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COMP 3111: Software Engineering

Lecture 7 Exercise: Movie Shop—Domain Model

- The system must be able to handle both physical and digital videos.

classes: Movie
associations:
attributes: Movie: Physical, digital
generalizations:

- It must be able to record which videos are sold and rented and by whom.

classes: Customer
associations: Customer purchases video, Customer rents video
attributes: Customer: rentedVideo
generalizations:

- For sold videos, the quantity sold should be recorded; for physical video rental, which copy is rented and when it is due back should be recorded.

classes: RentalCopy
associations: Movie has RentalCopy, Customer rents RentalCopy
attributes:
generalizations:

- The system should keep track of overdue rentals of physical videos and send email notices to customers who have videos overdue.

classes:
associations:
attributes: Customer: email
generalizations: Member is a kind of customer -> Customer generalizes Member

- There will be a customer membership option for an annual fee, which will entitle a member to discounts (10%) on the sale and rental of videos.

classes: Member
associations:
attributes:
generalizations:

- Members should be able to make reservations for physical video rentals either in person at the shop, by telephone or via the Web.

classes: RentalCopy
associations: Movie CanBeAPhysical RentalCopy, Member reserves RentalCopy
attributes:
generalizations:

- A member can reserve at most five physical videos at any one time, but there is no limit on how many physical videos a member or nonmember can rent at any one time.

classes:
associations:
attributes:
generalizations:

- As an added feature, the shop would like to allow customers (either members or nonmembers) to input, via the Web, mini-reviews (up to 100 words) and a rating (from 1, lowest, to 10, highest) of videos they have purchased or rented.

classes: Review

associations: Customer Provides Review, Review isFor Movie

attributes: Review: reviewTest, rating

generalizations:

- These reviews should be anonymous if the customer so wishes (i.e., customers can specify whether they want their name to be made known when other customers browse the reviews).

classes:

associations:

attributes: Review:anonymous

generalizations:

- A sales clerk should be able to enter and update the following information about all customers (members or nonmembers): name, address, phone number, age, sex, and email address.

classes:

associations:

attributes: Customer: name, address, phoneNumber, age, sex, email

generalizations:

- Members are assigned a membership number by the shop when they become members and a password, which allows them to change their personal information and to buy and rent digital videos via the Web.

classes:

associations:

attributes: Member: memberNumber, password

generalizations:

- The shop manager should be able to generate various reports on the sale and rental of videos.

classes:

associations:

attributes:

generalizations:

- A sales clerk should be able to sell and rent physical videos and process the return of rented physical videos.

classes:

associations:

attributes:

generalizations:

- When selling or renting physical videos, a sales clerk must be able to look up customer information and determine whether the customer is a member.

classes:

associations:

attributes:

generalizations:

- A sales clerk must be able to enter basic information about a video (i.e., video id, title, leading actor(s), director, producer, genre, synopsis, release year, running time, selling price, and rental price).

classes:

associations:

attributes:

generalizations:

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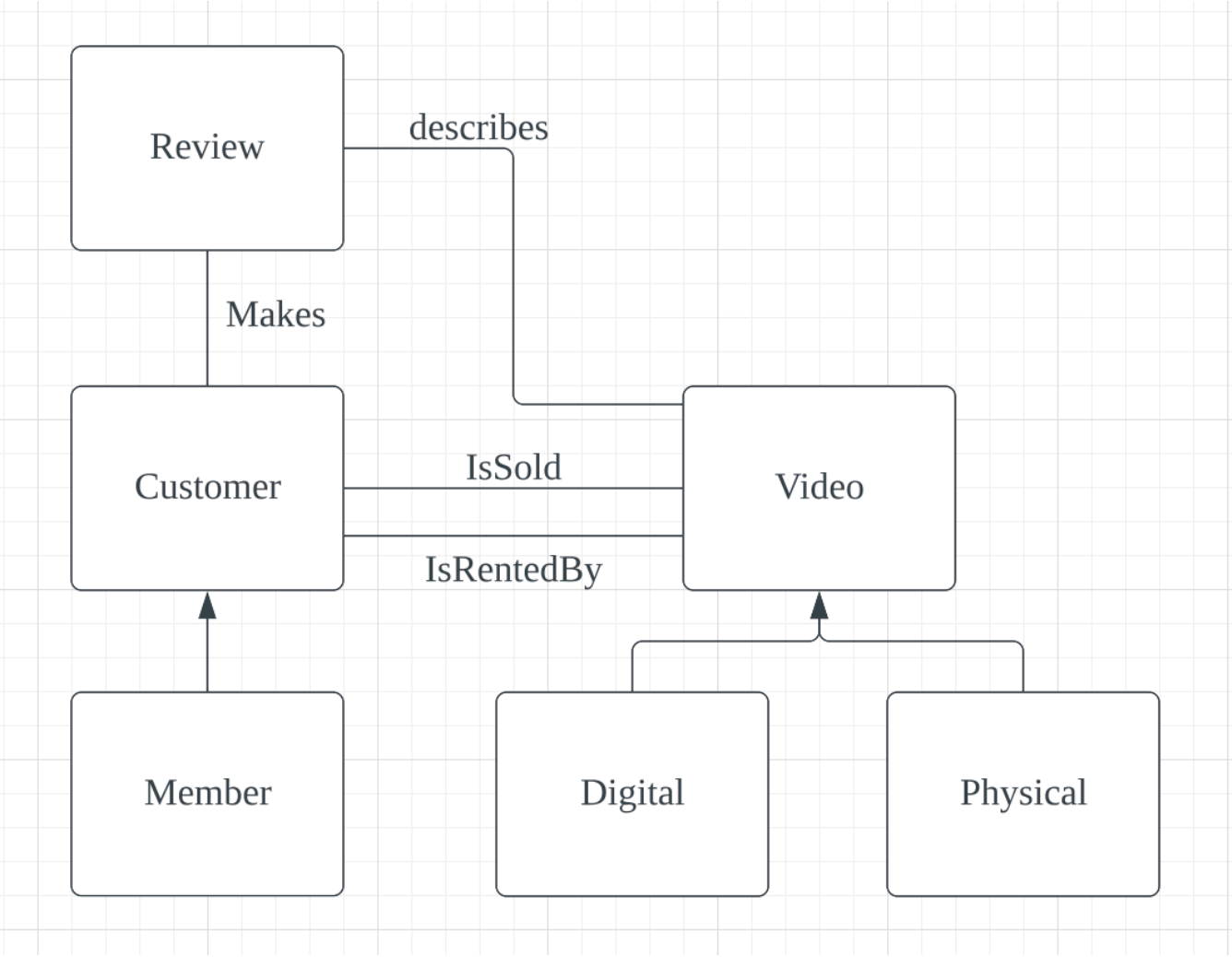
Lecture 7 Exercise: Movie Shop—Domain Model

1. On the accompanying worksheet containing the problem statement, identify all the classes, attributes, association classes, associations, generalizations and multiplicity constraints that are relevant to include in the domain model for the new system. *(Only those that are explicitly given in or implied by the requirements statement should be included.)*

2. In the space below construct a class diagram showing how the classes identified in (1) are related by associations, aggregations/ compositions and generalizations. Show the *most likely multiplicities for all associations*, making reasonable assumptions where necessary. If a multiplicity cannot be inferred from the requirements statement or common real-world domain knowledge, then indicate this with a "?".

Do not show the attributes of the classes in the class diagram.



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Lecture 7 Exercise: Movie Shop—Domain Model

In the space below construct the class diagram resulting from your discussion with another group.