* + 1. This application is for an online retail store.
    2. This system allows users to create an account, add their bank account numbers, and buy items from various registered suppliers.
    3. I got this idea from our class project idea list.

1.2.1 My entities include: a Customer table, a CustomerAccount table, a Supplier table, a SupplierAccount table, an OrderTable table, an Item table, an Item\_has\_Order table and an Order\_has\_Supplier table.

The Customer table has the attributes: CustomerID, CustomerName, CustomerAddress, CustomerState, CutsomerZipcode, CustomerEmail, CustomerPassword, and CustomerPhone. The CustomerID attribute is the Primary Key of this entity, holds integer values, cannot be NULL, and must contain unique values. The CustomerID attribute links the Customer table with the CusomerAccount table; it also links the Customer table with the OrderTable table. The CustomerName attribute is of type Varchar(25) and cannot be NULL. The CustomerAddress attribute is of type Varchar(45) and cannot be NULL. The CustomerState attribute is of type Varchar(20). The CutsomerZipcode attribute is of type int and cannot be NULL. The CustomerName, CustomerAddress, CustomerState, CutsomerZipcode attributes will be used when labeling and shipping orders to the respective customer. The CustomerEmail attribute is of type Varchar(25), holds unique values, and cannot be NULL. The CustomerPassword attribute is of type Varchar(25) and cannot be NULL. The CustomerPhone attribute is of type Varchar(15) and must hold unique values.

The CustomerAccount table has the attributes: BankAccountNumber, BankName, BankRoutingNumber, and CustomerID. The BankAccountNumber attribute is the Primary Key of this entity, holds integer values, cannot be NULL, and must contain unique values. The BankName attribute is of type Varchar(25) and cannot be NULL. The BankRoutingNumber attribute is of type int and cannot be NULL. The CustomerID attribute is a foreign key of type int and cannot be NULL. The CustomerID attribute serves to link the CusomerAccount table with the Customer table.

The Supplier table has the attributes: SupplierID, SupplierName, SupplierAddress, SupplierState, SupplierZipcode, SupplierWebsite, SupplierEmail, and SupplierPhone. The SupplierID attribute is the Primary Key of this entity, holds integer values, cannot be NULL, and must contain unique values. The SupplierID attribute links the Supplier table with the SupplierAccount table; it also links the Supplier table with the OrderTable table. The SupplierName attribute is of type Varchar(45) and cannot be NULL. The SupplierAddress attribute is of type Varchar(25) and cannot be NULL. The SupplierState attribute is of type Varchar(20) and cannot be NULL. The SupplierZipcode attribute is of type int and cannot be NULL. The SupplierWebsite attribute is of type Varchar(20). The SupplierEmail attribute is of type Varchar(25), must be unique, and cannot be NULL. The SupplierPhone attribute is of type Varchar(15), must be unique, and cannot be NULL.

The SupplierAccount table has the attributes: BankAccountNumber, BankName, BankRoutingNumber, and SupplierID. The BankAccountNumber attribute is the Primary Key of this entity, holds integer values, cannot be NULL, and must contain unique values. The BankName attribute is of type Varchar(25) and cannot be NULL. The BankRoutingNumber attribute is of type int and cannot be NULL. The SupplierID attribute is a foreign key of type int and cannot be NULL. The SupplierID attribute serves to link the SupplierAccount table with the Supplier table.

The Item table has the attributes: ItemID, ItemName, ItemType, ItemColor, ItemPrice, and AvilableStock. The ItemID attribute is the Primary Key of this entity, holds integer values, cannot be NULL, and must contain unique values. The ItemName attribute is of type Varchar(45) and cannot be NULL. The ItemType attribute is of type Varchar(25). The ItemColor attribute is of type Varchar(20). The ItemPrice attribute is of type int and cannot be NULL. The AvilableStock attribute is of type int and cannot be NULL.

The OrderTable table has the attributes: OrderID, ItemID, ItemQuantity, PriceOfOrder, Discounts, OrderTotal, SupplierID and CustomerID. The OrderID attribute is the Primary Key of this entity, holds integer values, and cannot be NULL. The ItemID attribute is a foreign key to the Item table and serves to connect the OrderTable table with the Item table. The ItemID attribute is of type int and cannot be NULL. The ItemQuantity attribute is of type int and cannot be NULL. The ItemQuantity attribute is of type int and cannot be NULL. The PriceOfOrder attribute is a foreign key to the Item\_has\_Order table and serves to connect the OrderTable table with the Item\_has\_Order table. The PriceOfOrder attribute is of type int and cannot be NULL. The Discounts attribute is of type int. The OrderTotal attribute is of type int and cannot be NULL. The OrderTotal attribute is generated by subtracting the value in the Discount attribute from the value in the PriceOfOrder attribute. The SupplierID attribute is a foreign key to the Supplier table and serves to connect the OrderTable table with the Supplier table. The SupplierID attribute is of type int and cannot be NULL. The CustomerID attribute is a foreign key to the Customer table and serves to connect the OrderTable table with the Customer table. The CustomerID attribute is of type int and cannot be NULL.

The Item\_has\_Order table has the attributes: ItemID, OrderID, ItemQuantity, ItemPrice, and PriceOfOrder. Both the ItemID and OrderID attributes are the composite keys of this table. The ItemID attribute serves to connect the Item\_has\_Order table with the Item table. The OrderID attribute serves to connect the Item\_has\_Order table with the OrderTable table. The ItemID attribute holds integer values and cannot be NULL. The OrderID attribute holds integer values and cannot be NULL. The ItemQuantity attribute is of type int. The ItemPrice attribute is of type int. The PriceOfOrder attribute is of type int.

The Order\_has\_Supplier table has the attributes: OrderID and SupplierID. Both the OrderID and SupplierID attributes are the composite keys of this table. The OrderID attribute serves to connect the Order\_has\_Supplier table with the OrderTable table. The SupplierID attribute serves to connect the Order\_has\_Supplier table with the Supplier table.

1.2.2.1. The Customer and CustomerAccount tables have a 1:N relationship. Each Customer can have one or more accounts; each CustomerAccount can only be associated with one Customer. The Supplier and SupplierAccount tables have a 1:N relationship. Each Supplier can have one or more accounts; each SupplierAccount can only be associated with one Supplier. The OrderTable and Order\_has\_Supplier tables have a 1:N relationship. Each Order can have one or more Suppliers. The Supplier and Order\_has\_Supplier tables have a 1:N relationship. Each Supplier can be associated with one or more orders. The Item and Item\_has\_Order tables have a 1:N relationship. Each Item can be associated with one or more orders. The OrderTable and Item\_has\_Order tables have a 1:N relationship. Each Order can contain one or more items.

1.2.2.2. The Customer and CustomerAccount tables have a 1:N relationship. Customer has a maximum cardinality of 1 and a minimum cardinality of 1. CustomerAccount has a maximum cardinality of many and a minimum cardinality of 1. The Supplier and SupplierAccount tables have a 1:N relationship. Supplier has a maximum cardinality of 1 and a minimum cardinality of 1. SupplierAccount has a maximum cardinality of many and a minimum cardinality of 1. The OrderTable and Order\_has\_Supplier tables have a 1:N relationship. OrderTable has a maximum cardinality of 1 and a minimum cardinality of 1. Order\_has\_Supplier has a maximum cardinality of many and a minimum cardinality of 1. The Supplier and Order\_has\_Supplier tables have a 1:N relationship. Supplier has a maximum cardinality of 1 and a minimum cardinality of 1. Order\_has\_Supplier has a maximum cardinality of many and a minimum cardinality of 1. The Item and Item\_has\_Order tables have a 1:N relationship. Item has a maximum cardinality of 1 and a minimum cardinality of 1. Item\_has\_Order has a maximum cardinality of many and a minimum cardinality of 1. The OrderTable and Item\_has\_Order tables have a 1:N relationship. OrderTable has a maximum cardinality of 1 and a minimum cardinality of 1. Item\_has\_Order has a maximum cardinality of many and a minimum cardinality of 1.

1.2.2.3. In my database, the strong entities include: Customer, Supplier, and Item. The weak entities include: CustomerAccount, SupplierAccount, OrderTable Item\_has\_Order, and Order\_has\_Supplier.

1.2.2.3.1. In my database, out of the weak entities, those that are ID Dependent include: Item\_has\_Order, and Order\_has\_Supplier. The Non-ID Dependent weak entities include: CustomerAccount, SupplierAccount, and OrderTable.

1.2.2.4. My database does not include any supertype or subtype relationships.

1.2.2.5 My database does not include any recursive relationships.

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