COMP 3711
Lab 4
October 6, October 8

Lab Exercise

1. Construct a UML System Sequence Diagram (SSD) based on the ReserveVehicle Use Case you have done in Lab 2. See the Use Case description posted.

2. Write an Operation Contract for the additional operation to reserve accessories (such as GPS, child-seat, etc.) along with the vehicle when the customer is making the reservation for it. Use the Operation Contract template given in the follow page.

3. Examine the eight proposed analysis classes, shown on the next page, for the vehicle rental system complete with the description for each class and the class responsibilities.

   Following from the Domain Class diagram you've constructed in Lab 3, examine the Rose model that is posted. It contains a UML class diagram that shows all 8 classes with the relationships between them and the multiplicities of the relationships.

   Construct a Sequence Diagram for the ReserveVehicle Use Case with messages between the classes to accomplish the class responsibilities shown in the table.

Marking Guide for the Lab Exercise

Category	Maximum	Mark
SSD	3	
Operation Contract	2	
Sequence Diagram	5	
Total	10	

Class name	Description of the Class	Class Responsibilities
Award Program	Represents a set of business rules which offer 'points' based on completed and paid vehicle rentals. The accrued 'points' can be assigned monetary value as surrogate currency for future rental agreements.	Manages the value of the award program 'account' for an associated customer. Knows the business rules to apply to a completed rental for accruing 'points.' Knows how to transform 'points' to the appropriate surrogate monetary value for a rental agreement.
Customer	Represents the human individual (no company accounts) who may request to reserve a vehicle.	Manages the information associated with a specific human customer (e.g., email address, physical address, telephone, etc.).
Customer Profile	Represents a set of properties describing the rental preferences for the associated Customer.	Manages its attributes and values as a cohesive set of properties associated with a given Customer. Knows the Customer for which it manages these properties.
Protection Product	Represents a legally binding liability- or risk-management agreement between the rental company and the customer. The legal agreement does not become binding until the rental reservation is confirmed, and the customer takes possession of the vehicle.	Each protection product knows its rules for application based on the geographic state (e.g., Georgia, Nevada, etc.) in which the rental is made. Knows the allowed limits on liability and property coverage.
Rental Location	Represents a business facility where vehicles are rented and returned. A rental location has an assigned vehicle inventory.	Knows its physical address. Has a unique identifier within the rental company. Manages its associated vehicle inventory to determine what automobiles are available for a prospective reservation.
Reservation	Represents a non-binding agreement to 'reserve' a vehicle that has been requested by a customer.	Each reservation uniquely identifies the association between a Customer and a Vehicle for a specific date and time.
Vehicle	Represents a physical vehicle that is part of a rental location vehicle inventory.	Knows its status (rented, damaged, ...). Knows the vehicle inventory it is part of; or the reservation it has been assigned to. Knows its schedule for availability.
Vehicle Inventory	Represents the vehicle fleet assigned to a rental location for given dates and times.	Manages the vehicles in the inventory for a specific Rental Location (i.e., the vehicles physically present, and transient vehicles that are scheduled for return, but have not been returned yet).

Operation Contact R02	ReserveAccessory
Operation	reserveAccesory(AccessoryID: itemID, quantity:ingerger)
Cross References	Use Cases: ReserverVehichle
Preconditions:	
Postconditions:	