CUSTOMER and SALE

* The complete relationship restrictions are that a CUSTOMER has a minimum and a maximum cardinality of 1 – a sale with a particular SaleID can be made to one and only one customer. A SALE has a minimum cardinality of 0 and a maximum cardinality of many – a customer can buy many items but does not have to buy any.

SALE and EMPLOYEE

* The complete relationship restrictions are that an EMPLOYEE has a minimum and a maximum cardinality of 1 – a sale with a particular SaleID can be made by one and only one employee. A SALE has a minimum cardinality of 0 and a maximum cardinality of many – an employee can make either not sales or many sales.

VENDOR and ITEM (**connecting VendorId without creating a circle)**

* The complete relationship restrictions are that an ITEM has a minimum cardinality of zero and a maximum cardinality of many – a vendor can supply zero or many items. A VENDOR has a minimum cardinality of 1 and a maximum cardinality of many – A same item can be supplied by one or many vendors.

**ITEM and SALE\_ITEM**

* SALE\_ITEM has a minimum cardinality of 1 and a maximum cardinality of many – an item can be sold one time or many times. An ITEM has a maximum and a minimum cardinality of 1 – Considering SALE\_ITEM to be a detailed invoice, each instance of a SALE\_ITEM refers to one and only one item instance.

**SALE\_ITEM AND SALE**

* SALE\_ITEM has a minimum cardinality of 1 and a maximum cardinality of many – a sale has to be made once on the invoice but it can be made multiple times. SALE has a minimum and a maximum cardinality of 1 – the invoice must contain only one sale.

We created an associative entity in ORDER\_ITEM between ITEM and VENDOR to keep track of item orders from vendors. We included QuantityOnHand as an attribute in ITEM to track current inventory.

ORDER\_ITEM and ITEM

* ORDER\_ITEM has a minimum cardinality of 0 and a maximum cardinality of many – An item can be ordered either zero times or many times. ITEM has a minimum and a maximum cardinality of 1. Assuming OrderID is unique, an order refers to one and only one items.

**C**. **Ask her if the Super Type and Sub Type relationships are correct**

We made a supertype CLIENT that contains all relevant information required from a customer (FName, LName, …). The subtypes are CUSTOMER and EMPLOYEE that will inherit the structure and values of the attributes from CLIENT. It is considered an exclusive subtype with the discriminator IsEmployee.

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Validating the data