# Programming Fundamentals LAB – BSDSF21

**(Both Morning and Afternoon)**

# Lab 12 – 28-04-2022

YOU may USE Command Prompt to interpret and execute all the PYTHON programs. Use of any IDE, except ***Mu Editor*** is not allowed for this LAB, despite you are expert. Unless and until you convinced me in personal capacity.

1. Consider N lists of numbers are in a text file, one per line. Each list can be of different size. The structure or format of text file is that its first line contains the number N which the count of lists follows. Next N lines begins with an integer, let the $k^{th}$ line with number $S_k$, following that $S_k$, space separated $S_k$ numbers are stored on the that line. An example file is given below.

```
4
3 2.5 5 0.9
2 9 1
7 2.6 1.8 3.3 5 7.1 9.4 8
5 7 0 0.5 3 0
```

In the above example, first line has 4 means there are 4 list on the next 4 lines, the first number on each list line is size of that list, so second list contains 2 values 9 and 1, third list contains 7 values from 2.6 to 8. The values are of real numbers (float data type).

**You have to write a function** createNLists(*fname*), which when called generate a file with name *fname*, the parameter. The filename must end at **.txt**. The count of the lists, the sizes of each list and the data in each are random values generated by the code of the function. The main function asks users how many files he/she wants to create, then asked for the names of these files and create files using the above mentioned function.

Note: You can use nested loops or create functions to support the function *createNLists*.

2. Using Copy and paste the following data in a text file named result_data.txt. The text file should be created using a text editor (e.g., Notepad, Textpad, UltraEdit, Visual Studio Code, Atom, Brackets, Notepad++, Espresso, Komodo Edit, et) not word processors or other type of software. Using text editor, remove errors from the file, and type data for at least TWO more students. Save and close the file.

```
Roll No   Name                                    Crs    Md Ss Fn
========================================== ====== == == ==
BSEF09M001Hammad Khan                             ITC    22 21 31
BSEF09M001Hammad Khan                             PF     14 15 25
BSEF09M001Hammad Khan                             DLD    20 18 22
BSEF09M003Younas Ahmad                            ITC    30 AB 29
BSEF09M003Younas Ahmad                            PF     34 25 30
BSEF09M003Younas Ahmad                            DLD    10 15 10
BSEF09M005Riffat Kaleem                           ITC    33 20 33
BSEF09M005Riffat Kaleem                           PF     26 11 35
BSEF09M005Riffat Kaleem DLD    30 24 38
BSEF09M012Barkat Jan                              ITC    25 18 34
BSEF09M012Barkat Jan                              PF     19    28
BSEF09M012Barkat Jan                              DLD    28 21 34
```

```
BITF09M002Khawer Hayat                ITC     11 18 37
       002Khawer Hayat                PF      19 17 27
BITF09M002Khawer Hayat                DLD     31 22 34
BITF09M003Kishwar Hameed              ITC     24 20 33
BITF09M003Kishwar Hameed              PF      28 24 37
BITF09M003Kishwar Hameed              DLD     19 15 26
BITF09M010Yasir Ubaid                         18 20 31
BITF09M010Yasir Ubaid                 PF      25 21 34
BITF09M010Yasir Ubaid                 DLD     29 22 33
```

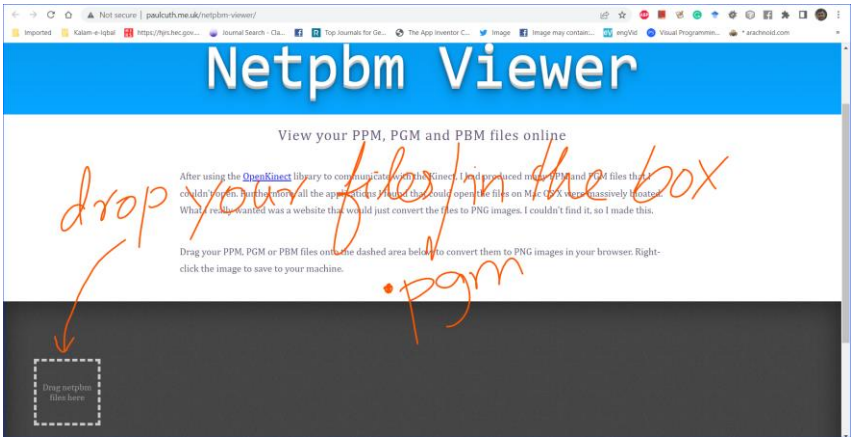
Now write a program that read the results_data.txt file and generate generates result_report.txt file for all students with an appropriate header of report, meaning full column headers. The report information of a student is as follows, using grading scheme from the pucit website:

1. BSEF09M001 Hammad Khan

| Subject | Sessional | Midterm | Final | Total | Grade |
|---|---|---|---|---|---|
| ITC | 21 | 22 | 31 | 74 | B+ |
| PF | 15 | 14 | 25 | 54 | D |
| DLD | 18 | 20 | 22 | 60 | C |

3. You have provided the files, pakistan.jpg, pakcities.txt and links.txt. Just have a deep view at the JPG file, open file pakcities.txt and note that it contains the names of various cities of the Pakistan and location of these cities in the form of their longitude and latitude based coordinates. You need to write a program which asks user to enter the names of two cities and return the distance between them using the formula for distance computation for longitudinal coordinates. The file links.txt have website's link for such formula.

4. You have provided the files, Lab03t.py and Lab03t1.pgm. The **pgm** file is data and **py** file is code that read and write the **pgm** files. The main logic of the code is to little enhance the information in the file, which you can ignore, if found difficult. When the code is executed, it generates a new file named, Lab03t2.pgm. Compare the data in the two files, also observe the output the execute code. You can also compare the two **pgm** files through some **pgm** viewer's software, or by dragging the files in the box at the website http://paulcuth.me.uk/netpbm-viewer/.




You need update the main function, so that the generated **pgm** file is the 90° rotated view of the original.

**Thanks,** for your **patience**