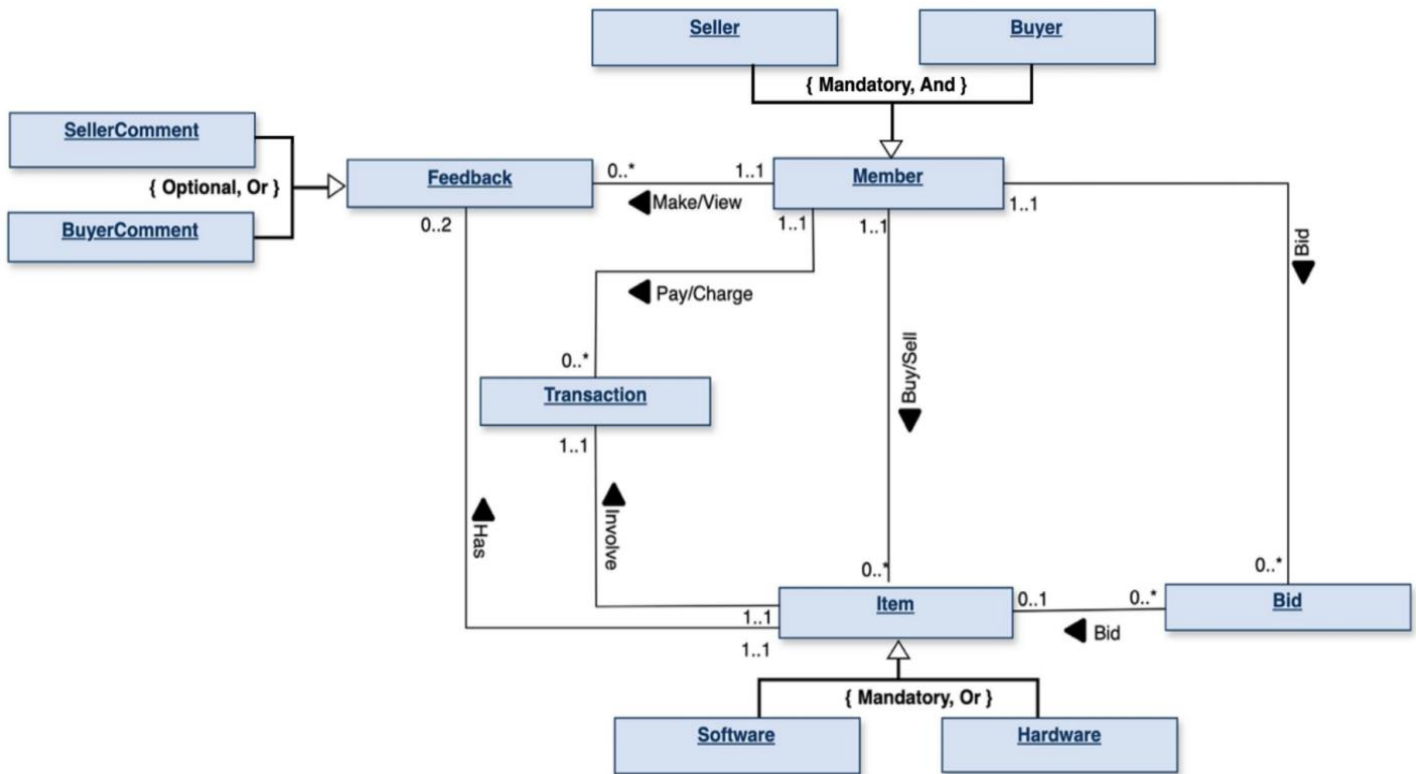


**CSCI – 6623 DATABASE SYSTEMS****Project Phase 1 Requirements (Due July 1, 2024)****Banking Database:**

Consider the operations of an online auction company that offers members the opportunity to buy and sell computer-related hardware and software items. The seller lists the item for sale. A description of the item, along with the starting price and bid increments, is specified by the seller. Various other information, such as shipping mode and charges, category of the item, when the auction ends, and so on, is also provided at the time of the listing. Buyers make bids for the items they are interested in buying. The person placing the highest bid at the time of the end of the auction is declared the winner and a transaction between the buyer and seller may proceed soon after. Buyers and sellers can leave feedback regarding their experience with a purchase or sale on the system. This feedback is available for every member to view.

1. Create the various tables based on the above requirements.



1. MemberTable

Field	Description	Data Type
memberId	The unique identifier for the member.	INT(Primary Key)
type	The type of member, such as buyer or seller.	VARCHAR
name	The full name of the member, typically broken down into first and last name.	Composite
- firstName	The first name of the member.	VARCHAR
- lastName	The last name of the member.	VARCHAR

userName	The username chosen by the member for login.	VARCHAR
password	The member's password for authentication.	VARCHAR
email	The member's email address.	VARCHAR
phone	The member's phone number.	VARCHAR
createdDate	The date when the member account was created.	DATE
address	The full address of the member, typically broken down into street, city, and postcode.	Composite
- street	The street address of the member.	VARCHAR
- city	The city of the member's address.	VARCHAR
- postcode	The postcode of the member's address.	VARCHAR

2. FeedbackTable

Field	Description	Data Type
feedbackId	The unique identifier for the feedback.	INT(Primary Key)
memberId	The foreign key linking to the Member table.	INT(Foreign Key)
sellerCommentId	The foreign key linking to the Seller's comment.	INT(Foreign Key)
buyerCommentId	The foreign key linking to the Buyer's comment.	INT(Foreign Key)
itemId	The foreign key linking to the Item table.	INT(Foreign Key)

3. ItemTable

Field	Description	Data Type
itemId	The unique identifier for the item.	INT(Primary Key)
category	The category to which the item belongs.	VARCHAR
description	A description of the item.	VARCHAR
listingTime	The time when the item was listed.	DATETIME
startTime	The start time for the item's availability.	DATETIME

endTime	The end time for the item's availability.	DATETIME
startingPrice	The initial price of the item.	DECIMAL
bidIncrement	The increment by which bids must increase.	DECIMAL
shippingMode	The mode of shipping available for the item.	VARCHAR
shippingCharge	The charge for shipping the item.	DECIMAL
memberId	The foreign key linking to the Member table.	INT (Foreign Key)
transactionId	The foreign key linking to the Transaction table.	INT (Foreign Key)
feedbackId	The foreign key linking to the Feedback table.	INT (Foreign Key)

4. BidTable

Field	Description	Data Type
bidId	The unique identifier for the bid.	INT (Primary Key)
bidTime	The timestamp when the bid was placed.	DATETIME
bidPrice	The price offered in the bid.	DECIMAL
itemId	The foreign key linking to the Item table.	INT (Foreign Key)
memberId	The foreign key linking to the Member table.	INT (Foreign Key)

5. TransactionTable

Field	Description	Data Type
transactionId	The unique identifier for the transaction.	INT (Primary Key)
transactionTime	The timestamp when the transaction occurred.	DATETIME
transactionPrice	The price at which the transaction was completed.	DECIMAL
biddersNumber	The number of bidders involved in the transaction.	INT
bidsNumber	The number of bids placed in the transaction.	INT

itemId	The foreign key linking to the Item table.	INT (Foreign Key)
memberId	The foreign key linking to the Member table.	INT (Foreign Key)

6. SellerTable

Field	Description	Data Type
sellerId	The unique identifier for the seller.	INT (Primary Key)
sellitemList	A list of items the seller has listed.	VARCHAR
memberId	The foreign key linking to the Member table.	INT (Foreign Key)

7. BuyerTable

Field	Description	Data Type
buyerId	The unique identifier for the buyer.	INT(Primary Key)
purchaseList	A list of items the buyer has purchased.	VARCHAR
paymentMethod	The method used by the buyer for payment.	VARCHAR
memberId	The foreign key linking to the Member table.	INT (Foreign Key)

8. SellerCommentTable

Field	Description	Data Type
sellerCommentId	The unique identifier for the seller's comment.	INT(Primary Key)
sellerCommentTime	The timestamp when the comment was made.	DATETIME
sellerCommentText	The content of the seller's comment.	VARCHAR
feedbackId	The foreign key linking to the Feedback table.	INT(Foreign Key)

9. BuyerCommentTable

Field	Description	Data Type
buyerCommentId	The unique identifier for the buyer's comment.	INT(Primary Key)
buyerCommentText	The content of the buyer's comment.	VARCHAR
buyerCommentTime	The timestamp when the comment was made.	DATETIME
feedbackId	The foreign key linking to the Feedback table.	INT (Foreign Key)

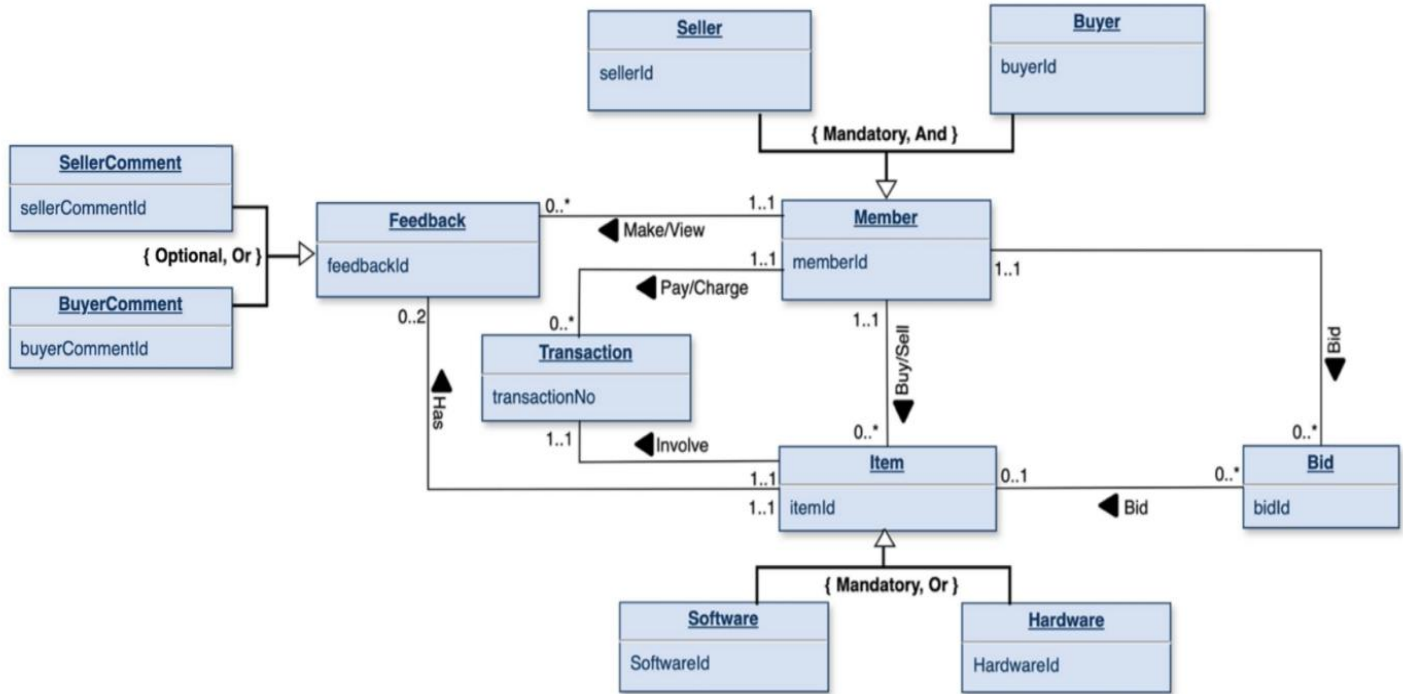
10. SoftwareTable

Field	Description	Data Type
softwareId	The unique identifier for the software item.	INT (Primary Key)
softwareVersion	The version number of the software.	VARCHAR
licenseKey	The license key for the software.	VARCHAR
supportedPlatforms	The platforms the software supports.	VARCHAR
developer	The developer or company that created the software.	VARCHAR

11. HardwareTable

Field	Description	Data Type
hardwareId	The unique identifier for the hardware item.	INT (Primary Key)
brand	The brand of the hardware.	VARCHAR
model	The model number of the hardware.	VARCHAR
specifications	The technical specifications of the hardware.	VARCHAR
warrantyPeriod	The warranty period for the hardware.	Composite
- startTime	The warranty start time for the hardware.	VARCHAR
- endTime	The warranty end time for the hardware.	VARCHAR
serialNumber	The serial number of the hardware.	VARCHAR

2. Include the various keys and constraints for the various tables.



1. MemberTable

Field	Description	Data Type	Nulls	Multi-valued
memberId	The unique identifier for the member.	INT(Primary Key)	No	No
type	The type of member, such as buyer or seller.	VARCHAR	No	Yes
name	The full name of the member, typically broken down into first and last name.	Composite	No	No
- firstName	The first name of the member.	VARCHAR	No	No
- lastName	The last name of the member.	VARCHAR	No	No

userName	The username chosen by the member for login.	VARCHAR	No	No
password	The member's password for authentication.	VARCHAR	No	No
email	The member's email address.	VARCHAR	No	No
phone	The member's phone number.	VARCHAR	Yes	No
createdDate	The date when the member account was created.	DATE	No	No
address	The full address of the member, typically broken down into street, city, and postcode.	Composite	No	No
- street	The street address of the member.	VARCHAR	No	No
- city	The city of the member's address.	VARCHAR	No	No
- postcode	The postcode of the member's address.	VARCHAR	No	No

2. FeedbackTable

Field	Description	Data Type	Nulls	Multi-valued
feedbackId	The unique identifier for the feedback.	INT(Primary Key)	No	No
sellerCommentId	The foreign key linking to the Seller's comment.	INT(Foreign Key)	No	No
buyerCommentId	The foreign key linking to the Buyer's comment.	INT(Foreign Key)	No	No
itemId	The foreign key linking to the Item table.	INT(Foreign Key)	No	No

3. ItemTable

Field	Description	Data Type	Nulls	Multi-valued
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itemId	The unique identifier for the item.	INT(Primary Key)	No	No
category	The category to which the item belongs.	VARCHAR	No	No
description	A description of the item.	VARCHAR	Yes	No
listingTime	The time when the item was listed.	DATETIME	No	No
startTime	The start time for the item's availability.	DATETIME	No	No
endTime	The end time for the item's availability.	DATETIME	No	No
startingPrice	The initial price of the item.	DECIMAL	No	No
bidIncrement	The increment by which bids must increase.	DECIMAL	No	No
shippingMode	The mode of shipping available for the item.	VARCHAR	No	No
shippingCharge	The charge for shipping the item.	DECIMAL	No	No
memberId	The foreign key linking to the Member table.	INT (Foreign Key)	No	No
transactionId	The foreign key linking to the transaction table.	INT (Foreign Key)	No	No
feedbackId	The foreign key linking to the feedbackId table.	INT (Foreign Key)	No	No

4. BidTable

Field	Description	Data Type	Nulls	Multi-valued
bidId	The unique identifier for the bid.	INT (Primary Key)	No	No
bidTime	The timestamp when the bid was placed.	DATETIME	No	No
bidPrice	The price offered in the bid.	DECIMAL	No	No

itemId	The foreign key linking to the Item table.	INT (Foreign Key)	No	No
memberId	The foreign key linking to the Member table.	INT (Foreign Key)	No	No

5. TransactionTable

Field	Description	Data Type	Nulls	Multi-valued
transactionId	The unique identifier for the transaction.	INT (Primary Key)	No	No
transactionTime	The timestamp when the transaction occurred.	DATETIME	No	No
transactionPrice	The price at which the transaction was completed.	DECIMAL	No	No
biddersNumber	The number of bidders involved in the transaction.	INT	No	No
bidsNumber	The number of bids placed in the transaction.	INT	No	No
itemId	The foreign key linking to the Item table.	INT (Foreign Key)	No	No
memberId	The foreign key linking to the Member table.	INT (Foreign Key)	No	No

6. SellerTable

Field	Description	Data Type	Nulls	Multi-valued
sellerId	The unique identifier for the seller.	INT (Primary Key)	No	No
sellitemList	A list of items the seller has listed.	VARCHAR	No	No
memberId	The foreign key linking to the Member table.	INT (Foreign Key)	No	No

7. BuyerTable

Field	Description	Data Type	Nulls	Multi-valued
buyerId	The unique identifier for the buyer.	INT(Primary Key)	No	No
memberId	The foreign key linking to the Member table.	INT (Foreign Key)	Yes	No
purchaseList	A list of items the buyer has purchased.	VARCHAR	Yes	No
paymentMethod	The method used by the buyer for payment.	VARCHAR	No	No

8. SellerCommentTable

Field	Description	Data Type	Nulls	Multi-valued
sellerCommentId	The unique identifier for the seller's comment.	INT(Primary Key)	No	No
sellerComment	The content of the seller's comment.	VARCHAR	Yes	No
sellerCommentTime	The timestamp when the comment was made.	DATETIME	Yes	No
feedbackId	The foreign key linking to the Feedback table.	INT(Foreign Key)	No	No

9. BuyerCommentTable

Field	Description	Data Type	Nulls	Multi-valued
buyerCommentId	The unique identifier for the buyer's comment.	INT(Primary Key)	No	No
buyerCommentText	The content of the buyer's	VARCHAR	No	No

	comment.			
buyerCommentTime	The timestamp when the comment was made.	DATETIME	No	No
feedbackId	The foreign key linking to the Feedback table.	INT (Foreign Key)	No	No

10. SoftwareTable

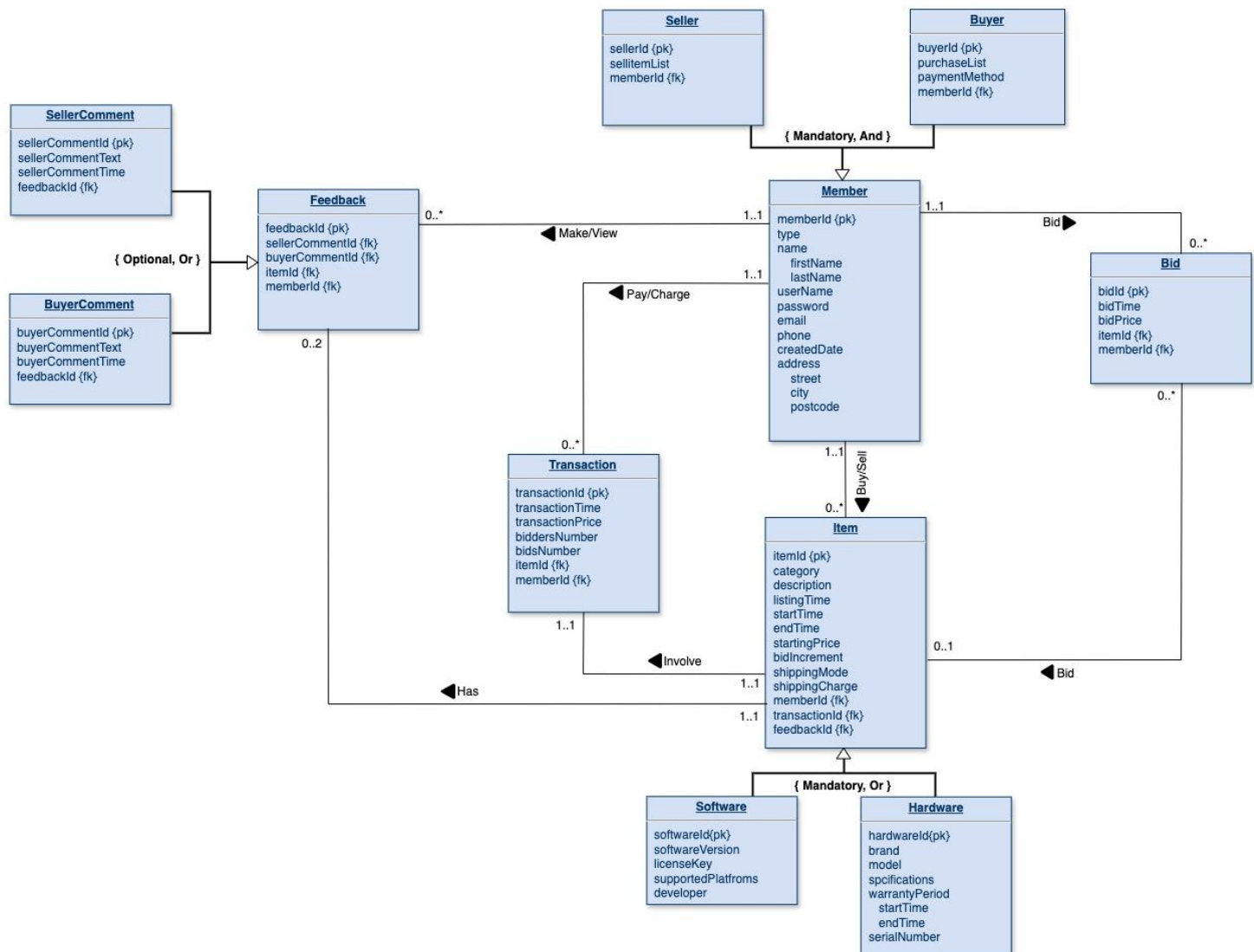
Field	Description	Data Type	Nulls	Multi-valued
softwareId	The unique identifier for the software item.	INT (Primary Key)	No	No
softwareVersion	The version number of the software.	VARCHAR	No	No
licenseKey	The license key for the software.	VARCHAR	No	No
supportedPlatforms	The platforms the software supports.	VARCHAR	No	Yes
developer	The developer or company that created the software.	VARCHAR	No	No

11. HardwareTable

Field	Description	Data Type	Nulls	Multi-valued
hardwareId	The unique identifier for the hardware item.	INT (Primary Key)	No	No
brand	The brand of the hardware.	VARCHAR	No	No
model	The model number of the hardware.	VARCHAR	No	No
specifications	The technical specifications of the hardware.	VARCHAR	No	No
warrantyPeriod	The warranty period for the hardware.	VARCHAR	No	No
- startTime	The warranty start time for the	VARCHAR	No	No

	hardware.			
- endTime	The warranty end time for the hardware.	VARCHAR	No	No
serialNumber	The serial number of the hardware.	VARCHAR	No	No

3. Design the database based on the above requirements using EER model.



4. Draw the various EER diagrams showing generalization/specialization.

