Assignment 2
ENSF 608 Fall 2021
Department of Electrical and Computer Engineering
Schulich School of Engineering

The objective of this assignment is to apply your understanding of the relational data model and the steps for mapping from conceptual ER/EER diagrams to a logical design.

Due: Monday, October 18th, 11:59 PM

Submission: This is an individual assignment. Your submission must be your own original work.

Please upload your solution as a single PDF file to the Assignment 2 Solutions D2L dropbox folder. The file should be named in the following format: Lastname_Firstname_Assignment2.pdf

Your solution may be handwritten or typed, and you may draw any diagrams by hand or by using software tools. Handwritten work may be scanned or photographed (*tip*: try using an app such as Microsoft Office Lens).

Weighting: This assignment is out of 30 marks and is worth 10% of your overall grade.

Grading:

All relational data models and ER models should follow the formatting conventions outlined in the lecture notes.

All relations should have a name, primary key, attribute(s) as necessary, and foreign key(s) as necessary. Each relational data model must contain relations and should use arrows to represent foreign keys (referential integrity).

The ER diagram should include correct notation for entity types, relationship types, attributes, key attributes, and relationship attributes. Cardinality constraints are not needed.

Marks will be deducted for incorrect or missing information. Solutions must be neat and organized.

Question #1 (10 marks):

The following Figure 1 shows the complete EER schema from Assignment 1, a school enrollment database. Map this schema into a relational data model, including all primary keys and referential integrity constraints (foreign keys). The diagram is also posted on D2L separately for better visibility.
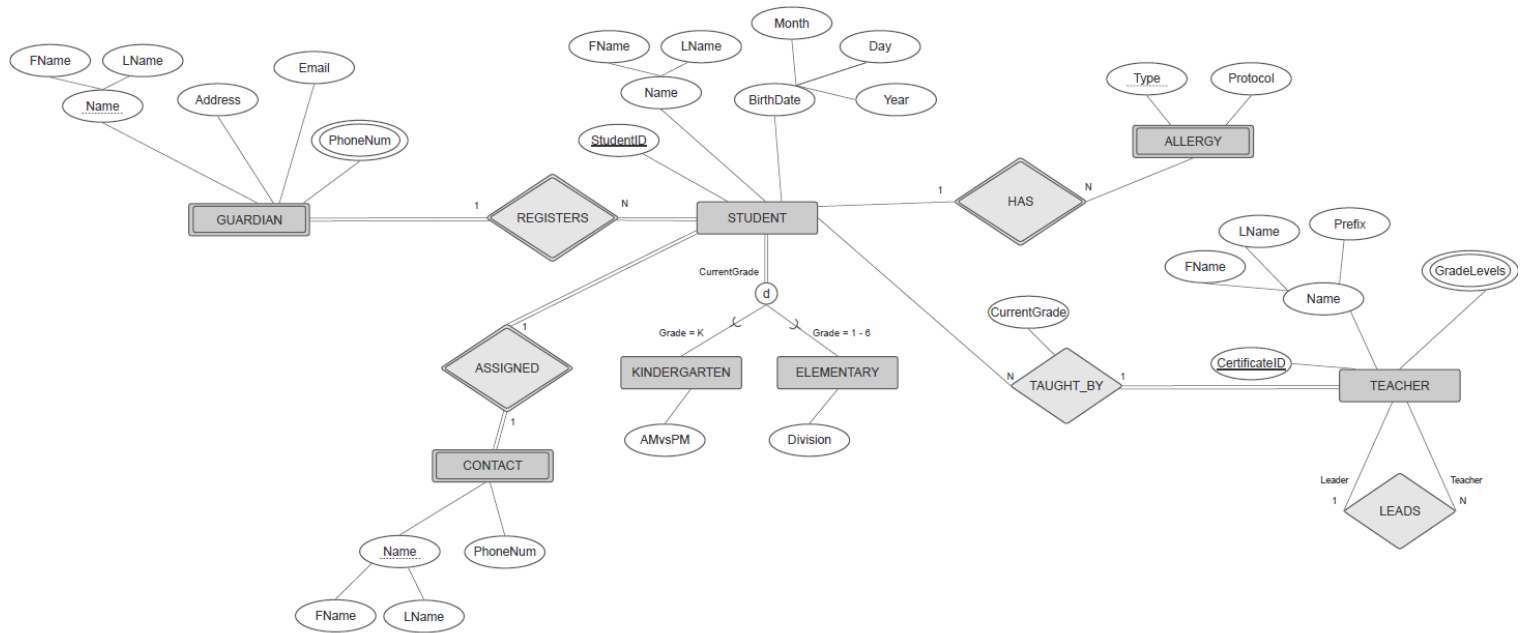

Figure 1: An EER schema for a school enrollment database.

Question #2 (10 marks):

The following Figure 2 shows an EER schema for a database that can be used to track sales at a car dealership.

Map this schema into a relational data model, including all primary keys and referential integrity constraints (foreign keys). For the VEHICLE to CAR/TRUCK/SUV generalization, consider the four Step 8 options presented in the lecture notes for mapping specializations/generalizations. Show the relational schema design under **each of those four options** (8A, 8B, 8C, 8D). You only need to show the rest of the model once.
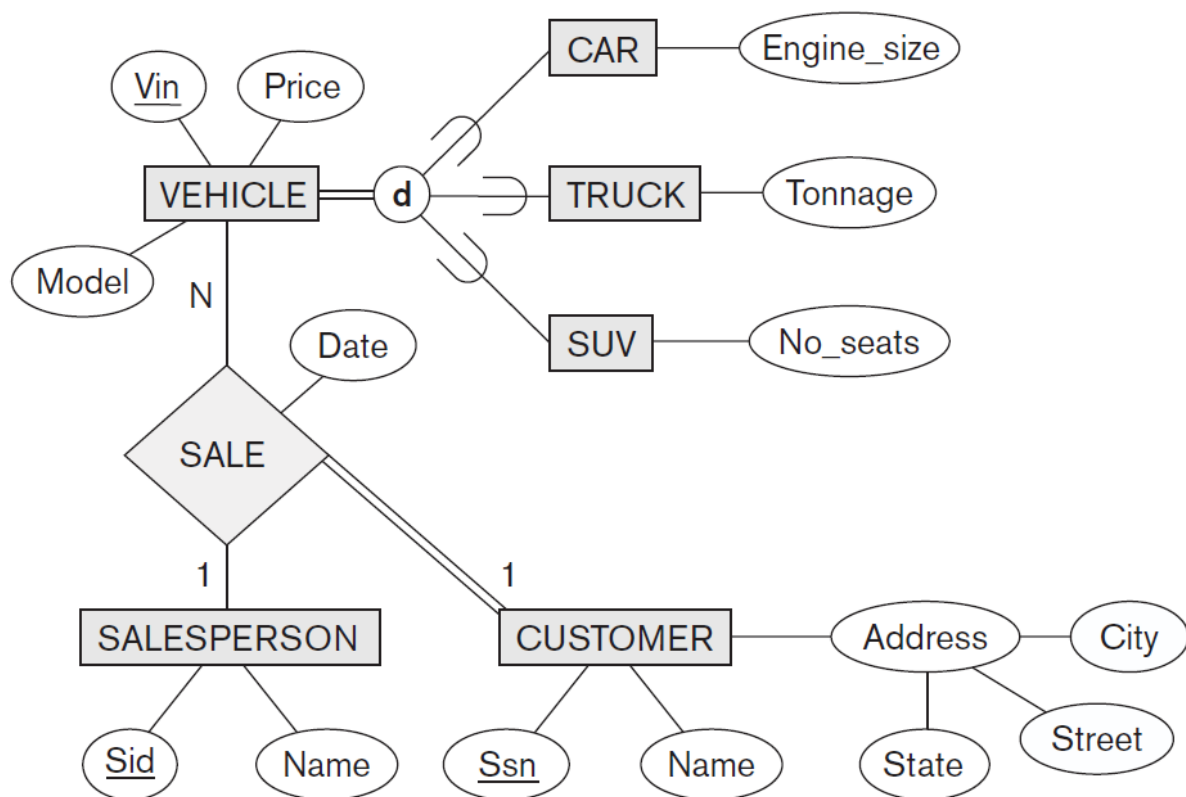

Figure 2: An EER diagram for a car dealership database.

Question #3 (10 marks):

The following Figure 3 shows a relational schema for a library loan database. Reverse engineer the schema to create a conceptual ER model. State any assumptions that you make.

BOOK

Book_id	Title	Publisher_name

BOOK_AUTHORS

Book_id	Author_name

PUBLISHER

Name	Address	Phone

BOOK_COPIES

Book_id	Branch_id	No_of_copies

BOOK_LOANS

Book_id	Branch_id	Card_no	Date_out	Due_date

LIBRARY_BRANCH

Branch_id	Branch_name	Address

BORROWER

Card_no	Name	Address	Phone