

CS384 2020 Assignment 4 - Academic Result Generator

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Assignment Given on 4th Nov 2020, 1600 hrs

Assignment Deadline on 8th Nov 2020, 2359 hrs

Given input file: `acad_res_stud_grades.csv`

It contains the following fields. Serial no., Roll number, Semester, Year, Subject code, Total credit, Obtained credit, Timestamp and Subject type (elective or core). You can ignore following columns like Serial no., Year, and timestamp. In this csv file (`acad_res_stud_grades.csv`), you will see every roll number have semester number, grades, credits etc.. Now, you have to find out CPI, SPI and record individual subject marks for every rollnumber.

Task:

1. For every roll number that appears in column 2 (Column B) of given csv file, you need to make 2 files named as `rollnumber_individual.csv` and `rollnumber_overall.csv`.
2. `rollnumber_individual.csv` file will contain Subject,Credits,Type,Grade,Sem (see `0801CS01_individual.csv`). All the entries corresponding to individual roll number will be present in the appended one by one.
3. `rollnumber_overall.csv` file will contain Semester,Semester Credits,Semester Credits Cleared,SPI,Total Credits,Total Credits Cleared,CPI. Refer (see `0801CS01_overall.csv`)
4. Record grades corresponding to each and every roll number for each individual subject.
5. If you got some error while processing any line then you have to save those entries causing error in `misc.csv` file.
6. You need to save all files in a single folder ('**grades**'). All the *.csv files will go into folder. The root folder will have your source code and the dataset (`acad_res_stud_grades.csv`) and in sub-folder, all your output files and error file.

Suppose, You have given this input file `acad_res_stud_grades.csv`. Now based on the input file you have to create 2 files i.e., `0801CS01_individual.csv` & `0801CS01_overall.csv`. *Note:* If you have n roll numbers then $2n$ files will be created.

Calculation of SPI and CPI: Suppose in a given semester a student has taken four courses having credits C_1 , C_2 , C_3 and C_4 and grade points in those courses are G_1 , G_2 , G_3 and G_4 respectively. Then,

$$SPI = (C_1 * G_1 + C_2 * G_2 + C_3 * G_3 + C_4 * G_4) / (C_1 + C_2 + C_3 + C_4) \quad (1)$$

$$CPI = (SPI1 * Credits\ in\ semester_1 + SPI2 * Credits\ in\ semester_2 + ...) / (Total\ credits) \quad (2)$$

For example, if in a given semester a student has taken four courses having credits 6, 6, 6, and 8 and grade points in those courses are 10, 9, 8, 6 respectively. Then,

$$SPI = (6 * 10 + 6 * 9 + 6 * 8 + 6 * 6) / (6 + 6 + 6 + 8) = 7.62 \quad (3)$$

If the student has an SPI of 7.62 in the 1st semester worth (say) 32 credits and 8.2 in the next semester worth 36 credits,

$$CPI(at\ the\ end\ of\ 2nd\ semester) = (7.62 * 32 + 8.2 * 36) / (32 + 36) = 7.93 \quad (4)$$

Grade Numeric Equivalent:

- AA - 10
- AB - 9
- BB - 8
- BC - 7
- CC - 6
- CD - 5
- DD - 4
- F - 0
- I - 0