Privat Transport

A private transport company called *Privat Transport (**PriTra**)* was established in Grimstad in 2023. Since then, the company has grown steadily and now has offices in most of the main cities of Norway. However, the company is now so large that more and more administrative staff are being employed to cope with the ever-increasing amount of paperwork. Furthermore, the communication and sharing of information within the company is poor. The Director of the company, Jens Jensen feels that too many mistakes are being made and that the success of his company will be short-lived if he does not do something to remedy the situation. He knows that a database could help in part to solve the problem and has approached you and your team to help in creating a database application to support the running of *Private Transport.*

The Director has provided the following brief description of how *Privat Transport* operates.

Each office has a Manager, several car owners, drivers, and administrative staff. The Manager is responsible for the day-to-day running of the office. An owner provides one or more cars to *Privat Transport* and each car is allocated for use to several drivers. The majority of owners are also drivers.

Private transport cars are not available for hire by the public hailing a taxi in the street but must be requested by first phoning the company to attend a given address.

There are two kinds of clients, namely private and business. The business provided by private clients is on an *ad hoc* basis. The details of private clients are collected on the first booking of a car. However, the business provided by business clients is more formal and involves agreeing a contract of work with the business. A contract stipulates the number of jobs that *Private transport* will undertake for a fixed fee.

When a job comes into *Private transport* the name, phone number and contract number (when appropriate) of the client is taken and then the pick-up date/time and pick-up/drop-off addresses are noted. Each job is allocated a unique jobID. The nearest driver to the pick-up address is called by radio and is informed of the details of the job.

When a job is completed the driver should note the mileage used and the charge made (for private clients only). If a job is not complete, the reason for the failed job should be noted.

The Director has provided some examples of typical queries that the database application for *Alternativ transport* must support.

a) The names and phone numbers of the Managers at each office.
b) The names of all female drivers based in the Grimstad office.
c) The total number of staff at each office.
d) The details of all cars at the Grimstad office.
e) The total number of PD registered taxis.
f) The number of drivers allocated to each car.
g) The name and number of owners with more than one car.

h) The full address of all business clients in Grimstad.
i) The details of the current contracts with business clients in Grimstad.
j) The total number of private clients in each city.
k) The details of jobs undertaken by a driver on a given day.
l) The names of drivers who are over 55 years old.
m) The names and numbers of private clients who hired a taxi in November 2020.
n) The names and addresses of private clients who have hired a car more than three times.
o) The average number of miles driven during a job.
p) The total number of jobs allocated to each car.
q) The total number of jobs allocated to each driver.
r) The total amount charged for each car in November 2020.
s) The total number of jobs and miles driven for a given contract.
t) A list of jobs a particular driver has had for a particular owner, driving a particular business client.

Based on the lectures in modeling you shall perform the following tasks using Enterprise Architect (EA). You should use the Database Design Methodology as shown in the lectures (also found in the shared pdf). You must also create a Data Dictionary Document and document each step as done in the lecture slides. Although the lecture slides only show fragments of a data dictionary, the data dictionary, with all the documentation, must be one document.

1. Create a conceptual data model based on the information above.
2. Create a logical data model for a relational database based on (1) the information above, and (2) your conceptual data model.
3. Create a physical data model by transforming the logical data model. In this assignment, you shall target the MySql database.
   (Deliverance for 1-3: (1) A complete EA model (2) ONE document with the models and the data dictionary included.
4. Implement the physical data model in MySql.
5. Important: (3 SQL files) Deliver the SQL scripts for creating the SQL tables, SQL transaction file for populating the database, and SQL file for running the transactions above as separate SQL files.
6. Create a C# application that will populate the database, and execute the transactions a-t

Note: You are not allowed to use any kind of object-relational mapper.