0360-322 Winter 2009 Assignment 3
Due: Mar 26, 11:59PM
Email your submission
The subject line should include your name and ID

This assignment is similar to the questions asked in your Midterm Exam.

Suppose you are running a bike rental store. You are given the following "Rent Bikes" use case.

Use Case: *Rent Bikes*

Main Success Scenario *(or Basic Flow or "Happy Path")*:
   1. Customer arrives at a checkout with bike to rent.
   2. Clerk enters Customer ID.
   3. Clerk enters rental identifier.
   4. System records rental line item and presents item description.
   (Clerk repeats steps 3-4 until indicates done.)
   5. System displays total.
   6. Customer pays. System handles payment.
   7. Clerk requests rental report.
   8. System outputs it. Clerk gives it to Customer.
   9. Customer leaves with rentals and report.

***Extensions (or Alternatives)*:**
a*. At any time, System fails:
        1. Clerk restarts System
        2. logs in
        3. requests recovery from prior state
1a. New Customer.
        1. Perform use case Manage Membership.
2a. Customer ID not found.
        1. Cashier verifies ID. If entry error, reenter, else Manage Membership.
2b. Customer has unpaid fines (usually for late returns).
        1. Pay Fines.

***Special Requirements*:**
   Language internationalization on the display messages and rental report.
   Large text on display. Visible from 1 m.

***Technology and Data Variations*:**
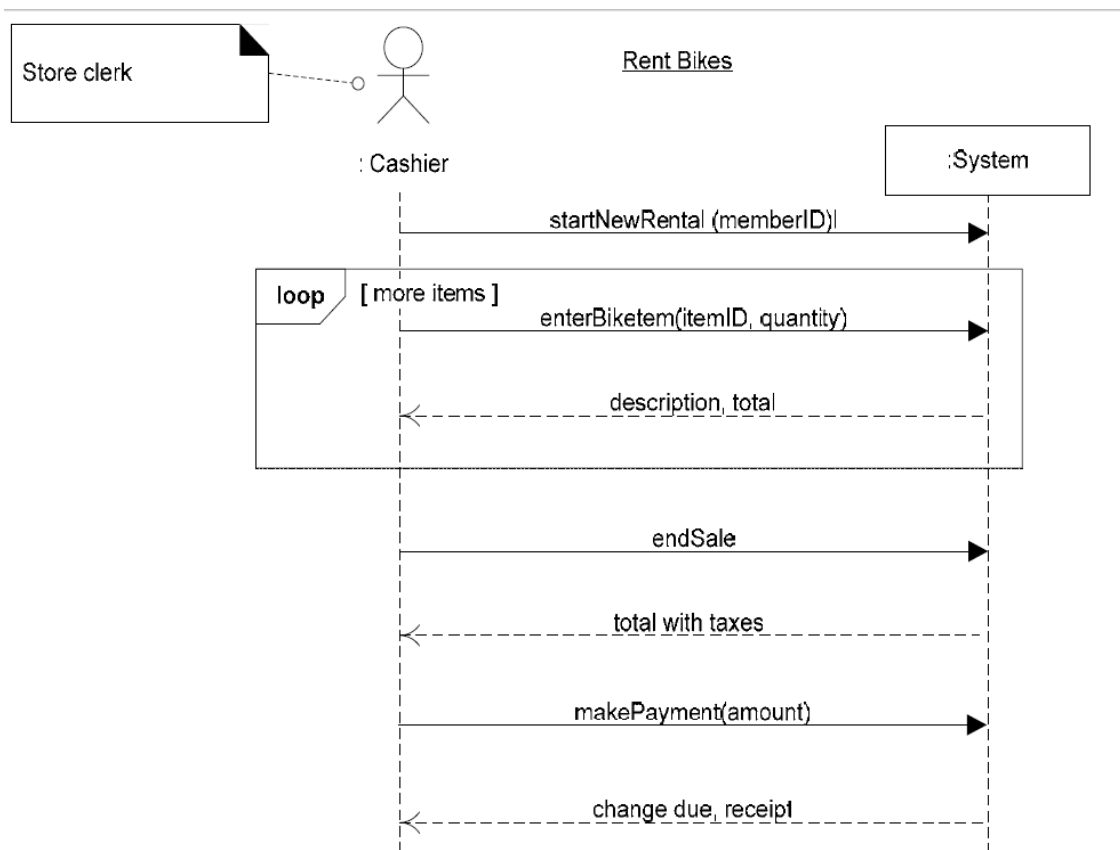
ID entries by bar code scanner or keyboard.

Frequency:
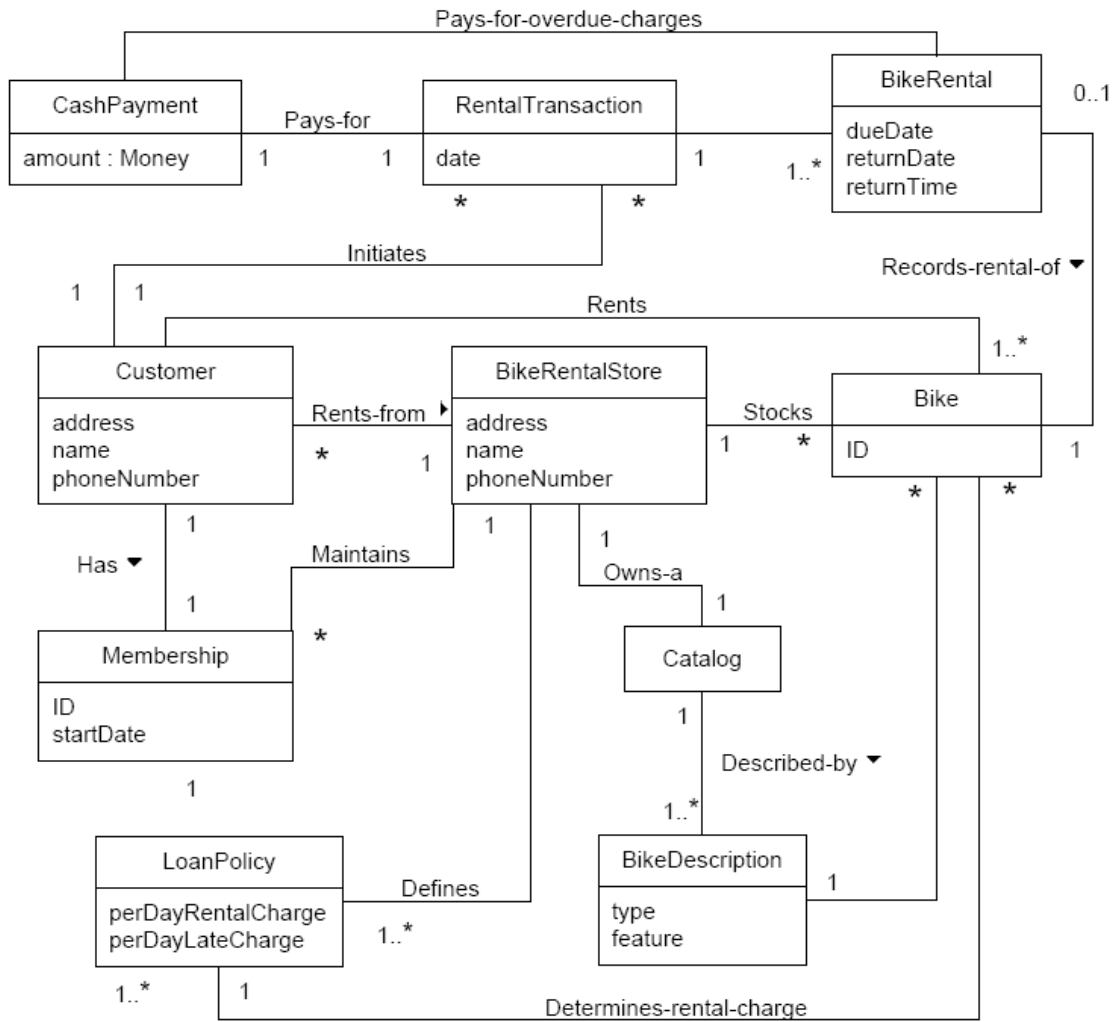
Near continuous

Open Issues:

Should we support a magnetic stripe cards for customer ID, and allow customer to directly use card reader?

Bounded by the above use case, you are also given the following SSD and domain model.

The SSD for the basic flow of *Rent Bikes* use case.

The corresponding domain model.

Question 1:

Write an operation contract for the system operation *startNewRental*,
complete the UML interaction diagram for this operation. Annotate every message with
the hint GRASP (Expert, Creator, and so on) and/or other pattern that justifies it.

by Controller

startNewRental((membershipID)
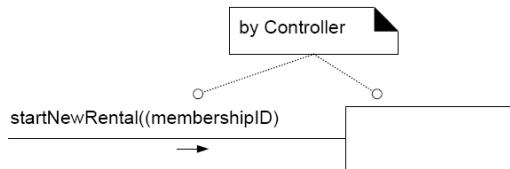
Question 2:

Write an operation contract for the system operation *enterBiketem(itemID, quantity)* , complete the UML interaction diagram for this operation. Annotate every message with the GRASP (Expert, Creator, and so on) and/or other pattern that justifies it.

by Controller

enterBikeItem(itemID, quantity)
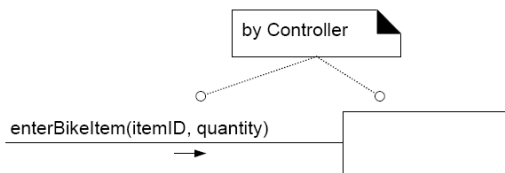
Question 3:

Draw a partial design class diagram for those classes involved in your
answer of Question 1 and 2. Show all attributes, associations between these classes if
applicable, and method signatures.