CS241 - Questions for Lab Assignment 2

1 INSTRUCTIONS

(1) This lab is graded.
(2) Those of you who have not completed the previous lab must complete it first.

2 QUESTIONS

Consider the following relations:

Student(snum: integer, sname: string, major: string, level: string, age: integer)
Class(name: string, meets_at: time, room: string, fid: integer)
Enrolled(snum: integer, cname: string)
Faculty (fid: integer, fname: string, deptid: integer)

The meaning of these relations is straightforward; for example, Enrolled has one record per student-class pair such that the student is enrolled in the class.

(1) Assume that a DBMS does not exist and all the data that you have are stored as files in the format that was given to you in the previous lab. For questions 2a and 2b below, write a program to produce the desired output. You can write some common functions that can be used across these programs. You may use C, Python or Java. [4+7 Marks]
(2) Write the following queries in SQL. No duplicates should be printed in any of the answers. [2 Marks each]
   (a) Find all classes conducted in room "R128".
   (b) Find all the faculty members who use room "R128". (List their ids, names and department ids).
   (c) Find the name of the faculty member who teaches "Data Structures".
   (d) Find the names of all students who are enrolled in a class taught by I.Teach.
   (e) Find the names of all Juniors (level = JR) who are enrolled in a class taught by I. Teach.
   (f) Find the courses that Joseph Thompson has enrolled in.
   (g) Find the names of students who have taken at least one course.

3 OPTIONAL QUESTION

Add the ability to parse basic queries. In that case, your program will accept an SQL query as the input and produce the output depending on the query. [No Marks]

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