TU München, Fakultät für Informatik
Lehrstuhl III: Datenbanksysteme
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Database System Concepts for Non-Computer Scientist – **WiSe 20/21**

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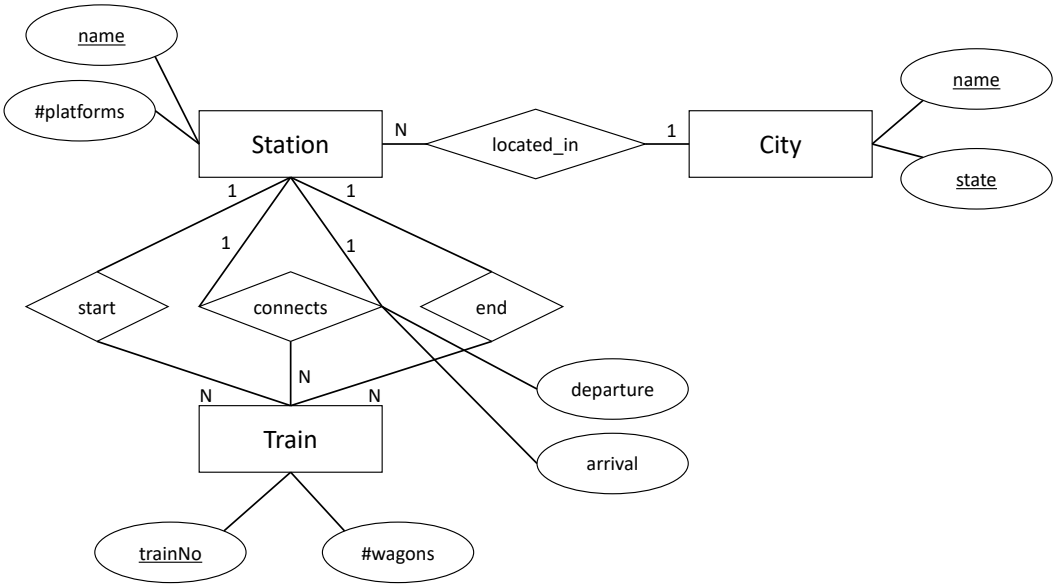
http://db.in.tum.de/teaching/ws2021/DBSandere/?lang=en

Sheet 05

Exercise 1

Consider the entity relationship diagram from exercise sheet 3:



Refine the relational schema that you created in sheet 3 from the ER-Diagram. Underline keys and find appropriate data types. As a reminder, here is the un-refined schema:

$$\text{City} : \{[\underline{\text{name} : \text{string}, \text{state} : \text{string}}]\} \quad (1)$$
$$\text{Station} : \{[\underline{\text{name} : \text{string}}, \#\text{platforms} : \text{integer}]\} \quad (2)$$
$$\text{Train} : \{[\underline{\text{trainNo} : \text{integer}}, \#\text{wagons} : \text{integer}]\} \quad (3)$$

For the relationships in the model, we create the following relations:

$$\text{located\_in} : \{[\underline{\text{stationName} : \text{string}}, \text{cityName} : \text{string}, \text{cityState} : \text{string}]\} \quad (4)$$
$$\text{start} : \{[\underline{\text{trainNo} : \text{integer}}, \text{stationName} : \text{string}]\} \quad (5)$$
$$\text{end} : \{[\underline{\text{trainNo} : \text{integer}}, \text{stationName} : \text{string}]\} \quad (6)$$
$$\text{connects} : \{[\underline{\text{fromStationName} : \text{string}}, \text{toStationName} : \text{string}, \underline{\text{trainNo} : \text{integer}}, \text{departure} : \text{date}, \text{arrival} : \text{date}]\} \quad (7)$$

Exercise 2

For additional practice, consider the hospital example, again. This time take the entity relationship diagram and transform it into a relational schema. Then, optimize it by eliminating relations.

This is obviously a large example but practice is very helpful. However, if you want to save time, you could focus on the difficult parts: *employs*, *works*, *consists_of*, *Doctors + has*