

Data Structure Lab

Assignment-2

Date of Assignment: 26-Aug-2020

Date of Submission: 1-Sept-2020 (11:55 P.M.)

Submission Instruction: Solve them as efficient as possible in terms of computational time and space.

Your filename will be ROLLNO_A2.c or ROLLNO_A2.cpp

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1. You are given three text files, named “csestudents.txt”, “courses.txt”, “grades.txt”.
 - The file “csestudents.txt” contains students’ records, where each line contains information of a single student in the form of <RollNo, StudentName>.
 - The file “courses.txt” contains courses’ information, where each line contains information of a single course in the form of <CourseID, CourseName>.
 - The file “grades.txt” contains students’ grades, where each line contains information in the form of <RollNo, CourseID, Grade>. Grade can be A+, A-, B+, B-, C+, C-, only.

Write a C/C++ menu-driven program to do the following. Read the records from the files into three array of structures. Different query is placed as input, and your task is to answer the query by calling the proper C/C++ function. All commands/queries are case-sensitive. Queries are as follows:

- a. SHOW <filename>; SHOW csestudents/courses/grades;
It will show all the records of the file row wise in the same order it appears in the file.
- b. SHOW <filename> SORTBY <columnname>;
SHOW csestudents SORTBY StudentName;

It will sort the records based on the column name of the file, and show all the records row wise. **Use C program to Merge Sort** the fields in lexicographic order.

- c. `SHOW <filename> WHERE <columnname = value>;`
`SHOW csestudents WHERE StudentName=Joy Mukherjee;`

It will show all the fields of the selected records. **Use C program for Binary Search** on the sorted output to find the results. Note that two or more students may have the same name. In that case, show records for all of them row wise.

- d. `SHOW CourseID=CS2L003;`

It will show all the student roll numbers, their names, and grades in the subject Data Structure. Here CS2L003 is the CourseID of the Data Structure course.

- e. `CLEAR`

Clear the console

- f. `QUIT`

Exit the program

```
FILE *fp = NULL;
```

```
char str[1001];
```

```
fp = fopen("grades.txt", "r");
```

```
fgets(fp, 1000, str);    or    fscanf(fp, " %[^\n]s", student[i].strStudentName);
```

```
fclose(fp);
```