Middle East Technical University | Department of Computer Engineering

CENG 351

Data Management and File Structures

Fall '2016-2017

SQL-LAB EXAM- Session 1

Duration: 60 Minutes

1 Specifications

You are given the following database schema.

Student (StudentId, Name, Address, Status, Gpa, Age)
Professor (ProfessorId, Name, DeptID, Age)
Course (CourseId, DeptID, CourseName)
Transcript (StudentId, CourseId, Semester, Score)
Teaching (CourseId, Semester, ProfessorId)

2 Questions

Prepare appropriate SQL queries for given definitions.

1. (15 pts.) Delete all courses from Course table that have never been offered (that is, do not occur in the Transcript relation).

2. (15 pts.) Modify the Transcript table by increasing the "Score"s of each student whose status is "Senior" by 10%.

3. (15 pts.) For students who live in "Springfield" (i.e., that includes "Springfield" someewhere in the Address column), list StudentIds and the number of courses each one has taken. (List "StudentId"s and "Count"s, where StudentIds are in ascending order).

4. (15 pts.) List the ProfessorId and the Age of the professors who taught all the courses that the professor named "Waylon Smithers" taught (i.e., on the same or different semesters). (List "ProfessorId"s and "Age"s ordered by **Age**) Note: Do not include Waylon Smithers in the result.

5. (20 pts.) List CourseName and the "age wideness" of the courses. (List "CourseName"s and "age wideness" ordered by CourseName).
   age wideness = difference between ages of the oldest and the youngest student enrolled to that course in any year.

6. (20 pts.) Find the names of the courses such that the average score of the students who took the course is higher than the average score of "ME202" course. (List "CourseName"s in ascending order).

3 Regulations

1. Use **Chromium** web browser.
2. DO NOT forget to put semicolon(;) after your queries!
3. You are not allowed to use **LIMIT** clause in your queries.
4. In each "evaluation" and "run" operations, we create the database from the beginning. So do not be afraid of deleting/updating rows. You are free to write any **single** DML statement (insert, update, delete) for your 1st. and 2nd. questions.
5. The grades at the end of the sql-lab will not be the final grades. While evaluating your queries we may use instances different from those given in during the lab session. These sample instances for each of the tables are given on next page. Hence, your final grades may change.

StudentId	Name	Address	Status	Gpa	Age
1	Martin Prince	Oak Grove St. Springfield, USA	Senior	2.5	22
2	Lisa Simpson	Elm St. Ogdenville USA	Junior	3.5	21
3	Milhouse Van Houten	Bow St. Springfield USA	Senior	2.7	21
4	Nelson Muntz	Plympton St. Springfield USA	Senior	2	23
5	Ralph Wiggum	Elm St. Ogdenville, USA	Freshman	2.5	19
6	Todd Flanders	275th St. Springfield USA	Sophomore	2.8	20
7	Shauna Chalmers	Walnut St. Ogdenville USA	Sophomore	2.9	20

a sample instance for Student table

ProfessorId	Name	DeptId	Age
1	Waylon Smithers	CENG	35
2	Edna Krabappel	EE	42
3	Hans Moleman	CENG	63
4	Joe Quimby	CENG	45
5	Julius Hibbert	METE	50
6	Troy McClure	EE	35
7	Lenny Leonard	CENG	55
8	Kent Brockman	CENG	43

a sample instance for Professor table

CourseID	DeptId	CourseName
CENG100	CENG	Computer Engineering Orientation
CENG230	CENG	Introduction to C Programming
CENG223	CENG	Discrete Computational Structures
CENG491	CENG	Computer Engineering Design I
CENG492	CENG	Computer Engineering Design II
EE201	EE	Circuit Theory I
EE213	EE	Electrical Circuits Laboratory
METE201	METE	Materials Science I
METE202	METE	Materials Science II
ME202	ME	Manufacturing Technologies

a sample instance for Course table

StudentId	CourseId	Semester	Score
1	EE213	F2013	20
1	EE213	F2014	60
1	CENG230	S2014	65
2	CENG230	F2013	85
2	ME202	F2013	40
3	EE213	S2014	90
3	EE201	S2014	10
4	EE213	F2013	52
4	CENG230	F2015	55
5	ME202	F2013	49
5	CENG230	S2014	53
6	EE213	F2014	78
4	EE201	F2013	50
7	CENG100	F2013	0
7	CENG223	F2014	88

a sample instance for Transcript table

CourseId	Semester	ProfessorId
CENG100	F2013	1
CENG230	F2011	1
EE201	S2014	2
CENG230	F2015	2
CENG230	S2010	4
CENG100	F2010	4
CENG230	F2013	5
EE213	F2013	2
EE213	F2014	2
EE213	S2014	6
CENG100	F2012	7
CENG230	S2011	8
CENG100	F2014	8
CENG223	S2015	8

a sample instance for Teaching table