National University of Singapore
School of Computing

IT5004 Enterprise Systems Architecture Fundamentals
Tutorial 4

Case Study

IS2102 Exam Question (AY2015/16 Sem 1)
EasyTrip is a new transportation booking service that allows passengers to easily book a ride. Drivers can also sign up as an EasyTrip driver and get paid for every trip. EasyTrip drivers can either use their own vehicle or use one of the vehicles provided by EasyTrip. Since there are only limited EasyTrip vehicles around, EasyTrip drivers often have to share the vehicles with other drivers. The system keeps track of the list of drivers and the vehicles they used. Each driver record contains information such as identification number, name, age, date of birth, address, telephone number, and join date. On the other hand, each vehicle record contains information such as vehicle number, make and model of the vehicle, and number of seats available (maximum of 6). There are also different types of vehicles. At the moment, EasyTrip provides 3 different types of vehicles: taxis (in collaboration with the various taxi companies in Singapore), mini vans, and cars.

Each of the vehicles operates on a different pricing model. Taxi has a base charge and a mileage rate. The actual values for the base charge and mileage rate are set depending on the taxi company. Mini vans do not have variable charges, instead each trip is charged at a fixed price if the trip falls below a maximum distance. Cars follow similar model compared to taxi. Please also note that there is a cancellation fees that applies for all EasyTrip vehicles if the passengers wish to cancel a booking.

The system also maintains a database of passengers and their personal details (name, age, address, telephone number, and email address). The trips taken by a passenger is captured using a Trip record. Each Trip record also contains the information of the driver, the vehicle that was used, and other trip specific information such as total amount of the trip, starting date/time, ending date/time, starting location, ending location, and distance travelled. One of the ways EasyTrip differentiates itself from other transportation booking services is that it allows passengers to share the payment with their friends. For example, if a trip was taken by 4 people and the sharing option was chosen, the trip fare could be shared equally among the 4 people (i.e. 4 payment transactions are generated). Each payment record contains the payment amount, the date of the payment and the credit card transaction id. To enable this sharing feature, each of the passengers must register an account with EasyTrip. At the end of the trip, the EasyTrip app will generate a trip summary for the passengers and request passengers for reviews on the driver. Each review record contains the rating given by a passenger for the driver.

1. Using the above narration, develop a **domain model class diagram** for the system. If you need to make assumptions, please note them in your answers.