

1. Discuss the entities, attributes, and the relationship cardinalities presented in the Crow's Foot ERD.

The first entity is Customer. The primary key of Customer is CUS_CODE and has additional attributes namely CUS_UNAME, CUS_AREACODE, CUS_INITIAL, CUS_BALANCE, CUS_PHONE, AND CUS_FNAME. The Customer entity is mandatory as denoted by the two parallel lines next to the entity box. The Customer entity has a relationship with Invoice. This relationship is an optional, one-to-many type relationship. This means that for every occurrence of the Customer entity, there can be many Invoices associated with the Customer entity, but the Customer is not required to have an Invoice. The Invoice entity is defined by its primary key INV_NUMBER and other attributes INV_DATE and CUS_DATE. Invoice is a mandatory entity as denoted by the two parallel lines next to the entity box. Like the relationship between Customer and Invoice, Invoice has an optional, one-to-many relationship with Line. The Line entity has two primary keys: INV_NUMBER and LINE_NUMBER. Line is an example of a dependent entity. This means that it relies upon the existence of other entities. Some of the attributes from the identifiers in other entities are taken and given to the dependent entity. In this case, Line takes the primary key INV_NUMBER from Invoice and the primary key P_CODE from the Product entity. Like Line's relationship with Invoice, Line also has an optional, one-to-many relationship with Product. For every occurrence of the Product entity, there can be many Lines, but they are not required to have any either. Product has primary key P_CODE and additional attributes P_QOH, P_DISCOUNT, V_CODE, P_PRICE, P_MIN, P_DESCRIPTION and P_INDATE. Product is a mandatory entity

and has an optional, one-to-many relationship with Vendor. Vendor is a dependent entity and takes the V_CODE attribute from Product as its primary key. It also has additional attributes V_NAME, V_CONTACT, V_PHONE, V_ORDER, V_STATE, and V_AREACODE.

2. Write the business rules that are reflected in the following Crow's Foot ERD. An example of a business rule in the given ERD: ***Every customer can have many invoices.***

- Every customer can have many invoices, but they are not required to have any either. Each invoice is billed to exactly one customer.
- Each invoice can have many lines, but they are not required to have any either. Each line is associated with one invoice.
- Every product can have many vendors, but they are not required to have any either. Each product can only have one vendor.
- Every product can have many lines, but they are not required to have any either. Each line can only be associated with one product.