ALGORITHM DEVELOPMENT AND COMPUTATIONAL APPLICATION WITH PYTHON HOMEWORK

Q1- Create variables defined by ***user input*** for your name, surname and student number, respectively. Name and surname should be indicated as a ***string*** and student number as an ***integer***.

a) Write a short Python enabling you print your name, surname and student number by using the concatenation property. **(5p)**

(**e.g.** "Hello ***name surname"***, "My student number is ***student number"***)

b) Develop your code to find out consonants and vowels in your name and surname by attaching a loop and further expressions. **(5p)**

(**e.g.** "There is/are ***number*** consonant/s and ***number*** vowel/s in my name" and "There is/are ***number*** consonant/s and ***number*** vowel/s in my surname")

c) Add necessary command and loops to check whether your student number is ***even*** or ***odd*** **(10p)**

Q2- 200 students enrolled in "Python Application" course have taken three exams. The instructor has classified the students into three groups in terms of success (upper-intermedia, intermediate, conditional pass and failed). The success criteria is evaluated separately for each exam and given in table below.

Criteria	Grade	Exam-1 (%)	Exam-2 (%)	Exam-3 (%)
Upper-intermedia	75-100	25	20	20
Intermedia	51-74	35	35	30
Conditional pass	45-50	25	25	25
Failed	0-44	15	20	25

Write a code defining student grades with random number with respect to each exam success rate, calculate the standard deviation of each exams and average grade of each student. **(30p)**

Hint: *use* ***list*** *method to store student grade, use* ***random library*** *to create random number for student grade, use* ***def*** *command to calculate standard deviation for each exam, use another* ***def*** *command to calculate student average grade.*

Q3- Create a **recursive function** structure.

a) Calculate and print **cumulative sum** of the **prime** numbers between 1 and 20000 at **each step**. **(10p)**

b) Find how many prime numbers there are. **(10p)**

Q4- Calculate $\boldsymbol{yy}= \boldsymbol{xx^{33}-33xx+1111}$ for $\boldsymbol{xx}=[\mathbf{00},\mathbf{11},\mathbf{11},-\mathbf{33},-\mathbf{66},\mathbf{110000},-\mathbf{99}]$, **print** rules given below and **y** values for every step. You can use necessary library or your own algorithm for this calculation.
(30p)

'' if y < 0, print: y is negative
if y > 0, print: y is positive
if y = -690, print: y equals to -690 otherwise,
print: undefined result for y ''

- Explain all of your lines with **#**. Students who do not prefer to comment the lines will get zero points per question.