

Spatial Databases- Basics of Data Modeling
UML Exercise

You work as a geoinformatics- and database expert at a company called Mo Biehl Ltd. and are specialised on spatio-temporal analyses in spatial databases. A public transport service provider of a city approaches you and asks you to create a database for their bus public transport network. You agree and make an appointment with the Ulen Beringer who is the CEO. Mr. Beringer has studied economics and tells you that he does not know how databases work, and he will not be able to help you with your work. To get an overview of the processes and the context of the application, you ask him to explain the details in his own words and make an appointment with him.

During your meeting he says: “We want to have a database that allows us to create daily reports on how much money each of our route earns as well as the average timeliness of the buses.” You express your thanks for this valuable information but also tell him that you need more information and ask him to describe the company: “As a public transport provider we are attached to the municipality. The municipality has in total about 1000 employees, and there are 163 employees working for the transport provider, if you sum up everyone. We currently have 50 buses, which operate 14 lines with 264 stops. We always keep some buses in the garage, if there is a special, bigger event or a bus needs to be repaired or maintained. Furthermore, some of the buses are quite old and need to be replaced soon.”

Afterwards you ask for more information about the procedure if a passenger wants to use a bus. “The customers buy tickets at the ticket machines, which are located at each bus stop. They have to be maintained during the night, which means the paper rolls need to be exchanged and the money box need to be emptied. A day ticket costs $3,90 = C$, a single ride $2,30 = C$ and a short distance ride $1,70 = C$. If a customer owns a loyalty card, which is connected to their names, they get 20 % discount. Furthermore, we have 4 inspectors, who frequently perform ticket controls in teams of two.”

