12,98

Then, the output should be:

['34', '67', '55', '33', '12', '98']

('34', '67', '55', '33', '12', '98')

1. Write a program that calculates and prints the value according to the given formula:

Q = Square root of [(2 \* C \* D)/H]

Following are the fixed values of C and H:

C is 50. H is 30.

D is the variable whose values should be input to your program in a comma-separated sequence.

1. Write a program that accepts a sentence and calculate the number of letters and digits.

Suppose the following input is supplied to the program:

hello world! 123

Then, the output should be:

LETTERS 10

DIGITS 3

1. Write a program that accepts a sentence and calculate the number of upper case letters and lower case letters.

Suppose the following input is supplied to the program:

Hello world!

Then, the output should be:

UPPER CASE 1

LOWER CASE 9

1. Write a Python function to create and print a list where the values are square of numbers between 1 and 30 (both included)
2. Write a Python program to calculate the area of a parallelogram.

Note: A parallelogram is a quadrilateral with opposite sides parallel (and therefore opposite angles equal). A quadrilateral with equal sides is called a rhombus, and a parallelogram whose angles are all right angles is called a rectangle.

Test Data:

Length of base: 5

Height of parallelogram: 6

Expected Output: Area is : 30.0

1. Write a Python program to calculate surface volume and area of a sphere.
2. Write a Python program to check the validity of password input by users. Go to the editor

Validation:

* At least 1 letter between [a-z] and 1 letter between [A-Z].
* At least 1 number between [0-9].
* At least 1 character from [$#@].
* Minimum length 6 characters.
* Maximum length 16 characters.

1. Write a Python function to reverses a string if its length is a multiple of 4.
2. Define a function that can accept two strings as input and concatenate them and then print it in console.

Hints:

Use + to concatenate the strings

1. Define a function which can print a dictionary where the keys are numbers between 1 and 3 (both included) and the values are square of keys.

Hints:

Use dict[key]=value pattern to put entry into a dictionary.

1. Define a function which can generate and print a list where the values are square of numbers between 1 and 20 (both included).
2. Define a function which can generate and print a list where the values are square of numbers between 1 and 20 (both included).
3. Write a Python program to access a function inside a function.

Try solve the python problems in <https://www.hackerrank.com/>