

## CSE102#hw10

Due Date: May 6, 23:55

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In this homework, you will write a simple database management system which reads information about a department in a university such as students, lectures, and professors and outputs a file which includes some summary information. The aim of this homework is to make you more familiar with structs and random and sequential file operations. Your program will read basic information from a random access file using structs and output a summary information as a sequential file. Example input and output files are given below. Please note that **the input file will be a random access file** instead of a sequential one given in this sheet for demonstration purposes.

**Input File Format:** There are 5 different data types (i.e. structs) in the file. Students (with id, name and surname), lecturers (with degree, id, name and surname), lectures ( with code, name and the id of the lecturer), schedule (with classroom name, day, start time of the lecture, duration of the lecture and the code of the lecture) and courses taken by the students (with student id and lecture code). The following is an example input file in the sequential form. At the beginning of each entry type is a number which indicates how many entries will be listed. For example, the first line indicates there are 3 students to be read. In the exact random access file, there will be no space or newline character between any of the information. The order of the data will be the same in all input files, i.e. first students, second lecturers, third lectures, etc..

### input.dat

```
3
100 kerem inan
105 oya demir
420 nese kaplan
3
prof 222 ibrahim sogukpinar
prof 356 yakup genc
assis 789 mustafa tunali
5
101 programming 356
444 discrete 222
108 programming_lab 789
321 network 222
521 algorithms 356
5
Z23 Tue 10 2 101
Z06 Thu 14 1 444
BM101 Wed 11 3 321
Z20Lab Fri 14 3 108
BM207 Mon 9 3 521
7
100 101
100 521
105 521
420 444
105 321
420 101
100 108
```

**Output file format:** Output file will include some relations about the data in the input file. The first summary will be lecture, lecturer and student relation. Namely, for each lecture its name, the name and surname of the lecturer and the number of students that takes the lecture will be listed. Secondly, the student-lecture relation will be listed, i.e for each student, his student id, name, surname and how many lectures he takes. The last summary is about student schedules, i.e. his student id, name, surname, and the days on which he has class.

### output.txt

```
Lecture-Lecturer
programming yakup genç 2
discrete Ibrahim sogukpinar 1
programing_lab mustafa tunalı 1
network ibrahim sogukpinar 1
algorithms yakup genc 2
```

```
Student-Lecture
100 kerem inan 3
105 oya demir 2
420 nese kaplan 2
```

```
Student-Day
100 kerem inan Tue, Mon, Fri
105 oya demir Mon, Wed
420 nese kaplan Thu,Tue
```

An example input.dat file is provided with the homework definition. Please note that your homework will be tested on another input file, so your program should handle **any input file** with the given format, for example varying number of student, lecture numbers. When defining your structs, use 30 length character arrays for string variables and integer for numeric variables to be able to read the input file properly. Do not change the format of the output file and **do not write any additional info or explanation.**

### #notes

- You are free to write any additional functions.
- **Do not change the input and output file names and formats! Different file names or formats will not be accepted.**
- The assignment must be your original work. Duplicate or very similar assignments are both going to be considered as cheating.
- Submit your homework via KADI.
- Ask your questions via moodle.