

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Software Engineering Specialization

### Exercise: Modeling Software Systems using UML

The classes shown below are required to represent information about car ownership and car loans. However, they have some attributes that are *internal object identifiers (OIDs)*, some of which are being used to represent relationships, and that *should not appear* in a class diagram. All such attributes conveniently have names ending in ID. 😊

Persons or companies may own cars. The car ownerID is the ID either the person or company that owns the car. A car may have only one owner (person or company). A car may have no loan or multiple loans. A bank provides a loan to a person or a company for the purchase of a car. Only the car owner may obtain a loan on the car. The car owner type and the loan customer type indicate whether the car owner/loan holder is a person or company.

**On the class diagram below:**

1. Replace all OIDs with associations.
2. Indicate the most likely multiplicities for all associations.
3. Cross out any unnecessary attributes.

Person
personID
name
age
address

Car
vehicleID
ownerID
ownerType
model
year

Company
companyID
name

Loan
loanID
vehicleID
customerType
customerID
accountNumber
bankID
interestRate
currentBalance

Bank
bankID
name