

All of the exercises in this document were adapted from materials created by Dr. Nenad Jukić, Professor of Information Systems and the Director of Business Intelligence and Data Warehousing Graduate Certificate Program at the Quinlan School of Business, Loyola University, Chicago, Illinois, USA. The exercises are excerpts from the textbook, “Database Systems: Introduction to Databases and Data Warehouses” (<http://www.amazon.com/Database-Systems-Introduction-Databases-Warehouses/dp/0132575671>), Prentice Hall, 2013 and are used in the “Managing Big Data with MySQL” course with permission of the publisher.

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### **Relational Schema Exercises**

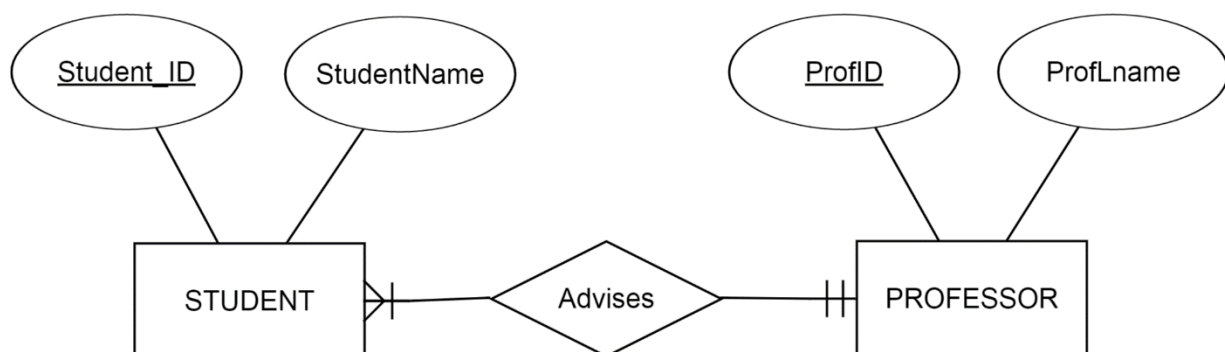
The following exercises provide you with opportunities to understand relational schemas more deeply. I highly recommend that you complete these exercises because I believe doing so will make it easier for you to write SQL queries, but you are not required to do so to pass the course.

Whenever you are asked to make your own relational schema, use the program ERDPlus, at <https://erdplus.com/>. Refer to videos in the course for demonstrations of how to use ERDPlus.

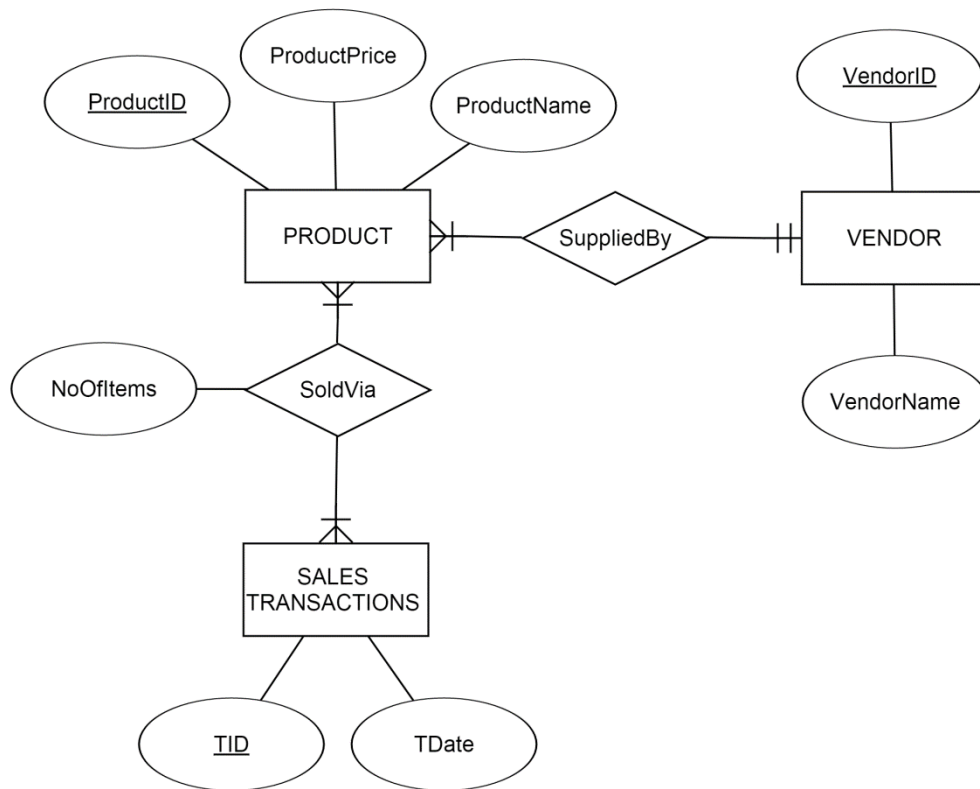
Remember that, in general when you are mapping relational schemas to ER diagrams, each “regular” entity in the ER diagram becomes a relation/table in the relational schema, and each “regular” attribute of an entity in the ER diagram becomes an attribute/field of a relation/table in the relational schema. “Not regular” entities and relationships may need additional properties or special treatment. Don’t forget to use foreign keys to connect relations/tables to one another.

Answers to all exercises are provided in a separate document included with the course materials.

**Exercise 1.** Make a relational schema that represents data and relationships depicted in this diagram:



**Exercise 2.** Make a relational schema that represents data and relationships depicted in this diagram:



**Exercise 3.** Which table of data (Table A or Table B) corresponds with the relation depicted below?

EMPLOYEE		
<u>EmpID</u>	SSN	Salary
	(U)	

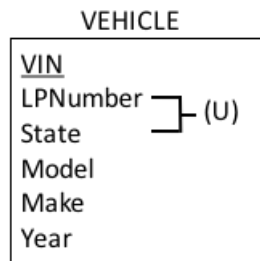
**Table A:**

<u>EmpID</u>	SSN	Salary
1243	111-11-1111	\$75,000
2345	222-22-2222	\$50,000
3456	333-33-3333	\$50,000
1324	222-22-2222	\$70,000

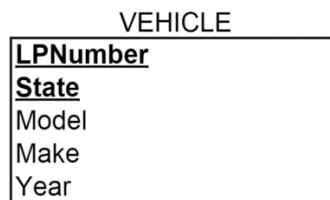
**Table B:**

<u>EmpID</u>	SSN	Salary
4536	111-11-1111	\$75,000
6645	222-22-2222	\$50,000
8867	333-33-3333	\$90,000
2134	444-44-4444	\$70,000

**Exercise 4a.** Describe in the words the data that would be contained in a table made to reflect the relation depicted below?



**Exercise 4b.** Describe in the words the data that would be contained in a table made to reflect the relation depicted below?



**Exercise 5.** Create a relational schema for a database that will hold the information depicted in Exercise 3 of the Entity Relationship Diagram Exercises (which asks you to make an ER diagram for Investco Scout's database).

**Exercise 6.** Create a relational schema for a database that will hold the information depicted in Exercise 4 of the Entity Relationship Diagram Exercises (which asks you to make an ER diagram for Snooty Fashion's database).

**Exercise 7.** Create a relational schema for a database that will hold the information depicted in Exercise 5 of the Entity Relationship Diagram Exercises (which asks you to interpret the ER diagram for ExoProtect's database).