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

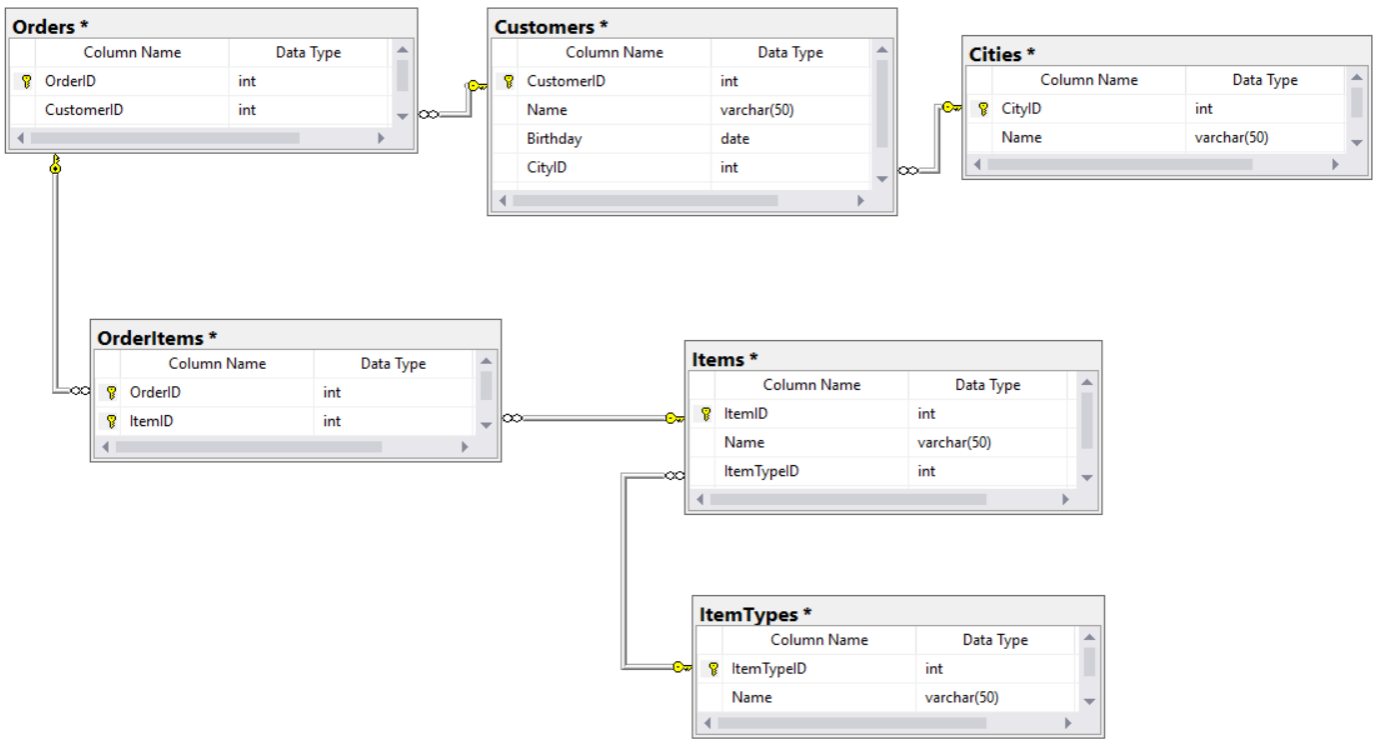
Create a single table as follows. Use appropriate data types.

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**.

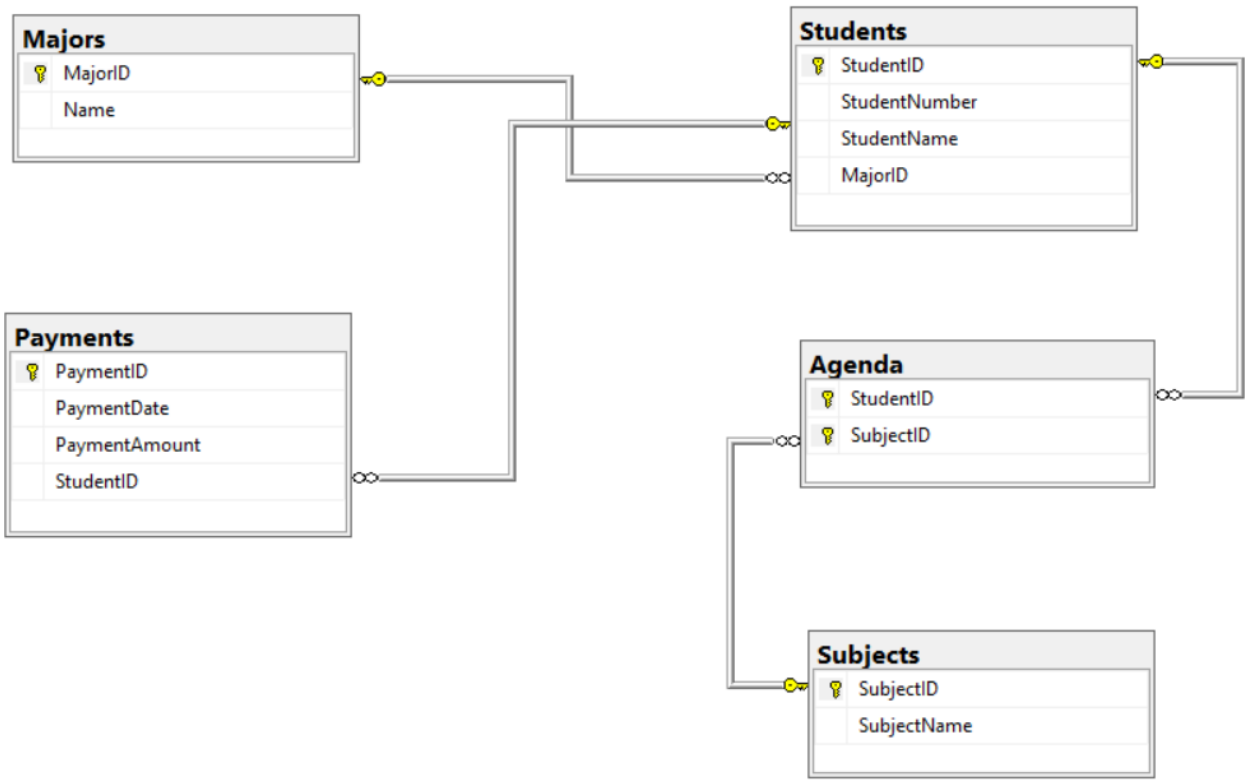
Problem 5. Online Store Database

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
…	…	…