Chapter 6 Exercises

A) Mailing Letter to Pen Pal

Retrieved address

Got Stamps

Address put on envelop

Stamp is put on envelope

Print Out

Composed

Assembled letter

Letter put in mailbox

Picked Up

(Decision=rewrite)

Letter is sent for address sorting

Address put on envelop

Letter is returned

(Address = not recognized)

Evaluated what to do with letter

Undeliverable

Sorted

(Address = recognized)

(Decision = not rewrite)

Letter is delivered

Letter is opened

Shipped

Received

Read

Discarded

B) Expense Form

(Decision = Don't Edit)

Sent back to employee

Reviewed form

Denied

(Boss approved =no)

(Decision = Edit)

(Value $300)

(Decision = Edit)

(Boss approved = yes)

Augmented form

Proceed

Submitted to boss

Augmented with purpose

(Value $300)

Resubmitted

Sent to CFO

Form is filled

(CFO Approved = Yes)

(CFO Approved = No)

Filled

Signed

Submitted to CFO

Sent to A/P

Inputted

System sends check

Not cashed in 90 days

Sent

Expired

Cashed in 90 days

Received Canceled Check

Canceled Check

Filed

C)

The answers to this exercise should essentially mirror those we show in the following example E, F, G, and H. Note also that the scope of this problem is really quite large and you might want to consider this exercise for a major semester project.
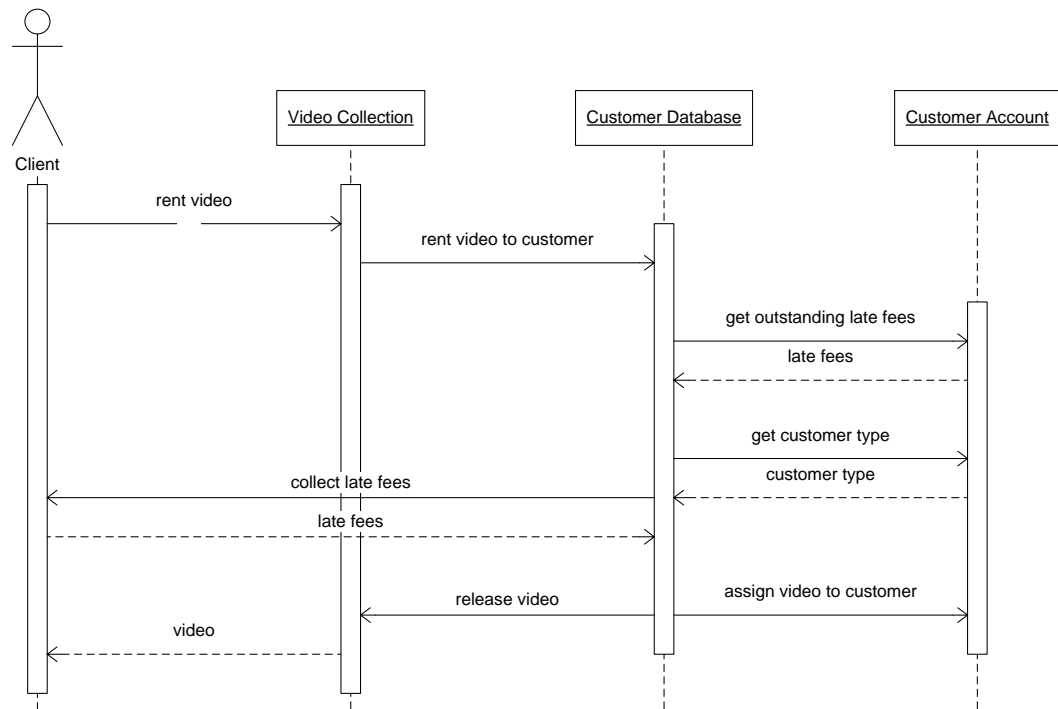
D)

The answers to this exercise should essentially similar to those we show in the example E, F, G, and H.

E1) Sequence diagrams for use cases

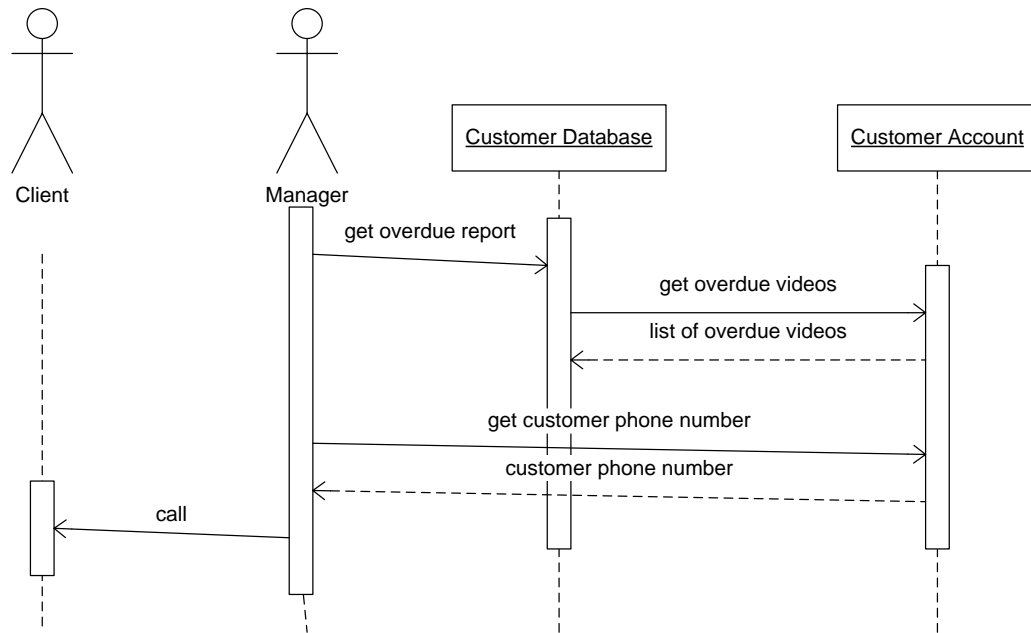AVS Sequence Diagram, for collecting overdue videos prior to new rentals
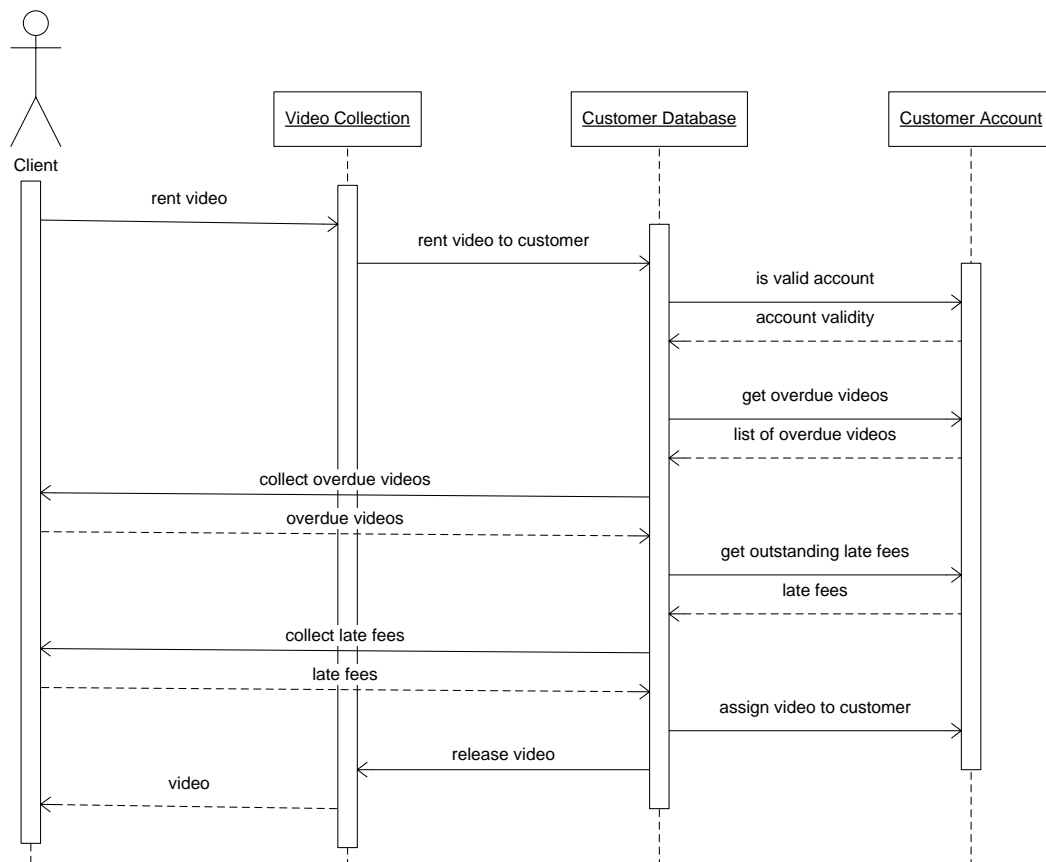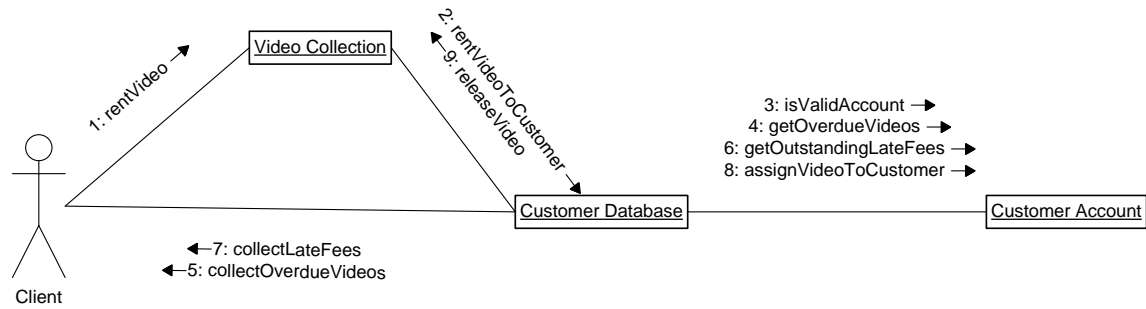
AVS Sequence Diagram, paying overdue late fees

Client

Video Collection

Customer Database

Customer Account

rent video

rent video to customer

get outstanding late fees

late fees

get customer type

customer type

collect late fees

late fees

release video

assign video to customer

video

AVS Sequence Diagram, part 3

Client

Manager

Customer Database

Customer Account

get overdue report

get overdue videos

list of overdue videos

get customer phone number

customer phone number

call
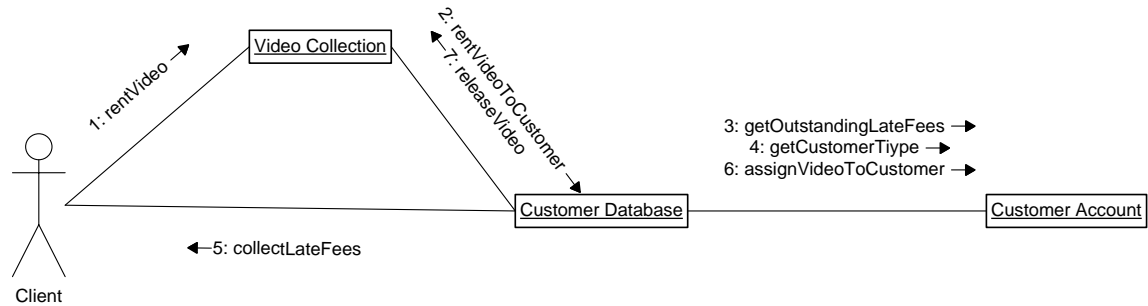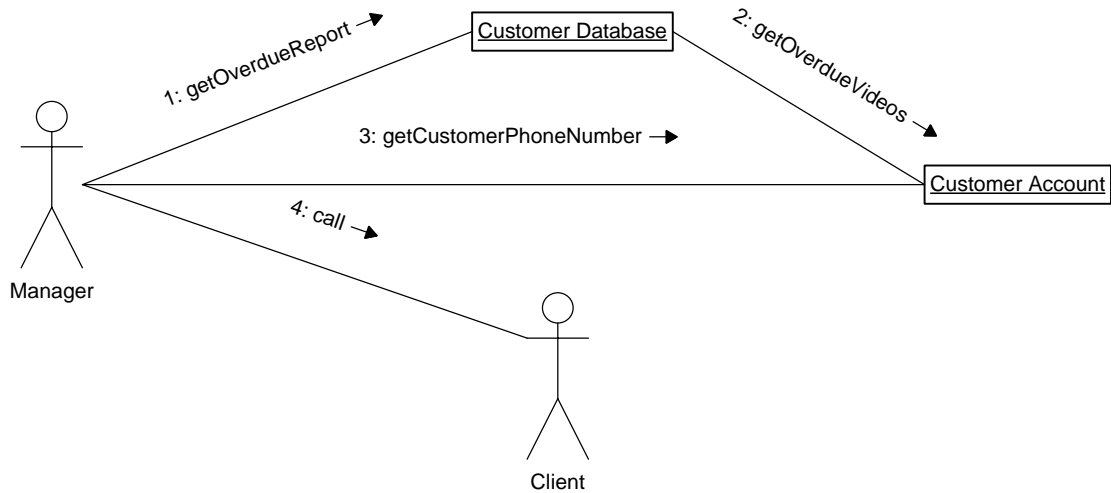
E2) Communication diagrams for AVS

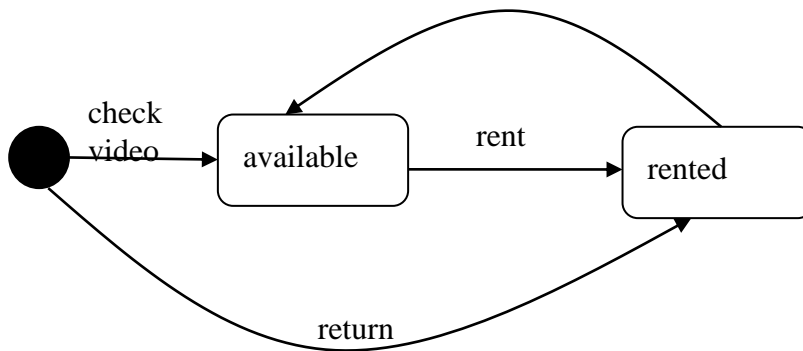## Communication Diagram for AVS

Communication Diagram for AVS

Communication Diagram for AVS

E3) Behavioral state machine
Video Rental. the state machine might be different since different students may define different symbolic states for this class.

E4) CRUD Diagram for AVS

	Client	Clerk	Mgr	Video Rental DB	Video DB	Customer DB	Bill	Payment DB
Client								C
Clerk				R,U	U	C,R	C	
Manager				R				

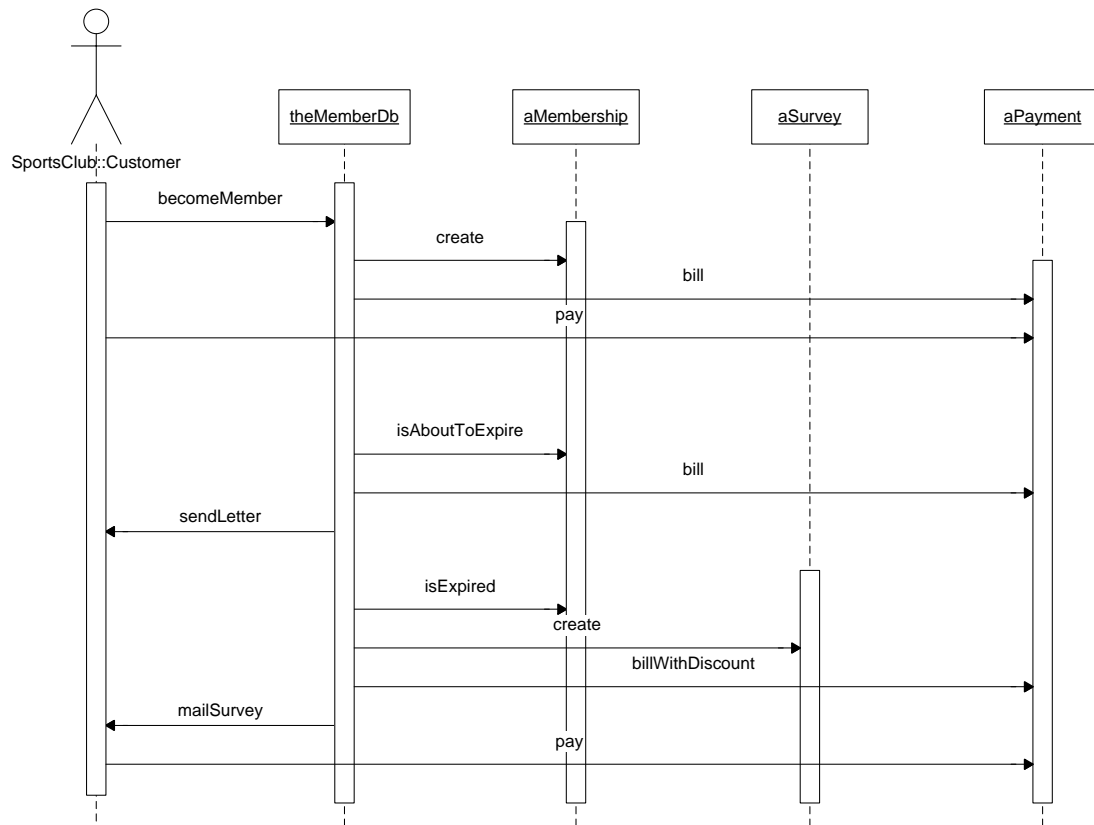|						R		
Video Rental DB								
Video DB								
Customer DB								
Bill								
Payment DB								

E5) walkthrough

Following the following rules to perform a walkthrough of the behavior model:
1, every actor and object included on a sequence diagram must be included as an actor and an object on a communication diagram, and vice versa.
2, if there is a message on the sequence diagram, there must be an association on the communications diagram, and vice versa.
3, every message that is included on a sequence diagram must appear as a message on an association in the corresponding communication diagram, and vice versa.
4, if a guard condition appears on a message in the sequence diagram, there must be an equivalent guard condition on the corresponding communication diagram, and vice versa.
5, the sequence number included as part of a message label in a communications diagram implies the sequential order in which the message will be sent. As such, it must correspond to the top-down ordering of the messages being sent on the sequence diagram.
6, all transitions contained in a behavior state machine must be associated with a message being sent on a sequence and communication diagram, and it must be classified as a (C)reate, (U)pdate, or (D)elete message in a CRUDE matrix.
7, all entries in a CRUDE matrix imply a message being sent from an actor or object to another actor or object. If the entry is a (C)reate, (U)pdate, or (D)elete, then there must be an associated transition in a behavioral state machine that represents the instances of the receiving class.
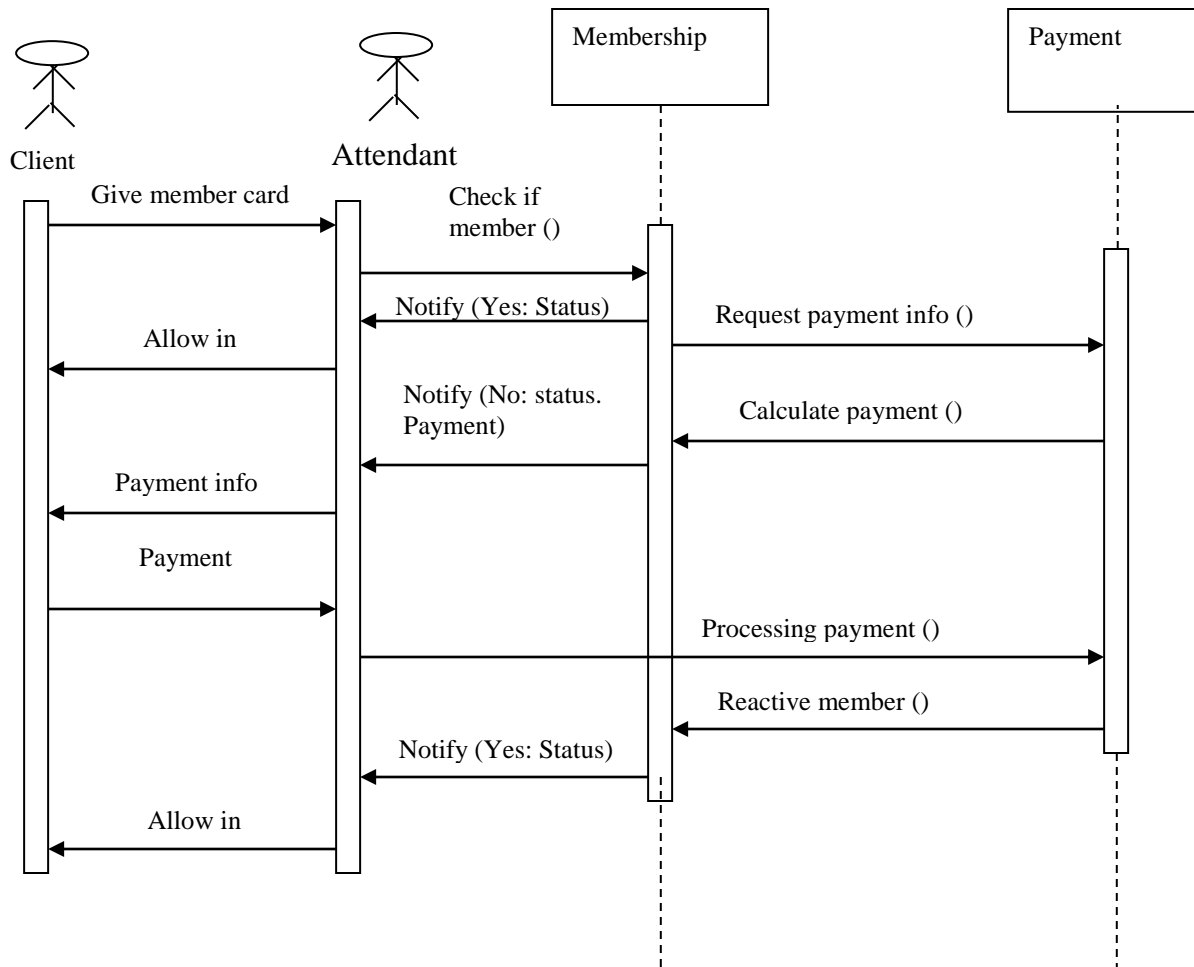8, there are many representation specific rules that have been proposed.

F1)
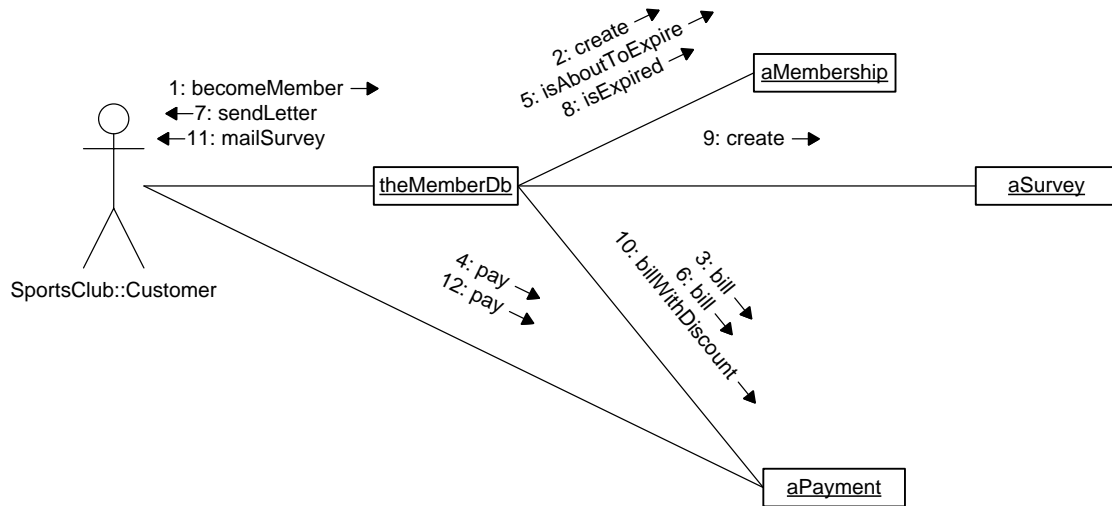# 1. Sequence Diagram of Expired Member Renewal Process
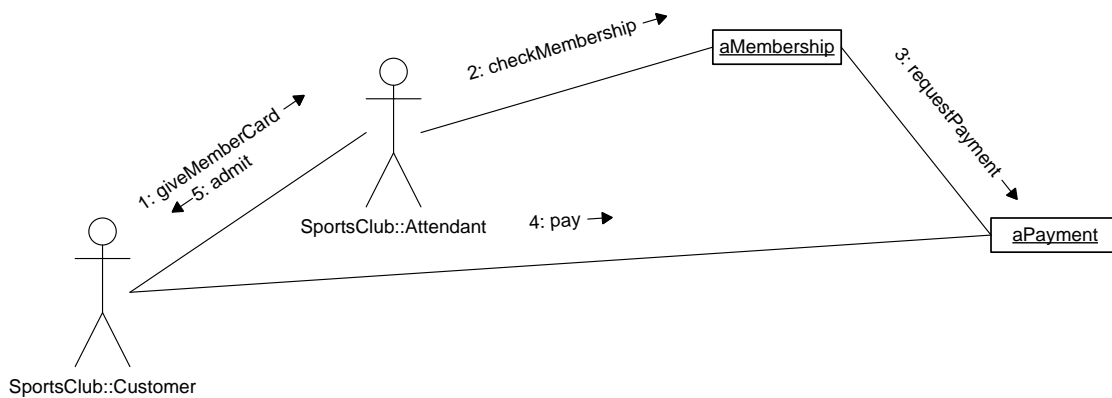
2. Sequence Diagram for Entering Club

Client   Attendant   Membership   Payment

Give member card

Check if member ()

Notify (Yes: Status)

Allow in

Request payment info ()

Notify (No: status. Payment)

Calculate payment ()

Payment info

Payment

Processing payment ()

Reactive member ()

Notify (Yes: Status)

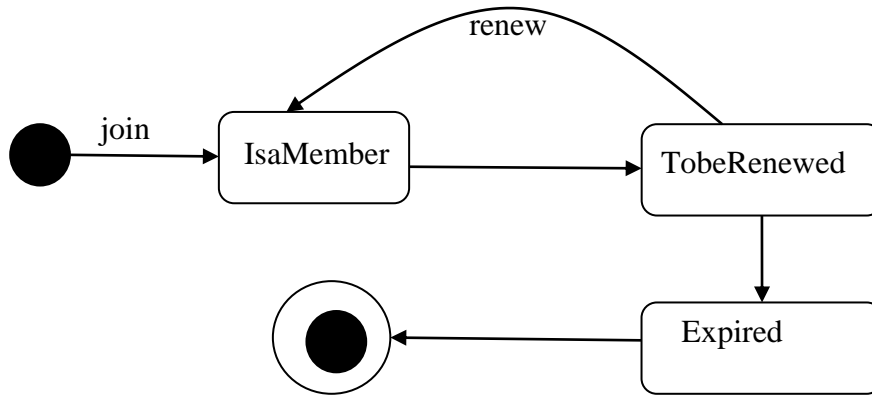Allow in

F2)
1. Communication Diagram for F1.1

2. Communication Diagram for F1.2

F3) Behavioral state machine

membership, the state machine might be different since different students may define different symbolic states for this class.

F4) CRUD analysis of Health Club Membership System (from exercise D)

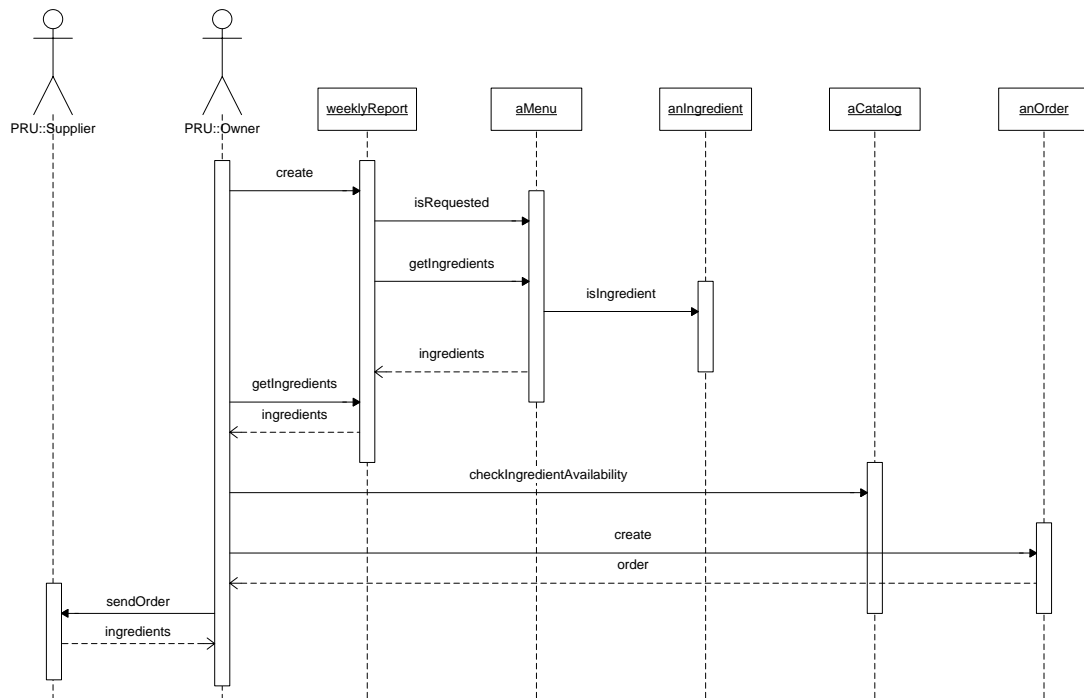|	Client	Attendant	Expiration Checker	Membership	Survey Processor	Payment
Client					U	C
Attendant				R		C,R
Expiration Checker				R		
Membership						
Survey Processor						
Payment				U		

F5) Walkthrough

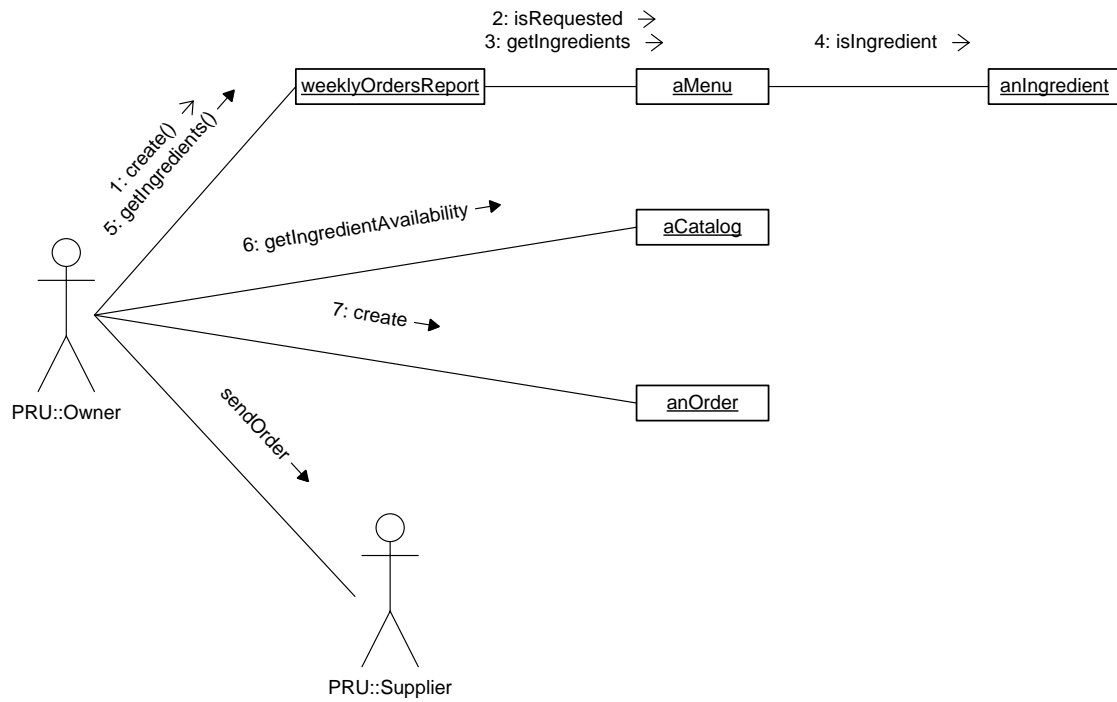Following the following rules to perform a walkthrough of the behavior model:
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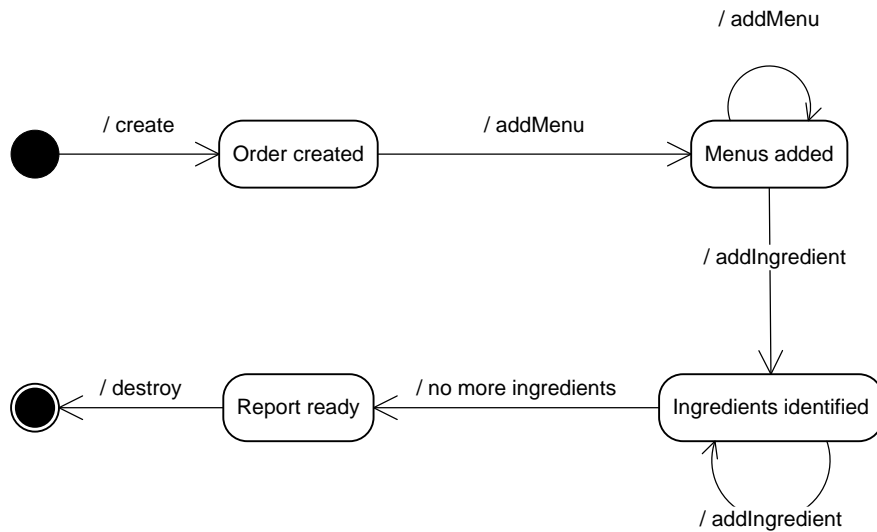8, there are many representation specific rules that have been proposed.

G1) Sequence Diagram for Order Supplies Use Case

G2) Communication Diagram PRU Supplies

2: isRequested →
3: getIngredients →

4: isIngredient →

weeklyOrdersReport — aMenu — anIngredient

1: create() ↗
5: getIngredients() →

6: getIngredientAvailability →

aCatalog

7: create →

anOrder

PRU::Owner

sendOrder →

PRU::Supplier

G3) Behavioral state machine Diagram for PRU Weekly Report class

/ addMenu

/ create → Order created → / addMenu → Menus added

/ addIngredient

Ingredients identified

/ addIngredient

/ destroy ← Report ready ← / no more ingredients ← Ingredients identified

G4) CRUD Analysis for PRU

|	Customer	Receptionist	Owner	Report	Menu	Ingredient	Catalog	Purchase Order
Customer								
Receptionist					C,R			
Owner				R			R	C
Report					R			
Menu						R		
Ingredient								
Catalog						R		
Purchase Order						R		

G5) Walkthrough

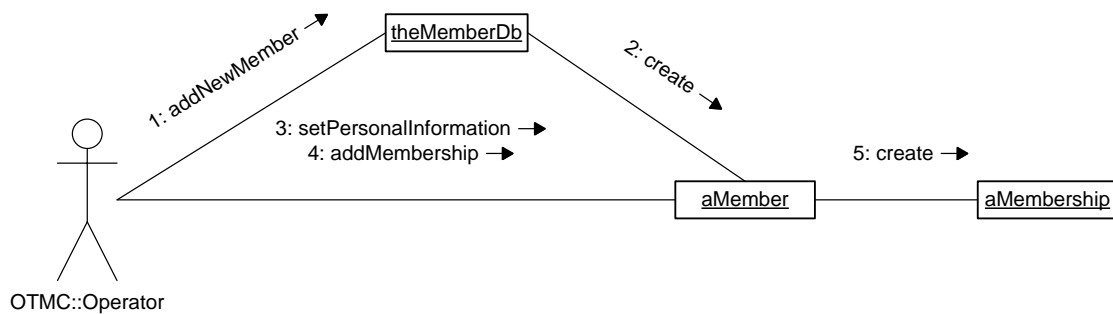Following the following rules to perform a walkthrough of the behavior model:
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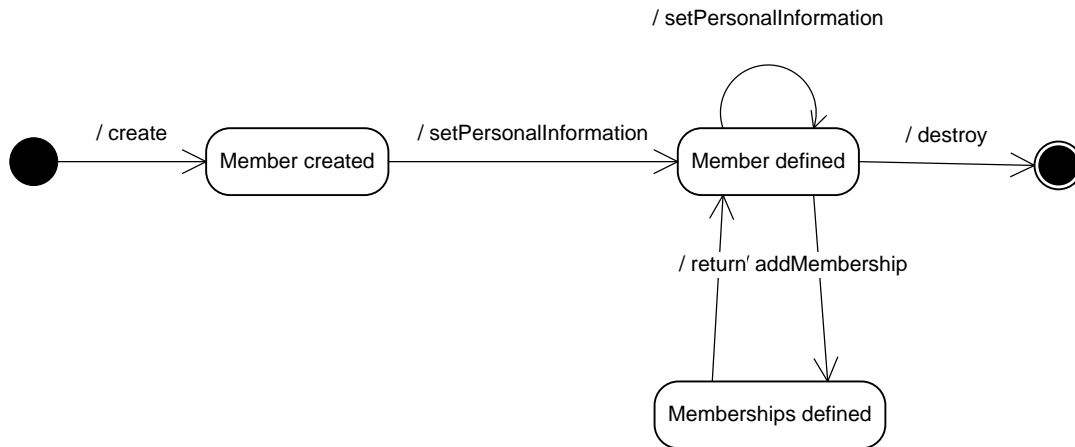8, there are many representation specific rules that have been proposed.

H1) Sequence Diagram for OTMC Enroll Member Use Case
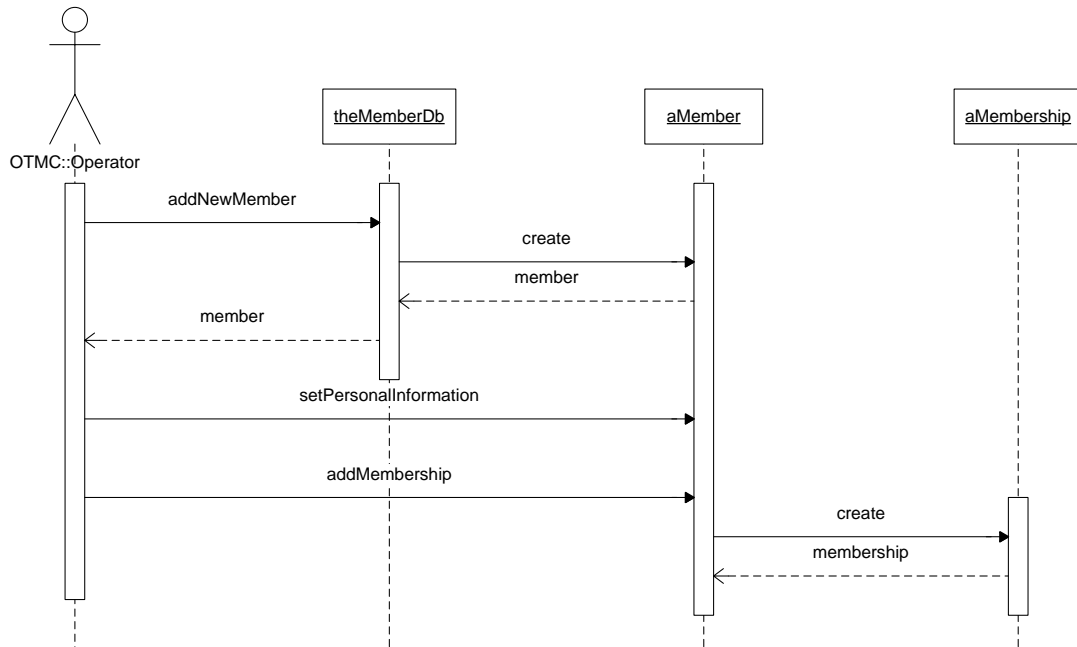
H2) Communication Diagram for OTMC Enroll Member Use Case

H3) Behavior State Machine for OMTC

H4) CRUD analysis for OTMC system

	Operator	Member	Membership	ComputerGameClub
Operator		**CU**	**C**	**C**
Member			**C**	
Membership				
MembershipDB		**C**		
ComputerGameClub				

H5) Walkthrough

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