

## Daffodil International University Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Exam Examination, Fall 2020 @ DIU Blended Learning Center

Course Code: CSE311 (Day), Course Title: Database Management System

Level: 3 Term: 1 Section: ALL

Instructor: ALL Modality: Open Book Exam

Date: Monday 9 November, 2020 Time: 02:00pm-06:00pm

Four hours (4:00) to support online open/case study based assessment Marks: 25

## **Directions:**

- Students need to go through the CASE STUDY shown in this exam paper.
- Analyze and answer specific section based on your own thinking and work.
- Do not share as this will be treated as plagiarism by Blended Learning Center.

## Life will give you many options, but today you have to "Answer all the questions"

Q1. Consider the following scenario:

Suppose you want to design an Art Base database, which builds a product for art galleries. The core of this product is a database with a schema that captures all the information that galleries need to maintain. So, you must know that galleries keep information about artists, their names (which are unique), birthplaces, age, and style of art. For each piece of artwork, you should keep all the necessary information. You should maintain all data regarding the type of art (e.g., lithograph, sculpture, etc.), and its price must be stored. You should keep in mind that a given piece may belong to more than one group.

- a. At first, you have to write a complete scenario about art galleries and include all possible information that you would like to maintain.
- b. After completing the scenario, propose an Entity-Relationship diagram that captures all the information. Be certain to indicate primary keys, relationships, participation constraints, and cardinality constraints.
- Q2. Convert the ER diagram into relational database that you have already proposed in Q1. 5
- Q3. Consider the following scenario to answer:

In an American supermarket named Walmart, people purchase various items on a daily basis. These supermarkets needs to keep track of multiple things in their database such as what type of products, how much of those products were sold from the market and how much of those products they need to purchase back to the market. Apart from using relational database, what other type of database can be used in this scenario?

4+6

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Q4. Consider two Entity relationship models for university management system. The first model (model A) consists of two entities and one relationship joining them. The entities are *teacher* and *subject* and the relationship is *teaches*. The second model (model B) contains three entities; the first and the third are the same as above but the second entity is called *lecture*. The first and second entities are connected by a relationship called *gives* while the second and the third entities are joined by a relationship called *of*.

Which of the following are correct? Briefly justify your answers.

- a. Both model A and model B allow a subject to have more than one lecture from the same teacher.
- b. Model B is more appropriate if information about all lectures, past and present, is to be stored.
- c. Model A does not allow lecture date and time to be stored.
- d. Model B leads to more tables than Model A does when translated to the relational model.
- Q5. Consider the following schema:

ProductSuppliers(*supplierid:* integer, *sname:* string, *address:* string, phoneNo: string) Catalog(*supplierid:* integer, *itemid:* integer, *cost:* real) Item(*Itemid:* integer, *iname:* string, numberOfavailable: integer, *color:* string)

Here, the domain of each field is given after the field name. The keys are underlined, thus, *supplierid* is the key for ProductSuppliers, *itemid* is the key for Item, and *supplierid* and *itemid* together form the key for Catalog.

- a. Find the *supplierid*, *sname* of suppliers who supply some black or white items.
- b. Write SQL to find the IDs of those red colored items that costs more than 500taka.
- c. Write SQL to find the ID and name of those suppliers who has supplied the most expensive items.

"The bad news is time flies. The good news is you're the pilot" - Michael Altshuler Best of luck ©

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