CSC343 Worksheet 14 Solution

July 8, 2020

1.

Correct Solution:

Notes:

- E/R Model
    - Means **Entity Relationship Model**
    - Entity Relationship Model(ER Modeling) is a graphical approach to database design.
    - Is comparable to class diagram in UML
    - Uses three principle element types:
        1. Entity sets
            * Is an abstract object of some sort (i.e. entitiy)
            * Is not used to represent class
            * Is represented by rectangles

2. Attributes
   * Are properties of entities in a set (i.e. column name)
   * Each has its own primitive data types (e.g. String, integers, Reals)
   * Is represented by ovals

3. Relationships
   * Are connections among two or more entity sets (e.g. intermediary Relations like Stars In)
   * Is represented by diamond

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Example:

Bars sell some beers.

Drinkers like some beers.

Drinkers frequent some bars.

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- Multiway Relationships

    - Connects more than two relationship sets
    - Enables to represent relationships that otherwise is difficult in binary relationship
    - Arrow → 'one'
    - No arrow → 'many'

Example:

Bar	Drinker	Beer
Joe's Bar	Ann	Miller
Sue's Bar	Ann	Bud
Sue's Bar	Ann	Pete's Ale
Joe's Bar	Bob	Bud
Joe's Bar	Bob	Miller
Joe's Bar	Cal	Miller
Sue's Bar	Cal	Bud Lite

Example 2:

Figure 4.4: A three-way relationship

- Roles in Relationships
  - Is the label of edges between the entity set and relationship
  - Are used to clarify the sementics of relationship

Example:

Figure 4.5: A relationship with roles

Example 2:

This means for each combination of stars and movies, there can be a one stduio for star, and one studio for movie

Has columns (Studio of Star, Studio of Movies, Stars, Movies)

Figure 4.6: A four-way relationship

- Attributes on Relationships
  - can be thought as a property of tuples in the relationship set (i.e. String, Integer, Float, Boolean)

    Example:

Price is a function of both the bar and the beer, not of one alone.

attribute

Bar	Beers	Price
Bar 1	Canadian	10.99
Bar 2	Budwiser	20.99
Bar 1	Hite	4.99
Bar 1	Cass	15.99

  - Can be removed by creating an entity set with the attribute

    Example:

- Conversting Multiway Relationships to Binary

    Example:

- Subclasses in the E/R Model
    - Has its own special attributes and/or relationships
    - All '*isa*' relationship is <u>one to one</u>
    - Is represented by triangle with label '*isa*' followed by entity set

    Example:
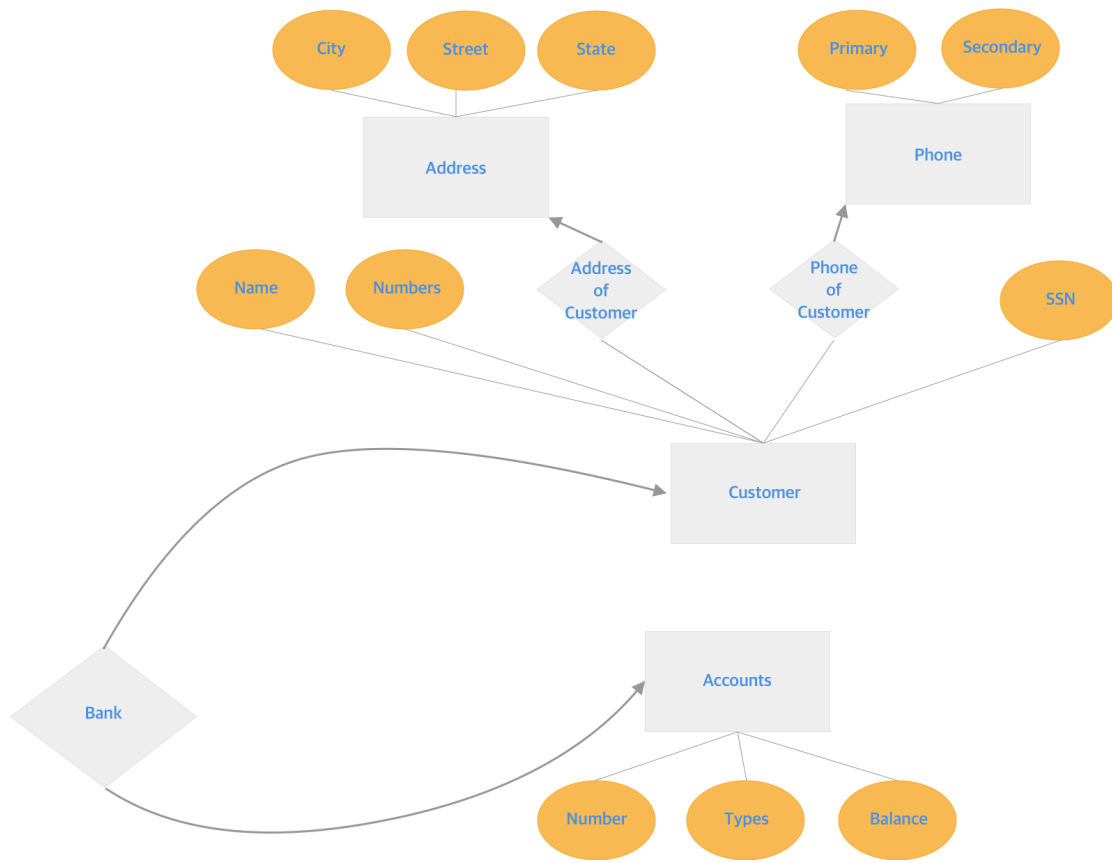
subclasses

2. a)

Correct Solution:

Name Numbers Address Phone SSN

Customer of

Customer

Bank

account of

Accounts

Number Types Balance

Name Numbers Address Phone SSN

account of

Customer

Accounts

customer of

Number Types Balance

b)

Correct Solution:

c)

Correct Solution:

City   Street   State   Primary   Secondary

Phone
of
Address ─────────────────────────────► Phone

Name   Numbers   Address   Phone   SSN
                   of   of
                   Customer   Customer

Customer

Bank

Accounts

Number   Types   Balance

d)

Correct Solution:

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3.

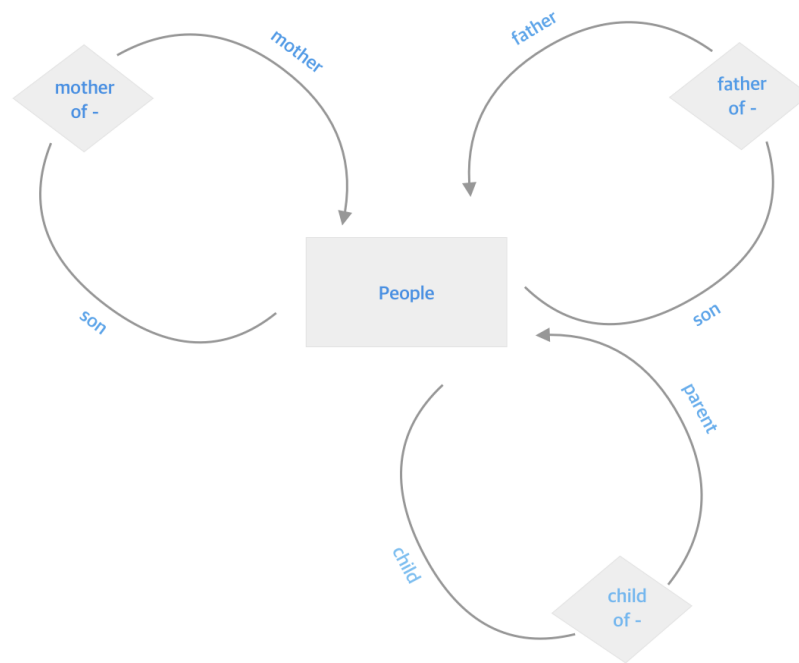**Correct Solution**

4. a)

b)

c) They are the same. (I need more work on providing reason).

Notes:

- I should ask professor about this :'(

5.

6.

Correct Solution: