Exercises: Table Relations

This document defines the exercise assignments for the "Databases Basics - MSSQL" course @ Software University.

Problem 1. One-To-One Relationship

Create two tables as follows. Use appropriate data types.

Persons			
PersonID	FirstName	Salary	PassportID
1	Roberto	43300.00	102
2	Tom	56100.00	103
3	Yana	60200.00	101

Passports		
PassportID PassportNumber		
101	N34FG21B	
102	K65LO4R7	
103	ZE657QP2	

Insert the data from the example above.

Alter the **customers** table and make **PersonID** a **primary key**. Create a **foreign key** between **Persons** and **Passports** by using **PassportID** column.

Problem 2. One-To-Many Relationship

Create two tables as follows. Use appropriate data types.

Models			
ModelID	Name	ManufacturerID	
101	X1	1	
102	i6	1	
103	Model S	2	
104	Model X	2	
105	Model 3	2	
106	Nova	3	

Manufacturers			
ManufacturerID Name EstablishedOn			
1	BMW	07/03/1916	
2	Tesla	01/01/2003	
3	Lada	01/05/1966	

Insert the data from the example above. Add **primary keys** and **foreign keys**.

Problem 3. Many-To-Many Relationship

Create three tables as follows. Use appropriate data types.

Students		
StudentID Name		
1	Mila	
2	Toni	
3	Ron	

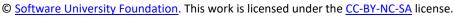
Exams		
ExamID Name		
101	SpringMVC	
102	Neo4j	
103	Oracle 11g	

StudentsExams		
StudentID	ExamID	
1	101	
1	102	
2	101	
3	103	
2	102	
2	103	

Insert the data from the example above.

Add primary keys and foreign keys. Have in mind that table StudentsExams should have a composite primary key.



















Problem 4. Self-Referencing

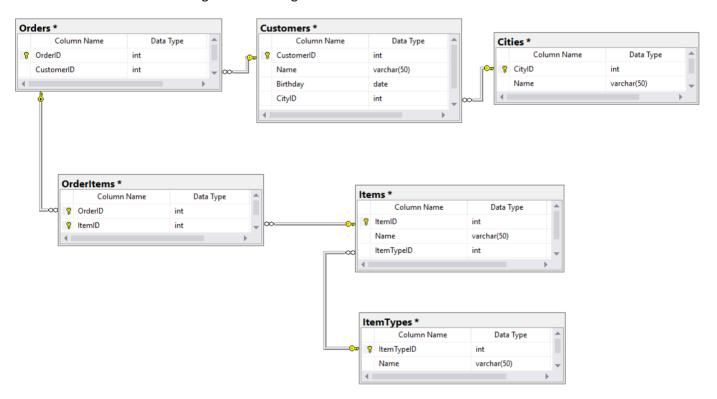
Create a single table as follows. Use appropriate data types.

Teachers			
TeacherID	Name	ManagerID	
101	John	NULL	
102	Maya	106	
103	Silvia	106	
104	Ted	105	
105	Mark	101	
106	Greta	101	

Insert the data from the example above. Add **primary keys** and **foreign keys**. The **foreign key** should be between **ManagerId** and **TeacherId**.

Problem 5. Online Store Database

Create a new database and design the following structure:



Problem 6. University Database

Create a new database and design the following structure:







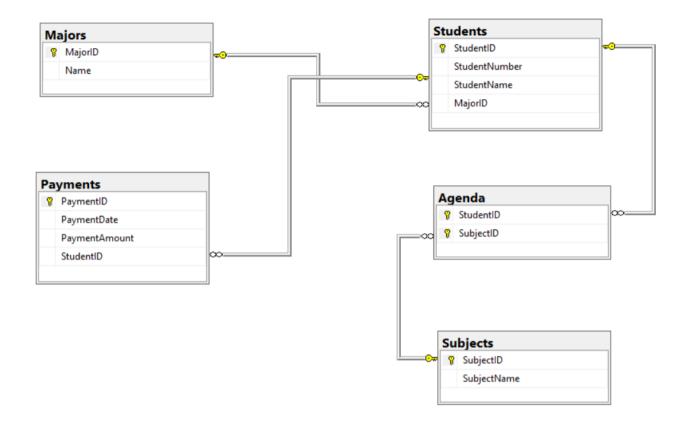












Problem 7. SoftUni Design

Create an E/R Diagram of the SoftUni Database. There are some special relations you should check out: Employees are self-referenced (ManagerID) and Departments have One-to-One with the Employees (ManagerID) while the Employees have One-to-Many (DepartmentID). You might find it interesting how it looks on the diagram. ©

Problem 8. **Geography Design**

Create an E/R Diagram of the Geography Database.

Problem 9. *Peaks in Rila

Display all peaks for "Rila" mountain. Include:

- MountainRange
- **PeakName**
- **Elevation**

Peaks should be sorted by elevation descending.

Example

MountainRange	PeakName	Elevation
Rila	Musala	2925



