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| **CIS 422 DBMS** | **Assignment 02** | **20 Points** |  |

***Elijah Chong Tay***

* Identify which ones of the following constraints are structural, semantic, static and dynamic.
* A class start time must be before its end time.

static and semantic

* A table of students should contain no more than 200 rows.

static and semantic

* The mileage of a car cannot decrease.

dynamic and semantic

* In teaching assignment table that assigns professors to courses, each individual assignment should correspond to exactly one professor and one course.

structural and static

* For a simple BBS (Bulletin Board System) we use the following SQL statements to create two tables: one storing all posted messages and the other users who can post them.

CREATE TABLE Message (

mesgid INTEGER,

poster INTEGER,

subject CHAR(50),

body CHAR(255),

postdate DATETIME,

PRIMARY KEY mesgid,

FOREIGN KEY poster REFERENCES User (userid)

ON DELETE CASCADE

ON UPDATE CASCADE

)

CREATE TABLE User (

userid CHAR(50),

password CHAR(50),

email CHAR(50),

status CHAR(1),

PRIMARY KEY(userid)

)

* There is an error in one of the above statements. Point out the error, explain why it is wrong and correct the error by rewriting that SQL statement.

poster INTEGER

-->

poster VARCHAR(50)

* Suppose there is a user with userid John in the database who has posted 100 messages.

What will the DBMS do if we delete John from table User?

All of John's messages will be deleted from the database.

What if we change John's userid to Michael?

All of the messages will belong to Michael

* Write an SQL statement to create a view of those messages with all their attributes that are posted by 'John'.

CREATE VIEW JOHNS as SELECT \* FROM MESSAGE WHERE poster='John'

* Write an SQL statement to create a domain such that the status attribute can only take two values, i.e., 'j' and 's'.

CREATE DOMAIN STATUS AS CHAR(1) CHECK (value = 'j' OR value = 's');

* Suppose occasionally the system will post some announcement messages, but unfortunately the system is not a user (thus it does not appear in the User table). How can you allow these messages being posted while not adding a “system user” and not violating the foreign key constraint?

CREATE new MESSAGE

then set the foreign key 'poster' and refer to the userid to null

* One desirable advanced feature of the BBS system is that each user can post messages not only to the public, but also to a subset of other users that are explicitly specified by userid when the message is posted. How would you change the definitions of the above two tables so that this new feature can be implemented? (You may introduce other tables if necessary.)

CREATE TABLE GroupMsg(

msgId VARCHAR(6)

senderId VARCHAR(6)

receiverId VARCHAR(6)

PRIMARY KEY(msgId,senderId,receieverId)

FOREIGN KEY (senderId) REFERENCES User (senderId)

FOREIGN KEY (recieverId) REFERENCES User (recieverId)

);

* Suppose we have a table Professor with attributes Id, name, etc., where Id is the primary key and a table Teaches with attributes ProfId, CrsCode, etc. How would you specify the constraint that each professor teaches exactly one course?

ALTER TABLE Teachers

ADD FOREIGN KEY (ProfId) REFERENCES Professor(Id)

ADD CONSTRAINT UniqueProf UNIQUE(ProfId)