

Wholesaler Inventory Management Database

I propose to build a relational database to track inventory and cashflow for a wholesaler.

Relations

To do this, suppliers, customers, purchase orders, sale orders, and inventory items will have to be tracked. The proposed relations are diagrammed in Figure 1.

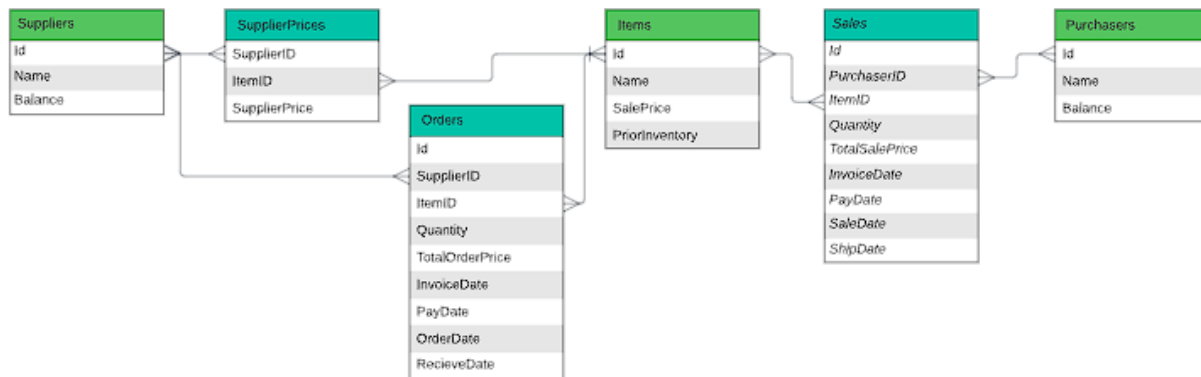


Figure 1: Initial ER Diagram

The relations will have constraints such that a new sale for an item cannot be placed if there is not sufficient inventory. To implement this, a sale will not be able to be inserted unless the sum of prior inventory plus the quantity of the item from all orders received before the ship date is greater than or equal to the size of the order plus the quantity of all prior sales. Purchaser and Supplier balances will be updated whenever the PayDate field is updated with a date. New sales will also be disallowed if a purchaser has not paid its previous invoices. This will be implemented by checking if the purchaser has a negative balance and the new SaleDate is after the InvoiceDate of any prior sales with a missing PayDate.

Platform and Presentation

The database will be hosted on the MySQL server provided by the university for the course at applied-sql.cs.colorado.edu. I will be interfacing with the database using the SQLAlchemy “raw” interface using a Jupyter Notebook.

Once the relations above are built and populated with simulated data, I will create a view joining all Orders and Sales. Using this view, inventory levels and cash flows can be calculated over arbitrary periods. To present this dynamically, I will connect Tableau to the database and build a dashboard from the consolidated view.



Figure 2: Proposed Dashboard Output

Learning Outcomes

The largest learning opportunity for this project will be the need for complex constraints on data entries in order for the database to be a useful tool and not simply a spreadsheet. The successful implementation of these constraints can be demonstrated by fulfilling their plain English descriptions.

This project will also give practical experience connecting databases with a BI tool such as Tableau. Having a functional live dashboard that shows business-relevant information will show that this learning outcome has been fulfilled.