Programming Fundamentals LAB – BSDSF21
(Both Morning and Afternoon)
Lab 13 – 12-05-2022

1. 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, <u>observe and remove errors</u> from the file if they are still there, and type error free 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  0 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  0 28
BSEF09M012Barkat  Jan                              DLD    28 21 34
BITF09M002Khawer  Hayat                            ITC    11 18 37
BITF09M002Khawer  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                             ITC    18 20 31
BITF09M010Yasir  Ubaid                             PF     25 21 34
BITF09M010Yasir  Ubaid                             DLD    29 22 33
```

a. Output the record of kth (say 1) student in the file without reading data of other students in the following form.

```
BSEF09M001 Hammad Khan
   Course Total  Grade
   ITC       74    B+
   PF        54    D
   DLD       60    C
   ================
   OPM    62.33    C
```

b. As file is well structured, without reading extra data, output the average marks of the PF stored in the file.

```
Average result of PF is ##
```

c. For the same file, search the record of a student by Roll No (say `BITF09M003`) and update his/her name taken from the user. The output the message on the screen "Name updated for Roll no". Also, make sure that in the file name is properly updated. Note: open file in r+ mode and do update in the existing file.

d. For the same file, search the record of a student by exact <u>Full Name</u> (say `Barkat Jan`) and remove his/her name from the file. You have to overwrite the record of last student in its place and truncate the file at appropriate location. Note: open file in r+ mode and do update in the existing file.

e. Describe, what are the limitations and issue in implementing sub task c (update name), if the structure of the file is as follows. Also, generate a report from this file as described in the LAB 12, task 2.

```
Roll,No,Name,Crs,Mid,Sess,Final
BSEF09M001,"Hammad Khan",ITC,22,21,31
BSEF09M001,"Hammad Khan",PF,14,15,25
BSEF09M001,"Hammad Khan",DLD,20,18,22
BSEF09M003,"Younas Ahmad",ITC,30,0,29
BSEF09M003,"Younas Ahmad",PF,34,25,30
BSEF09M003,"Younas Ahmad",DLD,10,15,10
BSEF09M005,"Riffat Kaleem",ITC,33,20,33
BSEF09M005,"Riffat Kaleem",PF,26,11,35
BSEF09M005,"Riffat Kaleem",DLD,30,24,38
BSEF09M012,"Barkat Jan",ITC,25,18,34
BSEF09M012,"Barkat Jan",PF,19,0,28
BSEF09M012,"Barkat Jan",DLD,28,21,34
BITF09M002,"Khawer Hayat",ITC,11,18,37
BITF09M002,"Khawer Hayat",PF,19,17,27
BITF09M002,"Khawer Hayat",DLD,31,22,34
BITF09M003,"Kishwar Hameed",ITC,24,20,33
BITF09M003,"Kishwar Hameed",PF,28,24,37
BITF09M003,"Kishwar Hameed",DLD,19,15,26
BITF09M010,"Yasir Ubaid",ITC,18,20,31
BITF09M010,"Yasir Ubaid",PF,25,21,34
BITF09M010,"Yasir Ubaid",DLD,29,22,33
```

2. Using PaintBrush preferably or another appropriate tool, create about 5 different color BMP images. Using the BMP file structure given in the slides or get it from internet, do the following tasks.

   a. Write a program that asks user for BMP file name, and output (print on monitor) some important properties stored in the BMP file about the image, like width, height, etc. Using the signature, the first two bytes, message user that file is BMP or NOT, must show the properties, even you entered a NON BMP but some existing file name as input.

   b. Write a program that asks user for BMP file name and prepare it so that left half of it is negative image of that part. For making negative you have to subtract the corresponding pixel values (RGB) from MAXVALUE (in general 255).

<div align="center">

Thanks, for your **patience**

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