CS246: Database Management Systems Lab

Lab # 09 (1 Questions, 124 Points)
Held on 20-Mar-2023
Lab Timings: 14:00 to 18:00 Hours Pages: 3
Submission: 18:00 Hrs, 20-Mar-2023
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a. This lab assignment is based on the concepts covered in chapter 5 **Advanced SQL** in the CS245 theory class.

b. You can refer to the text book for SQL syntax.

Question 1: (124 points)

Using `MySQL` and `python` perform the following tasks:

Task 01 (1 mark) Create a database named *week09*

Task 02 (4 marks) **Create tables**

a. (1 mark) A table `student18` containing the following

1^{st} column	`name`	string of characters of fixed size 100
2^{nd} column	`roll_number`	string of characters of fixed size 10

with `roll_number` as primary key.

b. (1 mark) A table `course18` containing the following

1^{st} column	`semester`	integer
2^{nd} column	`cid`	string of characters of fixed size 7
3^{rd} column	`name`	string of characters of fixed size 100
4^{th} column	`l`	integer
5^{th} column	`t`	integer
6^{th} column	`p`	integer
7^{th} column	`c`	integer

with `cid` as primary key.

c. (1 mark) A table `grade18` containing the following

1^{st} column	`roll_number`	string of characters of fixed size 10
2^{nd} column	`cid`	string of characters of fixed size 7
3^{rd} column	`letter_grade`	string of characters of fixed size 2

with `roll_number` and `cid` together form primary key

d. (1 mark) A table `curriculum` containing the following

1^{st} column	`dept`	string of characters of fixed size 3
2^{nd} column	`number`	integer
3^{rd} column	`cid`	string of characters of fixed size 7

Task 03 (4 marks) **populate data**

a. (1 mark) Populate data from file `student18.csv` into table `student18`

b. (1 mark) Populate data from file `course18.csv` into table `course18`

c. (1 mark) Populate data from file `grade18.csv` into table `grade18`

d. (1 marks) populate data from the file `curriculum.csv` into table `curriculum`

Task 04 (115 marks) Write a `python` script which takes `roll_number` as input argument in *command line mode* and prints the corresponding transcript by executing SQL queries for the sub-tasks listed below through python script.

a. (1 mark) Print in python: Institute name

b. (4 marks) Print in python: student information header in the given format (refer to `roll_number-transcript.txt`)

c. (10 marks) Semester-wise transcript contents (refer to `roll_number-transcript.txt`).

d. (10 marks) Compute semester-wise SPI (refer to `roll_number-transcript.txt`). Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks. Limit the SPI precision to 2 digits after decimal.

e. (10 marks) Computer semester-wise CPI (refer to `roll_number-transcript.txt`). Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks. Limit the CPI precision to 2 digits after decimal.

f. (10 marks) For every semester, check the `roll_number` has taken prescribed core courses given in the `curriculum`. Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks.
Which are the `core courses`? Refer to `CSE-curriculum.pdf` Union of the following results in the list of `CSE-curriculum.pdf`.

- Semester I: All courses except `HS101`.
- Semester II: All courses except `SA1xx`.
- Semester III: All courses except `SA2xx` and `HS200`.
- Semester IV: All courses except `HS1xx`, `SA3xx`, and minor course.
- Semester V: All courses except `SA4xx` and minor course.
- Semester VI: All courses except minor course.
- Semester VII: Only `CS498`.
- Semester VIII: Only `CS499`.

g. (10 marks) For every semester, check the `roll_number` has taken prescribed elective courses given in the `curriculum`. Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks.
Which are the `elective courses`? Refer to `CSE-curriculum.pdf`. All courses offered by CSE department which are equal to or greater than 500 level. Additionally, courses with `CSxxx` are also the elective courses.

h. (10 marks) For every semester, check the `roll_number` has taken prescribed minor courses given in the `curriculum`. Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks.

i. (10 marks) For every semester, check the `roll_number` has taken prescribed open elective courses given in the `curriculum`. Only print statements should

be in python. Any other python logic to achieve this sub-task invites 0 marks.

Which are the `open electives`? Refer to `CSE-curriculum.pdf`. `cid`'s which start with `OE` are considered open electives.

j. (10 marks) For every semester, check the `roll_number` has taken prescribed HSS courses given in the `curriculum`. Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks.

k. (10 marks) For every semester, check the `roll_number` has taken prescribed SA courses given in the `curriculum`. Only print statements should be in python. Any other python logic to achieve this sub-task invites 0 marks.

l. (10 marks) Check whether the `roll_number` has passed grade in each of the courses every semester. Any other python logic to achieve this sub-task invites 0 marks.

m. (10 marks) Check whether the `roll_number` has passed grade in each of the SA courses. Any other python logic to achieve this sub-task invites 0 marks.

Instructions Adhere to the following

Python script save the python script in a file with .py extension.

File naming text file name should be [Your roll number].sql or [your roll number].py

Independent efforts You should make an honest and independent effort in obtaining the solution to the above problem.

Mobile phones are not allowed inside the lab

Submission Procedure You should upload all the SQL files and python script files in MS assignments site.

Marking Scheme Mentioned against each task/sub task