Object Oriented Programming LAB – BSDSF22
(Morning and Afternoon)
Lab 08 – 17-11-2023

Consider a text file that stores the grade of student in the following format. A student may have enrolled in a maximum of three courses from ITC, PF and DLD, and at least in one course. Here you should be clear that following is only a format, not the complete data to process. Actual file may contain hundreds of such unsorted lines. The file is typed by a typist from handwritten data using some text editor and left several errors in it due to negligence and lack of proper understanding.

```
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
```

Task 01: Write a program to read and validate records (one data line, first two lines are headers) in the file. If any errors may be observed in them, they should be saved in another file with the record number on a line and the record itself on its following line. In the above sample some lines with errors are marked red. At the end, print on the screen, the count of the errored lines in file. The errors are improper spacing, alphabets appears in place of numbers, missing values, etc, etc.

Task 02: Open error file in some text editor and correct the errors manually, leaving record number unchanged. Later write a program to update data in the original file using the updated error file. Do not overwrite all the records but only those which require updates. Later again validate the file using program built in task 01 and repeat the process till the grades file became error free.

Task 03: Using data in the error free grades file, generate a report (on screen) as follows.

Note that, the grades file records need to be sorted before the generation of the report, you can do sorting programmatically or manually through text editor.

```
                        University of the Punjab
                     College of Information Technology
                       Result Session : Spring 2010


Degree : BIT

Sr.No. Roll No.   Student Name                    ITC   PF  DLD  Total %age Grade
====== ========== ============================== ===   === ===  ===== ==== =====
     1 XXXXXXXXXX Yyyyyyyyyy Zzyyyyyyyy            73   80   69   222 74.0   B
     2 XXXXXXXXXX Yyyyyyyyyy Zzyyyyyyyy            83   86   79   222 82.6   A-
     3 XXXXXXXXXX Yyyyyyyyyy Zzyyyyyyyy            78   78   66   222 74.0   B
...
                                                 ===============================
                             BIT Degree Average:  74   81   66   236


Degree : BSE

Sr.No. Roll No.   Student Name                    ITC   PF  DLD  Total %age Grade
====== ========== ============================== ===   === ===  ===== ==== =====
     1 XXXXXXXXXX Yyyyyyyyyy Zzyyyyyyyy            73   80   69   222 74.0   B
     2 XXXXXXXXXX Yyyyyyyyyy Zzyyyyyyyy            83   86   79   222 82.6   A-
     3 XXXXXXXXXX Yyyyyyyyyy Zzyyyyyyyy            78   78   66   222 74.0   B
...
                                                 ===============================
                             BSE Degree Average:  74   81   66   236

...

                             Over All Average:    72   88   78   269
```

Percent Marks	Letter Grade	Grade Points
85 & above	A	4.00
80 - 84	A-	3.70
75 - 79	B+	3.30
70 - 74	B	3.00
65 - 69	B-	2.70
61 - 64	C+	2.30
58 - 60	C	2.00
55 - 57	C-	1.70
50 - 54	D	1.00
Below 50 or Absent	F	0.00
Withdrawal	W	Not counted in GPA / CGPA calculation and not shown in FT
Forced Withdrawal	FW	Not counted in GPA / CGPA calculation, however will be reflected in the FT
Incomplete	I	Incomplete grade will be awarded in case of absence from exam. But this must be completed (special exam) within one month of the conduct of exam, otherwise 0 marks will be awarded in the in such exam.