

1(a) When translating an E - R model into a series of tables, if two entities have a 1:1 relationship, describe the resulting tables and keys.

Example: Suppose there is a 1:1 relationship between a person(ID, Name) and his dog (DogID, Name) (dogs have 1 owner, owners have 1 dog). In this situation, there are 3 possibilities:

1. Create one table having both entities.

a. There will be one primary key.

<u>ID (primary key)</u>	Name	DogID	Name
P1	Avneet	D1	Sparky

2. (and 3) Create two tables, 1 for each entity.

a. One table would have both primary key and foreign key.

b. The second table would only have a primary key. The foreign key in the previous table would indicate the primary key of the second table.

c. Which table should have the foreign key may depend on the relationship semantic

<u>ID</u>	Name	DogID
P1	Avneet	D1

<u>DogID</u>	Breed
D1	Sparky

Or

<u>ID</u>	Name
P1	Avneet

<u>DogID</u>	Breed	OwnerID
D1	Sparky	P1

(b) If translating two entities, A and B with MANY: MANY relationship into tables, will both tables A and B have each other's primary key as an attribute?

Tables A and B cannot have each other's primary key as an attribute because the query languages do not support many-to-many relationships.

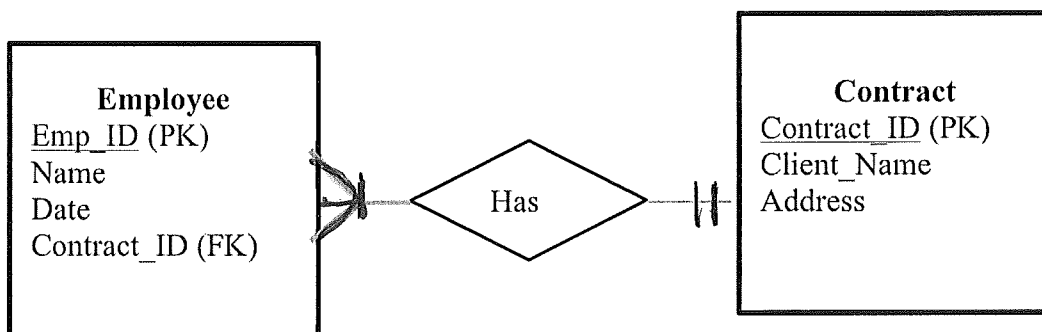
In order to translate a MANY-to-MANY relationships into tables, the following three tables would be created:

1. Table A For Entity A
2. Table B For Entity B
3. A relationship table with a composite primary key, i.e., primary key from both tables

(c) In a 1:1 relationship, when (if ever) is it highly desirable to create three tables for two entities?

- Because there is a direct relationship between an instance of 1 entity and an instance of the other entity, there is no need to have a 3rd table to represent the relationship between them.

2. Construct an E-R diagram for a cleaning company database where an employee can work on only one cleaning contract at any given time, while many employees can participate in a cleaning contract at the same time. Convert the E-R into tables. (1 to many relationship, put the key of the entity on the one side of the relationship as the foreign key in the table for the entity on the many side of the relationship)



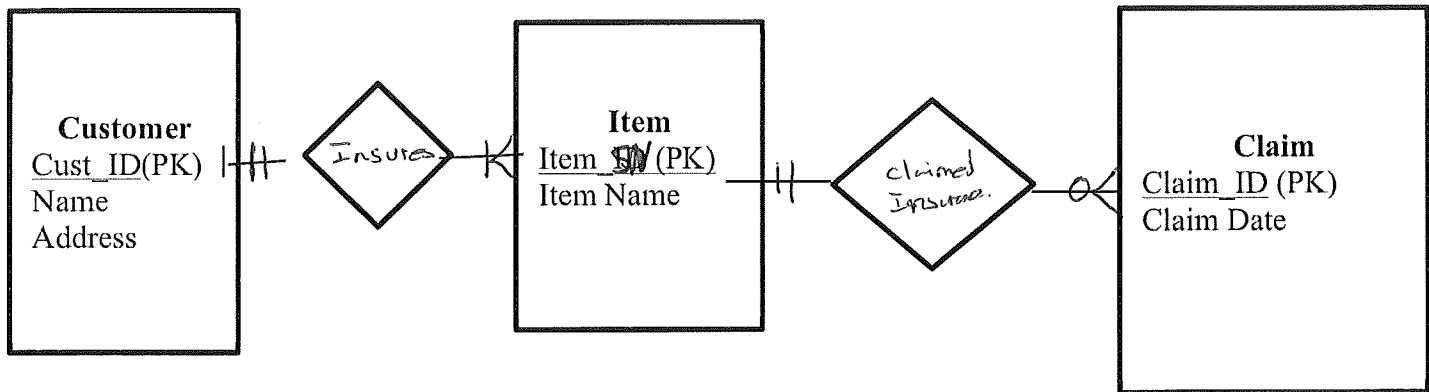
Employee

Emp_ID	Name	Date	ContractID
1	Avneet	1-2-2000	1
2	John	1-4-2012	1

Contract

Contract_ID	Client_Name	Address
1	ABC	London, Ontario
2	XYZ	Halifax, NS
3	PQR	Toronto, Ontario

- 3 Construct an E-R diagram for an insurance company that has a set of customers, each of whom owns one or more items (home, vehicles, etc.) to be insured. Each item is associated with 0 to any number of insurance claims. From the E-R diagram develop the tables and identify the primary keys and foreign keys.



Customer

Cust_ID (PK)	Name	Address
1	Avneet	Toronto
2	bhavna	London
3	John	Halifax

Item

Item_SN (PK)	Item Name	Cust_ID (FK)
1	Home	1
2	Car	1
3	laptop	2

Claim

Claim_ID (PK)	Claim_Date	Item_SN (FK)
1	1/2/2013	1
2	3/4/2013	2
3	4/5/2013	3

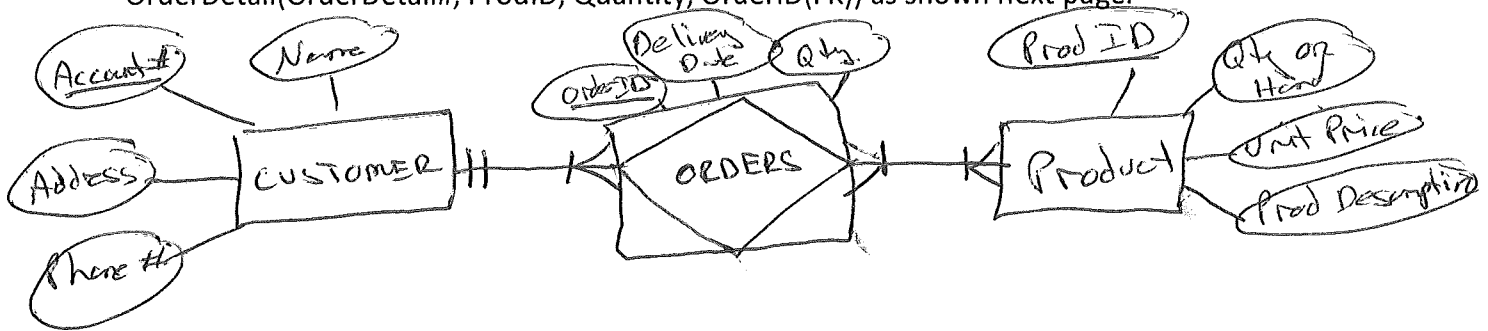
Note: could improve w/ concept of insurance policy against which claims are made.

3. AWC markets various products to thousands of repeat customers. Each product is identified by a product ID and has a product description, quantity on hand and unit price. A unique account number identifies each customer. All relevant information of the customer is maintained in the database (e.g. contact name, address, phone number, etc.). Customers place orders for various products. Each customer order may consist of one or more products. The quantity ordered for various products can vary. However the order delivery date will be the same.

(a) model AWC's business by way of the E-R diagram. Identify the keys, attributes and relationship cardinalities for each entity.

(b) based on your E-R model, develop the set of tables

Solution (note: very basic – could take it up a notch with orders having a one to many relationship to OrderDetail(OrderDetail#, ProdID, Quantity, OrderID(FK)) as shown next page.



Customer

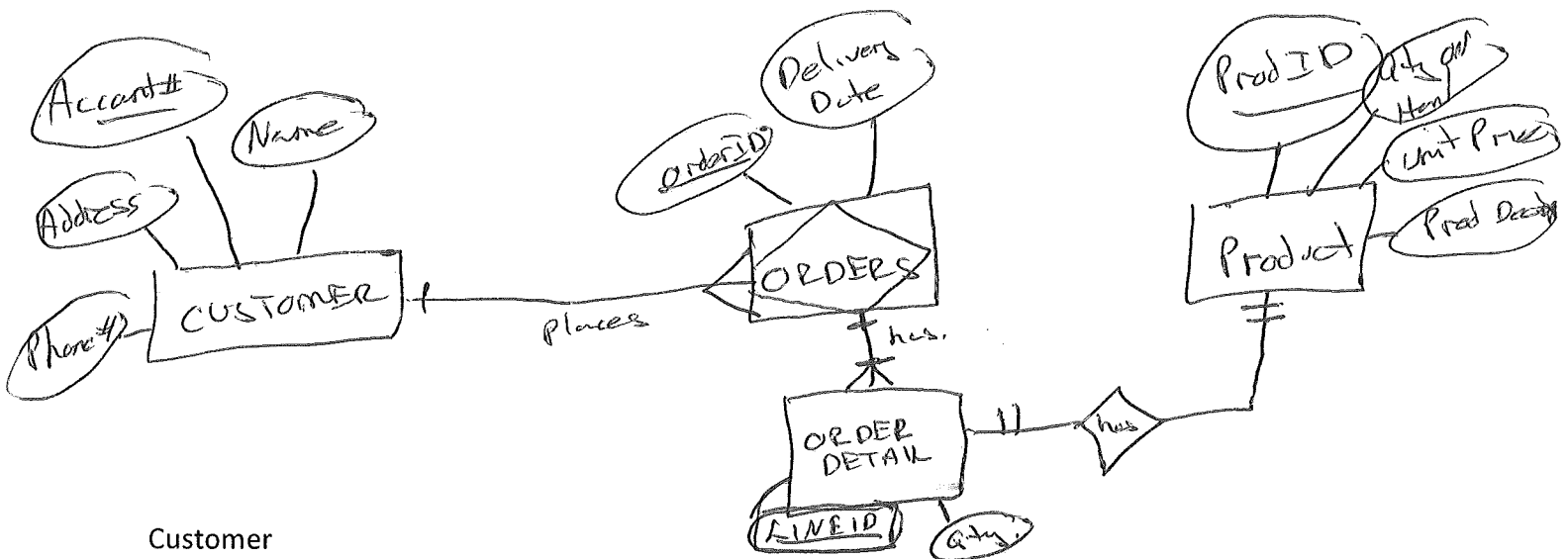
<u>AccountNo</u> (primary key)	Name	Address	Phone
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Product

<u>ProdID</u> (primary key)	Product_Desc	Qty_On_Hand	Unit Price
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Orders

<u>OrderID</u> (primary key)	Delivery Date	ProdID (foreign key)	AccountNo (foreign key)	Quantity
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Customer

<u>AccountNo</u> (primary key)	Name	Address	Phone
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Product

<u>ProdID</u> (primary key)	Product_Desc	Qty_On_Hand	Unit Price
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Orders

<u>OrderID</u> (primary key)	Delivery Date	CustomerAccountNo (foreign key)
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OrderDetail

<u>OrderDetailID</u> (primary key)	Quantity	ProdID (foreign key)	OrderID (foreign key)
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