CSCI 6441 – Homework 1
LAST NAME: Thompson FIRST NAME: Jerome

Practice 1-1

Starling DVD and Games Rentals" has come to realization that they need to revamp their systems as noted by "Starlight already has an information system to track rentals, but this needs enhancement to support proposed changes to the business". We noted in class that working with a flawed scheme will cause problems in the future. So, yes, a new model needs to be started, this will include an Entity Relational Diagram, Relational and Physical model along with Data Flow diagram resulting in a DDL being generated.
The Top-down modeling will be the approach used for this project.

Issue that may arises:

- Asking for photo id maybe not be an inviting change (it adds an additionally step to renting), customers should be incentivized through promos/reduced cost.

- Also, since there is already a database in place, there will have to be extra care put in place to replicate its data to the new system.

- There may also be some unforeseen issues with current systems that will only be discovered when cutting over to the new system.

- Adding companies (versus only having individual members) to system will incur an increase in resource need and must be taken into consideration.

- Lastly the point concerning the system being flexible enough to deviate from fees and time frames in individual cases will add an extra layer of complexity to project.

Practice 2-1

Note	Business Objective	Key Performance Indicator	Critical Success Factor	Assumption	Problem
Store clerks do not know when a membership is due for renewal, and cannot, therefore, proactively encourage customers to renew their membership.					Yes
To reduce the number of non-returned DVDs from 5% to <1%	Yes				
Staff needs to be alerted when a DVD is more than two weeks overdue.			Yes		
Store clerks cannot easily identify DVDs that are seriously overdue (more than two weeks late).					Yes
To increase rentals by 25% annually through the introduction of membership privileges	Yes				
Our current system uses Oracle Database 9i and is on UNIX.				Yes	
The number of seriously overdue DVDs should be <3%.		Yes			
Starlight must stock a very wide range of DVDs and sufficient copies of the latest DVDs to ensure that membership is attractive.			Yes		
Store clerks are unable to chase overdue DVDs.					Yes
Starlight would like to upgrade to Oracle Database 11g on Linux.				Yes	

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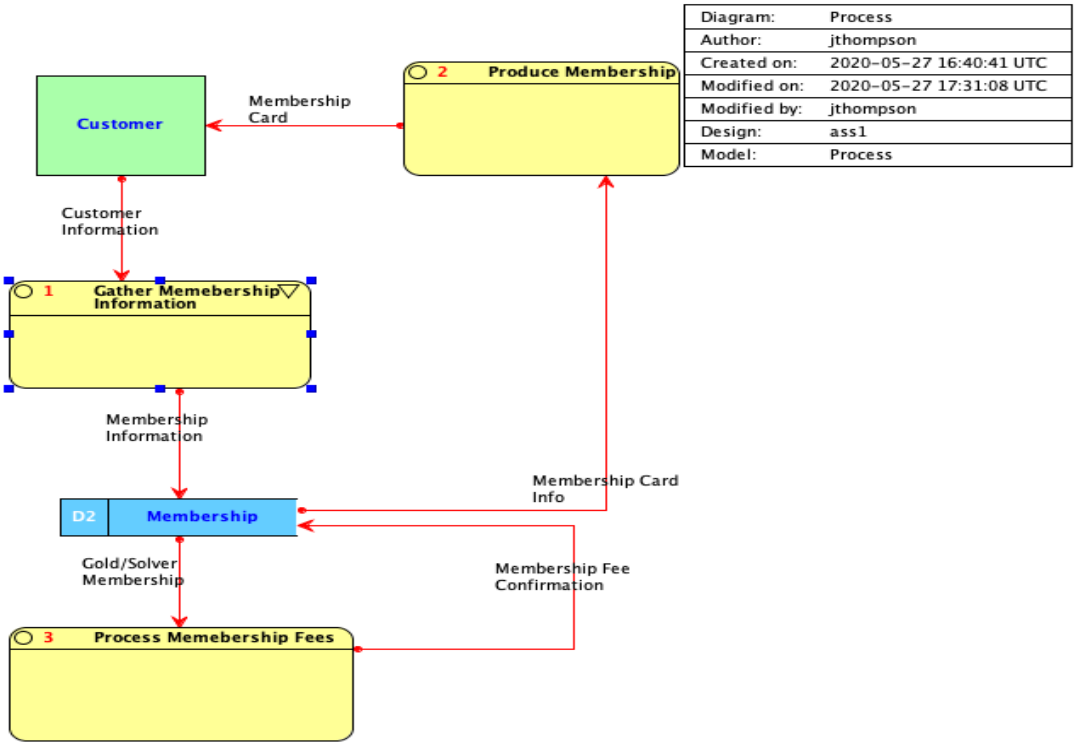
Practice 3-1 / Practice 4-1

The business consultants have recommended the introduction of a tiered membership scheme for Starlight. This necessitates some changes to the way the company deals with its customers. The following extract from the consultants' report describes the proposals regarding the creation of memberships:
• There will be three types of memberships: gold, silver, and bronze. Gold and silver memberships incur a fee but entitle the member to certain privileges. Bronze memberships replace the current situation.
• Customers must provide some form of identification before a membership is created. • The identification document will be photocopied and filed.
• A membership card will be issued and must be shown each time a DVD or game is rented.
• A unique number is allocated to each new membership
• The fee for gold and silver membership must be paid before the membership card can be issued.

Perform the following:
1. Create processes, external agents, information stores, and information flows.
2. Label all objects on your diagram.
3. Define the events that trigger each process.
4. Define the outcome of each process and specify its type.

Then use Oracle SQL Developer Data Modeler to build the data flow diagram.



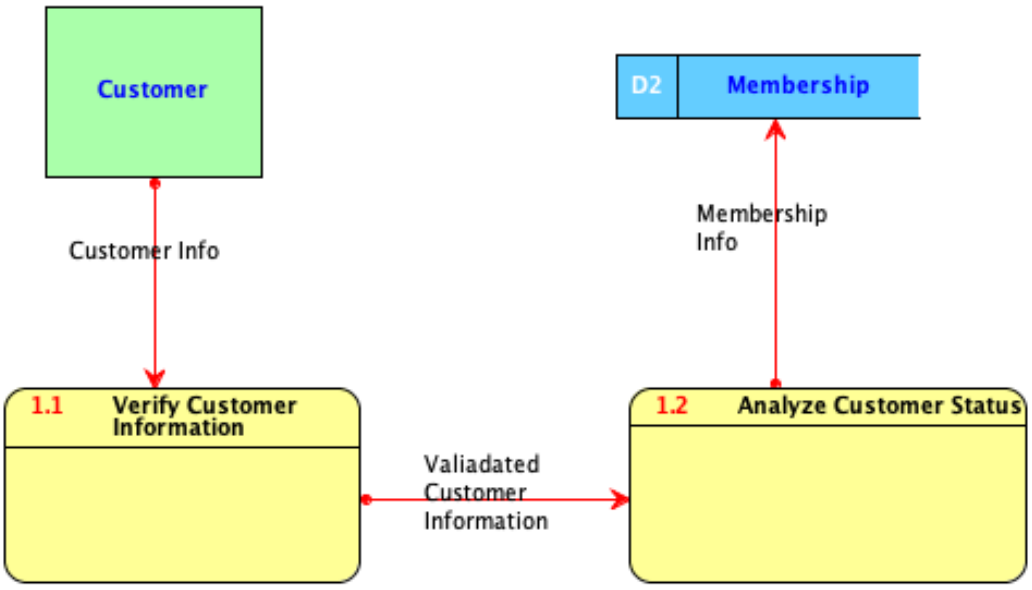
Practice 5-1

Decompose a process and add a transformation process in the DFD that you created in the previous practice. Decompose the Gather Membership Information process to handle the following requirements:

- Verify that the customer has entered all the required information on the form.
- Determine whether the customer is a current customer and compare whether the customer is upgrading the membership or staying at the same Bronze level.

Creating a transformation process that loads the membership information into your CRM system so that CRM activities can be used to communicate with customers. Incorporate the above requirements by revising your DFD to show the decomposition in Oracle SQL Developer Data Modeler.

Diagram:	Gather Memebership Information Diagram
Author:	jthompson
Created on:	2020-05-27 17:33:26 UTC
Modified on:	2020-05-27 17:38:01 UTC
Modified by:	jthompson
Design:	ass1
Model:	Gather Memebership Information Diagram



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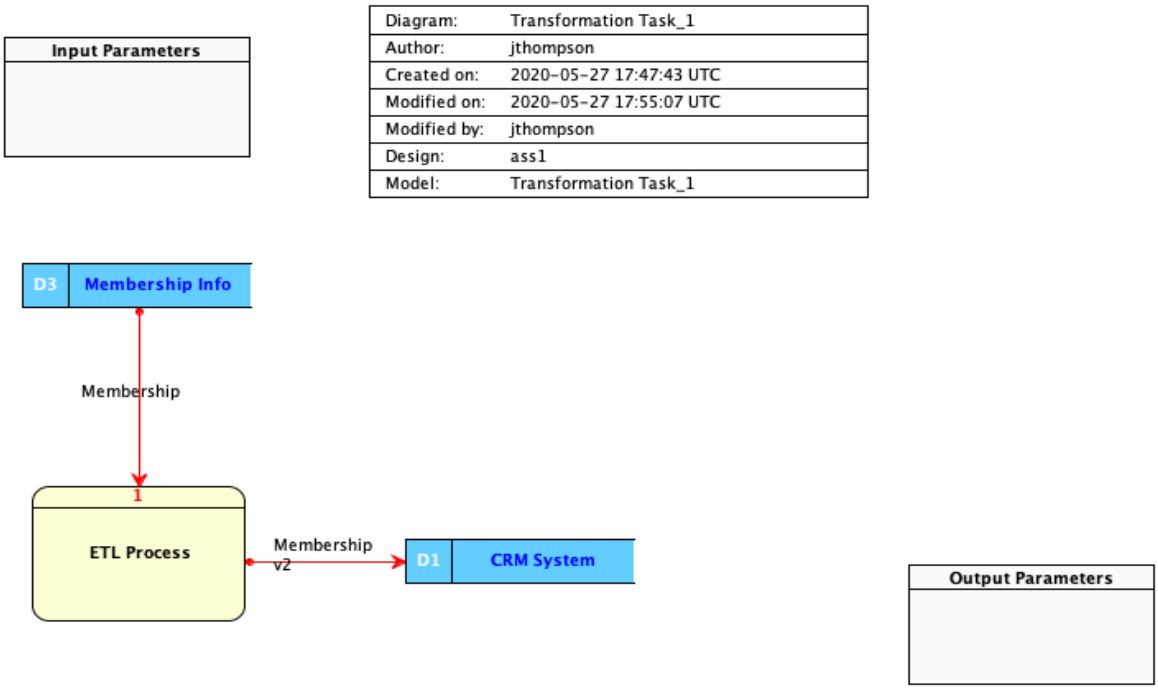

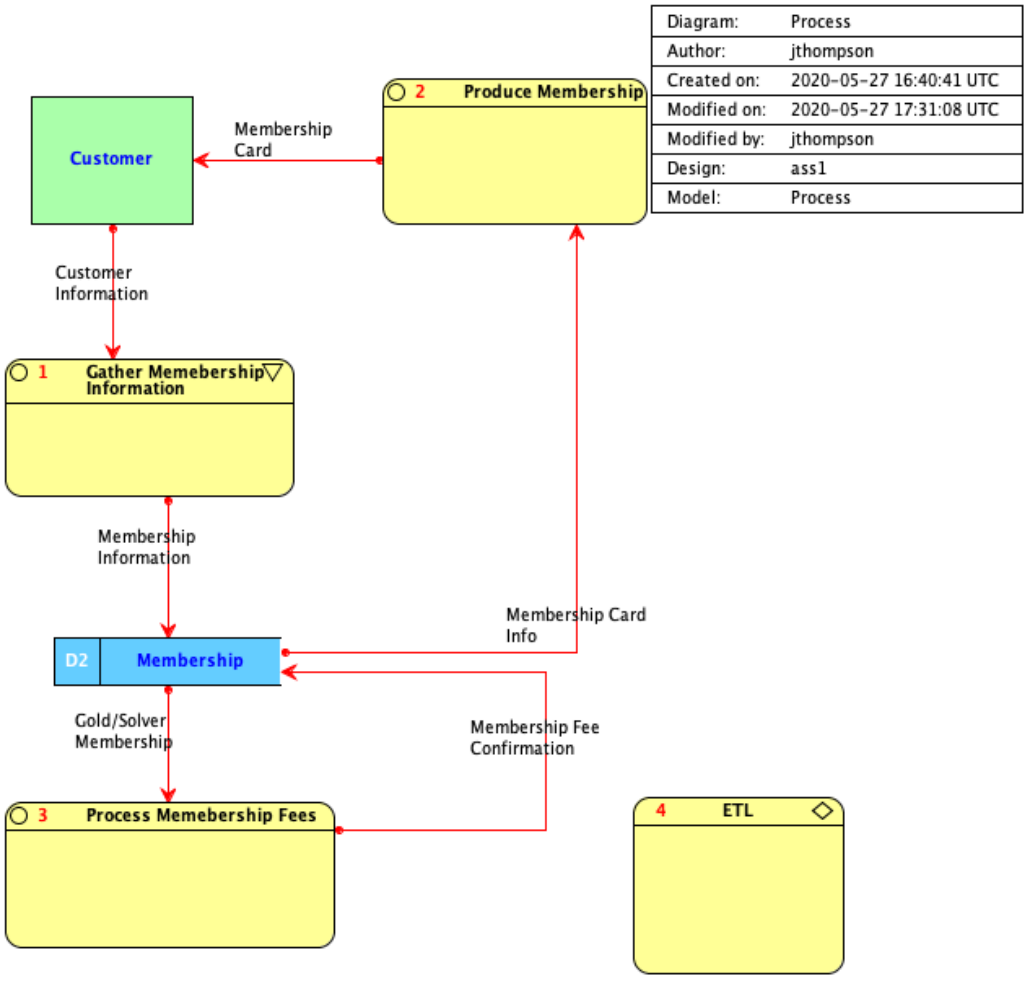
Diagram: Process
Author: jthompson
Created on: 2020-05-27 16:40:41 UTC
Modified on: 2020-05-27 17:31:08 UTC
Modified by: jthompson
Design: ass1
Model: Process
Customer
Membership Card
2 Produce Membership
Customer Information
1 Gather Memebership Information
Membership Information
Membership Card Info
D2 Membership
Gold/Solver Membership
Membership Fee Confirmation
3 Process Memebership Fees
4 ETL

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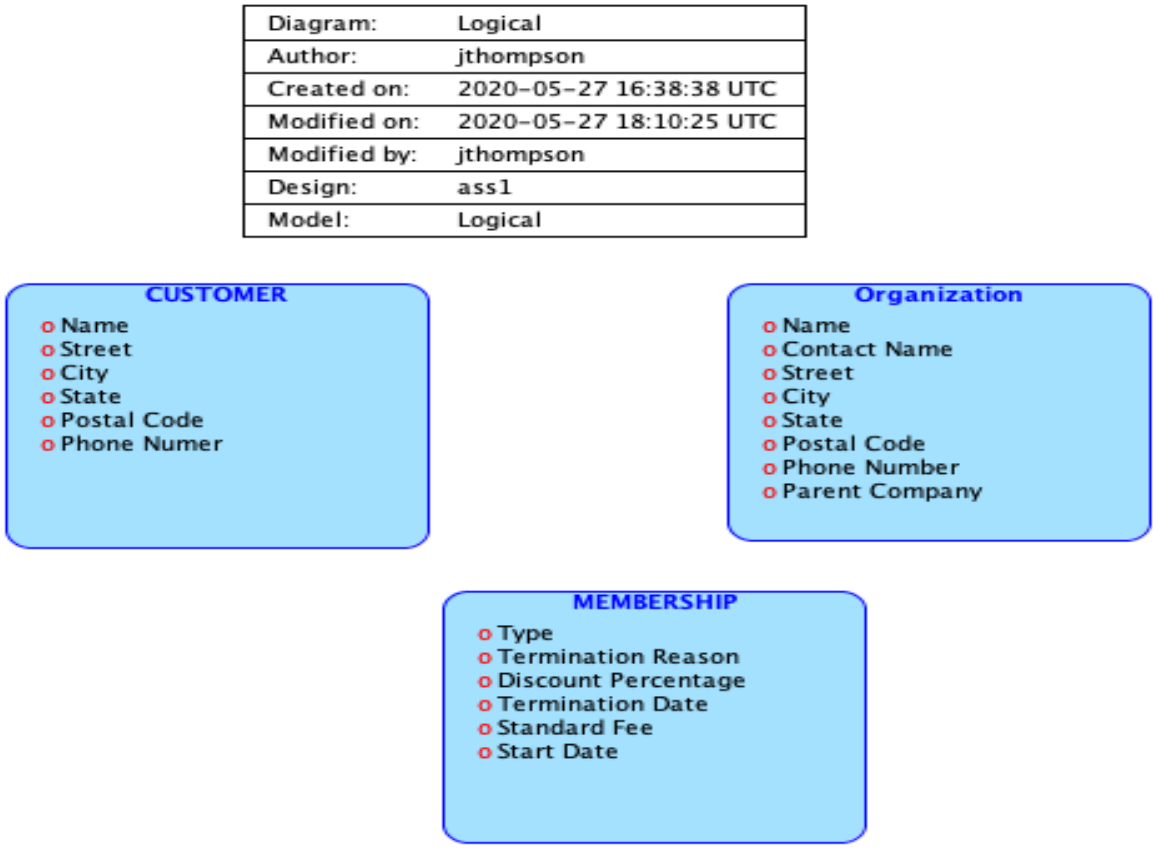
Practice 6-1

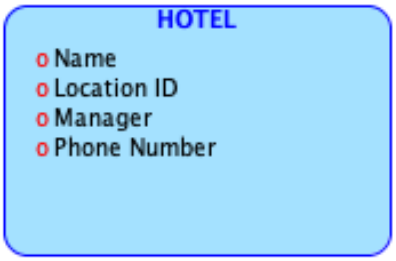
Identify and model the entities and attributes for Starlight DVD Rental. Write a brief description of each entity. Show at least two attributes for each entity. For your convenience, here is a summary of part of the business analyst's report:

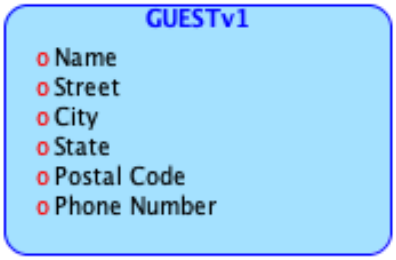
- Starlight Rentals wants to introduce memberships (Gold, Silver and Bronze).
- A membership can be for an individual customer or an organization.
- An organization may be a part of another organization
- Starlight Rentals must keep track of the reasons why memberships terminate.
- The actual fee that is paid by a member can be less than the standard fee.
- The type of membership cannot be modified. An upgrade always leads to termination of the current membership and creation of a new one.
- Memberships can be renewed annually
- A membership can start at any time and is valid for a period of a year.
- Silver and Gold memberships entitle members to privileges.
- One privilege is a type-dependent discount percentage of each rental.



Practice 6-2

Identify and model the entities in the following set of information requirements: District Hotel Manager, Sharon Ferguson, would like to manage the information that her company keeps about their hotels, guests, and rooms. Sharon is responsible for multiple hotels in various locations. Sharon would like to know what rooms she has in which hotels and what the price is for each room. She would also like to know which rooms have been reserved for a particular date by a guest.
Diagram each entity and its attributes.





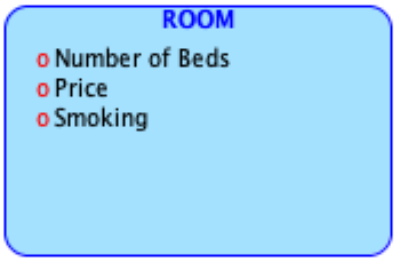


Diagram:	Logical
Author:	jthompson
Created on:	2020-05-27 16:38:38 UTC
Modified on:	2020-05-27 18:10:25 UTC
Modified by:	jthompson
Design:	ass1
Model:	Logical

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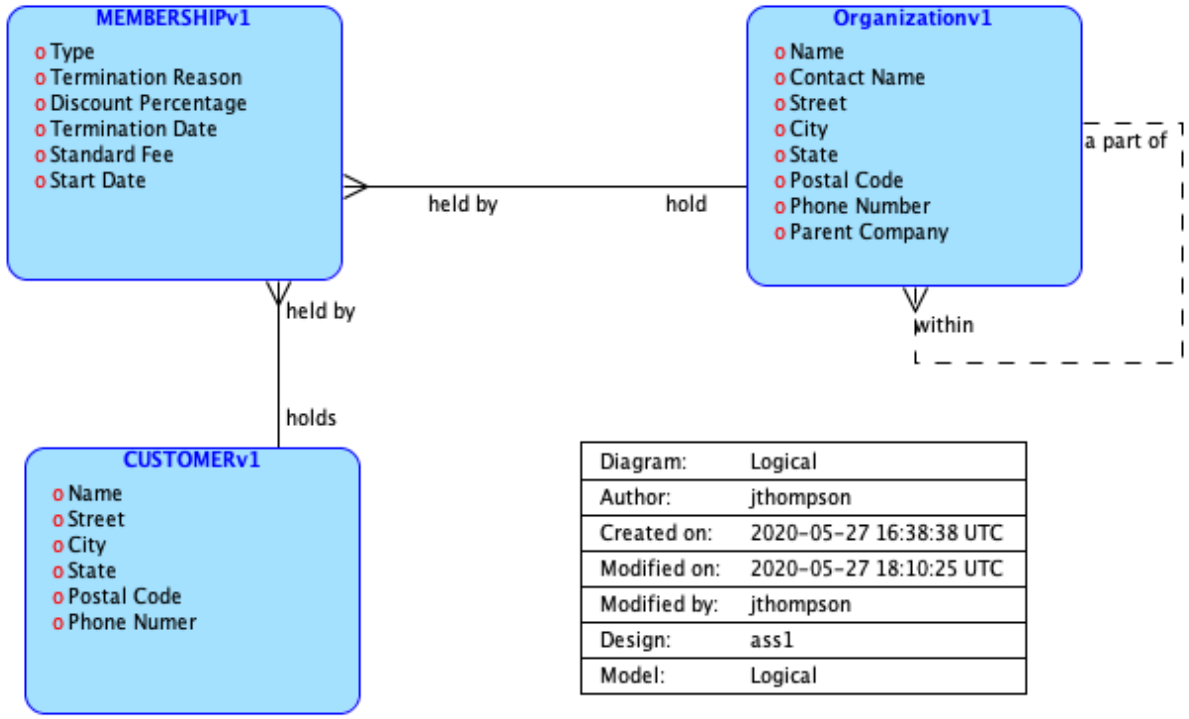
Practice 7-1

Analyze and model the relationships for the following entities, which you created in the DVD Membership practice (Practice 6-1). Use a relationship matrix to track the existence of relationships between the entities, and then draw the relationships in the diagram.

	MEMBERSHIP	ORGANIZATION	CUSTOMER
MEMBERSHIP		be held by	be held by
ORGANIZATION	hold	be part of / contained in	
CUSTOMER	hold		



Practice 7-2

Analyze and model the relationships for the following entities, which you created in Practice 6-2. Use a relationship matrix to track the existence of relationships between entities, and then draw the relationships in the diagram.

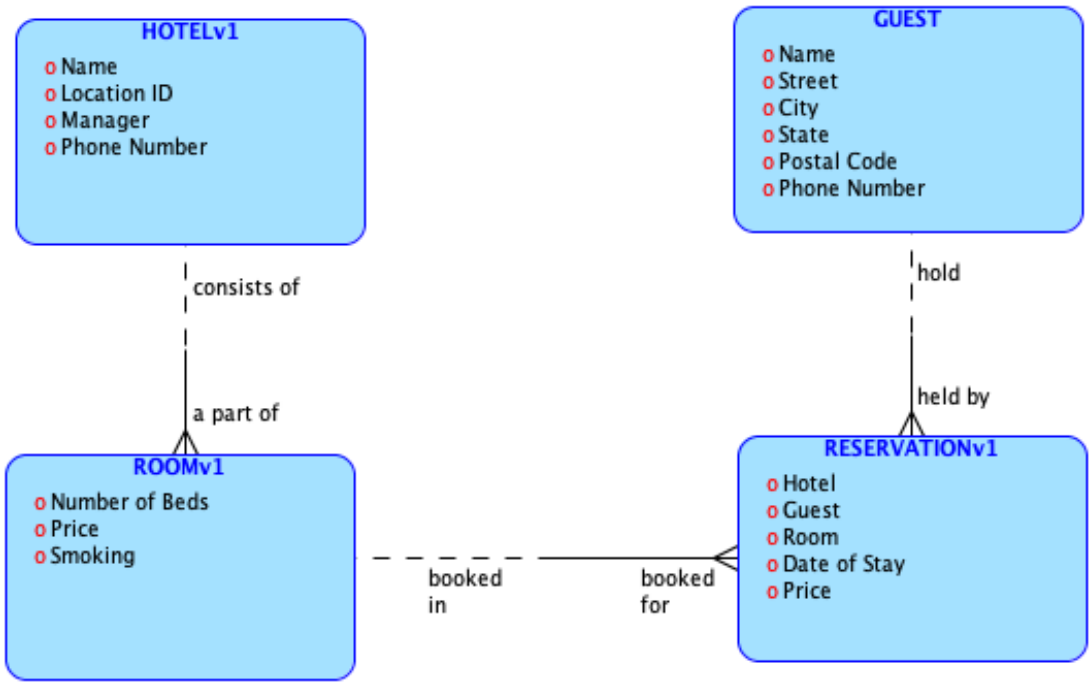


Diagram:	Logical
Author:	jthompson
Created on:	2020-05-27 16:38:38 UTC
Modified on:	2020-05-27 18:10:25 UTC
Modified by:	jthompson
Design:	ass1
Model:	Logical

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Practice 8-1

Identify the unique identifiers that you created in the DVD Membership practice (Practice 7-1).

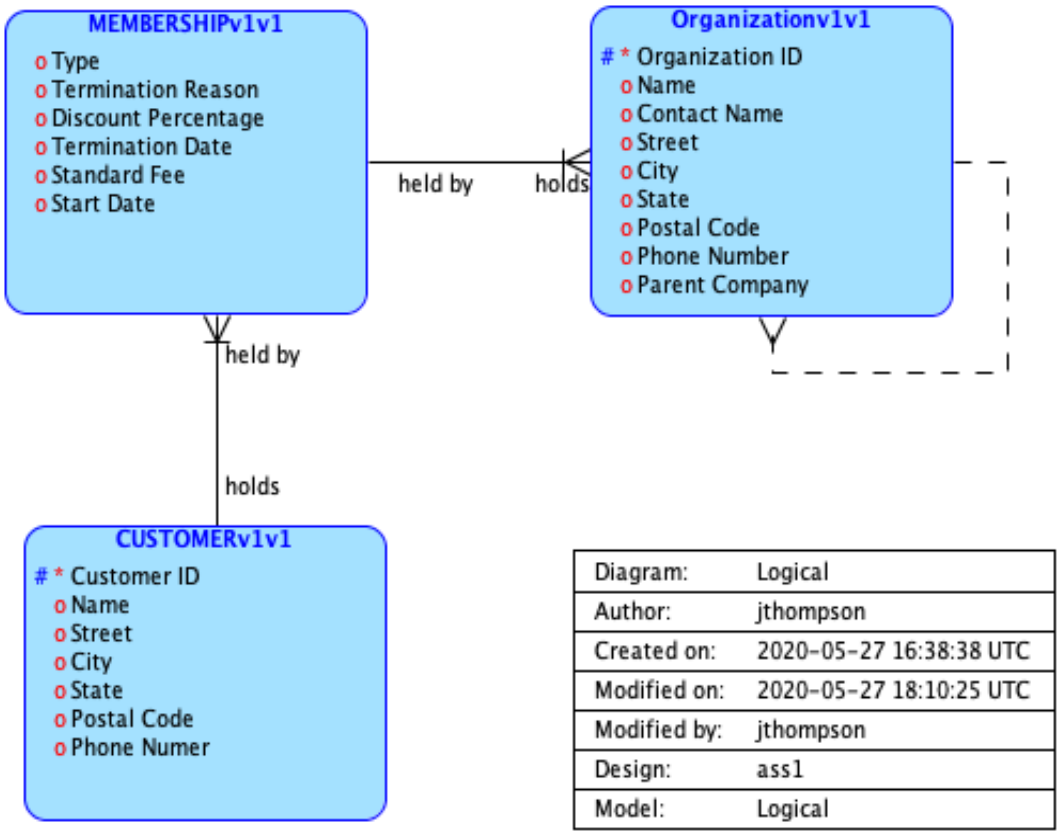

Diagram:	Logical
Author:	jthompson
Created on:	2020-05-27 16:38:38 UTC
Modified on:	2020-05-27 18:10:25 UTC
Modified by:	jthompson
Design:	ass1
Model:	Logical

Practice 8-2

Identify unique identifiers for the ERD you created in Practice 7-2.

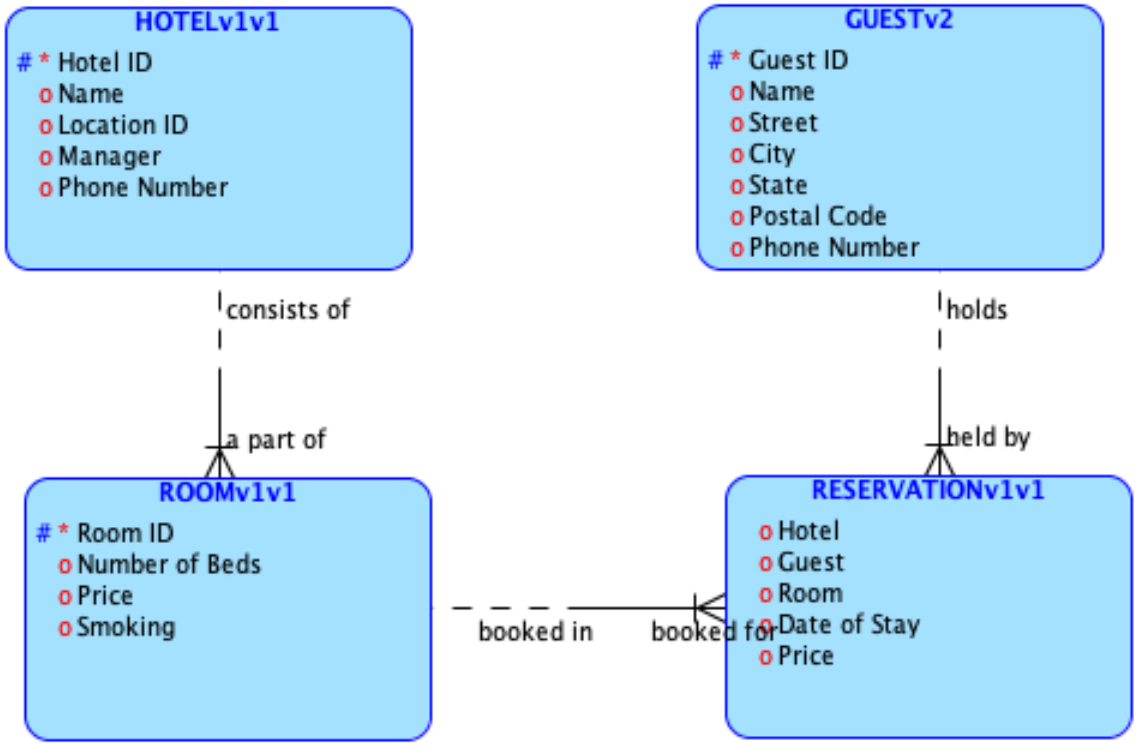

Diagram:	Logical
Author:	jthompson
Created on:	2020-05-27 16:38:38 UTC
Modified on:	2020-05-27 18:10:25 UTC
Modified by:	jthompson
Design:	ass1
Model:	Logical

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Practice 9-1

build the following ERDs in Oracle SQL Developer Data Modeler. Build a subview and display for each ERD.

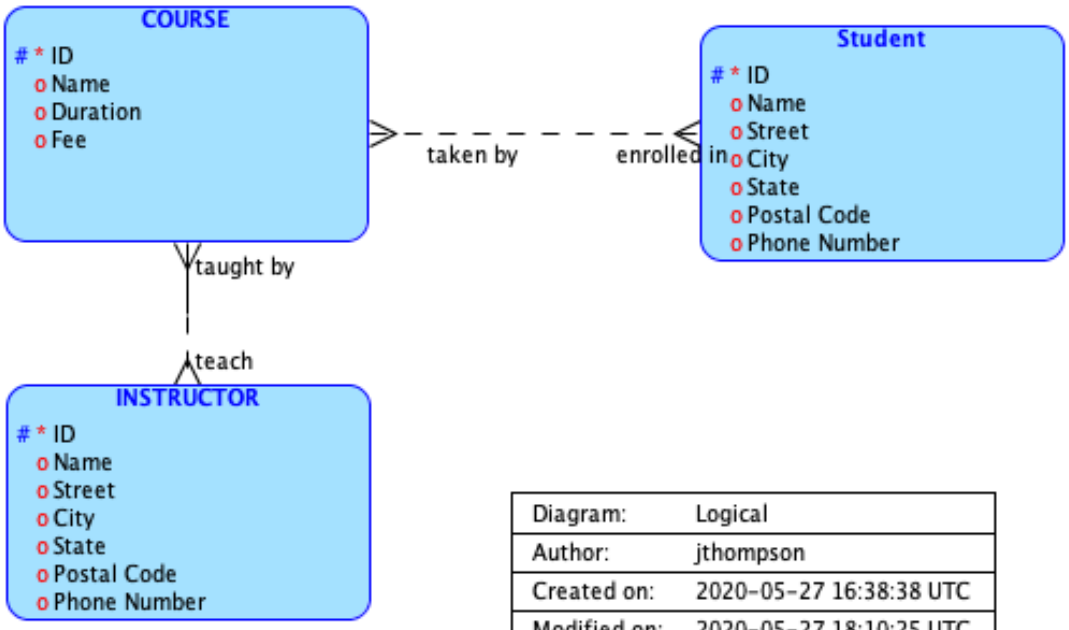

Diagram:	Logical
Author:	jthompson
Created on:	2020-05-27 16:38:38 UTC
Modified on:	2020-05-27 18:10:25 UTC
Modified by:	jthompson
Design:	ass1
Model:	Logical

Practice 10-1