



Assignment 2

ENSF 608 Fall 2020

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: Friday, October 30th, 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 an ER schema for a database that can be used by maritime authorities to keep track of transport ships and their locations. Map this schema into a relational data model, including all primary keys and referential integrity constraints (foreign keys).

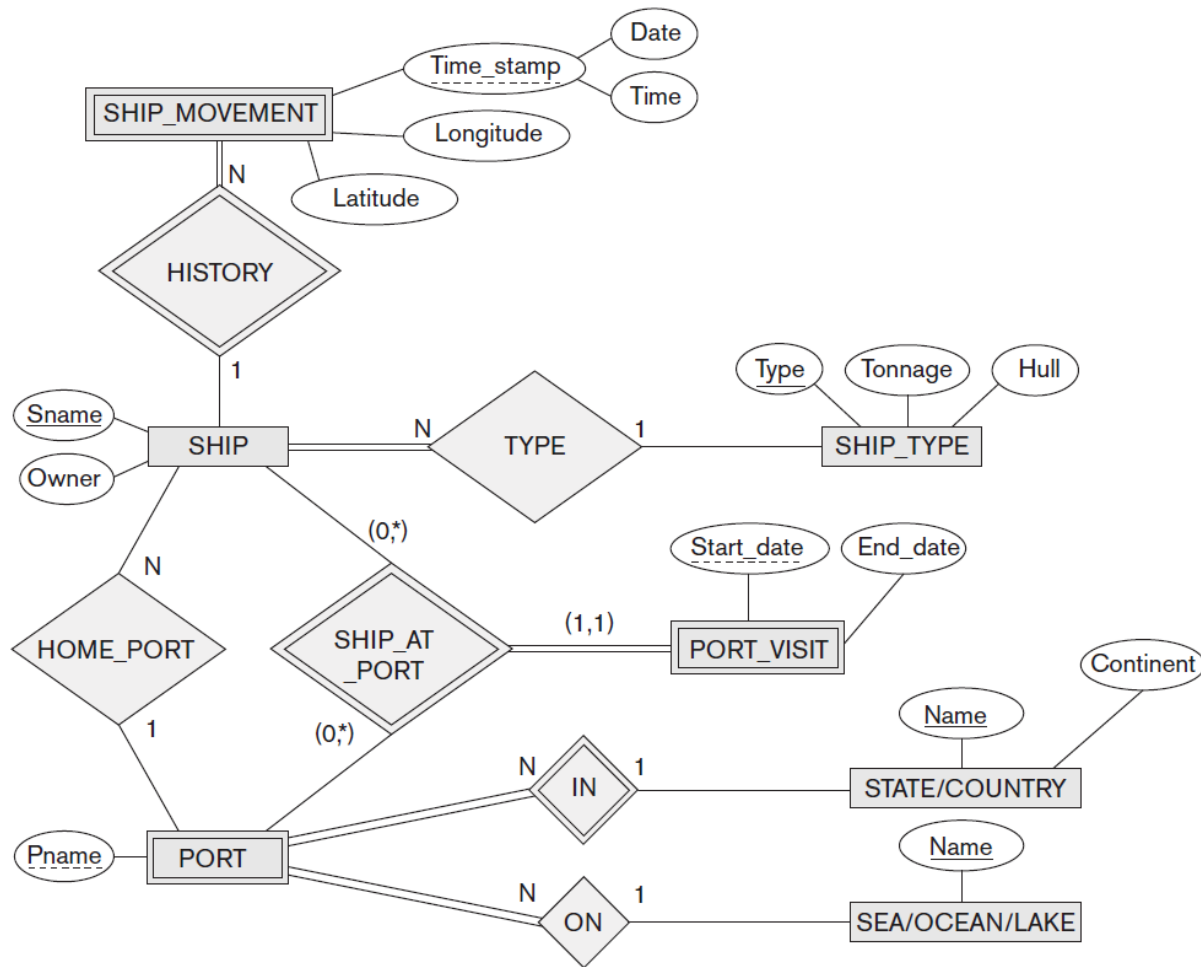


Figure 1: An ER schema for a ship-tracking database.

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).

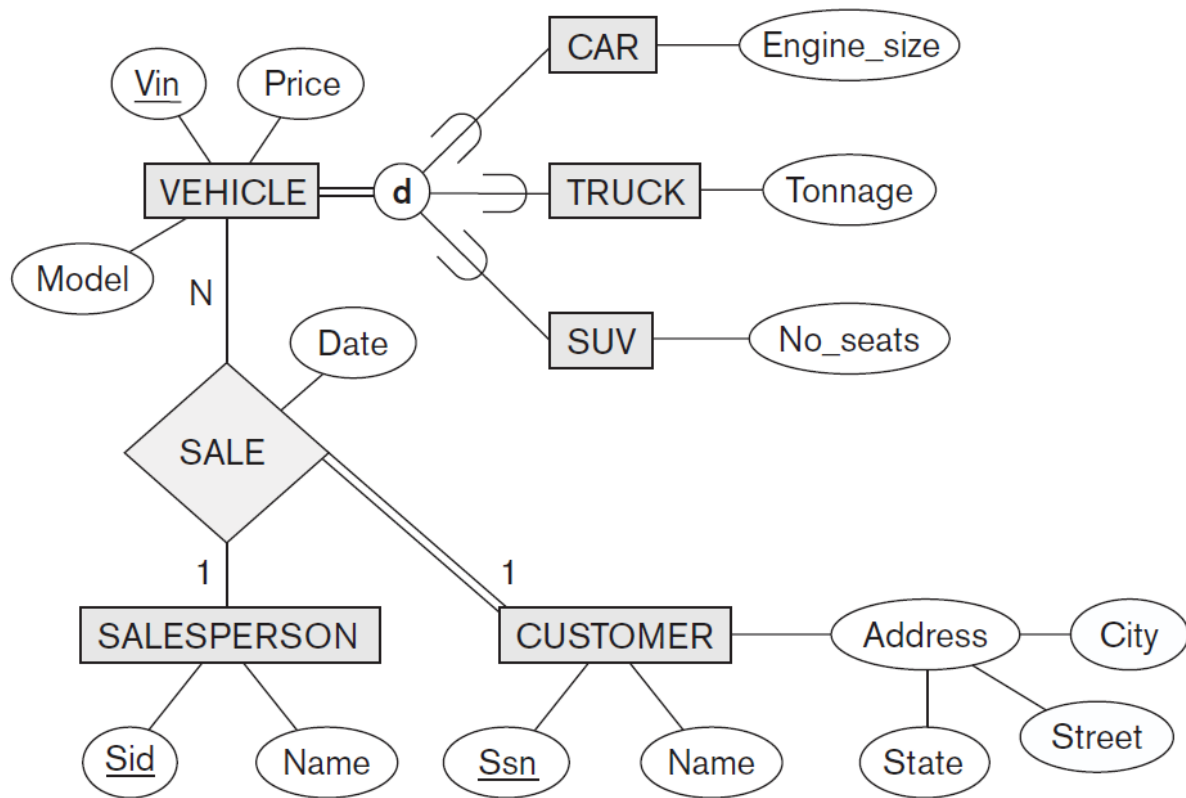


Figure 2: An EER diagram for a car dealership database.

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.

