Python, Assignment 1

- Due by 14th September, 2020 by 5pm IST.
- To be submitted to the following email address: **office.of.gr@gmail.com**
- The subject of the email should be: **Assignment Number [1,2,3 or 4]: Algorithms, 2020**
- Please mention your name and roll number.

A. Reinforcement of concepts / methods

Q1

(a) Write a Python function that takes a positive integer n, and returns the sum of the squares of all the positive integers smaller than n.

(b) Write a Python function that takes a positive integer n, and returns the sum of the squares of all the *odd* positive integers smaller than n.

Q2

What parameter values should be sent to the range constructor to produce a range with values:

(a) 60,70,80

(b) 4,2,0,-2,-4

B. Creativity

Q3

Write a Python function that takes a sequence of integer values and determines if there is a distinct pair of numbers in the sequence whose product is *odd*.

Q4

Write a Python function that counts the number of vowels in a given character string.

Q5

Write a Python program that takes as input three integers, “a”, “b” and “c”, from the console and determines if they can be used in the following arithmetic formulas: (i) “a+b=c”, (ii) “a=b-c”, (iii) “a*b=c”.

C. Project-based / Cross-Contextual

Q6

https://en.wikipedia.org/wiki/Birthday_problem

Design a program that can test the Birthday problem, by a series of experiments, on randomly generated birthdays which test this paradox for n = 5,10,15,20,25,30...200.