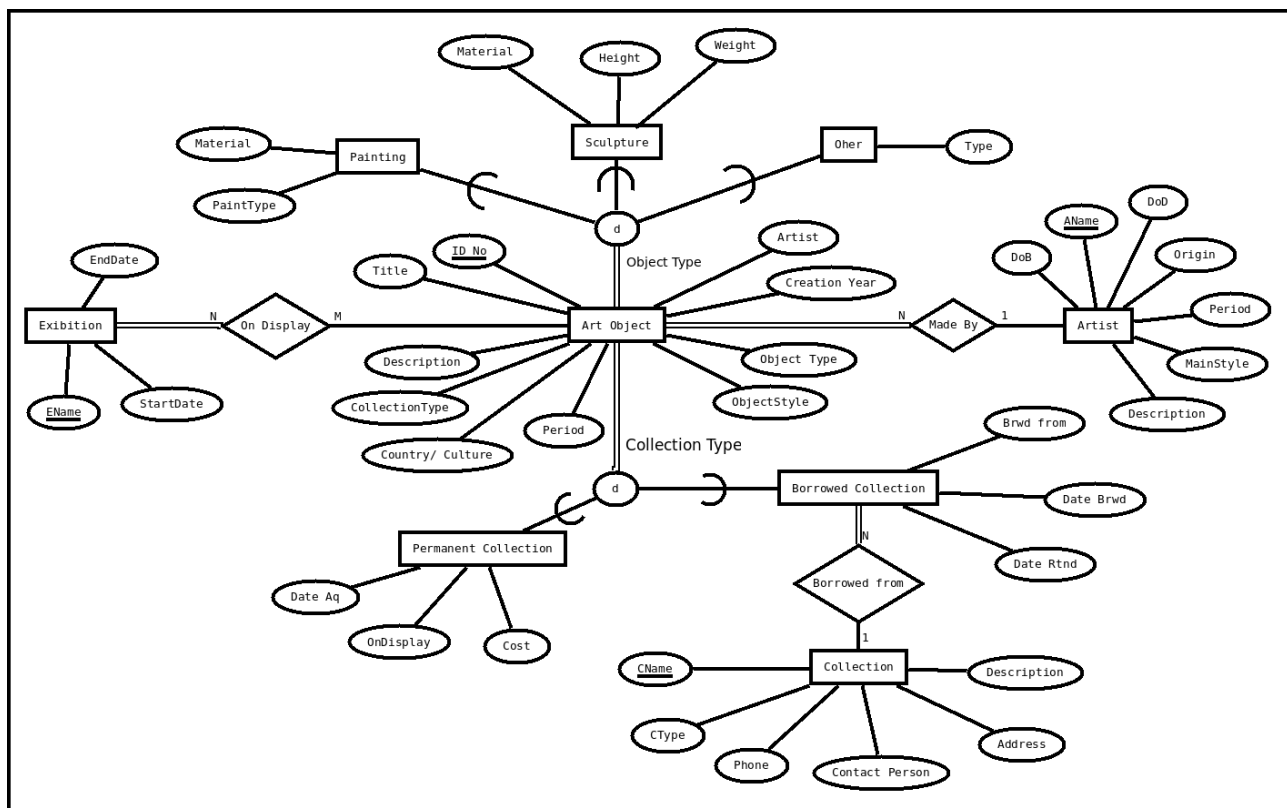The University of Texas at Dallas
Database Design – Prof. Nurcan, Yuruk
<u>**Assignment 01**</u>

1. Museum Application -

Assumptions:

1. BORROWED COLLECTION are bought from COLLECTION.

2. SCULPTURE contains information of both Sculptures and Statues (as thet dont have any distinguishing attribute).

3. Each ART OBJECT is made by a single ARTIST. Or simply, artists won't work together on the same art object.

4. Included two attributes in ART OBJECTS – Object Type and Collection Type to state the type of art object accordingly.

5. Included Object Style as an attribute too, in order to mention style of each object type (as it was a common attribute of all sub-classes in Object type specialization).

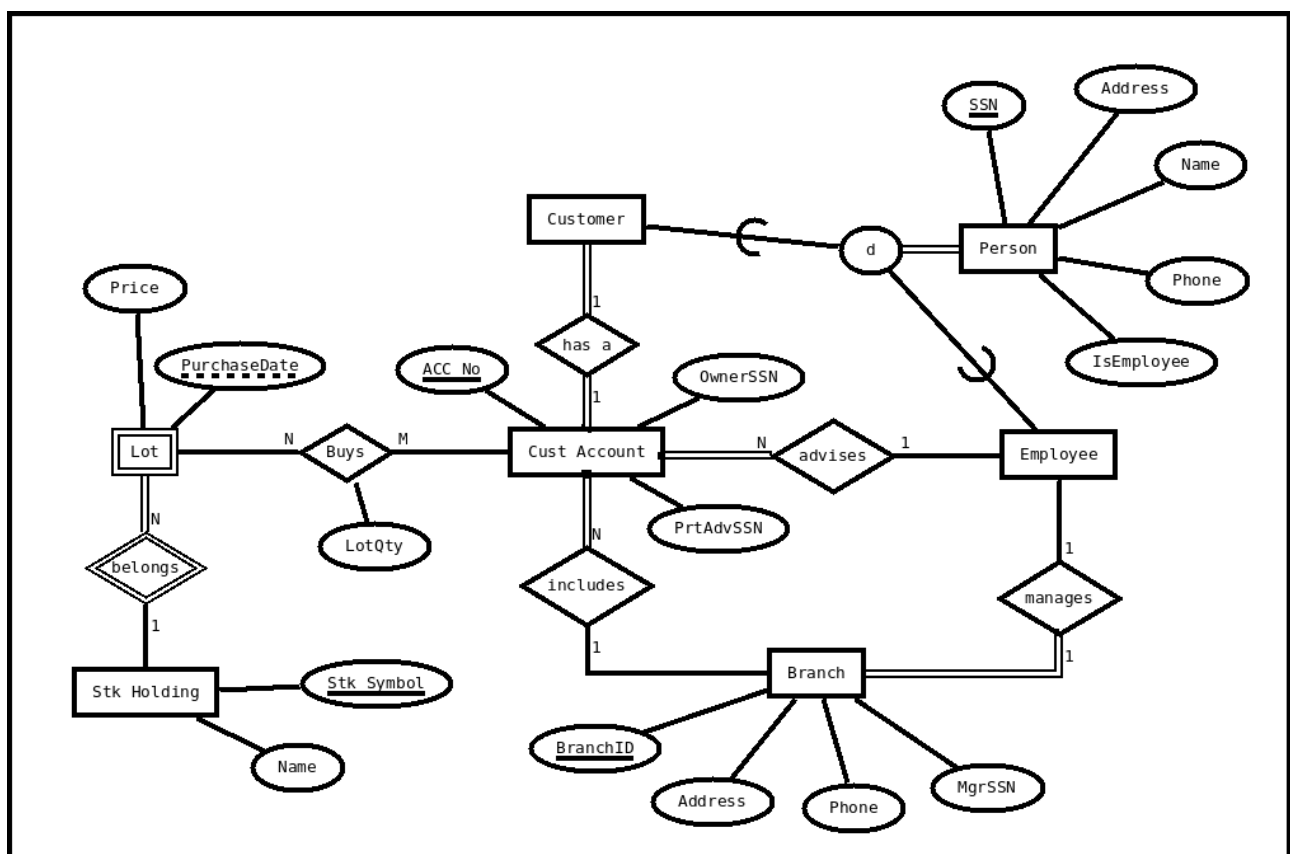6. Underlined attributes are assumed to be unique, if not mentioned in the problem.

EER:

2. EER for an Investment Company -

Assumptions:
1. At the time of purchase from a customer account, one would buy according to the lots available of a particular stock.

2. So, Lot is assumed to be the weak entity with an identifying relation to the Stock Holding.

3. Quantity for Stock Holding entity is an derived attribute from the LotQuantity of Lot entity.

4. Purchase Date is a partial key for Lot entity.

5. IsEmployee is a boolean type attribute for stating a person as an employee or else.

6. There is exactly one Manager for a Branch.

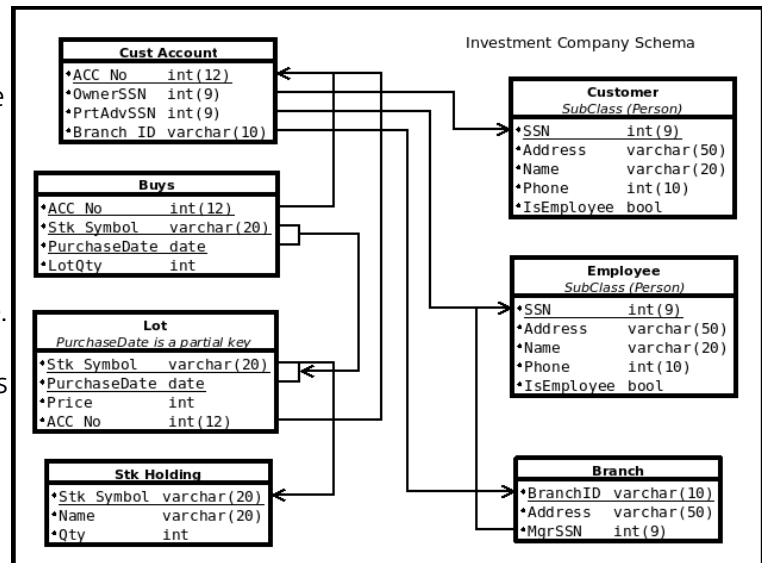7. Underlined attributes are assumed to be unique, if not mentioned in the problem.

EER:

3. Relational model for problem 2.

Relational Schema:
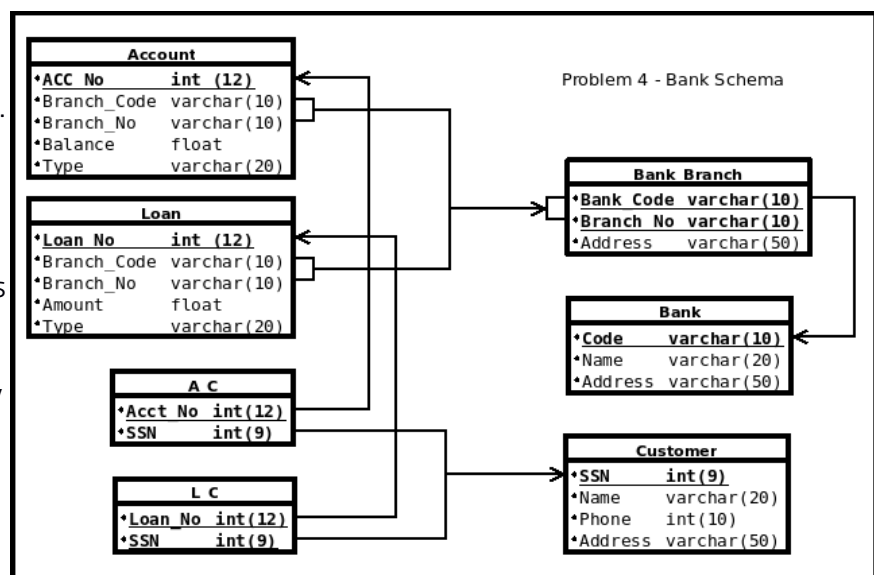
Assumptions:
1. Person to Customer or Employee specialization is modeled as 8B, as it is a total participating specialization.

2. Partial key of Table Lot is mentioned as a <bold> attribute.

3. Qty is derived from LotQty and is shown by a dotted arrow.

Investment Company Schema

Cust Account
- ◆ACC_No   int(12)
- ◆OwnerSSN   int(9)
- ◆PrtAdvSSN int(9)
- ◆Branch_ID varchar(10)

Buys
- ◆ACC_No   int(12)
- ◆Stk_Symbol   varchar(20)
- ◆PurchaseDate date
- ◆LotQty   int

Lot
PurchaseDate is a partial key
- ◆Stk_Symbol   varchar(20)
- ◆PurchaseDate date
- ◆Price   int
- ◆ACC_No   int(12)

Stk Holding
- ◆Stk_Symbol varchar(20)
- ◆Name   varchar(20)
- ◆Qty   int

Customer
SubClass (Person)
- ◆SSN   int(9)
- ◆Address   varchar(50)
- ◆Name   varchar(20)
- ◆Phone   int(10)
- ◆IsEmployee bool

Employee
SubClass (Person)
- ◆SSN   int(9)
- ◆Address   varchar(50)
- ◆Name   varchar(20)
- ◆Phone   int(10)
- ◆IsEmployee bool

Branch
- ◆BranchID   varchar(10)
- ◆Address   varchar(50)
- ◆MgrSSN   int(9)

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4. Ralational database schema:

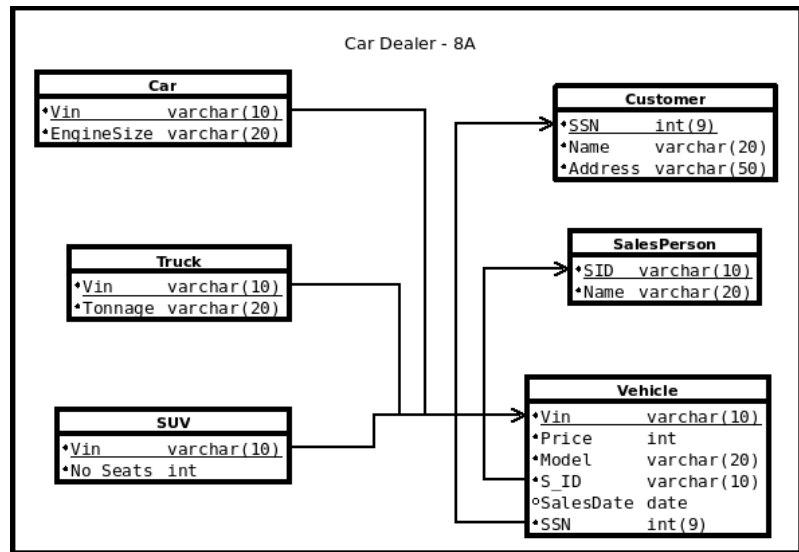### Assumptions:
1. <bold> & <underline> attributes are primary key of the the relations.

2. All the arrows show a foreign key reference.

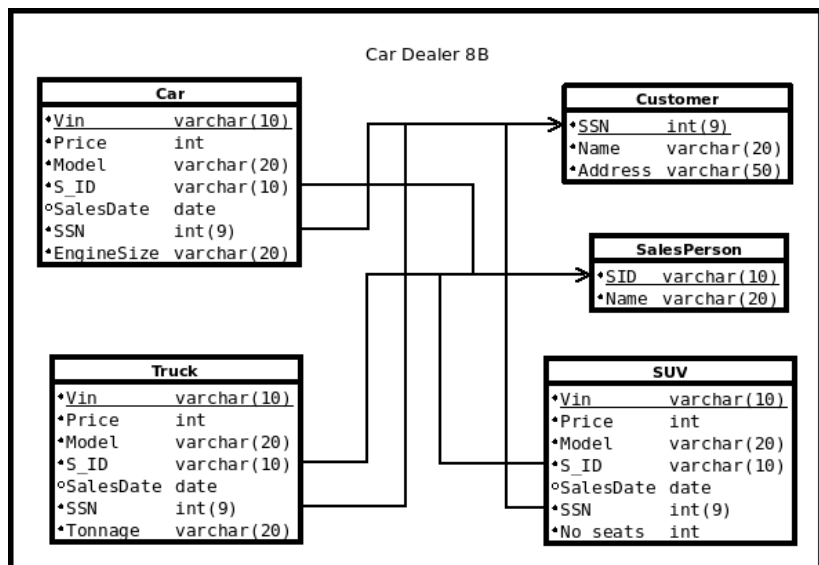3. A_C and L_C has SSN as it's one of the component of Primary Key (may not be clearly visible).

Problem 4 - Bank Schema

Account
- ◆ACC_No   int (12)
- ◆Branch_Code   varchar(10)
- ◆Branch_No   varchar(10)
- ◆Balance   float
- ◆Type   varchar(20)

Loan
- ◆Loan_No   int (12)
- ◆Branch_Code   varchar(10)
- ◆Branch_No   varchar(10)
- ◆Amount   float
- ◆Type   varchar(20)

A_C
- ◆Acct_No int(12)
- ◆SSN   int(9)

L_C
- ◆Loan_No int(12)
- ◆SSN   int(9)

Bank Branch
- ◆Bank_Code varchar(10)
- ◆Branch_No varchar(10)
- ◆Address   varchar(50)

Bank
- ◆Code   varchar(10)
- ◆Name   varchar(20)
- ◆Address varchar(50)

Customer
- ◆SSN   int(9)
- ◆Name   varchar(20)
- ◆Phone   int(10)
- ◆Address varchar(50)
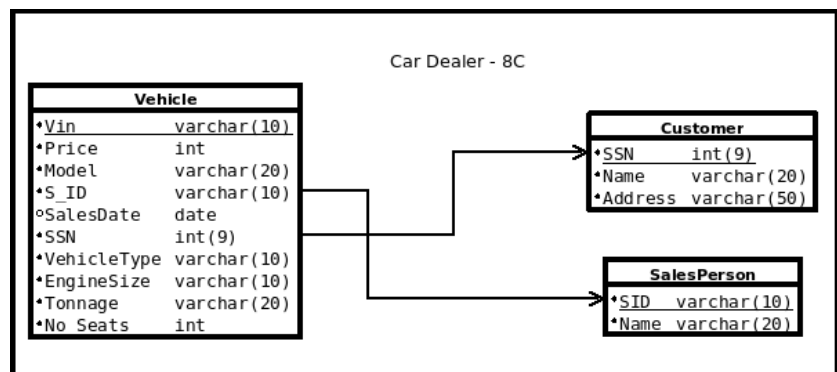
5. Relational Schema design for 4 options -

1. 8A Design:

2. 8B Design:

3. 8C Design:

4. 8D Design: